

TURCK

Industrial Automation

SENSORS

Sense it! Connect it! Bus it! Solve it!

Sensor technology












The company



The company

TURCK is one of the leading companies in the field of industrial automation. With more than 2.600 employees in 27 countries as well as sales partners in further 60 states, the sensor, fieldbus, connection and interface specialist is globally represented. With superior products and tailored solutions for factory and process automation, TURCK has been setting new standards for over 40 years. TURCK's early international orientation dates back to 1975, marked by the foundation of TURCK INC. in Minneapolis; USA. With state-of-the-art production facilities in Germany, Switzerland, the USA, Mexico and China, TURCK is able to adapt itself to local market conditions worldwide.



The product portfolio

TURCK offers the full range of solutions for factory and process automation with over 15,000 products from the fields of sensor, interface, connection and fieldbus technology. Examples for the company's innovative leadership are inductive *uprox*®+ factor 1 sensors, the modular IP67 I/O system BL67 as well as *excom*® the compact remote I/O system for the Ex-area.

Whether for machine & system engineering, the automotive sector, transport & handling, food & beverage or for chemical and pharmaceutical industries: TURCK products enhance the availability of your systems with absolutely reliable technologies. Our products lower the costs for purchase, storage, installation and operational safety through effective standardization.



Service and Support

We want to offer our customers simply the best – promptly, reliably and flexibly! Based on 40 years of experience and extensive know-how, we support our customers with efficient service, from a first analysis up to tailor-made solutions for your application.

We aim at enhancing the efficiency and productivity of production processes. The excellent quality of our products and support improves the availability of systems in all industrial areas. Our express delivery service and a comprehensive e-support system round off the TURCK portfolio.



Product data base

www.turck.com helps you to find products and solutions fast, seven days a week, at any place worldwide and in nine different languages.

Around 13,000 products are clearly structured, completely documented and ready for download. We provide all necessary information for your application. Our online platform guides you through the information and to the products you need. Find out for your self! www.turck.com

Table of Contents



Sensor technology – the full range

The catalog features more than 3000 devices for proximity, photoelectric, flow and postion sensing. No matter the requirements on design, function or material quality, TURCK offers first-class products and high-efficiency solutions.

For an **overview over the full product range** please see page 5. Each chapter contains a table providing details about product **Designs and variants**. If you are looking for special application solutions, please refer to **Sensors for special applications**. Should you already know the type code or the ID number of a sensor, refer to the **Type index** on page 932. It leads you to the desired product.

General information	Electrical versions	page 808
	Housing materials	page 818
	Standards and directives (if applicable)	page 816
	Glossary	page 822
Wiring diagramms	w For the numbers of the wiring diagrams see the selection of the sensors	page 832
Dimension drawings	d For the numbers of the dimension drawings see the selection of the sensors	page 842
Excess gain curves	e For the numbers of the excess gain curves see the selection of the sensors	page 922
Index of types	Type code and Ident Numbers	page 932

***uprox*®+ inductive factor 1 sensors**	Overview Designs and variants Product features	page 7 page 14 page 18	*uprox*®+ Factor 1
Inductive sensors	Overview Designs and variants Sensors for special applications Product features	page 55 page 64 page 58 page 78	Inductive sensors
Capacitive sensors	Overview Designs and variants Sensors for special applications Product features	page 233 page 240 page 236 page 244	Capacitive sensors
Magnetic field sensors	Overview Designs and variants Product features	page 279 page 284 page 286	Magnetic field-sensors
Photoelectric sensors	Overview Designs and variants Product features	page 299 page 302 page 310	Photoelectric sensors
Measuring and inspection sensors	Overview Designs and variants Product features	page 397 page 402 page 406	Inspection sensors
Pressure sensors	Overview Designs and variants Product features	page 455 page 462 page 466	Pressure sensors
Temperature sensors	Overview Designs and variants	page 541 page 548	Temperature sensors
Flow sensors	Overview Designs and variants Sensors for special applications Product features	page 573 page 584 page 578 page 590	Flow sensors
Flow meters	Overview Designs and variants Product features	page 641 page 648 page 650	Flow meters
Linear position sensors	Overview Product features	page 659 page 664	Linear position sensors
Encoders	Overview	page 671	Encoders
Inclinometers	Overview Product features	page 681 page 686	Inclinometers
Ultrasonic sensors	Overview Designs and variants Product features	page 691 page 694 page 698	Ultrasonic sensors
Connection and mounting accessories	Overview Product features Accessories (sorted by sensor types)	page 733 page 734 page 736	Accessories

At a glance
uprox®+ Inductive factor 1 sensors



The new generation of inductive sensors

The deployment of inductive sensors faces complex and continuously growing demands of modern industrial automation. An end-to-end solution is required, ranging from construction, purchase and system engineering to operation and maintenance.

TURCK demonstrates impressively how to optimize process cost and to improve the efficiency and availability of systems with the *uprox*®+ factor 1 sensors. The *uprox*®+ sensors operate with innovative non-ferritic coils and circuit boards, offering completely new application possibilities compared to conventional sensors with ferrite core and wound coil.

All inductive sensors of the new *uprox*®+ generation operate with highest switching distances, without reduction factor (i.e. same operating distance for all metals), are weld resistant, feature an extended temperature range, excellent EMC properties and are easily mounted.

Advantages for the user: Only a few *uprox*®+ sensors are needed to cover a broad range of applications. Standardization is thus guaranteed, purchase and logistics are simplified and the variety of types as well as the costs are reduced to a manageable amount.

The sensors are available as standard versions in chrome-plated brass barrels or in stainless steel housings with LPC front cap and special double lip seal for heavy use or sudden temperature changes. These are typical ambient conditions faced in cleaning processes of the food and tooling industry. The PTFE-coated brass versions offer extra protection against sparks and weld-splatter as experienced in the automotive industry during car body welding.

The sensors are accommodated in a rugged, rectangular plastic housing, needing little space while offering high switching distances. We also offer other rectangular designs with relocatable active face.

Our strengths ...



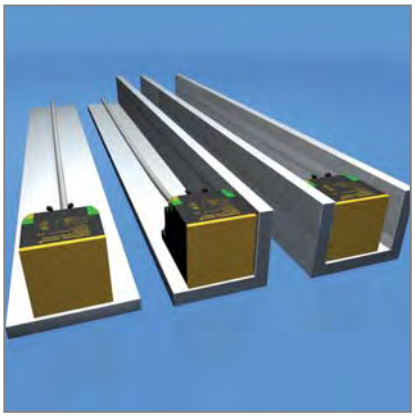
Factor 1

The innovative *uprox*®+ sensors set new benchmarks in metal detection. Thanks to the non-ferritic coil and circuit-board the sensors operate without reduction factor. Materials such as iron, stainless steel, copper, aluminium and brass are detected at the same distance and with the highest precision. Any application can therefore profit from the unique power spectrum of the *uprox*®+ sensors.



Highest switching distance

The new *uprox*®+ sensors have the same switching distance. Owing to their novel patented coil technology, the switching distance is up to 250 % higher than that of coventional inductive sensors with ferrite core. This means, that the *uprox*®+ sensors outclass any standard sensor of the same size in terms of switching distance and other features.



Partly-flush mounting of non-flush mountable sensors

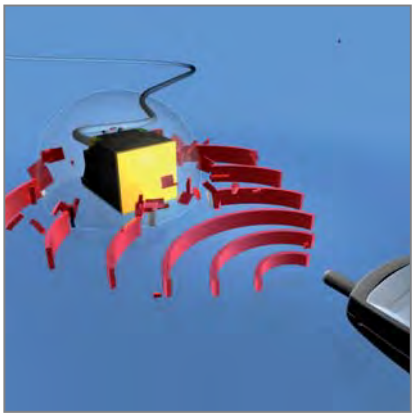
The mounting flexibility of rectangular *uprox*®+ sensors opens up many new application possibilities. All non-flush mountable rectangular *uprox*®+ sensors allow 4-side embedded mounting with reduced switching distance. Thus, additional mechanical components and accessories are not needed, making installation not only cheaper but also quicker and easier. The unique flexibility of non-flush mountable sensors is achieved through integrated pre-damping protection: This allows the sensors to be mounted to the upper edge of the barrel.

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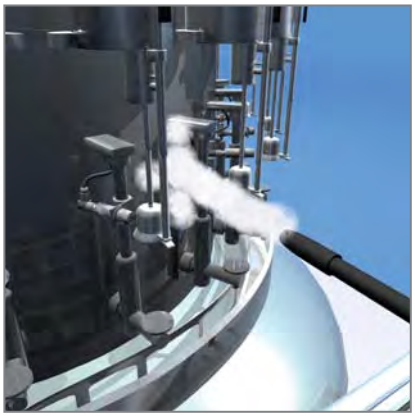
Recessed mounting of flush sensors

The new *uprox*®+ sensors only require small metal-free zones. No matter which sensor type, flush mounting is possible without compromises. The sensors are screwed in with a half turn to protect them against mechanical damage. This guarantees safe operation in all mounting positions!



Excellent EMC properties and magnetic field resistance

uprox®+ sensors fulfill the EN 60947-5-2 requirements and pass tests successfully according to EN 61000-4-6 „conducted interferences". They are also immune to strong magnetic fields, occuring for instance during electrical welding processes or near lifts and electrical furnaces.



High tightness and resistance

A special double lip seal in the front cap and at the connector insert prevent the ingress of liquids even during high pressure cleaning cycles. *uprox*®+ sensors thus exceed the requirements of protection class IP68 and IP69K by far. The threaded barrel and the front cap of the WD series are made of materials that are resistant to all common acid and alkaline cleaning agents and disinfectants.

Your advantages …



Efficient standardization

A single *uprox*®+ sensor replaces many conventional sensor types. Purchase and logistics as well as end-user service are simplified.

- The widest possible application range is achieved with only a few sensor versions
- Low average prices because special devices are not required
- Minimized training effort due to a lean product line



Maximum freedom

uprox®+ extends the capability of sensor technology and provides considerable more leeway for the development of new machines and systems:

- Many possible solutions are achieved with only a few device types
- Great flexibility in machine planning through avoidance of construction errors and targeted elimination of unnecessary conflicts between mechanical and electrical construction
- Easy mounting



Extremely service-friendly

uprox®+ sensors can be mounted in many ways and are easy to maintain:

- Convenient adjustment thanks to highest switching distances
- Maximum freedom for commissioning achieved through safe operating conditions in recessed and partailly embedded mounting positions
- Minimum maintenance and staff training due to a reduced variety of sensor types

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High system availability

uprox®+ sensors minimize downtimes of machines and systems:

- Less mechanical damage through recessed mounting
- Protection against ingress of liquids during cleaning processes
- Prevention of downtimes due to the excellent resistance of the materials used against acid and alkaline cleaning agents and disinfectants
- Short downtimes through high availability of spare parts at lowest costs

Type code

B	i	4	U	Functional principle	–	M12	.	Design	–	A	P	6	X	Electrical version	–

Special functions

U	***uprox*® or *uprox*®+ factor 1 sensors**

Rated operating distance

...	[mm]

Functional principle

i	inductive

Fitting

B	flush
N	non-flush

Additional information

E	long-sized housing
M	medium-sized housing
S	lateral active face
TC	terminal chamber with straight/angled cable outlet
WD	wash down applications

Housing

CK40, CP40, QV40	rectangular, 40 x 40 mm flexible active face
EG	threaded barrel,
EM	stainless steel Ø in [mm]
EGT	threaded barrel, stainless steel, PTFE-coated, Ø in [mm]
EH	smooth barrel, stainless steel, different diameters
K	smooth barrel, plastic, Ø in [mm]
M	threaded barrel, chrome-plated brass, Ø in [mm]
MT	threaded barrel, PTFE-coated brass Ø in [mm]
Q	rectangular housing

Output function

A	working current NO
R	closed current NC
V	changeover contact

Output mode

P	PNP
N	NPN
D	2-wire DC, non-polarized

Voltage range

4	10...65 VDC, Ⓚ
44	10...55 VDC, Ⓚ
6	10...30 VDC, Ⓚ

Indication

X	LED
X...	number of LEDs or multicolor LED

Ⓚ = short circuit protected

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H1	1	4	1	Electrical connection	/	L100	Special versions

Assignment

1 standard assignment or customized

Number of contacts

3 3 contacts

4 4 contacts

Connector type

1 straight

Connector type

H1 connector M12 x 1

V1 connector M8 x 1 / Ø 8 mm

Features

F2 offset oscillation frequency

L80 device length 80 mm

L100 device length 100 mm

X0R irradiated cable, resistant to weld splatter

x.x	PSG	3	M	Electrical connection: Cable connection

Assignment

M rotatable nut

S fixed thread

Number of contacts

... ... contacts

Connector type

PSG connector M8 x 1, straight

RS connector M12 x 1, straight

Cable length

... [m]

Designs and variants

	Page 29	Page 30, 43	Page 31, 43, 49	Page 35, 44, 50
				
	EH6.5	**EG08**	**M12**	**M18**
Design	smooth barrel 6.5 mm	threaded barrel M8 x 1	threaded barrel M12 x 1	threaded barrel M18 x 1
Switching distance	2 mm, 6 mm,	2 mm, 6 mm,	2 mm, 4 mm, 5 mm, 10 mm,	5 mm, 8 mm, 10 mm, 15 mm,
Electrical connection	connector, M8 x 1 cable	connector, M8 x 1 connector, M12 x 1 cable	connector, M12 x 1 connector, M8 x 1 cable terminal chamber, removable cage clamp terminals	connector, M12 x 1 cable terminal chamber, removable cage clamp terminals
Output	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN

	Page 38, 45, 52	Page 19	Page 19	Page 20
				
	M30	**Q8SE**	**Q08**	**Q10S**
Design	threaded barrel M30 x 1.5	rectangular Q8SE, 8 x 8 x 40 mm	rectangular Q08, 20 x 8 x 32 mm	rectangular Q10S, 16 x 10.2 x 27.8 mm
Switching distance	10 mm, 15 mm, 15 mm, 30 mm,	4 mm,	8 mm,	5 mm,
Electrical connection	connector, M12 x 1 cable terminal chamber, removable cage clamp terminals	connector, M8 x 1 cable cable with connector	connector, Ø 8 mm cable	cable cable with connector
Output	2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN

Designs and variants

	Page 20	Page 23	Page 24	Page 25
				
	Q12	**CK40**	**QV40**	**CP40**
Design	rectangular Q12, 26 x 12 x 40 mm	rectangular CK40, 40 x 40 x 65 mm	rectangular QV40, 40 x 40 x 65 mm	rectangular CP40, 40 x 40 x 114 mm
Switching distance	5 mm,	15 mm, 20 mm, 30 mm, 35 mm, 50 mm,	20 mm, 35 mm, 50 mm,	20 mm, 30 mm, 50 mm,
Electrical connection	connector, M8 x 1 connector, M12 x 1 cable	connector, M12 x 1	connector, M12 x 1	terminal chamber
Output	3-wire DC PNP 3-wire DC NPN 4-wire DC PNP	2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP	3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN

Page 26

Page 27





	Q80	K90SR
Design	rectangular Q80, 80 x 40 x 92 mm	rectangular K90SR, 75 x 60 x 130 mm
Switching distance	50 mm, 75 mm,	100 mm,
Electrical connection	connector, M12 x 1	connector, M12 x 1 terminal chamber
Output	3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	4-wire DC PNP 4-wire DC NPN

uprox®+ compact rectangular design

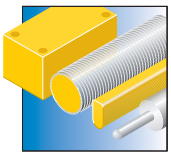


The mounting flexibility of the rectangular *uprox*®+ sensors opens up many new application possibilities. All variable non-flush rectangular *uprox*®+ sensors are 4-side embeddable with reduced switching distance. Thus additional mechanical components and accessories are not required. As a result, installation is cost-effective, quicker and easier.

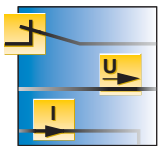
Features

- Partial embedding of non-flush rectangular sensors
- Highest switching distance
- Factor 1, all metals
- Excellent EMC properties and magnetic field resistance

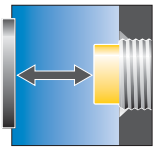
Properties



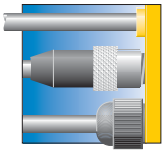
Design
From the small space-saving Q8SE to the standardized Q12 version



Electrical versions
3/4-wire NO/NC as well as antivalent PNP/NPN output



Switching distances
High switching distances between 4 and 12 mm on all metals



Electrical connections
Connection cable 2 m, plug connections M12, M8 or Ø 8 mm as well as M8 pigtail



Materials
Rugged and chemical resistant plastic and metal housings



Special features
High protection class IP68
Side-by-side, space-saving installation

Q8SE – 3-wire DC



General data

Dimensions	8 x 8 x 40 mm	**Ambient temperature**	-30…+85 °C
Switching distance	4 mm,	**Material housing**	PP
Operating voltage	10…30 VDC		

Lateral active face

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
NI4U-Q8SE-RP6X-V1131	, PNP	connector, M8 x 1	-	w003	d001
NI4U-Q8SE-RP6X-0,3-PSG3M	, PNP	cable with connector	PUR 0.3 m	w003	d002
NI4U-Q8SE-RP6X	, PNP	cable	PUR 2 m	w006	d003
NI4U-Q8SE-AP6X-V1131	, PNP	connector, M8 x 1	-	w001	d001
NI4U-Q8SE-AP6X-0,3-PSG3M	, PNP	cable with connector	PUR 0.3 m	w001	d002
NI4U-Q8SE-AP6X	, PNP	cable	PUR 2 m	w004	d003
NI4U-Q8SE-AN6X-V1131	, NPN	connector, M8 x 1	-	w002	d001
NI4U-Q8SE-AN6X	, NPN	cable	PUR 2 m	w005	d003

Q08 – 3-wire DC



General data

Dimensions	20 x 8 x 32 mm	**Ambient temperature**	-25…+70 °C
Switching distance	8 mm,	**Material housing**	GD-Zn
Operating voltage	10…30 VDC		

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BI8U-Q08-RP6X2	⊣⌒, PNP	cable	PUR	w006	d004
BI8U-Q08-AP6X2-V1131	_⌒, PNP	connector, Ø 8 mm	-	w001	d005
BI8U-Q08-AP6X2	_⌒, PNP	cable	PUR	w004	d004
BI8U-Q08-AN6X2-V1131	_⌒, NPN	connector, Ø 8 mm	-	w002	d005
BI8U-Q08-AN6X2	_⌒, NPN	cable	PUR	w005	d004

Q10S – 3-wire DC



General data

Dimensions	16 x 10.2 x 27.8 mm	**Ambient temperature**	-30…+85 °C
Switching distance	5 mm,	**Material housing**	PP
Operating voltage	10…30 VDC		

Lateral active face

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
NI5U-Q10S-AP6X-0,3-PSG3M	_⌒, PNP	cable with connector	PUR 0.3 m	w001	d006
NI5U-Q10S-AP6X	_⌒, PNP	cable	PUR 2 m	w004	d007
NI5U-Q10S-AN6X-0,3-PSG3M	_⌒, NPN	cable with connector	PUR 0.3 m	w002	d006
NI5U-Q10S-AN6X	_⌒, NPN	cable	PUR 2 m	w005	d007

Q12 – 3-wire DC



General data

Dimensions	26 x 12 x 40 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Material housing**	PA
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BI5U-Q12-AP6X2-V1131/F2	_⌒, PNP	connector, M8 x 1	-	w001	d008
BI5U-Q12-AP6X2-V1131	_⌒, PNP	connector, M8 x 1	-	w001	d008
BI5U-Q12-AP6X2-H1141	_⌒, PNP	connector, M12 x 1	-	w001	d009
BI5U-Q12-AP6X2	_⌒, PNP	cable	PUR 2 m	w004	d010
BI5U-Q12-AN6X2-V1131	_⌒, NPN	connector, M8 x 1	-	w002	d008
BI5U-Q12-AN6X2-H1141	_⌒, NPN	connector, M12 x 1	-	w002	d009
BI5U-Q12-AN6X2	_⌒, NPN	cable	PUR 2 m	w005	d010

Q12 – 4-wire DC



General data

Dimensions	26 x 12 x 40 mm	**Operating voltage**	10…30 VDC
Switching distance	5 mm,	**Ambient temperature**	-25…+70 °C
Output	, PNP	**Material housing**	PA

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BI5U-Q12-VP6X2/F2	cable	PUR 2 m	w007	d010
BI5U-Q12-VP6X2-H1141	connector, M12 x 1	-	w008	d009
BI5U-Q12-VP6X2	cable	PUR 2 m	w007	d010

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

uprox®+ large rectangular design

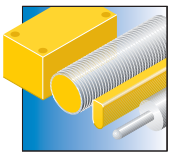


The mounting flexibility of the rectangular *uprox*®+ sensors open up many new application possibilities. All variable non-flush rectangular *uprox*®+ sensors are 4-side embeddable with reduced switching distance. Thus additional mechanical components and accessories are not required. As a result, installation is cost-effective, quicker and easier.

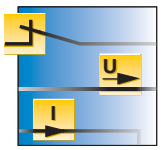
Features

- Highest switching distance
- Factor 1
- Excellent EMC properties and magnetic field resistance
- Partial embedding of non-flush rectangular sensors

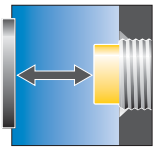
Properties



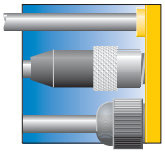
Design
From the 40 x 40 mm standard version CK 40 to the Ø 90 mm big size K90SR



Electrical versions
3/4-wire NO/NC as well as antivalent PNP/NPN output



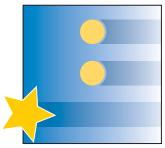
Switching distances
Large switching distances between 20 mm and max.100 mm on all metals



Electrical connections
Available with 2 m cable or M12 x 1 plug connection



Materials
Rugged plastic housing for harsh and uncompromizing application conditions



Special features
Protection class IP68
High luminance corner LEDs
Variable orientation of active face in 5 directions

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CK40 – 2-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…65 VDC
Output	⎯◟⎯, 2-wire	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Mechanical switches are replaced by a simple 2-wire connection and system diagnostics by short-circuit monitoring and wire-break detection.

Types and data – selection table

Type	Switching distance	w	d
BI15U-CK40-AD4X-H1144	15 mm,	w009	d011
NI35U-CK40-AD4X-H1144	35 mm,	w009	d012

CK40 – 3-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI30U-CK40-AP6X2-H1141	30 mm,	⎯◟⎯, PNP	-10…+60 °C	w001	d012
BI30U-CK40-AN6X2-H1141	30 mm,	⎯◟⎯, NPN	-10…+60 °C	w002	d012
BI20U-CK40-AP6X2-H1141	20 mm,	⎯◟⎯, PNP	-30…+85 °C	w001	d011
BI20U-CK40-AN6X2-H1141	20 mm,	⎯◟⎯, NPN	-30…+85 °C	w002	d011
NI50U-CK40-AP6X2-H1141	50 mm,	⎯◟⎯, PNP	-30…+85 °C	w001	d012
NI50U-CK40-AN6X2-H1141	50 mm,	⎯◟⎯, NPN	-30…+85 °C	w002	d012

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

CK40 – 4-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…65 VDC
Switching distance	50 mm,	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Output	w	d
NI50U-CK40-VP4X2-H1141	, PNP	w008	d012
NI50U-CK40-VN4X2-H1141	, NPN	w010	d012

QV40 – 3-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…30 VDC
Output	, PNP	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	Ambient temperature	w	d
BI20U-QV40-AP6X2-H1141	20 mm,	0…+70 °C	w001	d013
NI50U-QV40-AP6X2-H1141	50 mm,	-30…+85 °C	w001	d013
NI35U-QV40-AP6X2-H1141	35 mm,	-30…+85 °C	w001	d013

CP40 – 3-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…30 VDC
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI30U-CP40-AP6X2	30 mm,	, PNP	-10…+60 °C	w011	d014
BI30U-CP40-AN6X2	30 mm,	, NPN	-10…+60 °C	w012	d014
BI20U-CP40-AP6X2	20 mm,	, PNP	-30…+85 °C	w011	d014
BI20U-CP40-AN6X2	20 mm,	, NPN	-30…+85 °C	w012	d014
NI50U-CP40-AP6X2	50 mm,	, PNP	-30…+85 °C	w011	d014
NI50U-CP40-AN6X2	50 mm,	, NPN	-30…+85 °C	w012	d014

CP40 – 4-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…65 VDC
Switching distance	50 mm,	**Ambient temperature**	-30…+85 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Output	w	d
NI50U-CP40-VP4X2	, PNP	w014	d014
NI50U-CP40-VN4X2	, NPN	w013	d014

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

Q80 – 3-wire DC



General data

Dimensions	80 x 40 x 92 mm	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	PBT
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI50U-Q80-AP6X2-H1141	50 mm,	_⌒‾, PNP	w001	d015
BI50U-Q80-AN6X2-H1141	50 mm,	_⌒‾, NPN	w002	d015
NI75U-Q80-AP6X2-H1141	75 mm,	_⌒‾, PNP	w001	d015
NI75U-Q80-AN6X2-H1141	75 mm,	_⌒‾, NPN	w002	d015

Q80 – 4-wire DC



General data

Dimensions	80 x 40 x 92 mm	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	PBT
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI50U-Q80-VP4X2-H1141	50 mm,	⌒‾, PNP	w008	d015
BI50U-Q80-VN4X2-H1141	50 mm,	⌒‾, NPN	w010	d015
NI75U-Q80-VP4X2-H1141	75 mm,	⌒‾, PNP	w008	d015
NI75U-Q80-VN4X2-H1141	75 mm,	⌒‾, NPN	w010	d015

K90 – 4-wire DC



General data

Dimensions	75 x 60 x 130 mm	**Ambient temperature**	-30…+85 °C
Switching distance	100 mm,	**Material housing**	PBT
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Output	Electrical connection	w	d
NI100U-K90SR-VP4X2-H1141	, PNP	connector, M12 x 1	w008	d017
NI100U-K90SR-VP4X2	, PNP	terminal chamber	w014	d016
NI100U-K90SR-VN4X2-H1141	, NPN	connector, M12 x 1	w010	d017
NI100U-K90SR-VN4X2	, NPN	terminal chamber	w013	d016

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 736 ff

uprox®+ cylindrical design

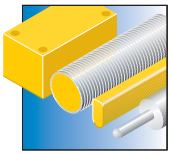


All sensors of the *uprox*®+ series owe many new features to their novel multi-coil system, providing them with distinct advantages over conventional inductive sensors. The Ø 6.5 mm standard types are available as chrome-plated versions (M12, M18, M30 x 1.5) or as stainless steel versions (EH6.5, EG08, EM12, EM18 and EM30) and excel in maximum operating distances, eliminated reduction factors, high magnetic-field immunity, excellent EMC properties and versatile mounting modes.

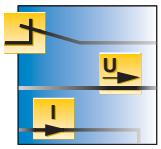
Features

- Recessed mounting of flush sensors
- Embedding up to the barrel edge of non-flush mountable sensors
- Excellent EMC properties and magnetic field resistance
- Highest switching distance
- Factor 1, all metals

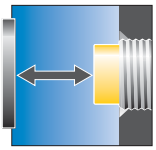
Properties



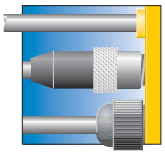
Design
From the small Ø 6.5 mm smooth barrel to the large threaded barrel version M30 x 1.5



Electrical versions
3/4-wire NO/NC as well as antivalent PNP/NPN output



Switching distances
From 2 mm flush to 30 mm non-flush, on all metals



Electrical connections
Available with 2 m cable, M12 x 1 or M8 x 1 plug connection



Materials
Threaded barrels available as nickel-plated brass or stainless steel versions



Special features
Protection class IP68
Different thread sizes for individual requirements

Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

EH6.5 – 3-wire DC – M8 x 1 plug connection



General data

Dimensions	Ø6.5 x 49 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M8 x 1	**Material housing**	V2A (1.4301)

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI2U-EH6,5-AP6X-V1131	2 mm,	_⌐‾⌐_, PNP	-30…+85 °C	w001	d018
BI2U-EH6,5-AN6X-V1131	2 mm,	_⌐‾⌐_, NPN	-30…+85 °C	w002	d018
NI6U-EH6,5-AP6X-V1131	6 mm,	_⌐‾⌐_, PNP	0…+70 °C	w001	d019
NI6U-EH6,5-AN6X-V1131	6 mm,	_⌐‾⌐_, NPN	0…+70 °C	w002	d019

EH6.5 – 3-wire DC – Cable connection



General data

Electrical connection	cable	**Material housing**	V2A (1.4301)
Operating voltage	10…30 VDC	**Material cable**	PUR 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Output	Ambient temperature	w	d
BI2U-EH6,5-AP6X	Ø6.5 x 41.6 mm	2 mm,	_⌐‾⌐_, PNP	-30…+85 °C	w004	d020
BI2U-EH6,5-AN6X	Ø6.5 x 41.6 mm	2 mm,	_⌐‾⌐_, NPN	-30…+85 °C	w005	d020
NI6U-EH6,5-AP6X	Ø6.5 x 42 mm	6 mm,	_⌐‾⌐_, PNP	0…+70 °C	w004	d021
NI6U-EH6,5-AN6X	Ø6.5 x 42 mm	6 mm,	_⌐‾⌐_, NPN	0…+70 °C	w005	d021

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 736 ff

EG08 – 3-wire DC – M8 x 1 plug connection



General data

Dimensions	Ø8 x 49 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M8 x 1	**Material housing**	V2A (1.4301)

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI2U-EG08-RP6X-V1131	2 mm,	, PNP	-30…+85 °C	w003	d022
BI2U-EG08-AP6X-V1131	2 mm,	, PNP	-30…+85 °C	w001	d022
BI2U-EG08-AN6X-V1131	2 mm,	, NPN	-30…+85 °C	w002	d022
NI6U-EG08-RP6X-V1131	6 mm,	, PNP	0…+70 °C	w003	d023
NI6U-EG08-AP6X-V1131	6 mm,	, PNP	0…+70 °C	w001	d023
NI6U-EG08-AN6X-V1131	6 mm,	, NPN	0…+70 °C	w002	d023

EG08 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø8 x 57 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	V2A (1.4301)

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI2U-EG08-RP6X-H1341	2 mm,	, PNP	-30…+85 °C	w015	d024
BI2U-EG08-AP6X-H1341	2 mm,	, PNP	-30…+85 °C	w001	d024
BI2U-EG08-AN6X-H1341	2 mm,	, NPN	-30…+85 °C	w002	d024
NI6U-EG08-RP6X-H1341	6 mm,	, PNP	0…+70 °C	w015	d025
NI6U-EG08-AP6X-H1341	6 mm,	, PNP	0…+70 °C	w001	d025
NI6U-EG08-AN6X-H1341	6 mm,	, NPN	0…+70 °C	w002	d025

EG08 – 3-wire DC – Cable connection



General data

Dimensions	Ø8 x 41.6 mm	**Material housing**	V2A (1.4301)
Electrical connection	cable	**Material cable**	PUR 2 m
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Ambient temperature	w	d
BI2U-EG08-AP6X	2 mm,	_⌒_, PNP	-30…+85 °C	w004	d026
BI2U-EG08-AN6X	2 mm,	_⌒_, NPN	-30…+85 °C	w005	d026
NI6U-EG08-AP6X	6 mm,	_⌒_, PNP	0…+70 °C	w004	d027
NI6U-EG08-AN6X	6 mm,	_⌒_, NPN	0…+70 °C	w005	d027

M12 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 62 mm	**Operating voltage**	10…65 VDC
Output	_⌒_, 2-wire	**Ambient temperature**	0…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Switching distance	w	d
BI2U-M12E-AD4X-H1144	2 mm,	w009	d028
NI5U-M12E-AD4X-H1144	5 mm,	w009	d029

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M12 – 2-wire DC – Cable connection



General data

Dimensions	Ø12 x 64 mm	**Ambient temperature**	0…+70 °C
Output	⎯◝◟⎯, 2-wire	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI2U-M12E-AD4X	2 mm, ▬	w016	d030
NI5U-M12E-AD4X	5 mm, ▬	w016	d031

M12 – 3-wire DC – M8 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M8 x 1	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-M12-AP6X-V1131	4 mm, ▬	⎯◝◟⎯, PNP	w001	d032
BI4U-M12-AN6X-V1131	4 mm, ▬	⎯◝◟⎯, NPN	w002	d032
NI10U-M12-AP6X-V1131	10 mm, ▬	⎯◝◟⎯, PNP	w001	d033
NI10U-M12-AN6X-V1131	10 mm, ▬	⎯◝◟⎯, NPN	w002	d033

M12 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
Bi4U-M12-RP6X-H1141	4 mm,	, PNP	w015	d034
BI4U-M12-AP6X-H1141	4 mm,	, PNP	w001	d034
BI4U-M12-AN6X-H1141	4 mm,	, NPN	w002	d034
NI10U-M12-RP6X-H1141	10 mm,	, PNP	w015	d035
NI10U-M12-AP6X-H1141	10 mm,	, PNP	w001	d035
NI10U-M12-AN6X-H1141	10 mm,	, NPN	w002	d035

M12 – 3-wire DC – Cable connection



General data

Dimensions	Ø12 x 54 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-M12-RP6X	4 mm,	, PNP	w006	d036
BI4U-M12-AP6X	4 mm,	, PNP	w004	d036
BI4U-M12-AN6X	4 mm,	, NPN	w005	d036
NI10U-M12-RP6X	10 mm,	, PNP	w006	d037
NI10U-M12-AP6X	10 mm,	, PNP	w004	d037
NI10U-M12-AN6X	10 mm,	, NPN	w005	d037

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M12 – 4-wire DC – M12 x 1 plug connection



General data

Electrical connection	connector, M12 x 1	**Ambient temperature**	-30…+85 °C
Operating voltage	10…55 VDC	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	w	d
BI4U-M12E-VP44X-H1141	Ø12 x 62 mm	4 mm,	, PNP	w017	d028
BI4U-M12E-VN44X-H1141	Ø12 x 62 mm	4 mm,	, NPN	w010	d028
BI4U-M12-VP44X-H1141 L80	Ø12 x 80 mm	4 mm,	, PNP	w017	d038
BI4U-M12-VP44X-H1141 L100	Ø12 x 100 mm	4 mm,	, PNP	w017	d039
NI10U-M12E-VP44X-H1141	Ø12 x 62 mm	10 mm,	, PNP	w017	d029
NI10U-M12E-VN44X-H1141	Ø12 x 62 mm	10 mm,	, NPN	w010	d029

M12 – 4-wire DC – Cable connection



General data

Dimensions	Ø12 x 64 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…55 VDC	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-M12E-VP44X	4 mm,	, PNP	w007	d030
BI4U-M12E-VN44X	4 mm,	, NPN	w018	d030
NI10U-M12E-VP44X	10 mm,	, PNP	w007	d031
NI10U-M12E-VN44X	10 mm,	, NPN	w018	d031

M18 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 61.5 mm	**Operating voltage**	10…65 VDC
Output	⎯⎽⎺⎽⎯, 2-wire	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Switching distance	w	d
BI5U-M18M-AD4X-H1144	5 mm,	w009	d040
NI10U-M18M-AD4X-H1144	10 mm,	w009	d041

M18 – 2-wire DC – Cable connection



General data

Dimensions	Ø18 x 64 mm	**Ambient temperature**	-25…+70 °C
Output	⎯⎽⎺⎽⎯, 2-wire	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI5U-M18M-AD4X	5 mm,	w016	d042
NI10U-M18M-AD4X	10 mm,	w016	d043

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M18 – 3-wire DC – M12 x 1 plug connection



General data

Electrical connection	connector, M12 x 1	**Ambient temperature**	-30…+85 °C
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI8U-M18E-AP6X-H1141	Ø18 x 72 mm	8 mm,	, PNP	CuZn-Cr	w001	d045
BI8U-M18E-AN6X-H1141	Ø18 x 72 mm	8 mm,	, NPN	CuZn-Cr	w002	d045
BI8U-M18-RP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-Cr	w015	d044
BI8U-M18-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-Cr	w001	d044
BI8U-M18-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	CuZn-Cr	w002	d044
BI8U-EM18E-AP6X-H1141	Ø18 x 72 mm	8 mm,	, PNP	V2A (1.4301)	w001	d045
BI8U-EM18-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	V2A (1.4301)	w001	d044
BI8U-EM18-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	V2A (1.4301)	w002	d044
NI15U-M18E-AP6X-H1141	Ø18 x 72 mm	15 mm,	, PNP	CuZn-Cr	w001	d047
NI15U-M18E-AN6X-H1141	Ø18 x 72 mm	15 mm,	, NPN	CuZn-Cr	w002	d047
NI15U-M18-RP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	CuZn-Cr	w015	d046
NI15U-M18-AP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	CuZn-Cr	w001	d046
NI15U-M18-AN6X-H1141	Ø18 x 52 mm	15 mm,	, NPN	CuZn-Cr	w002	d046
NI15U-EM18E-AP6X-H1141	Ø18 x 72 mm	15 mm,	, PNP	V2A (1.4301)	w001	d047
NI15U-EM18-AP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	V2A (1.4301)	w001	d046
NI15U-EM18-AN6X-H1141	Ø18 x 52 mm	15 mm,	, NPN	V2A (1.4301)	w002	d046

M18 – 3-wire DC – Cable connection



General data

Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC	**Material cable**	PVC 2 m
Ambient temperature	-30…+85 °C		

Types and data – selection table

Type	Dimensions	Switching distance	Output	w	d
BI8U-M18E-AP6X	Ø18 x 64 mm	8 mm,	, PNP	w004	d042
BI8U-M18-RP6X	Ø18 x 54 mm	8 mm,	, PNP	w006	d048
BI8U-M18-AP6X	Ø18 x 54 mm	8 mm,	, PNP	w004	d048
BI8U-M18-AN6X	Ø18 x 54 mm	8 mm,	, NPN	w005	d048
NI15U-M18-AP6X	Ø18 x 54 mm	15 mm,	, PNP	w004	d049
NI15U-M18-AN6X	Ø18 x 54 mm	15 mm,	, NPN	w005	d049

M18 – 4-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 61.5 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr
Operating voltage	10…55 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-M18M-VP44X-H1141	8 mm,	, PNP	w017	d040
BI8U-M18M-VN44X-H1141	8 mm,	, NPN	w010	d040
NI15U-M18M-VP44X-H1141	15 mm,	, PNP	w017	d041
NI15U-M18M-VN44X-H1141	15 mm,	, NPN	w010	d041

M18 – 4-wire DC – Cable connection



General data

Dimensions	Ø18 x 64 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…55 VDC	**Material cable**	PVC 2 m

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-M18M-VP44X	8 mm,	, PNP	w007	d042
BI8U-M18M-VN44X	8 mm,	, NPN	w018	d042
BI8U-M18E-VP44X	8 mm,	, PNP	w007	d042
NI15U-M18M-VP44X	15 mm,	, PNP	w007	d043
NI15U-M18M-VN44X	15 mm,	, NPN	w018	d043

M30 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Operating voltage**	10…65 VDC
Output	, 2-wire	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Switching distance	w	d
BI10U-M30-AD4X-H1144	10 mm,	w009	d050
NI15U-M30-AD4X-H1144	15 mm,	w009	d051

M30 – 2-wire DC – Cable connection



General data

Dimensions	Ø30 x 64 mm	**Ambient temperature**	-25…+70 °C
Output	, 2-wire	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI10U-M30-AD4X	10 mm,	w016	d052
NI15U-M30-AD4X	15 mm,	w016	d053

M30 – 3-wire DC – M12 x 1 plug connection



General data

Electrical connection connector, M12 x 1
Operating voltage 10…30 VDC
Ambient temperature -30…+85 °C

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI15U-M30E-AP6X-H1141	Ø30 x 77 mm	15 mm,	, PNP	CuZn-Cr	w001	d054
Bi15U-M30-RP6X-H1141	Ø30 x 62 mm	15 mm,	, PNP	CuZn-Cr	w015	d050
BI15U-M30-AP6X-H1141	Ø30 x 62 mm	15 mm,	, PNP	CuZn-Cr	w001	d050
BI15U-M30-AN6X-H1141	Ø30 x 62 mm	15 mm,	, NPN	CuZn-Cr	w002	d050
BI15U-EM30-AP6X-H1141	Ø30 x 62 mm	15 mm,	, PNP	V2A (1.4301)	w001	d050
BI15U-EM30-AN6X-H1141	Ø30 x 62 mm	15 mm,	, NPN	V2A (1.4301)	w002	d050
NI30U-M30E-AP6X-H1141	Ø30 x 77 mm	30 mm,	, PNP	CuZn-Cr	w001	d055
NI30U-M30-RP6X-H1141	Ø30 x 62 mm	30 mm,	, PNP	CuZn-Cr	w015	d051
NI30U-M30-AP6X-H1141	Ø30 x 62 mm	30 mm,	, PNP	CuZn-Cr	w001	d051
NI30U-M30-AN6X-H1141	Ø30 x 62 mm	30 mm,	, NPN	CuZn-Cr	w002	d051
NI30U-EM30-AP6X-H1141	Ø30 x 62 mm	30 mm,	, PNP	V2A (1.4301)	w001	d051
NI30U-EM30-AN6X-H1141	Ø30 x 62 mm	30 mm,	, NPN	V2A (1.4301)	w002	d051

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 736 ff

M30 – 3-wire DC – Cable connection



General data

Dimensions	Ø30 x 64 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Material housing	w	d
BI15U-M30-AP6X	15 mm,	, PNP	CuZn-Cr	w004	d052
BI15U-M30-AN6X	15 mm,	, NPN	CuZn-Cr	w005	d052
BI15U-EM30-AP6X	15 mm,	, PNP	V2A (1.4301)	w004	d052
NI30U-M30-RP6X	30 mm,	, PNP	CuZn-Cr	w006	d053
NI30U-M30-AP6X	30 mm,	, PNP	CuZn-Cr	w004	d053
NI30U-M30-AN6X	30 mm,	, NPN	CuZn-Cr	w005	d053

M30 – 4-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr
Operating voltage	10…55 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-M30-VP44X-H1141	15 mm,	, PNP	w017	d050
BI15U-M30-VN44X-H1141	15 mm,	, NPN	w010	d050
NI30U-M30-VP44X-H1141	30 mm,	, PNP	w017	d051
NI30U-M30-VN44X-H1141	30 mm,	, NPN	w010	d051

M30 – 4-wire DC – Cable connection



General data

Dimensions	Ø30 x 64 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…55 VDC	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-M30-VP44X	15 mm,	, PNP	w007	d052
BI15U-M30-VN44X	15 mm,	, NPN	w018	d052
NI30U-M30-VP44X	30 mm,	, PNP	w007	d053
NI30U-M30-VN44X	30 mm,	, NPN	w018	d053

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 736 ff

uprox®+ PTFE-coated sensors for the automotive industry

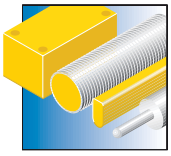


The *uprox*®+ sensors in PTFE-coated threaded barrels are the perfect choice for the rough ambient conditions of the automotive industry. The TF80i coating protects efficiently against weld splatter and drill cuttings and the non-ferritic coil system makes the sensors resistant to strong magnetic fields.

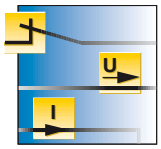
Features

- TF80i coating
- High magnetic field immunity
- Excellent EMC immunity
- Factor 1, all metals
- Highest switching distance

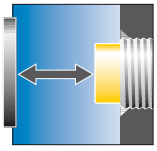
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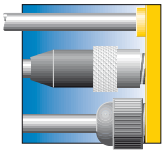
Design
Threaded barrel versions M8 x 1, M12 x 1, M18 x 1 and M30 x 1.5



Electrical versions
2/3-wire devices with NO output PNP/NPN



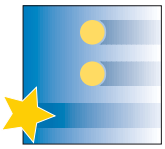
Switching distances
From 2 mm flush to 30 mm non-flush, on all metals



Electrical connections
Available with M12 x 1 plug connection or M12 x 1 pigtail



Materials
TF80i coating protects against weld splatter or drill cuttings



Special features
Protection class IP68
Approved for almost all automotive plants

Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

EG08 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø8 x 57 mm	**Operating voltage**	10…30 VDC
Output	⎯◺⎯, PNP	**Material housing**	V2A (1.4301) -T
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Switching distance	Ambient temperature	w	d
BI2U-EGT08-AP6X-H1341	2 mm, ⫢	-30…+85 °C	w001	d024
NI6U-EGT08-AP6X-H1341	6 mm, ⫢	0…+70 °C	w001	d056

M12 – 2-wire DC – M12 x 1 pigtail



Type	BI2U-MT12E-AD4X-0,3-RS4.23/XOR	**Ambient temperature**	0…+70 °C
Dimensions	Ø12 x 64 mm	**Material housing**	CuZn-T
Switching distance	2 mm, ⫢	**Material cable**	PVC 0.3 m
Output	⎯◺⎯, 2-wire	**Wiring diagram**	w009
Electrical connection	connector, M12 x 1	**Dimension drawing**	d057
Operating voltage	10…65 VDC		

M12 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn
Operating voltage	10…30 VDC		

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-MT12-AP6X-H1141	4 mm,	_⌒_, PNP	w001	d058
BI4U-MT12-AN6X-H1141	4 mm,	_⌒_, NPN	w002	d058
NI10U-MT12-AP6X-H1141	10 mm,	_⌒_, PNP	w001	d059
NI10U-MT12-AN6X-H1141	10 mm,	_⌒_, NPN	w002	d059

M18 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 61.5 mm	**Operating voltage**	10…65 VDC
Output	_⌒_, 2-wire	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-T

Types and data – selection table

Type	Switching distance	w	d
BI5U-MT18M-AD4X-H1144	5 mm,	w009	d040
NI10U-MT18M-AD4X-H1144	10 mm,	w009	d060

M18 – 2-wire DC – M12 x 1 pigtail



Type	BI5U-MT18M-AD4X-0,3-RS4.23/XOR	**Ambient temperature**	-25…+70 °C
Dimensions	Ø18 x 64 mm	**Material housing**	CuZn-T
Switching distance	5 mm,	**Material cable**	PVC 0.3 m
Output	_⌒_, 2-wire	**Wiring diagram**	w009
Electrical connection	connector, M12 x 1	**Dimension drawing**	d061
Operating voltage	10…65 VDC		

M18 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-T
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-MT18-AP6X-H1141	8 mm,	_⌒_, PNP	w001	d062
BI8U-MT18-AN6X-H1141	8 mm,	_⌒_, NPN	w002	d062
NI15U-MT18-AP6X-H1141	15 mm,	_⌒_, PNP	w001	d063
NI15U-MT18-AN6X-H1141	15 mm,	_⌒_, NPN	w002	d063

M30 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Operating voltage**	10…65 VDC
Output	_⌒_, 2-wire	**Ambient temperature**	-25…+70 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-T

Types and data – selection table

Type	Switching distance	w	d
BI10U-MT30-AD4X-H1144	10 mm,	w009	d064
NI15U-MT30-AD4X-H1144	15 mm,	w009	d065

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M30 – 2-wire DC – M12 x 1 pigtail



Type	BI10U-MT30-AD4X-0,3-RS4.23/XOR	**Ambient temperature**	-25…+70 °C
Dimensions	Ø30 x 64 mm	**Material housing**	CuZn-T
Switching distance	10 mm,	**Material cable**	PVC 0.3 m
Output	__, 2-wire	**Wiring diagram**	w009
Electrical connection	connector, M12 x 1	**Dimension drawing**	d066
Operating voltage	10…65 VDC		

M30 – 3-wire DC – M12 x 1 plug connection



General data			
Dimensions	Ø30 x 62 mm	**Ambient temperature**	-30…+85 °C
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-T
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-MT30-AP6X-H1141	15 mm,	__, PNP	w001	d064
BI15U-MT30-AN6X-H1141	15 mm,	__, NPN	w002	d064
NI30U-MT30-AP6X-H1141	30 mm,	__, PNP	w001	d065
NI30U-MT30-AN6X-H1141	30 mm,	__, NPN	w002	d065

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

uprox®+ for the food industry

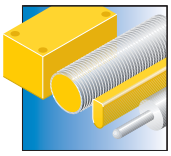


The *uprox*®+ sensors for the food industry feature a rugged V4A stainless steel housing with laser-engraved type label and resist temperatures of -40 °C to +100 °C easily. A special double lip seal prevents the ingress of liquids. The materials used are resistant to detergents and disinfectants. The fluid-tight housing and the excellent EMC properties of the electronics ensure failsafe operation in harsh industrial production environments.

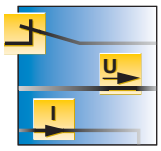
Features

- High tightness and resistance
- Factor 1, all metals
- Rugged stainless steel housing
- High protection classes IP68 and IP69K
- Highest switching distance

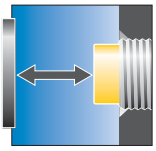
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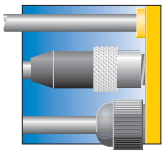
Design
Threaded barrel
M12 x 1, M18 x 1 and
M30 x 1.5



Electrical versions
3-wire NO contact
PNP/NPN



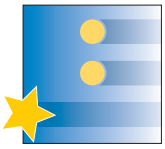
Switching distances
From 4 mm flush to
30 mm non-flush, on
all metals



Electrical connections
Available with
M12 x 1 plug connection, 2 m cable or
terminal chamber



Materials
Rugged V4A stainless steel housing
Chemical-resistant LCP front cap
Sealed PP connector insert



Special features
High protection classes IP68 and IP69K,
laser-engraved type code,
Ecolab certificate

M12 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X-H1141	4 mm,	_⌐¯⌐_, PNP	w001	d034
BI4U-EM12WD-AN6X-H1141	4 mm,	_⌐¯⌐_, NPN	w002	d034
NI10U-EM12WD-AP6X-H1141	10 mm,	_⌐¯⌐_, PNP	w001	d067
NI10U-EM12WD-AN6X-H1141	10 mm,	_⌐¯⌐_, NPN	w002	d067

M12 – 3-wire DC – Cable connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X	4 mm,	_⌐¯⌐_, PNP	w004	d068
BI4U-EM12WD-AN6X	4 mm,	_⌐¯⌐_, NPN	w005	d068
NI10U-EM12WD-AP6X	10 mm,	_⌐¯⌐_, PNP	w004	d069
NI10U-EM12WD-AN6X	10 mm,	_⌐¯⌐_, NPN	w005	d069

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M12 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø12 x 80 mm	**Operating voltage**	10…30 VDC
Output	_⌒‾, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI4U-EM12WDTC-AP6X	4 mm, ▨⊢	w011	d070
NI10U-EM12WDTC-AP6X	10 mm, ▨⊢	w011	d071

M18 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X-H1141	8 mm, ▨⊢	_⌒‾, PNP	w001	d044
BI8U-EM18WD-AN6X-H1141	8 mm, ▨⊢	_⌒‾, NPN	w002	d044
NI15U-EM18WD-AP6X-H1141	15 mm, ▨⊢	_⌒‾, PNP	w001	d072
NI15U-EM18WD-AN6X-H1141	15 mm, ▨⊢	_⌒‾, NPN	w002	d072

M18 – 3-wire DC – Cable connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X	8 mm,	_⌐¯⌐_, PNP	w004	d073
BI8U-EM18WD-AN6X	8 mm,	_⌐¯⌐_, NPN	w005	d073
NI15U-EM18WD-AP6X	15 mm,	_⌐¯⌐_, PNP	w004	d074
NI15U-EM18WD-AN6X	15 mm,	_⌐¯⌐_, NPN	w005	d074

M18 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø18 x 81 mm	**Operating voltage**	10…30 VDC
Output	_⌐¯⌐_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI8U-EM18WDTC-AP6X	8 mm,	w011	d075
NI15U-EM18WDTC-AP6X	15 mm,	w011	d076

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 736 ff

M30 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X-H1141	15 mm,	_⌐¯⌐_, PNP	w001	d050
BI15U-EM30WD-AN6X-H1141	15 mm,	_⌐¯⌐_, NPN	w002	d050
NI30U-EM30WD-AP6X-H1141	30 mm,	_⌐¯⌐_, PNP	w001	d077
NI30U-EM30WD-AN6X-H1141	30 mm,	_⌐¯⌐_, NPN	w002	d077

M30 – 3-wire DC – Cable connection



General data

Dimensions	Ø30 x 66 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X	15 mm,	_⌐¯⌐_, PNP	w004	d078
BI15U-EM30WD-AN6X	15 mm,	_⌐¯⌐_, NPN	w005	d078
NI30U-EM30WD-AP6X	30 mm,	_⌐¯⌐_, PNP	w004	d079
NI30U-EM30WD-AN6X	30 mm,	_⌐¯⌐_, NPN	w005	d079

M30 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø30 x 95 mm	**Operating voltage**	10…30 VDC
Output	⎯⎽⎺⎽⎯, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

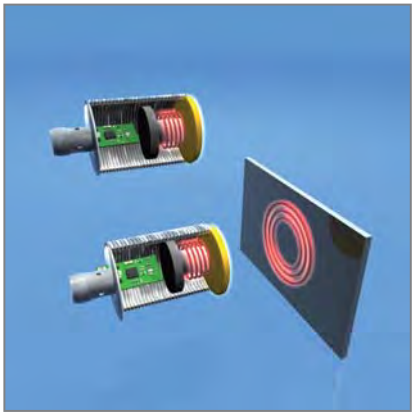
Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI15U-EM30WDTC-AP6X	15 mm,	w011	d080
NI30U-EM30WDTC-AP6X	30 mm,	w011	d081

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 736 ff

Inductive sensors - complete product range



Inductive sensors – complete product range

Inductive sensors are designed for contactless and wear-free detection of metal targets. They are extremely resistant to environmental influences, very reliable, feature high switching frequencies and are durable.

There are as many application possibilities as sensor types: The sensors detect motion states at machines, open/close position of grippers and pincers or are applied for parts inspection.

The entire program of inductive sensors comprises factor 1 sensors *uprox*® and *uprox*®+ as well as versions with conventional ferrite core technology.

Nearly all types are flush as well as non-flush mountable. Moreover, the product portfolio offers very flexible non-flush mountable sensors that can also be recessed or flush mounted.

Only extremely resistant housing materials are used to comply with the demanding ambient conditions of applications.

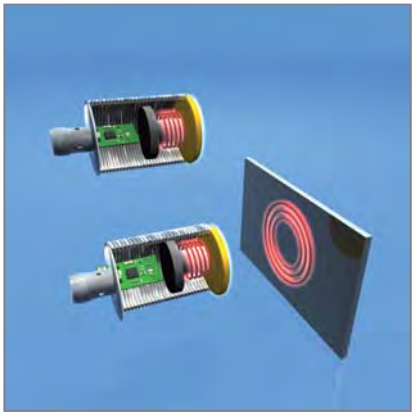
We offer of course all standard connection technologies and electrical output types.

Special applications often require special sensors. Most requirements such as factor 1, magnetic field immunity and protection class IP68/IP69K are fulfilled by standard *uprox*®+ sensors.

To achieve optimum performance, you find the matching sensors and functional description for all applications in the TURCK product portfolio.

- Ring sensors
- Slot sensors
- Dual sensors for valve control
- Analog inductive sensors
- Inductive sensors for underwater applications
- Pressure-resistant inductive sensors
- Selective inductive sensors
- and many more

Our strengths - Your advantages



Wear-free operation

Inductive proximity switches are designed for wear-free and contactless detection of metal objects. For this purpose they use a high-frequency electromagnetic AC field that interacts with the target. With conventional inductive sensors this field is generated by an LC resonant circuit with a ferrite coil. Eddy currents are induced in the metal target. They withdraw energy from the field which inturn leads to a decrease of the oscillating amplitude. The decrease is detected and analysed by the inductive sensor. For more information on inductive sensors please see chapter *uprox*®+ inductive factor 1 sensors.



Extensive product range

TURCK customers can choose from a broad range of standard products. The entire range of sensors and accessories holds the perfect solution for your individual application and meets increasing requirements in the long term. Nearly all types are flush as well as non-flush mountable. Moreover, the product portfolio offers very flexible non-flush mountable sensors for recessed or flush mounting. The devices are available as standard products ex stock.



Inductive sensors for special applications

Special applications often require special sensors. Most requirements such as factor 1, magnetic field immunity and protection classes IP68/IP69K are fulfilled by standard *uprox*®+ sensors. To achieve optimum performance, you find the matching sensors and functional descriptions for all applications in the TURCK product portfolio. Ring, slot, dual sensors for valve control, sensors with analog output, with extended temperature range, for underwater use, pressure resistant inductive sensors and sensors with selective properties.

advantages



Many different designs

Many designs are available and each is optimally adjusted to different application conditions. From the small rectangular 5 x 5 x 25 mm to the big 90 x 130 x 60 mm version with extremly large switching distance. Also available are sensor sizes ranging from M4 to PG36 threaded barrels as well as Ø 3 mm to Ø 40 mm smooth barrels. Nearly all types are flush as well as non-flush mountable. The product portfolio also includes very flexible non-flush mountable sensors for recessed or flush mounting.



Application compliant housing materials

Only extremely resistant housing materials are used. In order to comply with the ambient conditions of individual applications, we offer sensors with different housing materials: Plastic versions PA, PP, PBT or ABS, brass (threaded barrel), chrome-plated or PTFE coated, stainless steel in different qualities up to high-quality V4A, 1.4404.



Many different output and connection possibilities

We offer all connection types available on the market: Ø 8 mm, M8, M12, 1/2" and 7/8" plug connections, cable in different lengths and jacket qualities (standard length 2 m) pigtail - preassembled with M8 or M12 plug connections, terminal chamber - the new innovative TC version with removable terminal block and variable cable outlet. All standard electrical versions are available: NAMUR, 2, 3 and 4-wire DC, PNP/NPN output or 2-wire AC/DC. Also available are fieldbus capable dual sensors for DeviceNet™ or AS-interface®.

For special applications



Ring sensors

TURCK ring sensors with integrated electronics are compact and universally mountable. They are applied in many different systems sucha as in assembly lines or component feeding systems to detect small metal parts. The *uprox*®+ TS12 is an innovative replacement for various ring sensors. Only one sensor is needed to operate applications with different tube diameters.

Page 156



Slot sensors

The slot sensors are U-shaped and the active face is located between the two arms. If an object passes through the slot, the sensor is actuated.

Slot sensors detect laterally approaching targets regardless of their distance to the active face.

Page 162



Dual sensors for rotary actuators

In the chemical, petro-chemical and food industry, position control on rotary actuators is of great importance. TURCK dual sensors detect the end position of rotary actuators reliably.

Simple mounting and cable routing of TURCK dual sensors reduce the expenses for installation considerably.

Page 168



Sensors with analog output

Inductive sensors with analog output accomplish simple control tasks. They provide a current, voltage or frequency signal that is proportional to the target's distance.

The output signal provided by TURCK analog sensors is linear to the distance of the target over the entire sensing range.

Page 172



Extended temperature range

The product portfolio even includes sensors for applications with ambient temperatures of -60 °C or +250 °C. These TURCK sensors are typically used in deep freezing systems, outdoors, in metal foundries, in drying furnaces of varnishing stations or the glass industry for.

Page 182



Inductive sensors for underwater applications

TURCK offers sensors in fully pressure and seawater tight housings for subsea applications. They are made for continuous use under water. Mounted in M18 threaded barrels made of plastic, they can even be applied at water depths of up to 500 m.

Also included in the TURCK product portfolio are CP40 sensors. They are fully encapsulated in the SG40/2 housing. In addition, they feature large switching distances, are IP68 rated and are made for water depths of up to 50 m. They are mostly applied in locks, weirs and offshore areas.

Page 214

For special applications



Pressure-resistant sensors

We offer application optimized pressure resistant as well as high-pressure resistant devices. The *uprox*®+ WashDown sensors resist pressures up to 20 bar. The unique *uprox*® advantages are combined in one single product, such as largest switching distance, factor 1 and protection classes IP68/IP69K.

The high pressure resistant sensors are incorporated in a stainless steel housing and are ideally suited for hydraulic systems. Special gaskets and additional outer seals at the front as well as an O-ring enable the application in high pressure systems of up to 500 bar.

Page 218



Magnetic-inductive sensors

Magnetic-inductive sensors are typically applied in pig trap systems or used for gate monitoring. Since magnetic-inductive sensors are actuated by external magnetic fields, even the smaller types achieve large switching distances.

In combination with the actuation magnet DMR31-15-5, the M12 sensors attain a rated switching distance of 90 mm.

Page 224



Selective sensors

TURCK's sensor series NF, FE and NF/FE with distinctive function are particularly suited for applications in which ferritic metals have to be distinguished from non-ferritic metals. They distinguish between workpiece and tool or between workpieces made of different materials and perform simple coding tasks.

Page 228

ons

Type code

B	i	.	4	U	Functional principle	–	M12	.	Design	–	A	P	6	X	Electrical version	–

Special functions

FE	selective behaviour: ferrite only
U	*uprox*® or *uprox*®+ **factor 1 sensors**
NF	selective behaviour: non-ferrite only
R	ring sensor,

Rated operating distance

...	or slot width ring diameter [mm]

Options

D	high-pressure resistant

Functional principle

i	inductive

Fitting

B	flush
N	non-flush
S	slot sensor

Additional information

D	climate-proof
E	long-sized housing
K	short-sized housing
M	medium-sized housing
S	lateral active face
SK	terminal chamber, angled cable outlet
SR, TC	terminal chamber with straight/angled cable outlet
WD	wash down resistant to aggressive cleaning agents Protection class IP68/69K

Housing

CA25	rectangular , 25 x 25 flexible active face
Q, QN	rectangular, height in mm
CA40, CK40, CP40, QV40	rectangular, 40 x 40, flexible active face
CP80	cubic, 80 x 80
DSC, DSU	dual sensor for monitoring of rotary actuators height in mm
EG, EM	threaded barrel, stainless steel, Ø in [mm]
GS	threaded barrel, metal, lateral active face, Ø in [mm]
EH, H	smooth barrel, metal, Ø in [mm]
HS	smooth barrel, metal, lateral active face, Ø in [mm]
K	smooth barrel, plastic, or slot-shaped
G, M	threaded barrel, metal Ø in [mm]
EGT, GT, MT	threaded barrel, metal NRDC-coated, Ø in [mm]
P, S	threaded barrel, plastic Ø in [mm], housing style 'S' also available as ring sensor BI/NI...R
TS	tube sensor detection of small parts, height in mm
W	ring sensor, height in mm

Indication

X	LED
X...	number of LEDs or multicolor LED

Voltage range

3	10...300 VDC / 20...250 VAC
4	10...65 VDC, Ⓚ
6	10...30 VDC, Ⓚ
7	10...30 VDC (TTL compatibel)
30	10...300 VDC / 20...250 VDC, Ⓚ
31	10...300 VDC / 20...250 VAC, Ⓚ max. 100 mA
41	10...55 VDC
44	10...55 VDC, Ⓚ
45	8.4...65 VDC, Ⓚ, load dump and EMC protected acc. to e1 approval

Output mode

D	2-wire DC, non-polarized
G	2-wire DC, polarized
N	NPN
P	PNP
Z, DZ	2-wire AC/DC

Output function

A	working current NO
ASI	AS-Interface® connection
DA	dynamic output, working current NO
Dnet	DeviceNet™
F	working current NO/ closed current NC, programmable via connection
LF	analog output (frequency)
LI	analog output (current)
LI-Exi	analog output (current), intrinsically save
LIU, SIU	analog output (voltage and current)
LU	analog output (current)
R	closed current NC
Y0, Y1	output acc. to EN 60947-5-6 (NAMUR)
V	changeover contact

Ⓚ = short circuit protected

H1	1	4	1	Electrical connection:	/	L100	Special versions

Assignment

1	standard assignment or customized

Number of contacts

...	… contacts

Connector type

1	straight
3	straight, with adapter

Connector type

B1	connector type 7/8"
B3	connector type 1/2"
H1	connector type M12 x 1
V1, V2	connector type M8 x 1 / Ø 8 mm

Features

3G	approval ATEX II 3 G
3D	approval ATEX II 3 D
3GD	approval ATEX II 3 G and II 3 D
L100	device length 100 mm
L80	device length 80 mm
S34	magnetic-field resistant
S97	extended temperature range: -40 °C
S100	extended temperature range: +100 °C
S120	extended temperature range: +120 °C
S139	seawater-proof housing
S369	CP40 housing fully encapsulated in SG40 protective housing, seawater-proof
S907	extended temperature range: +160 °C
S929	extended temperature range: -60 °C
S1102	extended temperature range: +250 °C

x.x	PSG	3	M	Pigtail: Cable connection

Assignment

M	rotatable nut
S	fixed thread

.. contacts

...	… contacts

Connector type

PSG	connector M8 x 1, straight
RS	connector M12 x 1, straight rotatable nut

Cable length

...	[m]

...M	Cable connection

Connection

empty	cable connection, 2 m Exceptions: TC, SK, SR, CP40, CP80 with terminal chamber connection
...M	cable length [m]

Designs and variants

	Page 79	Page 79	Page 80	Page 80 ff.
				
	Q5SE	**Q5,5**	**Q06**	**Q6,5**
Design	rectangular Q5SE, 5 x 5 x 25 mm	rectangular Q5.5, 8 x 5.5 x 28 mm	rectangular Q06, 17.3 x 6 x 27.8 mm	rectangular Q6.5, 17 x 6.5 x 20 mm
Switching distance	0.8 mm,	2 mm, 3.5 mm,	3 mm,	1 mm, 2 mm,
Electrical connection	cable	cable	cable	cable
Output	3-wire DC PNP	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 3-wire DC PNP

	Page 81	Page 82, 173	Page 83	Page 84
				
	Q8SE	**Q08**	**Q9,5**	**Q10**
Design	rectangular Q8SE, 8 x 8 x 40 mm	rectangular Q08, 20 x 8 x 32 mm	rectangular Q9.5, 17 x 9.5 x 20 mm	rectangular Q10, 25 x 10.8 x 42 mm
Switching distance	4 mm, 	5 mm,  7 mm,  8 mm, 	2 mm, 	8 mm, 
Measuring range		1…4 mm		
Electrical connection	connector, M8 x 1 cable	connector, Ø 8 mm connector, M8 x 1 cable cable with connector	cable	connector, M8 x 1 cable
Output	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output	3-wire DC PNP	3-wire DC PNP 3-wire DC NPN

Designs and variants

	Page 84	Page 86	Page 157	Page 88, 157, 173
				
	Q10S	**Q12**	**TS12**	**Q14**
Design	rectangular Q10S, 16 x 10.2 x 27.8 mm	rectangular Q12, 26 x 12 x 40 mm	rectangular TS12, 17 x 12 x 80 mm	rectangular Q14, 30 x 14 x 52 mm
Switching distance	2 mm, 5 mm,	2 mm, 5 mm, 4 mm,	20 mm,	10 mm, 20 mm,
Internal ring diameter				6.1 mm 10.1 mm 15.1 mm 20.1 mm
Measuring range				3…8 mm
Electrical connection	connector, M8 x 1 cable cable with connector	connector, M8 x 1 connector, M12 x 1 cable	connector, M8 x 1	connector, M8 x 1 connector, M12 x 1 cable
Output	2-wire DC NAMUR 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 3-wire DC Analog output 4-wire DC Analog output

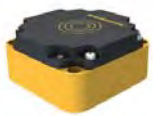
	Page 89	Page 90, 158, 174	Page 175	Page 91
				
	Q18	**Q20**	**Q20L**	**Q25**
Design	rectangular Q18, 18 x 18 x 29 mm	rectangular Q20, 40 x 20 x 68 mm	rectangular Q20L, 30 x 20 x 60 mm	rectangular Q25, 25 x 25.5 x 38.5 mm
Switching distance	5 mm,	15 mm, 25 mm,		10 mm,
Internal ring diameter		30.1 mm		
Measuring range		4…11 mm	10…50 mm 15…85 mm	
Electrical connection	cable	connector, M12 x 1 cable	connector, M12 x 1	cable
Output	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 4-wire DC Analog output	4-wire DC Analog output	3-wire DC PNP 3-wire DC NPN

Designs and variants

	Page 91	Page 92	Page 92	Page 93
				
	CA25	**QN26**	**Q40**	**CA40**
Design	rectangular CA25, 25 x 25 x 40 mm	rectangular QN26, 26 x 26 x 43 mm	rectangular Q40, 40 x 52.5 x 67 mm	rectangular CA40, 40 x 40 x 48 mm
Switching distance	10 mm, 15 mm,	10 mm,	22 mm,	20 mm,
Electrical connection	connector, M8 x 1 connector, M12 x 1	cable cable with connector, M12 x 1	connector, M12 x 1	connector, M12 x 1
Output	3-wire DC PNP	2-wire DC	3-wire DC PNP	3-wire DC PNP 3-wire DC NPN

	Page 93, 175	Page 100	Page 96, 184, 194, 215	Page 211
				
	CK40	**QV40**	**CP40**	**CQ40**
Design	rectangular CK40, 40 x 40 x 65 mm	rectangular QV40, 40 x 40 x 65 mm	rectangular CP40, 40 x 40 x 114 mm	rectangular CQ40, 40 x 40 x 52 mm
Switching distance	15 mm, 20 mm, 30 mm, 20 mm, 25 mm, 35 mm, 40 mm, 50 mm,	20 mm, 50 mm,	15 mm, 20 mm, 30 mm, 20 mm, 35 mm, 40 mm, 50 mm,	25 mm,
Measuring range	4…11 mm 5…25 mm		4…11 mm 5…25 mm	
Electrical connection	connector, 7/8“ connector, 1/2“ connector, M12 x 1	connector, M12 x 1	connector, M12 x 1 cable terminal chamber	connector, M12 x 1
Output	2-wire DC NAMUR 2-wire AC/DC 2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output	3-wire DC PNP	2-wire DC NAMUR 2-wire AC/DC 2-wire DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output	

Designs and variants

	Page 100, 176	Page 102, 185, 195	Page 211	Page 103
				
	Q80	**CP80**	**CQ80**	**K90**
Design	rectangular Q80, 80 x 40 x 92 mm	rectangular CP80, 80 x 41 x 80 mm	rectangular CQ80, 80 x 40 x 92 mm	rectangular K90SR, 75 x 60 x 130 mm
Switching distance	50 mm, 60 mm, 75 mm,	40 mm, 40 mm, 50 mm, 75 mm,	40 mm,	50 mm, 60 mm, 100 mm,
Measuring range	10…50 mm			
Electrical connection	connector, M12 x 1 cable	connector, M12 x 1 terminal chamber	connector, M12 x 1	connector, M12 x 1 terminal chamber
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output	2-wire DC NAMUR 2-wire AC/DC 4-wire DC PNP 4-wire DC NPN		2-wire DC NAMUR 4-wire DC NPN 2-wire AC/DC 4-wire DC PNP

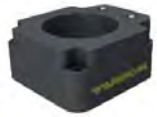
	Page 105	Page 107	Page 107, 177, 196, 219, 225	Page 112, 178, 183, 186, 197, 206, 219, 226, 229
				
	Q130	**M5 x 0.5**	**M8 x 1**	**M12 x 1**
Design	rectangular Q130, 57 x 48 x 130 mm	threaded barrel M5 x 0.5	threaded barrel M8 x 1	threaded barrel M12 x 1
Switching distance	30 mm,	1 mm,	1.5 mm, 2 mm, 3 mm, 4 mm, 6 mm, 78 mm	2 mm, 2.5 mm, 3 mm, 4 mm, 4 mm, 5 mm, 8 mm, 10 mm, 90 mm
Measuring range			0.25…1.25 mm	0.5…3 mm 1…2.5 mm 0.5…4 mm
Electrical connection	connector, 7/8“ cable	connector, M8 x 1 cable	connector, M8 x 1 connector, M12 x 1 cable	connector, 1/2“ connector, M8 x 1 connector, M12 x 1 cable terminal chamber terminal chamber, removable cage clamp terminals
Output	2-wire AC/DC 4-wire DC PNP 4-wire DC NPN	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN	2-wire DC 2-wire AC/DC 3-wire DC PNP 2-wire DC NAMUR 3-wire DC NPN 4-wire DC PNP 3-wire DC Analog output	2-wire DC NAMUR 2-wire DC 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output

Designs and variants

	M18	M30	G47	EH03
	Page 123, 178, 189, 200, 207, 210, 215, 220, 230	Page 132, 180, 191, 203, 208, 222, 230	Page 143	Page 147
				
Design	threaded barrel M18 x 1	threaded barrel M30 x 1.5	threaded barrel G47	smooth barrel 3 mm
Switching distance	2 mm, 5 mm, 7 mm, 8 mm, 7 mm, 8 mm, 10 mm, 12 mm, 14 mm, 15 mm,	10 mm, 12 mm, 15 mm, 15 mm, 20 mm, 30 mm,	20 mm, 25 mm, 25 mm, 40 mm,	1 mm,
Measuring range	1…5 mm 2…4 mm 1…7 mm 0…40 mm 0…70 mm	3…8 mm 2…10 mm 2…12 mm		
Electrical connection	connector, 7/8“ connector, 1/2“ connector, M12 x 1 cable terminal chamber terminal chamber, removable cage clamp terminals	connector, 7/8“ connector, 1/2“ connector, M12 x 1 cable rerminal chamber rerminal chamber, removable cage clamp terminals	cable terminal chamber	cable
Output	2-wire DC NAMUR 2-wire DC 2-wire AC/DC 2-wire DC Analog output 3-wire DC PNP 3-wire DC NPN 3-wire DC Analog output 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output 4-wire DC PNP/Analog output	2-wire DC NAMUR 2-wire DC 2-wire AC/DC 2-wire DC Analog output 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN 4-wire DC Analog output 4-wire DC PNP/Analog output	2-wire DC NAMUR 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP 3-wire DC NPN

	Page 147, 181	Page 148, 181	Page 151	Page 152
				
	EH04	**EH6.5**	**K11**	**K20**
Design	smooth barrel 4 mm	smooth barrel 6.5 mm	smooth barrel 11 mm	smooth barrel 20 mm
Switching distance	1 mm,	1.5 mm, 2 mm, 3 mm, 6 mm,	2 mm, 5 mm,	5 mm, 10 mm, 12 mm,
Measuring range	0.1…1.5 mm	0.25…1.25 mm		
Electrical connection	connector, M8 x 1 connector, M12 x 1 cable	connector, M8 x 1 cable	cable terminal chamber	connector, M12 x 1 cable terminal chamber
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 4-wire DC Analog output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 3-wire DC Analog output	2-wire DC NAMUR 3-wire DC PNP	2-wire DC NAMUR 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN

Designs and variants

	Page 153	Page 153	Page 159	Page 160
				
	K34	**K40**	**W30**	**R-Q80**
Design	smooth barrel 34 mm	smooth barrel 40 mm	ring sensor W30	ring sensor Q80
Switching distance	20 mm,	15 mm, 20 mm, 30 mm,		
Internal ring diameter			30.1 mm 6.1 mm 10.1 mm 15.1 mm 20.1 mm	50 mm 65 mm
Electrical connection	cable terminal chamber	terminal chamber	connector, M12 x 1	connector, M12 x 1
Output	4-wire DC PNP	2-wire AC/DC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 4-wire DC Analog output

	Page 160	Page 161	Page 163	Page 164
				
	S32SR	**S32 xL**	**K08**	**K09**
Design	ring sensor S32SR	ring sensor S32	slot sensor K08	slot sensor K09
Slot width			2 mm	5 mm
Internal ring diameter	20 mm 40 mm 65 mm	100 mm		
Steel wire diameter (St37)	0.4 mm 1 mm 2 mm	4 mm		
Electrical connection	terminal chamber	connector, M12 x 1	cable	cable
Output	4-wire DC PNP	4-wire DC PNP	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR

Designs and variants

	Page 164	Page 165	Page 169	Page 170
				
	K10	**K30**	**DSC26**	**DSU35**
Design	slot sensor K10	slot sensor K30	dual sensor for valve monitoring DSC26	dual sensor for valve monitoring DSU35
Switching distance			4 mm, ⊐	4 mm, ⊐
Slot width	3.5 mm	15 mm		
Electrical connection	cable	cable	connector, M12 x 1 cable	connector, M12 x 1 cable terminal chamber
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 2-wire AC/DC 3-wire DC PNP 3-wire DC NPN	4-wire DC NAMUR 4-wire DC PNP	4-wire DC NAMUR 4-wire DC PNP 4-wire DC 2-wire 4-wire AC/DC

Rectangular design

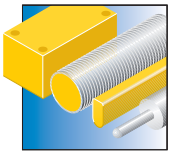


Rectangular inductive sensors fit to measure. The large switching distances provide excellent operational reliability. Only extremely resistant housing materials are used. They are quickly installed thanks to the optimally located mounting holes. All standard electrical output and connection types are available.

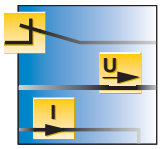
Features

- Stable and resistant plastic housings
- Large switching distances
- Perfect mounting
- All connection types

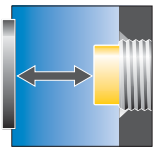
Properties



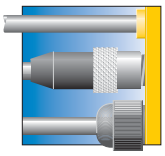
Design
From the small compact Q5SE to the big sized K90 Ø 90 mm version



Electrical versions
NAMUR, 2/3 and 4-wire DC, 2-wire AC/DC



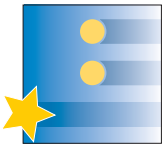
Switching distances
0.8 mm for exact position detection, 100 mm versions for long ranges



Electrical connections
All standard connection modes, cable, plug connection, terminal chamber and pigtail



Materials
Plastic and metal housings for all types of applications, rugged and chemical resistant



Special features
Factor 1
Extended temperature range
Approvals (et al. ATEX and SIL)

Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

Q5SE – 3-wire DC



Type	BI0,8-Q5SE-AP6X	**Operating voltage**	10…30 VDC
Dimensions	5 x 5 x 25 mm	**Material housing**	AL
Switching distance	0.8 mm	**Material cable**	PUR 2 m
Output	_⌒_, PNP	**Wiring diagram**	w004
Electrical connection	cable	**Dimension drawing**	d082

Lateral active face

Q5.5 – 3-wire DC



General data			
Dimensions	8 x 5.5 x 28 mm	**Material housing**	PP
Electrical connection	cable	**Material cable**	PUR 2 m
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI2-Q5,5-AP6X	2 mm,	_⌒_, PNP	w004	d083
BI2-Q5,5-AN6X	2 mm,	_⌒_, NPN	w005	d083
NI3,5-Q5,5-AP6X	3.5 mm,	_⌒_, PNP	w004	d083
NI3,5-Q5,5-AN6X	3.5 mm,	_⌒_, NPN	w005	d083

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q06 – 3-wire DC



General data

Dimensions	17.3 x 6 x 27.8 mm	**Operating voltage**	10…30 VDC
Switching distance	3 mm,	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PUR 2 m

Types and data – selection table

Type	Output	w	d
BI3-Q06-AP6X2	_⌒_, PNP	w004	d084
BI3-Q06-AN6X2	_⌒_, NPN	w005	d084

Q6.5 – NAMUR



General data

Dimensions	17 x 6.5 x 20 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	PP GR-20
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	w	d
BI1-Q6,5-Y1	1 mm,	w019	d085
NI2-Q6,5-Y1	2 mm,	w019	d085

Q6.5 – 3-wire DC



General data

Dimensions	17 x 6.5 x 20 mm	**Operating voltage**	10…30 VDC
Output	⎯◺⎯, PNP	**Material housing**	PP GR-20
Electrical connection	cable	**Material cable**	PUR 2 m

Types and data – selection table

Type	Switching distance	w	d
BI1-Q6,5-AP6/S34	1 mm,	w004	d085
NI2-Q6,5-AP6/S34	2 mm,	w004	d085

Q8SE – 3-wire DC



General data

Dimensions	8 x 8 x 40 mm	**Operating voltage**	10…30 VDC
Switching distance	4 mm,	**Material housing**	PP

Lateral active face

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
NI4U-Q8SE-AP6X-V1131	⎯◺⎯, PNP	connector, M8 x 1	-	w001	d001
NI4U-Q8SE-AP6X	⎯◺⎯, PNP	cable	PUR 2 m	w004	d003
NI4U-Q8SE-AN6X-V1131	⎯◺⎯, NPN	connector, M8 x 1	-	w002	d001
NI4U-Q8SE-AN6X	⎯◺⎯, NPN	cable	PUR 2 m	w005	d003

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q08 – NAMUR



Type	BI5-Q08-Y1X	**Operating voltage**	nom. 8.2 VDC
Dimensions	20 x 8 x 32 mm	**Material housing**	GD-Zn
Switching distance	5 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d086

Q08 – 3-wire DC



General data			
Dimensions	20 x 8 x 32 mm	**Material housing**	GD-Zn
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI8U-Q08-AP6X2-V1131	8 mm,	_⌒_, PNP	connector, flange connector, Ø 8 mm	-	w001	d005
BI8U-Q08-AP6X2	8 mm,	_⌒_, PNP	cable	PUR	w004	d004
BI8U-Q08-AN6X2-V1131	8 mm,	_⌒_, NPN	connector, Ø 8 mm	-	w002	d005
BI8U-Q08-AN6X2	8 mm,	_⌒_, NPN	cable	PUR	w005	d004
BI5U-Q08-AP6X2-V2131	5 mm,	_⌒_, PNP	connector, M8 x 1	-	w001	d087
BI5U-Q08-AP6X2-V1131	5 mm,	_⌒_, PNP	connector, Ø 8 mm	-	w001	d089
BI5U-Q08-AP6X2-1XOR-RS4	5 mm,	_⌒_, PNP	cable with connector	PVC 1 m	w001	d088
BI5U-Q08-AP6X2-0,5XOR-RS4	5 mm,	_⌒_, PNP	cable with connector	PVC 0.5 m	w001	d088
BI5U-Q08-AP6X2	5 mm,	_⌒_, PNP	cable	PUR	w004	d086
BI5U-Q08-AN6X2-V1131	5 mm,	_⌒_, NPN	connector, Ø 8 mm	-	w002	d089
BI5U-Q08-AN6X2	5 mm,	_⌒_, NPN	cable	PUR	w005	d086

Q08 – 4-wire DC



General data

Dimensions	20 x 8 x 32 mm	**Material housing**	GD-Zn
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI7-Q08-VP6X2-V1141	7 mm,	, PNP	connector, Ø 8 mm	-	w008	d089
BI7-Q08-VP6X2	7 mm,	, PNP	cable	PUR 2 m	w007	d086
BI7-Q08-VN6X2-V1141	7 mm,	, NPN	connector,, Ø 8 mm	-	w010	d089
BI7-Q08-VN6X2	7 mm,	, NPN	cable	PUR 2 m	w018	d086
BI5-Q08-VP6X2	5 mm,	, PNP	cable	PUR 2 m	w007	d086
BI5-Q08-VN6X2	5 mm,	, NPN	cable	PUR 2 m	w018	d086

Q9.5 – 3-wire DC



Type	NI2-Q9,5-AP6/S34	**Operating voltage**	10…30 VDC
Dimensions	17 x 9.5 x 20 mm	**Material housing**	PP GR-20
Switching distance	2 mm,	**Material cable**	PUR 2 m
Output	, PNP	**Wiring diagram**	w004
Electrical connection	cable	**Dimension drawing**	d090

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q10 – 3-wire DC



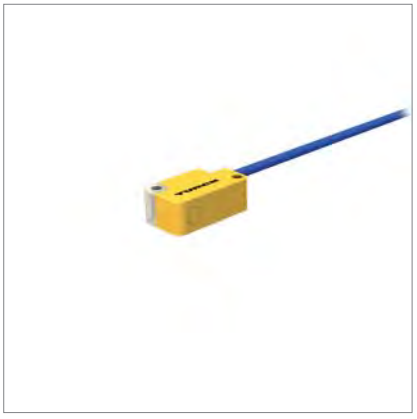
General data

Dimensions	25 x 10.8 x 42 mm	**Operating voltage**	10…30 VDC
Switching distance	8 mm,	**Material housing**	PBT

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BI8U-Q10-AP6X2-V1131	_⌒_, PNP	connector, M8 x 1	-	w001	d091
BI8U-Q10-AP6X2	_⌒_, PNP	cable	PUR 2 m	w004	d092
BI8U-Q10-AN6X2-V1131	_⌒_, NPN	connector, M8 x 1	-	w002	d091
BI8U-Q10-AN6X2	_⌒_, NPN	cable	PUR 2 m	w005	d092

Q10S – NAMUR



Type	BI2-Q10S-Y1X	**Operating voltage**	nom. 8.2 VDC
Dimensions	16 x 10.2 x 27.8 mm	**Material housing**	PP
Switching distance	2 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d007

Lateral active face

Q10S – 3-wire DC



General data

Dimensions	16 x 10.2 x 27.8 mm	**Material housing**	PP
Operating voltage	10…30 VDC		

Lateral active face

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI2-Q10S-AP6X-0,2-PSG3M	2 mm,	, PNP	connector, M8 x 1	PUR 0.2 m	w001	d006
BI2-Q10S-AP6X	2 mm,	, PNP	cable	PUR 2 m	w004	d007
BI2-Q10S-AN6X	2 mm,	, NPN	cable	PUR 2 m	w005	d007
NI5U-Q10S-AP6X-0,3-PSG3M	5 mm,	, PNP	cable with connector	PUR 0.3 m	w001	d006
NI5U-Q10S-AP6X	5 mm,	, PNP	cable	PUR 2 m	w004	d007
NI5U-Q10S-AN6X-0,3-PSG3M	5 mm,	, NPN	cable with connector	PUR 0.3 m	w002	d006
NI5U-Q10S-AN6X	5 mm,	, NPN	cable	PUR 2 m	w005	d007

Q10S – 4-wire DC



General data

Dimensions	16 x 10.2 x 27.8 mm	**Operating voltage**	10…30 VDC
Switching distance	2 mm,	**Material housing**	PP
Electrical connection	cable	**Material cable**	PUR 2 m

Lateral active face

Types and data – selection table

Type	Output	w	d
BI2-Q10S-VP6X	, PNP	w007	d007
BI2-Q10S-VN6X	, NPN	w018	d007

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q10S – 2-wire AC/DC



Type	BI2-Q10S-AZ31X	**Operating voltage**	20…250 VAC / 10…300 VDC
Dimensions	16 x 10.2 x 27.8 mm	**Material housing**	PP
Switching distance	2 mm,	**Material cable**	PUR 2 m
Output		**Wiring diagram**	w020
Electrical connection	cable	**Dimension drawing**	d007

Lateral active face

Q12 – 3-wire DC



General data			
Dimensions	26 x 12 x 40 mm	**Operating voltage**	10…30 VDC
Switching distance	5 mm,	**Material housing**	PA

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BI5U-Q12-AP6X2-V1131	, PNP	connector, M8 x 1	-	w001	d008
BI5U-Q12-AP6X2-H1141	, PNP	connector, M12 x 1	-	w001	d009
BI5U-Q12-AP6X2	, PNP	cable	PUR 2 m	w004	d010
BI5U-Q12-AN6X2-V1131	, NPN	connector, M8 x 1	-	w002	d008
BI5U-Q12-AN6X2-H1141	, NPN	connector, M12 x 1	-	w002	d009
BI5U-Q12-AN6X2	, NPN	cable	PUR 2 m	w005	d010

Q12 – 4-wire DC



General data

Dimensions	26 x 12 x 40 mm	**Operating voltage**	10…30 VDC
Switching distance	5 mm,	**Material housing**	PA
Electrical connection	cable		

Types and data – selection table

Type	Output	Material cable	w	d
BI5U-Q12-VP6X2 7M	, PNP	PUR 7 m	w007	d010
BI5U-Q12-VN6X2 7M	, NPN	PUR 2 m	w018	d010

Q12 – 2-wire AC/DC



General data

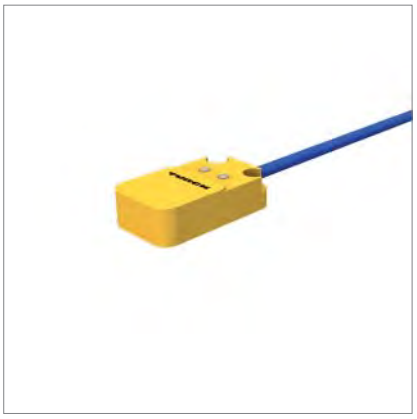
Dimensions	26 x 12 x 40 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output		**Material housing**	PA
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	w	d
BI2-Q12-AZ31X	2 mm,	w020	d093
NI4-Q12-AZ31X	4 mm,	w020	d093

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q14 – NAMUR



Type	BI10-Q14-Y1X	**Operating voltage**	nom. 8.2 VDC
Dimensions	30 x 14 x 52 mm	**Material housing**	PBT
Switching distance	10 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d094

Q14 – 3-wire DC



General data			
Dimensions	30 x 14 x 52 mm	**Material housing**	PBT
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI10U-Q14-AP6X2-V1131	10 mm,	, PNP	connector, M8 x 1	-	w001	d095
BI10U-Q14-AP6X2	10 mm,	, PNP	cable	PUR 2 m	w004	d096
BI10U-Q14-AN6X2-V1131	10 mm,	, NPN	connector, M8 x 1	-	w002	d095
BI10U-Q14-AN6X2	10 mm,	, NPN	cable	PUR 2 m	w005	d096
NI20-Q14-AP6X2-V1131	20 mm,	, PNP	connector, M8 x 1	-	w001	d095
NI20-Q14-AP6X2	20 mm,	, PNP	cable	PUR 2 m	w004	d096
NI20-Q14-AN6X2-V1131	20 mm,	, NPN	connector, M8 x 1	-	w002	d095
NI20-Q14-AN6X2	20 mm,	, NPN	cable	PUR 2 m	w005	d096

Q14 – 2-wire AC/DC



Type	BI10-Q14-ADZ32X2	**Operating voltage**	20…250 VAC / 10…300 VDC
Dimensions	30 x 14 x 52 mm	**Material housing**	PBT
Switching distance	10 mm,	**Material cable**	PUR 2 m
Output		**Wiring diagram**	w020
Electrical connection	cable	**Dimension drawing**	d096

Q18 – 3-wire DC



General data			
Dimensions	18 x 18 x 29 mm	**Operating voltage**	10…30 VDC
Switching distance	5 mm,	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	w	d
NI5-Q18-AP6X	, PNP	w004	d097
NI5-Q18-AN6X	, NPN	w005	d097

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q20 – NAMUR



General data

Dimensions	40 x 20 x 68 mm	**Operating voltage**	nom. 8.2 VDC
Switching distance	15 mm,	**Material housing**	PBT
Output	NAMUR		

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BI15-Q20-Y1X-H1141	connector, M12 x 1	-	w021	d098
BI15-Q20-Y1X	cable	PVC 2 m	w019	d099

Q20 – 3-wire DC



General data

Dimensions	40 x 20 x 68 mm	**Material housing**	PBT
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI15U-Q20-AP6X2-H1141	15 mm,	_⌐‾⌐_, PNP	connector, M12 x 1	-	w001	d098
BI15U-Q20-AP6X2	15 mm,	_⌐‾⌐_, PNP	cable	PUR 2 m	w004	d100
BI15U-Q20-AN6X2-H1141	15 mm,	_⌐‾⌐_, NPN	connector, M12 x 1	-	w002	d098
BI15U-Q20-AN6X2	15 mm,	_⌐‾⌐_, NPN	cable	PUR 2 m	w005	d100
NI25-Q20-AP6X2-H1141	25 mm,	_⌐‾⌐_, PNP	connector, M12 x 1	-	w001	d098
NI25-Q20-AP6X2	25 mm,	_⌐‾⌐_, PNP	cable	PUR 2 m	w004	d100
NI25-Q20-AN6X2-H1141	25 mm,	_⌐‾⌐_, NPN	connector, M12 x 1	-	w002	d098
NI25-Q20-AN6X2	25 mm,	_⌐‾⌐_, NPN	cable	PUR 2 m	w005	d100

Q25 – 3-wire DC



General data

Dimensions	25 x 25.5 x 38.5 mm	**Operating voltage**	10…30 VDC
Switching distance	10 mm,	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	w	d
NI10-Q25-AP6X	_⌒_, PNP	w004	d101
NI10-Q25-AN6X	_⌒_, NPN	w005	d101

CA25 – 3-wire DC



General data

Dimensions	25 x 25 x 40 mm	**Operating voltage**	10…30 VDC
Output	_⌒_, PNP	**Material housing**	GD-CuZn

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	Electrical connection	w	d
BI10U-CA25-AP6X2-V1131	10 mm,	connector, M8 x 1	w001	d102
BI10U-CA25-AP6X2-H1141	10 mm,	connector, M12 x 1	w001	d103
NI15U-CA25-AP6X2-V1131	15 mm,	connector, M8 x 1	w001	d102
NI15U-CA25-AP6X2-H1141	15 mm,	connector, M12 x 1	w001	d103

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

QN26 – 3-wire DC



General data

Dimensions	26 x 26 x 43 mm	**Operating voltage**	10…65 VDC
Switching distance	10 mm,	**Material housing**	PBT
Output	, 2-wire		

Variable orientation of active face in 4 directions

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BI10-QN26-AD4X/S90	cable	PUR 2 m	w022	d105
BI10-QN26-AD4X-0,15XOR-RS4.23/S100-S1589	cable with connector, M12 x 1	PUR 0.15 m	w009	d106
Bi10-QN26-AD4X-0,15-RS4.23/S90	cable with connector, M12 x 1	PUR 0.15 m	w009	d104

Q40 – 3-wire DC



Type	NI22U-Q40-AP6X2-H1141	**Operating voltage**	10…30 VDC
Dimensions	40 x 52.5 x 67 mm	**Material housing**	PBT
Switching distance	22 mm,	**Wiring diagram**	w001
Output	, PNP	**Dimension drawing**	d107
Electrical connection	connector, M12 x 1		

Special versions, height-adjustble, for pressing tools

CA40 – 3-wire DC



General data

Dimensions	40 x 40 x 48 mm	**Operating voltage**	10…30 VDC
Switching distance	20 mm,	**Material housing**	GD-Al
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Output	w	d
BI20U-CA40-AP6X2-H1141	, PNP	w001	d108
BI20U-CA40-AN6X2-H1141	, NPN	w002	d108

CK40 – NAMUR



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CK40-Y1X-H1141	15 mm,	w021	d109
NI20-CK40-Y1X-H1141	20 mm,	w021	d109

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

CK40 – 2-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…65 VDC
Output	⎓, 2-wire	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	w	d
BI15U-CK40-AD4X-H1144	15 mm,	w009	d011
BI15-CK40-AD4X-H1141	15 mm,	w023	d109
NI35U-CK40-AD4X-H1144	35 mm,	w009	d012
NI20-CK40-AD4X-H1141	20 mm,	w023	d109

CK40 – 3-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	Output	w	d
BI30U-CK40-AP6X2-H1141	30 mm,	, PNP	w001	d012
BI30U-CK40-AN6X2-H1141	30 mm,	, NPN	w002	d012
BI20U-CK40-AP6X2-H1141	20 mm,	, PNP	w001	d011
BI20U-CK40-AN6X2-H1141	20 mm,	, NPN	w002	d011
BI15U-CK40-AP6X2-H1141	15 mm,	, PNP	w001	d011
BI15U-CK40-AN6X2-H1141	15 mm,	, NPN	w002	d011
BI15-CK40-AP6X2-H1141	15 mm,	, PNP	w001	d011
BI15-CK40-AN6X2-H1141	15 mm,	, NPN	w002	d011
NI50U-CK40-AP6X2-H1141	50 mm,	, PNP	w001	d012
NI50U-CK40-AN6X2-H1141	50 mm,	, NPN	w002	d012
NI40U-CK40-AP6X2-H1141	40 mm,	, PNP	w001	d012
NI35U-CK40-AP6X2-H1141	35 mm,	, PNP	w001	d012
NI35U-CK40-AN6X2-H1141	35 mm,	, NPN	w002	d012
NI35-CK40-AP6X2-H1141	35 mm,	, PNP	w001	d011
NI25U-CK40-AP6X2-H1141	25 mm,	, PNP	w001	d012
NI25U-CK40-AN6X2-H1141	25 mm,	, NPN	w002	d012
NI20-CK40-AP6X2-H1141	20 mm,	, PNP	w001	d011
NI20-CK40-AN6X2-H1141	20 mm,	, NPN	w002	d011

CK40 – 4-wire DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…65 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Variable orientation of active face in 5 directions

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI20U-CK40-VP4X2-H1141	20 mm,	, PNP	w008	d011
BI20U-CK40-VN4X2-H1141	20 mm,	, NPN	w010	d011
BI15U-CK40-VP4X2-H1141	15 mm,	, PNP	w008	d011
BI15U-CK40-VN4X2-H1141	15 mm,	, NPN	w010	d011
NI50U-CK40-VP4X2-H1141	50 mm,	, PNP	w008	d012
NI50U-CK40-VN4X2-H1141	50 mm,	, NPN	w010	d012
NI25U-CK40-VP4X2-H1141	25 mm,	, PNP	w008	d012

CK40 – 2-wire AC/DC



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output		**Material housing**	PBT

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	Electrical connection	w	d
BI15U-CK40-ADZ30X2-B3131	15 mm,	connector, 1/2"	w025	d113
BI15U-CK40-ADZ30X2-B1131	15 mm,	connector, 7/8"	w024	d111
NI35U-CK40-ADZ30X2-B3131	35 mm,	connector, 1/2"	w025	d112
NI35U-CK40-ADZ30X2-B1131	35 mm,	connector, 7/8"	w024	d110

CP40 – NAMUR



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	PBT
Electrical connection	terminal chamber		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI20-CP40-Y1X	20 mm, ⊢	w026	d114
BI15-CP40-Y1X	15 mm, ⊢	w026	d114
NI20-CP40-Y1X	20 mm, ⊢	w026	d114

CP40 – 2-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…65 VDC
Output	⎓, 2-wire	**Material housing**	PBT
Electrical connection	terminal chamber		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-AD4X	15 mm, ⊢	w027	d114
NI20-CP40-AD4X	20 mm, ⊢	w027	d114

CP40 – 3-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Material housing**	PBT
Operating voltage	10…30 VDC		

Variable orientation of active face in 9 directions

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	Electrical connection	w	d
BI30U-CP40-AP6X2	30 mm,	_⎍_, PNP	terminal chamber	w011	d014
BI30U-CP40-AN6X2	30 mm,	_⎍_, NPN	terminal chamber	w012	d014
BI20U-CP40-AP6X2	20 mm,	_⎍_, PNP	terminal chamber	w011	d014
BI20U-CP40-AN6X2	20 mm,	_⎍_, NPN	terminal chamber	w012	d014
BI15U-CP40-AP6X2	15 mm,	_⎍_, PNP	terminal chamber	w011	d014
BI15U-CP40-AN6X2	15 mm,	_⎍_, NPN	terminal chamber	w012	d014
BI15-CP40-AP6X2	15 mm,	_⎍_, PNP	terminal chamber	w011	d014
BI15-CP40-AN6X2	15 mm,	_⎍_, NPN	terminal chamber	w012	d014
NI50U-CP40-AP6X2-H1141	50 mm,	_⎍_, PNP	connector, M12 x 1	w001	d115
NI50U-CP40-AP6X2	50 mm,	_⎍_, PNP	terminal chamber	w011	d014
NI50U-CP40-AN6X2	50 mm,	_⎍_, NPN	terminal chamber	w012	d014
NI40U-CP40-AP6X2	40 mm,	_⎍_, PNP	terminal chamber	w011	d014
NI40U-CP40-AN6X2	40 mm,	_⎍_, NPN	terminal chamber	w012	d014
NI20-CP40-AP6X2	20 mm,	_⎍_, PNP	terminal chamber	w011	d014
NI20-CP40-AN6X2	20 mm,	_⎍_, NPN	terminal chamber	w012	d014

CP40 – 4-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Material housing**	PBT
Operating voltage	10…65 VDC		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	Output	Electrical connection	w	d
BI20U-CP40-VP4X2	20 mm,	, PNP	terminal chamber	w014	d014
BI20U-CP40-VN4X2	20 mm,	, NPN	terminal chamber	w013	d014
BI15U-CP40-VP4X2-H1141	15 mm,	, PNP	connector, M12 x 1	w008	d115
BI15U-CP40-VP4X2	15 mm,	, PNP	terminal chamber	w014	d014
BI15-CP40-VP4X2	15 mm,	, PNP	terminal chamber	w014	d014
BI15-CP40-VN4X2	15 mm,	, NPN	terminal chamber	w013	d014
NI50U-CP40-VP4X2	50 mm,	, PNP	terminal chamber	w014	d014
NI50U-CP40-VN4X2	50 mm,	, NPN	terminal chamber	w013	d014
NI40U-CP40-VP4X2-H1141	40 mm,	, PNP	connector, M12 x 1	w008	d115
NI40U-CP40-VP4X2	40 mm,	, PNP	terminal chamber	w014	d014
NI40U-CP40-VN4X2	40 mm,	, NPN	terminal chamber	w013	d014
NI35-CP40-VP4X2	35 mm,	, PNP	terminal chamber	w014	d014
NI35-CP40-VN4X2	35 mm,	, NPN	terminal chamber	w013	d014
NI20-CP40-VP4X2	20 mm,	, PNP	terminal chamber	w014	d014
NI20-CP40-VN4X2	20 mm,	, NPN	terminal chamber	w013	d014

CP40 – 2-wire AC/DC



General data

Dimensions	40 x 40 x 114 mm	**Electrical connection**	terminal chamber
Output	connection programmable	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	Operating voltage	w	d
BI15U-CP40-FDZ30X2	15 mm,	20…250 VAC / 10…300 VDC	w028	d014
BI15-CP40-FZ3X2	15 mm,	20…250 VAC / 10…300 VDC	w028	d014
NI40U-CP40-FDZ30X2	40 mm,	20…250 VAC / 10…300 VDC	w028	d014
NI35-CP40-FZ3X2	35 mm,	20…250 VAC / 10…300 VDC	w028	d014
NI20NF-CP40-FZ3X2	20 mm,	20…250 VAC	w029	d116
NI20-CP40-FZ3X2	20 mm,	20…250 VAC / 10…300 VDC	w028	d014

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

QV40 – 3-wire DC



General data

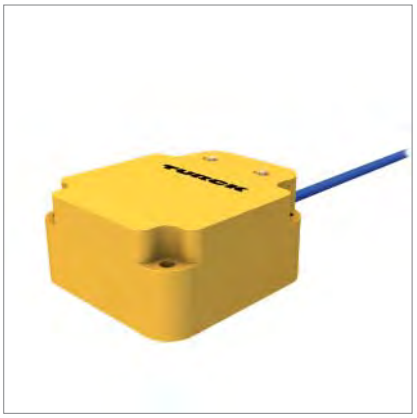
Dimensions	40 x 40 x 65 mm	**Operating voltage**	10…30 VDC
Output	_⌒‾, PNP	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Switching distance	w	d
BI20U-QV40-AP6X2-H1141	20 mm, ▨	w001	d013
NI50U-QV40-AP6X2-H1141	50 mm, ▨	w001	d013

Q80 – NAMUR



General data

Dimensions	80 x 40 x 92 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Switching distance	w	d
BI50-Q80-Y1X	50 mm, ▨	w019	d117
NI60-Q80-Y1X	60 mm, ▨	w019	d117

Q80 – 3-wire DC



General data

Dimensions	80 x 40 x 92 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Types and data – selection table

Type	Switching distance	Output	w	d
BI50U-Q80-AP6X2-H1141	50 mm,	, PNP	w001	d015
BI50U-Q80-AN6X2-H1141	50 mm,	, NPN	w002	d015
NI75U-Q80-AP6X2-H1141	75 mm,	, PNP	w001	d015

Q80 – 4-wire DC



General data

Dimensions	80 x 40 x 92 mm	**Operating voltage**	10…65 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Types and data – selection table

Type	Switching distance	Output	w	d
BI50U-Q80-VP4X2-H1141/3GD	50 mm,	, PNP	w008	d015
BI50U-Q80-VP4X2-H1141	50 mm,	, PNP	w008	d015
BI50U-Q80-VN4X2-H1141	50 mm,	, NPN	w010	d015
NI75U-Q80-VP4X2-H1141	75 mm,	, PNP	w008	d015

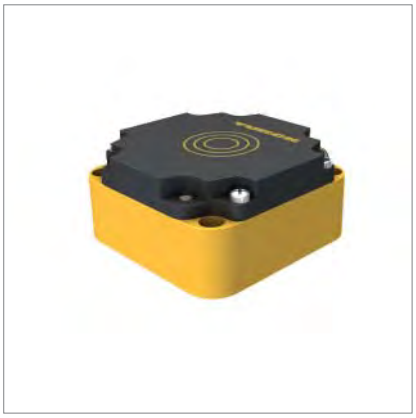
w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

CP80 – NAMUR



Type	NI40-CP80-Y1	**Operating voltage**	nom. 8.2 VDC
Dimensions	80 x 41 x 80 mm	**Material housing**	PBT
Switching distance	40 mm,	**Wiring diagram**	w026
Output	NAMUR	**Dimension drawing**	d118
Electrical connection	terminal chamber		

CP80 – 4-wire DC



General data			
Dimensions	80 x 41 x 80 mm	**Material housing**	PBT
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	w	d
BI40-CP80-VP4X2-H1141	40 mm,	, PNP	connector, M12 x 1	w008	d119
BI40-CP80-VP4X2	40 mm,	, PNP	terminal chamber	w014	d120
BI40-CP80-VN4X2	40 mm,	, NPN	terminal chamber	w013	d120
NI75U-CP80-VP4X2-H1141	75 mm,	, PNP	connector, M12 x 1	w008	d119
NI75U-CP80-VP4X2	75 mm,	, PNP	terminal chamber	w014	d120
NI75U-CP80-VN4X2	75 mm,	, NPN	terminal chamber	w013	d120
NI50-CP80-VP4X2	50 mm,	, PNP	terminal chamber	w014	d120
NI50-CP80-VN4X2	50 mm,	, NPN	terminal chamber	w013	d120
NI40-CP80-VP4X2	40 mm,	, PNP	terminal chamber	w014	d120
NI40-CP80-VN4X2	40 mm,	, NPN	terminal chamber	w013	d120

CP80 – 2-wire AC/DC



General data

Dimensions	80 x 41 x 80 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	connection programmable	**Material housing**	PBT
Electrical connection	terminal chamber		

Types and data – selection table

Type	Switching distance	w	d
BI40-CP80-FZ3X2	40 mm,	w028	d120
NI75U-CP80-FDZ30X2	75 mm,	w028	d120
NI50-CP80-FZ3X2	50 mm,	w028	d120
NI40-CP80-FZ3X2	40 mm,	w028	d120

K90 – NAMUR



Type	NI50-K90SR-Y1	**Operating voltage**	nom. 8.2 VDC
Dimensions	75 x 60 x 130 mm	**Material housing**	PBT
Switching distance	50 mm,	**Wiring diagram**	w026
Output	NAMUR	**Dimension drawing**	d121
Electrical connection	terminal chamber		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

K90 – 4-wire DC



General data

Dimensions	75 x 60 x 130 mm	**Material housing**	PBT
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	Output	Electrical connection	w	d
NI100U-K90SR-VP4X2-H1141	100 mm,	, PNP	connector, M12 x 1	w008	d017
NI100U-K90SR-VP4X2	100 mm,	, PNP	terminal chamber	w014	d016
NI100U-K90SR-VN4X2-H1141	100 mm,	, NPN	connector, M12 x 1	w010	d017
NI100U-K90SR-VN4X2	100 mm,	, NPN	terminal chamber	w013	d016
NI60-K90SR-VP4X2	60 mm,	, PNP	terminal chamber	w014	d016
NI60-K90SR-VN4X2	60 mm,	, NPN	terminal chamber	w013	d016

K90 – 2-wire AC/DC



Type	NI60-K90SR-FZ3X2	**Operating voltage**	20…250 VAC / 10…300 VDC
Dimensions	75 x 60 x 130 mm	**Material housing**	PBT
Switching distance	60 mm,	**Wiring diagram**	w028
Output	connection program-mable	**Dimension drawing**	d016
Electrical connection	terminal chamber		

Q130 – 4-wire DC



General data

Dimensions	57 x 48 x 130 mm	**Operating voltage**	10…65 VDC
Switching distance	30 mm,	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	w	d
NI30-Q130-VP4X2	, PNP	w007	d122
NI30-Q130-VN4X2	, NPN	w018	d122

Q130 – 2-wire AC/DC



General data

Dimensions	57 x 48 x 130 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Switching distance	30 mm,	**Material housing**	PBT
Output			

Types and data – selection table

Type	Electrical connection	Material cable	w	d
NI30-Q130-ADZ30X2-B1131	connector, 7/8“	-	w030	d123
NI30-Q130-ADZ30X2	cable	PVC 2 m	w031	d122

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Threaded barrel

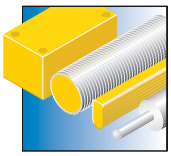


We offer threaded barrels for all types of applications, ranging from the 5 mm version up to the big size PG36. In order to comply with the ambient conditions of individual applications, most sensors are available in different housing materials. The range of accessories is broad and enhances the functionality of the sensors if needed.

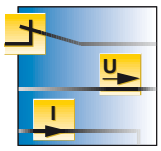
Features

- Rugged 4-hole LED
- Different thread lengths
- Rugged housing materials
- Connection cable with approved jacket quality
- Many different electrical output functions

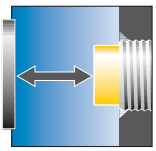
Properties



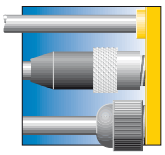
Design
All standard thread sizes M5 x 0.5, M8 x 1, M12 x 1, M18 x 1, M30 x 1.5 and PG36 (G47)



Electrical versions
NAMUR, 2/3 and 4-wire DC, 2-wire AC/DC



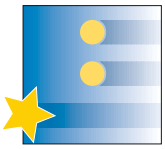
Switching distances
non-flush 1…25 mm
and flush
3 mm…25 mm



Electrical connections
Cable, plug connection, terminal chamber and pigtail



Materials
Chrome-plated brass (optionally PTFE-coated), stainless steel or rugged plastic housings



Special features
Factor 1, all metals extended temperature range, approvals (et al. ATEX and SIL)

M5 – NAMUR



Type	BI1-EG05-Y1	**Operating voltage**	nom. 8.2 VDC
Dimensions	Ø5 x 30 mm	**Material housing**	V4A (1.4404)
Switching distance	1 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d124

M5 – 3-wire DC



General data			
Switching distance	1 mm,	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BI1-EG05-RP6X-V1331	Ø5 x 42.5 mm	, PNP	connector, M8 x 1	-	w003	d125
BI1-EG05-RP6X	Ø5 x 30 mm	, PNP	cable	PUR 2 m	w006	d126
BI1-EG05-AP6X-V1331	Ø5 x 42.5 mm	, PNP	connector, M8 x 1	-	w001	d125
BI1-EG05-AN6X-V1331	Ø5 x 42.5 mm	, NPN	connector, M8 x 1	-	w002	d125
BI1-EG05-AP6X	Ø5 x 30 mm	, PNP	cable	PUR 2 m	w004	d126
BI1-EG05-AN6X	Ø5 x 30 mm	, NPN	cable	PUR 2 m	w005	d126

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M8 – NAMUR



General data

Output	NAMUR	**Material housing**	V2A (1.4301)
Operating voltage	nom. 8.2 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material cable	w	d
BI1,5-GS880-Y1	Ø8 x 47 mm	1.5 mm,	cable	PVC 2 m	w019	d132
BI1,5-EG08K-Y1-H1341	Ø8 x 39 mm	1.5 mm,	connector, M12 x 1	-	w021	d127
BI1,5-EG08K-Y1	Ø8 x 23.6 mm	1.5 mm,	cable	PVC 2 m	w019	d130
BI1,5-EG08-Y1-H1341	Ø8 x 57 mm	1.5 mm,	connector, M12 x 1	-	w021	d128
NI3-EG08K-Y1-H1341	Ø8 x 39 mm	3 mm,	connector, M12 x 1	-	w021	d129
NI3-EG08K-Y1	Ø8 x 23.6 mm	3 mm,	cable	PVC 2 m	w019	d131

M8 – 2-wire DC



General data

Output	, 2-wire	**Material housing**	V2A (1.4301)
Operating voltage	10…55 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material cable	w	d
BI2-EG08-AG41X-H1341	Ø8 x 57 mm	2 mm,	connector, M12 x 1	-	w032	d024
BI2-EG08-AG41X	Ø8 x 41.6 mm	2 mm,	cable	PUR 2 m	w033	d026
NI4-EG08-AG41X	Ø8 x 41.6 mm	4 mm,	cable	PUR 2 m	w033	d133

M8 – 3-wire DC – Cable connection



General data

Electrical connection	cable	**Material housing**	V2A (1.4301)
Operating voltage	10…30 VDC	**Material cable**	PUR 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Output	w	d
BI2U-EG08-AP6X	Ø8 x 41.6 mm	2 mm,	_⌐¯⌐_, PNP	w004	d026
BI2U-EG08-AN6X	Ø8 x 41.6 mm	2 mm,	_⌐¯⌐_, NPN	w005	d026
BI2-EG08K-AP6X	Ø8 x 23.6 mm	2 mm,	_⌐¯⌐_, PNP	w004	d141
BI2-EG08K-AN6X	Ø8 x 23.6 mm	2 mm,	_⌐¯⌐_, NPN	w005	d141
BI2-EG08-AP6X	Ø8 x 41.6 mm	2 mm,	_⌐¯⌐_, PNP	w004	d026
BI2-EG08-AN6X	Ø8 x 41.6 mm	2 mm,	_⌐¯⌐_, NPN	w005	d026
BI1,5U-EG08-AP6X	Ø8 x 41.6 mm	1.5 mm,	_⌐¯⌐_, PNP	w004	d026
BI1,5U-EG08-AN6X	Ø8 x 41.6 mm	1.5 mm,	_⌐¯⌐_, NPN	w005	d026
BI1,5-EG08K-AP6X	Ø8 x 23.6 mm	1.5 mm,	_⌐¯⌐_, PNP	w004	d141
BI1,5-EG08K-AN6X	Ø8 x 23.6 mm	1.5 mm,	_⌐¯⌐_, NPN	w005	d141
BI1,5-EG08-AP6X	Ø8 x 41.6 mm	1.5 mm,	_⌐¯⌐_, PNP	w004	d026
BI1,5-EG08-AN6X	Ø8 x 41.6 mm	1.5 mm,	_⌐¯⌐_, NPN	w005	d026
NI6U-EG08-AP6X	Ø8 x 41.6 mm	6 mm,	_⌐¯⌐_, PNP	w004	d027
NI6U-EG08-AN6X	Ø8 x 41.6 mm	6 mm,	_⌐¯⌐_, NPN	w005	d027
NI4U-EG08-AP6X	Ø8 x 41.6 mm	4 mm,	_⌐¯⌐_, PNP	w004	d027
NI4U-EG08-AN6X	Ø8 x 41.6 mm	4 mm,	_⌐¯⌐_, NPN	w005	d027
NI3-EG08K-AP6X	Ø8 x 23.6 mm	3 mm,	_⌐¯⌐_, PNP	w004	d142
NI3-EG08K-AN6X	Ø8 x 23.6 mm	3 mm,	_⌐¯⌐_, NPN	w005	d142
NI3-EG08-AP6X	Ø8 x 41.6 mm	3 mm,	_⌐¯⌐_, PNP	w004	d133
NI3-EG08-AN6X	Ø8 x 41.6 mm	3 mm,	_⌐¯⌐_, NPN	w005	d133

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M8 – 4-wire DC – M12 x 1 plug connection



Type	BI2-EG08-VP6X-H1341	**Operating voltage**	10…30 VDC
Dimensions	Ø8 x 57 mm	**Material housing**	V2A (1.4301)
Switching distance	2 mm,	**Wiring diagram**	w008
Output	, PNP	**Dimension drawing**	d024
Electrical connection	connector, M12 x 1		

M8 – 3-wire DC – M12 x 1 plug connection



General data

Electrical connection	connector, M12 x 1	**Operating voltage**	10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI2U-EGT08-AP6X-H1341	Ø8 x 57 mm	2 mm,	, PNP	V2A (1.4301) -T	w001	d024
BI2U-EG08-RP6X-H1341	Ø8 x 57 mm	2 mm,	, PNP	V2A (1.4301)	w015	d024
BI2U-EG08-AP6X-H1341	Ø8 x 57 mm	2 mm,	, PNP	V2A (1.4301)	w001	d024
BI2U-EG08-AN6X-H1341	Ø8 x 57 mm	2 mm,	, NPN	V2A (1.4301)	w002	d024
BI2-EG08K-AP6X-H1341	Ø8 x 39 mm	2 mm,	, PNP	V2A (1.4301)	w001	d137
BI2-EG08K-AN6X-H1341	Ø8 x 39 mm	2 mm,	, NPN	V2A (1.4301)	w002	d137
BI2-EG08-AP6X-H1341	Ø8 x 57 mm	2 mm,	, PNP	V2A (1.4301)	w001	d024
BI2-EG08-AN6X-H1341	Ø8 x 57 mm	2 mm,	, NPN	V2A (1.4301)	w002	d024
BI1,5U-EGT08-AP6X-H1341	Ø8 x 57 mm	1.5 mm,	, PNP	V2A (1.4301) -T	w001	d138
BI1,5U-EGT08-AN6X-H1341	Ø8 x 57 mm	1.5 mm,	, NPN	V2A (1.4301) -T	w002	d138
BI1,5U-EG08-AP6X-H1341	Ø8 x 57 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d024
BI1,5U-EG08-AN6X-H1341	Ø8 x 57 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d024
BI1,5-EG08WD-AP6X-H1341	Ø8 x 57 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d024
BI1,5-EG08WD-AN6X-H1341	Ø8 x 57 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d024
BI1,5-EG08K-AP6X-H1341	Ø8 x 39 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d137
BI1,5-EG08K-AN6X-H1341	Ø8 x 39 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d137
BI1,5-EG08-AP6X-H1341	Ø8 x 57 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d024
BI1,5-EG08-AN6X-H1341	Ø8 x 57 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d024

Type	Dimensions	Switching distance	Output	Material housing	w	d
NI6U-EG08-RP6X-H1341	Ø8 x 57 mm	6 mm,	, PNP	V2A (1.4301)	w015	d025
NI6U-EG08-AP6X-H1341	Ø8 x 57 mm	6 mm,	, PNP	V2A (1.4301)	w001	d025
NI6U-EG08-AN6X-H1341	Ø8 x 57 mm	6 mm,	, NPN	V2A (1.4301)	w002	d025
NI4U-EG08-AP6X-H1341	Ø8 x 57 mm	4 mm,	, PNP	V2A (1.4301)	w001	d025
NI4U-EG08-AN6X-H1341	Ø8 x 57 mm	4 mm,	, NPN	V2A (1.4301)	w002	d025
NI3-EG08K-AP6X-H1341	Ø8 x 39 mm	3 mm,	, PNP	V2A (1.4301)	w001	d139
NI3-EG08K-AN6X-H1341	Ø8 x 39 mm	3 mm,	, NPN	V2A (1.4301)	w002	d139
NI3-EG08-AP6X-H1341	Ø8 x 57 mm	3 mm,	, PNP	V2A (1.4301)	w001	d140
NI3-EG08-AN6X-H1341	Ø8 x 57 mm	3 mm,	, NPN	V2A (1.4301)	w002	d140

M8 – 3-wire DC – M8 x 1 plug connection



General data

Electrical connection connector, M8 x 1

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI2U-EGT08-AP6X-V1131	Ø8 x 49 mm	2 mm,	, PNP	V2A (1.4301) -T	w001	d022
BI2U-EG08-RP6X-V1131	Ø8 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w003	d022
BI2U-EG08-AP6X-V1131	Ø8 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w001	d022
BI2U-EG08-AN6X-V1131	Ø8 x 49 mm	2 mm,	, NPN	V2A (1.4301)	w002	d022
BI2-EG08K-AP6X-V1131	Ø8 x 31 mm	2 mm,	, PNP	V2A (1.4301)	w001	d134
BI2-EG08K-AN6X-V1131	Ø8 x 31 mm	2 mm,	, NPN	V2A (1.4301)	w002	d134
BI2-EG08-AP6X-V1131	Ø8 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w001	d022
BI2-EG08-AN6X-V1131	Ø8 x 49 mm	2 mm,	, NPN	V2A (1.4301)	w002	d022
BI1,5U-EGT08-AP6X-V1131	Ø8 x 49 mm	1.5 mm,	, PNP	V2A (1.4301) -T	w001	d022
BI1,5U-EG08-AP6X-V1131	Ø8 x 49 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d022
BI1,5U-EG08-AN6X-V1131	Ø8 x 49 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d022
BI1,5-EG08K-AP6X-V1131	Ø8 x 31 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d134
BI1,5-EG08K-AN6X-V1131	Ø8 x 31 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d134
BI1,5-EG08-AP6X-V1131	Ø8 x 49 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d022
BI1,5-EG08-AN6X-V1131	Ø8 x 49 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d022
NI6U-EG08-RP6X-V1131	Ø8 x 49 mm	6 mm,	, PNP	V2A (1.4301)	w003	d023
NI6U-EG08-AP6X-V1131	Ø8 x 49 mm	6 mm,	, PNP	V2A (1.4301)	w001	d023
NI6U-EG08-AN6X-V1131	Ø8 x 49 mm	6 mm,	, NPN	V2A (1.4301)	w002	d023
NI4U-EG08-AP6X-V1131	Ø8 x 49 mm	4 mm,	, PNP	V2A (1.4301)	w001	d023

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Type	Dimensions	Switching distance	Output	Material housing	w	d
NI4U-EG08-AN6X-V1131	Ø8 x 49 mm	4 mm,	, NPN	V2A (1.4301)	w002	d023
NI3-EG08K-AP6X-V1131	Ø8 x 31 mm	3 mm,	, PNP	V2A (1.4301)	w001	d135
NI3-EG08K-AN6X-V1131	Ø8 x 31 mm	3 mm,	, NPN	V2A (1.4301)	w002	d135
NI3-EG08-AP6X-V1131	Ø8 x 49 mm	3 mm,	, PNP	V2A (1.4301)	w001	d136
NI3-EG08-AN6X-V1131	Ø8 x 49 mm	3 mm,	, NPN	V2A (1.4301)	w002	d136

M8 – 2-wire AC/DC – Terminal chamber



Type	BI2-EG08-AZ14X	**Operating voltage**	20…132 VAC / 10…140 VDC
Dimensions	Ø8 x 41.6 mm	**Material housing**	V2A (1.4301)
Switching distance	2 mm,	**Material cable**	PUR 2 m
Output		**Wiring diagram**	w034
Electrical connection	cable	**Dimension drawing**	d026

M12 – NAMUR – M12 x 1 plug connection



General data			
Dimensions	Ø12 x 52 mm	**Electrical connection**	connector, M12 x 1
Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI2-M12-Y1X-H1141	2 mm,	CuZn-Cr	w021	d034
BI2-EM12-Y1X-H1141	2 mm,	V2A (1.4301)	w021	d034
NI5-M12-Y1X-H1141	5 mm,	CuZn-Cr	w021	d035
NI5-EM12-Y1X-H1141	5 mm,	V2A (1.4301)	w021	d035

M12 – NAMUR – Cable connection



General data

Dimensions	Ø12 x 34 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI2-P12-Y1X	2 mm,	PA	w019	d144
BI2-G12-Y1X	2 mm,	CuZn-Cr	w019	d145
NI5-P12-Y1X	5 mm,	PA	w019	d144
NI5-G12-Y1X	5 mm,	CuZn-Cr	w019	d143

M12 – NAMUR – Terminal chamber



General data

Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material housing	w	d
BI2-P12SK-Y1X	Ø12 x 70 mm	2 mm,	terminal chamber	PA	w026	d149
BI2-G12SK-Y1X	Ø12 x 65 mm	2 mm,	terminal chamber	CuZn-Cr	w026	d148
BI2-EM12WDTC-Y1X	Ø12 x 70 mm	2 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d147
BI2-EG12SK-Y1X	Ø12 x 65 mm	2 mm,	terminal chamber	V2A (1.4301)	w026	d148
NI5-P12SK-Y1X	Ø12 x 70 mm	5 mm,	terminal chamber	PA	w026	d149
NI5-G12SK-Y1X	Ø12 x 65 mm	5 mm,	terminal chamber	CuZn-Cr	w026	d150
NI5-EM12WDTC-Y1X	Ø12 x 70 mm	5 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d146
NI5-EG12SK-Y1X	Ø12 x 65 mm	5 mm,	terminal chamber	V2A (1.4301)	w026	d150

M12 – 2-wire DC – M12 x 1 plug connection



General data

Output , 2-wire
Operating voltage 10…65 VDC
Electrical connection connector, M12 x 1

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI2U-MT12E-AD4X-H1144	Ø12 x 62 mm	2 mm,	CuZn-T	w009	d151
BI2U-M12E-AD4X-H1144	Ø12 x 62 mm	2 mm,	CuZn-Cr	w009	d028
BI2-M12-AD4X-H1141	Ø12 x 52 mm	2 mm,	CuZn-Cr	w023	d034
NI8-M12-AD4X-H1141	Ø12 x 52 mm	8 mm,	CuZn-Cr	w023	d035
NI5U-MT12E-AD4X-H1144	Ø12 x 62 mm	5 mm,	CuZn-T	w009	d152
NI5U-M12E-AD4X-H1144	Ø12 x 62 mm	5 mm,	CuZn-Cr	w009	d029
NI4-M12-AD4X-H1141	Ø12 x 52 mm	4 mm,	CuZn-Cr	w023	d035

M12 – 2-wire DC – Cable connection



General data

Output	⎯◝◟⎯, 2-wire	**Operating voltage**	10…65 VDC
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI3-M12-AD4X	Ø12 x 54 mm	3 mm,	CuZn-Cr	w016	d036
BI3-G12K-AD4X	Ø12 x 34 mm	3 mm,	CuZn-Cr	w016	d145
BI2U-M12E-AD4X	Ø12 x 64 mm	2 mm,	CuZn-Cr	w016	d030
BI2-S12-AD4X	Ø12 x 60 mm	2 mm,	PA	w016	d153
BI2-M12-AD4X	Ø12 x 54 mm	2 mm,	CuZn-Cr	w016	d036
NI8-M12-AD4X	Ø12 x 54 mm	8 mm,	CuZn-Cr	w016	d037
NI8-G12K-AD4X	Ø12 x 34 mm	8 mm,	CuZn-Cr	w016	d143
NI5U-M12E-AD4X	Ø12 x 64 mm	5 mm,	CuZn-Cr	w016	d031
NI4-S12-AD4X	Ø12 x 64 mm	4 mm,	PA	w016	d153
NI4-M12-AD4X	Ø12 x 54 mm	4 mm,	CuZn-Cr	w016	d037

M12 – 3-wire DC – M8 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M8 x 1	**Material housing**	CuZn-Cr

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-M12-AP6X-V1131	4 mm,	_⎍_, PNP	w001	d032
BI4U-M12-AN6X-V1131	4 mm,	_⎍_, NPN	w002	d032
NI10U-M12-AP6X-V1131	10 mm,	_⎍_, PNP	w001	d033
NI10U-M12-AN6X-V1131	10 mm,	_⎍_, NPN	w002	d033

M12 – 3-wire DC – M12 x 1 plug connection



General data

Electrical connection connector, M12 x 1 **Operating voltage** 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI4U-MT12-AP6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, PNP	CuZn-T	w001	d058
BI4U-MT12-AN6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, NPN	CuZn-T	w002	d058
Bi4U-M12-RP6X-H1141	Ø12 x 52 mm	4 mm,	⊣⎍_, PNP	CuZn-Cr	w015	d034
BI4U-M12-AP6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, PNP	CuZn-Cr	w001	d034
BI4U-M12-AN6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, NPN	CuZn-Cr	w002	d034
BI4U-EM12WD-AP6X-H1141/3D	Ø12 x 52 mm	4 mm,	_⎍_, PNP	V4A (1.4404)	w001	d034
BI4U-EM12WD-AP6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, PNP	V4A (1.4404)	w001	d034
BI4U-EM12WD-AN6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, NPN	V4A (1.4404)	w002	d034
BI4-M12E-AP6X-H1141	Ø12 x 62 mm	4 mm,	_⎍_, PNP	CuZn-Cr	w001	d028
BI4-M12-AP6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, PNP	CuZn-Cr	w001	d034
BI4-M12-AN6X-H1141	Ø12 x 52 mm	4 mm,	_⎍_, NPN	CuZn-Cr	w002	d034
BI3U-S12-AP6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, PNP	PBT	w001	d155
BI3U-S12-AN6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, NPN	PBT	w002	d155
BI3U-MT12-AP6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, PNP	CuZn-T	w001	d058
BI3U-MT12-AN6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, NPN	CuZn-T	w002	d058
BI3U-M12EE-AP6X-H1141	Ø12 x 72 mm	3 mm,	_⎍_, PNP	CuZn-Cr	w001	d157
BI3U-M12-AP6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, PNP	CuZn-Cr	w001	d034
BI3U-M12-AN6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, NPN	CuZn-Cr	w002	d034
BI3U-EM12-AP6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, PNP	V2A (1.4301)	w001	d034
BI3U-EM12-AN6X-H1141	Ø12 x 52 mm	3 mm,	_⎍_, NPN	V2A (1.4301)	w002	d034
BI2-M12E-AP6X-H1141	Ø12 x 62 mm	2 mm,	_⎍_, PNP	CuZn-Cr	w001	d028
BI2-M12E-AN6X-H1141	Ø12 x 62 mm	2 mm,	_⎍_, NPN	CuZn-Cr	w002	d028
BI2-M12-AP6X-H1141	Ø12 x 52 mm	2 mm,	_⎍_, PNP	CuZn-Cr	w001	d034

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI2-M12-AN6X-H1141	Ø12 x 52 mm	2 mm,	, NPN	CuZn-Cr	w002	d034
BI2-G12K-AP6X-H1141	Ø12 x 42 mm	2 mm,	, PNP	CuZn-Cr	w001	d154
NI10U-MT12-AP6X-H1141	Ø12 x 52 mm	10 mm,	, PNP	CuZn-T	w001	d059
NI10U-MT12-AN6X-H1141	Ø12 x 52 mm	10 mm,	, NPN	CuZn-T	w002	d059
NI10U-M12E-AP6X-H1141	Ø12 x 62 mm	10 mm,	, PNP	CuZn-Cr	w001	d029
NI10U-M12-RP6X-H1141	Ø12 x 52 mm	10 mm,	, PNP	CuZn-Cr	w015	d035
NI10U-M12-AP6X-H1141	Ø12 x 52 mm	10 mm,	, PNP	CuZn-Cr	w001	d035
NI10U-M12-AN6X-H1141	Ø12 x 52 mm	10 mm,	, NPN	CuZn-Cr	w002	d035
NI10U-EM12WD-AP6X-H1141/3D	Ø12 x 52 mm	10 mm,	, PNP	V4A (1.4404)	w001	d067
NI10U-EM12WD-AP6X-H1141	Ø12 x 52 mm	10 mm,	, PNP	V4A (1.4404)	w001	d067
NI10U-EM12WD-AN6X-H1141	Ø12 x 52 mm	10 mm,	, NPN	V4A (1.4404)	w002	d067
NI8U-S12-AP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	PBT	w001	d155
NI8U-S12-AN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	PBT	w002	d155
NI8U-MT12-AP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	CuZn-T	w001	d059
NI8U-MT12-AN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	CuZn-T	w002	d059
NI8U-M12EE-AP6X-H1141	Ø12 x 72 mm	8 mm,	, PNP	CuZn-Cr	w001	d156
NI8U-M12-AP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	CuZn-Cr	w001	d035
NI8U-M12-AN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	CuZn-Cr	w002	d035
NI8U-EM12-AP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	V2A (1.4301)	w001	d035
NI8U-EM12-AN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	V2A (1.4301)	w002	d035
NI8-M12-AP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	CuZn-Cr	w001	d035
NI8-M12-AN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	CuZn-Cr	w002	d035
NI4-M12-AP6X-H1141	Ø12 x 52 mm	4 mm,	, PNP	CuZn-Cr	w001	d035
NI4-M12-AN6X-H1141	Ø12 x 52 mm	4 mm,	, NPN	CuZn-Cr	w002	d035

M12 – 3-wire DC – Cable connection



General data

Electrical connection cable

Operating voltage 10…30 VDC

w Wiring diagrams on page 832 ff

d Dimension drawings on page 842 ff

a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	Material cable	w	d
BI4U-M12-AP6X	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d036
BI4U-M12-AN6X	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d036
BI4U-EM12WD-AP6X	Ø12 x 52 mm	4 mm,	_⌐¯⌐_, PNP	V4A (1.4404)	PP 2 m	w004	d068
BI4U-EM12WD-AN6X	Ø12 x 52 mm	4 mm,	_⌐¯⌐_, NPN	V4A (1.4404)	PP 2 m	w005	d068
BI4-M12-AP6X	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d036
BI4-M12-AN6X	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d036
BI4-G12K-AP6X	Ø12 x 34 mm	4 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d145
BI4-G12K-AN6X	Ø12 x 34 mm	4 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d145
BI3U-S12-AP6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, PNP	PBT	PVC 2 m	w004	d158
BI3U-S12-AN6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, NPN	PBT	PVC 2 m	w005	d158
BI3U-M12-AP6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d036
BI3U-M12-AN6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d036
BI3U-EM12-AP6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, PNP	V2A (1.4301)	PVC 2 m	w004	d036
BI3U-EM12-AN6X	Ø12 x 54 mm	3 mm,	_⌐¯⌐_, NPN	V2A (1.4301)	PVC 2 m	w005	d036
BI2-M12-AP6X	Ø12 x 54 mm	2 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d036
BI2-M12-AN6X	Ø12 x 54 mm	2 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d036
BI2-G12K-AP6X	Ø12 x 34 mm	2 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d145
BI2-G12K-AN6X	Ø12 x 34 mm	2 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d145
NI10U-M12-AP6X	Ø12 x 54 mm	10 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d037
NI10U-M12-AN6X	Ø12 x 54 mm	10 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d037
NI10U-EM12WD-AP6X	Ø12 x 52 mm	10 mm,	_⌐¯⌐_, PNP	V4A (1.4404)	PP 2 m	w004	d069
NI10U-EM12WD-AN6X	Ø12 x 52 mm	10 mm,	_⌐¯⌐_, NPN	V4A (1.4404)	PP 2 m	w005	d069
NI8U-S12-AP6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, PNP	PBT	PVC 2 m	w004	d158
NI8U-S12-AN6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, NPN	PBT	PVC 2 m	w005	d158
NI8U-M12-AP6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d037
NI8U-M12-AN6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d037
NI8U-EM12-AP6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, PNP	V2A (1.4301)	PVC 2 m	w004	d037
NI8U-EM12-AN6X	Ø12 x 54 mm	8 mm,	_⌐¯⌐_, NPN	V2A (1.4301)	PVC 2 m	w005	d037
NI5-G12K-AP6X	Ø12 x 34 mm	5 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 2 m	w004	d143
NI5-G12K-AN6X	Ø12 x 34 mm	5 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 2 m	w005	d143
BI4-M12-AP6X 7M	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, PNP	CuZn-Cr	PVC 7 m	w004	d036
BI4-M12-AN6X 7M	Ø12 x 54 mm	4 mm,	_⌐¯⌐_, NPN	CuZn-Cr	PVC 7 m	w005	d036

M12 – 3-wire DC – Terminal chamber



General data

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Electrical connection	Material housing	w	d
BI4U-EM12WDTC-AP6X	Ø12 x 80 mm	4 mm,	_⌒_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d070
BI3U-P12SK-AP6X	Ø12 x 75 mm	3 mm,	_⌒_, PNP	terminal chamber	PA	w011	d161
BI3U-P12SK-AN6X	Ø12 x 75 mm	3 mm,	_⌒_, NPN	terminal chamber	PA	w012	d161
BI3U-EG12SK-AP6X	Ø12 x 75 mm	3 mm,	_⌒_, PNP	terminal chamber	V2A (1.4301)	w011	d160
BI3U-EG12SK-AN6X	Ø12 x 75 mm	3 mm,	_⌒_, NPN	terminal chamber	V2A (1.4301)	w012	d160
BI2-P12SK-AP6X	Ø12 x 75 mm	2 mm,	_⌒_, PNP	terminal chamber	PA	w011	d161
BI2-P12SK-AN6X	Ø12 x 75 mm	2 mm,	_⌒_, NPN	terminal chamber	PA	w012	d161
BI2-G12SK-AP6X	Ø12 x 75 mm	2 mm,	_⌒_, PNP	terminal chamber	CuZn-Cr	w011	d160
BI2-G12SK-AN6X	Ø12 x 75 mm	2 mm,	_⌒_, NPN	terminal chamber	CuZn-Cr	w012	d160
NI10U-EM12WDTC-AP6X	Ø12 x 80 mm	10 mm,	_⌒_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d071
NI8U-P12SK-AP6X	Ø12 x 75 mm	8 mm,	_⌒_, PNP	terminal chamber	PA	w011	d161
NI8U-P12SK-AN6X	Ø12 x 75 mm	8 mm,	_⌒_, NPN	terminal chamber	PA	w012	d161
NI8U-EG12SK-AP6X	Ø12 x 75 mm	8 mm,	_⌒_, PNP	terminal chamber	V2A (1.4301)	w011	d159
NI8U-EG12SK-AN6X	Ø12 x 75 mm	8 mm,	_⌒_, NPN	terminal chamber	V2A (1.4301)	w012	d159
NI5-P12SK-AP6X	Ø12 x 75 mm	5 mm,	_⌒_, PNP	terminal chamber	PA	w011	d161
NI5-P12SK-AN6X	Ø12 x 75 mm	5 mm,	_⌒_, NPN	terminal chamber	PA	w012	d161
NI5-G12SK-AP6X	Ø12 x 75 mm	5 mm,	_⌒_, PNP	terminal chamber	CuZn-Cr	w011	d159
NI5-G12SK-AN6X	Ø12 x 75 mm	5 mm,	_⌒_, NPN	terminal chamber	CuZn-Cr	w012	d159

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M12 – 4-wire DC – M12 x 1 plug connection



General data

Electrical connection connector, M12 x 1 **Material housing** CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	Operating voltage	w	d
BI4U-M12E-VP44X-H1141	Ø12 x 62 mm	4 mm,	, PNP	10…55 VDC	w017	d028
BI4U-M12E-VN44X-H1141	Ø12 x 62 mm	4 mm,	, NPN	10…55 VDC	w010	d028
BI4U-M12-VP44X-H1141 L80	Ø12 x 80 mm	4 mm,	, PNP	10…55 VDC	w017	d038
BI4U-M12-VP44X-H1141 L100	Ø12 x 100 mm	4 mm,	, PNP	10…55 VDC	w017	d039
BI4-M12-VN6X-H1141	Ø12 x 52 mm	4 mm,	, NPN	10…30 VDC	w010	d034
BI3U-M12E-VP4X-H1141	Ø12 x 62 mm	3 mm,	, PNP	10…65 VDC	w008	d028
BI3U-M12E-VN4X-H1141	Ø12 x 62 mm	3 mm,	, NPN	10…65 VDC	w010	d028
NI10U-M12E-VP44X-H1141	Ø12 x 62 mm	10 mm,	, PNP	10…55 VDC	w017	d029
NI10U-M12E-VN44X-H1141	Ø12 x 62 mm	10 mm,	, NPN	10…55 VDC	w010	d029
NI8U-M12E-VP4X-H1141	Ø12 x 62 mm	8 mm,	, PNP	10…65 VDC	w008	d029
NI8U-M12E-VN4X-H1141	Ø12 x 62 mm	8 mm,	, NPN	10…65 VDC	w010	d029
NI8-M12-VN6X-H1141	Ø12 x 52 mm	8 mm,	, NPN	10…30 VDC	w010	d035
NI8-M12-VP6X-H1141	Ø12 x 52 mm	8 mm,	, PNP	10…30 VDC	w008	d035
BI4-M12-VP6X-H1141	Ø12 x 52 mm	4 mm,	, PNP	10…30 VDC	w008	d034

M12 – 4-wire DC – Cable connection



General data

Electrical connection cable **Material housing** CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	Operating voltage	Material cable	w	d
BI4U-M12E-VP44X	Ø12 x 64 mm	4 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d030
BI4U-M12E-VN44X	Ø12 x 64 mm	4 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d030
BI4-M12-VP6X	Ø12 x 54 mm	4 mm,	, PNP	10…30 VDC	PVC 2 m	w007	d036
BI4-M12-VN6X	Ø12 x 54 mm	4 mm,	, NPN	10…30 VDC	PVC 2 m	w018	d036
NI10U-M12E-VP44X	Ø12 x 64 mm	10 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d031
NI10U-M12E-VN44X	Ø12 x 64 mm	10 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d031
BI4-M12-VP6X 7M	Ø12 x 54 mm	4 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d036
BI4-M12-VN6X 7M	Ø12 x 54 mm	4 mm,	, NPN	10…30 VDC	PVC 7 m	w018	d036
NI8-M12-VN6X 7M	Ø12 x 54 mm	8 mm,	, NPN	10…30 VDC	PVC 7 m	w018	d037
NI8-M12-VP6X 7M	Ø12 x 54 mm	8 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d037

M12 – 4-wire DC – Terminal chamber



General data

Dimensions	Ø12 x 75 mm	**Operating voltage**	10…65 VDC
Electrical connection	terminal chamber	**Material housing**	V2A (1.4301)

Types and data – selection table

Type	Switching distance	Output	w	d
BI3U-EG12SK-VP4X	3 mm,	, PNP	w014	d160
BI3U-EG12SK-VN4X	3 mm,	, NPN	w013	d160
NI8U-EG12SK-VP4X	8 mm,	, PNP	w014	d159
NI8U-EG12SK-VN4X	8 mm,	, NPN	w013	d159

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M12 – 2-wire AC/DC – 1/2“ plug connection



General data

Dimensions	Ø12 x 71 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	⎯◺⎯	**Material housing**	CuZn-Cr
Electrical connection	connector, 1/2“		

Types and data – selection table

Type	Switching distance	w	d
BI2U-G12-ADZ32X-B3131	2 mm,	w035	d162
NI8U-G12-ADZ32X-B3131	8 mm,	w035	d163

M12 – 2-wire AC/DC – Cable connection



General data

Output	⎯◺⎯	**Operating voltage**	20…250 VAC / 10…300 VDC
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI2-S12-AZ31X	Ø12 x 60 mm	2 mm,	PA	w020	d153
BI2-M12-AZ31X	Ø12 x 64 mm	2 mm,	CuZn-Cr	w020	d030
NI4-S12-AZ31X	Ø12 x 64 mm	4 mm,	PA	w020	d153
NI4-M12-AZ31X	Ø12 x 64 mm	4 mm,	CuZn-Cr	w020	d164

M18 – NAMUR – M12 x 1 plug connection



General data

Dimensions	Ø18 x 52 mm	**Electrical connection**	connector, M12 x 1
Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI5-M18-Y1X-H1141	5 mm,	CuZn-Cr	w021	d044
BI5-EM18-Y1X-H1141	5 mm,	V2A (1.4305)	w021	d044
NI10-M18-Y1X-H1141	10 mm,	CuZn-Cr	w021	d046
NI10-EM18-Y1X-H1141	10 mm,	V2A (1.4301)	w021	d046

M18 – NAMUR – Cable connection



General data

Dimensions	Ø18 x 34 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI5-P18-Y1X	5 mm,	PA	w019	d165
BI5-G18-Y1X	5 mm,	CuZn-Cr	w019	d166
NI14-G18-Y1X	14 mm,	CuZn-Cr	w019	d167
NI10-P18-Y1X	10 mm,	PA	w019	d165
NI10-G18-Y1X	10 mm,	CuZn-Cr	w019	d167

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M18 – NAMUR – Terminal chamber



General data

Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material housing	w	d
BI5-P18SK-Y1X	Ø18 x 67 mm	5 mm,	terminal chamber	PA	w026	d171
BI5-G18SK-Y1X	Ø18 x 67 mm	5 mm,	terminal chamber	CuZn-Cr	w026	d170
BI5-EM18WDTC-Y1X	Ø18 x 71 mm	5 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d168
BI5-EG18SK-Y1X	Ø18 x 67 mm	5 mm,	terminal chamber	V2A (1.4301)	w026	d170
NI10-P18SK-Y1X	Ø18 x 67 mm	10 mm,	terminal chamber	PA	w026	d171
NI10-G18SK-Y1X	Ø18 x 67 mm	10 mm,	terminal chamber	CuZn-Cr	w026	d172
NI10-EM18WDTC-Y1X	Ø18 x 71 mm	10 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d169
NI10-EG18SK-Y1X	Ø18 x 67 mm	10 mm,	terminal chamber	V2A (1.4301)	w026	d172

M18 – 2-wire DC – M12 x 1 plug connection



General data

Output	, 2-wire	**Operating voltage**	10…65 VDC
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI7-M18-AD4X-H1141	Ø18 x 52 mm	7 mm,	CuZn-Cr	w023	d044
BI5U-MT18M-AD4X-H1144	Ø18 x 61.5 mm	5 mm,	CuZn-T	w009	d040
BI5U-M18M-AD4X-H1144	Ø18 x 61.5 mm	5 mm,	CuZn-Cr	w009	d040
BI5-M18-AD4X-H1141	Ø18 x 52 mm	5 mm,	CuZn-Cr	w023	d044
NI10U-MT18M-AD4X-H1144	Ø18 x 61.5 mm	10 mm,	CuZn-T	w009	d060
NI10U-M18M-AD4X-H1144	Ø18 x 61.5 mm	10 mm,	CuZn-Cr	w009	d041
NI8-M18-AD4X-H1141	Ø18 x 52 mm	8 mm,	CuZn-Cr	w023	d046

M18 – 2-wire DC – Cable connection



General data

Output	, 2-wire	**Operating voltage**	10…65 VDC
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI7-M18-AD4X	Ø18 x 54 mm	7 mm,	CuZn-Cr	w016	d048
BI7-G18K-AD4X	Ø18 x 34 mm	7 mm,	CuZn-Cr	w016	d166
BI5-S18-AD4X	Ø18 x 64 mm	5 mm,	PA	w016	d173
BI5-M18-AD4X	Ø18 x 54 mm	5 mm,	CuZn-Cr	w016	d048
NI10U-M18M-AD4X	Ø18 x 64 mm	10 mm,	CuZn-Cr	w016	d043
NI8-S18-AD4X	Ø18 x 64 mm	8 mm,	PA	w016	d173
NI8-M18-AD4X	Ø18 x 54 mm	8 mm,	CuZn-Cr	w016	d049

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

M18 – 3-wire DC – M12 x 1 plug connection



General data

Electrical connection connector, M12 x 1 **Operating voltage** 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI8U-MT18E-AP6X-H1141	Ø18 x 72 mm	8 mm,	, PNP	CuZn-T	w001	d045
BI8U-MT18-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-T	w001	d062
BI8U-MT18-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	CuZn-T	w002	d062
BI8U-M18E-AP6X-H1141	Ø18 x 72 mm	8 mm,	, PNP	CuZn-Cr	w001	d045
BI8U-M18E-AN6X-H1141	Ø18 x 72 mm	8 mm,	, NPN	CuZn-Cr	w002	d045
BI8U-M18-RP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-Cr	w015	d044
BI8U-M18-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-Cr	w001	d044
BI8U-M18-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	CuZn-Cr	w002	d044
BI8U-EM18WD-AP6X-H1141/3GD	Ø18 x 52 mm	8 mm,	, PNP	V4A (1.4404)	w001	d044
BI8U-EM18WD-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	V4A (1.4404)	w001	d044
BI8U-EM18WD-AN6X-H1141/3GD	Ø18 x 52 mm	8 mm,	, NPN	V4A (1.4404)	w002	d044
BI8U-EM18WD-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	V4A (1.4404)	w002	d044
BI8-M18K-AP6X-H1141	Ø18 x 46 mm	8 mm,	, PNP	CuZn-Cr	w001	d175
BI8-M18-AP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	CuZn-Cr	w001	d044
BI8-M18-AN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	CuZn-Cr	w002	d044
BI5U-S18-AP6X-H1141	Ø18 x 52 mm	5 mm,	, PNP	PBT	w001	d176
BI5U-S18-AN6X-H1141	Ø18 x 52 mm	5 mm,	, NPN	PBT	w002	d176
BI5U-MT18E-AP6X-H1141	Ø18 x 72 mm	5 mm,	, PNP	CuZn-T	w001	d045
BI5U-MT18-AP6X-H1141	Ø18 x 52 mm	5 mm,	, PNP	CuZn-T	w001	d062
BI5U-MT18-AN6X-H1141	Ø18 x 52 mm	5 mm,	, NPN	CuZn-T	w002	d062
BI5U-M18-AP6X-H1141	Ø18 x 52 mm	5 mm,	, PNP	CuZn-Cr	w001	d044
BI5U-M18-AN6X-H1141	Ø18 x 52 mm	5 mm,	, NPN	CuZn-Cr	w002	d044
BI5U-EM18-AP6X-H1141	Ø18 x 52 mm	5 mm,	, PNP	V2A (1.4301)	w001	d044
BI5U-EM18-AN6X-H1141	Ø18 x 52 mm	5 mm,	, NPN	V2A (1.4301)	w002	d044
BI5-M18-AP6X-H1141	Ø18 x 52 mm	5 mm,	, PNP	CuZn-Cr	w001	d044
BI5-M18-AN6X-H1141	Ø18 x 52 mm	5 mm,	, NPN	CuZn-Cr	w002	d044
BI5-G18KK-AP6-H1141	Ø18 x 30 mm	5 mm,	, PNP	CuZn-Cr	w001	d174
NI15U-MT18-AP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	CuZn-T	w001	d063
NI15U-MT18-AN6X-H1141	Ø18 x 52 mm	15 mm,	, NPN	CuZn-T	w002	d063
NI15U-M18-RP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	CuZn-Cr	w015	d046
NI15U-M18-AP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	CuZn-Cr	w001	d046
NI15U-M18-AN6X-H1141	Ø18 x 52 mm	15 mm,	, NPN	CuZn-Cr	w002	d046
NI15U-EM18WD-AP6X-H1141/3D	Ø18 x 52 mm	15 mm,	, PNP	V4A (1.4404)	w001	d072

Type	Dimensions	Switching distance	Output	Material housing	w	d
NI15U-EM18WD-AP6X-H1141	Ø18 x 52 mm	15 mm,	, PNP	V4A (1.4404)	w001	d072
NI15U-EM18WD-AN6X-H1141/3D	Ø18 x 52 mm	15 mm,	, NPN	V4A (1.4404)	w002	d072
NI15U-EM18WD-AN6X-H1141	Ø18 x 52 mm	15 mm,	, NPN	V4A (1.4404)	w002	d072
NI12U-S18-AP6X-H1141	Ø18 x 52 mm	12 mm,	, PNP	PBT	w001	d176
NI12U-S18-AN6X-H1141	Ø18 x 52 mm	12 mm,	, NPN	PBT	w002	d176
NI12U-MT18-AP6X-H1141	Ø18 x 52 mm	12 mm,	, PNP	CuZn-T	w001	d063
NI12U-MT18-AN6X-H1141	Ø18 x 52 mm	12 mm,	, NPN	CuZn-T	w002	d063
NI12U-M18E-AP6X-H1141	Ø18 x 72 mm	12 mm,	, PNP	CuZn-Cr	w001	d047
NI12U-M18-AP6X-H1141	Ø18 x 52 mm	12 mm,	, PNP	CuZn-Cr	w001	d046
NI12U-M18-AN6X-H1141	Ø18 x 52 mm	12 mm,	, NPN	CuZn-Cr	w002	d046
NI12U-EM18-AP6X-H1141	Ø18 x 52 mm	12 mm,	, PNP	V2A (1.4301)	w001	d046
NI12U-EM18-AN6X-H1141	Ø18 x 52 mm	12 mm,	, NPN	V2A (1.4301)	w002	d046
NI14-M18-AP6X-H1141	Ø18 x 52 mm	14 mm,	, PNP	CuZn-Cr	w001	d046
NI14-M18-AN6X-H1141	Ø18 x 52 mm	14 mm,	, NPN	CuZn-Cr	w002	d046

M18 – 3-wire DC – Cable connection



General data

Electrical connection cable

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	Material cable	w	d
BI8U-M18-AP6X	Ø18 x 54 mm	8 mm,	, PNP	CuZn-Cr	PVC 2 m	w004	d048
BI8U-M18-AN6X	Ø18 x 54 mm	8 mm,	, NPN	CuZn-Cr	PVC 2 m	w005	d048
BI8U-EM18WD-AP6X	Ø18 x 52 mm	8 mm,	, PNP	V4A (1.4404)	PP 2 m	w004	d073
BI8U-EM18WD-AN6X	Ø18 x 52 mm	8 mm,	, NPN	V4A (1.4404)	PP 2 m	w005	d073
BI8-M18-AP6X	Ø18 x 54 mm	8 mm,	, PNP	CuZn-Cr	PVC 2 m	w004	d048
BI8-M18-AN6X	Ø18 x 54 mm	8 mm,	, NPN	CuZn-Cr	PVC 2 m	w005	d048
BI8-M18-AP6X 7M	Ø18 x 54 mm	8 mm,	, PNP	CuZn-Cr	PVC 7 m	w004	d048
BI8-M18-AN6X 7M	Ø18 x 54 mm	8 mm,	, NPN	CuZn-Cr	PVC 7 m	w005	d048
BI5U-S18-AP6X	Ø18 x 64 mm	5 mm,	, PNP	PBT	PVC 2 m	w004	d173
BI5U-S18-AN6X	Ø18 x 64 mm	5 mm,	, NPN	PBT	PVC 2 m	w005	d173
BI5U-M18-AP6X	Ø18 x 54 mm	5 mm,	, PNP	CuZn-Cr	PVC 2 m	w004	d048
BI5U-M18-AN6X	Ø18 x 54 mm	5 mm,	, NPN	CuZn-Cr	PVC 2 m	w005	d048
BI5U-EM18-AP6X	Ø18 x 54 mm	5 mm,	, PNP	V2A (1.4301)	PVC 2 m	w004	d048
BI5U-EM18-AN6X	Ø18 x 54 mm	5 mm,	, NPN	V2A (1.4301)	PVC 2 m	w005	d048

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Type	Dimensions	Switching distance	Output	Material housing	Material cable	w	d
BI5-M18-AP6X	Ø18 x 54 mm	5 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d048
BI5-M18-AN6X	Ø18 x 54 mm	5 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d048
BI5-G18K-AP6X	Ø18 x 34 mm	5 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d166
BI5-G18K-AN6X	Ø18 x 34 mm	5 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d166
NI15U-M18-AP6X	Ø18 x 54 mm	15 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d049
NI15U-M18-AN6X	Ø18 x 54 mm	15 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d049
NI15U-EM18WD-AP6X	Ø18 x 52 mm	15 mm,	_⎍_, PNP	V4A (1.4404)	PP 2 m	w004	d074
NI15U-EM18WD-AN6X	Ø18 x 52 mm	15 mm,	_⎍_, NPN	V4A (1.4404)	PP 2 m	w005	d074
NI12U-S18-AP6X	Ø18 x 64 mm	12 mm,	_⎍_, PNP	PBT	PVC 2 m	w004	d173
NI12U-S18-AN6X	Ø18 x 64 mm	12 mm,	_⎍_, NPN	PBT	PVC 2 m	w005	d173
NI12U-M18-AP6X	Ø18 x 54 mm	12 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d049
NI12U-M18-AN6X	Ø18 x 54 mm	12 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d049
NI12U-EM18-AP6X	Ø18 x 54 mm	12 mm,	_⎍_, PNP	V2A (1.4301)	PVC 2 m	w004	d177
NI12U-EM18-AN6X	Ø18 x 54 mm	12 mm,	_⎍_, NPN	V2A (1.4301)	PVC 2 m	w005	d177
NI10-G18K-AP6X	Ø18 x 34 mm	10 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d167
NI10-G18K-AN6X	Ø18 x 34 mm	10 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d167

M18 – 3-wire DC – Terminal chamber



General data

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Electrical connection	Material housing	w	d
BI8U-EM18WDTC-AP6X	Ø18 x 81 mm	8 mm,	_⎍_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d075
BI5U-P18SK-AP6X	Ø18 x 77 mm	5 mm,	_⎍_, PNP	terminal chamber	PBT	w011	d179
BI5U-P18SK-AN6X	Ø18 x 77 mm	5 mm,	_⎍_, NPN	terminal chamber	PBT	w012	d179
BI5U-EG18SK-AP6X	Ø18 x 77 mm	5 mm,	_⎍_, PNP	terminal chamber	V2A (1.4301)	w011	d178
BI5U-EG18SK-AN6X	Ø18 x 77 mm	5 mm,	_⎍_, NPN	terminal chamber	V2A (1.4301)	w012	d178
BI5-P18SK-AP6X	Ø18 x 77 mm	5 mm,	_⎍_, PNP	terminal chamber	PA	w011	d179
BI5-P18SK-AN6X	Ø18 x 77 mm	5 mm,	_⎍_, NPN	terminal chamber	PA	w012	d179
BI5-G18SK-AP6X	Ø18 x 77 mm	5 mm,	_⎍_, PNP	terminal chamber	CuZn-Cr	w011	d178
BI5-G18SK-AN6X	Ø18 x 77 mm	5 mm,	_⎍_, NPN	terminal chamber	CuZn-Cr	w012	d178
NI15U-EM18WDTC-AP6X	Ø18 x 81 mm	15 mm,	_⎍_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d076

Type	Dimensions	Switching distance	Output	Electrical connection	Material housing	w	d
NI12U-P18SK-AP6X	Ø18 x 77 mm	12 mm,	, PNP	terminal chamber	PBT	w011	d179
NI12U-P18SK-AN6X	Ø18 x 77 mm	12 mm,	, NPN	terminal chamber	PBT	w012	d179
NI12U-EG18SK-AP6X	Ø18 x 77 mm	12 mm,	, PNP	terminal chamber	V2A (1.4301)	w011	d180
NI12U-EG18SK-AN6X	Ø18 x 77 mm	12 mm,	, NPN	terminal chamber	V2A (1.4301)	w012	d180
NI10-P18SK-AP6X	Ø18 x 77 mm	10 mm,	, PNP	terminal chamber	PA	w011	d179
NI10-P18SK-AN6X	Ø18 x 77 mm	10 mm,	, NPN	terminal chamber	PA	w012	d179
NI10-G18SK-AP6X	Ø18 x 77 mm	10 mm,	, PNP	terminal chamber	CuZn-Cr	w011	d180
NI10-G18SK-AN6X	Ø18 x 77 mm	10 mm,	, NPN	terminal chamber	CuZn-Cr	w012	d180

M18 – 4-wire DC – M12 x 1 plug connection



General data

Electrical connection connector, M12 x 1

Material housing CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	Operating voltage	w	d
BI8U-M18M-VP44X-H1141	Ø18 x 61.5 mm	8 mm,	, PNP	10…55 VDC	w017	d040
BI8U-M18M-VN44X-H1141	Ø18 x 61.5 mm	8 mm,	, NPN	10…55 VDC	w010	d040
BI8-M18-VP6X-H1141	Ø18 x 52 mm	8 mm,	, PNP	10…30 VDC	w008	d044
BI8-M18-VN6X-H1141	Ø18 x 52 mm	8 mm,	, NPN	10…30 VDC	w010	d044
NI15U-M18M-VP44X-H1141	Ø18 x 61.5 mm	15 mm,	, PNP	10…55 VDC	w017	d041
NI15U-M18M-VN44X-H1141	Ø18 x 61.5 mm	15 mm,	, NPN	10…55 VDC	w010	d041
NI14-M18-VN6X-H1141	Ø18 x 52 mm	14 mm,	, NPN	10…30 VDC	w010	d046
NI14-M18-VP6X-H1141	Ø18 x 52 mm	14 mm,	, PNP	10…30 VDC	w008	d046

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M18 – 4-wire DC – Cable connection



General data

Electrical connection	cable	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	Operating voltage	Material cable	w	d
BI8U-M18M-VP44X	Ø18 x 64 mm	8 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d042
BI8U-M18M-VN44X	Ø18 x 64 mm	8 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d042
BI8-M18-VP4X 7M	Ø18 x 54 mm	8 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d048
BI8-M18-VN4X 7M	Ø18 x 54 mm	8 mm,	, NPN	10…30 VDC	PVC 7 m	w018	d048
BI8-M18-VP6X	Ø18 x 54 mm	8 mm,	, PNP	10…30 VDC	PVC 2 m	w007	d048
BI8-M18-VN6X	Ø18 x 54 mm	8 mm,	, NPN	10…30 VDC	PVC 2 m	w018	d048
NI15U-M18M-VP44X	Ø18 x 64 mm	15 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d043
NI15U-M18M-VN44X	Ø18 x 64 mm	15 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d043
NI14-M18-VP4X 7M	Ø18 x 54 mm	14 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d049
NI14-M18-VN4X 7M	Ø18 x 54 mm	14 mm,	, NPN	10…30 VDC	PVC 7 m	w018	d049

M18 – 4-wire DC – Terminal chamber



General data

Dimensions	Ø18 x 77 mm	**Operating voltage**	10…65 VDC
Electrical connection	terminal chamber	**Material housing**	V2A (1.4301)

Types and data – selection table

Type	Switching distance	Output	w	d
BI5U-EG18SK-VP4X	5 mm,	, PNP	w014	d178
BI5U-EG18SK-VN4X	5 mm,	, NPN	w013	d178
NI12U-EG18SK-VP4X	12 mm,	, PNP	w014	d180
NI12U-EG18SK-VN4X	12 mm,	, NPN	w013	d180

M18 – 2-wire AC/DC – 7/8“ plug connection



General data

Dimensions	Ø18 x 82 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output		**Material housing**	CuZn-Cr
Electrical connection	connector, 7/8“		

Types and data – selection table

Type	Switching distance	w	d
BI5U-G18-ADZ30X2-B1331	5 mm,	w030	d181
NI12U-G18-ADZ30X2-B1331	12 mm,	w030	d182

M18 – 2-wire AC/DC – 1/2“ plug connection



General data

Dimensions	Ø18 x 82 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output		**Material housing**	CuZn-Cr
Electrical connection	connector, 1/2“		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI5U-G18-ADZ30X2-B3331	5 mm,	w030	d183
NI12U-G18-ADZ30X2-B3331	12 mm,	w030	d184

M18 – 2-wire AC/DC – Cable connection



General data

Output		**Operating voltage**	20…250 VAC / 10…300 VDC
Electrical connection	cable		

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	Material cable	w	d
BI5U-M18-ADZ30X2	Ø18 x 64 mm	5 mm,	CuZn-Cr	PVC 2 m	w031	d185
BI5-S18-AZ3X	Ø18 x 64 mm	5 mm,	PA	PVC 2 m	w031	d173
BI5-P18-AZ3/S139-S90	Ø18 x 80 mm	5 mm,	POM	PUR 2 m	w031	d186
BI5-M18-AZ3X	Ø18 x 64 mm	5 mm,	CuZn-Cr	PVC 2 m	w020	d185
NI12U-M18-ADZ30X2	Ø18 x 65 mm	12 mm,	CuZn-Cr	PVC 2 m	w031	d187
NI8-S18-AZ3X	Ø18 x 64 mm	8 mm,	PA	PVC 2 m	w031	d173
NI8-P18-AZ3/S139-S90	Ø18 x 80 mm	8 mm,	POM	PUR 2 m	w031	d186
NI8-M18-AZ3X	Ø18 x 64 mm	8 mm,	CuZn-Cr	PVC 2 m	w020	d043

M30 – NAMUR – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Electrical connection**	connector, M12 x 1
Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI10-M30-Y1X-H1141	10 mm,	CuZn-Cr	w021	d050
BI10-EM30-Y1X-H1141	10 mm,	V2A (1.4301)	w021	d050
NI15-M30-Y1X-H1141	15 mm,	CuZn-Cr	w021	d051
NI15-EM30-Y1X-H1141	15 mm,	V2A (1.4301)	w021	d051

M30 – NAMUR – Cable connection



General data

Dimensions	Ø30 x 44 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI10-P30-Y1X	10 mm,	PA	w019	d188
BI10-G30-Y1X	10 mm,	CuZn-Cr	w019	d189
NI15-P30-Y1X	15 mm,	PA	w019	d188
NI15-G30-Y1X	15 mm,	CuZn-Cr	w019	d190

M30 – NAMUR – Terminal chamber



General data

Output	NAMUR	**Operating voltage**	nom. 8.2 VDC

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material housing	w	d
BI10-P30SK-Y1X	Ø30 x 72 mm	10 mm,	terminal chamber	PA	w026	d191
BI10-G30SK-Y1X	Ø30 x 72 mm	10 mm,	terminal chamber	CuZn-Cr	w026	d192
BI10-EM30WDTC-Y1X	Ø30 x 80 mm	10 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d194
BI10-EG30SK-Y1X	Ø30 x 72 mm	10 mm,	terminal chamber	V2A (1.4301)	w026	d192
NI15-P30SK-Y1X	Ø30 x 72 mm	15 mm,	terminal chamber	PA	w026	d191
NI15-G30SK-Y1X	Ø30 x 72 mm	15 mm,	terminal chamber	CuZn-Cr	w026	d193
NI15-EM30WDTC-Y1X	Ø30 x 80 mm	15 mm,	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w026	d195
NI15-EG30SK-Y1X	Ø30 x 72 mm	15 mm,	terminal chamber	V2A (1.4301)	w026	d193

M30 – 2-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Electrical connection**	connector, M12 x 1
Output	, 2-wire	**Operating voltage**	10…65 VDC

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI10U-MT30-AD4X-H1144	10 mm,	CuZn-T	w009	d064
BI10U-M30-AD4X-H1144	10 mm,	CuZn-Cr	w009	d050
BI10-M30-AD4X-H1141	10 mm,	CuZn-Cr	w023	d050
NI20-M30-AD4X-H1141	20 mm,	CuZn-Cr	w023	d051
NI15U-MT30-AD4X-H1144	15 mm,	CuZn-T	w009	d065
NI15U-M30-AD4X-H1144	15 mm,	CuZn-Cr	w009	d051
NI15-M30-AD4X-H1141	15 mm,	CuZn-Cr	w023	d051

M30 – 2-wire DC – Cable connection



General data

Output	⎯◝◟⎯, 2-wire	**Operating voltage**	10…65 VDC
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI12-G30K-AD4X	Ø30 x 44 mm	12 mm,	CuZn-Cr	w016	d189
BI10U-M30-AD4X	Ø30 x 64 mm	10 mm,	CuZn-Cr	w016	d052
BI10-S30-AD4X	Ø30 x 64 mm	10 mm,	PA	w016	d196
BI10-M30-AD4X	Ø30 x 64 mm	10 mm,	CuZn-Cr	w016	d052
NI20-M30-AD4X	Ø30 x 64 mm	20 mm,	CuZn-Cr	w016	d053
NI20-G30K-AD4X	Ø30 x 44 mm	20 mm,	CuZn-Cr	w016	d190
NI15U-M30-AD4X	Ø30 x 64 mm	15 mm,	CuZn-Cr	w016	d053
NI15-S30-AD4X	Ø30 x 64 mm	15 mm,	PA	w016	d196
NI15-M30-AD4X	Ø30 x 64 mm	15 mm,	CuZn-Cr	w016	d053

M30 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	Material housing	w	d
BI15U-MT30-AP6X-H1141	15 mm,	, PNP	CuZn-T	w001	d064
BI15U-MT30-AN6X-H1141	15 mm,	, NPN	CuZn-T	w002	d064
Bi15U-M30-RP6X-H1141	15 mm,	, PNP	CuZn-Cr	w015	d050
BI15U-M30-AP6X-H1141	15 mm,	, PNP	CuZn-Cr	w001	d050
BI15U-M30-AN6X-H1141	15 mm,	, NPN	CuZn-Cr	w002	d050
BI15U-EM30WD-AP6X-H1141/3GD	15 mm,	, PNP	V4A (1.4404)	w001	d050
BI15U-EM30WD-AP6X-H1141	15 mm,	, PNP	V4A (1.4404)	w001	d050
BI15U-EM30WD-AN6X-H1141/3GD	15 mm,	, NPN	V4A (1.4404)	w002	d050
BI15U-EM30WD-AN6X-H1141	15 mm,	, NPN	V4A (1.4404)	w002	d050
BI15-M30-AP6X-H1141	15 mm,	, PNP	CuZn-Cr	w001	d050
BI15-M30-AN6X-H1141	15 mm,	, NPN	CuZn-Cr	w002	d050
BI10U-S30-AP6X-H1141	10 mm,	, PNP	PBT	w001	d197
BI10U-S30-AN6X-H1141	10 mm,	, NPN	PBT	w002	d197
BI10U-MT30-AP6X-H1141	10 mm,	, PNP	CuZn-T	w001	d064
BI10U-MT30-AN6X-H1141	10 mm,	, NPN	CuZn-T	w002	d064
BI10U-M30-AP6X-H1141	10 mm,	, PNP	CuZn-Cr	w001	d050
BI10U-M30-AN6X-H1141	10 mm,	, NPN	CuZn-Cr	w002	d050
BI10U-EM30-AP6X-H1141	10 mm,	, PNP	V2A (1.4301)	w001	d050
BI10U-EM30-AN6X-H1141	10 mm,	, NPN	V2A (1.4301)	w002	d050
BI10-M30-AP6X-H1141	10 mm,	, PNP	CuZn-Cr	w001	d050
BI10-M30-AN6X-H1141	10 mm,	, NPN	CuZn-Cr	w002	d050
NI30U-MT30-AP6X-H1141	30 mm,	, PNP	CuZn-T	w001	d065
NI30U-MT30-AN6X-H1141	30 mm,	, NPN	CuZn-T	w002	d065
NI30U-M30-RP6X-H1141	30 mm,	, PNP	CuZn-Cr	w015	d051
NI30U-M30-AP6X-H1141	30 mm,	, PNP	CuZn-Cr	w001	d051
NI30U-M30-AN6X-H1141	30 mm,	, NPN	CuZn-Cr	w002	d051
NI30U-EM30WD-AP6X-H1141/3D	30 mm,	, PNP	V4A (1.4404)	w001	d077
NI30U-EM30WD-AN6X-H1141/3D	30 mm,	, NPN	V4A (1.4404)	w002	d077
NI20U-S30-AP6X-H1141	20 mm,	, PNP	PBT	w001	d197
NI20U-S30-AN6X-H1141	20 mm,	, NPN	PBT	w002	d197
NI20U-MT30-AP6X-H1141	20 mm,	, PNP	CuZn-T	w001	d065
NI20U-MT30-AN6X-H1141	20 mm,	, NPN	CuZn-T	w002	d065
NI20U-M30-AP6X-H1141	20 mm,	, PNP	CuZn-Cr	w001	d051
NI20U-M30-AN6X-H1141	20 mm,	, NPN	CuZn-Cr	w002	d051
NI20U-EM30-AP6X-H1141	20 mm,	, PNP	V2A (1.4301)	w001	d051
NI20U-EM30-AN6X-H1141	20 mm,	, NPN	V2A (1.4301)	w002	d051
NI20-M30-AP6X-H1141	20 mm,	, PNP	CuZn-Cr	w001	d051
NI20-M30-AN6X-H1141	20 mm,	, NPN	CuZn-Cr	w002	d051

M30 – 3-wire DC – Cable connection



General data

Electrical connection cable

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	Material cable	w	d
BI15U-M30-AP6X	Ø30 x 64 mm	15 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d052
BI15U-M30-AN6X	Ø30 x 64 mm	15 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d052
BI15U-EM30WD-AP6X	Ø30 x 66 mm	15 mm,	_⎍_, PNP	V4A (1.4404)	PP 2 m	w004	d078
BI15U-EM30WD-AN6X	Ø30 x 66 mm	15 mm,	_⎍_, NPN	V4A (1.4404)	PP 2 m	w005	d078
BI15-M30-AP6X	Ø30 x 64 mm	15 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d052
BI15-M30-AN6X	Ø30 x 64 mm	15 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d052
BI15-M30-AP6X 7M	Ø30 x 64 mm	15 mm,	_⎍_, PNP	CuZn-Cr	PVC 7 m	w004	d052
BI15-M30-AN6X 7M	Ø30 x 64 mm	15 mm,	_⎍_, NPN	CuZn-Cr	PVC 7 m	w005	d052
BI10U-S30-AP6X	Ø30 x 64 mm	10 mm,	_⎍_, PNP	PA	PVC 2 m	w004	d196
BI10U-S30-AN6X	Ø30 x 64 mm	10 mm,	_⎍_, NPN	PA	PVC 2 m	w005	d196
BI10U-M30-AP6X	Ø30 x 64 mm	10 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d198
BI10U-M30-AN6X	Ø30 x 64 mm	10 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d198
BI10U-EM30-AP6X	Ø30 x 64 mm	10 mm,	_⎍_, PNP	V2A (1.4301)	PVC 2 m	w004	d052
BI10U-EM30-AN6X	Ø30 x 64 mm	10 mm,	_⎍_, NPN	V2A (1.4301)	PVC 2 m	w005	d052
BI10-M30-AP6X	Ø30 x 64 mm	10 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d052
BI10-M30-AN6X	Ø30 x 64 mm	10 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d052
BI10-G30K-AP6X	Ø30 x 44 mm	10 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d189
BI10-G30K-AN6X	Ø30 x 44 mm	10 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d189
NI30U-M30-AP6X	Ø30 x 64 mm	30 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d053
NI30U-M30-AN6X	Ø30 x 64 mm	30 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d053
NI20U-S30-AP6X	Ø30 x 64 mm	20 mm,	_⎍_, PNP	PA	PVC 2 m	w004	d196
NI20U-S30-AN6X	Ø30 x 64 mm	20 mm,	_⎍_, NPN	PA	PVC 2 m	w005	d196
NI20U-M30-AP6X	Ø30 x 64 mm	20 mm,	_⎍_, PNP	CuZn-Cr	PVC 2 m	w004	d053
NI20U-M30-AN6X	Ø30 x 64 mm	20 mm,	_⎍_, NPN	CuZn-Cr	PVC 2 m	w005	d053
NI20U-EM30-AP6X	Ø30 x 64 mm	20 mm,	_⎍_, PNP	V2A (1.4301)	PVC 2 m	w004	d053
NI20U-EM30-AN6X	Ø30 x 64 mm	20 mm,	_⎍_, NPN	V2A (1.4301)	PVC 2 m	w005	d053

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M30 – 3-wire DC – Terminal chamber



General data

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Electrical connection	Material housing	w	d
BI15U-EM30WDTC-AP6X	Ø30 x 95 mm	15 mm,	_⎍_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d080
BI10U-P30SK-AP6X	Ø30 x 87 mm	10 mm,	_⎍_, PNP	terminal chamber	PA	w011	d201
BI10U-P30SK-AN6X	Ø30 x 87 mm	10 mm,	_⎍_, NPN	terminal chamber	PA	w012	d201
BI10U-EG30SK-AP6X	Ø30 x 87 mm	10 mm,	_⎍_, PNP	terminal chamber	V2A (1.4301)	w011	d199
BI10U-EG30SK-AN6X	Ø30 x 87 mm	10 mm,	_⎍_, NPN	terminal chamber	V2A (1.4301)	w012	d199
BI10-P30SR-AP6X	Ø30 x 115 mm	10 mm,	_⎍_, PNP	terminal chamber	ABS	w011	d202
BI10-P30SR-AN6X	Ø30 x 115 mm	10 mm,	_⎍_, NPN	terminal chamber	ABS	w012	d202
BI10-P30SK-AP6X	Ø30 x 87 mm	10 mm,	_⎍_, PNP	terminal chamber	PA	w011	d201
BI10-G30SK-AP6X	Ø30 x 87 mm	10 mm,	_⎍_, PNP	terminal chamber	CuZn-Cr	w011	d199
BI10-G30SK-AN6X	Ø30 x 87 mm	10 mm,	_⎍_, NPN	terminal chamber	CuZn-Cr	w012	d199
NI30U-EM30WDTC-AP6X	Ø30 x 95 mm	30 mm,	_⎍_, PNP	terminal chamber, removable cage clamp terminals	V4A (1.4404)	w011	d081
NI20U-P30SK-AP6X	Ø30 x 87 mm	20 mm,	_⎍_, PNP	terminal chamber	PA	w011	d201
NI20U-P30SK-AN6X	Ø30 x 87 mm	20 mm,	_⎍_, NPN	terminal chamber	PA	w012	d201
NI20U-EG30SK-AP6X	Ø30 x 87 mm	20 mm,	_⎍_, PNP	terminal chamber	V2A (1.4301)	w011	d200
NI20U-EG30SK-AN6X	Ø30 x 87 mm	20 mm,	_⎍_, NPN	terminal chamber	V2A (1.4301)	w012	d200
NI15-P30SR-AP6X	Ø30 x 115 mm	15 mm,	_⎍_, PNP	terminal chamber	ABS	w011	d202
NI15-P30SR-AN6X	Ø30 x 115 mm	15 mm,	_⎍_, NPN	terminal chamber	ABS	w012	d202
NI15-P30SK-AP6X	Ø30 x 87 mm	15 mm,	_⎍_, PNP	terminal chamber	PA	w011	d201
NI15-P30SK-AN6X	Ø30 x 87 mm	15 mm,	_⎍_, NPN	terminal chamber	PA	w012	d201
NI15-G30SK-AP6X	Ø30 x 87 mm	15 mm,	_⎍_, PNP	terminal chamber	CuZn-Cr	w011	d200
NI15-G30SK-AN6X	Ø30 x 87 mm	15 mm,	_⎍_, NPN	terminal chamber	CuZn-Cr	w012	d200

M30 – 4-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Material housing**	CuZn-Cr
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Switching distance	Output	Operating voltage	w	d
BI15U-M30-VP44X-H1141	15 mm,	, PNP	10…55 VDC	w017	d050
BI15U-M30-VN44X-H1141	15 mm,	, NPN	10…55 VDC	w010	d050
BI15-M30-VP6X-H1141	15 mm,	, PNP	10…30 VDC	w008	d050
BI15-M30-VN6X-H1141	15 mm,	, NPN	10…30 VDC	w010	d050
NI30U-M30-VP44X-H1141	30 mm,	, PNP	10…55 VDC	w017	d051
NI30U-M30-VN44X-H1141	30 mm,	, NPN	10…55 VDC	w010	d051
NI20-M30-VP6X-H1141	20 mm,	, PNP	10…30 VDC	w008	d051
NI20-M30-VN6X-H1141	20 mm,	, NPN	10…30 VDC	w010	d051

M30 – 4-wire DC – Cable connection



General data

Dimensions	Ø30 x 64 mm	**Material housing**	CuZn-Cr
Electrical connection	cable		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	Operating voltage	Material cable	w	d
BI15U-M30-VP44X	15 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d052
BI15U-M30-VN44X	15 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d052
BI15-M30-VN4X 7M	15 mm,	, NPN	10…30 VDC	PVC 7 m	w018	d052
BI15-M30-VP4X 7M	15 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d052
BI15-M30-VN6X	15 mm,	, NPN	10…30 VDC	PVC 2 m	w018	d052
BI15-M30-VP6X	15 mm,	, PNP	10…30 VDC	PVC 2 m	w007	d052
NI30U-M30-VP44X	30 mm,	, PNP	10…55 VDC	PVC 2 m	w007	d053
NI30U-M30-VN44X	30 mm,	, NPN	10…55 VDC	PVC 2 m	w018	d053
NI20-M30-VP6X 7M	20 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d053
NI20-M30-VN6X 7M	20 mm,	, PNP	10…30 VDC	PVC 7 m	w007	d053

M30 – 4-wire DC – Terminal chamber



General data

Electrical connection terminal chamber **Operating voltage** 10…65 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI10U-EG30SK-VP4X	Ø30 x 87 mm	10 mm,	, PNP	V2A (1.4301)	w014	d199
BI10U-EG30SK-VN4X	Ø30 x 87 mm	10 mm,	, NPN	V2A (1.4301)	w013	d199
BI10-P30SR-VP4X2	Ø30 x 115 mm	10 mm,	, PNP	ABS	w014	d203
BI10-P30SR-VN4X2	Ø30 x 115 mm	10 mm,	, NPN	ABS	w013	d203
NI20U-EG30SK-VP4X	Ø30 x 87 mm	20 mm,	, PNP	V2A (1.4301)	w014	d200
NI20U-EG30SK-VN4X	Ø30 x 87 mm	20 mm,	, NPN	V2A (1.4301)	w013	d200
NI15-P30SR-VP4X2	Ø30 x 115 mm	15 mm,	, PNP	ABS	w014	d203
NI15-P30SR-VN4X2	Ø30 x 115 mm	15 mm,	, NPN	ABS	w013	d203

M30 – 2-wire AC/DC – 7/8“ plug connection



General data

Dimensions	Ø30 x 80 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	_⌒‾	**Material housing**	CuZn-Cr
Electrical connection	connector, 7/8“		

Types and data – selection table

Type	Switching distance	w	d
BI10U-G30-ADZ30X2-B1131	10 mm,	w030	d204
NI20U-G30-ADZ30X2-B1131	20 mm,	w030	d205

M30 – 2-wire AC/DC – 1/2“ plug connection



General data

Dimensions	Ø30 x 80 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	_⌒‾	**Material housing**	CuZn-Cr
Electrical connection	connector, 1/2“		

Types and data – selection table

Type	Switching distance	w	d
BI10U-G30-ADZ30X2-B3131	10 mm,	w030	d206
NI20U-G30-ADZ30X2-B3131	20 mm,	w030	d207

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M30 – 2-wire AC/DC – Terminal chamber



General data

Dimensions	Ø30 x 64 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	⎯⎺⎯	**Material cable**	PVC 2 m
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	w	d
BI10U-M30-ADZ30X2	10 mm, ⊐⊢	CuZn-Cr	w031	d208
BI10-S30-AZ3X	10 mm, ⊐⊢	PA	w031	d196
BI10-M30-AZ3X	10 mm, ⊐⊢	CuZn-Cr	w020	d052
NI20U-M30-ADZ30X2	20 mm, ⊐⊢	CuZn-Cr	w031	d209
NI15-S30-AZ3X	15 mm, ⊐⊢	PA	w031	d196
NI15-M30-AZ3X	15 mm, ⊐⊢	CuZn-Cr	w020	d053

M30 – 2-wire AC/DC – Terminal chamber



General data

Dimensions	Ø30 x 115 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	connection programmable	**Material housing**	ABS
Electrical connection	Terminal chamber		

Types and data – selection table

Type	Switching distance	w	d
BI10-P30SR-FZ3X2	10 mm, ⊐⊢	w028	d203
NI15-P30SR-FZ3X2	15 mm, ⊐⊢	w028	d203

G47 – NAMUR



Type	BI20-G47-Y1X	**Operating voltage**	nom. 8.2 VDC
Dimensions	Ø47 x 70 mm	**Material housing**	CuZn-Cr
Switching distance	20 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d210

G47 – 3-wire DC



General data			
Dimensions	Ø47 x 70 mm	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Switching distance	Output	w	d
BI20-G47-AP4X	20 mm,	_⌐‾⌐_, PNP	w004	d210
BI20-G47-AN4X	20 mm,	_⌐‾⌐_, NPN	w005	d210
NI25-G47-AP4X	25 mm,	_⌐‾⌐_, PNP	w004	d211
NI25-G47-AN4X	25 mm,	_⌐‾⌐_, NPN	w005	d211

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

G47 – 4-wire DC



General data

Electrical connection	terminal chamber	**Material housing**	CuZn-Cr
Operating voltage	10…65 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Output	w	d
BI25-G47SR-VP4X2	Ø47 x 96 mm	25 mm,	, PNP	w014	d212
BI25-G47SR-VN4X2	Ø47 x 96 mm	25 mm,	, NPN	w013	d212
NI40-G47SR-VP4X2	Ø47 x 106 mm	40 mm,	, PNP	w014	d213
NI40-G47SR-VN4X2	Ø47 x 106 mm	40 mm,	, NPN	w013	d213

G47 – 2-wire AC/DC



General data

Operating voltage	20…250 VAC / 10…300 VDC	**Material housing**	CuZn-Cr

Types and data – selection table

Type	Dimensions	Switching distance	Output	Electrical connection	Material cable	w	d
BI25-G47SR-FZ3X2	Ø47 x 96 mm	25 mm,	connection programmable	terminal chamber	-	w028	d212
BI20-G47-AZ3X	Ø47 x 70 mm	20 mm,		cable	PVC 2 m	w031	d210
NI40-G47SR-FZ3X2	Ø47 x 106 mm	40 mm,	connection programmable	terminal chamber	-	w028	d213
NI25-G47-AZ3X	Ø47 x 70 mm	25 mm,		cable	PVC 2 m	w031	d211

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Smooth barrel

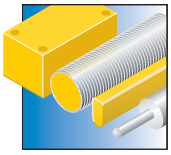


Compact 3 mm or robust Ø 40 mm versions: The smooth barrels feature different switching distances, many connection possibilities and a high protection class required as a standard in the sector of industrial automation.

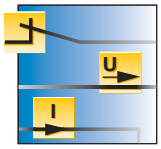
Features

- Cable, plug connection or terminal chamber
- Mounting bracket included in delivery
- Electrical versions NAMUR, DC and AC/DC
- Stainless steel and plastic housings

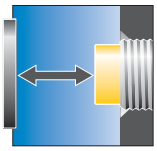
Properties



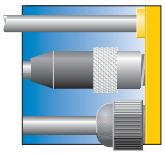
Design
from Ø 3 mm for confined spaces up to Ø 40 mm for animal feed applications



Electrical versions
NAMUR, 2/3 and 4-wire DC, 2-wire AC/DC



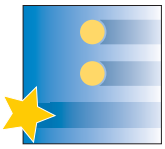
Switching distances
Large switching distances, optionally with factor 1, without reduction factor



Electrical connections
Cable, terminal chamber, M8 and M12 plug connections



Materials
Stainless steel sensors up to Ø 6.5 mm diameter, bigger sizes in PA or PBT



Special features
Ø 4 mm and 6.5 mm with lateral active face, Integrated rotation speed control

Ø 3 mm – 3-wire DC



General data

Dimensions	Ø3 x 27 mm	**Operating voltage**	10…30 VDC
Switching distance	1 mm,	**Material housing**	V2A (1.4301)
Electrical connection	cable	**Material cable**	PUR 2 m

Types and data – selection table

Type	Output	w	d
BI1-EH03-AP7X	_⌐¯⌐_, PNP	w004	d214
BI1-EH03-AN7X	_⌐¯⌐_, NPN	w005	d214

Ø 4 mm – NAMUR



General data

Dimensions	Ø4 x 30 mm	**Operating voltage**	nom. 8.2 VDC
Switching distance	1 mm,	**Material housing**	V4A (1.4404)
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable		

Types and data – selection table

Type	w	d
BI1-HS540-Y1	w019	d216
BI1-EH04-Y1	w019	d215

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Ø 4 mm – 3-wire DC



General data

Switching distance	1 mm,	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BI1-HS540-RP6X	Ø4 x 30 mm	, PNP	cable	PUR 2 m	w006	d219
BI1-HS540-AP6X	Ø4 x 30 mm	, PNP	cable	PUR 2 m	w004	d219
BI1-HS540-AN6X	Ø4 x 30 mm	, NPN	cable	PUR 2 m	w005	d219
BI1-EH04-RP6X-V1331	Ø4 x 42.5 mm	, PNP	connector, M8 x 1	-	w003	d217
BI1-EH04-RP6X	Ø4 x 30 mm	, PNP	cable	PUR 2 m	w006	d218
BI1-EH04-AP6X-V1331	Ø4 x 42.5 mm	, PNP	connector, M8 x 1	-	w001	d217
BI1-EH04-AP6X	Ø4 x 30 mm	, PNP	cable	PUR 2 m	w004	d218
BI1-EH04-AN6X-V1331	Ø4 x 42.5 mm	, NPN	connector, M8 x 1	-	w002	d217
BI1-EH04-AN6X	Ø4 x 30 mm	, NPN	cable	PUR 2 m	w005	d218

Ø 6.5 mm – NAMUR



General data

Output	NAMUR	**Operating voltage**	nom. 8.2 VDC
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Dimensions	Switching distance	Material housing	w	d
BI1,5-HS865-Y1	Ø6.5 x 31.6 mm	1.5 mm,	CuZn-Cr	w019	d221
BI1,5-EH6,5K-Y1	Ø6.5 x 23.6 mm	1.5 mm,	V4A (1.4404)	w019	d220
NI3-EH6,5K-Y1	Ø6.5 x 23.6 mm	3 mm,	V4A (1.4404)	w019	d222

Ø 6.5 mm – 3-wire DC – M18 x 1 plug connection



General data

Electrical connection connector, M8 x 1

Operating voltage 10…30 VDC

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI2U-EH6,5-RP6X-V1131	Ø6.5 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w003	d018
BI2U-EH6,5-AP6X-V1131	Ø6.5 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w001	d018
BI2U-EH6,5-AN6X-V1131	Ø6.5 x 49 mm	2 mm,	, NPN	V2A (1.4301)	w002	d018
BI2-EH6,5K-RP6X-V1131	Ø6.5 x 31 mm	2 mm,	, PNP	V4A (1.4404)	w003	d223
BI2-EH6,5K-AP6X-V1131	Ø6.5 x 31 mm	2 mm,	, PNP	V4A (1.4404)	w001	d223
BI2-EH6,5K-AN6X-V1131	Ø6.5 x 31 mm	2 mm,	, NPN	V4A (1.4404)	w002	d223
BI2-EH6,5-AP6X-V1131	Ø6.5 x 49 mm	2 mm,	, PNP	V2A (1.4301)	w001	d018
BI2-EH6,5-AN6X-V1131	Ø6.5 x 49 mm	2 mm,	, NPN	V2A (1.4301)	w002	d018
BI1,5-EH6,5K-AP6X-V1131	Ø6.5 x 31 mm	1.5 mm,	, PNP	V4A (1.4404)	w001	d223
BI1,5-EH6,5K-AN6X-V1131	Ø6.5 x 31 mm	1.5 mm,	, NPN	V4A (1.4404)	w002	d223
BI1,5-EH6,5-AP6X-V1131	Ø6.5 x 49 mm	1.5 mm,	, PNP	V2A (1.4301)	w001	d018
BI1,5-EH6,5-AN6X-V1131	Ø6.5 x 49 mm	1.5 mm,	, NPN	V2A (1.4301)	w002	d018
NI6U-EH6,5-RP6X-V1131	Ø6.5 x 49 mm	6 mm,	, PNP	V2A (1.4301)	w003	d019
NI6U-EH6,5-AP6X-V1131	Ø6.5 x 49 mm	6 mm,	, PNP	V2A (1.4301)	w001	d019
NI6U-EH6,5-AN6X-V1131	Ø6.5 x 49 mm	6 mm,	, NPN	V2A (1.4301)	w002	d019
NI3-EH6,5K-AP6X-V1131	Ø6.5 x 31 mm	3 mm,	, PNP	V4A (1.4404)	w001	d224
NI3-EH6,5K-AN6X-V1131	Ø6.5 x 31 mm	3 mm,	, NPN	V4A (1.4404)	w002	d224
NI3-EH6,5-AP6X-V1131	Ø6.5 x 49 mm	3 mm,	, PNP	V2A (1.4301)	w001	d019
NI3-EH6,5-AN6X-V1131	Ø6.5 x 49 mm	3 mm,	, NPN	V2A (1.4301)	w002	d019

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Ø 6.5 mm – 3-wire DC – Cable connection



General data

Electrical connection	cable	**Material cable**	PUR 2 m
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Output	Material housing	w	d
BI2U-EH6,5-RP6X	Ø6.5 x 41.6 mm	2 mm,	, PNP	V2A (1.4301)	w006	d020
BI2U-EH6,5-AP6X	Ø6.5 x 41.6 mm	2 mm,	, PNP	V2A (1.4301)	w004	d020
BI2U-EH6,5-AN6X	Ø6.5 x 41.6 mm	2 mm,	, NPN	V2A (1.4301)	w005	d020
BI2-EH6,5K-RP6X	Ø6.5 x 23.6 mm	2 mm,	, PNP	V4A (1.4404)	w006	d225
BI2-EH6,5K-AP6X	Ø6.5 x 23.6 mm	2 mm,	, PNP	V4A (1.4404)	w004	d225
BI2-EH6,5K-AN6X	Ø6.5 x 23.6 mm	2 mm,	, NPN	V4A (1.4404)	w005	d225
BI2-EH6,5-AP6X	Ø6.5 x 41.6 mm	2 mm,	, PNP	V2A (1.4301)	w004	d020
BI2-EH6,5-AN6X	Ø6.5 x 41.6 mm	2 mm,	, NPN	V2A (1.4301)	w005	d020
BI1,5-HS865-AP6X	Ø6.5 x 31.6 mm	1.5 mm,	, PNP	CuZn-Cr	w004	d221
BI1,5-HS865-AN6X	Ø6.5 x 41.6 mm	1.5 mm,	, NPN	CuZn-Cr	w005	d221
BI1,5-EH6,5K-AP6X	Ø6.5 x 23.6 mm	1.5 mm,	, PNP	V4A (1.4404)	w004	d225
BI1,5-EH6,5K-AN6X	Ø6.5 x 23.6 mm	1.5 mm,	, NPN	V4A (1.4404)	w005	d225
NI6U-EH6,5-AP6X	Ø6.5 x 42 mm	6 mm,	, PNP	V2A (1.4301)	w004	d021
NI6U-EH6,5-AN6X	Ø6.5 x 42 mm	6 mm,	, NPN	V2A (1.4301)	w005	d021
NI3-EH6,5K-AP6X	Ø6.5 x 23.6 mm	3 mm,	, PNP	V4A (1.4404)	w004	d226
NI3-EH6,5K-AN6X	Ø6.5 x 23.6 mm	3 mm,	, NPN	V4A (1.4404)	w005	d226
NI3-EH6,5-AP6X	Ø6.5 x 42 mm	3 mm,	, PNP	V2A (1.4301)	w004	d021
NI3-EH6,5-AN6X	Ø6.5 x 42 mm	3 mm,	, NPN	V2A (1.4301)	w005	d021

Ø 11 mm – NAMUR



General data

Dimensions	Ø11 x 34 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	PA
Electrical connection	cable	**Material cable**	PVC 2 m

Fixing clamp BS11 included in delivery

Types and data – selection table

Type	Switching distance	w	d
BI2-K11-Y1	2 mm,	w019	d227
NI5-K11-Y1	5 mm,	w019	d227

Ø 11 mm – 3-wire DC



General data

Output	, PNP	**Material housing**	PA
Operating voltage	10…30 VDC		

Fixing clamp BS11 included in delivery

Types and data – selection table

Type	Dimensions	Switching distance	Electrical connection	Material cable	w	d
BI2-K11SK-AP6X	Ø11 x 75 mm	2 mm,	terminal chamber	-	w011	d229
BI2-K11-AP6X	Ø11 x 54 mm	2 mm,	cable	PVC 2 m	w004	d228
NI5-K11SK-AP6X	Ø11 x 75 mm	5 mm,	terminal chamber	-	w011	d229
NI5-K11-AP6X	Ø11 x 54 mm	5 mm,	cable	PVC 2 m	w004	d228

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Ø 20 mm – 3-wire DC



General data

Switching distance	10 mm,	**Material housing**	PBT
Operating voltage	10…30 VDC		

Fixing clamp BS20 included in delivery

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
NI10-K20SK-AP6X	Ø20 x 77 mm	_⌐¯¬_, PNP	terminal chamber	-	w011	d231
NI10-K20SK-AN6X	Ø20 x 77 mm	_⌐¯¬_, NPN	terminal chamber	-	w012	d231
NI10-K20-AP6X	Ø20 x 54 mm	_⌐¯¬_, PNP	cable	PVC 2 m	w004	d230
NI10-K20-AN6X	Ø20 x 54 mm	_⌐¯¬_, NPN	cable	PVC 2 m	w005	d230

Ø 20 mm – 2-wire AC/DC



General data

Switching distance	10 mm,	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	_⌐¯¬_	**Material housing**	PBT

Fixing clamp BS20 included in delivery

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
NI10-K20SK-AZ3X	Ø20 x 77 mm	terminal chamber	-	w036	d231
NI10-K20-AZ3X	Ø20 x 79 mm	cable	PVC 2 m	w031	d232

Ø 34 mm – 4-wire DC



General data

Switching distance	20 mm,	**Operating voltage**	10…65 VDC
Output	, PNP	**Material housing**	PBT

Fixing clamp BS34.1 included in delivery

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
NI20-K34SR-VP4X2	Ø34 x 106 mm	terminal chamber	-	w014	d234
NI20-K34-VP4X	Ø34 x 80 mm	cable	PVC 2 m	w007	d233

Ø 40 mm – 4-wire DC



General data

Dimensions	Ø40 x 90 mm	**Operating voltage**	10…65 VDC
Electrical connection	Terminal chamber	**Material housing**	ABS

Fixing clamp BS40 included in delivery

Types and data – selection table

Type	Switching distance	Output	w	d
NI30-K40SR-VP4X2	30 mm,	, PNP	w014	d235
NI30-K40SR-VN4X2	30 mm,	, NPN	w013	d235
NI20-K40SR-VP4X2	20 mm,	, PNP	w014	d235
NI20-K40SR-VN4X2	20 mm,	, NPN	w013	d235

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Ø 40 mm – 2-wire AC/DC



General data

Dimensions	Ø40 x 90 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	connection programmable	**Material housing**	ABS
Electrical connection	terminal chamber		

Fixing clamp BS40 included in delivery

Types and data – selection table

Type	Switching distance	w	d
NI30-K40SR-FZ3X2	30 mm,	w028	d235
NI20-K40SR-FZ3X2	20 mm,	w028	d235

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Ring sensors

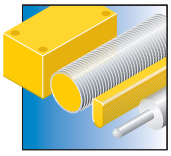


TURCK ring sensors are compact and universally mountable. They are applied in assembly lines or component feeding systems to detect small metal parts. The *uprox*®+ TS12 is an innovative replacement for various ring sensors, especially for applications with different tube diameters.

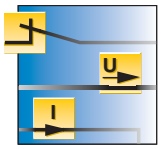
Features

- Ring diameter 6…100 mm
- Static, dynamic and analog versions
- Integrated amplifier or separable combination of probe and amplifier
- High sensitivity, adjustable, up to Ø 0.1 mm wire diameter
- Compact design
- Innovative TS12 version from the *uprox*®+ factor 1 series

Properties



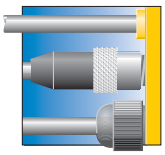
Design
From the compact Q14 rectangular version to the well-proven S32.



Electrical versions
3-wire NO contact or antivalent PNP/NPN switching
Static, dynamic or analog



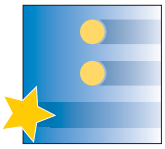
Measuring ranges
Ring diameters of Ø 6…100 mm detect steel balls of Ø 0.6 mm as well as wires of Ø 0.4 mm and larger



Electrical connections
M12 x 1 plug connection,
terminal chamber,
cable 2 m



Materials
Plastic housing in PBT, PA, ABS and POM



Special features
Versions with separate ring and amplifier
S32 XL with 100 mm ring diameter

TS12 – 3-wire DC



General data

Dimensions	17 x 12 x 80 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M8 x 1	**Material housing**	PBT

For small parts detection

Types and data – selection table

Type	Output	w	d
NI20U-TS12-AP6X2-V1131	_⌒‾⌒_, PNP	w001	d236
NI20U-TS12-AN6X2-V1131	_⌒‾⌒_, NPN	w002	d236

Q14 – 3-wire DC



General data

Dimensions	30 x 14 x 62.5 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PBT

Tailback detection possible

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Internal ring diameter	Min. object size	Output	w	d
BI20R-Q14-AP6X2-H1141	20.1 mm	4mm	_⎍_, PNP	w001	d240
BI20R-Q14-AN6X2-H1141	20.1 mm	4mm	_⎍_, NPN	w002	d240
BI15R-Q14-AP6X2-H1141	15.1 mm	3mm	_⎍_, PNP	w001	d239
BI15R-Q14-AN6X2-H1141	15.1 mm	3mm	_⎍_, NPN	w002	d239
BI10R-Q14-AP6X2-H1141	10.1 mm	2mm	_⎍_, PNP	w001	d238
BI10R-Q14-AN6X2-H1141	10.1 mm	2mm	_⎍_, NPN	w002	d238
BI6R-Q14-AP6X2-H1141	6.1 mm	2mm	_⎍_, PNP	w001	d237
BI6R-Q14-AN6X2-H1141	6.1 mm	2mm	_⎍_, NPN	w002	d237

Q14 – Voltage output 0…10 V



Type	BI20R-Q14-LU-H1141	**Operating voltage**	15…30 VDC
Dimensions	30 x 14 x 62.5 mm	**Material housing**	PBT
Internal ring diameter	20.1 mm	**Wiring diagram**	w037
Analog output	0…10 V	**Dimension drawing**	d241
Electrical connection	connector, M12 x 1		

Tailback detection possible

Q20 – 3-wire DC



General data			
Dimensions	40 x 20 x 68 mm	**Electrical connection**	connector, M12 x 1
Internal ring diameter	30.1 mm	**Operating voltage**	10…30 VDC
Min. object size	6 mm	**Material housing**	PBT

Tailback detection possible

Types and data – selection table

Type	Output	w	d
BI30R-Q20-AP6X2-H1141	_⌒_, PNP	w001	d242
BI30R-Q20-AN6X2-H1141	_⌒_, NPN	w002	d242

W30 – 3-wire DC – Dynamic output performance



General data

Dimensions	35 x 30 x 60 mm	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1	**Material housing**	PA

For the detection of small and fast moving parts

Types and data – selection table

Type	Internal ring diameter	Min. object size	Output	w	d
BI30R-W30-DAP6X-H1141	30.1 mm	3 mm	_⌒_, PNP	w001	d247
BI30R-W30-DAN6X-H1141	30.1 mm	3 mm	_⌒_, NPN	w002	d247
BI20R-W30-DAP6X-H1141	20.1 mm	2 mm	_⌒_, PNP	w001	d246
BI20R-W30-DAN6X-H1141	20.1 mm	2 mm	_⌒_, NPN	w002	d246
BI15R-W30-DAP6X-H1141	15.1 mm	1.5 mm	_⌒_, PNP	w001	d245
BI15R-W30-DAN6X-H1141	15.1 mm	1.5 mm	_⌒_, NPN	w002	d245
BI10R-W30-DAP6X-H1141	10.1 mm	1 mm	_⌒_, PNP	w001	d244
BI10R-W30-DAN6X-H1141	10.1 mm	1 mm	_⌒_, NPN	w002	d244
BI6R-W30-DAP6X-H1141	6.1 mm	0.6 mm	_⌒_, PNP	w001	d243
BI6R-W30-DAN6X-H1141	6.1 mm	0.6 mm	_⌒_, NPN	w002	d243

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q80 – 3-wire DC



General data

Dimensions	80 x 40 x 92 mm	**Operating voltage**	10…30 VDC
Output	⎯◺⎯, PNP	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Tailback detection possible

Types and data – selection table

Type	Internal ring diameter	Min. object size	w	d
BI65R-Q80-AP6X2-H1141	65 mm	10 mm	w001	d249
BI50R-Q80-AP6X2-H1141	50 mm	8 mm	w001	d248

S32SR – 4-wire DC



General data

Dimensions	100 x 32 x 175 mm	**Operating voltage**	10…55 VDC
Output	⎯◿⎯, PNP	**Material housing**	ABS
Electrical connection	terminal chamber		

Tailback detection possible

Types and data – selection table

Type	Internal ring diameter	w	d
NI65R-S32SR-VP44X	65 mm	w014	d252
NI40R-S32SR-VP44X	40 mm	w014	d251
NI20R-S32SR-VP44X	20 mm	w014	d250

S32XL – 4-wire DC

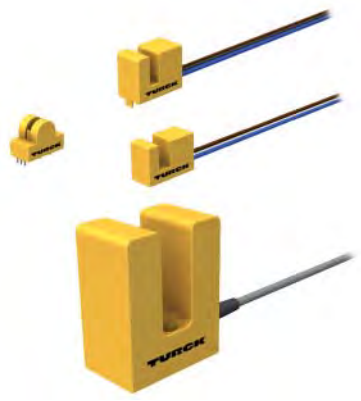


Type	NI100R-S32XL-VP44X-H1141	**Electrical connection**	connector, M12 x 1
Dimensions	137.5 x 32 x 180 mm	**Operating voltage**	10…55 VDC
Internal ring diameter	100 mm	**Material housing**	POM
Min. object size	10 mm / 4 mm	**Wiring diagram**	w017
Output	, PNP	**Dimension drawing**	d253

Tailback detection possible

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Slot sensors



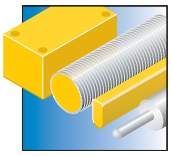
The slot sensors are U-shaped and the active face is located between the two arms. If a metal part passes through the slot, the sensor is actuated. Slot sensors detect laterally approaching targets regardless of their distance to the active face.

Slot sensors are thus applicable as limit value detectors on analog pointer instruments or on trailing chain capable conveyor systems, on which the positioning element may move due to the chain tolerance.

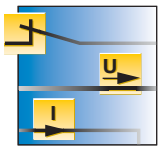
Features

- Sloth width 2 …15 mm
- Compact design for confined spaces
- High repeatability
- All versions available with NAMUR output (incl. SIL2)
- Robust plastic housings

Properties



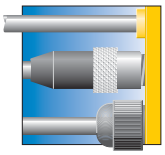
Design
From the small K08 for confined spaces up to the K33 with large slot width



Electrical versions
3 and 4-wire DC
NAMUR



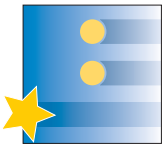
Measuring ranges
Slot widths 2…15 mm



Electrical connections
0.5 mm litz wires or 2 m PVC connection cable



Materials
PA or PBT housings



Special features
ATEX approved and SIL2 qualified NAMUR devices

K08 – NAMUR



Type	SI2-K08-Y1	**Operating voltage**	nom. 8.2 VDC
Dimensions	15 x 8 x 11 mm	**Material housing**	Vestamide
Slot width	2 mm	**Material cable**	PVC 0.5 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d254

K08 – 3-wire DC



General data

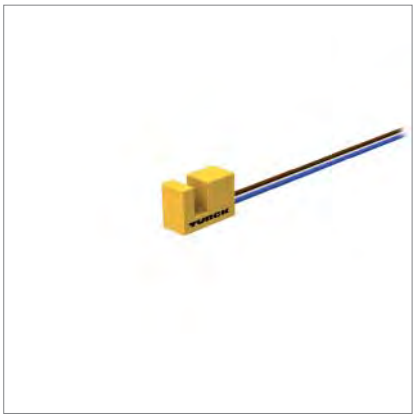
Dimensions	15 x 8 x 11 mm	**Operating voltage**	10…30 VDC
Slot width	2 mm	**Material housing**	Vestamide
Electrical connection	cable	**Material cable**	PVC 0.5 m

Types and data – selection table

Type	Output	w	d
SI2-K08-AP7	_⌐¯⌐_, PNP	w004	d255
SI2-K08-AN7	_⌐¯⌐_, NPN	w005	d255

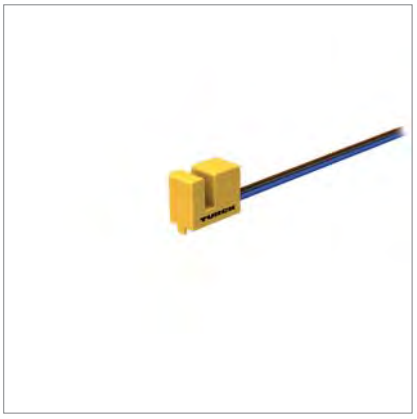
w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

K09 – NAMUR



Type	SI5-K09-Y1	**Operating voltage**	nom. 8.2 VDC
Dimensions	9 x 14 x 20 mm	**Material housing**	PBT
Slot width	5 mm	**Material cable**	PVC 0.5 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d256

K10 – NAMUR

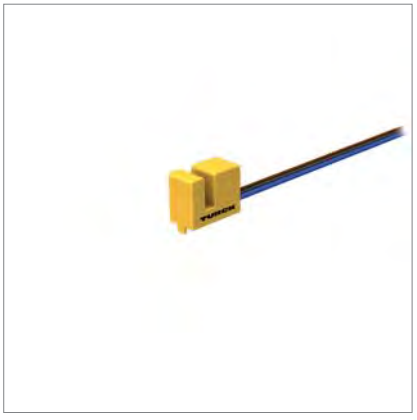


General data			
Dimensions	15 x 10 x 19 mm	**Operating voltage**	nom. 8.2 VDC
Slot width	3.5 mm	**Material housing**	PBT
Output	NAMUR	**Material cable**	PVC 0.5 m
Electrical connection	cable		

Types and data – selection table

Type	w	d
SI3,5-K10-Y1	w019	d257
SI3,5-K10-Y1X	w019	d258

M10 – 3-wire DC



General data			
Dimensions	15 x 10 x 19 mm	**Operating voltage**	10…30 VDC
Slot width	3.5 mm	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 0.5 m

Types and data – selection table

Type	Output	w	d
SI3,5-K10-AP6X	_⌒_, PNP	w004	d259
SI3,5-K10-AN7	_⌒_, NPN	w005	d259

K30 – NAMUR



Type	SI15-K30-Y1X	**Operating voltage**	nom. 8.2 VDC
Dimensions	60 x 30 x 48 mm	**Material housing**	PBT
Slot width	15 mm	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d260

K30 – 3-wire DC



General data			
Dimensions	60 x 30 x 48 mm	**Operating voltage**	10…30 VDC
Slot width	15 mm	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	w	d
SI15-K30-AP6X	_⌒_, PNP	w004	d260
SI15-K30-AN6X	_⌒_, NPN	w005	d260

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

K30 – 2-wire AC/DC



General data

Dimensions	60 x 30 x 48 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Slot width	15 mm	**Material housing**	PBT
Electrical connection	cable	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	w	d
SI15-K30-RZ3		w038	d261
SI15-K30-AZ3		w031	d261

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Dual sensors for rotary actuators

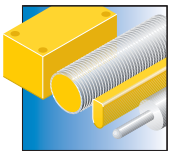


In the chemical, petro-chemical and food industry position control on rotary actuators is of great importance. TURCK dual sensors detect the end position of rotary actuators reliably. They are precisely tailored to the requirements of many different systems and application conditions. Simple mounting and cable routing of TURCK dual sensors reduce the expenses for installation.

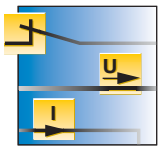
Features

- Safe protection against environmental conditions
- High resistance to chemicals and cleaning agents
- Integrated valve control
- Bus-compatible
- Direct mounting on the rotary actuator
- Robust and impact-resistant
- Repairs of the drive system without disconnection of wiring
- Absolutely maintenance-free
- Broad product range of actuators and accessories
- Compliant with world wide standards like ATEX and SIL

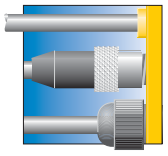
Properties



Design
Robust, impact-resistant and compact housing



Electrical versions
2, 3 and 4-wire DC
2-wire AC/DC
NAMUR



Electrical connections
Terminal chamber with pullable terminal strip, cable or M12 plug connection



Materials
Robust and chemical resistant PP housing



Special features
ATEX approved and SIL2 qualified NAMUR devices

DSC26 – NAMUR



General data

Dimensions	42 x 26 x 28 mm	**Operating voltage**	nom. 8.2 VDC
Switching distance	4 mm,	**Material housing**	PP
Output	NAMUR		

For more details on actuators (pucks) and mounting accessories see chapter „Accessories".

Types and data – selection table

Type	Electrical connection	Material cable	w	d
NI4-DSC26-2Y1X2-H1140	connector, M12 x 1	-	w040	d263
NI4-DSC26-2Y1X2	cable	PVC 2 m	w039	d262

DSC26 – 3-wire DC



General data

Dimensions	42 x 26 x 28 mm	**Operating voltage**	10…30 VDC
Switching distance	4 mm,	**Material housing**	PP
Output	, PNP		

For more details on actuators (pucks) and mounting accessories see chapter „Accessories".

Types and data – selection table

Type	Electrical connection	Material cable	w	d
NI4-DSC26-2AP6X2-H1141	connector, M12 x 1	-	w041	d263
NI4-DSC26-2AP6X2	cable	PUR 2 m	w042	d262

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

DSU35 – NAMUR



General data

Switching distance	4 mm,	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	plastic, PA12-GF20

For more details on actuators (pucks) and mounting accessories see chapter „Accessories“.

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
NI4-DSU35-2Y1X2-H1140	60 x 35.4 x 59 mm	connector, M12 x 1	-	w040	d265
NI4-DSU35-2Y1X2	60 x 35 x 59 mm	cable	PVC 2 m	w039	d264
NI4-DSU35TC-2Y1X2/S97	60 x 35 x 62 mm	terminal chamber	-	w043	d266
NI4-DSU35TC-2Y1X2/S933	60 x 35 x 62 mm	terminal chamber	-	w043	d266
NI4-DSU35TC-2Y1X2	60 x 35 x 62 mm	terminal chamber	-	w043	d266

DSU35 – 3-wire DC



General data

Switching distance	4 mm,	**Material housing**	plastic, PA12-GF20
Operating voltage	10…65 VDC		

For more details on actuators (pucks) and mounting accessories see chapter „Accessories“.

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
NI4-DSU35-2AP4X2-H1141	60 x 35.4 x 59 mm	_⌒_, PNP	connector, M12 x 1	-	w041	d265
NI4-DSU35-2AP4X2	60 x 35 x 59 mm	_⌒_, PNP	cable	PVC 2 m	w042	d264
NI4-DSU35TC-2AP4X2/3GD	60 x 35 x 62 mm	_⌒_, PNP	terminal chamber	-	w044	d266
NI4-DSU35TC-2AP4X2	60 x 35 x 62 mm	_⌒_, PNP	terminal chamber	-	w044	d266
NI4-DSU35TC-2AD4X2	60 x 35 x 62 mm	_⌒_, 2-wire	terminal chamber	-	w045	d266

DSU35 – 2-wire AC/DC



General data

Switching distance	4 mm,	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	2 x	**Material housing**	plastic, PA12-GF20

For more details on actuators (pucks) and mounting accessories see chapter „Accessories".

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
NI4-DSU35-2ADZ30X2	60 x 35 x 59 mm	cable	PVC 2 m	w046	d264
NI4-DSU35TC-2ADZ30X2	60 x 35 x 62 mm	terminal chamber	-	w047	d266

DSU35 – Fieldbus compatible



General data

Dimensions	60 x 35.4 x 59 mm	**Electrical connection**	connector, M12 x 1
Switching distance	4 mm,	**Material housing**	plastic, PA12-GF20

For more details on actuators (pucks) and mounting accessories see chapter „Accessories".

Types and data – selection table

Type	Output	Operating voltage	w	d
NI4-DSU35-2DNETX5-H1150	, DeviceNet™	11…25 VDC	w049	d268
NI4-DSU35-2ASIX4-H1140	, AS-i V2.1	18…33 VDC	w048	d267

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Sensors with analog output

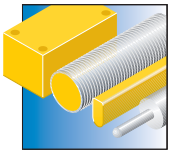


Inductive sensors with analog output provide a distance proportional current, voltage or frequency signal and are ideally suited for simple control tasks. They are used in many applications, requiring more than just simple digital position indication. Typical applications are for example tension control, winding/unwinding motion or separation of parts according to size and material.

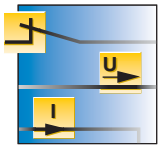
Features

- High repeatability
- Large measuring ranges
- Current, voltage and frequency output
- Optionally adjustable switching output
- Many different designs
- High EMC protection
- Short-circuit and reverse-polarity protection
- All connection types

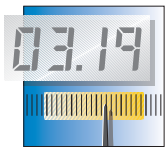
Properties



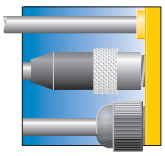
Design
Compact rectangular, threaded and smooth barrels as well as ring shaped versions



Electrical versions
0(2)…10 V or
0(4)…20 mA in 3/4-wire technology
or 4…20 mA, 2-wire intrinsically safe



Measuring ranges
Highly precise measuring range 0.1…1.5 mm, large range 10…50 mm, ring sensors Ø 20, 50, 100 mm



Electrical connections
Cable, plug connection or terminal chamber



Materials
Plastic and metal housings for all types of applications, rugged and chemical-resistant



Special features
Sensors for the detection of metals
ATEX approved versions

Q08 – Voltage output 0…10 V and current output 0…20 mA



Type	BI7-Q08-LIU	**Operating voltage**	15…30 VDC
Dimensions	20 x 8 x 32 mm	**Protection class**	IP67
Measuring range	1…4 mm,	**Material housing**	GD-Zn
Repeatability	1 % of measuring range	**Material cable**	PUR 2 m
Analog output	0…20 mA, 0…10 V	**Wiring diagram**	w050
Linearity deviation	5% of full scale	**Dimension drawing**	d269

Q14 – Voltage output 0…10 V and current output 0…20 mA



General data

Dimensions	30 x 14 x 52 mm	**Linearity deviation**	3% of full scale
Measuring range	3…8 mm,	**Operating voltage**	15…30 VDC
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	PBT

Types and data - selection table

Type	Electrical connection	Material cable	w	d
BI10-Q14-LIU-V1141	connector, M8 x 1	-	w051	d270
BI10-Q14-LIU	cable	PUR 2 m	w050	d271

Q14 – Ring sensor – Voltage output 0…10 V



General data

Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…10 V	**Material housing**	PBT
Operating voltage	15…30 VDC		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Types and data - selection table

Type	Dimensions	Electrical connection	Material cable	w	d
BI20R-Q14-LU-H1141	30 x 14 x 62.5 mm	connector, M12 x 1	-	w037	d241
BI20R-Q14-LU	30 x 14 x 52 mm	cable	PVC 2 m	w052	d272

Q20 – Voltage output 0…10 V and 0…20 mA



General data

Dimensions	40 x 20 x 68 mm	**Linearity deviation**	3% of full scale
Measuring range	4…11 mm,	**Operating voltage**	15…30 VDC
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	PBT

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BI15-Q20-LIU-H1141	connector, M12 x 1	-	w051	d273
BI15-Q20-LIU	cable	PUR 2 m	w050	d274

Q20 – 2 voltage outputs 0…10 V – Differentiation of metals



Type	BI15-Q20-2LU-H1141/S950	**Electrical connection**	connector, M12 x 1
Dimensions	40 x 20 x 68 mm	**Operating voltage**	15…30 VDC
Measuring range	4…11 mm,	**Protection class**	IP67
Repeatability	1 % of measuring range	**Material housing**	PBT
Analog output	0…10 V	**Wiring diagram**	w053
Linearity deviation	3% of full scale	**Dimension drawing**	d273

Q20L – Voltage output 0…10 V and current output 4…20 mA



General data

Repeatability	0.5 % of measuring range	**Electrical connection**	connector, M12 x 1
Analog output	4…20 mA, 0…10 V	**Protection class**	IP67
Operating voltage	15…30 VDC	**Material housing**	PBT

More information on magnetic actuators in chapter „Accessories“.

Types and data – selection table

Type	Dimensions	Measuring range	Linearity deviation	w	d
WIM70-Q20L100-LIU5-H1141	30 x 20 x 100 mm	15…85 mm,	8% of full scale	w051	d276
WIM40-Q20L60-LIU5-H1141	30 x 20 x 60 mm	10…50 mm,	2% of full scale	w051	d275

CK40 – Voltage output 0…10 V and current output 0…20 mA



General data

Dimensions	40 x 40 x 65 mm	**Operating voltage**	15…30 VDC
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	PBT
Electrical connection	connector, M12 x 1		

Variable orientation of active face in 5 directions

Types and data – selection table

Type	Measuring range	Linearity deviation	w	d
BI15-CK40-LIU-H1141	4…11 mm,	3% of full scale	w051	d277
NI25-CK40-LIU-H1141	5…25 mm,	5% of full scale	w051	d277

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

CP40 – Voltage output 0…10 V and current output 0…20 mA



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	15…30 VDC
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	PBT
Electrical connection	terminal chamber		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Measuring range	Linearity deviation	w	d
BI15-CP40-LIU	4…11 mm,	3% of full scale	w054	d278
NI25-CP40-LIU	5…25 mm,	5% of full scale	w054	d278

Q80 – Voltage output 0…10 V and current output 0…20 mA



Type	NI50-Q80-LIU-H1141	**Operating voltage**	15…30 VDC
Dimensions	80 x 40 x 92 mm	**Protection class**	IP67
Measuring range	10…50 mm,	**Material housing**	PBT
Repeatability	1 % of measuring range	**Electrical connection**	connector, M12 x 1
Analog output	0…20 mA, 0…10 V	**Wiring diagram**	w051
Linearity deviation	5% of full scale	**Dimension drawing**	d279

Q80 – 2 voltage outputs 0…10 V – Differentiation of metals



Type	BI50R-Q80-2LU-H1141/S950	**Operating voltage**	15…30 VDC
Dimensions	80 x 40 x 92 mm	**Protection class**	IP67
Repeatability	1 % of measuring range	**Material housing**	PBT
Analog output	0…10 V	**Wiring diagram**	w053
Linearity deviation	3% of full scale	**Dimension drawing**	d280
Electrical connection	connector, M12 x 1		

S32XL – 2 voltage outputs 0…10 V – Differentiation of metals



Type	NI100R-S32XL-2LU-H1141/S950	**Operating voltage**	15…30 VDC
Dimensions	137.5 x 32 x 180 mm	**Protection class**	IP67
Repeatability	1 % of measuring range	**Material housing**	POM
Analog output	0…10 V	**Wiring diagram**	w053
Linearity deviation	3% of full scale	**Dimension drawing**	d281
Electrical connection	connector, M12 x 1		

M8 – Voltage output 0…10 V



General data			
Measuring range	0.25…1.25 mm,	**Operating voltage**	15…30 VDC
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…10 V	**Material housing**	V2A (1.4301)
Linearity deviation	3% of full scale		

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
BI1,5-EG08-LU-H1341	Ø8 x 57 mm	connector, M12 x 1	-	w037	d128
BI1,5-EG08-LU	Ø8 x 41.6 mm	cable	PUR 2 m	w052	d282

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M12 – Voltage output 0…10 V and current output 0…20 mA



General data

Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	CuZn-Cr
Operating voltage	15…30 VDC		

Types and data – selection table

Type	Dimensions	Measuring range	Linearity deviation	Electrical connection	Material cable	w	d
BI4-M12-LIU-H1141	Ø12 x 62 mm	0.5…3 mm,	5 % of full scale	connector, M12 x 1	-	w051	d283
BI4-M12-LIU	Ø12 x 64 mm	0.5…3 mm,	5 % of full scale	cable	PVC 2 m	w050	d285
BI2-M12-LIU-H1141	Ø12 x 62 mm	1…2.5 mm,	3 % of full scale	connector, M12 x 1	-	w051	d283
BI2-M12-LIU	Ø12 x 64 mm	1…2.5 mm,	3 % of full scale	cable	PVC 2 m	w050	d285
NI5-M12-LIU-H1141	Ø12 x 62 mm	0.5…4 mm,	3 % of full scale	connector, M12 x 1	-	w051	d284
NI5-M12-LIU	Ø12 x 64 mm	0.5…4 mm,	3 % of full scale	cable	PVC 2 m	w050	d286

M18 – Voltage output 0…10 V and current output 0…20 mA



General data

Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	CuZn-Cr
Operating voltage	15…30 VDC		

Types and data – selection table

Type	Dimensions	Measuring range	Linearity deviation	Electrical connection	Material cable	w	d
BI8-M18E-LIU-H1141	Ø18 x 72 mm	1…5 mm,	5 % of full scale	connector, M12 x 1	-	w051	d287
BI8-M18-LIU	Ø18 x 64 mm	1…5 mm,	5 % of full scale	cable	PVC 2 m	w050	d185
BI5-M18E-LIU-H1141	Ø18 x 72 mm	2…4 mm,	3 % of full scale	connector, M12 x 1	-	w051	d287
BI5-M18-LIU	Ø18 x 64 mm	2…4 mm,	3 % of full scale	cable	PVC 2 m	w050	d185
NI10-M18E-LIU-H1141	Ø18 x 72 mm	1…7 mm,	5 % of full scale	connector, M12 x 1	-	w051	d288
NI10-M18-LIU	Ø18 x 64 mm	1…7 mm,	5 % of full scale	cable	PVC 2 m	w050	d289

M18 – Current output 4…20 mA – Intrinsically safe



Type	BI8-M18-LI-EXI	**Operating voltage**	14…30 VDC
Dimensions	Ø18 x 64 mm	**Protection class**	IP67
Measuring range	1…5 mm,	**Material housing**	CuZn-Cr
Repeatability	1 % of measuring range	**Material cable**	PVC 2 m
Analog output	4…20 mA	**Wiring diagram**	w055
Linearity deviation	5 % of full scale	**Dimension drawing**	d185
Electrical connection	cable		

M18 – Voltage output 0…10 V and 3-wire PNP



Type	BI8-M18-LUAP6X	**Operating voltage**	15…30 VDC
Dimensions	Ø18 x 54 mm	**Protection class**	IP67
Measuring range	1…5 mm,	**Material housing**	CuZn-Cr
Repeatability	1 % of measuring range	**Material cable**	PVC 2 m
Analog output	0…10 V	**Wiring diagram**	w056
Linearity deviation	5 % of full scale	**Dimension drawing**	d290
Electrical connection	cable		

M18 – Inductive linear position sensor – Output 0…10 V and 0…20 mA



General data			
Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	4…20 mA, 0…10 V	**Material housing**	CuZn-Cr
Operating voltage	15…30 VDC	**Material cable**	PVC 2 m
Electrical connection	cable		

Actuation via short-circuiting ring (included in delivery), blind hole or similar

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Measuring range	Linearity deviation	w	d
WI70-M18-LIU5	Ø18 x 139 mm	0…70 mm,	3% of full scale	w050	d292
WI40-M18-LIU5	Ø18 x 107.5 mm	0…40 mm,	2% of full scale	w050	d291

M30 – Voltage output 0…10 V and current output 0…20 mA



General data

Repeatability	1 % of measuring range	**Protection class**	IP67
Analog output	0…20 mA, 0…10 V	**Material housing**	CuZn-Cr
Operating voltage	15…30 VDC		

Types and data – selection table

Type	Dimensions	Measuring range	Linearity deviation	Electrical connection	Material cable	w	d
BI15-M30E-LIU-H1141	Ø30 x 77 mm	2…10 mm,	5 % of full scale	connector, M12 x 1	-	w051	d054
BI15-M30-LIU	Ø30 x 64 mm	2…10 mm,	5 % of full scale	cable	PVC 2 m	w050	d198
BI10-M30E-LIU-H1141	Ø30 x 77 mm	3…8 mm,	3 % of full scale	connector, M12 x 1	-	w051	d054
BI10-M30-LIU	Ø30 x 64 mm	3…8 mm,	3 % of full scale	cable	PVC 2 m	w050	d198
NI15-M30-LIU-H1141	Ø30 x 73 mm	2…12 mm,	3 % of full scale	connector, M12 x 1	-	w051	d293

M30 – Current output 4…20 mA – Intrinsically safe



Type	BI15-M30-LI-EXI	**Operating voltage**	14…30 VDC
Dimensions	Ø30 x 64 mm	**Protection class**	IP67
Measuring range	2…10 mm,	**Material housing**	CuZn-Cr
Repeatability	1 % of measuring range	**Material cable**	PVC 2 m
Analog output	4…20 mA	**Wiring diagram**	w055
Linearity deviation	5% of full scale	**Dimension drawing**	d198
Electrical connection	cable		

M30 – Voltage output 0…10 V and 3-wire PNP



Type	BI15-M30-LUAP6X	**Operating voltage**	15…30 VDC
Dimensions	Ø30 x 64 mm	**Protection class**	IP67
Measuring range	2…10 mm,	**Material housing**	CuZn-Cr
Repeatability	1 % of measuring range	**Material cable**	PVC 2 m
Analog output	0…10 V	**Wiring diagram**	w056
Linearity deviation	5% of full scale	**Dimension drawing**	d294
Electrical connection	cable		

Ø 4 mm – Voltage output 0…10 V and current output 0…20 mA



Type	BI1,5-EH04-0,3-M12-SIU-H1141	**Protection class**	IP67
Dimensions	Ø4 x 30 mm	**Material housing**	V4A (1.4404)
Measuring range	0.1…1.5 mm,	**Material cable**	PVC 0.3 m
Repeatability	1 % of measuring range	**Wiring diagram**	w051
Analog output	0…20 mA, 0…10 V	**Dimension drawing**	d295
Operating voltage	15…30 VDC		
Electrical connection	cable with connector, M12 x 1		

Ø 6.5 mm – Voltage output 0…10 V



Type	BI1,5-EH6,5-LU	**Operating voltage**	15…30 VDC
Dimensions	Ø6.5 x 41.6 mm	**Protection class**	IP67
Measuring range	0.25…1.25 mm,	**Material housing**	V2A (1.4301)
Repeatability	1 % of measuring range	**Material cable**	PUR 2 m
Analog output	0…10 V	**Wiring diagram**	w052
Linearity deviation	3% of full scale	**Dimension drawing**	d296
Electrical connection	cable		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Sensors with extended temperature range



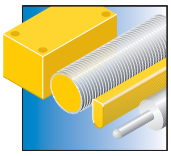
We offer many different sensors even for extreme ambient temperatures of -60 °C or +250 °C. These TURCK devices are typically used in deep freezing systems, outdoor applications, in metal foundries, the glass industry or in drying furnaces of varnishing stations used in the automotive industry.

Our climate-proof versions in stainless steel housings are exellently suited for humid environments affected by sudden temperature changes of up to 120 °C.

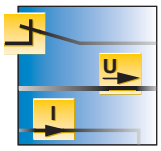
Features

- Six different series for temperatures from - 60 °C up to +250 °C
- Product families comprising all housing types: M8, M12, M18, M30, 40 x 40, 80 x 80
- Specially sealed sensors for wet environments
- Different cable materials tailored to the temperature ranges
- Excellent EMC immunity

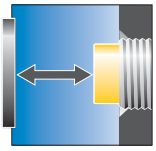
Properties



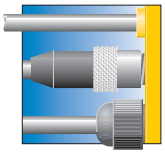
Design
Broad range of devices from the 8 mm threaded barrel up to the 80 x 80 mm rectangular version



Electrical versions
NAMUR: - 40…+100°C,
3/4-wire DC:
-60 …+250°C,
2-wire AC:
- 40 … +120°C



Switching distances
7 mm for temperatures up to - 60 °C,
40 mm for temperatures up to +250 °C



Electrical connections
Cable or M12 plug connection,
sensors from +160 °C with external amplifier



Materials
Rugged, temperature resistant housing materials, application optimized cable qualities



Special features
WashDown,
pressure resistant active face

-60 °C – M12 – 3-wire DC – Cable connection



General data

Output	⎯⎽⎯, PNP	**Ambient temperature**	-60…+60 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI2-EM12WD-AP6/S929	Ø12 x 63 mm	2 mm,	w004	d297
NI4-EM12WD-AP6/S929	Ø12 x 67 mm	4 mm,	w004	d298

-60 °C – M18 – 3-wire DC – Cable connection



General data

Output	⎯⎽⎯, PNP	**Ambient temperature**	-60…+60 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI5-EM18WD-AP6X/S929	Ø18 x 67 mm	5 mm,	w004	d299
NI7-EM18WD-AP6X/S929	Ø18 x 75 mm	7 mm,	w004	d300

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

-40 °C – CP40 – NAMUR



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+70 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-Y1X/S97	15 mm,	w026	d114
NI20-CP40-Y1X/S97	20 mm,	w026	d114

-40 °C – CP40 – 4-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…65 VDC
Output	, PNP	**Ambient temperature**	-40…+70 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-VP4X2/S97	15 mm,	w014	d014
NI20-CP40-VP4X2/S97	20 mm,	w014	d014

-40 °C – CP40 – 2-wire AC/DC



General data

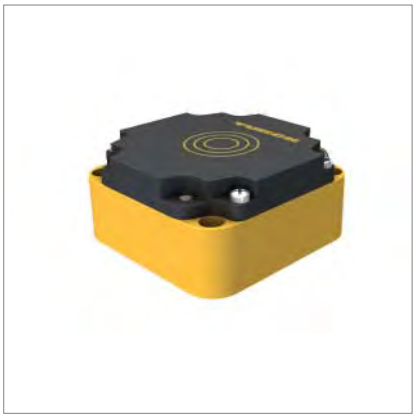
Dimensions	40 x 40 x 114 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	connection programmable	**Ambient temperature**	-40…+70 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-FZ3X2/S97	15 mm,	w028	d014
NI20-CP40-FZ3X2/S97	20 mm,	w028	d014

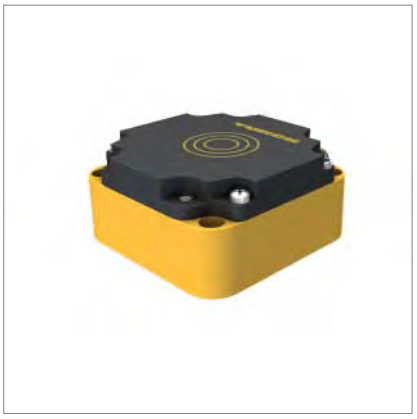
-40 °C – CP80 – NAMUR



Type	NI40-CP80-Y1/S97	**Operating voltage**	nom. 8.2 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-40…+70 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	NAMUR	**Wiring diagram**	w026
Electrical connection	terminal chamber	**Dimension drawing**	d118

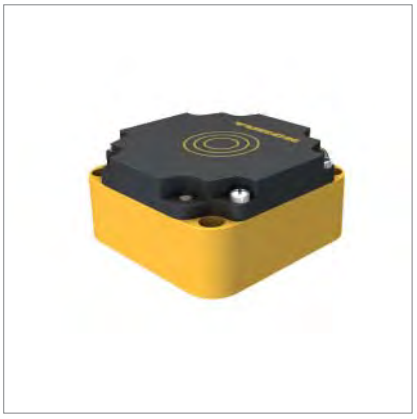
w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

-40 °C – CP80 – 4-wire DC



Type	NI40-CP80-VP4X2/S97	**Operating voltage**	10…65 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-40…+70 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	, PNP	**Wiring diagram**	w014
Electrical connection	terminal chamber	**Dimension drawing**	d120

-40 °C – CP80 – 2-wire AC/DC



Type	NI40-CP80-FZ3X2/S97	**Operating voltage**	20…250 VAC / 10…300 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-40…+70 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	connection program-mable	**Wiring diagram**	w028
Electrical connection	terminal chamber	**Dimension drawing**	d120

-40 °C – M12 – NAMUR – Cable connection



General data			
Dimensions	Ø12 x 34 mm	**Ambient temperature**	-40…+70 °C
Output	NAMUR	**Material housing**	PA
Electrical connection	cable	**Material cable**	silicone 2 m
Operating voltage	nom. 8.2 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI2-P12-Y1X/S97	2 mm,	w019	d144
NI5-P12-Y1X/S97	5 mm,	w019	d144

-40 °C – M12 – NAMUR – Terminal chamber



General data

Dimensions	Ø12 x 70 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI2-EM12WDTC-Y1X	2 mm,	w026	d147
NI5-EM12WDTC-Y1X	5 mm,	w026	d146

-40 °C – M12 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 20 bar

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X-H1141	4 mm,	_⎍_, PNP	w001	d034
BI4U-EM12WD-AN6X-H1141	4 mm,	_⎍_, NPN	w002	d034
NI10U-EM12WD-AP6X-H1141	10 mm,	_⎍_, PNP	w001	d067
NI10U-EM12WD-AN6X-H1141	10 mm,	_⎍_, NPN	w002	d067

-40 °C – M12 – 3-wire DC – Cable connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X	4 mm,	_⎍_, PNP	w004	d068
BI4U-EM12WD-AN6X	4 mm,	_⎍_, NPN	w005	d068
NI10U-EM12WD-AP6X	10 mm,	_⎍_, PNP	w004	d069
NI10U-EM12WD-AN6X	10 mm,	_⎍_, NPN	w005	d069

-40 °C – M12 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø12 x 80 mm	**Operating voltage**	10…30 VDC
Output	_⎍_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI4U-EM12WDTC-AP6X	4 mm,	w011	d070
NI10U-EM12WDTC-AP6X	10 mm,	w011	d071

-40 °C – M18 – NAMUR – Cable connection



General data

Dimensions	Ø18 x 34 mm	**Ambient temperature**	-40…+70 °C
Output	NAMUR	**Material housing**	PA
Electrical connection	cable	**Material cable**	silicone 2 m
Operating voltage	nom. 8.2 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI5-P18-Y1X/S97	5 mm,	w019	d165
NI10-P18-Y1X/S97	10 mm,	w019	d165

-40 °C – M18 – NAMUR – Terminal chamber



General data

Dimensions	Ø18 x 71 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI5-EM18WDTC-Y1X	5 mm,	w026	d168
NI10-EM18WDTC-Y1X	10 mm,	w026	d169

-40 °C – M18 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X-H1141	8 mm,	_⌒‾, PNP	w001	d044
BI8U-EM18WD-AN6X-H1141	8 mm,	_⌒‾, NPN	w002	d044
NI15U-EM18WD-AP6X-H1141	15 mm,	_⌒‾, PNP	w001	d072
NI15U-EM18WD-AN6X-H1141	15 mm,	_⌒‾, NPN	w002	d072

-40 °C – M18 – 3-wire DC – Cable connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X	8 mm,	_⌐‾⌐_, PNP	w004	d073
BI8U-EM18WD-AN6X	8 mm,	_⌐‾⌐_, NPN	w005	d073
NI15U-EM18WD-AP6X	15 mm,	_⌐‾⌐_, PNP	w004	d074
NI15U-EM18WD-AN6X	15 mm,	_⌐‾⌐_, NPN	w005	d074

-40 °C – M18 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø18 x 81 mm	**Operating voltage**	10…30 VDC
Output	_⌐‾⌐_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI8U-EM18WDTC-AP6X	8 mm,	w011	d075
NI15U-EM18WDTC-AP6X	15 mm,	w011	d076

-40 °C – M30 – NAMUR – Cable connection



General data

Dimensions	Ø30 x 44 mm	**Ambient temperature**	-40…+70 °C
Output	NAMUR	**Material housing**	PA
Electrical connection	cable	**Material cable**	silicone 2 m
Operating voltage	nom. 8.2 VDC		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI10-P30-Y1X/S97	10 mm,	w019	d188
NI15-P30-Y1X/S97	15 mm,	w019	d188

-40 °C – M30 – NAMUR – Terminal chamber



General data

Dimensions	Ø30 x 80 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI10-EM30WDTC-Y1X	10 mm,	w026	d194
NI15-EM30WDTC-Y1X	15 mm,	w026	d195

-40 °C – M30 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X-H1141	15 mm,	_⌒_, PNP	w001	d050
BI15U-EM30WD-AN6X-H1141	15 mm,	_⌒_, NPN	w002	d050
NI30U-EM30WD-AP6X-H1141	30 mm,	_⌒_, PNP	w001	d077
NI30U-EM30WD-AN6X-H1141	30 mm,	_⌒_, NPN	w002	d077

-40 °C – M30 – 3-wire DC – Cable connection



General data

Dimensions	Ø30 x 66 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X	15 mm,	_⌒_, PNP	w004	d078
BI15U-EM30WD-AN6X	15 mm,	_⌒_, NPN	w005	d078
NI30U-EM30WD-AP6X	30 mm,	_⌒_, PNP	w004	d079
NI30U-EM30WD-AN6X	30 mm,	_⌒_, NPN	w005	d079

-40 °C – M30 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø30 x 95 mm	**Operating voltage**	10…30 VDC
Output	_⌒_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI15U-EM30WDTC-AP6X	15 mm,	w011	d080
NI30U-EM30WDTC-AP6X	30 mm,	w011	d081

+100 °C – CP40 – NAMUR – Terminal chamber



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-25…+100 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-Y1X/S100	15 mm,	w026	d114
NI20-CP40-Y1X/S100	20 mm,	w026	d114

+100 °C – CP40 – 4-wire DC – Terminal chamber



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…65 VDC
Output	, PNP	**Ambient temperature**	-25…+100 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-VP4X2/S100	15 mm,	w014	d014
NI20-CP40-VP4X2/S100	20 mm,	w014	d014

+100 °C – CP40 – 2-wire AC/DC – Terminal chamber



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output	connection programmable	**Ambient temperature**	-25…+100 °C
Electrical connection	terminal chamber	**Material housing**	PBT

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Switching distance	w	d
BI15-CP40-FZ3X2/S100	15 mm,	w028	d014
NI20-CP40-FZ3X2/S100	20 mm,	w028	d014

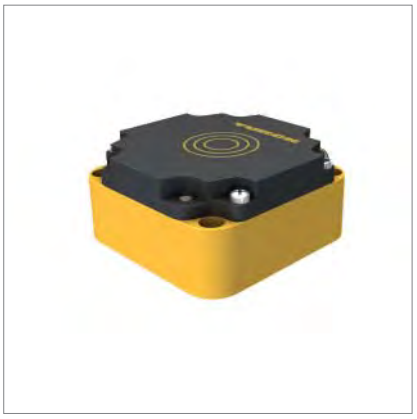
+100 °C – CP80 – NAMUR – Terminal chamber



Type	NI40-CP80-Y1/S100	**Operating voltage**	nom. 8.2 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-25…+100 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	NAMUR	**Wiring diagram**	w026
Electrical connection	terminal chamber	**Dimension drawing**	d118

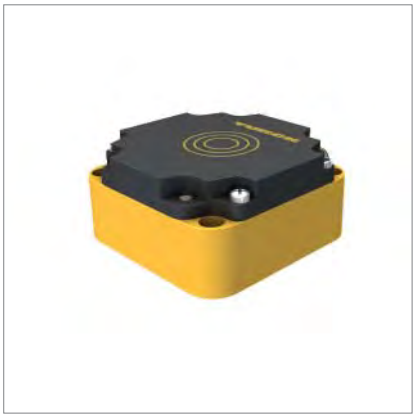
w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

+100 °C – CP80 – 4-wire DC – Terminal chamber



Type	NI40-CP80-VP4X2/S100	**Operating voltage**	10…65 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-25…+100 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	, PNP	**Wiring diagram**	w014
Electrical connection	terminal chamber	**Dimension drawing**	d120

+100 °C – CP80 – 2-wire AC/DC – Terminal chamber



Type	NI40-CP80-FZ3X2/S100	**Operating voltage**	20…250 VAC / 10…300 VDC
Dimensions	80 x 41 x 80 mm	**Ambient temperature**	-25…+100 °C
Switching distance	40 mm,	**Material housing**	PBT
Output	connection program-mable	**Wiring diagram**	w028
Electrical connection	terminal chamber	**Dimension drawing**	d120

+100 °C – M8 – 3-wire DC – Cable connection



General data			
Dimensions	Ø8 x 41.6 mm	**Ambient temperature**	-25…+100 °C
Switching distance	2 mm,	**Material housing**	V2A (1.4301)
Electrical connection	cable	**Material cable**	TPE 2 m
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Output	w	d
BI2-EG08-AP6X/S100	_⌒_, PNP	w004	d026
BI2-EG08-AN6X/S100	_⌒_, NPN	w005	d026

+100 °C – M12 – NAMUR – Cable connection



General data

Dimensions	Ø12 x 34 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-25…+100 °C
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	Material cable	w	d
BI2-P12-Y1/S100	2 mm, ▭	PA	PVC 2 m	w019	d301
BI2-EG12-Y1X/S100 7M	2 mm, ▭	V2A (1.4301)	PVC 7 m	w019	d145
NI5-P12-Y1/S100	5 mm, ▭	PA	PVC 2 m	w019	d301
NI5-EG12-Y1X/S100 7M	5 mm, ▭	V2A (1.4301)	PVC 7 m	w019	d143

+100 °C – M12 – NAMUR – Terminal chamber



General data

Dimensions	Ø12 x 70 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI2-EM12WDTC-Y1X	2 mm,	w026	d147
NI5-EM12WDTC-Y1X	5 mm,	w026	d146

+100 °C – M12 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X-H1141	4 mm,	_⌒‾⌒_, PNP	w001	d034
BI4U-EM12WD-AN6X-H1141	4 mm,	_⌒‾⌒_, NPN	w002	d034
NI10U-EM12WD-AP6X-H1141	10 mm,	_⌒‾⌒_, PNP	w001	d067
NI10U-EM12WD-AN6X-H1141	10 mm,	_⌒‾⌒_, NPN	w002	d067

+100 °C – M12 – 3-wire DC – Cable connection



General data

Dimensions	Ø12 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI4U-EM12WD-AP6X	4 mm,	_⌒_, PNP	w004	d068
BI4U-EM12WD-AN6X	4 mm,	_⌒_, NPN	w005	d068
NI10U-EM12WD-AP6X	10 mm,	_⌒_, PNP	w004	d069
NI10U-EM12WD-AN6X	10 mm,	_⌒_, NPN	w005	d069

+100 °C – M12 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø12 x 80 mm	**Operating voltage**	10…30 VDC
Output	_⌒_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI4U-EM12WDTC-AP6X	4 mm,	w011	d070
NI10U-EM12WDTC-AP6X	10 mm,	w011	d071

+100 °C – M12 – 2-wire AC/DC



General data

Output	_⌒_	**Ambient temperature**	-25…+100 °C
Electrical connection	cable	**Material housing**	PA
Operating voltage	20…250 VAC / 10…300 VDC	**Material cable**	PVC 2 m

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI2-S12-AZ31X/S100	Ø12 x 60 mm	2 mm,	w020	d153
NI4-S12-AZ31X/S100	Ø12 x 64 mm	4 mm,	w020	d153

+100 °C – M18 – NAMUR – Cable connection



General data

Dimensions	Ø18 x 34 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-25…+100 °C
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	Material cable	w	d
BI5-P18-Y1/S100	5 mm,	PA	PVC 2 m	w019	d302
BI5-EG18-Y1X/S100 7M	5 mm,	V2A (1.4301)	PVC 7 m	w019	d166
NI10-P18-Y1/S100	10 mm,	PA	PVC 2 m	w019	d302
NI10-EG18-Y1X/S100 7M	10 mm,	V2A (1.4301)	PVC 7 m	w019	d167

+100 °C – M18 – NAMUR – Terminal chamber



General data

Dimensions	Ø18 x 71 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI5-EM18WDTC-Y1X	5 mm,	w026	d168
NI10-EM18WDTC-Y1X	10 mm,	w026	d169

+100 °C – M18 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X-H1141	8 mm,	_⌒‾, PNP	w001	d044
BI8U-EM18WD-AN6X-H1141	8 mm,	_⌒‾, NPN	w002	d044
NI15U-EM18WD-AP6X-H1141	15 mm,	_⌒‾, PNP	w001	d072
NI15U-EM18WD-AN6X-H1141	15 mm,	_⌒‾, NPN	w002	d072

+100 °C – M18 – 3-wire DC – Cable connection



General data

Dimensions	Ø18 x 52 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 15 bar

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18WD-AP6X	8 mm,	_⌐¯⌐_, PNP	w004	d073
BI8U-EM18WD-AN6X	8 mm,	_⌐¯⌐_, NPN	w005	d073
NI15U-EM18WD-AP6X	15 mm,	_⌐¯⌐_, PNP	w004	d074
NI15U-EM18WD-AN6X	15 mm,	_⌐¯⌐_, NPN	w005	d074

+100 °C – M18 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø18 x 81 mm	**Operating voltage**	10…30 VDC
Output	_⌐¯⌐_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI8U-EM18WDTC-AP6X	8 mm,	w011	d075
NI15U-EM18WDTC-AP6X	15 mm,	w011	d076

+100 °C – M18 – 2-wire AC/DC – Cable connection



General data

Dimensions	Ø18 x 64 mm	**Ambient temperature**	-25…+100 °C
Output	_⌐¯_	**Material housing**	PA
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	20…250 VAC / 10…300 VDC		

Types and data – selection table

Type	Switching distance	w	d
BI5-S18-AZ3X/S100	5 mm,	w031	d173
NI8-S18-AZ3X/S100	8 mm,	w031	d173

+100 °C – M30 – NAMUR – Cable connection



General data

Dimensions	Ø30 x 44 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-25…+100 °C
Electrical connection	cable		

Types and data – selection table

Type	Switching distance	Material housing	Material cable	w	d
BI10-P30-Y1/S100	10 mm,	PA	PVC 2 m	w019	d303
BI10-EG30-Y1X/S100 7M	10 mm,	V2A (1.4301)	PVC 7 m	w019	d189
NI15-P30-Y1/S100	15 mm,	PA	PVC 2 m	w019	d303
NI15-EG30-Y1X/S100 7M	15 mm,	V2A (1.4301)	PVC 7 m	w019	d190

+100 °C – M30 – NAMUR – Terminal chamber



General data

Dimensions	Ø30 x 80 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	w	d
BI10-EM30WDTC-Y1X	10 mm,	w026	d194
NI15-EM30WDTC-Y1X	15 mm,	w026	d195

+100 °C – M30 – 3-wire DC – M12 x 1 plug connection



General data

Dimensions	Ø30 x 62 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X-H1141	15 mm,	_⌒, PNP	w001	d050
BI15U-EM30WD-AN6X-H1141	15 mm,	_⌒, NPN	w002	d050
NI30U-EM30WD-AP6X-H1141	30 mm,	_⌒, PNP	w001	d077
NI30U-EM30WD-AN6X-H1141	30 mm,	_⌒, NPN	w002	d077

+100 °C – M30 – 3-wire DC – Cable connection



General data

Dimensions	Ø30 x 66 mm	**Ambient temperature**	-40…+100 °C
Electrical connection	cable	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC	**Material cable**	PP 2 m

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI15U-EM30WD-AP6X	15 mm,	_⌒_, PNP	w004	d078
BI15U-EM30WD-AN6X	15 mm,	_⌒_, NPN	w005	d078
NI30U-EM30WD-AP6X	30 mm,	_⌒_, PNP	w004	d079
NI30U-EM30WD-AN6X	30 mm,	_⌒_, NPN	w005	d079

+100 °C – M30 – 3-wire DC – Terminal chamber



General data

Dimensions	Ø30 x 95 mm	**Operating voltage**	10…30 VDC
Output	_⌒_, PNP	**Ambient temperature**	-40…+100 °C
Electrical connection	terminal chamber, removable cage clamp terminals	**Material housing**	V4A (1.4404)

Removable terminal strip and variable cable outlet

Types and data – selection table

Type	Switching distance	w	d
BI15U-EM30WDTC-AP6X	15 mm,	w011	d080
NI30U-EM30WDTC-AP6X	30 mm,	w011	d081

+100 °C – M30 – 2-wire AC/DC – Cable connection



General data

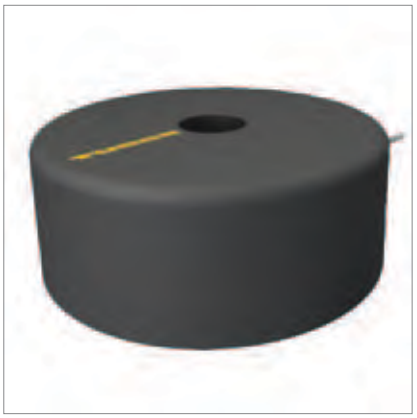
Dimensions	Ø30 x 64 mm	**Ambient temperature**	-25…+100 °C
Output	_⌒_	**Material housing**	PA
Electrical connection	cable	**Material cable**	PVC 2 m
Operating voltage	20…250 VAC / 10…300 VDC		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance		
BI10-S30-AZ3X/S100	10 mm,	w031	d196
NI15-S30-AZ3X/S100	15 mm,	w031	d196

+120 °C – Ø160 mm – 3-wire DC – Cable connection



Type	NI100-Q160-AP44X/S120	**Ambient temperature**	-25…+120 °C
Switching distance	100 mm,	**Material housing**	PPO
Output	_⌒_, PNP	**Material cable**	silicone 2 m
Electrical connection	cable	**Wiring diagram**	w004
Operating voltage	10…55 VDC	**Dimension drawing**	d304

+120 °C – M12 – 3-wire DC – Cable connection



General data			
Output	_⌒_, PNP	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	PTFE FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance		
BI2-EM12D-AP6/S120	Ø12 x 63 mm	2 mm,	w004	d297
NI4-EM12D-AP6/S120	Ø12 x 67 mm	4 mm,	w004	d298

+120 °C – M18 – 3-wire DC – Cable connection



General data

Output	⎯◺⎯, PNP	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC	**Material cable**	silicone 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI5-M18-AP6X/S120	Ø18 x 87 mm	5 mm, ⊐	w004	d305
NI8-M18-AP6X/S120	Ø18 x 97 mm	8 mm, ⊐	w004	d306

+120 °C – M18 – 4-wire DC – Cable connection



General data

Output	⎯◹⎯, PNP	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	PTFE FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI5-EM18D-VP6X/S120	Ø18 x 95 mm	5 mm, ⊐	w007	d307
NI7-EM18D-VP6X/S120	Ø18 x 103 mm	7 mm, ⊐	w007	d308

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

+120 °C – M18 – 2-wire AC – Cable connection



General data

Output	⎽⎽◝⎽⎽	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	20…250 VAC	**Material cable**	silicone 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI5-M18-AZ3X/S120	Ø18 x 87 mm	5 mm, ▭	w020	d305
NI8-M18-AZ3X/S120	Ø18 x 97 mm	8 mm, ▭	w020	d306

+120 °C – M30 – 3-wire DC – Cable connection



General data

Output	⎽⎽◝⎽⎽, PNP	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	10…30 VDC	**Material cable**	silicone 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI10-M30-AP6X/S120	Ø30 x 87 mm	10 mm, ▭	w004	d309
NI15-M30-AP6X/S120	Ø30 x 97 mm	15 mm, ▭	w004	d310

+120 °C – M30 – 4-wire DC – Cable connection



General data

Output	, PNP	**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	PTFE FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI10-EM30D-VP6X/S120	Ø30 x 100 mm	10 mm,	w007	d311
NI15-EM30D-VP6X/S120	Ø30 x 110 mm	15 mm,	w007	d312

+120 °C – M30 – 2-wire AC – Cable connection



General data

Output		**Ambient temperature**	-25…+120 °C
Electrical connection	cable	**Material housing**	CuZn-Cr
Operating voltage	20…250 VAC	**Material cable**	silicone 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI10-M30-AZ3X/S120	Ø30 x 87 mm	10 mm,	w020	d309
NI15-M30-AZ3X/S120	Ø30 x 97 mm	15 mm,	w020	d310

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

+160 °C – M18 – 3-wire DC – Cable connection



General data

Output	⎯⎽⎯, PNP	**Ambient temperature**	-25…+160 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	PTFE FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI5-EM18-AP6/S907	Ø18 x 95 mm	5 mm, ⊐	w004	d313
NI8-EM18-AP6/S907	Ø18 x 103 mm	8 mm, ⊐	w004	d314

+160 °C – M30 – 3-wire DC – Cable connection



General data

Output	⎯⎽⎯, PNP	**Ambient temperature**	-25…+160 °C
Electrical connection	cable	**Material housing**	V4A (1.4571)
Operating voltage	10…30 VDC	**Material cable**	PTFE FEP 2 m

Types and data – selection table

Type	Dimensions	Switching distance	w	d
BI10-EM30-AP6/S907	Ø30 x 100 mm	10 mm, ⊐	w004	d315
NI15-EM30-AP6/S907	Ø30 x 110 mm	15 mm, ⊐	w004	d316

+250 °C – Q40 – Sensor



Type	NI25-CQ40/S1102 5M	**Material housing**	AL
Dimensions	40 x 40 x 52 mm	**Material cable**	PTFE FEP 5 m
Switching distance	25 mm, ⊏⊐	**Wiring diagram**	w057
Electrical connection	connector, M12 x 1	**Dimension drawing**	d317
Ambient temperature	0…+250 °C		

Amplifier EM30-AP6X2-H1141/S1102 required

+250 °C – Q80 – Sensor



Type	NI40-CQ80/S1102 5M	**Material housing**	AL
Dimensions	80 x 40 x 92 mm	**Material cable**	PTFE FEP 5 m
Switching distance	40 mm, ⊏⊐	**Wiring diagram**	w057
Electrical connection	connector, M12 x 1	**Dimension drawing**	d318
Ambient temperature	0…+250 °C		

Amplifier EM30-AP6X2-H1141/S1102 required

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

+250 °C – EM30 – Amplifier



Type	EM30-AP6X2-H1141/ S1102	**Ambient temperature**	-20…+70 °C
Output	_⟍⟍_, PNP	**Material housing**	V4A (1.4571)
Electrical connection	connector, M12 x 1	**Wiring diagram**	w058
Operating voltage	10…30 VDC	**Dimension drawing**	d319

Required sensors Ni25-CQ40/S1102 5M or Ni40-CQ80/S1102 5M

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Inductive sensors for underwater applications

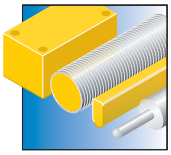


TURCK provides sensors in fully pressure and seawater tight housings for subsea applications. Mounted in M18 threaded barrels made of plastic, they can even be applied at water depths of up to 500 m. Also available are CP40 sensors, fully encapsulated in the SG40/2 housing for subsea use. These types feature a large switching distance, protection class IP68 and are made for (fresh) water depths of up to 50 m. They are mostly applied in locks, weirs and offshore plants.

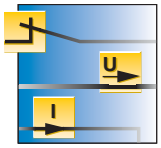
Features

- For continuous use underwater
- M18 sensors for water depths of up to 500 m
- M18 sensors in protective CP40 housing for water depths of up to 50 m
- Application compliant housing materials
- ATEX approved versions

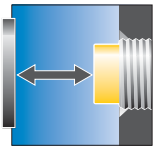
Properties



Design
M18 x 1 threaded barrel, Rectangular 40 x 40 mm, mounted in protective housing



Electrical versions
NAMUR, 3 and 4-wire DC



Switching distances
Threaded barrel 5 mm flush or 8 mm non-flush version, rectangular 35 mm non-flush



Materials
Seawater resistant longlife materials

CP40



Type	NI35-CP40-VP4X2/S938-F/S1194 30M	**Operating voltage**	10…65 VDC
Dimensions	67 x 50 x 190 mm	**Material housing**	Ultem
Switching distance	35 mm,	**Material cable**	PUR 30 m
Output	, PNP	**Wiring diagram**	w007
Electrical connection	cable	**Dimension drawing**	d320

M18 – NAMUR



Type	NI8-P18-Y1/S139	**Operating voltage**	nom. 8.2 VDC
Dimensions	Ø18 x 80 mm	**Material housing**	POM
Switching distance	8 mm,	**Material cable**	PVC 2 m
Output	NAMUR	**Wiring diagram**	w019
Electrical connection	cable	**Dimension drawing**	d186

M18 – 3-wire DC



General data			
Dimensions	Ø18 x 80 mm	**Material housing**	POM
Electrical connection	cable	**Material cable**	PUR 2 m
Operating voltage	10…30 VDC		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	w	d
BI5-P18-AP6/S139-S90	5 mm,	, PNP	w004	d186
BI5-P18-AN6/S139-S90	5 mm,	, NPN	w005	d186
NI8-P18-AP6/S139-S90	8 mm,	, PNP	w004	d186
NI8-P18-AN6/S139-S90	8 mm,	, NPN	w005	d186

M18 – 2-wire AC/DC



General data

Dimensions	Ø18 x 80 mm	**Operating voltage**	20…250 VAC / 10…300 VDC
Output		**Material housing**	POM
Electrical connection	cable	**Material cable**	PUR 2 m

Types and data – selection table

Type	Switching distance	w	d
BI5-P18-AZ3/S139-S90	5 mm,	w031	d186
NI8-P18-AZ3/S139-S90	8 mm,	w031	d186

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Pressure-resistant sensors



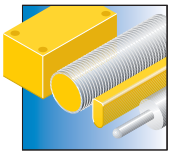
We offer pressure and high-pressure resistant sensors. The *uprox*®+ WashDown sensors resist pressures up to 20 bar. They combine the unique *uprox*® advantages, such as largest switching distance, factor 1 on all metals and protection classes IP68/IP69K.

The high-pressure resistant sensors are incorporated in a stainless steel housing and are ideally suited for hydraulic systems. Special gaskets and additional outer seals at the front as well as an O-ring enable the application in high pressure systems of up to 500 bar.

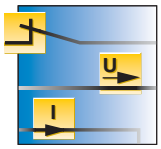
Features

- M8 and M12 versions up to 20 bar
- M18 up to 15 bar
- M30 up to 10 bar
- *uprox*®+ WashDown sensors with largest switching distance
- Special high pressure resistant sensors up to 500 bar

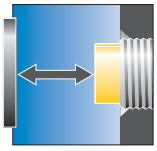
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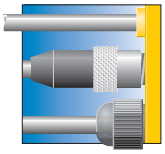
Design
Thread sizes M8 x 1, M12 x 1, M18 x 1 or M30 x 1.5



Electrical versions
NO and NC or antivalent DC output functions



Switching distances
uprox®+ WashDown sensors up to 30 mm, high-pressure resistant sensors up to 2 mm



Electrical connections
Cable or M12 plug connection



Materials
Robust stainless steel threaded barrel with shape-stable plastic cap to protect the active face



Special features
Factor 1, all metals, temperature range - 40 … +100 °C

M8 – 3-wire DC



General data

Dimensions	Ø8 x 57 mm	**Operating voltage**	10…30 VDC
Switching distance	1.5 mm,	**Material housing**	V2A (1.4301)
Electrical connection	connector, M12 x 1		

Pressure resistant up to 20 bar

Types and data – selection table

Type	Output	w	d
BI1,5-EG08WD-AP6X-H1341	_⌒, PNP	w001	d024
BI1,5-EG08WD-AN6X-H1341	_⌒, NPN	w002	d024

M12 – 3-wire DC



General data

Dimensions	Ø12 x 52 mm	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 20 bar

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI4U-EM12WD-AP6X-H1141	4 mm,	, PNP	connector, M12 x 1	-	w001	d034
BI4U-EM12WD-AP6X	4 mm,	, PNP	cable	PP 2 m	w004	d068
BI4U-EM12WD-AN6X-H1141	4 mm,	, NPN	connector, M12 x 1	-	w002	d034
BI4U-EM12WD-AN6X	4 mm,	, NPN	cable	PP 2 m	w005	d068
NI10U-EM12WD-AP6X-H1141	10 mm,	, PNP	connector, M12 x 1	-	w001	d067
NI10U-EM12WD-AP6X	10 mm,	, PNP	cable	PP 2 m	w004	d069
NI10U-EM12WD-AN6X-H1141	10 mm,	, NPN	connector, M12 x 1	-	w002	d067
NI10U-EM12WD-AN6X	10 mm,	, NPN	cable	PP 2 m	w005	d069

M12 – 4-wire DC



General data

Dimensions	Ø12 x 62 mm	**Operating voltage**	10…55 VDC
Output	, PNP	**Material housing**	V4A (1.4404)
Electrical connection	connector, M12 x 1		

Pressure resistant up to 20 bar

Types and data – selection table

Type	Switching distance	w	d
BI4U-EM12EWD-VP44X-H1141	4 mm,	w017	d028
NI10U-EM12EWD-VP44X-H1141	10 mm,	w017	d152

M18 – 3-wire DC



General data

Dimensions	Ø18 x 52 mm	**Material housing**	V4A (1.4404)
Operating voltage	10…30 VDC		

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	Electrical connection	Material cable	w	d
BI8U-EM18WD-AP6X-H1141	8 mm,	, PNP	connector, M12 x 1	-	w001	d044
BI8U-EM18WD-AP6X	8 mm,	, PNP	cable	PP 2 m	w004	d073
BI8U-EM18WD-AN6X-H1141	8 mm,	, NPN	connector, M12 x 1	-	w002	d044
BI8U-EM18WD-AN6X	8 mm,	, NPN	cable	PP 2 m	w005	d073
NI15U-EM18WD-AP6X-H1141	15 mm,	, PNP	connector, M12 x 1	-	w001	d072
NI15U-EM18WD-AP6X	15 mm,	, PNP	cable	PP 2 m	w004	d074
NI15U-EM18WD-AN6X-H1141	15 mm,	, NPN	connector, M12 x 1	-	w002	d072
NI15U-EM18WD-AN6X	15 mm,	, NPN	cable	PP 2 m	w005	d074

M18 – 4-wire DC



General data

Dimensions	Ø18 x 61.5 mm	**Operating voltage**	10…55 VDC
Electrical connection	connector, M12 x 1	**Material housing**	V4A (1.4404)

Pressure resistant up to 15 bar

Types and data – selection table

Type	Switching distance	Output	w	d
BI8U-EM18MWD-VP44X-H1141	8 mm,	, PNP	w017	d040
BI8U-EM18MWD-VN44X-H1141	8 mm,	, NPN	w010	d040
NI15U-EM18MWD-VP44X-H1141	15 mm,	, PNP	w017	d060

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M18 – 3-Draht DC – High pressure resistant



General data

Dimensions	Ø18 x 58 mm	**Operating voltage**	10…30 VDC
Switching distance	2 mm,	**Material housing**	V2A (1.4305)
Output	, PNP		

Pressure resistant up to 500 bar (S212) resp. 100 bar (S220)

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BID2-G180-AP6/S220	cable	PVC 2 m	w004	d322
BID2-G180-AP6/S212	cable	PVC 2 m	w004	d322
BID2-G180-AP6-H1141/S220	connector, M12 x 1	-	w001	d321
BID2-G180-AP6-H1141/S212	connector, M12 x 1	-	w001	d321

M30 – 3-wire DC



General data

Operating voltage	10…30 VDC	**Material housing**	V4A (1.4404)

Pressure resistant up to 10 bar

Types and data – selection table

Type	Dimensions	Switching distance	Output	Electrical connection	Material cable	w	d
BI15U-EM30WD-AP6X-H1141	Ø30 x 62 mm	15 mm,	, PNP	connector, M12 x 1	-	w001	d050
BI15U-EM30WD-AP6X	Ø30 x 66 mm	15 mm,	, PNP	cable	PP 2 m	w004	d078
BI15U-EM30WD-AN6X-H1141	Ø30 x 62 mm	15 mm,	, NPN	connector, M12 x 1	-	w002	d050
BI15U-EM30WD-AN6X	Ø30 x 66 mm	15 mm,	, NPN	cable	PP 2 m	w005	d078
NI30U-EM30WD-AP6X-H1141	Ø30 x 62 mm	30 mm,	, PNP	connector, M12 x 1	-	w001	d077
NI30U-EM30WD-AP6X	Ø30 x 66 mm	30 mm,	, PNP	cable	PP 2 m	w004	d079
NI30U-EM30WD-AN6X-H1141	Ø30 x 62 mm	30 mm,	, NPN	connector, M12 x 1	-	w002	d077
NI30U-EM30WD-AN6X	Ø30 x 66 mm	30 mm,	, NPN	cable	PP 2 m	w005	d079

M30 – 4-wire DC



General data

Dimensions	Ø30 x 62 mm	**Operating voltage**	10…55 VDC
Output	, PNP	**Material housing**	V4A (1.4404)
Electrical connection	connector, M12 x 1		

Pressure resistant up to 10 bar

Types and data – selection table

Type	Switching distance	w	d
BI15U-EM30WD-VP44X-H1141	15 mm,	w017	d050
NI30U-EM30WD-VP44X-H1141	30 mm,	w017	d077

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Magnetic-inductive sensors

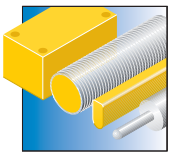


Magnetic-inductive sensors are typically applied in pig trap systems or used for gate monitoring. Since magnetic-inductive sensors are actuated by external magnetic fields, even the smaller types can operate at a large switching distance. When using the actuating magnet DMR31155, the M12 sensors attain a rated switching distance of 90 mm.

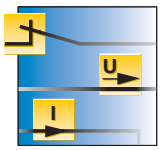
Features

- Extremely long ranges
- Detection through non-magnetizable materials
- ATEX and SIL approved versions
- Rugged threaded barrels
- Broad selection of actuators

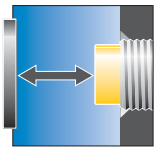
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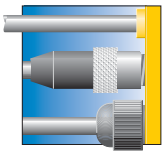
Design
Threaded barrels
M8 x 1 or M12 x 1



Electrical versions
NAMUR, 2 or 3-wire DC



Switching distances
M8 sensors up to 78 mm and M12 sensors up to 90 mm, depending on the actuating magnet



Electrical connections
2 m connection cable or M12 x 1 plug connection



Materials
Robust threaded barrels, chrome-plated brass or stainless steel

M8 – NAMUR



General data

Switching distance	78 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR	**Material housing**	V2A (1.4301)

More information on actuating magnets in chapter „Accessories“.

Nominal switching distance 78 mm with magnet DMR31-15-5

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
BIM-EG08-Y1X-H1341	Ø8 x 57 mm	connector, M12 x 1	-	w021	d323
BIM-EG08-Y1X	Ø8 x 41.6 mm	cable	PVC 2 m	w019	d026

M8 – 3-wire DC



General data

Switching distance	78 mm	**Material housing**	V2A (1.4301)
Operating voltage	10…30 VDC		

More information on actuating magnets in chapter „Accessories“.

Nominal switching distance 78 mm with magnet DMR31-15-5

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BIM-EG08-AP6X-V1131	Ø8 x 49 mm	_⌒‾, PNP	connector, M8 x 1	-	w001	d022
BIM-EG08-AP6X-H1341	Ø8 x 57 mm	_⌒‾, PNP	connector, M12 x 1	-	w001	d323
BIM-EG08-AP6X	Ø8 x 41.6 mm	_⌒‾, PNP	cable	PUR 2 m	w059	d026
BIM-EG08-AN6X-H1341	Ø8 x 57 mm	_⌒‾, NPN	connector, M12 x 1	-	w002	d323
BIM-EG08-AN6X	Ø8 x 41.6 mm	_⌒‾, NPN	cable	PUR 2 m	w005	d026

M12 – NAMUR



General data

Switching distance	90 mm	**Operating voltage**	nom. 8.2 VDC
Output	NAMUR		

More information on actuating magnets in chapter „Accessories“.

Nominal switching distance 90 mm with magnet DMR31-15-5

Types and data – selection table

Type	Dimensions	Electrical connection	Material housing	Material cable	w	d
BIM-M12E-Y1X-H1141	Ø12 x 62 mm	connector, M12 x 1	CuZn-Cr	-	w021	d151
BIM-EM12E-Y1X	Ø12 x 64 mm	cable	V2A (1.4301)	PVC 2 m	w019	d030

M12 – 3-wire DC



General data

Switching distance	90 mm	**Operating voltage**	10…65 VDC

More information on actuating magnets in chapter „Accessories“.

Nominal switching distance 90 mm with magnet DMR31-15-5

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material housing	Material cable	w	d
BIM-M12E-AN4X-H1141	Ø12 x 62 mm	_⌒_, NPN	connector, M12 x 1	CuZn-Cr	-	w002	d151
BIM-M12E-AN4X	Ø12 x 64 mm	_⌒_, NPN	cable	CuZn-Cr	PUR 2 m	w005	d030
BIM-EM12E-AP4X-H1141	Ø12 x 62 mm	_⌒_, PNP	connector, M12 x 1	V2A (1.4301)	-	w001	d151
BIM-EM12E-AP4X	Ø12 x 64 mm	_⌒_, PNP	cable	V2A (1.4301)	PVC 2 m	w004	d030

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Selective sensors

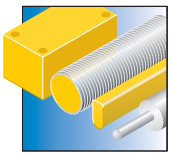


TURCK's sensor series NF, FE and NF/FE with distinctive function are particularly suited for applications in which ferritic metals have to be distinguished from non-ferritic metals. They distinguish for example between workpiece and tool or between workpieces made of different materials and perform simple coding tasks.

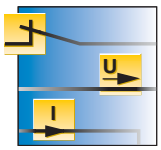
Features

- Switching outputs for the detection of different materials
- NF with output for non-ferritic metals
- FE with output for ferritic metals
- Stainless steel housing
- Large switching distance also on non-ferritic metals
- High interference immunity

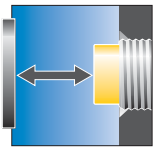
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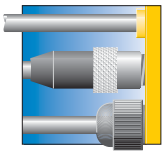
Design
Broad product range, 12, 18 and 30 mm threaded barrels as well as 40 x 40 mm rectangular types



Electrical versions
3-wire DC for threaded barrels
4-wire DC / 2-wire AC rectangular type



Switching distances
Detection of ferrous metals up to 5 mm, no distinction of metals up to 20 mm



Electrical connections
Threaded barrel with M12 plug connection, rectangular type with terminal chamber

CP40 – 4-wire DC



General data

Dimensions	40 x 40 x 114 mm	**Operating voltage**	10…65 VDC
Switching distance	20 mm,	**Material housing**	PBT
Electrical connection	terminal chamber		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Output	w	d
NI20NF-CP40-VP4X2	, PNP	w014	d116
NI20NF-CP40-VN4X2	, NPN	w013	d116

M12 – 3-wire DC



General data

Electrical connection	connector, M12 x 1	**Material housing**	V2A (1.4301)
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Dimensions	Switching distance	Output	w	d
BI3NF-EM12HE-AP6X2-H1141	Ø12 x 62 mm	3 mm,	, PNP	w001	d151
BI3NF-EM12HE-AN6X2-H1141	Ø12 x 62 mm	3 mm,	, NPN	w002	d151
BI2,5FE-EM12FE-AP6X-H1141	Ø12 x 60 mm	2.5 mm,	, PNP	w001	d324

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M18 – 3-wire DC



General data

Switching distance	5 mm,	**Operating voltage**	10…30 VDC
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Dimensions	Output	Material housing	w	d
BI5NF-EM18HE-AP6X2-H1141	Ø18 x 72 mm	_⟍_, PNP	V2A (1.4301)	w001	d045
BI5NF-EM18HE-AN6X2-H1141	Ø18 x 72 mm	_⟍_, NPN	V2A (1.4301)	w002	d045
BI5FE-M18FE-AP6X-H1141	Ø18 x 70 mm	_⟍_, PNP	CuZn -OP	w001	d325

M30 – 3-wire DC



General data

Dimensions	Ø30 x 77 mm	**Operating voltage**	10…30 VDC
Switching distance	10 mm,	**Material housing**	V2A (1.4301)
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Output	w	d
BI10NF-EM30HE-AP6X2-H1141	_⟍_, PNP	w001	d326
BI10NF-EM30HE-AN6X2-H1141	_⟍_, NPN	w002	d326

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

At a glance
Capacitive sensors



Capacitive sensors with high application potential

Capacitive sensors operate contactless, reactionless and wear-free. Both, electrically conductive and non-conductive materials are detected reliably. Capacitive sensors can thus be applied in systems in which inductive sensors would be inappropriate.

In addition to distance and position, capacitive sensors measure deflection, thickness, filling level, eccentricity, concentricity, deformation, wear and vibration.

The functional principle of capacitive sensors is based on the arrangement of two conductors (plates) separated by a dielectric (insulator). An electric field created through the potential difference between the two conductors is stored in the dielectric. The change of field strength (capacitance) in the dielectric is used as a measure. Non-conductive materials are detected through the change of field strength in the dielectric whereby a probe on the one hand and the ambient on the other hand represent the two conductors. Conductive materials are detected through the change of material as well as through the change of distance between the conductors.

The effective switching distances of capacitive sensors can vary considerably. A maximum switching distance is achieved with metallic objects. Reduction factors do not have to be observed as with conventional inductive sensors. With regard to other materials, the switching distance is reduced in dependance to the dielectric constant of the target object. The higher the value the higher the switching distance. The switching distance of nearly all capacitive sensors can be adjusted with a potentiometer.

Capacitive sensors are laid out for temperature ranges between -25 and +70 °C by default. Special version are also available for temperatures up to +100 °C.

Based on the novel technology, the close-up range suppression of TURCK sensors works also with conductive clingage. TURCK also offers a solution for electromagnetic sensitivity. The product portfolio comprises sensors with EMC filter, making them insensitive to radiated and conducted HF interference and burst.

Capacitive sensors are available in cylinder and rectangular design. Alongside the standard plastic and metal versions, sensors enclosed in a Dyflor housing are also available for extra protection against chemically aggressive environments.

Our strengths - your advantages



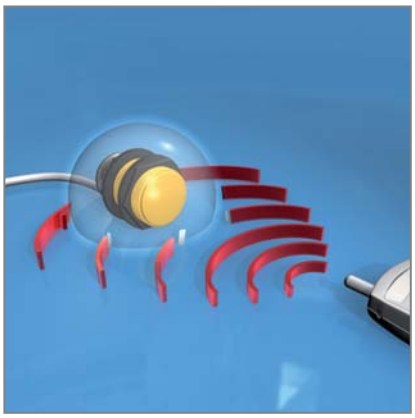
Novel close-up range suppression

Capacitive sensors react to all materials with a permittivity greater than 1. This may lead to interferences during operation in the event of wetting, condensation or icing on the sensor surface. Residue and humidity may also lead to detection failures. In order to rule out this effect, a signal is produced with an electrode close to the sensor surface, antagonizing the main signal. A zone is thus created near the electrode in which dirt and humidity are not detected by the sensor. Based on the novel technology, the close-up range suppression of TURCK sensors works also with conductive clingage.



Wear-free detection of conducting and non-conducting materials.

Capacitive proximity sensors are designed for contactless and wear-free detection of electrically conducting and non-conducting objects. These all-rounders are thus suited for many applications. In addition to distance and position, capacitive sensors measure deflection, thickness, eccentricity, concentricity, deformation, wear, vibration and above all filling levels of liquid and solid substances.



All-round protection against interferences

Capacitive sensors work reliably and safe, even under rough environmental conditions. Special protective measures ensure failsafe operation of the sensors in ambients subject to high electromagnetic interference. The sensors are also ESD immune. Automatic wetting compensation eliminates moreover interferences caused by wetting and condensation.

advantages



Rectangular design, high-performance technology within the smallest space

The rectangular devices offer high-quality components and high functionality in a rugged housing. These sensors moreover convince through easy and convenient mounting. The prescribed free zones are considerably smaller, lowering the construction effort while enhancing the system availability. You save time and money.



Cylindrical design, metal or plastic version

Whether metal or plastic housing, the product range of standard cylindrical sensors is large, offering devices with diameters between 12 mm and 40 mm. The flush mountable sensors generate an almost linear detection field.

Besides the usual reliability, capacitive TURCK sensors feature standard functions such as automatic wetting compensation, excellent EMC and ESD properties and they are flexibly mounted.

For special applications



High-temperature resistant sensors

A growing number of applications require sensors resisting temperatures beyond the standard range of -25 … +70 °C. For this purpose TURCK has developed capacitive sensors which meet exactly these requirements.

The sensors feature temperature-resistant components as well as cleverly designed, fanless passive cooling concepts approved in demanding laboratory tests. These sensors resist temperatures in a range of -25 °C …+100 °C

Page 260



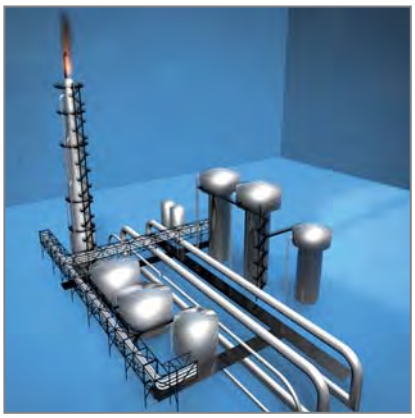
AC 2-wire sensors

Capacitive AC 2-wire sensors are available as M12, M18, M30 and CK40 types.

The 2-wire sensors can be used to replace mechanical switches in existing systems.

The established wiring, normally two wires, can still be used. Cutting down on the amount of wiring safes time.

Page 262



NAMUR sensors

NAMUR sensors are approved for zone 0 and 1. They are polarized 2-wire devices, changing their internal resistance depending on the attenuation (continuous linear/current characteristics). They can be connected to external switching amplifiers which convert current variations into a binary output signal. The advantage: With an approved switching amplifier, they can be applied in Ex-areas and monitor wire-break and short-circuit.

Page 268



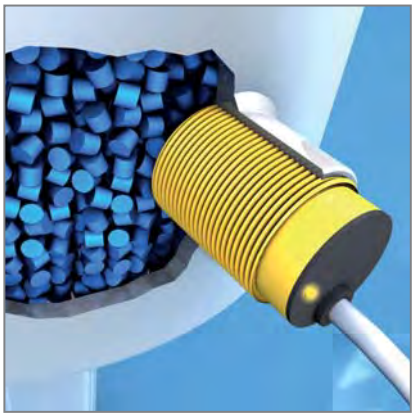
BCF sensors for demanding applications

Conventional sensors do not operate reliably in demanding ambients. Residue and humidity on the active face may inhibit proper operation of the sensor. These problems are now ruled out with the new BCF series. Even conductive clingage are not a problem any more, thanks to the novel technology.

The sensors are immune to radiated and conducted HF interference, burst as well as electrostatic discharge (ESD).

- Suited for highly viscous media
- Increased EMI and RFI shielding

Page 270



BCC sensors for level control

The BCC sensors blank out all interferences during the monitoring process. They are EMC and ESD immune. A laterally mounted shield and an integrated processing unit inhibit predamping when mounted in metal flanges. The full switching distance is thus available.

- Detection of smallest pellets
- Same switching distance, even when mounted in metal barrels
- Excellent EMC and ESD properties

Page 274



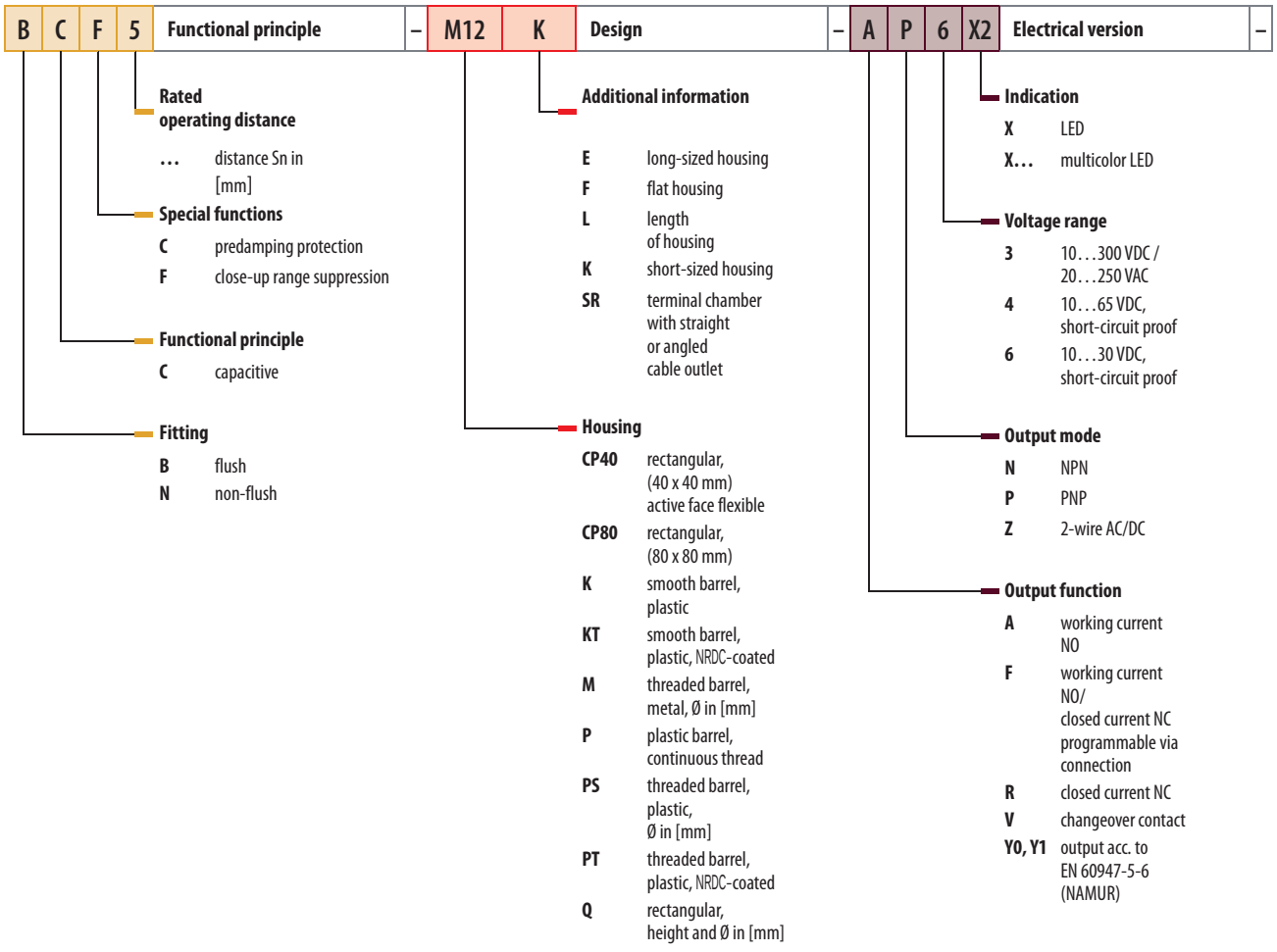
Chemical-resistant sensors

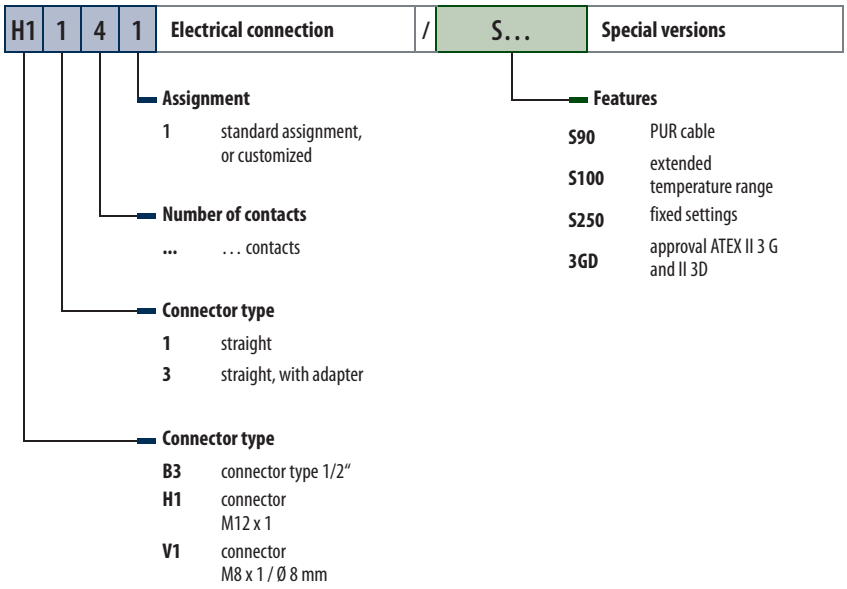
The capacitive sensors (PVDF) are the ideal solution for any application of the pharmaceutical, chemical or food industry. They help to optimize all kinds of applications for instance in dairies, breweries, industrial bakeries, frozen food production, packaging and filling machinery.

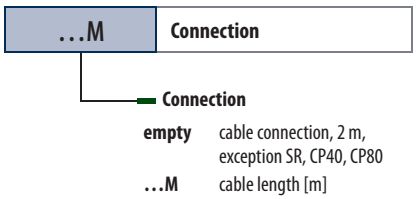
PVDF materials belong to the group of fluoride plastics. They are extremely resistant due to the high fluorine content. They also feature a high creep strength under constant load as well as good heat and cold properties.

Page 276

Type code


B C F 5 Functional principle – M12 K Design – A P 6 X2 Electrical version –
Rated operating distance
... distance Sn in [mm]
Special functions
C predamping protection
F close-up range suppression
Functional principle
C capacitive
Fitting
B flush
N non-flush
Additional information
E long-sized housing
F flat housing
L length of housing
K short-sized housing
SR terminal chamber with straight or angled cable outlet
Housing
CP40 rectangular, (40 x 40 mm) active face flexible
CP80 rectangular, (80 x 80 mm)
K smooth barrel, plastic
KT smooth barrel, plastic, NRDC-coated
M threaded barrel, metal, Ø in [mm]
P plastic barrel, continuous thread
PS threaded barrel, plastic, Ø in [mm]
PT threaded barrel, plastic, NRDC-coated
Q rectangular, height and Ø in [mm]
Indication
X LED
X... multicolor LED
Voltage range
3 10...300 VDC / 20...250 VAC
4 10...65 VDC, short-circuit proof
6 10...30 VDC, short-circuit proof
Output mode
N NPN
P PNP
Z 2-wire AC/DC
Output function
A working current NO
F working current NO/ closed current NC programmable via connection
R closed current NC
V changeover contact
Y0, Y1 output acc. to EN 60947-5-6 (NAMUR)


H1 1 4 1
Electrical connection
/
S...
Special versions
Assignment
1 standard assignment, or customized
Number of contacts
... ... contacts
Connector type
1 straight
3 straight, with adapter
Connector type
B3 connector type 1/2"
H1 connector M12 x 1
V1 connector M8 x 1 / Ø 8 mm
Features
S90 PUR cable
S100 extended temperature range
S250 fixed settings
3GD approval ATEX II 3 G and II 3D


...M
Connection
Connection
empty cable connection, 2 m, exception SR, CP40, CP80
...M cable length [m]

Designs and variants

	Page 247, 269	Page 245	Page 245	Page 246
				
	QF5.5	**Q08**	**Q10**	**Q14**
Design	rectangular QF5.5, 20.3 x 5.5 x 54 mm	rectangular Q08, 20 x 8 x 32 mm	rectangular Q10, 25 x 10.8 x 42 mm	rectangular Q14, 30 x 14 x 55.5 mm
Switching distance	5 mm, 10 mm,	5 mm,	8 mm,	10 mm,
Electrical connection	cable	connector, Ø 8 mm cable	connector cable	connector, M8 x 1 cable
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN

	Page 246	Page 273	Page 248, 266	Page 248, 267
				
	Q20	**Q20L60**	**CP40**	**CP80**
Design	rectangular Q20, 40 x 20 x 68 mm	rectangular Q20L60, 30 x 20 x 60 mm	rectangular CP40, 40 x 40 x 114 mm	rectangular CP80, 80 x 40.5 x 80 mm
Switching distance	20 mm,	10 mm,	20 mm,	50 mm,
Electrical connection	connector, M8 x 1 connector, M12 x 1 cable	connector, M12 x 1 cable	connector, M12 x 1 terminal chamber	connector, M12 x 1 terminal chamber
Output	3-wire DC PNP 3-wire DC NPN	3-wire DC PNP	2-wire AC 4-wire DC PNP 4-wire DC NPN	2-wire AC 4-wire DC PNP 4-wire DC NPN

Designs and variants

	Page 251	Page 251, 263	Page 277	Page 252, 264
				
	M12	**M18**	**S185**	**M30**
Design	threaded barrel M12 x 1	threaded barrel M18 x 1	threaded barrel M18 x 1	threaded barrel M30 x 1.5
Switching distance	3 mm,	5 mm,	5 mm,	10 mm,
Electrical connection	cable	connector, 1/2“ connector, M12 x 1 cable cable with connector, M12 x 1	cable	connector, 1/2“ connector, M12 x 1 cable terminal chamber
Output	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 2-wire AC 3-wire DC PNP 3-wire DC NPN	3-wire DC PNP 3-wire DC NPN	2-wire DC NAMUR 2-wire AC 3-wire DC PNP 4-wire DC PNP 4-wire DC NPN

	Page 265, 272	Page 258
		
	K34	**K40**
Design	smooth barrel 34 mm	smooth barrel 40 mm
Switching distance	15 mm,	20 mm,
Electrical connection	connector, M12 x 1 cable terminal chamber	connector, M12 x 1 terminal chamber
Output	2-wire AC 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	4-wire DC PNP 4-wire DC NPN

Rectangular design



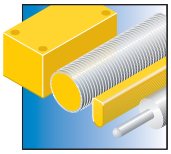
Rectangular shaped capacitive sensors are the compact solution for your facilities. The rugged housing and high-quality components provide additional options for installation and detection. The 8 mm Q08 as well as the variable CP80 convince through easy mounting and short blind zones.

The rectangular types thus simplify the assembly and enhance the operability of your systems.

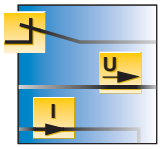
Features

- Stable and resistant housings
- Large switching distances
- Excellent EMC immunity
- Easy to mount
- Connector and cable versions

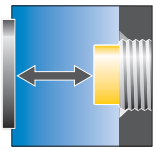
Properties



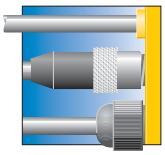
Design
From the small Q08 to the big sized CP80



Electrical versions
3/4-wire DC, PNP/NPN



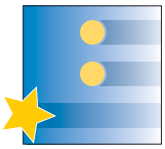
Switching distances
5 mm versions for close-range detection, 50 mm versions for long ranges



Electrical connections
2 m cable PVC/PUR, M8 x 1 plug connection, Ø 8 mm and M12 x 1



Materials
Rugged and chemical resistant plastic and metal housings



Special features
Fine adjustment via potentiometer

Q08 – 3-wire DC – Fixed settings



General data

Dimensions	20 x 8 x 32 mm	**Protection class**	IP67
Switching distance	5 mm,	**Material housing**	GD-Zn
Operating voltage	10…30 VDC	**Material active face**	PA
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BC5-Q08-RP6X2/S250	, PNP	cable	PVC 2 m	w006	d086
BC5-Q08-RP6X2-V1131/S250	, PNP	connector, Ø 8 mm	-	w003	d089
BC5-Q08-AP6X2/S250	, PNP	cable	PVC 2 m	w004	d086
BC5-Q08-AP6X2-V1131/S250	, PNP	connector, Ø 8 mm	-	w001	d089
BC5-Q08-AN6X2/S250	, NPN	cable	PVC 2 m	w005	d086
BC5-Q08-AN6X2-V1131/S250	, NPN	connector, Ø 8 mm	-	w002	d089

Q10 – 3-wire DC – Fixed settings



General data

Dimensions	25 x 10.8 x 42 mm	**Protection class**	IP67
Switching distance	8 mm,	**Material housing**	PBT
Operating voltage	10…30 VDC	**Material active face**	PBT
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BC8-Q10-RP6X2/S250	, PNP	cable	PVC 2 m	w006	d092
BC8-Q10-RP6X2-V1131/S250	, PNP	connector, M8 x 1	-	w003	d091
BC8-Q10-AP6X2/S250	, PNP	cable	PVC 2 m	w004	d092
BC8-Q10-AP6X2-V1131/S250	, PNP	connector, M8 x 1	-	w001	d091
BC8-Q10-AN6X2/S250	, NPN	cable	PVC 2 m	w005	d092
BC8-Q10-AN6X2-V1131/S250	, NPN	connector, M8 x 1	-	w002	d091

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q14 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	30 x 14 x 55.5 mm	**Protection class**	IP67
Switching distance	10 mm,	**Material housing**	PBT
Operating voltage	10…65 VDC	**Material active face**	PBT
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BC10-Q14-RP4X2	⊣⌒, PNP	cable	PUR 2 m	w006	d328
BC10-Q14-AP4X2-V1131	_⌒, PNP	connector, M8 x 1	-	w001	d327
BC10-Q14-AP4X2	_⌒, PNP	cable	PUR 2 m	w004	d328
BC10-Q14-AN4X2-V1131	_⌒, NPN	connector, M8 x 1	-	w002	d327
BC10-Q14-AN4X2	_⌒, NPN	cable	PUR 2 m	w005	d328

Q20 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	40 x 20 x 68 mm	**Protection class**	IP67
Switching distance	20 mm,	**Material housing**	PBT
Operating voltage	10…65 VDC	**Material active face**	PBT
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BC20-Q20-RP4X2-V1131	⊣⌒, PNP	connector, M8 x 1	-	w003	d331
BC20-Q20-RP4X2-H1143	⊣⌒, PNP	connector, M12 x 1	-	w003	d329
BC20-Q20-RP4X2	⊣⌒, PNP	cable	PUR 2 m	w006	d330
BC20-Q20-AP4X2-H1141	_⌒, PNP	connector, M12 x 1	-	w001	d329
BC20-Q20-AP4X2	_⌒, PNP	cable	PUR 2 m	w004	d330
BC20-Q20-AN4X2-H1141	_⌒, NPN	connector, M12 x 1	-	w002	d329
BC20-Q20-AN4X2	_⌒, NPN	cable	PUR 2 m	w005	d330

QF5.5 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	20.3 x 5.5 x 54 mm	**Protection class**	IP67
Switching distance	10 mm,	**Material housing**	PP
Electrical connection	cable	**Material active face**	PP
Operating voltage	10…30 VDC	**Material cable**	PUR 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC10-QF5,5-AP6X2	_⌒_, PNP	w004	d332
BC10-QF5,5-AN6X2	_⌒_, NPN	w005	d332

QF5.5 – 3-wire DC – Fixed settings



General data

Dimensions	20.3 x 5.5 x 54 mm	**Protection class**	IP67
Output	_⌒_, PNP	**Material housing**	PP
Electrical connection	cable	**Material active face**	PP
Operating voltage	10…30 VDC	**Material cable**	PUR 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Switching distance	w	d
BC5-QF5,5-AP6X2/S250	5 mm,	w004	d333
BC10-QF5,5-AP6X2/S250	10 mm,	w004	d333

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

CP40 – 4-wire DC – Fine adjustment via potentiometer



General data

Dimensions	40 x 40 x 114 mm	**Protection class**	IP67
Switching distance	20 mm,	**Material housing**	PBT
Operating voltage	10…65 VDC	**Material active face**	PBT
Ambient temperature	-25…+70 °C		

Variable orientation of active face in 9 directions

Types and data – selection table

Type	Output	Electrical connection	w	d
BC20-CP40-VP4X2-H1141	, PNP	connector, M12 x 1	w008	d335
BC20-CP40-VP4X2	, PNP	terminal chamber	w014	d334
BC20-CP40-VN4X2	, NPN	terminal chamber	w013	d334

CP80 – 4-wire DC – Fine adjustment via potentiometer



General data

Dimensions	80 x 40.5 x 80 mm	**Protection class**	IP67
Switching distance	50 mm,	**Material housing**	PBT
Operating voltage	10…65 VDC	**Material active face**	PBT
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	w	d
NC50-CP80-VP4X2-H1141	, PNP	connector, M12 x 1	w008	d337
NC50-CP80-VP4X2	, PNP	terminal chamber	w014	d336
NC50-CP80-VN4X2	, NPN	terminal chamber	w013	d336

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Cylindrical design - metal

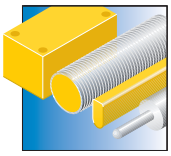


Cylindrically shaped capacitive sensors feature high switching distances and are available in a vast range of types. M12, M18 and M30 chrome-plated threaded barrels are available with connection cable or plug connection. Besides the usual reliability, capacitive sensors feature standard properties such as automatic wetting compensation, excellent EMC and ESD properties and more flexibility with respect to mounting.

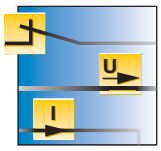
Features

- Excellent reliability
- Automatic wetting compensation
- Excellent EMC properties
- ESD immunity
- Mounting flexibility

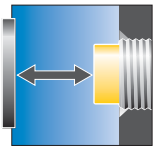
Properties



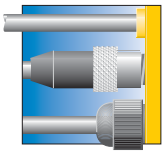
Design
Threaded barrel
M12 x 1 and M30 x 1.5



Electrical versions
3/4-wire NO/NC contact as well as antivalent PNP/NPN output



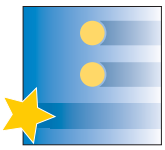
Switching distances
From 3 mm flush to 10 mm non-flush on all metals and non-metals



Electrical connections
2 m connection cable or M12 x 1 plug connection



Materials
Nickel-plated brass or stainless steel threaded barrel versions offer many application possibilities



Special features
Fine adjustment via potentiometer

M12 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø12 x 60 mm	**Protection class**	IP67
Switching distance	3 mm,	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material active face**	ABS
Operating voltage	10…30 VDC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC3-M12-RP6X	, PNP	w006	d338
BC3-M12-AP6X	, PNP	w004	d338
BC3-M12-AN6X	, NPN	w005	d338

M18 – 3-wire DC – Fixed settings



General data

Dimensions	Ø18 x 83 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Material housing**	CuZn-Cr
Operating voltage	10…65 VDC	**Material active face**	PBT

Types and data – selection table

Type	Output	w	d
BC5-M18-RP4X-H1141/S250	, PNP	w015	d339
BC5-M18-AP4X-H1141/S250	, PNP	w001	d339
BC5-M18-AN4X-H1141/S250	, NPN	w002	d339

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

M18 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø18 x 74 mm	**Protection class**	IP67
Switching distance	5 mm,	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material active face**	PBT
Operating voltage	10…65 VDC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC5-M18-RP4X	, PNP	w006	d340
BC5-M18-AP4X	, PNP	w004	d340
BC5-M18-AN4X	, NPN	w005	d340

M30 – 3-wire DC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	10…65 VDC	**Material housing**	CuZn-Cr
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BC10-M30K-VP4X-H1141	Ø30 x 60 mm	, PNP	connector, M12 x 1	-	w008	d341
BC10-M30K-VP4X	Ø30 x 62.5 mm	, PNP	cable	PVC 2 m	w007	d342
BC10-M30K-VN4X-H1141	Ø30 x 60 mm	, NPN	connector, M12 x 1	-	w010	d341
BC10-M30K-VN4X	Ø30 x 62.5 mm	, NPN	cable	PVC 2 m	w018	d342

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

Cylindrical design - plastic



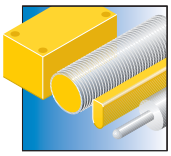
Cylindrically shaped capacitive sensors feature high switching distances and are available in a vast range of types. The standard types come in plastic housings and sizes from Ø 12 mm to Ø 40 mm, with connection cable, plug connection or terminal chamber.

Besides the usual reliability, capacitive sensors feature standard properties such as automatic wetting compensation, excellent EMC and ESD properties and more flexibility with respect to mounting.

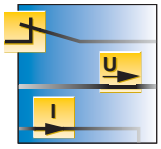
Features

- Excellent reliability
- Automatic wetting compensation
- Excellent EMC properties
- ESD immunity
- Mounting flexibility

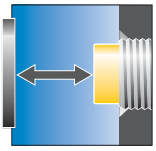
Properties



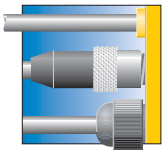
Design
Cylindrical versions M12 x 1, M18 x 1, M30 x 1.5, Ø 34 mm and Ø 40 mm



Electrical versions
3/4-wire NO/NC contact as well as antivalent PNP/NPN output



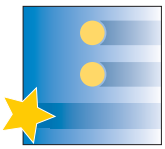
Switching distances
From 3 mm to 20 mm flush mountable on all metals and non-metals



Electrical connections
2 m connection cable or M12 x 1 plug connection



Materials
Plastic housings PA, PBT, PVDF and ABS



Special features
Fine adjustment via potentiometer, protection class IP67

S12 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø12 x 63 mm	**Protection class**	IP67
Switching distance	3 mm,	**Material housing**	PA
Electrical connection	cable	**Material active face**	PA
Operating voltage	10…30 VDC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC3-S12-RP6X	, PNP	w006	d343
BC3-S12-AP6X	, PNP	w004	d343
BC3-S12-AN6X	, NPN	w005	d343

S18 – 3-wire DC – Fixed settings



General data

Dimensions	Ø18 x 83 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Material housing**	PA
Operating voltage	10…65 VDC	**Material active face**	PA

Types and data – selection table

Type	Output	w	d
BC5-S18-RP4X-H1141/S250	, PNP	w015	d344
BC5-S18-AP4X-H1141/S250	, PNP	w001	d344
BC5-S18-AN4X-H1141/S250	, NPN	w002	d344

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

S18 – 3-wire DC – Fine adjustment via potentiometer



General data

Switching distance	5 mm,	**Protection class**	IP67
Operating voltage	10…65 VDC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BC5-S18-RP4X-0,15-RS4	Ø18 x 70 mm	, PNP	cable with connector, M12 x 1	PVC 0.15 m	w015	d346
BC5-S18-RP4X	Ø18 x 74 mm	, PNP	cable	PVC 2 m	w006	d345
BC5-S18-AP4X	Ø18 x 74 mm	, PNP	cable	PVC 2 m	w004	d345
BC5-S18-AN4X	Ø18 x 74 mm	, NPN	cable	PVC 2 m	w005	d345

S30 – 4-wire DC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	10…65 VDC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BC10-S30-VP4X-H1141	Ø30 x 71 mm	, PNP	connector, M12 x 1	-	w008	d347
BC10-S30-VP4X	Ø30 x 62.5 mm	, PNP	cable	PVC 2 m	w007	d348
BC10-S30-VN4X-H1141	Ø30 x 71 mm	, NPN	connector, M12 x 1	-	w010	d347
BC10-S30-VN4X	Ø30 x 62.5 mm	, NPN	cable	PVC 2 m	w018	d348

K34 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø34 x 74.5 mm	**Ambient temperature**	-25…+70 °C
Switching distance	15 mm,	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Material housing**	PBT
Operating voltage	10…65 VDC	**Material active face**	PBT

Types and data – selection table

Type	Output	w	d
BC15-K34-AP4X-H1141	, PNP	w001	d349
BC15-K34-AN4X-H1141	, NPN	w002	d349

K34 – 4-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø34 x 80 mm	**Protection class**	IP67
Switching distance	15 mm,	**Material housing**	PBT
Electrical connection	cable	**Material active face**	PBT
Operating voltage	10…65 VDC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC15-K34-VP4X	, PNP	w007	d350
BC15-K34-VN4X	, NPN	w018	d350

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

KT34 – 4-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø34 x 80 mm	**Protection class**	IP67
Switching distance	20 mm,	**Material housing**	PVDF
Electrical connection	cable	**Material active face**	PVDF
Operating voltage	10…65 VDC	**Material cable**	2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
NC20-KT34-VP4X2	, PNP	w007	d351
NC20-KT34-VN4X2	, NPN	w018	d351

K40SR – 4-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø40 x 90 mm	**Protection class**	IP67
Switching distance	20 mm,	**Material housing**	ABS
Operating voltage	10…65 VDC	**Material active face**	ABS
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	w	d
BC20-K40SR-VP4X2	, PNP	terminal chamber	w014	d352
BC20-K40SR-VN4X2-H1141	, NPN	connector, M12 x 1	w010	d353
BC20-K40SR-VN4X2	, NPN	terminal chamber	w013	d352

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

High-temperature resistant sensors

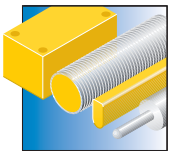


A growing number of applications require sensors resisting temperatures beyond the standard range of -25 … +70 °C. For this purpose TURCK has developed capacitive sensors which meet exactly these requirements. The sensors feature temperature resistant components as well as cleverly designed passive cooling concepts, approved in demanding laboratory tests. These sensors resist temperatures from -25 °C to +100 °C.

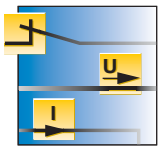
Features

- For temperatures up to +100 °C
- Automatic wetting compensation
- Excellent EMC properties
- ESD immunity

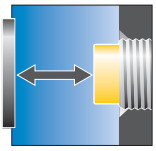
Properties



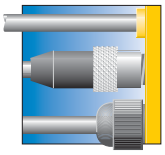
Design
Threaded barrel
M12 x 1 and M18 x 1



Electrical versions
3-wire DC and NAMUR



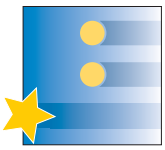
Switching distances
3 mm and 5 mm flush mounting



Electrical connections
2 m cable



Materials
Rugged, temperature resistant housing materials, application optimized cable qualities



Special features
Fixed settings via potentiometer,
-25 °C to +100 °C

+100°C – S12 – 3-wire DC



Type	BC3-S12-AP6X/S100	**Protection class**	IP67
Dimensions	Ø12 x 63 mm	**Material housing**	PA
Switching distance	3 mm,	**Material active face**	PA
Output	_⌒_, PNP	**Material cable**	PUR 2 m
Electrical connection	cable	**Wiring diagram**	w004
Operating voltage	10…30 VDC	**Dimension drawing**	d343
Ambient temperature	-25…+100 °C		

+100°C – S18 – NAMUR



Type	BC5-S18-Y1X/S100	**Protection class**	IP67
Dimensions	Ø18 x 74 mm	**Material housing**	PA
Switching distance	5 mm,	**Material active face**	PA
Output	NAMUR	**Material cable**	silicone 2 m
Electrical connection	cable	**Wiring diagram**	w019
Operating voltage	8.2 VDC	**Dimension drawing**	d345
Ambient temperature	-25…+100 °C		

+100°C – S185 – 3-wire DC



General data

Dimensions	Ø18 x 74.5 mm	**Protection class**	IP67
Switching distance	5 mm,	**Material housing**	PVDF
Electrical connection	cable	**Material active face**	PVDF
Operating voltage	10…65 VDC	**Material cable**	PVC 2 m
Ambient temperature	-25…+100 °C		

Types and data – selection table

Type	Output	w	d
BC5-S185-AP4X/S100	_⌒_, PNP	w004	d354
BC5-S185-AN4X/S100	_⌒_, NPN	w005	d354

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

AC -2-wire sensors

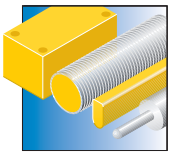


AC 2-wire sensors are easily installed, they replace mechanical switches in existing systems and simplify wiring. The established wiring, normally two wires, can still be used. Cutting down on the amount of wiring safes time.

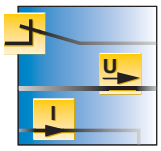
Features

- Automatic wetting compensation
- Excellent EMC properties
- Large switching distances

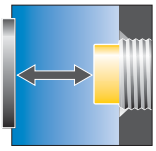
Properties



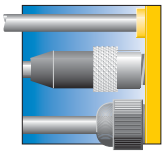
Design
Cylindrical Ø 18, 30 and 34 mm, rectangular 40 x 40 and 80 x 80 mm



Electrical versions
2-wire AC, NO/NC or programmable version



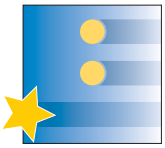
Switching distances
5 mm flush, 50 mm non-flush



Electrical connections
2 m connection cable, terminal chamber or 1/2-20 UNF plug connection



Materials
Chrome-plated brass and rugged plastic



Special features
Fine adjustment via potentiometer, protection class IP67

M18 – 2-wire AC – Fixed settings



General data

Dimensions	Ø18 x 82 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Protection class**	IP67
Electrical connection	connector, 1/2"	**Material housing**	CuZn-Cr
Operating voltage	20…250 VAC	**Material active face**	PBT

Types and data – selection table

Type	Output	w	d
BC5-M18-RZ3X-B3331/S250	, 2-wire	w061	d183
BC5-M18-AZ3X-B3331/S250	, 2-wire	w060	d183

M18 – 2-wire AC – Fine adjustment via potentiometer



General data

Dimensions	Ø18 x 74 mm	**Protection class**	IP67
Switching distance	5 mm,	**Material housing**	CuZn-Cr
Electrical connection	cable	**Material active face**	PBT
Operating voltage	20…250 VAC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC5-M18-RZ3X	, 2-wire	w062	d340
BC5-M18-AZ3X	, 2-wire	w031	d340

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

S18 – 2-wire AC – Fine adjustment via potentiometer



General data

Dimensions	Ø18 x 74 mm	**Protection class**	IP67
Switching distance	5 mm,	**Material housing**	PA
Electrical connection	cable	**Material active face**	PA
Operating voltage	20…250 VAC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BC5-S18-RZ3X	, 2-wire	w038	d345
BC5-S18-AZ3X	, 2-wire	w020	d345

M30 – 2-wire AC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	20…250 VAC	**Material housing**	CuZn-Cr
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material active face	Material cable	w	d
BC10-M30K-RZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2“	-	-	w061	d355
BC10-M30K-RZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PA	PVC 2 m	w062	d342
BC10-M30K-AZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2“	-	-	w060	d355
BC10-M30K-AZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PA	PVC 2 m	w031	d342

S30 – 2-wire AC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	20…250 VAC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BCF10-S30-RZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2"	-	w063	d356
BCF10-S30-RZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PVC 2 m	w038	d348
BCF10-S30-AZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2"	-	w025	d356
BCF10-S30-AZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PVC 2 m	w020	d348
BC10-S30-RZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2"	-	w063	d356
BC10-S30-RZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PVC 2 m	w038	d348
BC10-S30-AZ3X-B3131	Ø30 x 71 mm	, 2-wire	connector, 1/2"	-	w025	d356
BC10-S30-AZ3X	Ø30 x 62.5 mm	, 2-wire	cable	PVC 2 m	w020	d348

K34 – 2-wire AC – Fine adjustment via potentiometer



General data

Dimensions	Ø34 x 80 mm	**Protection class**	IP67
Switching distance	15 mm,	**Material housing**	PBT
Electrical connection	cable	**Material active face**	PBT
Operating voltage	20…250 VAC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BCF15-K34-RZ3X	, 2-wire	w038	d350
BCF15-K34-AZ3X	, 2-wire	w020	d350
BC15-K34-RZ3X	, 2-wire	w038	d350
BC15-K34-AZ3X	, 2-wire	w020	d350

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

P30SR – 2-wire AC – Fine adjustment via potentiometer



Type	BC10-P30SR-FZ3X2	**Ambient temperature**	-25…+70 °C
Dimensions	Ø30 x 115 mm	**Protection class**	IP67
Switching distance	10 mm,	**Material housing**	ABS
Output	connection programmable	**Material active face**	ABS
Electrical connection	terminal chamber	**Wiring diagram**	w029
Operating voltage	20…250 VAC	**Dimension drawing**	d357

K34SR – 2-wire AC – Fine adjustment via potentiometer



Type	BC15-K34SR-FZ3X2	**Ambient temperature**	-25…+70 °C
Dimensions	Ø34 x 106 mm	**Protection class**	IP67
Switching distance	15 mm,	**Material housing**	PBT
Output	connection programmable	**Material active face**	PBT
Electrical connection	terminal chamber	**Wiring diagram**	w029
Operating voltage	20…250 VAC	**Dimension drawing**	d358

CP40 – 2-wire AC – Fine adjustment via potentiometer



Type	BC20-CP40-FZ3X2	**Ambient temperature**	-25…+70 °C
Dimensions	40 x 40 x 114 mm	**Protection class**	IP67
Switching distance	20 mm,	**Material housing**	PBT
Output	connection programmable	**Material active face**	PBT
Electrical connection	terminal chamber	**Wiring diagram**	w029
Operating voltage	20…250 VAC	**Dimension drawing**	d334

Variable orientation of active face in 9 directions

CP80 – 2-wire AC – Fine adjustment via potentiometer



Type	NC50-CP80-FZ3X2	**Ambient temperature**	-25…+70 °C
Dimensions	80 x 40.5 x 80 mm	**Protection class**	IP67
Switching distance	50 mm,	**Material housing**	PBT
Output	connection programmable	**Material active face**	PBT
Electrical connection	terminal chamber	**Wiring diagram**	w029
Operating voltage	20…250 VAC	**Dimension drawing**	d336

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

NAMUR sensors

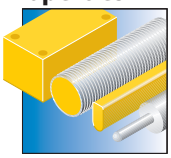


NAMUR sensors are approved for the zones 0 and 1. They are polarized 2-wire devices, changing their internal resistance in dependence on the attenuation (continuous linear/current characteristics). They can be connected to external switching amplifiers which convert current variations into binary output signals. The advantage: With an approved switching amplifier, they can be applied in Ex-areas as well as monitor wire-break and short-circuit continuously.

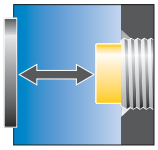
Features

- Integrated sensor monitoring
- Automatic wetting compensation
- Excellent EMC properties
- Ex-area approved

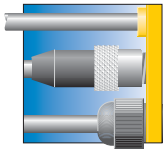
Properties



Design
Threaded barrel
M18 x 1, M30 x 1.5 and rectangular QF5.5



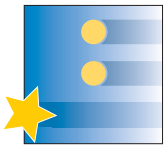
Switching distances
5 mm and 10 mm, flush mountable



Electrical connections
2 m cable PVC and silicone



Materials
Polypropylene and polyamide housings



Special features
Fixed settings, ATEX and SIL approvals, extended temperature range

QF5.5 – NAMUR – Fixed settings



Type	BC5-QF5,5-Y1X/S250	**Protection class**	IP67
Dimensions	20.3 x 5.5 x 54 mm	**Material housing**	PP
Switching distance	5 mm,	**Material active face**	PP
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable	**Wiring diagram**	w019
Operating voltage	nom. 8.2 VDC	**Dimension drawing**	d359
Ambient temperature	-25…+70 °C		

S18 – NAMUR – Fine adjustment via potentiometer



General data

Dimensions	Ø18 x 74 mm	**Operating voltage**	nom. 8.2 VDC
Switching distance	5 mm,	**Protection class**	IP67
Output	NAMUR	**Material housing**	PA
Electrical connection	cable	**Material active face**	PA

Types and data – selection table

Type	Ambient temperature	Material cable	w	d
BC5-S18-Y1X/S100	-25…+100 °C	silicone 2 m	w019	d345
BC5-S18-Y1X	-25…+70 °C	PVC 2 m	w019	d345

S30 – NAMUR – Fine adjustment via potentiometer



Type	BC10-S30-Y1X	**Protection class**	IP67
Dimensions	Ø30 x 62.5 mm	**Material housing**	PA
Switching distance	10 mm,	**Material active face**	PA
Output	NAMUR	**Material cable**	PVC 2 m
Electrical connection	cable	**Wiring diagram**	w019
Operating voltage	nom. 8.2 VDC	**Dimension drawing**	d348
Ambient temperature	-25…+70 °C		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

BCF sensors with close-up range suppression

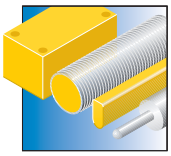


Thanks to the new switching technology in combination with optimized electrode and compensation features, the BCFs work reliably under difficult application conditions. Even conductive coatings are not a problem at all. To avoid HF crosstalk and other interferences, the potentiometer is located in a less sensitive area of the circuit, this applies to all capacitive TURCK sensors. Even applications that are subject to strong interferences do not require additional protective measures. All sensors of the BCF series are immune to radiated and conducted HF interference, burst as well as electrostatic discharge (ESD).

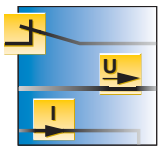
Features

- Automatic wetting compensation
- Increased EMI and RFI shielding
- High protection class
- Novel close-up range suppression

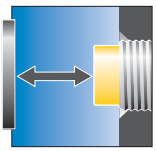
Properties



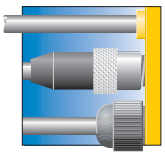
Design
Cylinders Ø 18, Ø 30 and Ø 34 mm and rectangular Q20L60



Electrical versions
2, 3 and 4-wire, PNP or NPN, NO or NC



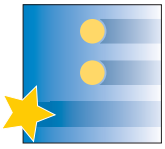
Switching distances
5 … 15 mm, flush mounting



Electrical connections
2 m cable PVC/PUR, M12 x 1 plug connection



Materials
PA or PBT housings



Special features
Close-up range suppression
EMC shielded

BCF – S18 – 3-wire DC – Fixed settings



General data

Dimensions	Ø18 x 83 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Material housing**	PA
Operating voltage	10…65 VDC	**Material active face**	PA

Types and data – selection table

Type	Output	w	d
BCF5-S18-AP4X-H1141/S250	_⌒_, PNP	w001	d344
BCF5-S18-AN4X-H1141/S250	_⌒_, NPN	w002	d344

BCF – S18 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø18 x 74 mm	**Ambient temperature**	-25…+70 °C
Switching distance	5 mm,	**Protection class**	IP67
Electrical connection	cable	**Material housing**	PA
Operating voltage	10…65 VDC	**Material active face**	PA

Types and data – selection table

Type	Output	Material cable	w	d
BCF5-S18-RP4X/S90	⊣⌒_, PNP	PUR 2 m	w006	d345
BCF5-S18-RN4X	⊣⌒_, NPN	PVC 2 m	w064	d345
BCF5-S18-AP4X/S90	_⌒_, PNP	PUR 2 m	w004	d345
BCF5-S18-AP4X	_⌒_, PNP	PVC 2 m	w004	d345
BCF5-S18-AN4X	_⌒_, NPN	PVC 2 m	w005	d345

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

BCF – S30 – 4-wire DC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	10…65 VDC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BCF10-S30-VP4X-H1141	Ø30 x 71 mm	, PNP	connector, M12 x 1	-	w008	d347
BCF10-S30-VP4X	Ø30 x 62.5 mm	, PNP	cable	PVC 2 m	w007	d348
BCF10-S30-VN4X-H1141	Ø30 x 71 mm	, NPN	connector, M12 x 1	-	w010	d347
BCF10-S30-VN4X	Ø30 x 62.5 mm	, NPN	cable	PVC 2 m	w018	d348

BCF – K34 – 2-wire AC – Fine adjustment via potentiometer



General data

Dimensions	Ø34 x 80 mm	**Protection class**	IP67
Switching distance	15 mm,	**Material housing**	PBT
Electrical connection	cable	**Material active face**	PBT
Operating voltage	20…250 VAC	**Material cable**	PVC 2 m
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	w	d
BCF15-K34-RZ3X	, 2-wire	w038	d350
BCF15-K34-AZ3X	, 2-wire	w020	d350

BCF – Q20L60 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	30 x 20 x 60 mm	**Ambient temperature**	-25…+70 °C
Switching distance	10 mm,	**Protection class**	IP67
Output	, PNP	**Material housing**	PC
Operating voltage	10…65 VDC	**Material active face**	PC

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BCF10-Q20L60-AP4X-H1141	connector, M12 x 1	-	w001	d361
BCF10-Q20L60-AP4X	cable	PVC 2 m	w004	d360

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

BCC sensors for level control

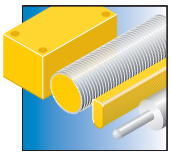


The BCC sensors blank out all interferences during the monitoring process and feature excellent EMC and ESD properties. A laterally mounted shield and an integrated processing unit inhibit predamping when mounted in metal flanges. The full switching distance is thus available.

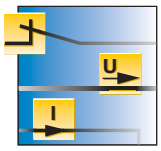
Features

- Automatic wetting compensation
- Excellent EMC properties
- High ESD immunity
- Detection of smallest pellets

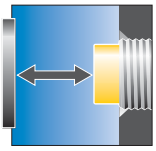
Properties



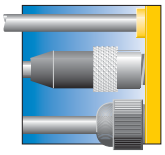
Design
Threaded barrel,
M30 x 1.5



Electrical versions
3/4-wire NO/NC, PNP as well as antivalent PNP/NPN output



Switching distances
10 mm, flush mounting



Electrical connections
2 m cable, M12 x 1 plug connection



Materials
Polyamide housing



Special features
ESD immunity,
lateral predamping protection

BCF – S30 – 3-wire DC – Fine adjustment via potentiometer



General data

Switching distance	10 mm,	**Protection class**	IP67
Operating voltage	10…65 VDC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BCC10-S30-VP4X-H1141	Ø30 x 71 mm	, PNP	connector, M12 x 1	-	w008	d347
BCC10-S30-RP4X-H1143	Ø30 x 71 mm	, PNP	connector, M12 x 1	-	w003	d347
BCC10-S30-RP4X	Ø30 x 62.5 mm	, PNP	cable	PVC 2 m	w006	d348
BCC10-S30-AP4X-H1141	Ø30 x 71 mm	, PNP	connector, M12 x 1	-	w001	d347
BCC10-S30-AP4X	Ø30 x 62.5 mm	, PNP	cable	PVC 2 m	w004	d348

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Chemical-resistant sensors

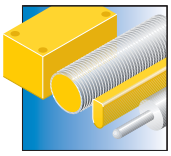


The capacitive sensors (PVDF) are the ideal solution for any application of the pharmaceutical, chemical or food industry. The broad range of functional features of TURCK sensors help to optimize all kinds of applications, for instance, in dairies, breweries, the manufacture of bakery products and frozen foods, or packaging and filling procedures. PVDF materials belong to the group of fluoride plastics. They are extremely resistant due to the high fluorine content. They also feature a high tracking resistance under constant load, good cold properties and excellent temperature resistance.

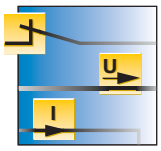
Features

- Excellent chemical resistance
- Automatic wetting compensation
- Excellent EMC properties
- Large switching distances

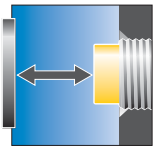
Properties



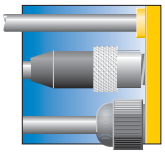
Design
Cylinders Ø 18, Ø 30 mm



Electrical versions
3-wire NO contact or antivalent PNP/NPN switching, NAMUR



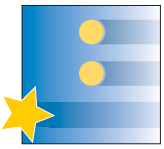
Switching distances
10 mm, flush mounting



Electrical connections
2 m cable PVC or PUR



Materials
Threaded barrel, plastic PVDF



Special features
Chemical resistant

S185 – 3-wire DC – Fine adjustment via potentiometer



Type	BC5-S185-AP4X	**Protection class**	IP67
Dimensions	Ø18 x 74.5 mm	**Material housing**	PVDF
Switching distance	5 mm,	**Material active face**	PVDF
Output	, PNP	**Material cable**	PVC 2 m
Electrical connection	cable	**Wiring diagram**	w004
Operating voltage	10…65 VDC	**Dimension drawing**	d354
Ambient temperature	-25…+70 °C		

PT30 – 3-wire DC – Fine adjustment via potentiometer



General data

Dimensions	Ø30 x 80 mm	**Protection class**	IP67
Switching distance	10 mm,	**Material housing**	PVDF
Electrical connection	cable	**Material active face**	PVDF
Ambient temperature	-25…+70 °C	**Material cable**	PVC 2 m

Types and data – selection table

Type	Output	Operating voltage	w	d
BC10-PT30-Y0X	NAMUR	nom. 8.2 VDC	w019	d362
BC10-PT30-VP4X2	, PNP	10…65 VDC	w007	d362
BC10-PT30-VN4X2	, NPN	10…65 VDC	w018	d362

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

At a glance

Magnetic field sensors



Magnetic field sensors for pneumatic cylinders

Magnetic field sensors are activated by magnetic fields and are especially suited for the detection of pistons in pneumatic cylinders. Based on the fact that magnetic fields can permeate non-magnetizable metals, sensors of this type detect a permanent magnet mounted on a piston through the aluminium wall of a cylinder.

Magnetic-inductive sensors from TURCK operate on a patented function principle. The sensing range is adjusted to a core width to rule out multiple switchpoints. Permanent magnets of different field strengths are thus reliably detected in all common cylinder types. The sensors operate wear-free, are rugged and short-circuit protected and feature protection class IP67.

The product range offers many solutions for standard applications, welding facilities as well as Ex-areas. TURCK also offers magnetic field sensors for analog detection tasks. They are easy to operate and even fulfill higher requirements equally reliable.

To monitor the piston position on all standard pneumatic cylinders, sensors from only one family are required, namely BIM-UNT and BIM-UNR. NAMUR sensors for explosion hazardous areas are also available.

BIM-UNT and BIM-UNR can be mounted directly on T- and C-groove cylinders. Matching accessories are available for round, tie-rod and dovetail cylinders, making the use of special versions with manual fine adjustment or external switchpoint setting redundant.

The family of universal magnetic field sensors for pneumatic cylinders is completed by the WIM45-UNTL with analog current and voltage output. Already existing solutions with indirect analog detection can be replaced easily by this new type.

Our strengths - Your advantages



Universal magnetic field sensors

The piston position is monitored very comfortably on all standard pneumatic cylinders with the universal magnetic field sensors. But what's more, the new magnetic field sensors by TURCK not only support efficient standardization but also provide enormous potential in terms of optimization, from construction over purchase and production up to system support for operators and service personnel. Use the unique performance spectrum of these sensors for effective cost reduction!



High system availability

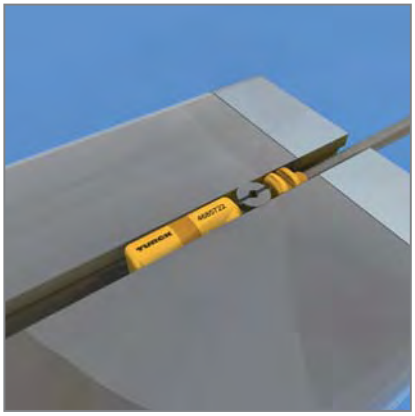
The universally applicable magnetic field sensors operate extremely reliable, even in rough production environments. This is guaranteed through excellent EMC immunity, protection class IP67 as well as the especially safe installation method of the sensors. We placed great emphasis on practical functionality of the housings and solid mounting accessories. Magnetic field sensors thus withstand the rough ambient conditions of machine building without any problems. Use these benefits to optimize your production processes.



Maximum freedom

Numerous connection possibilities, simple mounting and flexible accessories guarantee maximum freedom in planning with minimal mounting effort. From single switchpoint monitoring, over twin-sets, analog position detection up to combined binary/analog monitoring: Profit from the extensive standard product range of TURCK magnetic field sensors providing more flexibility for your application.

advantages



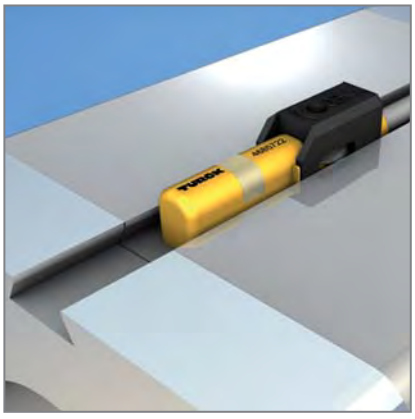
Safe installation

A pre-fixation lip enables one-handed mounting in the groove. Once inserted in the groove, the sensor is moved to its final position. Screwed tight with a wing screw near the cable exit prevents an uplift of the sensor when pulling the cable. The screw is made of tool steel alloy and thus extremely stable. For vibration-resistant mounting it is simply enough to tighten the screw with a quarter revolution, using a standard screw driver or a 1.5 mm Allen key.



Compact design

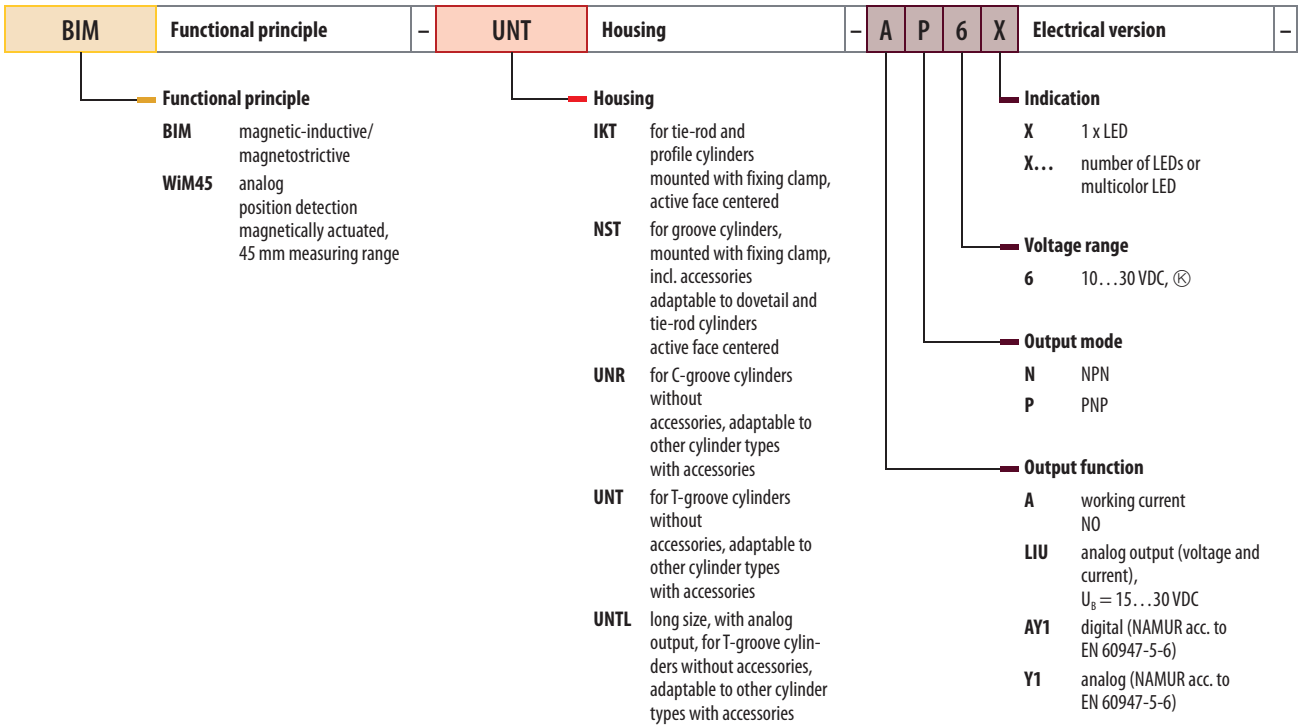
With a total length of only 28 (UNT) resp. 18 mm (UNR) the standard sensors are the most compact devices on the market. The active face is located directly at the sensor end. This enables the piston position to be detected up to the end of compact short-stroke cylinders. Thanks to the bright and all-round visible LED, the switching state is perfectly visible from any perspective and proves helpful when the sensors are aligned and mounted. The best mounting position is thus obtained.

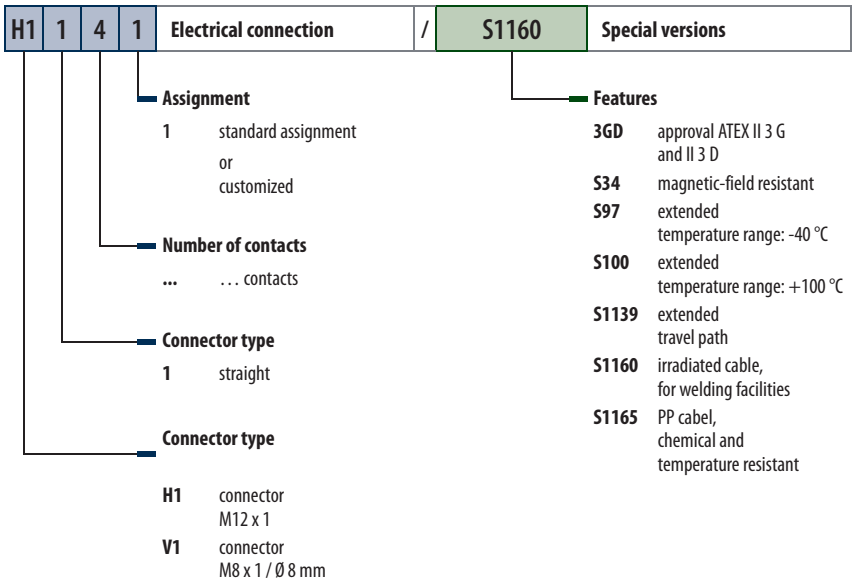


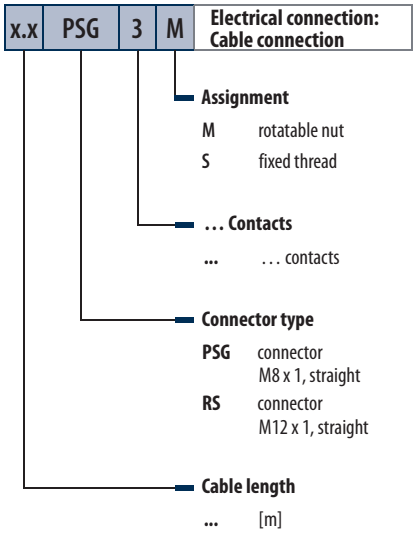
Optional accessories

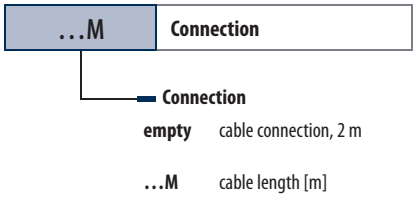
An extensive range of accessories round off the performance spectrum of the new, universally applicable magnetic field sensors. We offer mounting aids for all standard cylinders, adjustment and fixation tools, as well as the fixation clips for save cable routing. Due to a novel MR sensor element all magnets in standard pneumatic cylinders can be detected safely and without multiple switchpoints. Thus exact position detection is possible, allowing you to benefit from the high level of flexibility.

Type code


BIM
Functional principle
–
UNT
Housing
–
A
P
6
X
Electrical version
–
Functional principle
BIM magnetic-inductive/ magnetostrictive
WiM45 analog position detection magnetically actuated, 45 mm measuring range
Housing
IKT for tie-rod and profile cylinders mounted with fixing clamp, active face centered
NST for groove cylinders, mounted with fixing clamp, incl. accessories adaptable to dovetail and tie-rod cylinders active face centered
UNR for C-groove cylinders without accessories, adaptable to other cylinder types with accessories
UNT for T-groove cylinders without accessories, adaptable to other cylinder types with accessories
UNTL long size, with analog output, for T-groove cylinders without accessories, adaptable to other cylinder types with accessories
Indication
X 1 x LED
X... number of LEDs or multicolor LED
Voltage range
6 10...30 VDC, Ⓚ
Output mode
N NPN
P PNP
Output function
A working current NO
LIU analog output (voltage and current), U_B = 15...30 VDC
AY1 digital (NAMUR acc. to EN 60947-5-6)
Y1 analog (NAMUR acc. to EN 60947-5-6)


H1 1 4 1
Electrical connection
/
S1160
Special versions
Assignment
1 standard assignment
or
customized
Number of contacts
... ... contacts
Connector type
1 straight
Connector type
H1 connector
M12 x 1
V1 connector
M8 x 1 / Ø 8 mm
Features
3GD approval ATEX II 3 G
and II 3 D
S34 magnetic-field resistant
S97 extended
temperature range: -40 °C
S100 extended
temperature range: +100 °C
S1139 extended
travel path
S1160 irradiated cable,
for welding facilities
S1165 PP cabel,
chemical and
temperature resistant


x.x PSG 3 M
Electrical connection:
Cable connection
Assignment
M rotatable nut
S fixed thread
... Contacts
... ... contacts
Connector type
PSG connector
M8 x 1, straight
RS connector
M12 x 1, straight
Cable length
... [m]


...M
Connection
Connection
empty cable connection, 2 m
...M cable length [m]

Designs and variants

	Page 287	Page 291	Page 293	Page 295
				
	UNT	**UNR**	**WIM**	**NST**
Design	rectangular UNT, 5 x 6 x 28 mm	rectangular UNR, 2.9 x 4.6 x 18 mm	rectangular UNTL, 5 x 14.5 x 73 mm	rectangular NST, 17 x 14 x 28 mm
Measuring range			45 mm	
Electrical connection	cable connector, M12 x 1 connector, fixed thread, cable with connector, Ø 8 mm connector, rotable thread, M8 x 1 connector, M8 x 1	cable connector, fixed thread, cable with connector, Ø 8 mm connector, rotable thread, M8 x 1 connector, M12 x 1	cable with connector, M8 x 1 cable with connector, M12 x 1 connector, M12 x 1	connector, M12 x 1 connector, M8 x 1 cable
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN 4-wire DC PNP 4-wire DC NPN	3-wire DC PNP 3-wire DC NPN	4-wire DC Analog output 4-wire DC PNP/analog output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN
Accessories cylindrical design	KLR1... - KLDT... KLZ...INT	-	- KLDT...	KLN3 KLN3 KLZ...INT und KLN3 KLN-SMC KLF1 KLF2

Page 296



	IKT
Design	rectangular IKT, 14.6 x 17 x 30 mm
Electrical connection	connector, M8 x 1 connector, M12 x 1 cable
Output	2-wire DC NAMUR 3-wire DC PNP 3-wire DC NPN
Accessories cylindrical design	◯ KLI... ⬡ KLI... ⬡ KLI...

Magnetic field sensors - UNT series

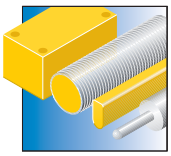


UNTs are mounted quickly and firmly. A pre-fixation lip enables one-handed mounting, even overhead. With the extended range of accessories, the sensors can be mounted on nearly all standard pneumatic cylinders. All standard connection types are available.

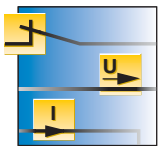
Features

- Compact design
- Quickly and firmly mounted
- Excellent EMC immunity
- For T-groove cylinders without accessories
- Mounting accessories for all standard cylinders.
- Clearly visible LED
- Twin set for switchpoint monitoring

Properties



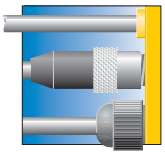
Design
One type for all standard pneumatic cylinders



Electrical versions
NAMUR, 2, 3 and 4-wire DC



Measuring ranges
Reliable position detection on all standard pneumatic cylinders



Electrical connections
All standard connection types available, cable, connector or pigtail



Materials
Rugged PP housing for a wide range of applications

UNT – Cable connection



General data

Dimensions	5 x 6 x 28 mm	**Protection class**	IP67
Electrical connection	cable	**Material housing**	PP
Switching frequency	1 kHz	**Material active face**	PP

Types and data – selection table

Type	Output	Operating voltage	Ambient temperature	Material cable	w	d
BIM-UNT-AP6X	_⌒_, PNP	10…30 VDC	-25…+70 °C	PUR 2 m	w059	d363
BIM-UNT-AP6X 7M	_⌒_, PNP	10…30 VDC	-25…+70 °C	PUR 7 m	w059	d363
BIM-UNT-AP6X/S1139	_⌒_, PNP	10…30 VDC	-25…+70 °C	PUR 2 m	w059	d363
BIM-UNT-AP6X/S1160	_⌒_, PNP	10…30 VDC	-25…+70 °C	TPU 2 m	w059	d363
BIM-UNT-AP6X/S100/S1165	_⌒_, PNP	10…30 VDC	-25…+100 °C	TPE 2 m	w059	d363
BIM-UNT-AP6X/3GD	_⌒_, PNP	10…30 VDC	-25…+70 °C	PUR 2 m	w059	d363
BIM-UNT-AN6X	_⌒_, NPN	10…30 VDC	-25…+70 °C	PUR 2 m	w005	d363
BIM-UNT-AG41X/S1139/S1160	_⌒_, 2-wire	10…55 VDC	-25…+70 °C	TPU 2 m	w065	d363
BIM-UNT-AG41X/S1139/S1160 7M	_⌒_, 2-wire	10…55 VDC	-25…+70 °C	TPU 7 m	w065	d363
BIM-UNT-AY1X/S1139	NAMUR	nom. 8.2 VDC	-25…+70 °C	PVC 2 m	w019	d363
BIM-UNT-AY1X/S1139 7M	NAMUR	nom. 8.2 VDC	-25…+70 °C	PVC 7 m	w019	d363

UNT – Pigtail with M8 x 1 connector



General data

Dimensions	5 x 6 x 28 mm	**Material housing**	PP
Switching frequency	1 kHz	**Material active face**	PP
Ambient temperature	-25…+70 °C	**Material cable**	PUR 0.3 m
Protection class	IP67		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 758 ff

Types and data – selection table

Type	Output	Electrical connection	Operating voltage	w	d
BIM-UNT-AP6X-0,3-PSG3S	_⌒_, PNP	connector, fixed thread, Ø 8 mm	10…30 VDC	w001	d364
BIM-UNT-AP6X-0,3-PSG3S/S1139	_⌒_, PNP	connector, fixed thread, Ø 8 mm	10…30 VDC	w001	d364
BIM-UNT-AN6X-0,3-PSG3S	_⌒_, NPN	connector, fixed thread, Ø 8 mm	10…30 VDC	w002	d364
BIM-UNT-AP6X-0,3-PSG3M	_⌒_, PNP	connector rotable thread, M8 x 1	10…30 VDC	w001	d365
BIM-UNT-AP6X-0,3-PSG3M/S1139	_⌒_, PNP	connector rotable thread, M8 x 1	10…30 VDC	w001	d365
BIM-UNT-AN6X-0,3-PSG3M	_⌒_, NPN	connector rotable thread, M8 x 1	10…30 VDC	w002	d365

UNT – Pigtail with M12 x 1 connector



General data

Dimensions	5 x 6 x 28 mm	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Material housing**	PP
Switching frequency	1 kHz	**Material active face**	PP
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Operating voltage	Material cable	w	d
BIM-UNT-AP6X-0,3-RS4	_⌒_, PNP	10…30 VDC	PUR 0.3 m	w001	d366
BIM-UNT-AP6X-0,3-RS4/S1139	_⌒_, PNP	10…30 VDC	PUR 0.3 m	w001	d366
BIM-UNT-AP6X-0,3-RS4/S1160	_⌒_, PNP	10…30 VDC	TPU 0.3 m	w001	d366
BIM-UNT-AG41X-0,3-RS4.23/S1139/S1160	_⌒_, 2-wire	10…55 VDC	TPU 0.3 m	w032	d366
BIM-UNT-AY1X-0,3-RS4.21/S1139	NAMUR	nom. 8.2 VDC	PVC 0.3 m	w021	d366

UNT – M12 x 1 or M8 x 1 connector



General data

Dimensions	5 x 22 x 30 mm	**Protection class**	IP67
Operating voltage	10…30 VDC	**Material housing**	PP
Switching frequency	1 kHz	**Material active face**	PP
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	w	d
BIM-UNT-AP6X2-V1131	_⌒_, PNP	connector, M8 x 1	w001	d367
BIM-UNT-AP6X2-H1141	_⌒_, PNP	connector, M12 x 1	w001	d368
BIM-UNT-AN6X2-V1131	_⌒_, NPN	connector, M8 x 1	w002	d367
BIM-UNT-AN6X2-H1141	_⌒_, NPN	connector, M8 x 1	w002	d368

UNT – Twin set



General data

Dimensions	5 x 22 x 30 mm	**Protection class**	IP67
Operating voltage	10…30 VDC	**Material housing**	PP
Switching frequency	1 kHz	**Material active face**	PP
Ambient temperature	-25…+70 °C	**Material cable**	PUR 0.3 m

Types and data – selection table

Type	Output	Electrical connection	w	d
BIM-UNT-0,3-UNT-2AP6X3-V1141	_⌒_, PNP	connector, M8 x 1	w066	d369
BIM-UNT-0,3-UNT-2AP6X3-H1141	_⌒_, PNP	connector, M12 x 1	w066	d370
BIM-UNT-0,3-UNT-2AN6X3-H1141	_⌒_, NPN	connector, M12 x 1	w066	d370

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 758 ff

Magnetic field sensors UNR design

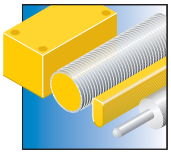


Magnetic field sensors for short-stroke cylinders and parallel grippers are very compactly designed. The all-round visible LED allows the switching state to be observed from any position. All standard connection types are available.

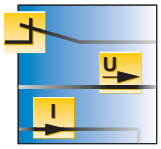
Features

- Compact design
- For C-groove cylinders
- Quickly and firmly mounted
- Excellent EMC properties
- Clearly visible LED

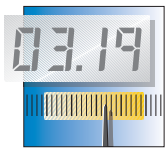
Properties



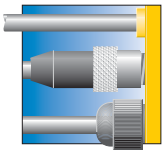
Design
Small size, length 18 mm



Electrical versions
3-wire DC outputs NPN/PNP switching



Measuring ranges
Reliable position detection on all standard pneumatic cylinders



Electrical connections
All standard connection types available, cable, connector or pigtail



Materials
Rugged PP housing for a wide range of applications

UNR – 3-wire DC



General data

Dimensions	2.9 x 4.6 x 18 mm	**Protection class**	IP67
Operating voltage	10…30 VDC	**Material housing**	PP
Switching frequency	0.3 kHz	**Material active face**	PP
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Output	Electrical connection	Material cable	w	d
BIM-UNR-AP6X-0,3-RS4	_⌒_, PNP	connector, M12 x 1	PUR 0.3 m	w001	d374
BIM-UNR-AP6X-0,3-PSG3S	_⌒_, PNP	connector, fixed thread, Ø 8 mm	PUR 0.3 m	w001	d372
BIM-UNR-AP6X-0,3-PSG3M	_⌒_, PNP	connector, rotable thread, M8 x 1	PUR 0.3 m	w001	d373
BIM-UNR-AP6X 7M	_⌒_, PNP	cable	PUR 7 m	w059	d371
BIM-UNR-AP6X	_⌒_, PNP	cable	PUR 2 m	w059	d371
BIM-UNR-AN6X-0,3-RS4	_⌒_, NPN	connector, M12 x 1	PUR 0.3 m	w002	d374
BIM-UNR-AN6X-0,3-PSG3S	_⌒_, NPN	connector, fixed thread, Ø 8 mm	PUR 0.3 m	w002	d372
BIM-UNR-AN6X-0,3-PSG3M	_⌒_, NPN	connector, rotable thread, M8 x 1	PUR 0.3 m	w002	d373
BIM-UNR-AN6X 7M	_⌒_, NPN	cable	PUR 7 m	w005	d371
BIM-UNR-AN6X	_⌒_, NPN	cable	PUR 2 m	w005	d371

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 758 ff

Magnetic field sensors - analog position gauging systems

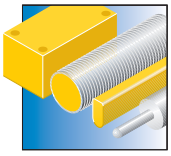


The universal magnetic field sensors for pneumatic cylinders are now also available with analog current and voltage output. The new analog sensor WIM45-UNTL by TURCK provides obvious advantages, especially in situations where additional flexibility and monitoring properties are required.

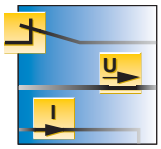
Features

- Compact design
- Quickly and firmly mounted
- Inserted in the groove from the top
- Hardly affected by external magnetic fields
- Status of magnetic field displayed via 2 LEDs
- Measured value memory

Properties



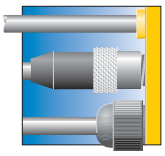
Design
One type for all standard pneumatic cylinders



Electrical versions
Analog outputs 4… 20 mA, 0…10 VDC, 3-wire DC switching output



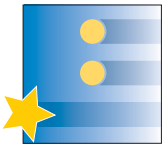
Measuring ranges
Analog position detection up to 45 mm on all standard pneumatic cylinders



Electrical connections
Standard connection with cable and M8/M12 connector



Materials
Rugged PA housing for a wide range of applications



Special features
Also available with combined analog and switching output in one device.

UNTL – Current and voltage output



General data

Dimensions	5 x 14.5 x 73 mm	**Protection class**	IP67
Analog output	4…20 mA, 0…10 V	**Material housing**	PA
Operating voltage	15…30 VDC	**Material active face**	PA
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Electrical connection	w	d
WIM45-UNTL-LIU5X2-0,3-PSG4M	cable with connector, M8 x 1	w051	d375
WIM45-UNTL-LIU5X2-0,3-RS4	cable with connector, M12 x 1	w051	d376

UNTL – Twin set



Type	WIM45-UNTL-0,3-BIM-UNT-LUAP6X 4-H1141	**Ambient temperature**	-25…+70 °C
Output	⎍, PNP/analog output	**Protection class**	IP67
Analog output	0…10 V	**Material housing**	PA12-GF30 / PP
Electrical connection	connector, M12 x 1	**Material cable**	PUR 0.3 m
Operating voltage	15…30 VDC	**Wiring diagram**	w067
Switching frequency	1 kHz	**Dimension drawing**	d377

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 758 ff

Magnetic field sensors for harsh environments

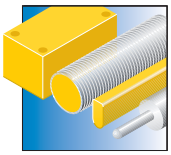


The rugged magnetic field sensors are particularly suited for harsh environments. With the extended range of accessories the sensors can be mounted on nearly all standard pneumatic cylinders. All standard connection types are available.

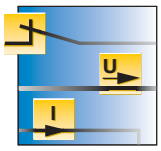
Features

- Rugged design
- Many different mounting options
- Optional weld field immunity
- Excellent EMC properties

Properties



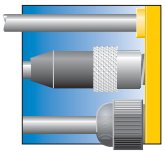
Design
standard design suited for harsh environments.



Electrical versions
NAMUR, 2/3-wire DC



Measuring ranges
Reliable position detection on all standard pneumatic cylinders



Electrical connections
All standard connection types available, cable, connector



Materials
Rugged PA12-GF30 resp. GD-ZN housing for a wide range of applications

NST – NAMUR



General data

Dimensions	17 x 14 x 28 mm	**Ambient temperature**	-25…+70 °C
Output	NAMUR	**Protection class**	IP67
Operating voltage	nom. 8.2 VDC	**Material housing**	PA
Switching frequency	1 kHz	**Material active face**	PA

Types and data – selection table

Type	Electrical connection	Material cable	w	d
BIM-NST-Y1X-H1141	connector, M12 x 1	-	w021	d378
BIM-NST-Y1X	cable	PVC 2 m	w019	d379

NST – 3-wire DC



General data

Dimensions	17 x 14 x 28 mm	**Protection class**	IP67
Operating voltage	10…30 VDC	**Material housing**	PA
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Output	Electrical connection	Switching frequency	Material cable	w	d
BIM-NST-AP6X-V1131	_⌒_, PNP	connector, M8 x 1	1 kHz	-	w001	d380
BIM-NST-AP6X-H1141/S34	_⌒_, PNP	connector, M12 x 1	0.02 kHz	-	w001	d381
BIM-NST-AP6X-H1141	_⌒_, PNP	connector, M12 x 1	1 kHz	-	w001	d378
BIM-NST-AP6X	_⌒_, PNP	cable	1 kHz	PVC 2 m	w059	d379
BIM-NST-AN6X-V1131	_⌒_, NPN	connector, M8 x 1	1 kHz	-	w002	d380
BIM-NST-AN6X-H1141/S34	_⌒_, NPN	connector, M12 x 1	0.02 kHz	-	w002	d381
BIM-NST-AN6X-H1141	_⌒_, NPN	connector, M12 x 1	1 kHz	-	w002	d378
BIM-NST-AN6X	_⌒_, NPN	cable	1 kHz	PVC 2 m	w005	d379

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 758 ff

IKT – NAMUR



General data

Output	NAMUR	**Protection class**	IP67
Operating voltage	nom. 8.2 VDC	**Material housing**	GD-Zn
Switching frequency	1 kHz	**Material active face**	PA
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Dimensions	Electrical connection	Material cable	w	d
BIM-IKT-Y1X-H1141	14.6 x 28 x 30 mm	connector, M12 x 1	-	w021	d382
BIM-IKT-Y1X	14.6 x 17 x 30 mm	cable	PVC 2 m	w019	d383

IKT – 3-wire DC



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Switching frequency	1 kHz	**Material housing**	GD-Zn
Ambient temperature	-25…+70 °C	**Material active face**	PA

Types and data – selection table

Type	Dimensions	Output	Electrical connection	Material cable	w	d
BIM-IKT-AP6X-V1131	14.6 x 17 x 30 mm	_⌒_, PNP	connector, M8 x 1	-	w001	d384
BIM-IKT-AP6X-H1141	14.6 x 28 x 30 mm	_⌒_, PNP	connector, M12 x 1	-	w001	d382
BIM-IKT-AP6X	14.6 x 17 x 30 mm	_⌒_, PNP	cable	PVC 2 m	w059	d383
BIM-IKT-AN6X-V1131	14.6 x 17 x 30 mm	_⌒_, NPN	connector, M8 x 1	-	w002	d384
BIM-IKT-AN6X-H1141	14.6 x 28 x 30 mm	_⌒_, NPN	connector, M12 x 1	-	w002	d382
BIM-IKT-AN6X	14.6 x 17 x 30 mm	_⌒_, NPN	cable	PVC 2 m	w005	d383

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 758 ff

At a glance
Photoelectric sensors



Photoelectric sensors – more solutions more advantages

Photoelectric sensors use visible or infrared light to detect many different objects, regardless of their quality and consistency. Unlike inductive or capacitive sensors, they cover larger measuring ranges.

The most common tasks are positioning, counting, sorting and classifying. They are mostly applied in the automotive industry, machine-building, assembly lines, storage and transport systems.

Photoelectric sensors operate on the principle of emitting and receiving light. A diod emits light which is either cut off or reflected by an object and the detection event is subsequently processed.

Photoelectric sensors are available as opposed mode, retroreflective mode, diffuse mode or fiber-optic systems.

Diffuse mode sensors detect the light beam reflected by an object. The sensing range of these sensors depends largely on the reflectivity factor of the object.

A retroreflective sensor, contains emitter and receiver in the same housing. A light beam is established between emitter, reflector and receiver. If an object cuts off the beam, the sensor reacts.

Opposed mode sensors operate similarly. Unlike retroreflective sensors, emitter and receiver are separate units covering greater sensing ranges.

Optic fibers made of glass or plastic pipe the light beam from the sensor to the object and back. Fiber optics are especially suited for confined spaces or demanding environmental conditions.

Whether standard or programmable multifunctional versions, compact devices or devices with external amplifier etc., each sensor has special features suited for different applications. TURCK not only offers the most comprehensive product range of photoelectric sensors and fiber optic systems, you also get individual service and support to find the optimal solution for your application.

Our strengths - Your advantages



QS30ELVC – High-End opposed mode sensor for clear-glass recognition

The QS30ELVC is a user-friendly powerful opposed mode sensor for detecting bright, transparent or opaque objects. PET bottles, glass jars and reflecting surfaces such as mirrors, LCDs with polarization coating are reliably detected. The sensor is insensitive to the reflections of the objects.



QS30 H2O – High-power sensor for the detection of water

The QS30H2O detects water reliably. The photoelectric components are adjusted to the absorption band of water in the long-wafe infrared spectrum. The emitted infrared beam permeates most plastic and glass containers but not water-based liquids, wood, metal or cardboard.

For damping and shaping the light beam in applications with low excess gain, like for example clear water in a transparent bottle, blinds are additionally available.



Q20 series - Compact, powerful and versatile

The Q20 are not only versatile in terms of operating modes but equally powerful like bigger sensors. The plastic housings are fully encapsulated and excellently durable and tight.

Their compact design enables easy mounting even in confined spaces. Bores with integrated thread make the use of additional mounting nuts redundant.

advantages



Expert mode – Easy set-up – Teach-and-ready

The Expert sensors pave the way to simple system setup. The QS18 Expert is either configured via pushbutton at the sensor or remotely via teach line. Different configurations can be taught through certain pulse sequences, like for example the pushbutton lock.

The ON and OFF conditions are individually set in the static teach mode, whereas in dynamic teach mode the light and dark conditions are automatically taught during operation and the switching threshold is continuously updated while the sensor is working.



D10 Expert – Innovative sensor for use with plastic fibers

The D10 Expert is a user-friendly fiber optic sensor suited for DIN rail mounting. The sensor works reliably, even in low contrast applications. Available are devices with, switching, two switching and analog/switching output.

The expert version provides functions such as static and dynamic teaching, window setting options as well as manual fine adjustment and external programming.

A big and well readable display resp. bargraph and LEDs support programming and monitoring during operation.



Ex area – Solutions for hazardous applications

TURCK provides the full range of performance even for explosion hazardous areas.

The NAMUR sensors series MINI-BEAM® and Q45 are approved according to KEMA certificate 03 ATEX 1441 X ignition protection type Ex ia IIC T6 and fulfill all relevant norms such as EN 60947-5-6, EN 60079-0, part 1 and EN 60079-11.

Available are opposed and retroreflective mode, convergent and diffuse mode sensors as well as base units for fiber optics.

Designs and variants

	Page 317	Page 317	Page 319	Page 320
				
	Miniature VS1	**Miniature VS2**	**Miniature VS3**	**Miniature VS4**
Design	rectangular, 8.3 x 25.7 x 11.6 mm	rectangular, 12 x 25.1 x 4.7 mm	rectangular, 9 x 25.4 x 16.6 mm	rectangular, 4.75 x 25.4 x 12.5 mm
Output function	PNP	PNP	PNP	PNP
Protection class	IP67	IP67	IP67	IP67
Ambient temperature	-20…+55 °C	-20…+55 °C	-20…+55 °C	-20…+55 °C
Operating mode	convergent mode sensor	opposed mode sensor (emitter) opposed mode sensor (receiver) convergent mode sensor	retro-reflective sensor retro-reflective sensor with polarisation filter	opposed mode sensor (emitter) opposed mode sensor (receiver)
Max. range	20 mm	1200 mm	250 mm	1000 mm
Light type	red	red	red	red

	Page 315	Page 311	Page 341	Page 347
				
	Miniature T8	**Miniature Q12**	**Compact M12**	**Compact QS18**
Design	threaded barrel, Ø16.3 x 15.8 mm	rectangular, 8 x 26.6 x 12.4 mm, 8 x 28.8 x 12.5 mm	threaded barrel, Ø12 x 67.5 mm Ø12 x 74 mm	rectangular, 15 x 35 x 31 mm, 15 x 41.5 x 27.7 mm, 15 x 35 x 27.7 mm, 15 x 35 x 21.1 mm, 15 x 41.5 x 21.1 mm, 15 x 34.5 x 21.1 mm, 15 x 35 x 33.2 mm
Output function	PNP	pnp/npn	PNP	PNP
Protection class	IP67	IP67	IP67	IP67
Ambient temperature	-20…+55 °C	-20…+55 °C	-20…+60 °C 0…+40 °C	-20…+70 °C -10…+50 °C 0…+55 °C
Operating mode	opposed mode sensor (emitter) opposed mode sensor (receiver) diffuse mode sensor	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor diffuse mode sensor with fixed-field background suppression diffuse mode sensor with adjustable background suppression convergent mode sensor
Max. range	2000 mm	2000 mm	5000 mm	30000 mm
Light type	red	red	red	IR red

Designs and variants

	Page 354	Page 357	Page 374	Page 363
				
	Compact QS18 Expert	**Compact Q20**	**MINI-BEAM NAMUR**	**Compact QS30**
Design	rectangular, 15 x 35 x 31 mm, 15 x 35 x 21.1 mm	rectangular, 12 x 32 x 20 mm, 12 x 42 x 20 mm	rectangular, 12.3 x 30.7 x 66 mm, 12.3 x 30.7 x 84 mm, 12.3 x 30.7 x 51.8 mm, 12.3 x 30.7 x 69.8 mm	rectangular, 22 x 49 x 35 mm, 22 x 57 x 35 mm, 22 x 57 x 54.3 mm
Output function	PNP	PNP	NAMUR	pnp/npn
Protection class	IP67	IP67	IP67	IP67 IP68 / IP69K
Ambient temperature	-20…+70 °C	-20…+60 °C	-40…+70 °C	-20…+60 °C -20…+70 °C -10…+55 °C -10…+50 °C
Operating mode	retro-reflective sensor with polarisation filter diffuse mode sensor convergent mode sensor	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor convergent mode sensor fibre optic sensor	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor diffuse mode sensor with fixed-field background suppression diffuse mode sensor with adjustable background suppression
Max. range	3500 mm	15000 mm	6000 mm	300000 mm
Light type	IR red	IR red	IR red	IR red

	Page 323, 326, 330, 331, 335, 338	Page 323, 327, 330, 332, 335, 339	Page 324, 327, 331, 332, 336, 339	Page 324, 328, 333, 336
				
	Compact EZ-BEAM M18	**Compact EZ-BEAM S18**	**Compact EZ-BEAM T18**	**Compact EZ-BEAM Q25**
Design	cylindrical/threaded, Ø18 x 59.2 mm, Ø18 x 78 mm, Ø18 x 83.8 mm, Ø18 x 65 mm	cylindrical/threaded, Ø18 x 78.7 mm, Ø18 x 88 mm, Ø18 x 69.5 mm, Ø18 x 59.2 mm, Ø18 x 84.1 mm, Ø18 x 65 mm	cylindrical/threaded, 30 x 41.5 x 30 mm, 30 x 54 x 30 mm	rectangular, 25 x 50.2 x 30 mm, 25 x 62.7 x 30 mm
Output function	PNP	PNP	PNP	PNP
Protection class	IP67	IP68 / IP69K IP67	IP68 / IP69K	IP68 / IP69K
Ambient temperature	-40…+70 °C	-40…+70 °C -10…+50 °C	-40…+70 °C	-40…+70 °C
Operating mode	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression
Max. range	20000 mm	20000 mm	20000 mm	20000 mm
Light type	IR red	IR red	IR red	IR red

Designs and variants

	Page 325, 328, 333, 337	Page 325, 329, 334, 337	Page 326, 329, 334, 338	Page 371.
				
	Compact EZ-BEAM S30	**Compact EZ-BEAM T30**	**Compact EZ-BEAM Q40**	**Q45 NAMUR**
Design	cylindrical/threaded, Ø30 x 68.7 mm, Ø30 x 77.5 mm	cylindrical/threaded, 40 x 51.5 x 45 mm, 40 x 64 x 45 mm	rectangular, 40 x 69.8 x 46 mm 40 x 82.5 x 46 mm	rectangular, 54.1 x 44.5 x 87 mm, 54.1 x 44.5 x 103 mm, 44.5 x 87.6 x 54.1 mm, 44.5 x 102.6 x 54.1 mm, 44.5 x 87.6 x 56.4 mm, 44.5 x 102.6 x 56.4 mm, 44.5 x 87.6 x 60.5 mm, 44.5 x 102.6 x 60.5 mm
Output function	PNP	PNP	PNP	NAMUR
Protection class	IP68 / IP69K	IP68 / IP69K	IP68 / IP69K	IP67
Ambient temperature	-40…+70 °C	-40…+70 °C	-40…+70 °C	-40…+70 °C
Operating mode	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	opposed mode sensor (emitter) opposed mode sensor (receiver) retro-reflective sensor retro-reflective sensor with polarisation filter diffuse mode sensor convergent mode sensor fibre optic sensor
Max. range	60000 mm	60000 mm	60000 mm	9000 mm
Light type	IR red	IR red	IR red	

	Page 379	Page 391	Page 389	Page 381
				
	SLM – Slot sensor	**Fiber optic sensor QS18F/ FP**	**Fiber optic sensors FI22**	**Fiber optic sensor D10**
Design	slot sensor, 12 x 42 x 80 mm, 12 x 62 x 80 mm, 12 x 112 x 80 mm, 12 x 152 x 140 mm, 12 x 252 x 140 mm, 12 x 82 x 80 mm	rectangular, 15 x 35 x 36.9 mm, 15 x 49 x 36.9 mm, 15 x 34.5 x 27.5 mm, 15 x 41.5 x 27.5 mm, 15 x 49 x 27.5 mm	rectangular, 2 3 x 14.5 x 50 mm	rectangular, 10 x 35.9 x 68.1 mm, 10 x 35.9 x 84.4 mm, 10.5 x 35.9 x 68.1 mm, 10.5 x 35.9 x 84.4 mm
Output function	pnp/npn PNP	PNP	pnp/npn	pnp/npn PNP
Protection class	IP67	IP67	IP67	IP50
Ambient temperature	-20…+60 °C	-20…+70 °C	-10…+55 °C	-10…+55 °C -20…+55 °C
Operating mode	bifurcated retro-reflective sensor	fibre optic sensor	fibre optic sensor	fibre optic sensor
Light type	red	IR red	red	red green

Designs and variants

Page 385



Page 393



	Fiber optic sensors D12	Fiber optic sensors R55F
Design	rectangular, 12 x 30 x 70 mm, 12 x 30 x 64 mm	rectangular, 30 x 25 x 85.4 mm, 30 x 25 x 97 mm
Output function	PNP pnp/npn	pnp/npn
Protection class	IP66	IP67
Ambient temperature	-20…+70 °C -40…+70 °C	-10…+55 °C
Operating mode	fibre optic sensor	fibre optic sensor
Light type	red	red green blue white

Miniature sensors Q12, T8, VS1, VS2, VS3, VS4



We offer different types of miniature sensors. From the well-priced compact T8 with 8 mm thread, over the extremely small, powerfull VS1, VS2, VS3 and VS4 rectangular series, up to the robust and universally applicable QS12 series.

Made for limited space conditions, these sensors cover the entire power spectrum in terms of operating modes, functionality, range and robustness.

Features

- High performance series for limited spaces
- Short response time of 1 ms
- Easily aligned through a visible light beam
- LED indicating power-on and light detection
- 3-wire connection, adjustment of light and dark operation, PNP or NPN output
- Protection class IP67
- 2 m connection cable and 150 mm pigtail with M8 x 1 plug connection

Type code miniature sensors

VS3	A	P	5	XLV	Q

VS3	Series	A	P	Output	5	Operating voltage

Series

Q12	rectangular 8 x 26.6 x 12.4 mm
T8	cylinder 15.8 x 16.3 mm
VS1	rectangular, 8.3 x 25.7 x 11.6 mm
VS2	rectangular 12 x 25.1 x 4.7 mm
VS3	rectangular 9 x 25.4 x 16.6 mm
VS4	rectangular 4.75 x 25.4 x 12.5 mm

Output

B	PNP/NPN
N	NPN
P	PNP

Output function

A	light operation
R	dark operation

Operating voltage

5	10 . . . 30 VDC max. 20 mA
6	10 . . . 30 VDC max. 25 mA

XLV	Operating mode	Q	Electrical connection

Operating mode

CV	convergent mode
D	diffuse mode
E	opposed mode emitter
EV	emitter, visible red light
FF	diffuse mode, fixed field
L	opposed mode
LP	opposed mode, polarizing filter
LV	opposed mode, visible red light
R	opposed mode receiver
XLP	retroreflective mode polarizing filter
XLV	retroreflective mode visible red light
CR	chemical resistant housing

Electrical connection

Q	pigtail, connector M8 cable 150 mm, 3-pole
blank	cable connection, 2 m

Q12 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, Elastomere
Power-on, indicator	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+55 °C
Dimensions	8 x 26.6 x 12.4 mm	**Light type**	red
Protection class	IP67	**Range**	0…2000 mm

A receiver is required.

Types and data – selection table

Type	Electrical connection	w	d	e
Q126EQ	cable with connector, M8 x 1	w068	d386	e001
Q126E	cable	w068	d385	e001

Q12 – Opposed mode sensor – Emitter – Chemical resistance



Type	Q126ECR	**Electrical connection**	cable
Operating voltage	10…30 VDC	**Ambient temperature**	-20…+55 °C
Power-on, indicator	LED	**Light type**	red
Indication of excess gain type	LED	**Range**	0…1500 mm
Dimensions	8 x 28.8 x 12.5 mm	**Wiring diagram**	w068
Protection class	IP67	**Dimension drawing**	d387
Housing material	plastic, PFA	**Excess gain curve**	e002
Lens material	plastic		

CR = Chemical resistant housing

A receiver is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q12 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, Elastomere
Indication of excess gain type	LED	**Lens material**	plastic
Switching frequency	≤ 450 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	8 x 26.6 x 12.4 mm	**Range**	0…2000 mm

An emitter is required.

Types and data – selection table

Type	Output	Electrical connection	w	d	e
Q12RB6RQ	_⟍_, dark operation, pnp/npn	cable with connector, M8 x 1	w069	d386	e001
Q12AB6RQ	_⟍_, light operation, pnp/npn	cable with connector, M8 x 1	w069	d386	e001
Q12AB6R	_⟍_, light operation, pnp/npn	cable	w069	d385	e001
Q12RB6R	_⟍_, dark operation, pnp/npn	cable	w069	d385	e001

Q12 – Opposed mode sensor – Receiver – Chemical resistance



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PFA
Power-on, indicator	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Electrical connection**	cable
Switching frequency	≤ 450 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	8 x 28.8 x 12.5 mm	**Range**	0…1500 mm
Protection class	IP67		

CR = Chemical resistant housing

An emitter is required.

Types and data – selection table

Type	Output	w	d	e
Q12AB6RCR	_⟍_, light operation, pnp/npn	w069	d387	e002
Q12RB6RCR	_⟍_, dark operation, pnp/npn	w069	d387	e002

Q12 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, Elastomere
Power-on, indicator	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+55 °C
Switching frequency	≤ 700 Hz	**Light type**	red
Dimensions	8 x 26.6 x 12.4 mm	**Range**	0…1500 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Output	Electrical connection	w	d	e
Q12AB6LVQ	_◺‾, light operation, pnp/npn	cable with connector, M8 x 1	w069	d386	e003
Q12RB6LVQ	_◹‾, dark operation, pnp/npn	cable with connector, M8 x 1	w069	d386	e003
Q12AB6LV	_◺‾, light operation, pnp/npn	cable	w069	d385	e003
Q12RB6LV	_◹‾, dark operation, pnp/npn	cable	w069	d385	e003

Q12 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, Elastomere
Power-on, indicator	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+55 °C
Switching frequency	≤ 700 Hz	**Light type**	red
Dimensions	8 x 26.6 x 12.4 mm	**Range**	0…1000 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Output	Electrical connection	w	d	e
Q12AB6LPQ	_◺‾, light operation, pnp/npn	cable with connector, M8 x 1	w069	d389	e004
Q12RB6LPQ	_◹‾, dark operation, pnp/npn	cable with connector, M8 x 1	w069	d389	e004
Q12AB6LP	_◺‾, light operation, pnp/npn	cable	w069	d388	e004
Q12RB6LP	_◹‾, dark operation, pnp/npn	cable	w069	d388	e004

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q12 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, Elastomere
Indication of excess gain type	LED	**Lens material**	plastic
Switching frequency	≤ 700 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	8 x 26.6 x 12.4 mm	**Light type**	red

Types and data – selection table

Type	Output	Electrical connection	Range	w	d	e
Q12AB6FF15	_◺‾, light operation, pnp/npn	cable	3…15 mm	w069	d385	e005
Q12AB6FF15Q	_◺‾, light operation, pnp/npn	cable with connector, M8 x 1	3…15 mm	w069	d386	e005
Q12RB6FF15	_◺‾, dark operation, pnp/npn	cable	3…15 mm	w069	d385	e005
Q12RB6FF15Q	_◺‾, dark operation, pnp/npn	cable with connector, M8 x 1	3…15 mm	w069	d386	e005
Q12AB6FF30	_◺‾, light operation, pnp/npn	cable	3…30 mm	w069	d385	e006
Q12AB6FF30Q	_◺‾, light operation, pnp/npn	cable with connector, M8 x 1	3…30 mm	w069	d386	e006
Q12RB6FF30	_◺‾, dark operation, pnp/npn	cable	3…30 mm	w069	d385	e006
Q12RB6FF30Q	_◺‾, dark operation, pnp/npn	cable with connector, M8 x 1	3…30 mm	w069	d386	e006
Q12AB6FF50	_◺‾, light operation, pnp/npn	cable	3…50 mm	w069	d385	e007
Q12RB6FF50	_◺‾, dark operation, pnp/npn	cable	3…50 mm	w069	d385	e007
Q12AB6FF50Q	_◺‾, light operation, pnp/npn	cable with connector, M8 x 1	3…50 mm	w069	d386	e007
Q12RB6FF50Q	_◺‾, dark operation, pnp/npn	cable with connector, M8 x 1	3…50 mm	w069	d386	e007

Q12 – Diffuse mode sensor with fixed-field – Chemical resistance



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PFA
Power-on, indicator	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Electrical connection**	cable
Switching frequency	≤ 700 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	8 x 28.8 x 12.5 mm	**Light type**	red
Protection class	IP67		

CR = Chemical-resistant housing

Types and data – selection table

Type	Output	Range	w	d	e
Q12AB6FF15CR	_◺‾, light operation, pnp/npn	3…13 mm	w069	d387	e008
Q12RB6FF15CR	_◺‾, dark operation, pnp/npn	3…13 mm	w069	d387	e008
Q12AB6FF30CR	_◺‾, light operation, pnp/npn	4…28 mm	w069	d387	e009
Q12RB6FF30CR	_◺‾, dark operation, pnp/npn	4…28 mm	w069	d387	e009
Q12AB6FF50CR	_◺‾, light operation, pnp/npn	5…48 mm	w069	d387	e010
Q12RB6FF50CR	_◺‾, dark operation, pnp/npn	5…48 mm	w069	d387	e010

T8 – Opposed mode sensor – Emitter



General data

Power-on, indicator	LED	**Lens material**	plastic
Dimensions	Ø16.3 x 15.8 mm	**Ambient temperature**	-20…+55 °C
Protection class	IP67	**Light type**	red
Housing material	plastic, ABS	**Range**	0…2000 mm

A receiver is required.

Types and data – selection table

Type	Electrical connection	w	d	e
T86EVQ	cable with connector, M8 x 1	w068	d391	e011
T86EV	cable	w068	d390	e011

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

T8 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Switching frequency	≤ 666 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	Ø16.3 x 15.8 mm	**Range**	0…2000 mm

An emitter is required.

Types and data – selection table

Type	Output	Electrical connection	w	d	e
T8AP6RQ	_⌒_, light operation, PNP	cable with connector, M8 x 1	w070	d391	e011
T8RP6RQ	_⌒_, dark operation, PNP	cable with connector, M8 x 1	w070	d391	e011
T8AP6R	_⌒_, light operation, PNP	cable	w070	d390	e011
T8RP6R	_⌒_, dark operation, PNP	cable	w070	d390	e011

T8 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Switching frequency	≤ 500 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	Ø16.3 x 15.8 mm	**Light type**	red

Types and data – selection table

Type	Output	Electrical connection	Range	w	d	e
T8AP6D50	_⌒_, light operation, PNP	cable	0…50 mm	w070	d390	e012
T8AP6D50Q	_⌒_, light operation, PNP	cable with connector, M8 x 1	0…50 mm	w070	d391	e012
T8RP6D50	_⌒_, dark operation, PNP	cable	0…50 mm	w070	d390	e012
T8RP6D50Q	_⌒_, dark operation, PNP	cable with connector, M8 x 1	0…50 mm	w070	d391	e012
T8AP6D100	_⌒_, light operation, PNP	cable	0…100 mm	w070	d390	e012
T8AP6D100Q	_⌒_, light operation, PNP	cable with connector, M8 x 1	0…100 mm	w070	d391	e012
T8RP6D100	_⌒_, dark operation, PNP	cable	0…100 mm	w070	d390	e012
T8RP6D100Q	_⌒_, dark operation, PNP	cable with connector, M8 x 1	0…100 mm	w070	d391	e012

VS1 – Convergent mode sensor



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Electrical connection**	cable
Switching frequency	≤ 500 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	8.3 x 25.7 x 11.6 mm	**Light type**	red
Protection class	IP67		

Types and data – selection table

Type	Output	Range	Focal distance	w	d	e
VS1AP5CV10	_◺‾, light operation, PNP	10 mm	10 mm	w151	d593	e013
VS1RP5CV10	_◺‾, dark operation, PNP	10 mm	10 mm	w151	d593	e013
VS1AP5CV20	_◺‾, light operation, PNP	20 mm	20 mm	w151	d593	e013
VS1RP5CV20	_◺‾, dark operation, PNP	20 mm	20 mm	w151	d593	e013

VS2 – Opposed mode sensor – Emitter



Type	VS25EV	**Electrical connection**	cable
Operating voltage	10…30 VDC	**Ambient temperature**	-20…+55 °C
Power-on, indicator	LED	**Light type**	red
Dimensions	12 x 25.1 x 4.7 mm	**Range**	0…1200 mm
Protection class	IP67	**Wiring diagram**	w068
Housing material	plastic, ABS	**Dimension drawing**	d594
Lens material	plastic	**Excess gain curve**	e014

A receiver is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

VS2 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Electrical connection**	cable
Switching frequency	≤ 500 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	12 x 25.1 x 4.7 mm	**Range**	0…1200 mm
Protection class	IP67		

An emitter is required.

Types and data – selection table

Type	Output	w	d	e
VS2AP5R	_◺‾, light operation, PNP	w070	d594	e014
VS2RP5R	‾◺_, dark operation, PNP	w070	d594	e014

VS2 – Convergent mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Switching frequency	≤ 500 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	12 x 25.1 x 4.7 mm	**Light type**	red

Types and data – selection table

Type	Output	Electrical connection	Focal distance	w	d	e
VS2RP5CV15	‾◺_, dark operation, PNP	cable	15 mm	w070	d595	e015
VS2AP5CV15Q	_◺‾, light operation, PNP	cable with connector, M8 x 1	15 mm	w070	d596	e015
VS2RP5CV15Q	‾◺_, dark operation, PNP	cable with connector, M8 x 1	15 mm	w070	d596	e015
VS2AP5CV15	_◺‾, light operation, PNP	cable	15 mm	w070	d595	e015
VS2AP5CV30	_◺‾, light operation, PNP	cable	30 mm	w070	d597	e015
VS2RP5CV30	‾◺_, dark operation, PNP	cable	30 mm	w070	d597	e015
VS2AP5CV30Q	_◺‾, light operation, PNP	cable with connector, M8 x 1	30 mm	w070	d598	e015
VS2RP5CV30Q	‾◺_, dark operation, PNP	cable with connector, M8 x 1	30 mm	w070	d598	e015

VS3 – Retroreflective sensor



Type	VS3RP5XLV	**Lens material**	plastic
Operating voltage	10…30 VDC	**Electrical connection**	cable
Power-on, indicator	LED	**Ambient temperature**	-20…+55 °C
Error message type	LED	**Light type**	red
Output	_⌒‾, dark operation, PNP	**Range**	250 mm
Switching frequency	≤ 500 Hz	**Wiring diagram**	w070
Dimensions	9 x 25.4 x 16.6 mm	**Dimension drawing**	d599
Protection class	IP67	**Excess gain curve**	e016
Housing material	plastic, ABS		

A reflector is required.

VS3 – Retroreflective sensor with polarizing filter



General data			
Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	glass
Error message type	LED	**Ambient temperature**	-20…+55 °C
Switching frequency	≤ 500 Hz	**Light type**	red
Dimensions	9 x 25.4 x 16.6 mm	**Range**	250 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Output	Electrical connection	w	d	e
VS3RP5XLPQ	_⌒‾, dark operation, PNP	connector, M8 x 1	w070	d600	e016
VS3AP5XLP	_⌒‾, light operation, PNP	cable	w070	d599	e016

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

VS4 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PC
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-20…+55 °C
Dimensions	4.75 x 25.4 x 12.5 mm	**Light type**	red
Protection class	IP67	**Range**	0…1000 mm

A receiver is required.

Types and data – selection table

Type	Electrical connection	w	d	e
VS4EVQ	cable with connector, M8 x 1	w068	d601	e014
VS4EV	cable	w068	d602	e014

VS4 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, PC
Error message type	LED	**Lens material**	plastic
Switching frequency	≤ 660 Hz	**Ambient temperature**	-20…+55 °C
Dimensions	4.75 x 25.4 x 12.5 mm	**Range**	0…1000 mm

An emitter is required.

Types and data – selection table

Type	Output	Electrical connection	w	d
VS4RP5RQ	_⟍_, dark operation, PNP	cable with connector, M8 x 1	w070	d603
VS4RP5R	_⟍_, dark operation, PNP	cable	w070	d604
VS4AP5RQ	_⟍_, PNP	cable with connector, M8 x 1	w070	d603
VS4AP5R	_⟍_, PNP	cable	w070	d604

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

EZ-BEAM M18, S18, T18, Q25, S30, T30, Q40



EZ-BEAM sensors are compact, easy to install and integrate in any application, even under rough operating conditions.

Sensitivity adjustments are redundant for most of the types.

EZ-BEAM sensors are available in different sizes and designs, such as plastic and threaded barrel or rectangular versions. The operating modes are opposed, retro-reflective with/without polarizing filter as well as diffuse mode with background suppression.

Features

- The well-priced high performance sensors are IP69K rated (most types)
- No sensitivity adjustments (most types)
- Auto-diagnostics with separate display for insufficient excess gain and alarm output
- Extended range of operating temperature -40 … +70 °C
- Antivalent PNP/NPN output, AC versions available
- Blind for opposed mode sensors available

Type code EZ-BEAM

Q25	S	P	6	LP	Q

Q25 — Series

M18	thread, metal, Ø 18 mm
Q25	rectangular 25 x 50.2 x 30 mm
Q40	rectangular 40 x 40 x 46 mm
S18	thread, Ø 18 mm
S30	thread, plastic, Ø 30 mm
T18	thread Ø 18 mm, angled 30 x 54 x 30 mm
T30	thread Ø 30 mm, angled dimensions 40 x 64 x 45 mm

S — Output function

S	programmable*

*selectable light/dark operation or light operation and alarm

P — Output

P	PNP
N	NPN

6 — Operating voltage

6	10…30 VDC

LP — Operating mode

E	opposed mode emitter
R	receiver
D	diffuse mode
DL	diffuse mode, long distance
FF600	diffuse mode, fixed field 0…600 mm
LP	retroreflective mode polarizing filter
L	retroreflective mode infrared light
ELD	opposed mode laser emitter (only S18)

Q — Electrical connection

Q	connector, M12 x 1
blank	cable connection, 2 m

M18 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP67	**Light type**	IR
Housing material	metal, V2A (1.4305)	**Range**	0…20000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M186EQ	Ø18 x 78 mm	connector, M12 x 1	w068	d606	e017
M186E	Ø18 x 59.2 mm	cable	w068	d605	e017

S18 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Range**	0…20000 mm
Housing material	plastic, PBT		

A receiver is required.

Types and data – selection table

Type	Dimensions	Protec-tion class	Electrical connection	Ambient temperature	Light type	Laser class	w	d	e
S186EQ	Ø18 x 78.7 mm	IP68 / IP69K	connector, M12 x 1	-40…+70 °C	IR	-	w068	d607	e017
S186ELDQ	Ø18 x 88 mm	IP67	connector, M12 x 1	-10…+50 °C	red	2 (EN 60825, IEC 60825)	w152	d608	e017
S186ELD	Ø18 x 69.5 mm	IP67	cable	-10…+50 °C	red	2 (EN 60825, IEC 60825)	w152	d609	e017
S186E	Ø18 mm	IP68 / IP69K	cable	-40…+70 °C	IR	-	w068	d610	e017

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

T18 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP68 / IP69K	**Light type**	IR
Housing material	plastic, PBT	**Range**	0…20000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T186EQ	30 x 54 x 30 mm	connector, M12 x 1	w068	d612	e018
T186E	30 x 41.5 x 30 mm	cable	w068	d611	e018

Q25 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP68 / IP69K	**Light type**	IR
Housing material	plastic, PBT	**Range**	0…20000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q256EQ	25 x 62.7 x 30 mm	connector, M12 x 1	w068	d614	e017
Q256E	25 x 50.2 x 30 mm	cable	w068	d613	e017

S30 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP68 / IP69K	**Light type**	IR
Housing material	plastic, PBT	**Range**	0…60000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
S306EQ	Ø30 x 77.5 mm	connector, M12 x 1	w068	d616	e019
S306E	Ø30 x 68.7 mm	cable	w068	d615	e019

T30 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP68 / IP69K	**Light type**	IR
Housing material	plastic, PBT	**Range**	0…60000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T306EQ	40 x 64 x 45 mm	connector, M12 x 1	w068	d618	e020
T306E	40 x 51.5 x 45 mm	cable	w068	d617	e020

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q40 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP68 / IP69K	**Light type**	IR
Housing material	plastic, PBT	**Range**	0…60000 mm

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q406EQ	40 x 82.5 x 46 mm	connector, M12 x 1	w068	d620	e019
Q406E	40 x 69.8 x 46 mm	cable	w068	d619	e019

M18 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, V2A (1.4305)
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…20000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M18SP6RQ	Ø18 x 78 mm	connector, M12 x 1	w153	d606	e017
M18SP6R	Ø18 x 59.2 mm	cable	w153	d605	e017

S18 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…20000 mm

An emitter is required.

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	w	d	e
S18SP6RQ	≤ 0.16 kHz	Ø18 x 78.7 mm	connector, M12 x 1	w153	d607	e017
S18SP6R	-	Ø18 x 59.2 mm	cable	w153	d610	e017

T18 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…20000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T18SP6RQ	30 x 54 x 30 mm	connector, M12 x 1	w153	d612	e018
T18SP6R	30 x 41.5 x 30 mm	cable	w153	d611	e018

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q25 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…20000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q25SP6RQ	25 x 62.7 x 30 mm	connector, M12 x 1	w153	d614	e017
Q25SP6R	25 x 50.2 x 30 mm	cable	w153	d613	e017

S30 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…60000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
S30SP6RQ	Ø30 x 77.5 mm	connector, M12 x 1	w153	d616	e019
S30SP6R	Ø30 x 68.7 mm	cable	w153	d615	e019

T30 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…60000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T30SP6RQ	40 x 64 x 45 mm	connector, M12 x 1	w153	d618	e020
T30SP6R	40 x 51.5 x 45 mm	cable	w153	d617	e020

Q40 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Range**	0…60000 mm
Dimensions	40 x 40 x 46 mm		

An emitter is required.

Types and data – selection table

Type	Electrical connection	w	d
Q40SP6RQ	connector, M12 x 1	w153	d620
Q40SP6R	cable	w153	d619

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

M18 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Housing material**	metal, V2A (1.4305)
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	IR
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M18SP6LQ	Ø18 x 78 mm	connector, M12 x 1	w153	d606	e021
M18SP6L	Ø18 x 59.2 mm	cable	w153	d605	e021

S18 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	IR
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
S18SP6LQ	Ø18 x 78.7 mm	connector, M12 x 1	w153	d607	e021
S18SP6L	Ø18 x 59.2 mm	cable	w153	d610	e021

T18 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	IR
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T18SP6LQ	30 x 54 x 30 mm	connector, M12 x 1	w153	d612	e021
T18SP6L	30 x 41.5 x 30 mm	cable	w153	d611	e021

M18 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	metal, V2A (1.4305)
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M18SP6LPQ	Ø18 x 78 mm	connector, M12 x 1	w153	d606	e021
M18SP6LP	Ø18 x 59.2 mm	cable	w153	d605	e021

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

S18 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
S18SP6LPQ	Ø18 x 78.7 mm	connector, M12 x 1	w153	d607	e021
S18SP6LP	Ø18 x 59.2 mm	cable	w153	d610	e021

T18 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T18SP6LPQ	30 x 54 x 30 mm	connector, M12 x 1	w153	d612	e021
T18SP6LP	30 x 41.5 x 30 mm	cable	w153	d611	e021

Q25 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…2000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q25SP6LPQ	25 x 62.7 x 30 mm	connector, M12 x 1	w153	d614	e021
Q25SP6LP	25 x 50.2 x 30 mm	cable	w153	d613	e021

S30 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…6000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
S30SP6LPQ	Ø30 x 77.5 mm	connector, M12 x 1	w153	d616	e022
S30SP6LP	Ø30 x 68.7 mm	cable	w153	d615	e022

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

T30 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…6000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T30SP6LPQ	40 x 64 x 45 mm	connector, M12 x 1	w153	d618	e022
T30SP6LP	40 x 51.5 x 45 mm	cable	w153	d617	e022

Q40 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	red
Switching frequency	≤ 160 Hz	**Range**	50…6000 mm
Protection class	IP68 / IP69K		

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q40SP6LPQ	40 x 82.5 x 46 mm	connector, M12 x 1	w153	d620	e022
Q40SP6LP	40 x 69.8 x 46 mm	cable	w153	d619	e022

M18 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, V2A (1.4305)
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
M18SP6FF25Q	Ø18 x 83.8 mm	connector, M12 x 1	0…25 mm	w153	d621	e023
M18SP6FF25	Ø18 x 65 mm	cable	0…25 mm	w153	d622	e023
M18SP6FF50	Ø18 x 65 mm	cable	0…50 mm	w153	d622	e024
M18SP6FF50Q	Ø18 x 83.8 mm	connector, M12 x 1	0…50 mm	w153	d621	e024
M18SP6FF100	Ø18 x 65 mm	cable	0…100 mm	w153	d622	e024
M18SP6FF100Q	Ø18 x 83.8 mm	connector, M12 x 1	0…100 mm	w153	d621	e024

S18 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
S18SP6FF25Q	Ø18 x 84.1 mm	connector, M12 x 1	0…25 mm	w153	d623	e023
S18SP6FF25	Ø18 x 65 mm	cable	0…25 mm	w153	d624	e023
S18SP6FF50	Ø18 x 65 mm	cable	0…50 mm	w153	d624	e024
S18SP6FF50Q	Ø18 x 84.1 mm	connector, M12 x 1	0…50 mm	w153	d623	e024
S18SP6FF100	Ø18 x 65 mm	cable	0…100 mm	w153	d624	e024
S18SP6FF100Q	Ø18 x 84.1 mm	connector, M12 x 1	0…100 mm	w153	d623	e024

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

T18 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
T18SP6FF25Q	30 x 54 x 30 mm	connector, M12 x 1	0…25 mm	w153	d612	e023
T18SP6FF25	30 x 41.5 x 30 mm	cable	0…25 mm	w153	d611	e023
T18SP6FF50	30 x 41.5 x 30 mm	cable	0…50 mm	w153	d611	e024
T18SP6FF50Q	30 x 54 x 30 mm	connector, M12 x 1	0…50 mm	w153	d612	e024
T18SP6FF100	30 x 41.5 x 30 mm	cable	0…100 mm	w153	d611	e024
T18SP6FF100Q	30 x 54 x 30 mm	connector, M12 x 1	0…100 mm	w153	d612	e024

Q25 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
Q25SP6FF25Q	25 x 62.7 x 30 mm	connector, M12 x 1	0…25 mm	w153	d614	e023
Q25SP6FF25	25 x 50.2 x 30 mm	cable	0…25 mm	w153	d613	e023
Q25SP6FF50	25 x 50.2 x 30 mm	cable	0…50 mm	w153	d613	e024
Q25SP6FF50Q	25 x 62.7 x 30 mm	connector, M12 x 1	0…50 mm	w153	d614	e024
Q25SP6FF100	25 x 50.2 x 30 mm	cable	0…100 mm	w153	d613	e024
Q25SP6FF100Q	25 x 62.7 x 30 mm	connector, M12 x 1	0…100 mm	w153	d614	e024

S30 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
S30SP6FF200	Ø30 x 68.7 mm	cable	0…200 mm	w153	d615	e025
S30SP6FF200Q	Ø30 x 77.5 mm	connector, M12 x 1	0…200 mm	w153	d616	e025
S30SP6FF400	Ø30 x 68.7 mm	cable	0…400 mm	w153	d615	e025
S30SP6FF400Q	Ø30 x 77.5 mm	connector, M12 x 1	0…400 mm	w153	d616	e025
S30SP6FF600	Ø30 x 68.7 mm	cable	0…600 mm	w153	d615	e026
S30SP6FF600Q	Ø30 x 77.5 mm	connector, M12 x 1	0…600 mm	w153	d616	e026

T30 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
T30SP6FF200	40 x 51.5 x 45 mm	cable	0…200 mm	w153	d617	e025
T30SP6FF200Q	40 x 64 x 45 mm	connector, M12 x 1	0…200 mm	w153	d618	e025
T30SP6FF400	40 x 51.5 x 45 mm	cable	0…400 mm	w153	d617	e025
T30SP6FF400Q	40 x 64 x 45 mm	connector, M12 x 1	0…400 mm	w153	d618	e025
T30SP6FF600Q	40 x 64 x 45 mm	connector, M12 x 1	0…600 mm	w153	d618	e026
T30SP6FF600	40 x 51.5 x 45 mm	cable	0…600 mm	w153	d617	e026

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q40 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
Q40SP6FF200	40 x 69.8 x 46 mm	cable	0…200 mm	w153	d619	e025
Q40SP6FF200Q	40 x 82.5 x 46 mm	connector, M12 x 1	0…200 mm	w153	d620	e025
Q40SP6FF400	40 x 69.8 x 46 mm	cable	0…400 mm	w153	d619	e025
Q40SP6FF400Q	40 x 82.5 x 46 mm	connector, M12 x 1	0…400 mm	w153	d620	e025
Q40SP6FF600	40 x 69.8 x 46 mm	cable	0…600 mm	w153	d619	e026
Q40SP6FF600Q	40 x 82.5 x 46 mm	connector, M12 x 1	0…600 mm	w153	d620	e026

M18 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, V2A (1.4305)
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
M18SP6D	Ø18 x 59.2 mm	cable	0…100 mm	w153	d605	e027
M18SP6DQ	Ø18 x 78 mm	connector, M12 x 1	0…100 mm	w153	d606	e027
M18SP6DL	Ø18 x 59.2 mm	cable	2…300 mm	w153	d605	e027
M18SP6DLQ	Ø18 x 78 mm	connector, M12 x 1	2…300 mm	w153	d606	e027

S18 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP68 / IP69K
Power-on, indicator	LED	**Housing material**	plastic, PBT
Error message type	LED	**Lens material**	plastic
Output	connection programmable, PNP	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 160 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
S18SP6D	Ø18 x 59.2 mm	cable	0…100 mm	w153	d610	e027
S18SP6DQ	Ø18 x 78.7 mm	connector, M12 x 1	0…100 mm	w153	d607	e027
S18SP6DL	Ø18 x 59.2 mm	cable	2…300 mm	w153	d610	e027
S18SP6DLQ	Ø18 x 78.7 mm	connector, M12 x 1	2…300 mm	w153	d607	e027

T18 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, PBT
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-40…+70 °C
Output	connection programmable, PNP	**Light type**	IR
Switching frequency	≤ 160 Hz	**Range**	0…500 mm
Protection class	IP68 / IP69K		

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
T18SP6DQ	30 x 54 x 30 mm	connector, M12 x 1	w153	d625	e028
T18SP6D	30 x 41.5 x 30 mm	cable	w153	d611	e028

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Compact sensors M12



The M12 provide many functions incorporated in a rugged metal housing. With a diameter of only 12 mm, they can be mounted even in poorly accessible places. Even under rough operating conditions the IP67 rated sensors work convincingly powerfull, such as their bigger counterparts.

The operating modes are opposed, retroreflective with/without polarizing filter as well as diffuse mode with background suppression.

Features

- M12 sensor series, threaded barrel, metal
- All operating modes
- Easily aligned through a visible red light beam
- LED indicating power-on and light detection
- PNP or NPN output
- Protection class IP67
- 2 m connection cable, M12 x 1 plug connection or cable with M12 x 1 plug connection

Type code M12

M12	P	FF25	Q8

M12	Series	P	Output	FF25	Operating mode

Series

M12	thread, Ø 12 thread

Output

N	NPN
P	PNP

Operating mode

D	diffuse mode
E	opposed mode emitter
FF25	diffuse mode fixed field 0...25 mm
LP	retroreflective mode polarizing filter
LV	retroreflective mode visible red light
R	receiver
6E1LD	10...30 VDC laser emitter, class 1
6E2LD	10...30 VDC, laser emitter, class 2

Q8	Electrical connection

Electrical connection

Q5	pigtail with connector, Ø 8 mm
Q8	connector, M12 x 1
blank	cable connection, 2 m

M12 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-20…+60 °C
Error message type	LED	**Light type**	red
Protection class	IP67	**Range**	0…5000 mm
Housing material	metal, CuZn		

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M12EQ8	Ø12 x 74 mm	connector, M12 x 1	w068	d627	e029
M12E	Ø12 x 67.5 mm	cable	w068	d626	e029

M12 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, CuZn
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Range**	0…5000 mm
Switching frequency	≤ 500 Hz		

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M12PRQ8	Ø12 x 74 mm	connector, M12 x 1	w155	d627	e029
M12PR	Ø12 x 67.5 mm	cable	w155	d626	e029

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

M12 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, CuZn
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 1 kHz	**Range**	0…3000 mm

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M12PLVQ8	Ø12 x 74 mm	connector, M12 x 1	w155	d627	e030
M12PLV	Ø12 x 67.5 mm	cable	w155	d626	e030

M12 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, CuZn
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 1 kHz	**Range**	0…1500 mm

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M12PLPQ8	Ø12 x 74 mm	connector, M12 x 1	w155	d627	e031
M12PLP	Ø12 x 67.5 mm	cable	w155	d626	e031

M12 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, CuZn
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 1 kHz	**Range**	0…400 mm

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
M12PDQ8	Ø12 x 74 mm	connector, M12 x 1	w155	d627	e032
M12PD	Ø12 x 67.5 mm	cable	w155	d626	e032

M12 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	metal, CuZn
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 1 kHz		

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
M12PFF25	Ø12 x 67.5 mm	cable	0…25 mm	w155	d626	e033
M12PFF25Q8	Ø12 x 74 mm	connector, M12 x 1	0…25 mm	w155	d627	e033
M12PFF50	Ø12 x 67.5 mm	cable	0…50 mm	w155	d626	e034
M12PFF50Q8	Ø12 x 74 mm	connector, M12 x 1	0…50 mm	w155	d627	e034
M12PFF75	Ø12 x 67.5 mm	cable	0…75 mm	w155	d626	e035
M12PFF75Q8	Ø12 x 74 mm	connector, M12 x 1	0…75 mm	w155	d627	e035

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

M12 – Opposed mode laser sensor – Emitter



General data

Operating voltage	10…30 VDC	**Housing material**	metal, AL
Power-on, indicator	LED	**Lens material**	plastic
Dimensions	57 mm	**Ambient temperature**	0…+40 °C
Protection class	IP67	**Light type**	red

Combinable with all standard TURCK receivers; range depending on emitter used.

Types and data – selection table

Type	Electrical connection	Laser class	w	d
M126E1LD	cable with connector	1 (EN 60825, IEC 60825)	w154	d628
M126E1LDQ	cable with connector, flange connector, Ø 8 mm	1 (EN 60825, IEC 60825)	w154	d629
M126E2LDQ	cable with connector, flange connector, Ø 8 mm	2 (EN 60825, IEC 60825)	w154	d629
M126E2LD	cable with connector	2 (EN 60825, IEC 60825)	w154	d628

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Compact sensors QS18



The compact QS18 fit in almost any place. Equipped with standard bores and optionally available M18, they can replace M18 threaded barrel as well as rectangular shaped sensors without thread.

The QS18 are available in many operating modes and achieve an optical power exceeding by far the usual performance of sensors of this size.

Features

- Universal rectangular design, flexible mounting
- Many operating modes, functions and application possibilities
- Response time less then 1 ms
- Rugged, fully encapsulated plastic housing, protected circuit
- Protection class IP67
- Bright LED display, all-round visibility
- 2 m connection cable, M12 x 1 plug connection, cable with M12 x 1 plug connection
- Blind for opposed mode sensors available
- Expert™ QS18E: Easy startup via pushbutton or remote via cable

Type code QS18

QS18	V	P	6	LAF250	Q5

QS18 Series

Series

QS18	rectangular height 35 mm, width 15 mm depth 21...33 mm

V P Output

Output

N	NPN
P	PNP

Output function

E	teach-in/NO
V	NO/NC

6 Operating voltage

Operating voltage

6	10...30 VDC

LAF250 Operating mode

Operating mode

AF100	diffuse mode adjustable field 20...100 mm
CV15	C = convergent mode V = visible red light, focal distance 15 mm
CV16	C = convergent mode V = visible red light focal distance 16 mm
D	diffuse mode
DB	diffuse mode, without blind zone
DV	diffuse mode, visible red light
E	emitter, opposed mode
EB	emitter, opposed mode sensor range 3 m
FF50	diffuse mode, fixed field 0...50 mm
LAF	laser, diffuse mode adjustable field 30...150 mm, class 1
LAF250	laser, diffuse mode adjustable field 50...250 mm, class 2
LD	laser, diffuse mode
LE	laser emitter
LE10	laser emitter, point
LE11	laser emitter, vertical line
LE12	laser emitter, horizontal line
LE14	laser emitter, cross
LLP	laser, retroreflective mode polarizing filter
LP	retroreflective mode polarizing filter, visible red light
LV	retroreflective mode visible red light,
R	receiver, opposed mode
RB	receiver, opposed mode range 3 m
W	diffuse mode, wide angle

Q5 Electrical connection

Electrical connection

Q	pigtail with connector, Ø 8 mm
Q5	pigtail with connector, M12 x 1
Q7	connector, Ø 8 mm
Q8	connector, M12 x 1
blank	cable connection, 2 m

QS18 – Opposed mode sensor – Emitter – M18 thread



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Dimensions	15 x 35 x 31 mm	**Lens material**	plastic

A receiver is required.

Types and data – selection table

Type	Electrical connection	Ambient temperature	Light type	Range	Laser class	w	d	e
QS186EQ8	connector, M12 x 1	-20…+70 °C	IR	0…20000 mm	-	w156	d630	e036
QS186LE11Q8	connector, M12 x 1	-10…+50 °C	red	0…2000 mm	1 (EN 60825, IEC 60825)	w158	d633	
QS186LE12Q8	connector, M12 x 1	-10…+50 °C	red	0…2000 mm	1 (EN 60825, IEC 60825)	w158	d633	
QS186LE11	cable	-10…+50 °C	red	0…2000 mm	1 (EN 60825, IEC 60825)	w157	d631	
QS186LE12	cable	-10…+50 °C	red	0…2000 mm	1 (EN 60825, IEC 60825)	w068	d631	
QS186E	cable	-20…+70 °C	IR	0…20000 mm	-	w068	d631	e036
QS186LE	cable	-10…+50 °C	red	0…30000 mm	1 (EN 60825, IEC 60825)	w157	d632	
QS186LEQ8	connector, M12 x 1	-10…+50 °C	red	0…30000 mm	1 (EN 60825, IEC 60825)	w158	d633	
QS186LE10Q8	connector, M12 x 1	-10…+50 °C	red	0…5000 mm	1 (EN 60825, IEC 60825)	w158	d633	
QS186LE14Q8	connector, M12 x 1	-10…+50 °C	red	0…5000 mm	1 (EN 60825, IEC 60825)	w158	d633	
QS186LE10	cable	-10…+50 °C	red	0…5000 mm	1 (EN 60825, IEC 60825)	w157	d631	
QS186LE14	cable	-10…+50 °C	red	0…5000 mm	1 (EN 60825, IEC 60825)	w157	d631	

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS18 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-20…+70 °C
Dimensions	15 x 35 x 27.7 mm	**Light type**	IR
Protection class	IP67	**Range**	0…3000 mm
Housing material	plastic, ABS		

A receiver is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS186EBQ8	connector, M12 x 1	w068	d634	e036
QS186EB	cable	w068	d635	e036

QS18 – Opposed mode sensor – Receiver – M18 thread



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 35 x 31 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	_⌐¯¯¬_ / _⌐¯¯¬_, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 400 Hz	**Range**	0…20000 mm

An emitter is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6RQ8	connector, M12 x 1	w155	d630	e036
QS18VP6RQ8-02790	connector, M12 x 1	w155	d630	e036
QS18VP6R	cable	w155	d631	e036

QS18 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 35 x 27.7 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	⎍/⎍, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 400 Hz	**Range**	0…3000 mm

An emitter is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6RBQ8	connector, M12 x 1	w155	d634	e036
QS18VP6RB	cable	w155	d635	e036

QS18 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	red
Switching frequency	≤ 800 Hz	**Range**	0…6500 mm
Dimensions	15 x 35 x 31 mm		

A reflector is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6LVQ8	connector, M12 x 1	w155	d637	e037
QS18VP6LV	cable	w155	d636	e037

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS18 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	_⟍_/_⊣⟍_, PNP	**Light type**	red
Switching frequency	≤ 800 Hz	**Range**	50…3500 mm
Dimensions	15 x 35 x 31 mm		

A reflector is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6LPQ8	connector, M12 x 1	w155	d637	e037
QS18VP6LP	cable	w155	d636	e037

QS18 – Retroreflective laser sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-10…+50 °C
Output	_⟍_/_⊣⟍_, PNP	**Light type**	red
Switching frequency	≤ 700 Hz	**Range**	100…10000 mm
Dimensions	15 x 35 x 31 mm	**Laser class**	1 (EN 60825, IEC 60825)

Reflector included in scope of supply.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6LLPQ8	connector, M12 x 1	w155	d637	e038
QS18VP6LLP	cable	w155	d636	e038

QS18 – Diffuse mode sensor – M18 thread



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	IR
Switching frequency	≤ 800 Hz	**Range**	0…450 mm
Dimensions	15 x 35 x 31 mm		

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6DQ8	connector, M12 x 1	w155	d637	e039
QS18VP6D	cable	w155	d636	e039

QS18 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 35 x 21.1 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	⎍/⎍, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 800 Hz	**Light type**	IR

Types and data – selection table

Type	Electrical connection	Range	w	d	e
QS18VP6W	cable	0…100 mm	w155	d638	e039
QS18VP6WQ8	connector, M12 x 1	0…100 mm	w155	d639	e039
QS18VP6DB	cable	0…450 mm	w155	d638	e039
QS18VP6DBQ8	connector, M12 x 1	0…450 mm	w155	d639	e039

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS18 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 35 x 31 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	_⟍_/_⊣⟍_, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 625 Hz	**Light type**	red

Types and data – selection table

Type	Electrical connection	Range	w	d	e
QS18VP6FF50	cable	0…50 mm	w155	d631	e041
QS18VP6FF50Q8	connector, M12 x 1	0…50 mm	w155	d630	e041
QS18VP6FF100	cable	0…100 mm	w155	d631	e042
QS18VP6FF100Q8	connector, M12 x 1	0…100 mm	w155	d630	e042

QS18 – Diffuse mode sensor with adjustable field



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 34.5 x 21.1 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	_⟍_/_⊣⟍_, PNP	**Light type**	red
Switching frequency	≤ 700 Hz		

Types and data – selection table

Type	Electrical connection	Ambient temperature	Range	Laser class	w	d	e
QS18VP6AF100	cable	0…+55 °C	1…100 mm	-	w155	d640	e043
QS18VP6AF100Q5	cable with connector, M12 x 1	0…+55 °C	1…100 mm	-	w155	d641	e043
QS18VP6LAF	cable	-10…+50 °C	1…150 mm	1 (EN 60825, IEC 60825)	w155	d640	e044
QS18VP6LAFQ5	cable with connector, M12 x 1	-10…+50 °C	1…150 mm	1 (EN 60825, IEC 60825)	w155	d641	e044
QS18VP6LAF250	cable	-10…+50 °C	1…250 mm	2 (EN 60825, IEC 60825)	w155	d640	e045
QS18VP6LAF250Q5	cable with connector, M12 x 1	-10…+50 °C	1…250 mm	2 (EN 60825, IEC 60825)	w155	d641	e045

QS18 – Convergent mode sensor



General data

Operating voltage	10…30 VDC	**Dimensions**	15 x 35 x 33.2 mm
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	⎍/⎍, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 800 Hz	**Light type**	red

Types and data – selection table

Type	Electrical connection	Focal distance	w	d	e
QS18VP6CV15Q8	connector, M12 x 1	16 mm	w155	d643	e046
QS18VP6CV45Q8	connector, M12 x 1	43 mm	w155	d643	e046
QS18VP6CV15	cable	16 mm	w155	d642	e046
QS18VP6CV45	cable	43 mm	w155	d642	e046

QS18 – Diffuse mode laser sensor – M18 thread



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-10…+50 °C
Output	⎍/⎍, PNP	**Light type**	red
Switching frequency	≤ 700 Hz	**Range**	0…300 mm
Dimensions	15 x 35 x 31 mm	**Laser class**	1 (EN 60825, IEC 60825)

Types and data – selection table

Type	Electrical connection	w	d	e
QS18VP6LDQ8	connector, M12 x 1	w155	d637	e040
QS18VP6LD	cable	w155	d636	e040

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS18E – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Output	⎓, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 800 Hz	**Light type**	red
Dimensions	15 x 35 x 31 mm	**Range**	50…3500 mm

A reflector is required.

Types and data – selection table

Type	Electrical connection	w	d	e
QS18EP6LP	cable	w159	d644	e037
QS18EP6LPQ8	connector, M12 x 1	w159	d645	e037

QS18E – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Output	⎓, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 800 Hz	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
QS18EP6W	15 x 35 x 21.1 mm	cable	0…300 mm	w159	d646	e039
QS18EP6WQ8	15 x 35 x 21.1 mm	connector, M12 x 1	0…300 mm	w159	d647	e039
QS18EP6DB	15 x 35 x 21.1 mm	cable	0…500 mm	w159	d646	e039
QS18EP6DBQ8	15 x 35 x 21.1 mm	connector, M12 x 1	0…500 mm	w159	d647	e039
QS18EP6D	15 x 35 x 31 mm	cable	0…800 mm	w159	d644	e039
QS18EP6DQ8	15 x 35 x 31 mm	connector, M12 x 1	0…800 mm	w159	d645	e039

QS18E – Convergent mode sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Output	⎓, PNP	**Ambient temperature**	-20…+70 °C
Switching frequency	≤ 800 Hz	**Light type**	red
Dimensions	15 x 35 x 31 mm		

Types and data – selection table

Type	Electrical connection	Focal distance	w	d	e
QS18EP6CV15Q8	connector, M12 x 1	16 mm	w159	d645	e046
QS18EP6CV45Q8	connector, M12 x 1	43 mm	w159	d645	e046
QS18EP6CV15	cable	16 mm	w159	d644	e046
QS18EP6CV45	cable	43 mm	w159	d644	e046

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Compact sensors Q20



The rectangular Q20 are quickly and easily mounted. Bores with integrated thread make the use of additional mounting nuts redundant.

Whether applied as opposed mode, retroreflective or diffuse mode sensor, the compact Q20 are striking for their outstanding optical power and reliability. Their flat design enables easy mounting even in confined spaces.

Features

- 3 mm thread bores, 25.4 mm distance inbetween
- Easily aligned through visible light beam (most types)
- Protection class IP67
- Excellent protection against interferences and crosstalk
- Antivalent transistor outputs (NO/NC), PNP/NPN depending on the type
- 2 m connection cable, M8 x 1 plug connection, cable with M8 x 1 plug connection, cable with M12 x 1 plug connection

Type code Q20

Q20	P	DXL	Q5

Q20	Series	P	Output	DXL	Operating mode

Series

Q20	rectangular dimensions 12 x 32 x 20 mm (cable device) 12 x 42 x 20 mm (plug-in device)

Output

P	PNP
N	NPN

Operating mode

E	opposed mode emitter
R	opposed mode receiver
EL	emitter, long range
RL	receiver, long range
LV	retroreflective mode visible red light
LP	retroreflective mode polarizing filter
DL	diffuse mode, long range
DXL	diffuse mode sensor extra long range
DV	diffuse mode, visible red light

Q5	Electrical connection

Electrical connection

Q	pigtail with connector, M8 x 1
Q5	pigtail with connector, M12 x 1
Q7	connector, M8 mm
blank	cable connection, 2 m

Q20 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Protection class	IP67	**Ambient temperature**	-20…+60 °C

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	Light type	Range	w	d	e
Q20E	12 x 32 x 20 mm	cable	red	0…10000 mm	w068	d648	e047
Q20EQ	12 x 32 x 20 mm	cable with connector, M8 x 1	red	0…10000 mm	w068	d649	e047
Q20EQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	red	0…10000 mm	w068	d650	e047
Q20EQ7	12 x 42 x 20 mm	connector, M8 x 1	red	0…10000 mm	w068	d651	e047
Q20EL	12 x 32 x 20 mm	cable	IR	0…15000 mm	w068	d648	e047
Q20ELQ	12 x 32 x 20 mm	cable with connector, M8 x 1	IR	0…15000 mm	w068	d649	e047
Q20ELQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	IR	0…15000 mm	w068	d650	e047
Q20ELQ7	12 x 42 x 20 mm	connector, M8 x 1	IR	0…15000 mm	w068	d651	e047

Q20 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 600 Hz
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	⎍/⎍, PNP	**Ambient temperature**	-20…+60 °C

An emitter is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
Q20PRQ	12 x 32 x 20 mm	cable with connector, M8 x 1	0…10000 mm	w155	d649	e047
Q20PRQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	0…10000 mm	w155	d650	e047
Q20PRQ7	12 x 42 x 20 mm	connector, M8 x 1	0…10000 mm	w155	d651	e047
Q20PR	12 x 32 x 20 mm	cable	0…10000 mm	w155	d648	e047
Q20PRL	12 x 32 x 20 mm	cable	0…15000 mm	w155	d648	e047
Q20PRLQ	12 x 32 x 20 mm	cable with connector, M8 x 1	0…15000 mm	w155	d649	e047
Q20PRLQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	0…15000 mm	w155	d650	e047
Q20PRLQ7	12 x 42 x 20 mm	connector, M8 x 1	0…15000 mm	w155	d651	e047

Q20 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎍/⎓, PNP	**Light type**	red
Switching frequency	≤ 600 Hz	**Range**	0…6000 mm

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q20PLVQ7	12 x 42 x 20 mm	connector, M8 x 1	w155	d655	e048
Q20PLVQ	12 x 32 x 20 mm	cable with connector, M8 x 1	w155	d652	e048
Q20PLVQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	w155	d654	e048
Q20PLV	12 x 32 x 20 mm	cable	w155	d653	e048

Q20 – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	⎍/⎍, PNP	**Light type**	red
Switching frequency	≤ 600 Hz	**Range**	0…4000 mm

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q20PLPQ7	12 x 42 x 20 mm	connector, M8 x 1	w155	d655	e049
Q20PLPQ	12 x 32 x 20 mm	cable with connector, M8 x 1	w155	d652	e049
Q20PLPQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	w155	d654	e049
Q20PLP	12 x 32 x 20 mm	cable	w155	d653	e049

Q20 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 600 Hz
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic
Output	⎍/⎍, PNP	**Ambient temperature**	-20…+60 °C

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Types and data – selection table

Type	Dimensions	Electrical connection	Light type	Range	w	d	e
Q20PD	12 x 32 x 20 mm	cable	red	0…250 mm	w155	d653	e050
Q20PDQ	12 x 32 x 20 mm	cable with connector, M8 x 1	red	0…250 mm	w155	d652	e050
Q20PDQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	red	0…250 mm	w155	d654	e050
Q20PDQ7	12 x 42 x 20 mm	connector, M8 x 1	red	0…250 mm	w155	d655	e050
Q20PDL	12 x 32 x 20 mm	cable	red	0…800 mm	w155	d653	e051
Q20PDLQ	12 x 32 x 20 mm	cable with connector, M8 x 1	red	0…800 mm	w155	d652	e051
Q20PDLQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	red	0…800 mm	w155	d654	e051
Q20PDLQ7	12 x 42 x 20 mm	connector, M8 x 1	red	0…800 mm	w155	d655	e051
Q20PDXL	12 x 32 x 20 mm	cable	IR	0…1500 mm	w155	d653	e051
Q20PDXLQ	12 x 32 x 20 mm	cable with connector, M8 x 1	IR	0…1500 mm	w155	d652	e051
Q20PDXLQ5	12 x 32 x 20 mm	cable with connector, M12 x 1	IR	0…1500 mm	w155	d654	e051
Q20PDXLQ7	12 x 42 x 20 mm	connector, M8 x 1	IR	0…1500 mm	w155	d655	e051

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Compact sensors QS30



The compact QS30 fit in almost any place. With an optionally available M30 thread and standard bores, they can replace M30 threaded barrel as well as rectangular sensors without thread

The QS30 series offers many operating modes, functions and application possibilities

Features

- Universal rectangular design, flexible mounting
- Many operating modes, functions and application possibilities
- Pushbutton or external programming
- Easy-to-read status indication via 8-segment bargraph display
- Plastic housing, protection class IP67
- Bipolar digital outputs, PNP/NPN
- 30 ms switch-off delay (adjustable)
- 2 m connection cable or M12 x 1 plug connection

Type code QS30

QS30	VR	3	FF600	Q

QS30	Series	VR	Output	3	Operating voltage

Series

QS30	rectangular 22 x 49 x 35 mm (cable device) 22 x 57 x 35 mm (plug-in device)

Output

VR	relay output changeover contact NO/NC
blank	PNP/NPN

Operating voltage

3	12...250 VDC, 24...250 VAC
blank	10...30 VDC

FF600	Operating mode

Operating mode

AF	diffuse mode, adjustable field, bargraph display
ARX	receiver, high-power light operation
D	diffuse mode
E	opposed mode emitter
EDV	diffuse mode, teachable visible red light bargraph display
ELVC	retroreflective mode, visible red light, clear-glass recognition, bargraph display
EX	opposed mode emitter high-power
EXH20	opposed mode emitter high-power, water detection
FF600	diffuse mode, fixed field 0...600 mm
LD	laser, diffuse mode bargraph display
LDL	laser, diffuse mode, long distance, bargraph display
LLP	laser, retroreflective mode polarizing filter bargraph display
LLPC	laser, retroreflective mode polarizing filter, clear-glass recognition, bargraph display
LP	retroreflective mode polarizing filter
LV	retroreflective mode
R	opposed mode receiver
RRH20	receiver, dark operation water detection
RRX	receiver, high-power dark operation
RRXH20	receiver, high-power dark operation water detection

Q	Electrical connection

Electrical connection

Q	connector, M12 x 1
Q5	pigtail with connector, M12 x 1
blank	cable connection, 2 m

QS30 – Opposed mode sensor – Emitter



General data

Operating voltage	10…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-20…+70 °C
Error message type	LED	**Light type**	IR
Protection class	IP67	**Range**	0…60000 mm
Housing material	plastic, ABS		

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
QS30EQ	22 x 57 x 35 mm	connector, M12 x 1	w068	d657
QS30E	22 x 49 x 35 mm	cable	w068	d656

QS30 – Opposed mode sensor – Receiver



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	pnp/npn	**Range**	0…60000 mm

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
QS30RQ	22 x 57 x 35 mm	connector, M12 x 1	w161	d657
QS30R	22 x 49 x 35 mm	cable	w161	d656

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS30 – Retroreflective sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Light type**	red
Output	pnp/npn		

A reflector is required.

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	Ambient temperature	Range	w	d	e
QS30LV	≤ 250 Hz	22 x 49 x 35 mm	cable	-20…+70 °C	10…12000 mm	w161	d662	e053
QS30LVQ	≤ 250 Hz	22 x 57 x 35 mm	connector, M12 x 1	-20…+70 °C	10…12000 mm	w161	d663	e053
QS30ELVCQ	≤ 1000 Hz	22 x 57 x 35 mm	connector, M12 x 1	-10…+55 °C	100…2000 mm	w078	d664	
QS30ELVC	≤ 1000 Hz	22 x 49 x 35 mm	cable	-10…+55 °C	100…2000 mm	w078	d665	

QS30 – Retroreflective laser sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-20…+70 °C
Indication of excess gain type	LED	**Light type**	red
Output	pnp/npn	**Range**	0…8000 mm
Protection class	IP67		

A reflector is required.

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	w	d	e
QS30LPQ	≤ 250 Hz	22 x 57 x 35 mm	connector, M12 x 1	w161	d663	e054
QS30LP	≤ 33 Hz	22 x 49 x 35 mm	cable	w161	d662	e054

QS30 – Retroreflective laser sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-10…+50 °C
Indication of excess gain type	LED	**Light type**	red
Output	pnp/npn	**Range**	200…18000 mm
Switching frequency	≤ 1 kHz	**Laser class**	1 (EN 60825, IEC 60825)
Protection class	IP67		

Reflector included in scope of supply.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
QS30LLPQ	22 x 57 x 35 mm	connector, M12 x 1	w078	d664	e055
QS30LLPCQ	22 x 57 x 35 mm	connector, M12 x 1	w078	d664	e055
QS30LLP	22 x 49 x 35 mm	cable	w078	d665	e055
QS30LLPC	22 x 49 x 35 mm	cable	w078	d665	e055

QS30 – Diffuse mode sensor



General data

Operating voltage	10…30 VDC	**Output**	pnp/npn
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Lens material**	plastic

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	Ambient temperature	Light type	Range	w	d	e
QS30D	≤ 250 Hz	22 x 49 x 35 mm	cable	-20…+70 °C	IR	2…1000 mm	w163	d662	e056
QS30DQ	≤ 250 Hz	22 x 57 x 35 mm	connector, M12 x 1	-20…+70 °C	IR	2…1000 mm	w163	d663	e056
QS30EDV	≤ 270 Hz	22 x 49 x 35 mm	cable	-10…+55 °C	red	2…1400 mm	w078	d665	e057
QS30EDVQ	≤ 270 Hz	22 x 57 x 35 mm	connector, M12 x 1	-10…+55 °C	red	2…1400 mm	w078	d664	e057

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS30 – Diffuse mode sensor with fixed-field



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	pnp/npn	**Light type**	red
Switching frequency	≤ 250 Hz		

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
QS30FF200	22 x 49 x 35 mm	cable	0…200 mm	w163	d656	e058
QS30FF200Q	22 x 57 x 35 mm	connector, M12 x 1	0…200 mm	w163	d657	e058
QS30FF400	22 x 49 x 35 mm	cable	0…400 mm	w163	d656	e059
QS30FF400Q	22 x 57 x 35 mm	connector, M12 x 1	0…400 mm	w163	d657	e059
QS30FF600	22 x 49 x 35 mm	cable	0…600 mm	w163	d656	e060
QS30FF600Q	22 x 57 x 35 mm	connector, M12 x 1	0…600 mm	w163	d657	e060

QS30 – Diffuse mode sensor with adjustable field



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-10…+55 °C
Output	pnp/npn	**Light type**	red
Switching frequency	≤ 500 Hz	**Range**	50…300 mm

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
QS30AFQ	22 x 57 x 35 mm	connector, M12 x 1	w078	d664	e061
QS30AF	22 x 49 x 35 mm	cable	w078	d665	e061

QS30 – Diffuse mode laser sensor



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-10…+50 °C
Output	pnp/npn	**Light type**	red
Switching frequency	≤ 1 kHz		

Types and data – selection table

Type	Dimensions	Electrical connection	Range	Laser class	w	d	e
QS30LDQ	22 x 57 x 35 mm	connector, M12 x 1	0…400 mm	1 (EN 60825, IEC 60825)	w078	d664	e062
QS30LD	22 x 49 x 35 mm	cable	0…400 mm	1 (EN 60825, IEC 60825)	w078	d665	e062
QS30LDL	22 x 49 x 35 mm	cable	0…800 mm	2 (EN 60825, IEC 60825)	w078	d665	e063
QS30LDLQ	22 x 57 x 35 mm	connector, M12 x 1	0…800 mm	2 (EN 60825, IEC 60825)	w078	d664	e063

QS30 – Opposed mode sensor – Emitter – Water detection



Type	QS30EXH2OQ5	**Electrical connection**	cable with connector, M12 x 1
Operating voltage	10…30 VDC	**Ambient temperature**	-20…+60 °C
Power-on, indicator	LED	**Light type**	IR
Error message type	LED	**Range**	0…4000 mm
Output	(emitter)	**Response time**	3 ms
Dimensions	22 x 57 x 54.3 mm	**Wiring diagram**	w160
Protection class	IP67	**Dimension drawing**	d660
Housing material	plastic, ABS		
Lens material	plastic		

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

QS30 – Opposed mode sensor – Receiver – Water detection



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Electrical connection**	cable with connector, M12 x 1
Output	_⟍‾, dark operation, pnp/npn	**Ambient temperature**	-20…+60 °C
Dimensions	22 x 57 x 54.3 mm	**Response time**	3 ms

Types and data – selection table

Type	Range	w	d
QS30RRH2OQ5	0…2000 mm	w162	d661
QS30RRXH2OQ5	0…4000 mm	w162	d661

QS30 – Opposed mode sensor – Emitter – High Power



General data

Operating voltage	10…30 VDC	**Ambient temperature**	-20…+60 °C
Power-on, indicator	LED	**Light type**	IR
Housing material	plastic, ABS	**Range**	0…300000 mm
Lens material	plastic		

Types and data – selection table

Type	Dimensions	Protection class	Electrical connection	w	d	e
QS30EXQ	22 x 57 x 35 mm	IP68 / IP69K	connector, M12 x 1	w160	d659	e052
QS30EX	22 x 49 x 35 mm	IP67	cable	w160	d658	e052

QS30 – Opposed mode sensor – Receiver – High Power



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 16 Hz
Power-on, indicator	LED	**Housing material**	plastic, ABS
Error message type	LED	**Lens material**	plastic
Indication of excess gain type	LED	**Ambient temperature**	-20…+60 °C
Output	pnp/npn	**Range**	0…300000 mm

Types and data – selection table

Type	Dimensions	Protection class	Electrical connection	w	d	e
QS30RRXQ	22 x 57 x 35 mm	IP68 / IP69K	connector, M12 x 1	w162	d659	e052
QS30ARXQ	22 x 57 x 35 mm	IP68 / IP69K	connector, M12 x 1	w162	d659	e052
QS30RRX	22 x 49 x 35 mm	IP67	cable	w162	d658	e052
QS30ARX	22 x 49 x 35 mm	IP67	cable	w162	d658	e052

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

NAMUR sensors MINI-BEAM and Q45



The NAMUR sensors MINI-BEAM® and Q45 feature intrinsically safe amplifiers and are made for rough industrial applications. Conform to the NAMUR standard, light operating sensors are supplied with < 1 mA in dark state and with > 2.1 mA in light state.

Available are opposed and retroreflective mode, convergent and diffuse mode sensors and base units for fiber optics. NOTE: NAMUR sensors have to be operated via intrinsically safe switching amplifiers in areas subject to explosion hazards.

Features

- Ex approval acc. to KEMA certificate 03 ATEX 1441 X ignition protection type Ex ia IIC T6
- acc. to EN 60947-5-6: 2000, EN 60079-0: 2006, part 1 and EN 60079-11: 2007 A1…A2
- Sensitivity exactly adjustable via a 15-turn potentiometer
- 2 m connection cable or M12 x 1 plug connection

Type code NAMUR sensors

MI	AD	9	LVAG	Q

MI	Series	AD	Output	9	Input

Series

Q45	rectangular 44.5 x 87.6 x 56.4 mm
MI	MINI-BEAM, rectangular, 12.3 x 30.7 x 66 mm

Output

AD	2-wire, NAMUR sensor

Input
voltage supply via isolating switching amplifier

9	5…15 VDC

LVAG	Operating mode	Q	Electrical connection

Operating mode

CV	convergent mode, visible red light MINI-BEAM, 16 mm, Q45: 38 mm
CV2	convergent mode, visible red light focal distance 43 mm
CV4	convergent mode, visible red light focal distance 100 mm
D	diffuse mode
DL	diffuse mode, long distance
E	opposed mode emitter
F	basic device for glass fibers
FP	basic device for plastic fibers
LP	retroreflective mode polarizing filter
LV	retroreflective mode visible red light,
LVAG	retroreflective mode polarizing filter low contrast application
R	receiver
W	diffuse mode, divergent

Electrical connection

Q	connector, M12 x 1
blank	cable connection, 2 m

Q45 – NAMUR – Emitter



General data

Operating voltage	8.2 VDC	**Light type**	IR
Output	(emitter)	**Range**	0…6000 mm
Protection class	IP67	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Housing material	plastic, PBT	**Protection type**	Ex ia IIC T6
Lens material	plastic	**Voltage**	nom. 8.2 VDC
Ambient temperature	-40…+70 °C		

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q459EQ	54.1 x 44.5 x 103 mm	connector, M12 x 1	w021	d667	e064
Q459E	54.1 x 44.5 x 87 mm	cable	w021	d666	e064

Q45 – NAMUR – Receiver



General data

Operating voltage	8.2 VDC	**Range**	0…6000 mm
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 250 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Lens material	plastic	**Non-actuated current consumption**	1 mA
Ambient temperature	-40…+70 °C		

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q45AD9RQ	54.1 x 44.5 x 103 mm	connector, M12 x 1	w021	d667	e064
Q45AD9R	54.1 x 44.5 x 87 mm	cable	w021	d666	e064

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q45 – NAMUR – Retroreflective sensor



General data

Output	light operation, NAMUR	**Light type**	red
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1 mA

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
Q45AD9LV	44.5 x 87.6 x 54.1 mm	cable	80…9000 mm	w021	d666	e065
Q45AD9LVQ	44.5 x 102.6 x 54.1 mm	connector, M12 x 1	80…9000 mm	w021	d667	e065
Q45AD9LP	44.5 x 87.6 x 54.1 mm	cable	150…6000 mm	w021	d666	e065
Q45AD9LPQ	44.5 x 102.6 x 54.1 mm	connector, M12 x 1	150…6000 mm	w021	d667	e065

Q45 – NAMUR – Diffuse mode sensor



General data

Operating voltage	8.2 VDC	**Light type**	IR
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 100 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Lens material	plastic	**Non-actuated current consumption**	1 mA
Ambient temperature	-40…+70 °C		

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
Q45AD9D	54.1 x 44.5 x 87 mm	cable	0…300 mm	w021	d666	
Q45AD9DQ	54.1 x 44.5 x 103 mm	connector, M12 x 1	0…300 mm	w021	d667	
Q45AD9DL	54.1 x 44.5 x 87 mm	cable	0…1070 mm	w021	d666	e066
Q45AD9DLQ	54.1 x 44.5 x 103 mm	connector, M12 x 1	0…1070 mm	w021	d667	e066

Q45 – NAMUR – Convergent mode sensor



General data

Output	light operation, NAMUR	**Light type**	red
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1 mA

Types and data – selection table

Type	Dimensions	Electrical connection	Focal distance	w	d	e
Q45AD9CVQ	44.5 x 102.6 x 56.4 mm	connector, M12 x 1	38 mm	w021	d667	e067
Q45AD9CV4Q	44.5 x 102.6 x 56.4 mm	connector, M12 x 1	100 mm	w021	d667	e067
Q45AD9CV	44.5 x 87.6 x 56.4 mm	cable	38 mm	w021	d666	e067
Q45AD9CV4	44.5 x 87.6 x 56.4 mm	cable	100 mm	w021	d666	e067

Q45 – NAMUR – Basic device for glass fibers



General data

Output	light operation, NAMUR	**Light type**	IR
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1 mA

A glass fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q45AD9FQ	44.5 x 102.6 x 60.5 mm	connector, M12 x 1	w021	d669	e068
Q45AD9F	44.5 x 87.6 x 60.5 mm	cable	w021	d668	e068

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Q45 – NAMUR – Basic device for plastic fibers



General data

Output	light operation, NAMUR	**Light type**	red
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1 mA

A plastic fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
Q45AD9FPQ	44.5 x 102.6 x 60.5 mm	connector, M12 x 1	w021	d669	e069
Q45AD9FP	44.5 x 87.6 x 60.5 mm	cable	w021	d668	e069

MINI-BEAM – NAMUR – Emitter



General data

Output	(emitter), NAMUR	**Light type**	IR
Protection class	IP67	**Range**	0…6000 mm
Housing material	plastic, PBT	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Lens material	plastic	**Protection type**	Ex ia IIC T6
Ambient temperature	-40…+70 °C	**Voltage**	nom. 8.2 VDC

A receiver is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
MI9EQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	w021	d671	e070
MI9E	12.3 x 30.7 x 66 mm	cable	w021	d670	e070

MINI-BEAM – NAMUR – Receiver



General data

Indication of excess gain type	LED	**Range**	0…6000 mm
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 100 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Lens material	plastic	**Non-actuated current consumption**	1.2 mA
Ambient temperature	-40…+70 °C		

An emitter is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
MIAD9RQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	w021	d671	e070
MIAD9R	12.3 x 30.7 x 66 mm	cable	w021	d670	e070

MINI-BEAM – NAMUR – Retroreflective sensor



General data

Indication of excess gain type	LED	**Light type**	red
Output	light operation, NAMUR	**Range**	0…5000 mm
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1.2 mA

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
MIAD9LVQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	w021	d671	e071
MIAD9LV	12.3 x 30.7 x 66 mm	cable	w021	d670	e071

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

MINI-BEAM – NAMUR – Retroreflective sensor with polarizing filter



General data

Indication of excess gain type	LED	**Light type**	red
Output	light operation, NAMUR	**Range**	0…2000 mm
Switching frequency	≤ 100 Hz	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Protection class	IP67	**Protection type**	Ex ia IIC T6
Housing material	plastic, PBT	**Voltage**	nom. 8.2 VDC
Lens material	plastic	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1.2 mA

A reflector is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
MIAD9LVAGQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	w021	d671	e071
MIAD9LVAG	12.3 x 30.7 x 66 mm	cable	w021	d670	e071

MINI-BEAM – NAMUR – Diffuse mode sensor



General data

Indication of excess gain type	LED	**Light type**	IR
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 100 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Lens material	plastic	**Non-actuated current consumption**	1.2 mA
Ambient temperature	-40…+70 °C		

Types and data – selection table

Type	Dimensions	Electrical connection	Range	w	d	e
MIAD9D	12.3 x 30.7 x 66 mm	cable	0…380 mm	w021	d670	e072
MIAD9DQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	0…380 mm	w021	d671	e072
MIAD9W	12.3 x 30.7 x 51.8 mm	cable	0…75 mm	w021	d672	e072
MIAD9WQ	12.3 x 30.7 x 69.8 mm	connector, M12 x 1	0…75 mm	w021	d673	e072

MINI-BEAM – NAMUR – Convergent mode sensor



General data

Indication of excess gain type	LED	**Light type**	red
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 100 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Lens material	plastic	**Non-actuated current consumption**	1.2 mA
Ambient temperature	-40…+70 °C		

Types and data – selection table

Type	Dimensions	Electrical connection	Focal distance	w	d	e
MIAD9CVQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	16 mm	w021	d671	e073
MIAD9CV2Q	12.3 x 30.7 x 84 mm	connector, M12 x 1	43 mm	w021	d671	e073
MIAD9CV2	12.3 x 30.7 x 66 mm	cable	43 mm	w021	d670	e073
MIAD9CV	12.3 x 30.7 x 66 mm	cable	16 mm	w021	d670	e073

MINI-BEAM – NAMUR – Basic device for glass fibers



General data

Indication of excess gain type	LED	**Light type**	IR
Output	light operation, NAMUR	**Ex approval acc. to conformity certificate**	KEMA 03ATEX 1441 X
Switching frequency	≤ 100 Hz	**Protection type**	Ex ia IIC T6
Protection class	IP67	**Voltage**	nom. 8.2 VDC
Housing material	plastic, PBT	**Actuated current consumption**	2.1 mA
Ambient temperature	-40…+70 °C	**Non-actuated current consumption**	1.2 mA

A glas fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
MIAD9FQ	12.3 x 30.7 x 84 mm	connector, M12 x 1	w021	d675	e074
MIAD9F	12.3 x 30.7 x 66 mm	cable	w021	d674	e074

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Slot sensors SLM



SLM slot sensors consist of a compact pair of opposed mode sensors hosted in a U-shaped die-cast metal housing. The sensors are thus well protected and easily mounted. Emitter-receiver alignment is not required.

Different designs with 8 slot widths from 10 mm to 220 mm are available for many applications. The sensitivity is adjusted via a single turn potentiometer.

Features

- Compact slot design with integrated opposed mode sensor
- Rugged die-cast metal housing, IP67 rated
- 8 slot widths from 10 mm to 220 mm
- PNP, NPN or bipolar output (1 x NPN and 1 x PNP)
- Short response time of 0.5 ms
- Visible red beam
- Light or dark operation selectable via sealed switch.
- 2 m connection cable or M12 x 1 plug connection

Type code SLM

SLM	120	P	6	Q

SLM	Series	120	Slot width	P	Output

Series

SLM	slot sensor 12 x 42 x 80 mm 12 x 62 x 80 mm 12 x 82 x 80 mm 12 x 112 x 80 mm 12 x 152 x 140 mm 12 x 252 x 140 mm

Slot width

120	slot width, mm 8 sloth widths 10 . . . 220 m

Output

B	PNP/NPN
N	NPN
P	PNP

6	Operating voltage	Q	Electrical connection

Operating voltage

6	10 . . . 30 VDC

Electrical connection

Q	connector, M12 x 1
blank	cable connection, 2 m

SLM – Slot sensor



General data

Operating voltage	10…30 VDC	**Housing material**	metal/plastic, ZN
Power-on, indicator	LED	**Lens material**	plastic
Switching frequency	≤ 1 kHz	**Ambient temperature**	-20…+60 °C
Protection class	IP67	**Light type**	red

Types and data – selection table

Type	Output	Dimensions	Electrical connection	Slot width	w	d
SLM10P6Q	_⌒_, PNP	12 x 42 x 80 mm	connector, M8 x 1	10 mm	w070	d677
SLM30P6Q	_⌒_, PNP	12 x 62 x 80 mm	connector, M8 x 1	30 mm	w070	d679
SLM80P6Q	_⌒_, PNP	12 x 112 x 80 mm	connector, M8 x 1	80 mm	w070	d681
SLM120P6Q	_⌒_, PNP	12 x 152 x 140 mm	connector, M8 x 1	120 mm	w070	d683
SLM50P6Q	_⌒_, PNP	12 x 82 x 80 mm	connector, M8 x 1	50 mm	w070	d685
SLM220P6Q	_⌒_, PNP	12 x 252 x 140 mm	connector, M8 x 1	220 mm	w070	d686
SLM10B6	_⌒_, pnp/npn	12 x 42 x 80 mm	cable	10 mm	w069	d676
SLM30B6	_⌒_, pnp/npn	12 x 62 x 80 mm	cable	30 mm	w069	d678
SLM80B6	_⌒_, pnp/npn	12 x 112 x 80 mm	cable	80 mm	w069	d680
SLM120B6	_⌒_, pnp/npn	12 x 152 x 140 mm	cable	120 mm	w069	d682
SLM220B6	_⌒_, pnp/npn	12 x 252 x 140 mm	cable	220 mm	w069	d684
SLM50B6	_⌒_, pnp/npn	12 x 82 x 80 mm	cable	50 mm	w069	d687

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Fiber optic sensors D10



The D10 and D10 expert series provides user-friendly plastic fiber sensors for DIN rail mounting. Numerous possibilities for configuration and the slim design of only 10 mm make these sensors the perfect choice for demanding application conditions.

The user can select functions such as static, dynamic and single-point teach mode as well as manual fine adjustment, external programming and keylock. A big and well readable display resp. bargraph and LEDs support programming and monitoring during operation.

Features

- High-power sensors for use with plastic fibers
- Extremely slim housing (10 mm) for DIN rail mounting
- Standard versions with bipolar switching output (1 x PNP and 1 x NPN)
- Expert version, optionally available with two analog outputs, one analog and one switching output, two separate switching outputs
- Teachable version with numeric and bargraph display
- Automatic crosstalk protection
- Adjustable switch-off delay
- Status indicated via red or green LED

Type code D10

D10	IP	FP	G	-	Q

D10	Series	IP	Output	FP	Fibers

Series

D10	basic device for plastic fibers DIN rail mounting 10 x 36 x 61.3 mm

Output

IP	expert: analog output 4. . . 20 mA switching output, PNP, teach input numeric display
DP	expert: 2 analog outputs, PNP, teach input numeric display
UP	expert: analog output 0. . . 10 V switching output, PNP, teach input, numeric display
B	switching output,bipolar, bargraph teach input
A	switching output, bipolar, potentiometer

Fibers

FP	plastic fiber

G	Lights	-	Response time	Q	Electrical connection

Lights

G	green
blank	red

Response time

Y	high-speed (higher switching frequency)
blank	standard

Electrical connection

Q	connector, Ø 8 mm
blank	cable connection, 2 m

D10A – Basic unit for plastic fibers – Potentiometer



General data

Operating voltage	10…30 VDC	**Protection class**	IP50
Power-on, indicator	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Ambient temperature**	-10…+55 °C
Output	_⌒‾, pnp/npn		

A plastic fiber is required.

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	Light type	w	d
D10AFPQ	≤ 1 kHz	10 x 35.9 x 84.4 mm	connector, Ø 8 mm	red	w069	d689
D10AFPYQ	≤ 2.5 kHz	10 x 35.9 x 84.4 mm	connector, Ø 8 mm	red	w069	d689
D10AFP	≤ 1 kHz	10 x 35.9 x 68.1 mm	cable	red	w069	d688
D10AFPY	≤ 2.5 kHz	10 x 35.9 x 68.1 mm	cable	red	w069	d688
D10AFPGQ	≤ 1 kHz	10 x 35.9 x 84.4 mm	connector, Ø 8 mm	green	w069	d689
D10AFPGYQ	≤ 2.5 kHz	10 x 35.9 x 84.4 mm	connector, Ø 8 mm	green	w069	d689
D10AFPG	≤ 1 kHz	10 x 35.9 x 68.1 mm	cable	green	w069	d688
D10AFPGY	≤ 2.5 kHz	10 x 35.9 x 68.1 mm	cable	green	w069	d688

D10B – Basic device for plastic fibers – Teach input



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 2.5 kHz
Power-on, indicator	LED	**Protection class**	IP50
Indication of excess gain type	LED chain	**Housing material**	plastic, ABS
Output	_⌒‾, pnp/npn	**Ambient temperature**	-10…+55 °C

A plastic fiber is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Types and data – selection table

Type	Dimensions	Electrical connection	Light type	w	d
D10BFPQ	10.5 x 35.9 x 84.4 mm	connector, Ø 8 mm	red	w164	d691
D10BFP	10.5 x 35.9 x 68.1 mm	cable	red	w164	d690
D10BFPGQ	10.5 x 35.9 x 84.4 mm	connector, Ø 8 mm	green	w164	d691
D10BFPG	10.5 x 35.9 x 68.1 mm	cable	green	w164	d690

D10Expert – Basic device for plastic fibers – Teach input



General data

Operating voltage	12…24 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Ambient temperature**	-20…+55 °C
Switching frequency	≤ 10 kHz	**Light type**	red
Protection class	IP50		

A plastic fiber is required.

Types and data – selection table

Type	Output	Dimensions	Electrical connection	Analog output	w	d
D10DPFPQ	2 x _◺‾, PNP	10.5 x 35.9 x 84.4 mm	connector, Ø 8 mm	-	w165	d693
D10UPFPQ	_◺‾, PNP	10.5 x 35.9 x 84.4 mm	connector, Ø 8 mm	0…10 V	w166	d693
D10IPFPQ	_◺‾, PNP	10.5 x 35.9 x 84.4 mm	connector, Ø 8 mm	4…20 mA	w166	d693
D10DPFP	2 x _◺‾, PNP	10.5 x 35.9 x 68.1 mm	cable	-	w165	d692
D10UPFP	_◺‾, PNP	10.5 x 35.9 x 68.1 mm	cable	0…10 V	w166	d692
D10IPFP	_◺‾, PNP	10.5 x 35.9 x 68.1 mm	cable	4…20 mA	w166	d692

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Fiber optic sensors D12



The D12 and D12 Expert series feature sensors for glass and plastic fibers. The user-friendly sensors are only 12 mm wide and suited for DIN rail mounting. Each sensor features auto-diagnostics and an alarm function A 7-segment LED bargraph indicates the signal strength at the input and output as well as the overload at the output. Antivalent NPN or PNP outputs are available.

The D12E expert version with integrated teach function enables optimal adjustment of sensitivity. Sensors of this type are thus especially suited for low-contrast applications, as well as the dynamic versions with automatic range control and continuous readjustment of the emitted luminous intensity.

Features

- High-power sensor for use with plastic and glass fibers
- Robust design, IP66 rated
- Mounting on DIN rail
- Standard version with manual adjustment of sensitivity
- Expert version with automatic adjustment of sensitivity, selected via pushbutton or via external control cable
- Dynamic version with automatic range control and regulation of luminous intensity
- Alarm output for indication of insufficient excess gain
- PNP or NPN transistor output, antivalent
- Visible red light

Type code D12

D12	DAB	6	FV	-	Q

D12	Series	DAB	Output/Function	6	Input

Series

D12	basic device for glass and plastic fibers DIN rail mounting, dimensions 12 x 30 x 64 mm (plastic fiber) 12 x 30 x 70 mm (glass fiber)

Output/Function

DAB	dynamic sensor with automatic range control, PNP/NPN
EN	expert: NPN, teach input
EP	expert: PNP, teach input
SN	NO/NC, NPN, potentiometer
SP	NO/NC, PNP, potentiometer

Input

6	10...30 VDC

FV	Fibers	-	Specification	Q	Electrical connection

Fibers

FP	plastic fiber
FV	glass fiber

Specification

H	extra high excess gain
Y	high-speed (higher frequency), no alarm output
Y1	off delay, high-speed (high frequency) no alarm output
blank	no specification

Electrical connection

W/30	cable connection, 9 m
Q	pigtail with connector, Ø 8 mm
blank	cable connection, 2 m

D12 – Basic unit for glass fibers – Potentiometer



General data

Operating voltage	10…30 VDC	**Dimensions**	12 x 30 x 70 mm
Power-on, indicator	LED	**Protection class**	IP66
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED chain	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	red

A glass fiber is required.

Types and data – selection table

Type	Switching frequency	Electrical connection	w	d	e
D12SP6FVYQ	≤ 10 kHz	cable with connector, Ø 8 mm	w153	d695	e076
D12SP6FVY1Q	≤ 10 kHz	cable with connector, Ø 8 mm	w153	d695	e076
D12SP6FVQ	≤ 1 kHz	cable with connector, Ø 8 mm	w153	d695	e075
D12SP6FV	≤ 1 kHz	cable	w153	d694	e075
D12SP6FVY1	≤ 10 kHz	cable	w153	d694	e076
D12SP6FVH	≤ 1 kHz	cable	w153	d694	e075
D12SP6FVY	≤ 10 kHz	cable	w153	d694	e076

D12 – Basic device for plastic fibers – Potentiometer



General data

Operating voltage	10…30 VDC	**Dimensions**	12 x 30 x 64 mm
Power-on, indicator	LED	**Protection class**	IP66
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED chain	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	red

A plastic fiber is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Types and data – selection table

Type	Switching frequency	Electrical connection	w	d	e
D12SP6FPHQ	≤ 1 kHz	cable with connector, Ø 8 mm	w153	d697	e078
D12SP6FPYQ	≤ 10 kHz	cable with connector, f Ø 8 mm	w153	d697	e077
D12SP6FPY1Q	≤ 10 kHz	cable with connector, Ø 8 mm	w153	d697	e077
D12SP6FPQ	≤ 1 kHz	cable with connector, Ø 8 mm	w153	d697	e075
D12SP6FP	≤ 1 kHz	cable	w153	d696	e075
D12SP6FPY	≤ 10 kHz	cable	w153	d696	e077
D12SP6FPH	≤ 1 kHz	cable	w153	d696	e078
D12SP6FPY1	≤ 10 kHz	cable	w153	d696	e077

D12 – Basic device for glass fibers



General data

Operating voltage	10…30 VDC	**Dimensions**	12 x 30 x 70 mm
Power-on, indicator	LED	**Protection class**	IP66
Indication of excess gain type	LED	**Housing material**	plastic, ABS
Output	⎓, pnp/npn	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 10 kHz	**Light type**	red

A glas fiber is required.

Types and data – selection table

Type	Electrical connection	w	d
D12DAB6FVQ	cable with connector, Ø 8 mm	w167	d699
D12DAB6FV	cable	w167	d698

D12 – Dynamic basic device for plastic fibers



General data

Operating voltage	10…30 VDC	**Dimensions**	12 x 30 x 64 mm
Power-on, indicator	LED	**Protection class**	IP66
Indication of excess gain type	LED	**Housing material**	plastic, ABS
Output	⎓, pnp/npn	**Ambient temperature**	-40…+70 °C
Switching frequency	≤ 10 kHz	**Light type**	red

A plastic fiber is required.

Types and data – selection table

Type	Electrical connection	w	d
D12DAB6FPQ	cable with connector, Ø 8 mm	w167	d701
D12DAB6FP	cable	w167	d700

D12 Expert – Basic device for glass fibers – Teach input



Type	D12EP6FV	**Housing material**	plastic, ABS
Operating voltage	10…30 VDC	**Electrical connection**	cable
Power-on, indicator	LED	**Ambient temperature**	-20…+70 °C
Indication of excess gain type	7-digit LED	**Light type**	red
Output	_⟋‾, PNP	**Wiring diagram**	w168
Switching frequency	≤ 2.5 kHz	**Dimension drawing**	d702
Dimensions	12 x 30 x 70 mm	**Excess gain curve**	
Protection class	IP66		

A glass fiber is required.

D12Expert – Basic device for plastic fibers – Teach input



Type	D12EP6FP	**Housing material**	plastic, ABS
Operating voltage	10…30 VDC	**Electrical connection**	cable
Power-on, indicator	LED	**Ambient temperature**	-20…+70 °C
Indication of excess gain type	7-digit LED	**Light type**	red
Output	_⟋‾, PNP	**Wiring diagram**	w168
Switching frequency	≤ 2.5 kHz	**Dimension drawing**	d703
Dimensions	12 x 30 x 64 mm	**Excess gain curve**	
Protection class	IP66		

A plastic fiber is required.

Photoelectric sensors

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Fiber optic sensors FI22



The plastic fiber sensor FI22 operates reliably even in low-contrast applications.

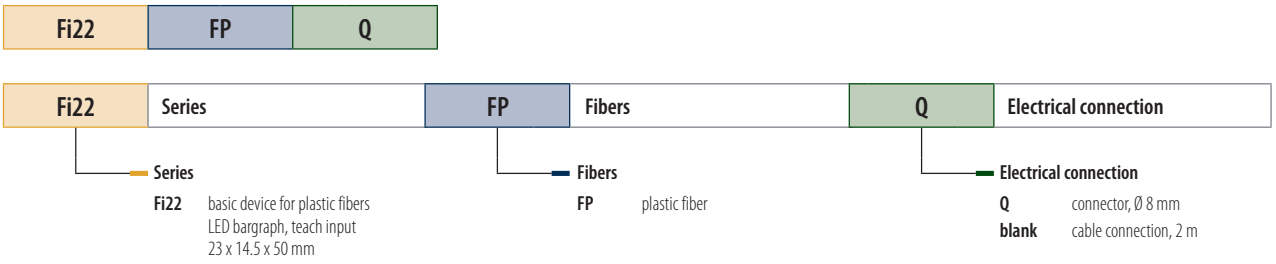
The expert version provides functions such as static, dynamic and single-point teach mode as well as manual fine adjustment, external programming and keylock. A large, well readable bargraph and bright LEDs support programming and monitoring during operation.

Owing to its compact design, the sensor can be mounted almost anywhere. It is simply snapped on with the supplied bracket. The housing is IP67 protected, allowing the sensor to be applied in polluted ambients.

Features

- Compact plastic fiber sensor
- Protection class IP67
- 8-segment LED bargraph indicates the relative signal strength at the input, the contrast, the programming and alarm status.
- Automatic teach modes, including static, dynamic, and single-point programming as well as manual fine adjustment.
- PNP or NPN outputs
- Programmable 30 ms pulse expansion (switch-off delay)
- Flexible programming via two pushbuttons or remote via cable
- Visible red light

Type code Fi22



FI22 – Basic device for plastic fibers – Teach input



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Power-on, indicator	LED	**Housing material**	plastic, ABS
Output	⎓, pnp/npn	**Ambient temperature**	-10…+55 °C
Switching frequency	≤ 1 kHz	**Light type**	red
Dimensions	23 x 14.5 x 50 mm		

A plastic fiber is required.

Types and data – selection table

Type	Electrical connection	w	d
FI22FPQ	connector, Ø 8 mm	w164	d705
FI22FP	cable	w164	d704

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Fiber optic sensors QS18F/FP



The QS18 series offers well-priced solutions, even for applications requiring fiber optics. Robust basic units are available for plastic as well as for glass fibers.

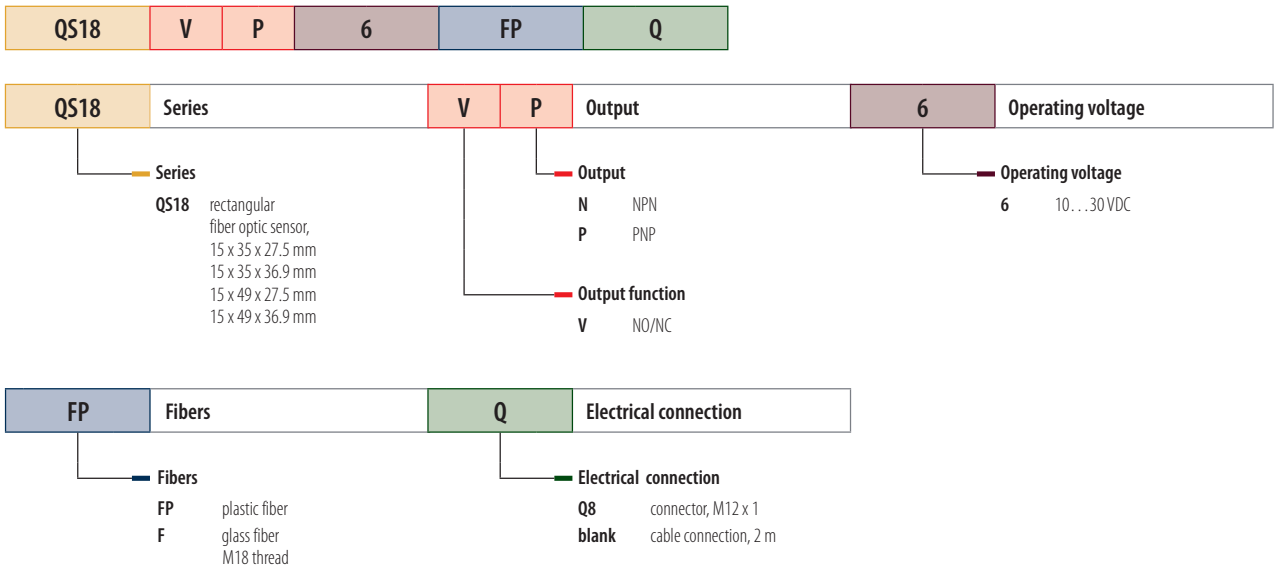
The sensitivity is adjusted via potentiometer. A green flashing LED indicates overload at the output. A yellow LED indicates the switching status and excess gain.

Owing to their functional design, the sensors are universally applicable and fit almost anywhere.

Features

- Well-priced basic device for plastic and glass fibers
- Universal rectangular design and fit
- Versions with or without M18 thread
- Sensitivity adjusted via potentiometer
- Protection class IP67
- Indication of insufficient excess gain
- Bright LEDs, all-round visible
- Light/dark operation

Type code QS18 ... F



QS18F – Basic device for glass fibers – Potentiometer, M18 thread



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 800 Hz
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	IR

A glass fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
QS18VP6FQ8	15 x 49 x 36.9 mm	connector, M12 x 1	w155	d707	e079
QS18VP6F	15 x 35 x 36.9 mm	cable	w155	d706	e079

QS18FP – Basic device for plastic fibers – Potentiometer



General data

Operating voltage	10…30 VDC	**Switching frequency**	≤ 800 Hz
Power-on, indicator	LED	**Protection class**	IP67
Error message type	LED	**Housing material**	plastic, ABS
Indication of excess gain type	LED	**Ambient temperature**	-20…+70 °C
Output	⎍/⎍, PNP	**Light type**	red

A plastic fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	w	d	e
QS18VP6FPQ8	15 x 49 x 27.5 mm	connector, M12 x 1	w155	d709	e079
QS18VP6FP	15 x 34.5 x 27.5 mm	cable	w155	d708	e079

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Fiber optic sensors R55F – Color mark sensor



The R55F detects 16 greyscales reliably at up to 10,000 actuations per second. Green light is suited for most color mark applications. Blue light is ideally suited for the detection of yellow tones. For example, 20 % of yellow on newspaper is detected with it. Blue and green tones are detected with red light. White light is used for special applications.

The ON and OFF conditions for detection are individually defined in the static teach mode. In dynamic teach mode the light and dark conditions are automatically taught during operation and the switching threshold is continuously updated while the sensor is working. During commissioning and operation a good visible green LED chain indicates continuously the contrast quality and the switchpoint.

Features

- Contrast sensor for color mark detection used with plastic and glass fibers
- Installed with bracket or on a 35 mm DIN rail
- Devices with green, blue, red and white light
- Static or dynamic teaching
- Adjustments: Light/dark operation, switch-off delay
- 4 LEDs for indication of light/dark operation, switching status and switch-off delay.
- Bipolar outputs NPN/PNP

Type code R55F

R55F	V	W	Q

R55F	Series	V	Fibers	W	Lights

Series

R55	color mark sensor 30 x 25 x 85.4 mm
F	connection for glass and plastic fiber

Fibers

P	plastic fiber
V	glass fiber

Lights

B	blue
G	green
W	white
blank	red

Q	Electrical connection

Electrical connection

Q	connector, M12 x 1
blank	cable connection, 2 m

R55FV – Color mark sensor – Basic device for glass fibers



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Indication of excess gain type	LED chain	**Housing material**	plastic, polycarbonate/ABS
Output	_⟋‾, pnp/npn	**Ambient temperature**	-10…+55 °C
Switching frequency	≤ 10 kHz		

A glas fiber is required.

Types and data – selection table

Type	Dimensions	Electrical connection	Light type	w	d
R55FVQ	30 x 25 x 97 mm	connector, M12 x 1	red	w078	d711
R55FV	30 x 25 x 85.4 mm	cable	red	w078	d710
R55FVGQ	30 x 25 x 97 mm	connector, M12 x 1	green	w078	d711
R55FVG	30 x 25 x 85.4 mm	cable	green	w078	d710
R55FVBQ	30 x 25 x 97 mm	connector, M12 x 1	blue	w078	d711
R55FVB	30 x 25 x 85.4 mm	cable	blue	w078	d710
R55FVWQ	30 x 25 x 97 mm	connector, M12 x 1	white	w078	d711
R55FVW	30 x 25 x 85.4 mm	cable	white	w078	d710

R55FP – Color mark sensor – Basic device for plastic fibers



General data

Operating voltage	10…30 VDC	**Protection class**	IP67
Indication of excess gain type	LED chain	**Housing material**	plastic, polycarbonate/ABS
Output	_⟋‾, pnp/npn	**Ambient temperature**	-10…+55 °C
Switching frequency	≤ 10 kHz		

A plastic fiber is required.

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

Types and data – selection table

Type	Dimensions	Electrical connection	Light type	w	d
R55FPQ	30 x 25 x 97 mm	connector, M12 x 1	red	w078	d711
R55FP	30 x 25 x 85.4 mm	cable	red	w078	d710
R55FPGQ	30 x 25 x 97 mm	connector, M12 x 1	green	w078	d711
R55FPG	30 x 25 x 85.4 mm	cable	green	w078	d710
R55FPBQ	30 x 25 x 97 mm	connector, M12 x 1	blue	w078	d711
R55FPB	30 x 25 x 85.4 mm	cable	blue	w078	d710
R55FPWQ	30 x 25 x 97 mm	connector, M12 x 1	white	w078	d711
R55FPW	30 x 25 x 85.4 mm	cable	white	w078	d710

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff e Excess gain curves on page 922 ff a Accessories on page 788 ff

At a glance
Inspection sensors



Measurement and inspection systems - Adaptable, precise and fast

Sensors and light screens operating with innovative infrared, red light and laser technology fulfill the most sophisticated measurement and inspection tasks efficiently. Changes of distance, scan angles, backgrounds, profiles, shapes, edges, surfaces, reflexions and even colors are easily detected. The sensors operate contactless, at great distances, with high resolution, fast and uninfluenced by interferences of any kind.

Different methods for distance measurement are applied, namely optical triangulation, phase shifting or pulse counting. As a result, clear differences emerge with respect to resolution, repeatability and accuracy.

The fields of application for measurement and inspection sensors are nearly infinite, covering tasks such as distance measurement, color contrasts, filling levels, parts detection, position determination and job sequencing.

Switching and measuring light screens, the so called area sensors, are applied where single beam detection would fail. Light screens consist of many single beams, detecting the quality of objects through the different switching states of each single beam.

Typical applications are package sizing and profiling in sorting plants, loop and sag detection at conveyor belts, parts counting, measuring of bores and workpieces, edge and center guiding, detection of cracks in tapes and tailback of parts on conveyor belts. In pick-to-light applications they regulate the job sequence in combination with optical and acoustic alerts.

For each application the best solution! TURCK offers the best solutions of a full-service provider for all measurement and inspection systems: You can draw from the extensive variety of our product portfolio which is unrivalled in its scope and diversity. In addition, you can rely on our experience and competence which stand the test in uncountable applications every day.

Our strengths - Your advantages



L-GAGE® LT3 – Laser sensor for distance measurement

LT3 laser sensors for distance measurement provide exceptional sensing ranges and accuracy. Diffuse mode versions achieve ranges of 0.3 to 3 m for grey targets and 0.3 m to 5 m for white targets. Retroreflective sensors achieve ranges of up to 50 m.

The LT3 is easily programmed via pushbutton. A resolution of up to 1 mm is achieved depending on the adjusted response time and object color.

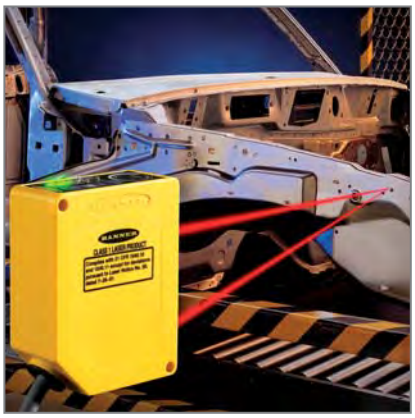
The sensor features a switching and an analog output, each with its individual measuring range. The scalable analog output automatically distributes the output signal over the entire programmed sensing range.



R58E Expert – Registration mark sensor with automatic teach routines

The R58E with excellent color sensitivity is typically used for the registration of products and materials. It achieves excellent repeatability even in high-speed applications, thanks to a response time of 50 µs.

The static teach mode is used to set output ON and output OFF individually. In dynamic teach mode the R58E adjusts the switchpoint automatically during operation through scanning the brightest and darkest events continuously.



Q60 - Compact sensors with large ranges and background suppression

The compact Q60 with adjustable field and extended sensing range are attractively priced.

Objects with low reflectivity are detected reliably while objects located in the background are ignored.

The input/output timing as well as light/dark operation is adjusted via pushbutton or external control. The keylock provides additional protection. The cut-off point can be adjusted between 0.2 m and 2 m with a two-turn screw.

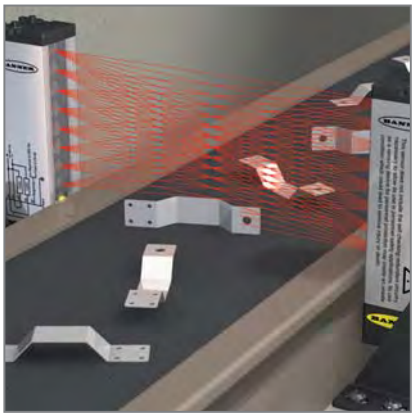
advantages



EZ-ARRAY™ – Measuring light screen

The measuring light screen A-GAGE® EZ-ARRAY™ is ideal for product sizing and profiling, edge and center guarding, loop tension control and parts counting etc.

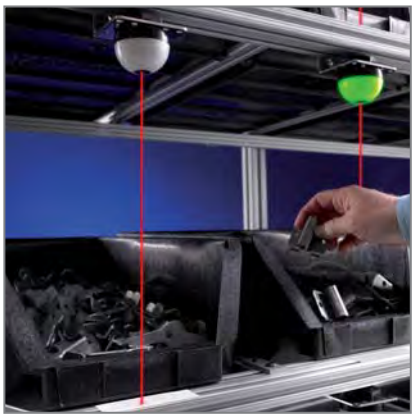
The narrowly arranged infrared beams detect objects of 5 mm width at a range of 4 m. The height ranges from 150 mm to 1800 mm, edge resolution 2.5 mm. 14 measuring modes can be set such as, 3 scanning methods, 2 analog and 2 digital switching outputs as well as a serial output.



LX – Light screen for very small and flat objects

The LX is a simple, cheap and very reliable alternative for the detection of very small or flat objects. Typical applications are piece counting or parcel handling on conveyor belts. Emitter and receiver generate a very precise optical grid. Very small but also very thin, flat objects are detected reliably, such as sheets of paper or envelopes. Even irregularly shaped objects in random positions on a conveyor belt are detected.

The LX are available in three different lengths (2, 5, 9 m) and with two different ranges (75…200 resp. 150…2000 mm).



Pick-to-light solutions – Control and monitoring of job sequences

Pick-to-light solutions control and monitor commissioning processes. An array of light beams in front of picking bins detect the hand of the operator. In addition, job lights indicate into which bin the operator has to reach next.

TURCK offers different pick-to-light solutions, also for direct mounting on picking bins. Purely visual, multicolor job lights are applied at places where the output signal of a sensor has to be monitored for example. The bright LEDs are also suitable for indication of machine states.

Our strengths - Your advantages



PVA – Light screen for job sequencing

The PVA controls each single bin, making manual confirmation by the operator redundant. The system is easily installed through simple cable routing. Additional job lights are not necessary.

Job sequences are enhanced with the PVA system because operators are quickly trained, workflow errors are ruled out and as a result, the quality control can be reduced. Moreover, communication at multilingual workplaces is simplified and the safety of workflows is also improved.



TL50 – General-purpose indicators

The TL50 tower lights are clearly visible, indicating the operating status throughout the entire production line. Each tower light is preassembled and preconfigured, featuring LEDs in different colors and with optional audible function. The tower lights are easily installed, no matter if mounted directly on the machine, in the cabinet or at critical control points within the production line.

Up to five different color lights are combinable in a single tower and can be on simultaneously.

The durable LED technology has a service life of more than 100,000 hrs. (11 years).

The volume of the audible alert is adjustable; max. sound pressure level 95 dB at 1 m distance.

advantages

Designs and variants

	Page 415	Page 417	Page 421	Page 425
				
	Laser sensor PicoDot	**LED – Sensor Q50**	**LED/Laser sensor Q60**	**Registration mark sensor R58E**
Design	rectangular, 12.7 x 40.6 x 45.6 mm	rectangular, 19.7 x 60 x 49.8 mm, 25 x 50 x 50 mm, 15 x 50 x 50 mm, 31 x 58 x 77 mm	rectangular, 25 x 75 x 60 mm	rectangular, 30 x 58.9 x 80.1 mm
Output function	NPN PNP	NPN PNP PNP/analog output	pnp/npn Relay output	pnp/npn
Protection class	IP54 IP67	IP67 IP62	IP67	IP67
Ambient temperature	-10…+45 °C	-10…+55 °C -25…+55 °C	-20…+55 °C -10…+50 °C -10…+45 °C	-10…+55 °C
Operating mode	Convergent mode laser sensor (triangulation) Retroreflective laser sensor (triangulation) with polarizing filter	Diffuse mode sensor with adjustable foreground and background suppression retroreflective sensor colour sensor luminescence sensor	diffuse mode sensor with adjustable background suppression Diffuse mode laser sensor (time-of-fly) with adjustable background suppression	diffuse mode contrast sensor
Max. range	10600 mm	400 mm	2000 mm	
Light type	red	red IR white UV	red IR	red / green / blue

	Page 407	Page 411	Page 427	Page 431
				
	Laser sensors LG5/LG10	**Laser sensors LT3/LT7**	**Pick-to-Light – K50**	**Pick-to-Light – Job sequencing PVA/PVD**
Design	rectangular, 20.2 x 55.3 x 82.3 mm	rectangular, 35.3 x 68.5 x 87 mm, 42 x 93 x 95 mm	cylindrical/threaded, Ø50 mm	rectangular, 30 x 137.8 x 15 mm, 30 x 266.4 x 15 mm, 30 x 341.4 x 15 mm, 30 x 416.6 x 15 mm
Output function	NPN/analog output PNP/analog output	PNP/analog output pnp/npn	PNP	PNP NPN pnp/npn
Protection class	IP67	IP67	IP67	IP62
Ambient temperature	-10…+50 °C	0…+50 °C -10…+50 °C	-20…+50 °C	0…+50 °C
Operating mode	Diffuse mode laser sensor (tri-angulation)	Retroreflective laser sensor (time-of-flight) Diffuse mode laser sensor (time-of-fly) with adjustable background suppression	retro-reflective sensor with polarisation filter diffuse mode sensor with fixed-field background suppression	light screen
Max. range	125 mm	250000 mm	2000 mm	2000 mm
Light type	red	red IR	red IR	IR red

Designs and variants

	Page 447	Page 451	Page 435	Page 441
				
	Light screen LX	**Light screen EZ-ARRAY™**	**LED indicators EZ-LIGHT**	**LED – Tower light TL50**
Design	rectangular, 25.4 x 342 x 31.8 mm, 25.4 x 189.6 x 31.8 mm, 25.4 x 113.4 x 31.8 mm	rectangular, 36 x 379 x 45.2 mm, 36 x 529 x 45.2 mm, 36 x 678 x 45.2 mm, 36 x 828 x 45.2 mm, 36 x 978 x 45.2 mm, 36 x 1128 x 45.2 mm, 36 x 1278 x 45.2 mm, 36 x 1578 x 45.2 mm, 36 x 1878 x 45.2 mm, 36 x 227 x 45.2 mm, 36 x 2178 x 45.2 mm, 36 x 2478 x 45.2 mm	cylindrical/threaded, Ø 50 mm, Ø 18 x 61 mm, Ø 40 x 45 mm, Ø 30 mm	50 x 61.2 mm, 50 x 101.9 mm, 50 x 142.6 mm, 50 x 183.3 mm, 50 x 224 mm, 50 x 92 mm, 50 x 132.7 mm, 50 x 173.4 mm, 50 x 214.1 mm
Output function	pnp/npn	PNP/analog output NPN/analog output		
Protection class	IP67	IP65	IP67 IP50	IP67 IP50
Ambient temperature	-20…+70 °C	-40…+70 °C	-40…+50 °C	-40…+50 °C -20…+50 °C
Operating mode	light screen	light screen		
Max. range	2000 mm	4000 mm		
Light type	IR	IR	white green red / green red / yellow / green red / green / blue green / red / yellow / blue / white	red yellow white green / red green / red / yellow green / red / yellow / blue green / red / yellow / blue / white

Laser sensors LG5/LG10



The compact laser gauging sensors LG5 and LG10 work according to the principle of optical triangulation. They are a well-priced and a versatile alternative for precision measurement at short to medium distances. Typical fields of application are the control of surface qualities, dimensional accuracy of components and distance measurement.

The sensors are available with switching and analog output. The limit values are separately programmable for each output via pushbutton. The minimum window size is 1 mm.

Response time, self-diagnostics with alarm output, status indication and hold function are included in the functional scope.

Features

- Compact laser gauging system, working on the principle of optical triangulation, for short to medium distances
- No separate controller required
- Extremely slim beam for precise measurement of distance, height, thickness and other gauging applications
- Accuracy 3 µm (LG5) resp. 10 µm (LG10)
- Sensing ranges: 45 mm…60 mm or 75 mm…125 mm
- Digital switching and analog output in the same unit, individually programmable
- Simple and fast teaching via pushbutton

Type code LG5/LG10

LG	5B65	N	U	Q

LG	Series	5B65	Measuring range	N	Switching output

Series

LG	laser sensor, rectangular 20.2 x 55.3 x 82.3 mm

Measuring range

5A65	measuring range 45 . . . 60 mm focal point 70mm
5B65	measuring range 45 . . . 60 mm focal point 53 mm
10A65	measuring range 75 . . . 125 mm focal point 180 mm

Switching output

P	PNP
N	NPN

U	Analog output	Q	Electrical connection

Analog output

U	analog output 0 . . . 10 V
I	analog output 4 . . . 20 mA

Electrical connection

Q	pigtail with connector, M12 x 1
blank	cable connection, 2 m

LG5 – Range 45…60 mm – Focal point 70 mm



General data

Operating voltage	12…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-10…+50 °C
Output	⎓, PNP/analog output	**Light type**	red
Switching frequency	≤ 500 Hz	**Range**	45…60 mm
Dimensions	20.2 x 55.3 x 82.3 mm	**Laser class**	2 (EN 60825, IEC 60825)
Protection class	IP67	**Focal distance**	70 mm
Housing material	metal, ZN, black lacquer		

Types and data – selection table

Type	Electrical connection	Analog output	Load	w	d	e
LG5A65PIQ	cable with connector, M12 x 1	4…20 mA	≤ 1000 Ω	w071	d392	e080
LG5A65PI	cable	4…20 mA	≤ 1000 Ω	w071	d392	e080
LG5A65PUQ	cable with connector, M12 x 1	0…10 V	≥ 2500 Ω	w071	d392	e080
LG5A65PU	cable	0…10 V	≥ 2500 Ω	w071	d392	e080

LG5 – Range 45…60 mm – Focal point 53 mm



General data

Operating voltage	12…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-10…+50 °C
Output	⎓, PNP/analog output	**Light type**	red
Switching frequency	≤ 500 Hz	**Range**	45…60 mm
Dimensions	20.2 x 55.3 x 82.3 mm	**Laser class**	2 (EN 60825, IEC 60825)
Protection class	IP67	**Focal distance**	53 mm
Housing material	metal, ZN, black lacquer		

Types and data – selection table

Type	Electrical connection	Analog output	Load	w	d	e
LG5B65PIQ	cable with connector, M12 x 1	4…20 mA	≤ 1000 Ω	w071	d392	e080
LG5B65PI	cable	4…20 mA	≤ 1000 Ω	w071	d392	e080
LG5B65PUQ	cable with connector, M12 x 1	0…10 V	≥ 2500 Ω	w071	d392	e080
LG5B65PU	cable	0…10 V	≥ 2500 Ω	w071	d392	e080

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

LG10 – Range 75…125 mm – Focal point 180 mm



General data

Operating voltage	12…30 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	-10…+50 °C
Output	⎯⎽⎺⎽⎯, PNP/analog output	**Light type**	red
Switching frequency	≤ 500 Hz	**Range**	75…125 mm
Dimensions	20.2 x 55.3 x 82.3 mm	**Laser class**	2 (EN 60825, IEC 60825)
Protection class	IP67	**Focal distance**	180 mm
Housing material	metal, ZN, black lacquer		

Types and data – selection table

Type	Electrical connection	Analog output	Load	w	d	e
LG10A65PIQ	cable with connector, M12 x 1	4…20 mA	≤ 1000 Ω	w071	d392	e081
LG10A65PI	cable	4…20 mA	≤ 1000 Ω	w071	d392	e081
LG10A65PUQ	cable with connector, M12 x 1	0…10 V	≥ 2500 Ω	w071	d392	e081
LG10A65PU	cable	0…10 V	≥ 2500 Ω	w071	d392	e081

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Laser sensors LT3/LT7



LT3/LT7 sensors use advanced time-of-flight technology. The laser emits one million pulses per second. The microprocessor records the time each pulse needs to travel to the target and back to the sensor. One thousand pulse times are averaged every millisecond and the value is transferred to the output.

The long rangeability of the sensors enables very small parts or less prominent features to be detected, even if the LT sensor is mounted at a safe distance to the hazardous area.

The sensors are available with switching and analog output. Measuring and switching range are easily adjusted via pushbutton. A bright, visible laser spot simplifies the alignment.

Features

- Measuring range adjusted via pushbutton
- Well-priced solution for long-range detection
- Measuring range up to 10 m in diffuse mode, up to 250 m in retroreflective mode
- Fast and easy programming via pushbutton, no potentiometer adjustments
- Switching and analog outputs
- Switching and measuring range independently adjustable

Type code LT3/LT7

LT3	BD	LV	Q

LT3	Series	BD	Output	LV	Operating mode

Series

LT3	laser sensor, light propagation time rectangular 35.3 x 68.5 x 87 mm
LT7	laser sensor, light propagation time rectangular 42 x 93 x 95 mm

Output

B	PNP/NPN selectable
D	2 switching outputs
I	analog output 4 . . . 20 mA
N	NPN
P	PNP
U	analog output 0 . . . 10 V

Operating mode

LV	laser, retroreflective mode
blank	laser, diffuse mode

Q	Electrical connection

Electrical connection

Q in combination with LT3	connector, M12 x 1
Q in combination with LT7	connector, M16
blank	cable connection, 2 m

LT3 – Retroreflective sensor



General data

Operating voltage	12…24 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	0…+50 °C
Switching frequency	≤ 1 kHz	**Light type**	red
Dimensions	35.3 x 68.5 x 87 mm	**Range**	500…50000 mm
Protection class	IP67	**Laser class**	1 (EN 60825, IEC 60825)
Housing material	plastic, ABS		

Types and data – selection table

Type	Output	Electrical connection	Analog output	w	d	e
LT3PILVQ	_⟍_, PNP/analog output	connector, M12 x 1	4…20 mA	w072	d394	e082
LT3PILV	_⟍_, PNP/analog output	cable	4…20 mA	w072	d393	e082
LT3BDLVQ	2x _⟍_, pnp/npn	connector, M12 x 1	-	w073	d394	e082
LT3BDLV	2x _⟍_, pnp/npn	cable	-	w073	d393	e082
LT3PULVQ	_⟍_, PNP/analog output	connector, M12 x 1	0…10 V	w072	d394	e082
LT3PULV	_⟍_, PNP/analog output	cable	0…10 V	w072	d393	e082

LT3 – Diffuse-mode sensor



General data

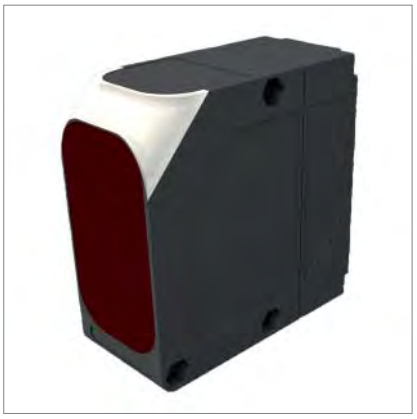
Operating voltage	12…24 VDC	**Lens material**	plastic
Power-on, indicator	LED	**Ambient temperature**	0…+50 °C
Switching frequency	≤ 1 kHz	**Light type**	red
Dimensions	35.3 x 68.5 x 87 mm	**Range**	300…5000 mm
Protection class	IP67	**Laser class**	2 (EN 60825, IEC 60825)
Housing material	plastic, ABS		

Types and data – selection table

Type	Output	Electrical connection	Analog output	w	d	e
LT3PIQ	_⟍_, PNP/analog output	connector, M12 x 1	4…20 mA	w072	d394	e083
LT3PI	_⟍_, PNP/analog output	cable	4…20 mA	w072	d393	e083
LT3PUQ	_⟍_, PNP/analog output	connector, M12 x 1	0…10 V	w072	d394	e083
LT3PU	_⟍_, PNP/analog output	cable	0…10 V	w072	d393	e083
LT3BDQ	2 x _⟍_, pnp/npn	connector, M12 x 1	-	w073	d394	e083
LT3BD	2 x _⟍_, pnp/npn	cable	-	w073	d393	e083

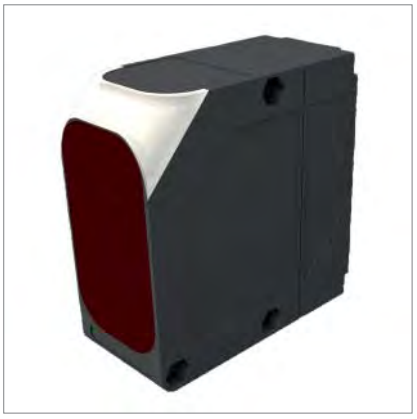
w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

LT7 – Retroreflective sensor



Type	LT7PLVQ	**Electrical connection**	connector, M16
Operating voltage	18…30 VDC	**Ambient temperature**	-10…+50 °C
Power-on, indicator	LED	**Light type**	IR
Output	2x ⎍, PNP	**Range**	500…250000 mm
Switching frequency	≤ 400 Hz	**Laser class**	1 (EN 60825, IEC 60825)
Dimensions	42 x 93 x 95 mm	**Wiring diagram**	w074
Protection class	IP67	**Dimension drawing**	d395
Housing material	plastic, ABS	**Excess gain curve**	e084
Lens material	plastic		

LT7 – Diffuse-mode sensor



Type	LT7PIDQ	**Electrical connection**	connector, M16
Operating voltage	18…30 VDC	**Ambient temperature**	-10…+50 °C
Power-on, indicator	LED	**Light type**	IR
Output	2 x ⎍, PNP/analog output	**Range**	500…10000 mm
Switching frequency	≤ 400 Hz	**Analog output**	4…20 mA
Dimensions	42 x 93 x 95 mm	**Laser class**	1 (EN 60825, IEC 60825)
Protection class	IP67	**Wiring diagram**	w074
Housing material	plastic, ABS	**Dimension drawing**	d395
Lens material	plastic	**Excess gain curve**	e085

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

PicoDot™ laser precision sensors



The laser precision sensors of the PicoDot™ series are available as convergent mode and retroreflective versions. The PicoDot™ convergent mode laser sensors detect the position of objects very precisely with high excess gain. The strength of retroreflective sensors lies in their long range operability.

The devices feature an antivalent PNP/NPN switching output. The sensitivity is adjusted via potentiometer. A yellow and a green LED indicate operational readiness, switching status, signal strength as well as short circuit or output overload.

Features

- Fast laser sensor with narrow beam profile
- Convergent mode laser sensors for precise position detection, inspection and counting
- Retroreflective laser sensors for long range detection
- Sensitivity adjusted via potentiometer
- Antivalent switching outputs, PNP/NPN
- Light/dark operation
- Visible red light

Type code PicoDot

PD49	VP	6	C	200	Q

PD49	Series	VP	Output	6	Operating voltage

Series

PD45	laser sensor, rectangular 12.7 x 40.6 x 45.6 mm, IP54
PD49	laser sensor, rectangular 12.7 x 40.6 x 45.6 mm, IP54

Output

VP	changeover contact, PNP
VN	changeover contact, NPN

Operating voltage

6	10…30 VDC

C	Operating mode	200	Range	Q	Electrical connection

Operating mode

C	convergent mode
LLP	retroreflective mode polarizing filter

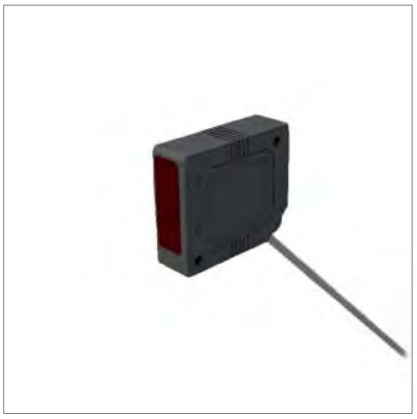
Range (only convergent mode sensors)

200	max. range [mm]

Electrical connection

blank	cable connection, 2 m
Q	connector, M12 x 1

PicoDot – Convergent mode sensor



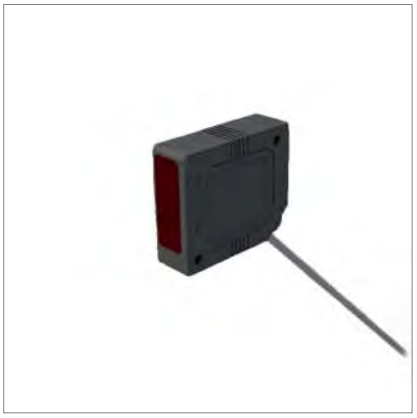
General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-10…+45 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 2.5 kHz	**Laser class**	2 (EN 60825, IEC 60825)
Dimensions	12.7 x 40.6 x 45.6 mm		

Types and data – selection table

Type	Protection class	Electrical connection	Focal distance	w	d	e
PD45VP6C200	IP54	cable	203 mm	w075	d396	e086
PD45VP6C200Q	IP54	cable with connector, M12 x 1	203 mm	w075	d397	e086
PD49VP6C200Q	IP67	cable with connector, M12 x 1	203 mm	w075	d397	e086
PD45VP6C100Q	IP54	cable with connector, M12 x 1	102 mm	w075	d397	e086
PD45VP6C100	IP54	cable	102 mm	w075	d396	e086

PicoDot – Retroreflective sensor with polarizing filter



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, ABS
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-10…+45 °C
Output	⎓, PNP	**Light type**	red
Switching frequency	≤ 2.5 kHz	**Range**	200…10600 mm
Dimensions	12.7 x 40.6 x 45.6 mm	**Laser class**	2 (EN 60825, IEC 60825)

Types and data – selection table

Type	Protection class	Electrical connection	w	d	e
PD49VP6LLPQ	IP67	cable with connector, M12 x 1	w075	d397	e087
PD45VP6LLPQ	IP54	cable with connector, M12 x 1	w075	d397	e087
PD45VP6LLP	IP54	cable	w075	d396	e087

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

Triangulation sensor Q50



Q50 is a series of compact LED-based triangulation sensors. The high-performing sensors are a well-priced alternative to laser sensors for demanding measurement applications. Available are devices with switching, analog current or voltage output.

Pushbutton or remote programming of close and long distance measurement. Devices with switching output can be taught a measuring range with two switchpoints, or just one switchpoint, like sensors with background suppression.

The scalable analog output automatically distributes the output signal over the width of the programmed sensing window.

Features

- Powerful LED-based triangulation sensor
- Versions with switching output (PNP/NPN) or with analog current or voltage output
- Measuring range 50…400 mm
- Foreground and background suppression
- Fast and easy programming via pushbutton
- Remote teach input
- Two bicolor status LEDs
- Visible red and infrared light
- Protection class IP67

Type code Q50

Q50	A	V	P	Y	Q

Q50	Series	A	Range	V	Light type

Series

Q50	triangulation sensor rectangular 19.7 x 60 x 49.8 mm

Range

Infrared	
A	50 . . . 200 mm
B	100 . . . 400 mm
Visible red light	
AV	50 . . . 150 mm
BV	100 . . . 300 mm

Light type

V	visible red light
blank	infrared light

P	Output	Y	Response time	Q	Electrical connection

Output

I	analog output 4 . . . 20 mA
N	NPN
P	PNP
U	analog output 0 . . . 10 V

Response time

Y	output response time 4 ms
blank	response time of output 48 ms

Electrical connection

Q	connector, M12 x 1
blank	cable connection, 2 m

Q50 – Visible red light – Range 50…150 mm



General data

Dimensions	19.7 x 60 x 49.8 mm	**Ambient temperature**	-10…+55 °C
Protection class	IP67	**Light type**	red
Housing material	plastic, ABS	**Range**	50…150 mm
Lens material	plastic		

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Analog output	w	d	e
Q50AVPQ	12…30 VDC	_⟋‾/⊣⟋‾, PNP	≤ 7 Hz	connector	-	w076	d399	e088
Q50AVP	12…30 VDC	_⟋‾/⊣⟋‾, PNP	≤ 7 Hz	cable	-	w076	d398	e088
Q50AVPYQ	12…30 VDC	_⟋‾/⊣⟋‾, PNP	≤ 112 Hz	connector	-	w076	d399	e088
Q50AVPY	12…30 VDC	_⟋‾/⊣⟋‾, PNP	≤ 112 Hz	cable	-	w076	d398	e088
Q50AVIQ	15…30 VDC	-	-	connector	4…20 mA	w077	d399	e089
Q50AVI	15…30 VDC	-	-	cable	4…20 mA	w077	d398	e089
Q50AVUQ	15…30 VDC	-	-	connector	0…10 V	w077	d399	e089
Q50AVU	15…30 VDC	-	-	cable	0…10 V	w077	d398	e089

Q50 – Infrared light – Range 50…200 mm



General data

Dimensions	19.7 x 60 x 49.8 mm	**Ambient temperature**	-10…+55 °C
Protection class	IP67	**Light type**	IR
Housing material	plastic, ABS	**Range**	50…200 mm
Lens material	plastic		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Analog output	w	d	e
Q50APQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	connector	-	w076	d399	e088
Q50AP	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	cable	-	w076	d398	e088
Q50APYQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	connector	-	w076	d399	e088
Q50APY	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	cable	-	w076	d398	e088
Q50AIQ	15…30 VDC	-	-	connector	4…20 mA	w077	d399	e089
Q50AI	15…30 VDC	-	-	cable	4…20 mA	w077	d398	e089
Q50AUQ	15…30 VDC	-	-	connector	0…10 V	w077	d399	e089
Q50AU	15…30 VDC	-	-	cable	0…10 V	w077	d398	e089

Q50 – Visible red light – Range 100…300 mm



General data

Dimensions	19.7 x 60 x 49.8 mm	**Ambient temperature**	-10…+55 °C
Protection class	IP67	**Light type**	red
Housing material	plastic, ABS	**Range**	100…300 mm
Lens material	plastic		

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Analog output	w	d	e
Q50BVPQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	connector	-	w076	d399	e090
Q50BVP	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	cable	-	w076	d398	e090
Q50BVPYQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	connector	-	w076	d399	e090
Q50BVPY	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	cable	-	w076	d398	e090
Q50BVIQ	15…30 VDC	-	-	connector	4…20 mA	w077	d399	e091
Q50BVI	15…30 VDC	-	-	cable	4…20 mA	w077	d398	e091
Q50BVUQ	15…30 VDC	-	-	connector	0…10 V	w077	d399	e091
Q50BVU	15…30 VDC	-	-	cable	0…10 V	w077	d398	e091

Q50 – Infrared light – Range 100…400 mm



General data

Dimensions	19.7 x 60 x 49.8 mm	**Ambient temperature**	-10…+55 °C
Protection class	IP67	**Light type**	IR
Housing material	plastic, ABS	**Range**	100…400 mm
Lens material	plastic		

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Analog output	w	d	e
Q50BPQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	connector	-	w076	d399	e090
Q50BP	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 7 Hz	cable	-	w076	d398	e090
Q50BPYQ	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	connector	-	w076	d399	e090
Q50BPY	12…30 VDC	_⟋‾⟍_/_⟍‾⟋_, PNP	≤ 112 Hz	cable	-	w076	d398	e090
Q50BIQ	15…30 VDC	-	-	connector	4…20 mA	w077	d399	e091
Q50BI	15…30 VDC	-	-	cable	4…20 mA	w077	d398	e091
Q50BUQ	15…30 VDC	-	-	connector	0…10 V	w077	d399	e091
Q50BU	15…30 VDC	-	-	cable	0…10 V	w077	d398	e091

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Laser/LED sensors Q60



The Q60 series comprises sensors working with laser or visible red LED beam. They are long-range operating devices with programmable background suppression. Objects with low reflectivity are detected reliably while objects located just beyond the sensing field are ignored. The cutoff point is set via a two-turn adjusting screw.

Output timing, light/dark operate and keylock are programmed remotely or via two pushbuttons.

Configuration and operating status are indicated by seven LEDs in run mode. Five of the seven LEDs combine to form a single light bar indicating relative ON and OFF delay.

Features

- Sensors with adjustable background suppression
- Measuring ranges 200 … 2000 mm
- Easy setting of cutoff point
- Laser or LED sensors (infrared or visible red light)
- Easy programming via integrated pushbutton or remotely
- Light or dark operate
- Seven LEDs indicate configuration and operating status
- Rugged IP67 rated housing

Type code Q60

Q60	BB	6	L	AF	1400	Q

Q60	Series	BB	Output	6	Operating voltage

Series

Q60	laser /LED sensors rectangular 25 x 75 x 60 mm

Output

BB	PNP/NPN bipolar
VR	relay output (changeover contact)

Operating voltage

6	10…30 VDC
3	12 … 250 VDC 24 … 250 VAC

L	Sensor type	AF	Background suppression	1400	Max. range [mm]

Sensor type

L	laser sensor
blank	LED sensor

Background suppression

AF	adjustable field, infrared light
AFV	adjustable field, visible red light

Max. range [mm]

1400	max. range mm

Q	Electrical connection

Electrical connection

blank	cable connection, 2 m
Q	connector, M12 x 1

Q60 – Visible red light – Range 200…1000 mm



General data

Power-on, indicator	LED	**Lens material**	plastic
Dimensions	25 x 75 x 60 mm	**Ambient temperature**	-20…+55 °C
Protection class	IP67	**Light type**	red
Housing material	plastic, ABS	**Range**	200…1000 mm

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	w	d	e
Q60BB6AFV1000Q	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	connector, M12 x 1	w078	d400	e092
Q60BB6AFV1000	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	cable	w078	d401	e092
Q60VR3AFV1000	12…250 VDC	_⟋‾, relay output	≤ 33 Hz	cable	w079	d401	e092

Q60 – Laser class 1 – Range 200…1400 mm



General data

Power-on, indicator	LED	**Lens material**	plastic
Dimensions	25 x 75 x 60 mm	**Light type**	red
Protection class	IP67	**Range**	200…1400 mm
Housing material	plastic, ABS	**Laser class**	1 (EN 60825, IEC 60825)

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Ambient temperature	w	d	e
Q60BB6LAF1400Q	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	connector, M12 x 1	-10…+50 °C	w078	d400	e094
Q60BB6LAF1400	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	cable	-10…+50 °C	w078	d401	e094
Q60VR3LAF1400	12…250 VDC	_⟋‾, relay output	≤ 33 Hz	cable	-10…+45 °C	w079	d401	e094

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Q60 – Infrared light – Range 200…2000 mm



General data

Power-on, indicator	LED	**Lens material**	plastic
Dimensions	25 x 75 x 60 mm	**Ambient temperature**	-20…+55 °C
Protection class	IP67	**Light type**	IR
Housing material	plastic, ABS	**Range**	200…2000 mm

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	w	d	e
Q60BB6AF2000Q	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	connector, M12 x 1	w078	d400	e093
Q60BB6AF2000	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	cable	w078	d401	e093
Q60VR3AF2000	12…250 VDC	_⟋‾, relay output	≤ 33 Hz	cable	w079	d401	e093

Q60 – Laser class 2 – Range 200…2000 mm



General data

Power-on, indicator	LED	**Lens material**	plastic
Dimensions	25 x 75 x 60 mm	**Light type**	red
Protection class	IP67	**Range**	200…2000 mm
Housing material	plastic, ABS	**Laser class**	2 (EN 60825, IEC 60825)

Types and data – selection table

Type	Operating voltage	Output	Switching frequency	Electrical connection	Ambient temperature	w	d	e
Q60BB6LAF2000Q	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	connector, M12 x 1	-10…+50 °C	w078	d400	e093
Q60BB6LAF2000	10…30 VDC	_⟋‾, pnp/npn	≤ 250 Hz	cable	-10…+50 °C	w078	d401	e093
Q60VR3LAF2000	12…250 VDC	_⟋‾, relay output	≤ 33 Hz	cable	-10…+45 °C	w079	d401	e093

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Registration mark sensor R58E



The registration mark sensor R58 Expert detects all common color marks used for product and material registration. The sensor automatically selects one of the three integrated color LEDs (red, green, blue) to achieve the highest contrast ratio. The very fast response time of 50 µs is perfectly suited for high-speed applications.

Contrast sensitivity, switching performance and delays are adjusted via integrated pushbuttons or remote via teach line. Static or dynamic teaching of switch ON/OFF delay.

Features

- Registration mark sensor with tri-color light source
- Excellent color contrast sensitivity, detects 16 greyscales
- Vertical or horizontal light spot, depending on the model
- Light/dark operate, switch ON/OFF delay 30 ms, programmed via pushbutton or teach line
- Bipolar output PNP/NPN
- Highly visible 8-segment bargraph indicates signal strength, output status and setup.
- Rugged IP67 rated housing

Type code R58

R58	E	CRGB	2	Q

R58	Series	E	Programming	CRGB	Scanning

Series
R58 registration mark sensor rectangular 30 x 58.9 x 80.1 mm

Programming
E teachable

Scanning
CRGB convergent mode sensor, 3 emitter LEDs, red, green, blue

2	Detection field	Q	Electrical connection

Detection field
1 parallel detection field relative to the housing axis
2 vertical detection field relative to the housing axis

Electrical connection
blank cable connection, 2 m
Q connector, M12 x 1

R58E – Parallel detection field



General data

Operating voltage	10…30 VDC	**Housing material**	metal, ZN
Indication of excess gain type	LED chain	**Lens material**	plastic
Output	⎍, pnp/npn	**Ambient temperature**	-10…+55 °C
Switching frequency	≤ 10 kHz	**Light type**	red / green / blue
Dimensions	30 x 58.9 x 80.1 mm	**Focal distance**	10 mm
Protection class	IP67		

Types and data – selection table

Type	Electrical connection	w	d
R58ECRGB1Q	connector, M12 x 1	w078	d403
R58ECRGB1	cable	w078	d402

R58E – Vertical detection field



General data

Operating voltage	10…30 VDC	**Housing material**	metal, ZN
Indication of excess gain type	LED chain	**Lens material**	plastic
Output	⎍, pnp/npn	**Ambient temperature**	-10…+55 °C
Switching frequency	≤ 10 kHz	**Light type**	red / green / blue
Dimensions	30 x 58.9 x 80.1 mm	**Focal distance**	10 mm
Protection class	IP67		

Types and data – selection table

Type	Electrical connection	w	d
R58ECRGB2Q	connector, M12 x 1	w078	d403
R58ECRGB2	cable	w078	d402

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Pick-to-Light sensors K50



The Pick-to-Light K50 are mounted to the bins. Integrated job lights indicate the pickup order of components. If the operator takes a component from a box, the sensor detects the operator's hand and sends a correspondent signal to the control unit. The control unit checks if the right component and the right amount has been removed from the box. If so, the job light of the current box is switched off and the job light of the next box turns on. Alarm and other signals can be programmed to indicate mispick.

Features

- Sensors with integrated job light for removal control and bin-picking applications
- Compact design with sensor and integrated job light
- Job lights available in different colors
- Versions with pushbutton and passive triggering to confirm the removal
- NPN or PNP output
- Fully encapsulated IP67 build, suited for rough environments
- Protection against ambient light, immune to electromagnetic and high-frequency interferences

Type code K50

K50	R	P	LP	GR	E	QP

K50	Series	R	Output function	P	Output

Series

K50	pick-to-light, Ø 50 mm, height 37.3 mm thread M30 x 1

Output function

A	light operation
R	dark operation

Output

P	PNP
N	NPN

LP	Operating mode	GR	Colors	E	Color signals

Operating mode

LP	retroreflective mode polarizing filter
FF50	diffuse mode fixed field 50 mm
PB	pushbutton

Colors

G	green
R	red
X	single-color

Color signals

C	request green - pick-up red - picking error red
D	request green - pick-up green - picking error OFF
E	request green - pick-up green - picking error red

QP	Electrical connection

Electrical connection

blank	cable connection, 2 m
Q	connector, M12 x 1
QP	cable connection with connection, M12 x 1

K50 – Pick-to-Light – Retroreflective sensor with polarizing filter



General data

Operating voltage	12…30 VDC	**Lens material**	plastic
Switching frequency	≤ 160 Hz	**Ambient temperature**	-20…+50 °C
Dimensions	Ø50 x 37.3 mm	**Light type**	red
Protection class	IP67	**Range**	0…2000 mm
Housing material	plastic, PC		

Versions with one (GXD) or more colored signal lights (GRC/GRE) are available.

Types and data – selection table

Type	Output	Electrical connection	w	d
K50RPLPGRCQ	dark operation, PNP	connector, M12 x 1	w080	d405
K50APLPGXDQP	light operation, PNP	cable with connector, M12 x 1	w080	d404
K50APLPGREQP	light operation, PNP	cable with connector, M12 x 1	w080	d404
K50RPLPGXDQP	dark operation, PNP	cable with connector, M12 x 1	w080	d404
K50RPLPGREQP	dark operation, PNP	cable with connector, M12 x 1	w080	d404

K50 – Pick-to-Light – Diffuse mode sensor with fixed-field



General data

Operating voltage	12…30 VDC	**Lens material**	plastic
Switching frequency	≤ 160 Hz	**Ambient temperature**	-20…+50 °C
Dimensions	Ø50 x 37.3 mm	**Light type**	IR
Protection class	IP67	**Range**	0…100 mm
Housing material	plastic, PC		

Versions with one (GXD) or more colored signal lights (GRC/GRE) are available.

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

Types and data – selection table

Type	Output	Electrical connection	w	d
K50APFF100GREQ	light operation, PNP	connector, M12 x 1	w080	d405
K50APFF100GXDQ	light operation, PNP	connector, M12 x 1	w080	d405
K50APFF100GXDQP	light operation, PNP	cable with connector, M12 x 1	w080	d404
K50APFF100GREQP	light operation, PNP	cable with connector, M12 x 1	w080	d404
K50APFF100GRCQP	light operation, PNP	cable with connector, M12 x 1	w080	d404
K50RPFF100GXDQP	dark operation, PNP	cable with connector, M12 x 1	w080	d404
K50RPFF100GREQP	dark operation, PNP	cable with connector, M12 x 1	w080	d404

K50 – Pick-to-Light – Pushbutton



General data

Operating voltage	12…30 VDC	**Protection class**	IP67
Output	⎍, PNP	**Housing material**	plastic, PC
Switching frequency	≤ 160 Hz	**Electrical connection**	cable with connector, M12 x 1
Dimensions	Ø50 x 37.3 mm	**Ambient temperature**	-20…+50 °C

Versions with one (GXD) or more colored signal lights (GRE)

Types and data – selection table

Type	w	d
K50APPBGXDQP	w080	d404
K50APPBGREQP	w080	d404

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Job sequencing PVA/PVD



PVA and PVD sensors are used for job sequencing and monitoring of bin-picking processes. Clearly visible job lights on each emitter and receiver guide the operators at the assembly lines through the parts assembly sequence. Failures such as missing or wrongly mounted parts are considerably reduced.

The following settings can be adjusted via DIP switch: PNP/NPN output, NO/NC output, steady/flashing job light; gate polarity for activation of job light. LEDs indicate setup and system failures.

Features

- PVA: Opposed mode sensor, 2 m range; emitter and receiver with integrated job light; asynchronous emitter and receiver
- PVD: One-piece, compact sensor; automatic selection of diffuse or retroreflective mode; max. 2 m range with reflector; max. 400 mm in diffuse mode
- Protective mounting brackets are available

Type code PVA & PVD

PVA	225	P	6	E	XX

PVA	Series	225	Monitored field	P	Output

Series

PVA	light screen for bin-picking sequences, two-part width: 15 mm, depth: 30 mm other heights PVA 100: 137.8 mm PVA 225: 266.4 mm PVA 300: 341.4 mm PVA 375: 416.6 mm
PVD	light screen for bin-picking sequences, one-part width: 15 mm, depth: 30 mm other heights PVD 100: 137.8 mm PVD 225: 266.4 mm

Monitored field (height)

225	monitored field in mm

Output (PVA)

P	PNP
N	NPN

6	Operating voltage	E	Operating mode	Q	Electrical connection

Operating voltage (PVA)

6	10…30 VDC

Operating mode (PVA)

E	emitter
R	receiver
blank	pair (emitter/receiver)

Electrical connection

blank	cable connection, 2 m
Q	pigtail with connector, M12 x 1

PVA – Pick-to-Light – Opposed mode sensor



General data

Operating voltage	12…30 VDC	**Housing material**	metal, AL, black lacquer
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	0…+50 °C
Output	⎓, PNP	**Light type**	IR
Protection class	IP62	**Range**	0…2000 mm

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	Detection zone height	w	d
PVA100P6Q	≤ 250 Hz	30 x 137.8 x 15 mm	cable with connector, M12 x 1	100 mm	w081	d406
PVA100P6	≤ 250 Hz	30 x 137.8 x 15 mm	cable	100 mm	w081	d407
PVA225P6Q	≤ 125 Hz	30 x 266.4 x 15 mm	cable with connector, M12 x 1	225 mm	w081	d406
PVA225P6	≤ 125 Hz	30 x 266.4 x 15 mm	cable	225 mm	w081	d407
PVA300P6Q	≤ 100 Hz	30 x 341.4 x 15 mm	cable with connector, M12 x 1	300 mm	w081	d406
PVA300P6	≤ 100 Hz	30 x 341.4 x 15 mm	cable	300 mm	w081	d407
PVA375P6Q	≤ 80 Hz	30 x 416.6 x 15 mm	cable with connector, M12 x 1	375 mm	w081	d406
PVA375P6	≤ 80 Hz	30 x 416.6 x 15 mm	cable	375 mm	w081	d407

PVD – Pick-to-Light – Diffuse / Retroreflective mode sensor



General data

Operating voltage	12…30 VDC	**Housing material**	metal, AL, black lacquer
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	0…+50 °C
Output	⎓/⏚, pnp/npn	**Light type**	red
Switching frequency	≤ 2.5 Hz	**Range**	0…2000 mm
Protection class	IP62		

PVD can also be used as retroreflective sensor with reflector (range up to 2 m).

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

Types and data – selection table

Type	Dimensions	Electrical connection	Detection zone height	w	d
PVD225Q	30 x 266.4 x 15 mm	cable with connector, M12 x 1	240 mm	w082	d408
PVD225	30 x 266.4 x 15 mm	cable	240 mm	w082	d408
PVD100	30 x 137.8 x 15 mm	cable	111 mm	w082	d409
PVD100Q	30 x 137.8 x 15 mm	cable with connector, M12 x 1	111 mm	w082	d409

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Multisegment LED indicators EZ-LIGHT



The EZ-LIGHT series provides a comprehensive selection of job lights, indicator lights, general-purpose indicators and touch switches for job sequencing and monitoring of pick-to-light and assembly processes. The rugged devices are suited for rough industrial applications and feature clearly visible status indicators.

The EZ-LIGHT indicators are programmed in a few steps and are easily mounted directly on the machine, in the cabinet or at critical control points. A great variety of designs, modules, functions and accessories offer perfect solutions for any task.

Features

- Highly visible LED indicators, up to 5 colors available
- Optional audible alert
- Different designs and sizes
- Simple mounting and configuration

Type code EZ-LIGHT

K50L	GRYBW	P	QP

K50L	Series	GRYBW	LED colors/signals	P	Input

Series

T8L	cylinder, plastic Ø 16 mm thread Ø 8 mm
M18	cylinder, plastic thread, Ø 18 mm
T18	cylinder, plastic Ø 30 mm thread Ø 8 mm
T30	cylinder, plastic Ø 40 mm thread Ø 30 mm
K30L	cylinder, plastic Ø 30 mm thread Ø 22.5 mm
K50L	cylinder, plastic Ø 50 mm thread Ø 30 mm
K80L	rectangular, plastic 81 x 110 x 67 mm

LED colors

G	green
R	red
Y	yellow
B	blue
W	white
X	no other function
2	3 colors / 7 functions

Audible signals

A1Y	continuous tone 75 dB
A2Y	pulsed tone
AL1Y	continuous tone 95 dB

Input

P	PNP
N	NPN

QP	Electrical connection

Electrical connection

blank	pigtail cable connection, 2 m
QP	150 mm PVC cable connection with connector, M12 x 1, 5-pole
Q	connector, M12 x 1, 5-pole
Q8	connector, M12 x 1, 8-pole

EZ-LIGHT – 1 LED color



General data

Operating voltage	18…30 VDC	**Lens material**	plastic
Dimensions	Ø50 x 37.3 mm	**Electrical connection**	cable
Protection class	IP67	**Ambient temperature**	-40…+50 °C
Housing material	plastic, PC	**Response time**	250 ms

Types and data – selection table

Type	Light type	w	d
K50LWXXP	white	w083	d410
K50LGXXP	green	w083	d410

EZ-LIGHT – 2 LED colors



General data

Protection class	IP67	**Ambient temperature**	-40…+50 °C
Lens material	plastic	**Response time**	250 ms

Types and data – selection table

Type	Operating voltage	Dimensions	Housing material	Electrical connection	Light type	w	d
M18RGXPQ	10…30 VDC	Ø 18 x 61 mm	metal, CuZn	connector, M12 x 1	red / green	w083	d411
T18RGXPQ	10…30 VDC	53.6 x 33 mm	plastic, Polyester	connector, M12 x 1	red / green	w083	d412
T30RGXPQ	10…30 VDC	Ø 40 x 45 mm	plastic, Polyester	connector, M12 x 1	red / green	w083	d413
K30LGRXPQ	10…30 VDC	Ø 30 mm	plastic, PC	connector, M12 x 1	red / green	w085	d417
K50LGXRPQP	18…30 VDC	Ø 50 mm	plastic, PC	cable with connector, M12 x 1	red / green	w084	d414
T8LGRXPQP	10…30 VDC	-	plastic, Polyester	cable with connector	red / green	w085	d416
T8LGRXP	10…30 VDC	-	plastic, Polyester	cable, M12 x 1	red / green	w085	d415

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

EZ-LIGHT – 3 LED colors



General data

Protection class	IP67	**Ambient temperature**	-40…+50 °C
Lens material	plastic	**Response time**	250 ms

Types and data – selection table

Type	Operating voltage	Dimensions	Housing material	Electrical connection	Light type	w	d
K50LGRYPQ	18…30 VDC	Ø 50 mm	plastic, PC	connector, M12 x 1	red / yellow / green	w083	d418
M18GRYPQ	10…30 VDC	Ø 18 x 61 mm	metal, CuZn	connector, M12 x 1	red / yellow / green	w083	d411
T18GRYPQ	10…30 VDC	53.6 x 33 mm	plastic, Polyester	connector, M12 x 1	red / yellow / green	w083	d412
T30GRYPQ	10…30 VDC	Ø 40 x 45 mm	plastic, Polyester	connector, M12 x 1	red / yellow / green	w083	d413
K30LGRYPQ	10…30 VDC	Ø30 mm	plastic, PC	connector, M12 x 1	red / yellow / green	w085	d417
K50LGRYP	18…30 VDC	Ø50 mm	plastic, PC	cable	red / yellow / green	w083	d410
K80LGRYPQ	18…30 VDC	109.5 x 66.3 x 80.8 mm	plastic, ABS	connector, M12 x 1	red / yellow / green	w083	d419
K50LGRBPQ	18…30 VDC	Ø50 mm	plastic, PC	connector, M12 x 1	red / green / blue	w083	d418

EZ-LIGHT – 3 LED colors – 7 functions



General data

Protection class	IP67	**Ambient temperature**	-40…+50 °C
Lens material	plastic	**Response time**	250 ms
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Operating voltage	Dimensions	Housing material	Light type	w	d	e
K50LGRY2PQ	18…30 VDC	Ø50 mm	plastic, PC	red / yellow / green	w083	d418	e095
M18GRY2PQ	10…30 VDC	Ø18 x 61 mm	metal, CuZn	red / yellow / green	w083	d411	e095
K80LGRB2PQ	18…30 VDC	109.5 x 66.3 x 80.8 mm	plastic, ABS	red / green / blue	w083	d419	e095
K80LGRY2PQ	18…30 VDC	109.5 x 66.3 x 80.8 mm	plastic, ABS	red / yellow / green	w083	d419	e095

EZ-LIGHT – 5 LED colors



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Protection class	IP67	**Light type**	green / red / yellow / blue / white
Lens material	plastic	**Response time**	250 ms

Types and data – selection table

Type	Dimensions	Housing material	Electrical connection	w	d
K50LGRYBWPQ8	Ø50 mm	plastic, PC	connector, M12 x 1	w086	d418
K80LGRYBWPQ8	109.5 x 66.3 x 80.8 mm	plastic, ABS	connector, M12 x 1	w086	d419
K50LGRYBWP	Ø50 mm	plastic, PC	cable	w086	d410

EZ-LIGHT – 3 LED colors – Continuous tone 75 dB



General data

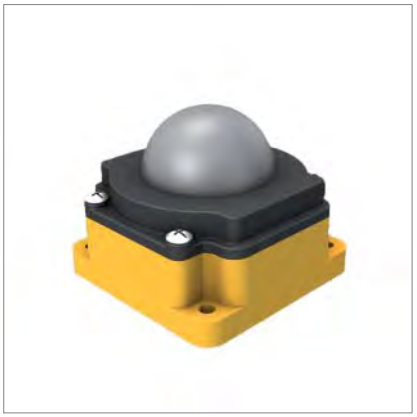
Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Protection class	IP50	**Light type**	green / red / yellow
Lens material	plastic	**Response time**	250 ms

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Types and data – selection table

Type	Electrical connection	w	d
K50LGRA1YP	cable	w087	d420
K50LGRA1YPQ	connector, M12 x 1	w087	d421
K50LGRA1YPQP	cable with connector, M12 x 1	w087	d422
K80LGRA1YP	cable	w087	d423
K80LGRA1YPQ	connector, M12 x 1	w087	d424
K80LGRA1YPQP	cable with connector, M12 x 1	w087	d425

EZ-LIGHT – 3 LED colors – Pulsed signal 75 dB



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Protection class	IP50	**Light type**	green / red / yellow
Lens material	plastic	**Response time**	250 ms

Types and data – selection table

Type	Electrical connection	w	d
K50LGRA2YP	cable	w087	d420
K50LGRA2YPQ	connector, M12 x 1	w087	d421
K50LGRA2YPQP	cable with connector, M12 x 1	w087	d422
K80LGRA2YP	cable	w087	d423
K80LGRA2YPQ	connector, M12 x 1	w087	d424
K80LGRA2YPQP	cable with connector, M12 x 1	w087	d425

EZ-LIGHT – 3 LED colors – Continuous tone 95 dB



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Protection class	IP50	**Light type**	green / red / yellow
Lens material	plastic	**Response time**	250 ms

Types and data – selection table

Type	Electrical connection	w	d
K50LGRAL1YPQ	connector, M12 x 1	w087	d421
K80LGRAL1YPQ	connector, M12 x 1	w087	d424
K80LGRAL1YP	cable	w087	d423

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

LED – Tower light TL50



TL50 tower lights indicate the operating status clearly throughout the entire production line. Each tower light is preassembled and preconfigured, featuring LEDs in different colors and with optional audible alert. The tower lights are easily installed, no matter if mounted directly on the machine, in the cabinet or at critical control points within the production line.

Up to five different color lights are combinable in a single tower and can be on simultaneously. The signal intensity of devices with audible alert is adjustable.

Features

- Multicolor multisegment indicators
- Green, yellow, red, blue or white LEDs
- Optional audible alert with variable intensity (max. 95 dB)
- Longlife LED technology, low-power consumption
- Protection class IP67 (with audible function IP50)
- Water and oil-tight
- Insensitive to ambient lights, shock, vibration and electromagnetic interference
- Wide range of accessories for variable and easy mounting

Type code TL50

TL50	BGYR	A	QP

TL50	Series	BGYR	LED colors	A	Audible alert

Series

TL50 multifunction display TL50
Ø 50 m, different heights depending on number of LEDs
without audible alert
1) 61.2 mm
2) 101.9 mm
3) 142.6 mm
4) 183.3 mm
5) 224.0 mm
with audible alert
1) 92.0 mm
2) 132.7 mm
3) 173.4 mm
4) 214.1 mm

LED colors

B	blue
G	green
Y	yellow
R	red
W	white

Audible alert

blank	without audible alert
A	with audible alert

QP	Electrical connection

Electrical connection

blank	connection cable, 2 m
Q	connector, M12 x 1
QP	pigtail with connector, M12 x 1

TL50 – 1 color



General data

Operating voltage	18…30 VDC	**Housing material**	plastic, polycarbonate/ABS
Dimensions	50 x 61.2 mm	**Ambient temperature**	-40…+50 °C
Protection class	IP67	**Response time**	10 ms

Types and data – selection table

Type	Electrical connection	Light type	w	d
TL50R	cable	red	w088	d426
TL50RQ	connector, M12 x 1	red	w088	d427
TL50RQP	cable with connector, M12 x 1	red	w088	d428
TL50YQ	connector, M12 x 1	yellow	w088	d427
TL50WQ	connector, M12 x 1	white	w088	d427

TL50 – 2 colors



General data

Operating voltage	18…30 VDC	**Housing material**	plastic, polycarbonate/ABS
Dimensions	50 x 101.9 mm	**Ambient temperature**	-40…+50 °C
Protection class	IP67	**Response time**	10 ms

Types and data – selection table

Type	Electrical connection	Light type	w	d
TL50GR	cable	green / red	w088	d429
TL50GRQ	connector, M12 x 1	green / red	w088	d430
TL50GRQP	cable with connector, M12 x 1	green / red	w088	d431
TL50WRQ	connector, M12 x 1	white / red	w088	d430

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

TL50 – 3 colors



General data

Operating voltage	18…30 VDC	**Housing material**	plastic, polycarbonate/ABS
Dimensions	50 x 142.6 mm	**Ambient temperature**	-40…+50 °C
Protection class	IP67	**Response time**	10 ms

Types and data – selection table

Type	Electrical connection	Light type	w	d
TL50GYR	cable	green / red / yellow	w088	d432
TL50GYRQ	connector, M12 x 1	green / red / yellow	w088	d433
TL50GYRQP	cable with connector, M12 x 1	green / red / yellow	w088	d434
TL50YBRQ	connector, M12 x 1	yellow	w088	d433

TL50 – 4 colors



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Dimensions	50 x 183.3 mm	**Light type**	green / red / yellow / blue
Protection class	IP67	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50BGYRQ	connector, M12 x 1	w089	d435
TL50BGYRQP	cable with connector, M12 x 1	w089	d436
TL50BGYR	cable	w089	d437

TL50 – 5 colors



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-40…+50 °C
Dimensions	50 x 224 mm	**Light type**	green / red / yellow / blue / white
Protection class	IP67	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50WBGYR	cable	w090	d438
TL50WBGYRQ	connector, M12 x 1	w090	d439
TL50WBGYRQP	cable with connector, M12 x 1	w090	d440

TL50 – 1 color – Signal tone



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-20…+50 °C
Dimensions	50 x 92 mm	**Light type**	red
Protection class	IP50	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50RA	cable	w088	d441
TL50RAQ	connector, M12 x 1	w088	d442
TL50RAQP	cable with connector, M12 x 1	w088	d443

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

TL50 – 2 colors – Signal tone



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-20…+50 °C
Dimensions	50 x 132.7 mm	**Light type**	green / red
Protection class	IP50	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50GRAQP	cable with connector, M12 x 1	w088	d444
TL50GRAQ	connector, M12 x 1	w088	d445
TL50GRA	cable	w088	d446

TL50 – 3 colors – Signal tone



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-20…+50 °C
Dimensions	50 x 173.4 mm	**Light type**	green / red / yellow
Protection class	IP50	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50GYRA	cable	w089	d447
TL50GYRAQ	connector, M12 x 1	w089	d448
TL50GYRAQP	cable with connector, M12 x 1	w089	d449

TL50 – 4 colors – Signal tone



General data

Operating voltage	18…30 VDC	**Ambient temperature**	-20…+50 °C
Dimensions	50 x 214.1 mm	**Light type**	green / red / yellow / blue
Protection class	IP50	**Response time**	10 ms
Housing material	plastic, polycarbonate/ABS		

Types and data – selection table

Type	Electrical connection	w	d
TL50BGYRA	cable	w090	d450
TL50BGYRAQP	cable with connector, M12 x 1	w090	d451
TL50BGYRAQ	connector, M12 x 1	w090	d452

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Switching light screen LX



The LX switching light screen detects very small but also extremely flat objects, for example a sheet of paper or an envelope. Typical applications are counting tasks or parcel handling on conveyor belts. The two-piece system consists of an emitter and a receiver identical in size and range.

The distance between emitter and receiver can be up to 75 mm for short-range applications and 200 mm to 2 m for standard-range applications. High reliability and precision is achieved through a 5 ms switch-off delay.

Features

- Switching light screen
- Multiple-beam infrared pattern
- Detects small and extremely flat objects of 5.6 or 9.5 mm
- Available in different sizes 113, 189, 342 mm
- Sensing ranges from 75 mm to 2 m
- Response time in 0.8 to 3.2 ms
- Simple wiring, synchronizing line is not required
- NPN and PNP transistor outputs
- Rugged IP67 rated housing
- Temperature range: -20…+70 °C

Type code LX - Switching light screens

LX	12	R	SR	Q

LX	Series	12	Monitored field	R	Sensor type

Series

LX	switching light screen height: 31.8 mm, depth: 25.4 mm other heights LX3 = 113.4 mm LX6 = 189.6 mm LX9 = 265.8 mm LX12 = 342.0 mm LX15 = 418.2 mm LX18 = 494.4 mm LX21 = 570.6 mm LX24 = 646.8 mm

Monitored field [height mm]

3	67 mm
6	143 mm
9	218 mm
12	295 mm
15	371 mm
18	447 mm
21	523 mm
24	99 mm

Sensor type

R	receiver
E	emitter

SR	Resolution	Q	Electrical connection

Resolution

SR	minimum object size 5.6 mm
blank	minimum object size 9.5 mm

Electrical connection

Q	pigtail with connector, M12 x 1
blank	connection cable, 2 m

LX – Emitter



General data

Operating voltage	10…30 VDC	**Housing material**	Metal, AL
Power-on, indicator	LED	**Lens material**	plastic
Error message type	LED	**Ambient temperature**	-20…+70 °C
Protection class	IP67	**Light type**	IR

Types and data – selection table

Type	Dimensions	Electrical connection	Range	Detection zone height	w	d
LX12ESR	25.4 x 342 x 31.8 mm	cable	75…200 mm	295 mm	w091	d453
LX12ESRQ	25.4 x 342 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	295 mm	w091	d453
LX6ESR	25.4 x 189.6 x 31.8 mm	cable	75…200 mm	143 mm	w091	d454
LX6ESRQ	25.4 x 189.6 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	143 mm	w091	d454
LX3ESR	25.4 x 113.4 x 31.8 mm	cable	75…200 mm	67 mm	w091	d455
LX3ESRQ	25.4 x 113.4 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	67 mm	w091	d455
LX12E	25.4 x 342 x 31.8 mm	cable	300…2000 mm	295 mm	w091	d453
LX12EQ	25.4 x 342 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	295 mm	w091	d453
LX6E	25.4 x 189.6 x 31.8 mm	cable	300…2000 mm	143 mm	w091	d454
LX6EQ	25.4 x 189.6 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	143 mm	w091	d454
LX3E	25.4 x 113.4 x 31.8 mm	cable	300…2000 mm	67 mm	w091	d455
LX3EQ	25.4 x 113.4 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	67 mm	w091	d455

LX – Receiver



General data

Operating voltage	10…30 VDC	**Housing material**	Metal, AL
Error message type	LED	**Lens material**	plastic
Output	⎓, pnp/npn	**Ambient temperature**	-20…+70 °C
Protection class	IP67		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

Types and data – selection table

Type	Switching frequency	Dimensions	Electrical connection	Range	Detection zone height	w	d
LX12RSRQ	≤ 85 Hz	25.4 x 342 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	295 mm	w092	d453
LX12RSR	≤ 85 Hz	25.4 x 342 x 31.8 mm	cable	75…200 mm	295 mm	w092	d453
LX6RSR	≤ 120 Hz	25.4 x 189.6 x 31.8 mm	cable	75…200 mm	143 mm	w092	d454
LX6RSRQ	≤ 120 Hz	25.4 x 189.6 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	143 mm	w092	d454
LX3RSR	≤ 150 Hz	25.4 x 113.4 x 31.8 mm	cable	75…200 mm	67 mm	w092	d455
LX3RSRQ	≤ 150 Hz	25.4 x 113.4 x 31.8 mm	cable with connector, M12 x 1	75…200 mm	67 mm	w092	d455
LX12R	≤ 85 Hz	25.4 x 342 x 31.8 mm	cable	300…2000 mm	295 mm	w092	d453
LX12RQ	≤ 85 Hz	25.4 x 342 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	295 mm	w092	d453
LX6R	≤ 120 Hz	25.4 x 189.6 x 31.8 mm	cable	300…2000 mm	143 mm	w092	d454
LX6RQ	≤ 120 Hz	25.4 x 189.6 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	143 mm	w092	d454
LX3R	≤ 150 Hz	25.4 x 113.4 x 31.8 mm	cable	300…2000 mm	67 mm	w092	d455
LX3RQ	≤ 150 Hz	25.4 x 113.4 x 31.8 mm	cable with connector, M12 x 1	300…2000 mm	67 mm	w092	d455

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Measuring light screen EZ-ARRAY™



The measuring light screen EZ-ARRAY is ideal for hole sizing, product sizing and profiling, edge and center guarding, loop tension control and parts counting.

The controller functionality is integrated in the receiver and can be configured via 6 DIP switches. Status and alignment of emitter and receiver are indicated by a 3-digit display and LED bargraph. The light screen can be configured alternatively via RS485 interface at the receiver (software included in delivery).

The EZ-ARRAY can be adjusted to almost any application with a resolution limit above 5 mm. The functionality comprises first, last or middle beam blocked, number of beams blocked, invert and blanking.

Features

- Measuring light screen with multiple operating modes
- Adjustable resolution 5 mm and higher
- Range up to 4 m
- Two-piece device with controller functionality integrated in receiver
- Configuration via DIP switch or software
- Serial interface RS485 Modbus-RTU
- Two switching outputs (PNP or NPN) and two analog outputs (0…10 V or 4…20 mA)
- Display and LED bargraph for status indication
- Temperature range -40…+70 °C
- Protection class IP65

Type code EZ-ARRAY - Measuring light screens

EA5	R	1500	P	I	XMOD	Q

EA5	Series	R	Operating mode	1500	Field range

Series

EA5	measuring light screen width: 36 mm, depth: 46.2 mm other heights EA5.150 mm EA5.300 mm EA5.450 mm EA5.600 mm EA5.750 mm EA5.900 mm EA5.1050 mm EA5.1200 mm EA5.1500 mm EA5.1800 mm EA5.2100 mm EA5.2400 mm

Operating mode

R	receiver
E	emitter

Field range

1500	range in mm

P	Switching output (2 x)	I	Analog output (2 x)	XMOD	

Switching output (2 x)

P	PNP (2 x)
N	NPN (2 x)

Analog output 2 x

I	4 . . . 20 mA (2 x)
U	0 . . . 10 VDC (2 x)

XMOD	serial interface RS485 (Modbus RTU) via M12 x 1 connector (only on emitter)

Q	Electrical connection

Electrical connection

Q	connector, M12 x 1, 8-pole

EZ-ARRAY – Emitter



General data

Operating voltage	12…30 VDC	**Electrical connection**	connector, M12 x 1
Power-on, indicator	LED	**Ambient temperature**	-40…+70 °C
Protection class	IP65	**Light type**	IR
Housing material	metal, AL, anodized	**Range**	400…4000 mm
Lens material	plastic		

Types and data – selection table

Type	Dimensions	Detection zone height	w	d
EA5E150Q	36 x 227 x 45.2 mm	150 mm	w093	d456
EA5E300Q	36 x 379 x 45.2 mm	300 mm	w093	d456
EA5E450Q	36 x 529 x 45.2 mm	450 mm	w093	d456
EA5E600Q	36 x 678 x 45.2 mm	600 mm	w093	d456
EA5E750Q	36 x 828 x 45.2 mm	750 mm	w093	d456
EA5E900Q	36 x 978 x 45.2 mm	900 mm	w093	d456
EA5E1050Q	36 x 1128 x 45.2 mm	1050 mm	w093	d456
EA5E1200Q	36 x 1278 x 45.2 mm	1200 mm	w093	d456
EA5E1500Q	36 x 1578 x 45.2 mm	1500 mm	w093	d456
EA5E1800Q	36 x 1878 x 45.2 mm	1800 mm	w093	d456
EA5E2100Q	36 x 2178 x 45.2 mm	2100 mm	w093	d456
EA5E2400Q	36 x 2478 x 45.2 mm	2400 mm	w093	d456

EZ-ARRAY – Receiver – Switching and current output



General data

Operating voltage	12…30 VDC	**Electrical connection**	connector, M12 x 1
Error message type	LED	**Ambient temperature**	-40…+70 °C
Indication of excess gain type	LED	**Light type**	IR
Output	2 x ⎓, PNP/analog output	**Range**	400…4000 mm
Protection class	IP65	**Analog output**	4…20 mA
Housing material	metal, AL, anodized	**Load**	≤ 1350 Ω
Lens material	plastic		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

Types and data – selection table

Type	Dimensions	Response time	Detection zone height	w	d
EA5R150PIXMODQ	36 x 227 x 45.2 mm	2.8 ms	150 mm	w094	d457
EA5R300PIXMODQ	36 x 379 x 45.2 mm	5 ms	300 mm	w094	d457
EA5R450PIXMODQ	36 x 529 x 45.2 mm	7.1 ms	450 mm	w094	d457
EA5R600PIXMODQ	36 x 678 x 45.2 mm	9.3 ms	600 mm	w094	d457
EA5R750PIXMODQ	36 x 828 x 45.2 mm	11.4 ms	750 mm	w094	d457
EA5R900PIXMODQ	36 x 978 x 45.2 mm	13.6 ms	900 mm	w094	d457
EA5R1050PIXMODQ	36 x 1128 x 45.2 mm	15.7 ms	1050 mm	w094	d457
EA5R1200PIXMODQ	36 x 1278 x 45.2 mm	17.9 ms	1200 mm	w094	d457
EA5R1500PIXMODQ	36 x 1578 x 45.2 mm	22.2 ms	1500 mm	w094	d457
EA5R1800PIXMODQ	36 x 1878 x 45.2 mm	26.5 ms	1800 mm	w094	d457
EA5R2100PIXMODQ	36 x 2178 x 45.2 mm	30.8 ms	2100 mm	w094	d457
EA5R2400PIXMODQ	36 x 2478 x 45.2 mm	35.1 ms	2400 mm	w094	d457

EZ-ARRAY – Receiver – Switching and voltage output



General data

Operating voltage	15…30 VDC	**Electrical connection**	connector, M12 x 1
Error message type	LED	**Ambient temperature**	-40…+70 °C
Indication of excess gain type	LED	**Light type**	IR
Output	2 x ⎍, PNP/analog output	**Range**	400…4000 mm
Protection class	IP65	**Analog output**	0…10 V
Housing material	metal, AL, anodized	**Load**	≥ 2000 Ω
Lens material	plastic		

Types and data – selection table

Type	Dimensions	Response time	Detection zone height	w	d
EA5R150PUXMODQ	36 x 227 x 45.2 mm	2.8 ms	150 mm	w094	d457
EA5R300PUXMODQ	36 x 379 x 45.2 mm	5 ms	300 mm	w094	d457
EA5R450PUXMODQ	36 x 529 x 45.2 mm	7.1 ms	450 mm	w094	d457
EA5R600PUXMODQ	36 x 678 x 45.2 mm	9.3 ms	600 mm	w094	d457
EA5R750PUXMODQ	36 x 828 x 45.2 mm	11.4 ms	750 mm	w094	d457
EA5R900PUXMODQ	36 x 978 x 45.2 mm	13.6 ms	900 mm	w094	d457
EA5R1050PUXMODQ	36 x 1128 x 45.2 mm	15.7 ms	1050 mm	w094	d457
EA5R1200PUXMODQ	36 x 1278 x 45.2 mm	17.9 ms	1200 mm	w094	d457
EA5R1500PUXOMDQ	36 x 1578 x 45.2 mm	22.2 ms	1500 mm	w094	d457
EA5R1800PUXMODQ	36 x 1878 x 45.2 mm	26.5 ms	1800 mm	w094	d457
EA5R2100PUXMODQ	36 x 2178 x 45.2 mm	30.8 ms	2100 mm	w094	d457
EA5R2400PUXMODQ	36 x 2478 x 45.2 mm	35.1 ms	2400 mm	w094	d457

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
e Excess gain curves on page 922 ff

At a glance
Pressure sensors







Pressure sensors – Reliability and flexibility on highest levels

Pressure is most commonly detected and monitored in applications of process and manufacturing industries. Equally complex are the demands on pressure sensors:

Whether applied in standard systems or exposed to extreme temperature changes, vibration, impacts or aggressive media: Each application requires a perfect solution in every respect. High-quality materials, flexible process connections, easy programming as well as highest accuracy and many display functions are therefore essential standards of electronic pressure measurement.

Pressure is not measured as a general physical property; a pressure value has rather a special reference. The positive and negative pressure is defined as the difference between the measured pressure and the atmospheric pressure. Therefore, most measuring devices require a reference terminal open to the atmosphere. This type of pressure is also described as relative pressure or gauge.

The absolute pressure however is related to a vacuum. In actual practice, the reference side of the measuring device is hermetically sealed. The pressure and temperature of gases are mainly regulated this way in industrial applications. With regard to differential pressure, the process pressure is connected to the reference side of the device. Filling levels, flow rates and leaks are detected by this means in systems.

Most electronic pressure sensors transduce the measured pressure in deformation force which is subsequently converted into an electrical signal by strain gauges, piezo-crystals, piezoresistive, capacitive or inductive measuring principles.

TURCK pressure sensors detect and measure absolute, relative pressure as reference pressures of liquids, gases and air in nearly all industrial applications and under the most diverse conditions. The **PK series** is especially designed for pneumatic and vacuum applications. Rugged, compact and at the same time lightweight designed, these sensors are made for handling and automation systems.

Ideally suited for demanding hydraulic and pneumatic systems are pressure sensors of the **PS series**. The devices are incorporated in a stainless steel housing and operate with a ceramic measuring cell. Different versions with switching and analog output as well as 4-digit 7-segment display are user friendly and easily integrated in your system. Open standards such as VDMA menu guide and IO-Link are also supported.

The **PT-series** features transmitter in robust cylindrical housings made of stainless steel, without display and with linear current or voltage output.

More information on the **PS series** on p. 456, **PK series** on p. 521 and **PT series** on p. 529.

Our strenghts...



The full range of performance

The sensors of this series cover all important pressure ranges from -1…+600 bar with an accuracy of 0.5% f.s.. Bar, psi and further 12 standard pressure units can be selected for measurement. The 4-digit 7-segment LED display indicates the pressure status and makes programming more comfortable. The devices are available with two transistor switching outputs or with one switching and one analog output. High EMC immunity and protection classes IP67/IP69K guarantee reliable operation, even under harsh conditions. All sensors are equipped with an IO-Link interface. Flexible integration and diagnostics is guaranteed, making the PS series a cost-effective solution.



Clearly visible display

The 4-digit 7-segment display indicates the applied pressure during normal operation and is easily programmed. The sloped display allows the sensors to be mounted on top or in front according to the position of the process connection. The read direction can be reversed by 180° degrees via software. Values are thus perfectly readable, even if the sensor is mounted horizontally.



Flexible mounting

Inclined by 45° the display is well readable from any position and even from a great distance. After locking the pressure connection, the PS500 can be moved in any desired position because it is freely rotatable. Once the final position is acquired, the device is fixed in place with a second coupling nut. Special mounting aids are not required. With a diameter of only 34 mm, several sensors can be mounted side by side in confined spaces.



Easy programming

Thanks to the user friendly menu guide parameters such as switch and release points, output type, analog range and various other special functions are easily taught. The PS sensors are programmed with the buttons MODE and SET. Tools are not needed to view the parameter values. To avoid accidental changes of programmed data, the ENTER button for storing the values is recessed. The button can only be pressed with a pointed object, such as a ball pen for example.



Rugged design

The sensor body, process and electrical connection of the PS series are made of stainless steel. Based on proven ceramic component technology, these shock and vibration proof sensors operate safely and reliably even in harsh environments. All sensors feature excellent EMC properties and are IP67 or IP69K protected. Even in an undesired exceptional situation, safety comes first: Should the measuring cell burst, a patented medium-stop system prevents the discharge of liquids up to a pressure of 2400 bar, depending on the medium temperature.

Your advantages...



High system availability

The PS series excels in excellent EMC properties and is IP67 rated. Sensor body pressure and electrical connection are made of stainless steel and are therfore highly reliable and rugged. Should the measuring cell burst, a patented medium-stop system prevents the discharge of liquids up to a pressure of 2400 bar, depending on the medium temperature.

- Excellent EMC properties
- Protection against mechanical impacts is provided through a rugged design
- Short down-times through high system availability and short replacement times



Extremely service-friendly

Due to the extremely flexible mounting options, user-friendly operation and high accuracy, the sensors offer you distinct and calculable advantages.

- Upper sensor part rotatable by 360° (PS500 series)
- Minimum maintenance effort through streamlined product range.
- Simple operation via two finger-operated pushbuttons
- Failsafe operation through a recessed ENTER button for the storage of values



Efficient standardization

A single sensor replaces many „conventional“ types. Even if a PS sensor is applied to measure only half of its nominal pressure, it will operate highly accurate, as required by the machine engineering industry. Standardization helps to reduce the inventory which pays off for the customer.

- Only a few sensor versions are needed to cover a large range of applications
- Reduced training effort due to simple and failsafe operation
- High system safety achieved through a rugged design

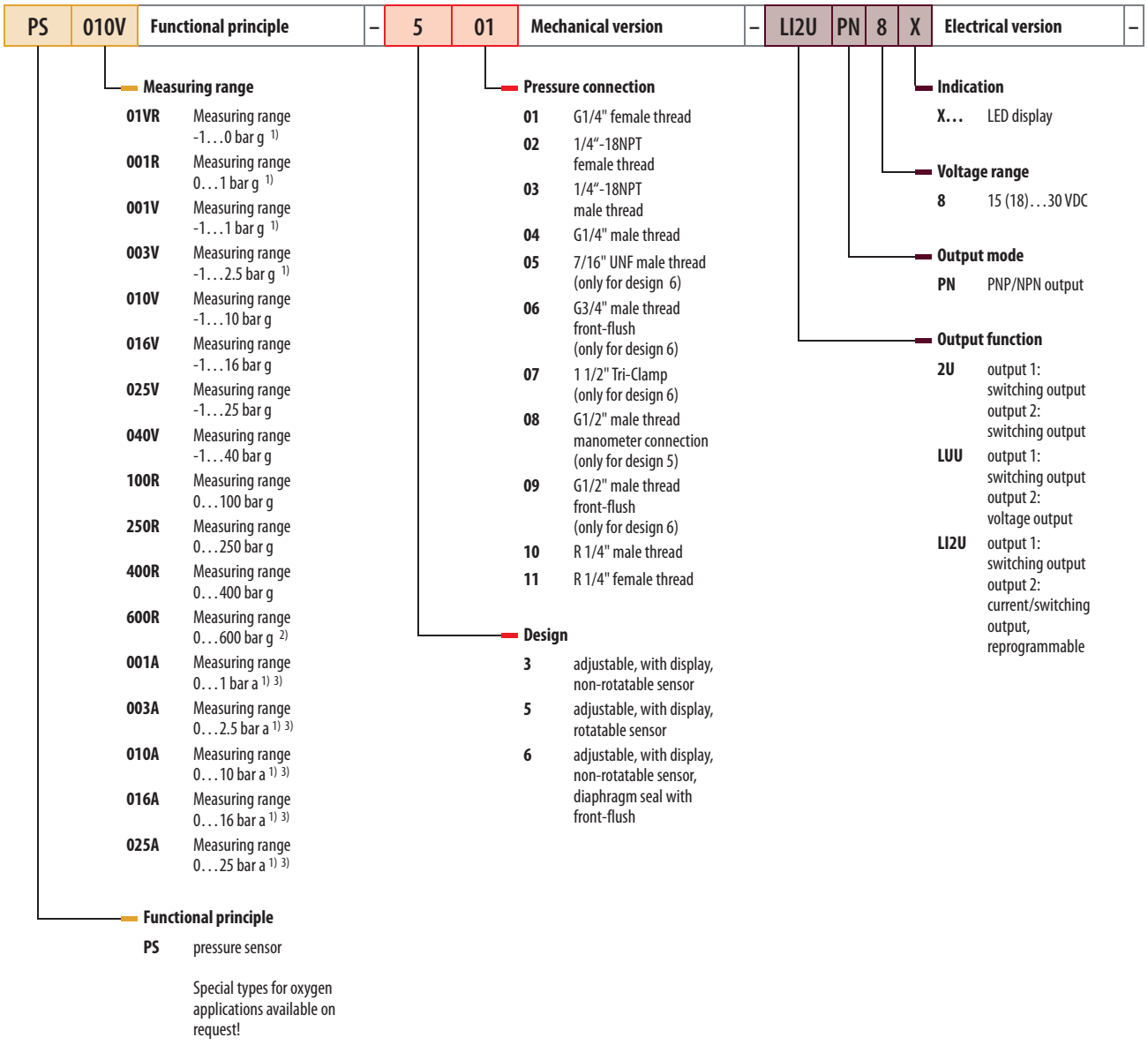


Maximum freedom

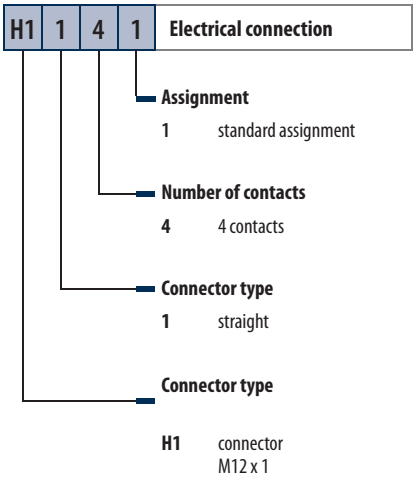
Due to many solutions achievable with only a few devices, the new sensors of the PS series offer maximum planning freedom, while minimizing the mounting efforts.

- Upper sensor part rotatable by 360°
- Display rotatable by 180°
- Sloped display by 45°
- Bright illuminated LED display legible at long ranges
- Highest accuracy, 0.5 % f.s.
- Two switching outputs or a combination of switching and analog output
- IO-Link communication
- VDMA menu guide (optional)

Type code



1) Not available for design/pressure connection 609
2) Not available for design 600
3) Not available for design 300


H1 1 4 1
Electrical connection
Assignment
1 standard assignment
Number of contacts
4 4 contacts
Connector type
1 straight
Connector type
H1 connector M12 x 1

Designs and variants

	Page 467	Page 470	Page 473	Page 476
				
	PS…-301	**PS…-302**	**PS…-303**	**PS…-304**
Mechanical connection	G 1/4" female thread	NPT1/4" - 18 female threads	NPT 1/4" - 18 male thread	G 1/4" male thread
Electrical connection	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output

Page 479



PS…-310

Mechanical connection	R1/4" female thread per DIN 2999
Electrical connection	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output

Page 482



PS…-311

Mechanical connection	R1/4" female thread per DIN 2999
Electrical connection	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output

Page 487



PS…-501

Mechanical connection	G 1/4" female thread
Electrical connection	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output

Page 490



PS…-502

Mechanical connection	NPT1/4" - 18 female threads
Electrical connection	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output

Designs and variants

	Page 493	Page 496	Page 499	Page 502
				
	PS…-503	**PS…-504**	**PS…-505**	**PS…-508**
Mechanical connection	NPT 1/4“ - 18 male thread	G 1/4“ male thread	7/16-20 UNF	G 1/2“ male threaded manometer acc. to DIN 3852-E
Electrical connection	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output

	Page 505	Page 508	Page 513	Page 516
				
	PS…-510	**PS…-511**	**PS…-606**	**PS…-609**
Mechanical connection	R1/4" female thread per DIN 2999	R1/4" female thread per DIN 2999	G 3/4" front flush	G 1/2" front flush
Electrical connection	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1	connector, M12 x 1
Output 1 (PIN 4)	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode	switching output or IO-Link mode
Output 2 (PIN 2)	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output	switching output analog or switching output analog output

PS300 series – For hydraulic applications

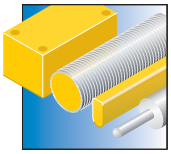


The PS300 series has been designed especially for hydraulic applications. The devices operate with a ceramic measuring cell. Available are versions with two switching outputs or one switching and one analog output. IO-Link communication is integrated as a standard. Highest process safety is achieved through a stainless steel housing, fully encapsulated electronics and protection class IP69K.

Features

- IO-Link capable
- Measuring range -1…600 bar
- Fully encapsulated stainless steel housing
- Protection class IP69K
- VDMA menu guide (optional)
- Permanent indication of pressure (bar, psi, kPa, MPa, misc)
- Highest pressure resistance

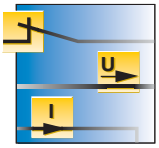
Properties



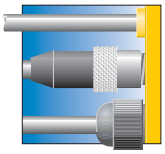
Design
Cylindrical design, non-rotatable, with display



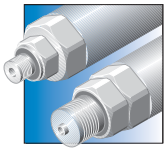
Measuring ranges
-1…600 bar relative pressure



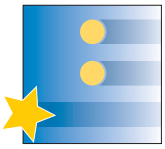
Electrical versions
IO-Link capable, dual-channel, switching, current or voltage output



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
G1/4", 1/4" NPT, R1/4" male or female thread



Special features
Failsafe 3-key operation, VDMA menu guide (optional), IP67, fully encapsulated electronics

G1/4“ – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-301-2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w095	d458
PS001R-301-2UPN8X-H1141	0…1 bar rel.	5.5 bar	w095	d458
PS001V-301-2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w095	d458
PS003V-301-2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w095	d458
PS010V-301-2UPN8X-H1141	-1…10 bar rel.	50 bar	w095	d458
PS016V-301-2UPN8X-H1141	-1…16 bar rel.	80 bar	w095	d458
PS025V-301-2UPN8X-H1141	-1…25 bar rel.	120 bar	w095	d458
PS040V-301-2UPN8X-H1141	-1…40 bar rel.	200 bar	w095	d458
PS100R-301-2UPN8X-H1141	0…100 bar rel.	450 bar	w095	d458
PS250R-301-2UPN8X-H1141	0…250 bar rel.	600 bar	w095	d458
PS400R-301-2UPN8X-H1141	0…400 bar rel.	800 bar	w095	d458
PS600R-301-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d458

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

G1/4“ – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-301-LI2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w096	d458
PS001R-301-LI2UPN8X-H1141	0…1 bar rel.	5.5 bar	w096	d458
PS001V-301-LI2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w096	d458
PS003V-301-LI2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w096	d458
PS010V-301-LI2UPN8X-H1141	-1…10 bar rel.	50 bar	w096	d458
PS016V-301-LI2UPN8X-H1141	-1…16 bar rel.	80 bar	w096	d458
PS025V-301-LI2UPN8X-H1141	-1…25 bar rel.	120 bar	w096	d458
PS040V-301-LI2UPN8X-H1141	-1…40 bar rel.	200 bar	w096	d458
PS100R-301-LI2UPN8X-H1141	0…100 bar rel.	450 bar	w096	d458
PS250R-301-LI2UPN8X-H1141	0…250 bar rel.	600 bar	w096	d458
PS400R-301-LI2UPN8X-H1141	0…400 bar rel.	800 bar	w096	d458
PS600R-301-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d458

G1/4“ – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-301-LUUPN8X-H1141	-1…0 bar rel.	5.5 bar	w097	d458
PS001R-301-LUUPN8X-H1141	0…1 bar rel.	5.5 bar	w097	d458
PS001V-301-LUUPN8X-H1141	-1…1 bar rel.	5.5 bar	w097	d458
PS003V-301-LUUPN8X-H1141	-1…2.5 bar rel.	12 bar	w097	d458
PS010V-301-LUUPN8X-H1141	-1…10 bar rel.	50 bar	w097	d458
PS016V-301-LUUPN8X-H1141	-1…16 bar rel.	80 bar	w097	d458
PS025V-301-LUUPN8X-H1141	-1…25 bar rel.	120 bar	w097	d458
PS040V-301-LUUPN8X-H1141	-1…40 bar rel.	200 bar	w097	d458
PS100R-301-LUUPN8X-H1141	0…100 bar rel.	450 bar	w097	d458
PS250R-301-LUUPN8X-H1141	0…250 bar rel.	600 bar	w097	d458
PS400R-301-LUUPN8X-H1141	0…400 bar rel.	800 bar	w097	d458
PS600R-301-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d458

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-302-2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w095	d459
PS001R-302-2UPN8X-H1141	0…1 bar rel.	5.5 bar	w095	d459
PS001V-302-2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w095	d459
PS003V-302-2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w095	d459
PS010V-302-2UPN8X-H1141	-1…10 bar rel.	50 bar	w095	d459
PS016V-302-2UPN8X-H1141	-1…16 bar rel.	80 bar	w095	d459
PS025V-302-2UPN8X-H1141	-1…25 bar rel.	120 bar	w095	d459
PS040V-302-2UPN8X-H1141	-1…40 bar rel.	200 bar	w095	d459
PS100R-302-2UPN8X-H1141	0…100 bar rel.	450 bar	w095	d459
PS250R-302-2UPN8X-H1141	0…250 bar rel.	600 bar	w095	d459
PS400R-302-2UPN8X-H1141	0…400 bar rel.	800 bar	w095	d459
PS600R-302-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d459

1/4“ NPT – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎍/⎍, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-302-LI2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w096	d459
PS001R-302-LI2UPN8X-H1141	0…1 bar rel.	5.5 bar	w096	d459
PS001V-302-LI2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w096	d459
PS003V-302-LI2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w096	d459
PS010V-302-LI2UPN8X-H1141	-1…10 bar rel.	50 bar	w096	d459
PS016V-302-LI2UPN8X-H1141	-1…16 bar rel.	80 bar	w096	d459
PS025V-302-LI2UPN8X-H1141	-1…25 bar rel.	120 bar	w096	d459
PS040V-302-LI2UPN8X-H1141	-1…40 bar rel.	200 bar	w096	d459
PS100R-302-LI2UPN8X-H1141	0…100 bar rel.	450 bar	w096	d459
PS250R-302-LI2UPN8X-H1141	0…250 bar rel.	600 bar	w096	d459
PS400R-302-LI2UPN8X-H1141	0…400 bar rel.	800 bar	w096	d459
PS600R-302-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d459

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-302-LUUPN8X-H1141	-1…0 bar rel.	5.5 bar	w097	d459
PS001R-302-LUUPN8X-H1141	0…1 bar rel.	5.5 bar	w097	d459
PS001V-302-LUUPN8X-H1141	-1…1 bar rel.	5.5 bar	w097	d459
PS003V-302-LUUPN8X-H1141	-1…2.5 bar rel.	12 bar	w097	d459
PS010V-302-LUUPN8X-H1141	-1…10 bar rel.	50 bar	w097	d459
PS016V-302-LUUPN8X-H1141	-1…16 bar rel.	80 bar	w097	d459
PS025V-302-LUUPN8X-H1141	-1…25 bar rel.	120 bar	w097	d459
PS040V-302-LUUPN8X-H1141	-1…40 bar rel.	200 bar	w097	d459
PS100R-302-LUUPN8X-H1141	0…100 bar rel.	450 bar	w097	d459
PS250R-302-LUUPN8X-H1141	0…250 bar rel.	600 bar	w097	d459
PS400R-302-LUUPN8X-H1141	0…400 bar rel.	800 bar	w097	d459
PS600R-302-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d459

1/4“ NPT – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-303-2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w095	d460
PS001R-303-2UPN8X-H1141	0…1 bar rel.	5.5 bar	w095	d460
PS001V-303-2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w095	d460
PS003V-303-2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w095	d460
PS010V-303-2UPN8X-H1141	-1…10 bar rel.	50 bar	w095	d460
PS016V-303-2UPN8X-H1141	-1…16 bar rel.	80 bar	w095	d460
PS025V-303-2UPN8X-H1141	-1…25 bar rel.	120 bar	w095	d460
PS040V-303-2UPN8X-H1141	-1…40 bar rel.	200 bar	w095	d460
PS100R-303-2UPN8X-H1141	0…100 bar rel.	450 bar	w095	d460
PS250R-303-2UPN8X-H1141	0…250 bar rel.	600 bar	w095	d460
PS400R-303-2UPN8X-H1141	0…400 bar rel.	800 bar	w095	d460
PS600R-303-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d460

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽⊐◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-303-LI2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w096	d460
PS001R-303-LI2UPN8X-H1141	0…1 bar rel.	5.5 bar	w096	d460
PS001V-303-LI2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w096	d460
PS003V-303-LI2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w096	d460
PS010V-303-LI2UPN8X-H1141	-1…10 bar rel.	50 bar	w096	d460
PS016V-303-LI2UPN8X-H1141	-1…16 bar rel.	80 bar	w096	d460
PS025V-303-LI2UPN8X-H1141	-1…25 bar rel.	120 bar	w096	d460
PS040V-303-LI2UPN8X-H1141	-1…40 bar rel.	200 bar	w096	d460
PS100R-303-LI2UPN8X-H1141	0…100 bar rel.	450 bar	w096	d460
PS250R-303-LI2UPN8X-H1141	0…250 bar rel.	600 bar	w096	d460
PS400R-303-LI2UPN8X-H1141	0…400 bar rel.	800 bar	w096	d460
PS600R-303-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d460

1/4“ NPT – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-303-LUUPN8X-H1141	-1…0 bar rel.	5.5 bar	w097	d460
PS001R-303-LUUPN8X-H1141	0…1 bar rel.	5.5 bar	w097	d460
PS001V-303-LUUPN8X-H1141	-1…1 bar rel.	5.5 bar	w097	d460
PS003V-303-LUUPN8X-H1141	-1…2.5 bar rel.	12 bar	w097	d460
PS010V-303-LUUPN8X-H1141	-1…10 bar rel.	50 bar	w097	d460
PS016V-303-LUUPN8X-H1141	-1…16 bar rel.	80 bar	w097	d460
PS025V-303-LUUPN8X-H1141	-1…25 bar rel.	120 bar	w097	d460
PS040V-303-LUUPN8X-H1141	-1…40 bar rel.	200 bar	w097	d460
PS100R-303-LUUPN8X-H1141	0…100 bar rel.	450 bar	w097	d460
PS250R-303-LUUPN8X-H1141	0…250 bar rel.	600 bar	w097	d460
PS400R-303-LUUPN8X-H1141	0…400 bar rel.	800 bar	w097	d460
PS600R-303-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d460

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/4“ – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-304-2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w095	d461
PS001R-304-2UPN8X-H1141	0…1 bar rel.	5.5 bar	w095	d461
PS001V-304-2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w095	d461
PS003V-304-2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w095	d461
PS010V-304-2UPN8X-H1141	-1…10 bar rel.	50 bar	w095	d461
PS016V-304-2UPN8X-H1141	-1…16 bar rel.	80 bar	w095	d461
PS025V-304-2UPN8X-H1141	-1…25 bar rel.	120 bar	w095	d461
PS040V-304-2UPN8X-H1141	-1…40 bar rel.	200 bar	w095	d461
PS100R-304-2UPN8X-H1141	0…100 bar rel.	450 bar	w095	d461
PS250R-304-2UPN8X-H1141	0…250 bar rel.	600 bar	w095	d461
PS400R-304-2UPN8X-H1141	0…400 bar rel.	800 bar	w095	d461
PS600R-304-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d461

G1/4“ – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-304-LI2UPN8X-H1141	-1…0 bar rel.	5.5 bar	w096	d461
PS001R-304-LI2UPN8X-H1141	0…1 bar rel.	5.5 bar	w096	d461
PS001V-304-LI2UPN8X-H1141	-1…1 bar rel.	5.5 bar	w096	d461
PS003V-304-LI2UPN8X-H1141	-1…2.5 bar rel.	12 bar	w096	d461
PS010V-304-LI2UPN8X-H1141	-1…10 bar rel.	50 bar	w096	d461
PS016V-304-LI2UPN8X-H1141	-1…16 bar rel.	80 bar	w096	d461
PS025V-304-LI2UPN8X-H1141	-1…25 bar rel.	120 bar	w096	d461
PS040V-304-LI2UPN8X-H1141	-1…40 bar rel.	200 bar	w096	d461
PS100R-304-LI2UPN8X-H1141	0…100 bar rel.	450 bar	w096	d461
PS250R-304-LI2UPN8X-H1141	0…250 bar rel.	600 bar	w096	d461
PS400R-304-LI2UPN8X-H1141	0…400 bar rel.	800 bar	w096	d461
PS600R-304-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d461

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

G1/4“ – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽⊣◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-304-LUUPN8X-H1141	-1…0 bar rel.	5.5 bar	w097	d461
PS001R-304-LUUPN8X-H1141	0…1 bar rel.	5.5 bar	w097	d461
PS001V-304-LUUPN8X-H1141	-1…1 bar rel.	5.5 bar	w097	d461
PS003V-304-LUUPN8X-H1141	-1…2.5 bar rel.	12 bar	w097	d461
PS010V-304-LUUPN8X-H1141	-1…10 bar rel.	50 bar	w097	d461
PS016V-304-LUUPN8X-H1141	-1…16 bar rel.	80 bar	w097	d461
PS025V-304-LUUPN8X-H1141	-1…25 bar rel.	120 bar	w097	d461
PS040V-304-LUUPN8X-H1141	-1…40 bar rel.	200 bar	w097	d461
PS100R-304-LUUPN8X-H1141	0…100 bar rel.	450 bar	w097	d461
PS250R-304-LUUPN8X-H1141	0…250 bar rel.	600 bar	w097	d461
PS400R-304-LUUPN8X-H1141	0…400 bar rel.	800 bar	w097	d461
PS600R-304-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d461

R1/4“ – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-310-2UPN8X-H11141	-1…0 bar rel.	5.5 bar	w095	d462
PS001R-310-2UPN8X-H11141	0…1 bar rel.	5.5 bar	w095	d462
PS001V-310-2UPN8X-H11141	-1…1 bar rel.	5.5 bar	w095	d462
PS003V-310-2UPN8X-H11141	-1…2.5 bar rel.	12 bar	w095	d462
PS010V-310-2UPN8X-H11141	-1…10 bar rel.	50 bar	w095	d462
PS016V-310-2UPN8X-H11141	-1…16 bar rel.	80 bar	w095	d462
PS025V-310-2UPN8X-H11141	-1…25 bar rel.	120 bar	w095	d462
PS040V-310-2UPN8X-H11141	-1…40 bar rel.	200 bar	w095	d462
PS100R-310-2UPN8X-H11141	0…100 bar rel.	450 bar	w095	d462
PS250R-310-2UPN8X-H11141	0…250 bar rel.	600 bar	w095	d462
PS400R-310-2UPN8X-H11141	0…400 bar rel.	800 bar	w095	d462
PS600R-310-2UPN8X-H11141	0…600 bar rel.	900 bar	w095	d462

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

R1/4“ – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-310-LI2UPN8X-H11141	-1…0 bar rel.	5.5 bar	w096	d462
PS001R-310-LI2UPN8X-H11141	0…1 bar rel.	5.5 bar	w096	d462
PS001V-310-LI2UPN8X-H11141	-1…1 bar rel.	5.5 bar	w096	d462
PS003V-310-LI2UPN8X-H11141	-1…2.5 bar rel.	12 bar	w096	d462
PS010V-310-LI2UPN8X-H11141	-1…10 bar rel.	50 bar	w096	d462
PS016V-310-LI2UPN8X-H11141	-1…16 bar rel.	80 bar	w096	d462
PS025V-310-LI2UPN8X-H11141	-1…25 bar rel.	120 bar	w096	d462
PS040V-310-LI2UPN8X-H11141	-1…40 bar rel.	200 bar	w096	d462
PS100R-310-LI2UPN8X-H11141	0…100 bar rel.	450 bar	w096	d462
PS250R-310-LI2UPN8X-H11141	0…250 bar rel.	600 bar	w096	d462
PS400R-310-LI2UPN8X-H11141	0…400 bar rel.	800 bar	w096	d462
PS600R-310-LI2UPN8X-H11141	0…600 bar rel.	900 bar	w096	d462

R1/4“ – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎓/⎓, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-310-LUUPN8X-H11141	-1…0 bar rel.	5.5 bar	w097	d462
PS001R-310-LUUPN8X-H11141	0…1 bar rel.	5.5 bar	w097	d462
PS001V-310-LUUPN8X-H11141	-1…1 bar rel.	5.5 bar	w097	d462
PS003V-310-LUUPN8X-H11141	-1…2.5 bar rel.	12 bar	w097	d462
PS010V-310-LUUPN8X-H11141	-1…10 bar rel.	50 bar	w097	d462
PS016V-310-LUUPN8X-H11141	-1…16 bar rel.	80 bar	w097	d462
PS025V-310-LUUPN8X-H11141	-1…25 bar rel.	120 bar	w097	d462
PS040V-310-LUUPN8X-H11141	-1…40 bar rel.	200 bar	w097	d462
PS100R-310-LUUPN8X-H11141	0…100 bar rel.	450 bar	w097	d462
PS250R-310-LUUPN8X-H11141	0…250 bar rel.	600 bar	w097	d462
PS400R-310-LUUPN8X-H11141	0…400 bar rel.	800 bar	w097	d462
PS600R-310-LUUPN8X-H11141	0…600 bar rel.	900 bar	w097	d462

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

R1/4“ – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP69K / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-311-2UPN8X-H11141	-1…0 bar rel.	5.5 bar	w095	d463
PS001R-311-2UPN8X-H11141	0…1 bar rel.	5.5 bar	w095	d463
PS001V-311-2UPN8X-H11141	-1…1 bar rel.	5.5 bar	w095	d463
PS003V-311-2UPN8X-H11141	-1…2.5 bar rel.	12 bar	w095	d463
PS010V-311-2UPN8X-H11141	-1…10 bar rel.	50 bar	w095	d463
PS016V-311-2UPN8X-H11141	-1…16 bar rel.	80 bar	w095	d463
PS025V-311-2UPN8X-H11141	-1…25 bar rel.	120 bar	w095	d463
PS040V-311-2UPN8X-H11141	-1…40 bar rel.	200 bar	w095	d463
PS100R-311-2UPN8X-H11141	0…100 bar rel.	450 bar	w095	d463
PS250R-311-2UPN8X-H11141	0…250 bar rel.	600 bar	w095	d463
PS400R-311-2UPN8X-H11141	0…400 bar rel.	800 bar	w095	d463
PS600R-311-2UPN8X-H11141	0…600 bar rel.	900 bar	w095	d463

R1/4“ – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-311-LI2UPN8X-H11141	-1…0 bar rel.	5.5 bar	w096	d463
PS001R-311-LI2UPN8X-H11141	0…1 bar rel.	5.5 bar	w096	d463
PS001V-311-LI2UPN8X-H11141	-1…1 bar rel.	5.5 bar	w096	d463
PS003V-311-LI2UPN8X-H11141	-1…2.5 bar rel.	12 bar	w096	d463
PS010V-311-LI2UPN8X-H11141	-1…10 bar rel.	50 bar	w096	d463
PS016V-311-LI2UPN8X-H11141	-1…16 bar rel.	80 bar	w096	d463
PS025V-311-LI2UPN8X-H11141	-1…25 bar rel.	120 bar	w096	d463
PS040V-311-LI2UPN8X-H11141	-1…40 bar rel.	200 bar	w096	d463
PS100R-311-LI2UPN8X-H11141	0…100 bar rel.	450 bar	w096	d463
PS250R-311-LI2UPN8X-H11141	0…250 bar rel.	600 bar	w096	d463
PS400R-311-LI2UPN8X-H11141	0…400 bar rel.	800 bar	w096	d463
PS600R-311-LI2UPN8X-H11141	0…600 bar rel.	900 bar	w096	d463

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

R1/4“ – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP69K / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-311-LUUPN8X-H11141	-1…0 bar rel.	5.5 bar	w097	d463
PS001R-311-LUUPN8X-H11141	0…1 bar rel.	5.5 bar	w097	d463
PS001V-311-LUUPN8X-H11141	-1…1 bar rel.	5.5 bar	w097	d463
PS003V-311-LUUPN8X-H11141	-1…2.5 bar rel.	12 bar	w097	d463
PS010V-311-LUUPN8X-H11141	-1…10 bar rel.	50 bar	w097	d463
PS016V-311-LUUPN8X-H11141	-1…16 bar rel.	80 bar	w097	d463
PS025V-311-LUUPN8X-H11141	-1…25 bar rel.	120 bar	w097	d463
PS040V-311-LUUPN8X-H11141	-1…40 bar rel.	200 bar	w097	d463
PS100R-311-LUUPN8X-H11141	0…100 bar rel.	450 bar	w097	d463
PS250R-311-LUUPN8X-H11141	0…250 bar rel.	600 bar	w097	d463
PS400R-311-LUUPN8X-H11141	0…400 bar rel.	800 bar	w097	d463
PS600R-311-LUUPN8X-H11141	0…600 bar rel.	900 bar	w097	d463

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

PS500 series – For hydraulic and pneumatic applications

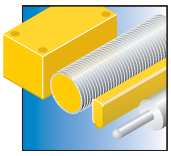


The PS500 sensors operate with ceramic measuring cells. Through pressure exerted on the ceramics a proportional signal is created and then electronically processed. Depending on the sensor version, the processed signal is either provided at a switching or an analog output. IO-Link communication is integrated as a standard. A rotatable sensor body, a large number of available thread types and an accuracy of 0.5% f.s. guarantee highest mounting flexibility and a save integration in the process.

Features

- IO-Link capable
- Sensor rotatable by 360°
- 4-digit 7-segment display
- Measuring range -1…600 bar relative pressure
- Measuring range 0…25 bar absolute pressure
- Stainless steel housing
- Permanent display of pressure (bar, psi, kPa, MPa, misc)

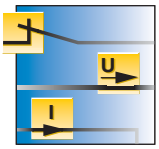
Properties



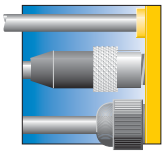
Design
Cylindrical design, rotatable by 360°, with display



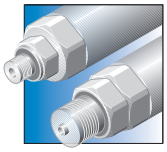
Measuring ranges
-1…600 bar relative and 0…25 bar absolute



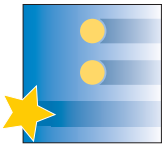
Electrical versions
IO-Link capable, dual-channel, switching, current or voltage output



Electrical connections
4-pin M12 x 1 plug connection



Mechanical connections
G1/4“, 1/4“ NPT, R1/4“ male or female thread, 7/16“ UNF and G1/2“ male thread



Special features
Fail-safe three-key operation, VDMA menu guide (optional), IP67

G1/4“ – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-501-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d464
PS001V-501-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d464
PS01VR-501-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d464
PS001A-501-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d464
PS003V-501-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d464
PS003A-501-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d464
PS010V-501-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d464
PS010A-501-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d464
PS016V-501-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d464
PS016A-501-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d464
PS025V-501-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d464
PS025A-501-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d464
PS040V-501-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d464
PS100R-501-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d464
PS250R-501-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d464
PS400R-501-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d464
PS600R-501-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d464

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

G1/4“ – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-501-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d464
PS001V-501-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d464
PS01VR-501-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d464
PS001R-501-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d464
PS003A-501-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d464
PS003V-501-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d464
PS010A-501-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d464
PS010V-501-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d464
PS016A-501-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d464
PS016V-501-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d464
PS025A-501-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d464
PS025V-501-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d464
PS040V-501-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d464
PS100R-501-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d464
PS250R-501-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d464
PS600R-501-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d464
PS400R-501-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d464

G1/4“ – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{ks}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-501-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d464
PS001V-501-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d464
PS01VR-501-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d464
PS001R-501-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d464
PS003A-501-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d464
PS003V-501-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d464
PS010A-501-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d464
PS010V-501-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d464
PS016A-501-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d464
PS016V-501-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d464
PS025A-501-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d464
PS025V-501-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d464
PS040V-501-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d464
PS100R-501-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d464
PS250R-501-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d464
PS600R-501-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d464
PS400R-501-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d464

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

1/4“ NPT – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎽◺⎽/⎽⊣◺⎽, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-502-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d465
PS001V-502-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d465
PS01VR-502-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d465
PS001A-502-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d465
PS003V-502-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d465
PS003A-502-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d465
PS010V-502-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d465
PS010A-502-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d465
PS016V-502-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d465
PS016A-502-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d465
PS025V-502-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d465
PS025A-502-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d465
PS040V-502-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d465
PS100R-502-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d465
PS250R-502-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d465
PS400R-502-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d465
PS600R-502-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d465

1/4“ NPT – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-502-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d465
PS001V-502-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d465
PS01VR-502-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d465
PS001R-502-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d465
PS003A-502-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d465
PS003V-502-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d465
PS010A-502-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d465
PS010V-502-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d465
PS016A-502-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d465
PS016V-502-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d465
PS025A-502-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d465
PS025V-502-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d465
PS040V-502-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d465
PS100R-502-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d465
PS250R-502-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d465
PS600R-502-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d465
PS400R-502-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d465

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎓/⎓, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT1/4“ - 18 female threads

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-502-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d465
PS001V-502-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d465
PS001R-502-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d465
PS01VR-502-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d465
PS003A-502-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d465
PS003V-502-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d465
PS010A-502-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d465
PS010V-502-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d465
PS016A-502-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d465
PS016V-502-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d465
PS025A-502-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d465
PS025V-502-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d465
PS040V-502-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d465
PS100R-502-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d465
PS250R-502-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d465
PS600R-502-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d465
PS400R-502-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d465

1/4“ NPT – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-503-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d466
PS001V-503-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d466
PS01VR-503-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d466
PS001A-503-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d466
PS003V-503-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d466
PS003A-503-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d466
PS010V-503-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d466
PS010A-503-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d466
PS016V-503-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d466
PS016A-503-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d466
PS025V-503-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d466
PS025A-503-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d466
PS040V-503-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d466
PS100R-503-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d466
PS250R-503-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d466
PS400R-503-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d466
PS600R-503-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d466

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{ks}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽⊐◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-503-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d466
PS001V-503-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d466
PS01VR-503-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d466
PS001R-503-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d466
PS003A-503-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d466
PS003V-503-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d466
PS010A-503-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d466
PS010V-503-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d466
PS016A-503-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d466
PS016V-503-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d466
PS025A-503-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d466
PS025V-503-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d466
PS040V-503-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d466
PS100R-503-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d466
PS250R-503-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d466
PS600R-503-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d466
PS400R-503-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d466

1/4“ NPT – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽╲⎽/⎽⊣╲⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-503-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d466
PS001V-503-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d466
PS001R-503-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d466
PS01VR-503-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d466
PS003A-503-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d466
PS003V-503-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d466
PS010A-503-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d466
PS010V-503-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d466
PS016A-503-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d466
PS016V-503-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d466
PS025A-503-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d466
PS025V-503-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d466
PS040V-503-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d466
PS100R-503-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d466
PS250R-503-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d466
PS600R-503-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d466
PS400R-503-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d466

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/4“ – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-504-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d467
PS001V-504-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d467
PS01VR-504-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d467
PS001A-504-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d467
PS003V-504-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d467
PS003A-504-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d467
PS010V-504-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d467
PS010A-504-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d467
PS016V-504-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d467
PS016A-504-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d467
PS025V-504-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d467
PS025A-504-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d467
PS040V-504-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d467
PS100R-504-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d467
PS250R-504-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d467
PS400R-504-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d467
PS600R-504-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d467

G1/4“ – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-504-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d467
PS001V-504-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d467
PS01VR-504-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d467
PS001R-504-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d467
PS003A-504-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d467
PS003V-504-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d467
PS010A-504-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d467
PS010V-504-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d467
PS016A-504-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d467
PS016V-504-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d467
PS025A-504-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d467
PS025V-504-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d467
PS040V-504-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d467
PS100R-504-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d467
PS250R-504-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d467
PS600R-504-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d467
PS400R-504-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d467

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/4“ – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-504-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d467
PS001V-504-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d467
PS001R-504-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d467
PS01VR-504-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d467
PS003A-504-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d467
PS003V-504-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d467
PS010A-504-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d467
PS010V-504-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d467
PS016A-504-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d467
PS016V-504-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d467
PS025A-504-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d467
PS025V-504-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d467
PS040V-504-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d467
PS100R-504-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d467
PS250R-504-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d467
PS600R-504-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d467
PS400R-504-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d467

7/16“ UNF – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	7/16-20 UNF

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-505-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d468
PS001V-505-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d468
PS01VR-505-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d468
PS001A-505-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d468
PS003V-505-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d468
PS003A-505-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d468
PS010V-505-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d468
PS010A-505-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d468
PS016V-505-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d468
PS016A-505-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d468
PS025V-505-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d468
PS025A-505-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d468
PS040V-505-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d468
PS100R-505-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d468
PS250R-505-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d468
PS400R-505-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d468
PS600R-505-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d468

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

7/16“ UNF – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	_⟍‾/⌐⟍_ , pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	7/16-20 UNF

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-505-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d468
PS001V-505-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d468
PS001R-505-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d468
PS01VR-505-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d468
PS003A-505-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d468
PS003V-505-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d468
PS010A-505-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d468
PS016A-505-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d468
PS016V-505-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d468
PS025A-505-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d468
PS025V-505-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d468
PS040V-505-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d468
PS100R-505-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d468
PS250R-505-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d468
PS600R-505-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d468
PS400R-505-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d468

7/16“ UNF – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	7/16-20 UNF

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-505-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d468
PS001R-505-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d468
PS001V-505-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d468
PS001A-505-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d468
PS003V-505-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d468
PS003A-505-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d468
PS010V-505-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d468
PS010A-505-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d468
PS016V-505-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d468
PS016A-505-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d468
PS025V-505-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d468
PS025A-505-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d468
PS040V-505-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d468
PS100R-505-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d468
PS250R-505-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d468
PS400R-505-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d468
PS600R-505-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d468

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

G1/2“ – Male – Manometer connection – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	G 1/2“ male threaded manometer acc. to DIN 3852-E

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-508-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d469
PS001V-508-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d469
PS01VR-508-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d469
PS001A-508-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d469
PS003V-508-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d469
PS003A-508-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d469
PS010V-508-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d469
PS010A-508-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d469
PS016V-508-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d469
PS016A-508-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d469
PS025V-508-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d469
PS025A-508-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d469
PS040V-508-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d469
PS100R-508-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d469
PS250R-508-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d469
PS400R-508-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d469
PS600R-508-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d469

G1/2“ – Male – Manometer connection – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◹⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/2“ male threaded manometer acc. to DIN 3852-E

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-508-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d469
PS001V-508-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d469
PS01VR-508-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d469
PS001R-508-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d469
PS003A-508-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d469
PS003V-508-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d469
PS010A-508-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d469
PS010V-508-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d469
PS016A-508-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d469
PS016V-508-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d469
PS025A-508-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d469
PS025V-508-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d469
PS040V-508-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d469
PS100R-508-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d469
PS250R-508-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d469
PS600R-508-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d469
PS400R-508-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d469

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/2“ – Male – Manometer connection – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	_⌒‾/⊐⌒‾, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	G 1/2“ male threaded manometer acc. to DIN 3852-E

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-508-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d469
PS001V-508-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d469
PS001R-508-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d469
PS01VR-508-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d469
PS003A-508-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d469
PS003V-508-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d469
PS010A-508-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d469
PS010V-508-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d469
PS016A-508-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d469
PS016V-508-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d469
PS025A-508-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d469
PS025V-508-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d469
PS040V-508-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d469
PS100R-508-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d469
PS250R-508-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d469
PS600R-508-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d469
PS400R-508-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d469

R1/4“ – Male – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎽◺⎽/⎽⊣◺⎽, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-510-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d470
PS001V-510-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d470
PS01VR-510-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d470
PS001A-510-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d470
PS003V-510-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d470
PS003A-510-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d470
PS010V-510-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d470
PS010A-510-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d470
PS016V-510-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d470
PS016A-510-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d470
PS025V-510-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d470
PS025A-510-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d470
PS040V-510-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d470
PS100R-510-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d470
PS250R-510-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d470
PS400R-510-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d470
PS600R-510-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d470

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 772 ff

R1/4“ – Male – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	_⟍_/_⊐⟍_, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-510-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d470
PS001V-510-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d470
PS001R-510-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d470
PS01VR-510-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d470
PS003A-510-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d470
PS003V-510-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d470
PS010A-510-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d470
PS010V-510-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d470
PS016A-510-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d470
PS016V-510-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d470
PS025A-510-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d470
PS025V-510-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d470
PS040V-510-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d470
PS100R-510-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d470
PS250R-510-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d470
PS600R-510-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d470
PS400R-510-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d470

R1/4“ – Male – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-510-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d470
PS001R-510-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d470
PS001V-510-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d470
PS001A-510-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d470
PS003V-510-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d470
PS003A-510-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d470
PS010V-510-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d470
PS010A-510-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d470
PS016V-510-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d470
PS016A-510-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d470
PS025V-510-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d470
PS025A-510-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d470
PS040V-510-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d470
PS100R-510-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d470
PS250R-510-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d470
PS400R-510-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d470
PS600R-510-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d470

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

R1/4“ – Female – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Medium temperature**	-40…85 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-40…80 °C
Output function	⎍/⎍, pnp/npn	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching point accuracy	0.5 % of full scale	**material pressure element**	ceramics Al_2O_3
Repeatability	0.1 % of full scale	**Sealing material**	FPM
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Response time	3 ms	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-511-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d471
PS001V-511-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d471
PS01VR-511-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d471
PS001A-511-2UPN8X-H1141	0…1 bar abs.	3 bar	w095	d471
PS003V-511-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d471
PS003A-511-2UPN8X-H1141	0…2.5 bar abs.	7 bar	w095	d471
PS010V-511-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d471
PS010A-511-2UPN8X-H1141	0…10 bar abs.	25 bar	w095	d471
PS016V-511-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d471
PS016A-511-2UPN8X-H1141	0…16 bar abs.	40 bar	w095	d471
PS025V-511-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d471
PS025A-511-2UPN8X-H1141	0…25 bar abs.	65 bar	w095	d471
PS040V-511-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d471
PS100R-511-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d471
PS250R-511-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d471
PS400R-511-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d471
PS600R-511-2UPN8X-H1141	0…600 bar rel.	900 bar	w095	d471

R1/4“ – Female – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001A-511-LI2UPN8X-H1141	0…1 bar abs.	3 bar	w096	d471
PS001V-511-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d471
PS001R-511-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d471
PS01VR-511-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d471
PS003A-511-LI2UPN8X-H1141	0…2.5 bar abs.	7 bar	w096	d471
PS003V-511-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d471
PS010A-511-LI2UPN8X-H1141	0…10 bar abs.	25 bar	w096	d471
PS010V-511-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d471
PS016A-511-LI2UPN8X-H1141	0…16 bar abs.	40 bar	w096	d471
PS016V-511-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d471
PS025A-511-LI2UPN8X-H1141	0…25 bar abs.	65 bar	w096	d471
PS025V-511-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d471
PS040V-511-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d471
PS100R-511-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d471
PS250R-511-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d471
PS600R-511-LI2UPN8X-H1141	0…600 bar rel.	900 bar	w096	d471
PS400R-511-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d471

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

R1/4“ – Female – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Medium temperature**	-40…85 °C
Output function	⎽◺⎽/⎽◺⎽, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**material pressure element**	ceramics Al_2O_3
Switching frequency	180 Hz	**Sealing material**	FPM
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Electrical connection**	connector, M12 x 1
Accuracy (Lin. + Hys. + Rep.)	0.5% of final value BSL	**Mechanical connection**	R1/4“ female thread per DIN 2999

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-511-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d471
PS001R-511-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d471
PS001V-511-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d471
PS001A-511-LUUPN8X-H1141	0…1 bar abs.	3 bar	w097	d471
PS003V-511-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d471
PS003A-511-LUUPN8X-H1141	0…2.5 bar abs.	7 bar	w097	d471
PS010V-511-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d471
PS010A-511-LUUPN8X-H1141	0…10 bar abs.	25 bar	w097	d471
PS016V-511-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d471
PS016A-511-LUUPN8X-H1141	0…16 bar abs.	40 bar	w097	d471
PS025V-511-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d471
PS025A-511-LUUPN8X-H1141	0…25 bar abs.	65 bar	w097	d471
PS040V-511-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d471
PS100R-511-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d471
PS250R-511-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d471
PS400R-511-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d471
PS600R-511-LUUPN8X-H1141	0…600 bar rel.	900 bar	w097	d471

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

PS600 series – For viscous media or contamination

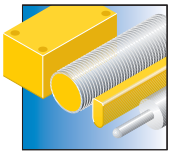


The PS600 series operates with a front-flush mounted diaphragm seal. Pressure applied on the stainless steel diaphragm is transmitted via the filling medium to the ceramic substrate of the measuring cell. Depending on the sensor type, the processed signal is either provided at a switching or an analog output. IO-Link is standard. Highest flexibility achieved with a front-flush or dead space free diaphragm and an accuracy of 0.5% f.s. guarantees save integration in the process.

Features

- IO-Link capable
- Front-flush and dead space free process connections
- 4-digit 7-segment display
- Measuring range -1…400 bar relative pressure
- Measuring range 0…25 bar absolute pressure
- Stainless steel housing
- Permanent display of pressure (bar, psi, kPa, MPa, misc)

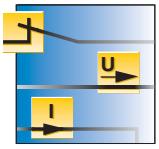
Properties



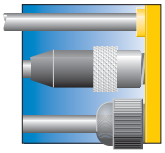
Design
Cylindrical design, non-rotatable, with display



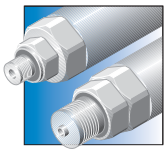
Measuring ranges
-1… 600 bar relative pressure



Electrical versions
IO-Link capable, dual-channel, switching, current or voltage output



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
G1/2“ and G3/4“ front-flush process connections



Special features
Failsafe 3-key operation, VDMA menu guide (optional), IP67, fully encapsulated electronics

G3/4“ – Front-flush diaphragm – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	switching output	**Medium temperature**	-10…85 °C
Output function	⎯⎺⎯/⎓⎺⎯, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**Electrical connection**	connector, M12 x 1
Switching frequency	180 Hz	**Mechanical connection**	G 3/4“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-606-2UPN8X-H1141	-1…0 bar rel.	3 bar	w095	d472
PS001R-606-2UPN8X-H1141	0…1 bar rel.	3 bar	w095	d472
PS001V-606-2UPN8X-H1141	-1…1 bar rel.	3 bar	w095	d472
PS003V-606-2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w095	d472
PS010V-606-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d472
PS016V-606-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d472
PS025V-606-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d472
PS040V-606-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d472
PS100R-606-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d472
PS250R-606-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d472
PS400R-606-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d472

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G3/4“ – Front-flush diaphragm – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Accuracy (Lin. + Hys. + Rep.)**	0.5% of final value BSL
Protection type and class	IP67 / III	**Response time**	3 ms
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output function	⎽◺⎽/⎽⊣◺⎽, pnp/npn	**Medium temperature**	-10…85 °C
Switching point accuracy	0.5 % of full scale	**Ambient temperature**	-40…80 °C
Repeatability	0.1 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Mechanical connection**	G 3/4“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS01VR-606-LI2UPN8X-H1141	-1…0 bar rel.	3 bar	w096	d472
PS001R-606-LI2UPN8X-H1141	0…1 bar rel.	3 bar	w096	d472
PS001V-606-LI2UPN8X-H1141	-1…1 bar rel.	3 bar	w096	d472
PS003V-606-LI2UPN8X-H1141	-1…2.5 bar rel.	7 bar	w096	d472
PS010V-606-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d472
PS016V-606-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d472
PS025V-606-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d472
PS040V-606-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d472
PS100R-606-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d472
PS250R-606-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d472
PS400R-606-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d472

G3/4“ – Front-flush diaphragm – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Accuracy (Lin. + Hys. + Rep.)**	0.5% of final value BSL
Protection type and class	IP67 / III	**Response time**	3 ms
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output function	⎍/⎍, pnp/npn	**Medium temperature**	-10…85 °C
Switching point accuracy	0.5 % of full scale	**Ambient temperature**	-40…80 °C
Repeatability	0.1 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Mechanical connection**	G 3/4“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS001R-606-LUUPN8X-H1141	0…1 bar rel.	3 bar	w097	d472
PS01VR-606-LUUPN8X-H1141	-1…0 bar rel.	3 bar	w097	d472
PS001V-606-LUUPN8X-H1141	-1…1 bar rel.	3 bar	w097	d472
PS003V-606-LUUPN8X-H1141	-1…2.5 bar rel.	7 bar	w097	d472
PS010V-606-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d472
PS016V-606-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d472
PS025V-606-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d472
PS040V-606-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d472
PS100R-606-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d472
PS250R-606-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d472
PS400R-606-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d472

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/2“ – Front-flush diaphragm – 2 switching outputs



General data

Operating voltage	15…30 VDC	**Response time**	3 ms
Protection type and class	IP67 / III	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	switching output	**Medium temperature**	-10…85 °C
Output function	⎓/⎓, pnp/npn	**Ambient temperature**	-40…80 °C
Switching point accuracy	0.5 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Repeatability	0.1 % of full scale	**Electrical connection**	connector, M12 x 1
Switching frequency	180 Hz	**Mechanical connection**	G 1/2“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS010V-609-2UPN8X-H1141	-1…10 bar rel.	25 bar	w095	d473
PS016V-609-2UPN8X-H1141	-1…16 bar rel.	40 bar	w095	d473
PS025V-609-2UPN8X-H1141	-1…25 bar rel.	65 bar	w095	d473
PS040V-609-2UPN8X-H1141	-1…40 bar rel.	100 bar	w095	d473
PS100R-609-2UPN8X-H1141	0…100 bar rel.	250 bar	w095	d473
PS250R-609-2UPN8X-H1141	0…250 bar rel.	625 bar	w095	d473
PS400R-609-2UPN8X-H1141	0…400 bar rel.	900 bar	w095	d473

G1/2“ – Front-flush diaphragm – 1 switching and 1 current output



General data

Operating voltage	18…30 VDC	**Accuracy (Lin. + Hys. + Rep.)**	0.5% of final value BSL
Protection type and class	IP67 / III	**Response time**	3 ms
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analog or switching output	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output function	⎍/⎎, pnp/npn	**Medium temperature**	-10…85 °C
Switching point accuracy	0.5 % of full scale	**Ambient temperature**	-40…80 °C
Repeatability	0.1 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Operating range	4…20/ 0…20/ 20…4/ 20… 0 mA	**Mechanical connection**	G 1/2“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS010V-609-LI2UPN8X-H1141	-1…10 bar rel.	25 bar	w096	d473
PS016V-609-LI2UPN8X-H1141	-1…16 bar rel.	40 bar	w096	d473
PS025V-609-LI2UPN8X-H1141	-1…25 bar rel.	65 bar	w096	d473
PS040V-609-LI2UPN8X-H1141	-1…40 bar rel.	100 bar	w096	d473
PS100R-609-LI2UPN8X-H1141	0…100 bar rel.	250 bar	w096	d473
PS250R-609-LI2UPN8X-H1141	0…250 bar rel.	625 bar	w096	d473
PS400R-609-LI2UPN8X-H1141	0…400 bar rel.	900 bar	w096	d473

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

G1/2“ – Front-flush diaphragm – 1 switching and 1 voltage output



General data

Operating voltage	18…30 VDC	**Accuracy (Lin. + Hys. + Rep.)**	0.5% of full scale BSL
Protection type and class	IP67 / III	**Response time**	3 ms
Output 1 (PIN 4)	switching output or IO-Link mode	**Temperature coefficient zero point T_{k0}**	0.15% of full scale / 10 K
Output 2 (PIN 2)	analogue output	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Output function	⎽◺⎽/⎽⊣◺⎽, pnp/npn	**Medium temperature**	-10…85 °C
Switching point accuracy	0.5 % of full scale	**Ambient temperature**	-40…80 °C
Repeatability	0.1 % of full scale	**Housing material**	stainless-steel/ plastic, 1.4305 (AISI 303)/PC
Switching frequency	180 Hz	**Electrical connection**	connector, M12 x 1
Voltage output, programmable	0…10 V/0…5 V/ 1…6 V/10…0 V/ 5…0 V/6…1 V	**Mechanical connection**	G 1/2“ front flush

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PS010V-609-LUUPN8X-H1141	-1…10 bar rel.	25 bar	w097	d473
PS016V-609-LUUPN8X-H1141	-1…16 bar rel.	40 bar	w097	d473
PS025V-609-LUUPN8X-H1141	-1…25 bar rel.	65 bar	w097	d473
PS040V-609-LUUPN8X-H1141	-1…40 bar rel.	100 bar	w097	d473
PS100R-609-LUUPN8X-H1141	0…100 bar rel.	250 bar	w097	d473
PS250R-609-LUUPN8X-H1141	0…250 bar rel.	625 bar	w097	d473
PS400R-609-LUUPN8X-H1141	0…400 bar rel.	900 bar	w097	d473

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 772 ff

At a glance

Pressure sensors - PK series



Multifaceted pneumatic specialists

The PK pressure sensors are especially designed for pneumatic applications and are ideally suited for pick-and-place systems, labelling machines and hoists. The N version is manometer-shaped, features a display and a process connection on the back side. The P version has a rotatable, cylindrical body with display. The processed signal is provided at the switching output. These sensors are only made for non-aggressive gas and compressed air applications.



Compact design

The sensors are compact, rugged but at the same time lightweight and thus perfectly suited for handling and automation systems. They feature two switching outputs and are NO/NC programmable in hysteresis mode. The output configuration is easily reprogrammed for special requirements, such as monitoring of a pressure window, for example.

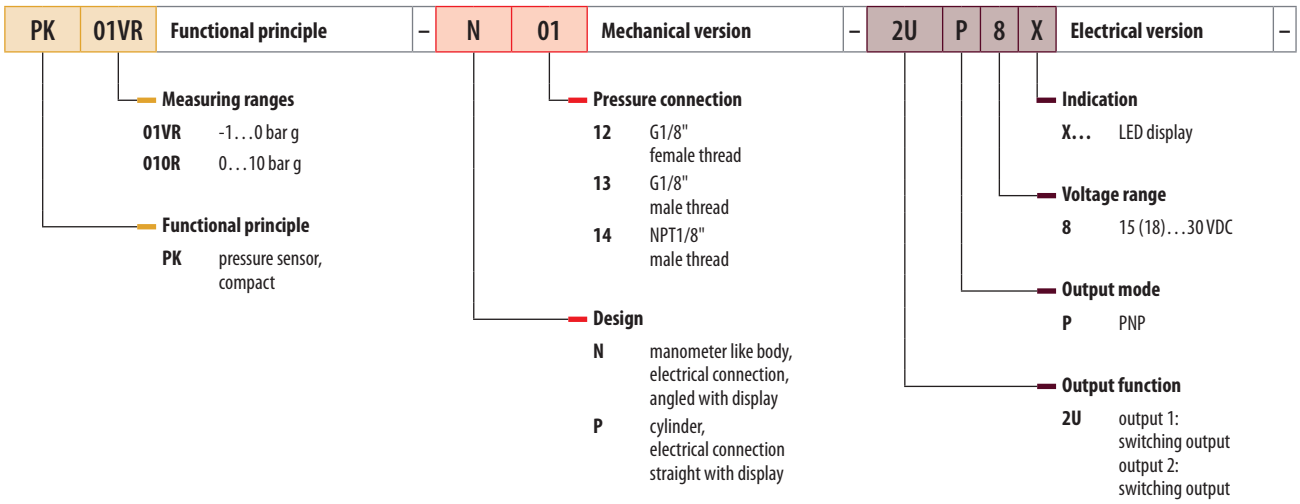
- For pressure and vacuum monitoring
- Compact sensors in cylindrical or manometer-like design
- 3-digit 7-segment display
- Display rotatable by 180°
- Excellent EMC properties
- One LED per output to indicate the switching status

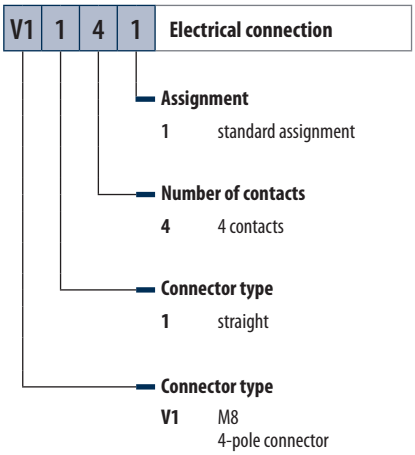


Easy programming

Thanks to the user friendly menu guide, parameters such as switch and release points, output type, analog range and various special functions are easily taught. The buttons are finger-operated. Additional tools are not needed.

Type code


PK
01VR
Functional principle
–
N
01
Mechanical version
–
2U
P
8
X
Electrical version
–
Measuring ranges
01VR -1…0 bar g
010R 0…10 bar g
Functional principle
PK pressure sensor, compact
Pressure connection
12 G1/8" female thread
13 G1/8" male thread
14 NPT1/8" male thread
Design
N manometer like body, electrical connection, angled with display
P cylinder, electrical connection straight with display
Indication
X… LED display
Voltage range
8 15 (18)…30 VDC
Output mode
P PNP
Output function
2U output 1: switching output output 2: switching output


V1 1 4 1
Electrical connection
Assignment
1 standard assignment
Number of contacts
4 4 contacts
Connector type
1 straight
Connector type
V1 M8
4-pole connector

PK-N series – For pneumatic applications

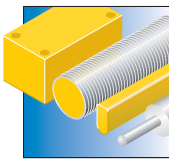


The PK-N pressure sensors operate with a piezo-resistive silicon cell. It is a silicon chip with direct medium contact. The N version is manometer-shaped, features a display and a process connection on the back side. The processed signal is provided at the switching output. These sensors are only made for non-aggressive gas and compressed air applications.

Features

- Compact manometer-like design
- 3-digit 7-segment display
- For pressure and vacuum monitoring
- Display rotatable by 180°
- Excellent EMC properties

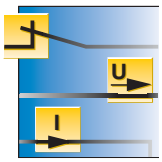
Properties



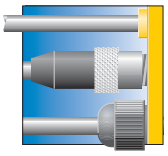
Design
Manometer-like design with display



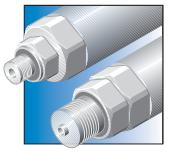
Measuring ranges
-1… 10 bar relative pressure



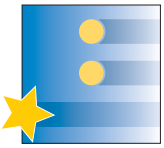
Electrical versions
Dual-channel with switching outputs



Electrical connections
4-pole M8 x 1 connector



Mechanical connections
G1/4“ female and 1/4“NPT male thread



Special features
For pneumatic applications

N12 – G1/8 – Female



General data

Operating voltage	10.8…30 VDC	**Repeatability**	0.2 % of full scale
Protection type and class	IP65	**Switching frequency**	400 Hz
Output 1 (PIN 4)	switching output	**Medium temperature**	0…50 °C
Output 2 (PIN 2)	switching output	**Ambient temperature**	-20…85 °C
Output function	⎯◺⎯ / ⎯◺⎯, PNP	**Electrical connection**	connector, M8 x 1
Switching point accuracy	1 % of full scale	**Mechanical connection**	G1/8 female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	Housing material	w	d
PK01VR-N12-2UP8X-V1141	-1…0 bar rel.	5 bar	plastic, ABS	w100	d477
PK010R-N12-2UP8X-V1141	0…10 bar rel.	16 bar	plastic, ABS	w100	d477
PK01VR-N12AL-2UP8X-V1141	-1…0 bar rel.	5 bar	aluminium, ABS	w100	d477
PK010R-N12AL-2UP8X-V1141	0…10 bar rel.	16 bar	aluminium, ABS	w100	d477

N14 – 1/8“ NPT – Male



General data

Operating voltage	10.8…30 VDC	**Switching frequency**	400 Hz
Protection type and class	IP65	**Medium temperature**	0…50 °C
Output 1 (PIN 4)	switching output	**Ambient temperature**	-20…85 °C
Output 2 (PIN 2)	switching output	**Housing material**	plastic, ABS
Output function	⎯◺⎯ / ⎯◺⎯, PNP	**Electrical connection**	connector, M8 x 1
Switching point accuracy	1 % of full scale	**Mechanical connection**	NPT1/8“ males thread
Repeatability	0.2 % of full scale		

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PK01VR-N14-2UP8X-V1141	-1…0 bar rel.	5 bar	w100	d477
PK010R-N14-2UP8X-V1141	0…10 bar rel.	16 bar	w100	d477

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

PK-P series – For pneumatic applications

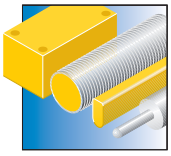


The PK-P pressure sensors operate with a piezo-resistive silicon cell. It is a silicon chip with direct medium contact. The P version has a rotatable, cylindrical body with display. These sensors are only made for non-aggressive gas and compressed air applications. The processed signal is provided at the switching output.

Features

- Compact cylindrical design
- Rotatable sensor body
- 3-digit 7-segment display
- For pressure and vacuum monitoring
- Display rotatable by 180°
- Excellent EMC properties

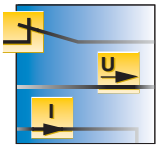
Properties



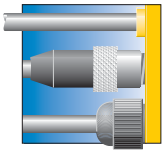
Design
Cylindrical version with laterally mounted display



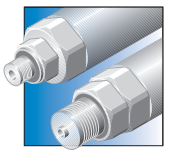
Measuring ranges
-1…10 bar relative pressure



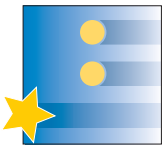
Electrical versions
Dual-channel with switching outputs



Electrical connections
4-pole M8 x 1 connector



Mechanical connections
G1/4“ or 1/4“NPT male thread



Special features
For pneumatic applications

P13 – G1/8“ – Male



General data

Operating voltage	10.8…30 VDC	**Switching frequency**	400 Hz
Protection type and class	IP65	**Medium temperature**	0…50 °C
Output 1 (PIN 4)	switching output	**Ambient temperature**	-20…85 °C
Output 2 (PIN 2)	switching output	**Housing material**	plastic, ABS
Output function	_⟋/⊣⟋_, PNP	**Electrical connection**	connector, M8 x 1
Switching point accuracy	1 % of full scale	**Mechanical connection**	G1/8“ male thread
Repeatability	0.2 % of full scale		

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PK01VR-P13-2UP8X-V1141	-1…0 bar rel.	5 bar	w100	d478
PK010R-P13-2UP8X-V1141	0…10 bar rel.	16 bar	w100	d478

P14 – 1/8“ NPT – Male



General data

Operating voltage	10.8…30 VDC	**Switching frequency**	400 Hz
Protection type and class	IP65	**Medium temperature**	0…50 °C
Output 1 (PIN 4)	switching output	**Ambient temperature**	-20…85 °C
Output 2 (PIN 2)	switching output	**Housing material**	plastic, ABS
Output function	_⟋/⊣⟋_, PNP	**Electrical connection**	connector, M8 x 1
Switching point accuracy	1 % of full scale	**Mechanical connection**	NPT1/8“ males thread
Repeatability	0.2 % of full scale		

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PK01VR-P14-2UP8X-V1141	-1…0 bar rel.	5 bar	w100	d478
PK010R-P14-2UP8X-V1141	0…10 bar rel.	16 bar	w100	d478

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

Hans Turck GmbH & Co. KG ▪ Tel. +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

At a glance
Pressure sensors - PT series



Compact pressure transmitters – Solutions

The pressure transmitters develop their full potential in applications requiring high operational safety and accuracy. Based on proven ceramic technology, these shock and vibration proof devices work reliably even in harsh environments. Thanks to the compact design, the sensors can be applied in almost all areas of industrial automation. The patented medium-stop system prevents the discharge of liquids when burst pressure exceeds 40 bar. In normal operating mode it works as a peak pressure aperture.



Made-to-measure solutions

The PT devices with diaphragm are a cost-efficient solution and a proven success regarding the control of filling levels at vessels. Other typical applications for pressure transmitters are machine tools, pneumatic systems and hydraulic power units. The PT series proves its applicability in refrigeration technology and many other industrial fields with features such as operational safety, accuracy and temperature stability.

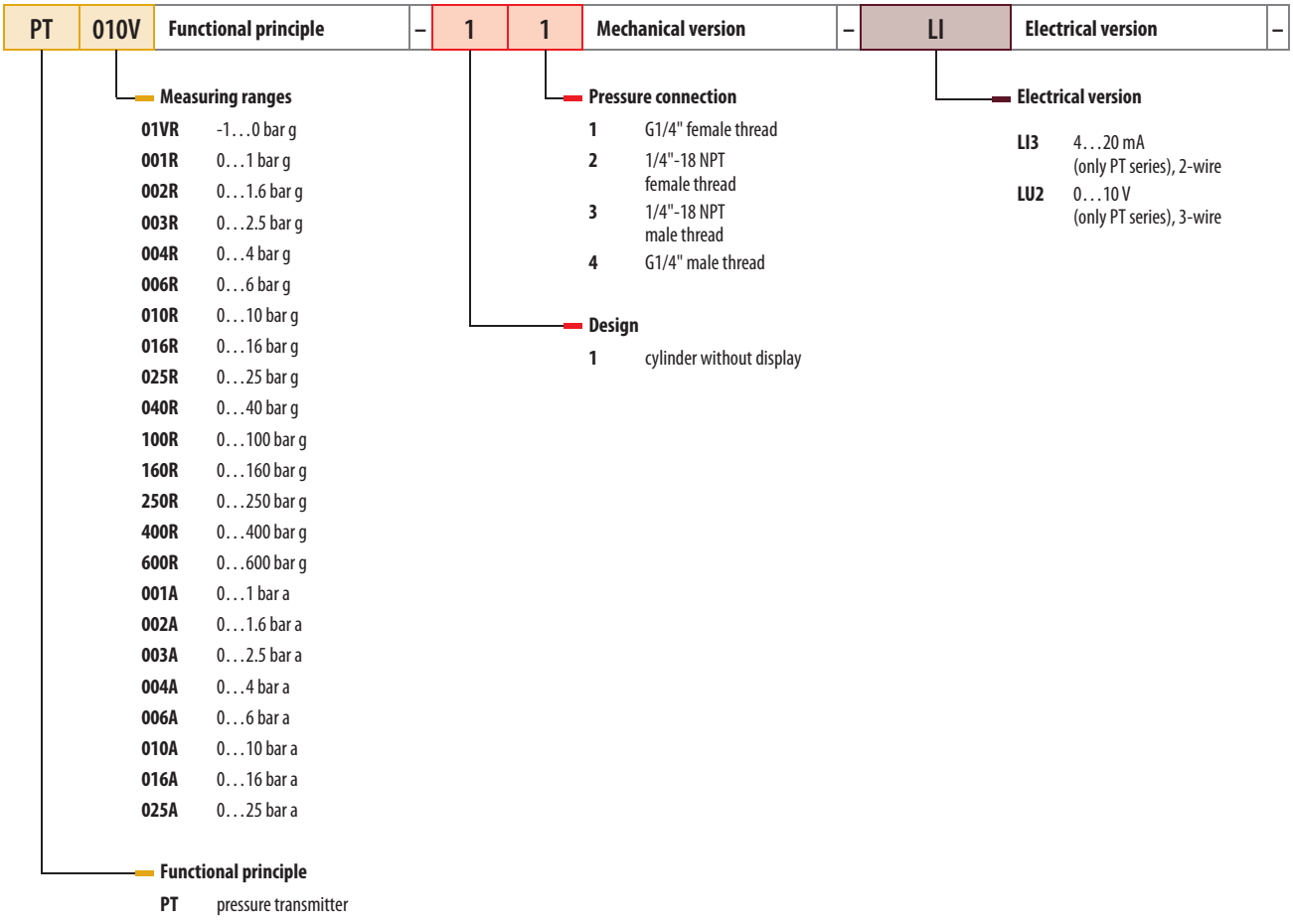


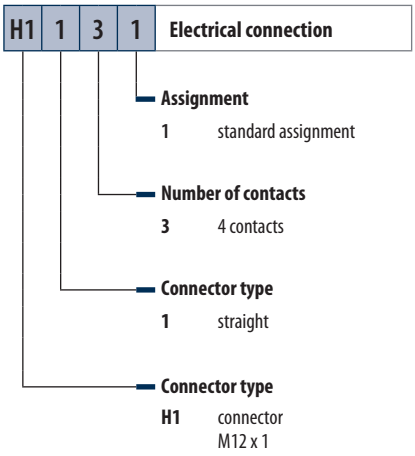
Working reliably even under extreme conditions

Equipped with a ceramic measuring cell, a stainless steel body and a FPM O-ring, the PT pressure transmitters resist temperatures of up to 125 °C without any problems. The devices fulfill industrial standards and guarantee a long-term stable performance.

- Compact and rugged design
- Accuracy 0.6 % f.s.
- Stainless steel housing and pressure connection
- 1.4305 (AISI 303)
- Medium-stop system
- Protection class IP67
- Excellent EMC properties
- -1…+600 bar relative pressure
- 0…25 bar absolute pressure

Type code


PT
010V
Functional principle
–
1
1
Mechanical version
–
LI
Electrical version
–
Measuring ranges
01VR -1…0 bar g
001R 0…1 bar g
002R 0…1.6 bar g
003R 0…2.5 bar g
004R 0…4 bar g
006R 0…6 bar g
010R 0…10 bar g
016R 0…16 bar g
025R 0…25 bar g
040R 0…40 bar g
100R 0…100 bar g
160R 0…160 bar g
250R 0…250 bar g
400R 0…400 bar g
600R 0…600 bar g
001A 0…1 bar a
002A 0…1.6 bar a
003A 0…2.5 bar a
004A 0…4 bar a
006A 0…6 bar a
010A 0…10 bar a
016A 0…16 bar a
025A 0…25 bar a
Functional principle
PT pressure transmitter
Pressure connection
1 G1/4" female thread
2 1/4"-18 NPT female thread
3 1/4"-18 NPT male thread
4 G1/4" male thread
Design
1 cylinder without display
Electrical version
LI3 4…20 mA (only PT series), 2-wire
LU2 0…10 V (only PT series), 3-wire


H1 1 3 1
Electrical connection
Assignment
1 standard assignment
Number of contacts
3 4 contacts
Connector type
1 straight
Connector type
H1 connector M12 x 1

PT-1 series – For temperatures up to +125 °C

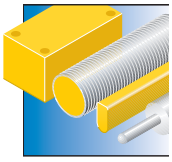


The PT1 pressure transmitters operate with ceramic measuring cells. They are cylindrically shaped, made of stainless and have no display. Depending on the type, the processed signal is output as 4…20 mA (2-wire) or 0…10 V (3-wire).

Features

- Compact and rugged design
- Measuring range -1…600 bar relative pressure
- Temperature range - 40…+125°C
- 4…20 mA (2-wire) or 0…10 V (3-wire)
- Excellent EMC properties

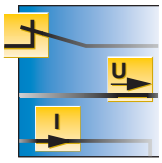
Properties



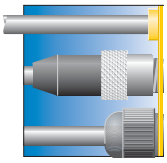
Design
Cylindrical design, non-rotatable, without display



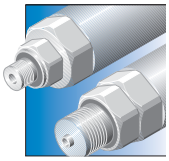
Measuring ranges
-1…600 bar relative pressure



Electrical versions
Current output 4…20 mA



Electrical connections
M12 x 1 plug connection, 3-pole



Mechanical connections
Female and male thread G1/4“ and 1/4“ NPT



Special features
Media temperature -40…+125 °C, IP67

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G1/4“ – Female – Current output (2-wire)



General data

Operating voltage	8…33 VDC	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	4…20 mA (2-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT001R-11-LI3-H1131	0…1 bar rel.	3 bar	w098	d474
PT002R-11-LI3-H1131	0…1.6 bar rel.	5 bar	w098	d474
PT003R-11-LI3-H1131	0…2.5 bar rel.	7 bar	w098	d474
PT004R-11-LI3-H1131	0…4 bar rel.	12 bar	w098	d474
PT006R-11-LI3-H1131	0…6 bar rel.	15 bar	w098	d474
PT010R-11-LI3-H1131	0…10 bar rel.	25 bar	w098	d474
PT016R-11-LI3-H1131	0…16 bar rel.	40 bar	w098	d474
PT025R-11-LI3-H1131	0…25 bar rel.	65 bar	w098	d474
PT040R-11-LI3-H1131	0…40 bar rel.	100 bar	w098	d474
PT060R-11-LI3-H1131	0…60 bar rel.	150 bar	w098	d474
PT100R-11-LI3-H1131	0…100 bar rel.	250 bar	w098	d474
PT160R-11-LI3-H1131	0…160 bar rel.	400 bar	w098	d474
PT250R-11-LI3-H1131	0…250 bar rel.	625 bar	w098	d474
PT400R-11-LI3-H1131	0…400 bar rel.	900 bar	w098	d474
PT600R-11-LI3-H1131	0…600 bar rel.	900 bar	w098	d474

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

G1/4“ – Female – Voltage output (3-wire)



General data

Operating voltage	11.4…33 VDC	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	0…10 V (3-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	G 1/4“ female thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT001R-11-LU2-H1131	0…1 bar rel.	3 bar	w099	d474
PT01VR-11-LU2-H1131	-1…0 bar rel.	3 bar	w099	d474
PT002R-11-LU2-H1131	0…1.6 bar rel.	5 bar	w099	d474
PT003R-11-LU2-H1131	0…2.5 bar rel.	7 bar	w099	d474
PT004R-11-LU2-H1131	0…4 bar rel.	12 bar	w099	d474
PT006R-11-LU2-H1131	0…6 bar rel.	15 bar	w099	d474
PT010R-11-LU2-H1131	0…10 bar rel.	25 bar	w099	d474
PT016R-11-LU2-H1131	0…16 bar rel.	40 bar	w099	d474
PT025R-11-LU2-H1131	0…25 bar rel.	65 bar	w099	d474
PT040R-11-LU2-H1131	0…40 bar rel.	100 bar	w099	d474
PT060R-11-LU2-H1131	0…60 bar rel.	150 bar	w099	d474
PT100R-11-LU2-H1131	0…100 bar rel.	250 bar	w099	d474
PT160R-11-LU2-H1131	0…160 bar rel.	400 bar	w099	d474
PT250R-11-LU2-H1131	0…250 bar rel.	625 bar	w099	d474
PT400R-11-LU2-H1131	0…400 bar rel.	900 bar	w099	d474
PT600R-11-LU2-H1131	0…600 bar rel.	900 bar	w099	d474

1/4“ NPT – Male – Current output (2-wire)



General data

Operating voltage	8…33 VDC	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	4…20 mA (2-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT004R-13-LI3-H1131	0…4 bar rel.	12 bar	w098	d475
PT010R-13-LI3-H1131	0…10 bar rel.	25 bar	w098	d475
PT016R-13-LI3-H1131	0…16 bar rel.	40 bar	w098	d475
PT025R-13-LI3-H1131	0…25 bar rel.	65 bar	w098	d475
PT040R-13-LI3-H1131	0…40 bar rel.	100 bar	w098	d475
PT060R-13-LI3-H1131	0…60 bar rel.	150 bar	w098	d475
PT100R-13-LI3-H1131	0…100 bar rel.	250 bar	w098	d475
PT160R-13-LI3-H1131	0…160 bar rel.	400 bar	w098	d475
PT250R-13-LI3-H1141	0…250 bar rel.	625 bar	w098	d475
PT400R-13-LI3-H1141	0…400 bar rel.	900 bar	w098	d475
PT600R-13-LI3-H1141	0…600 bar rel.	900 bar	w098	d475

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

1/4“ NPT – Male – Voltage output (3-wire)



General data

Operating voltage	11.4…33 VDC	**Temperature coefficient span T_{kS}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	0…10 V (3-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	NPT 1/4“ - 18 male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT001R-13-LU2-H1141	0…1 bar rel.	3 bar	w099	d475
PT01VR-13-LU2-H1131	-1…0 bar rel.	3 bar	w099	d475
PT002R-13-LU2-H1131	0…1.6 bar rel.	5 bar	w099	d475
PT003R-13-LU2-H1131	0…2.5 bar rel.	7 bar	w099	d475
PT004R-13-LU2-H1131	0…4 bar rel.	12 bar	w099	d475
PT006R-13-LU2-H1131	0…6 bar rel.	15 bar	w099	d475
PT010R-13-LU2-H1131	0…10 bar rel.	25 bar	w099	d475
PT060R-13-LU2-H1131	0…60 bar rel.	150 bar	w099	d475
PT100R-13-LU2-H1131	0…100 bar rel.	250 bar	w099	d475
PT160R-13-LU2-H1131	0…160 bar rel.	400 bar	w099	d475
PT250R-13-LU2-H1131	0…250 bar rel.	625 bar	w099	d475
PT600R-13-LU2-H1131	0…600 bar rel.	900 bar	w099	d475
PT400R-13-LU2-H1131	0…400 bar rel.	900 bar	w099	d475

G1/4“ – Male – Current output (2-wire)



General data

Operating voltage	8…33 VDC	**Temperature coefficient span T_{ks}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	4…20 mA (2-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT01VR-14-LI3-H1131	-1…0 bar rel.	3 bar	w098	d476
PT001R-14-LI3-H1131	0…1 bar rel.	3 bar	w098	d476
PT002R-14-LI3-H1131	0…1.6 bar rel.	5 bar	w098	d476
PT003R-14-LI3-H1131	0…2.5 bar rel.	7 bar	w098	d476
PT004R-14-LI3-H1131	0…4 bar rel.	12 bar	w098	d476
PT006R-14-LI3-H1131	0…6 bar rel.	15 bar	w098	d476
PT010R-14-LI3-H1131	0…10 bar rel.	25 bar	w098	d476
PT016R-14-LI3-H1131	0…16 bar rel.	40 bar	w098	d476
PT025R-14-LI3-H1131	0…25 bar rel.	65 bar	w098	d476
PT040R-14-LI3-H1131	0…40 bar rel.	100 bar	w098	d476
PT060R-14-LI3-H1131	0…60 bar rel.	150 bar	w098	d476
PT100R-14-LI3-H1131	0…100 bar rel.	250 bar	w098	d476
PT160R-14-LI3-H1131	0…160 bar rel.	400 bar	w098	d476
PT250R-14-LI3-H1131	0…250 bar rel.	625 bar	w098	d476
PT400R-14-LI3-H1131	0…400 bar rel.	900 bar	w098	d476
PT600R-14-LI3-H1131	0…600 bar rel.	900 bar	w098	d476

Pressure sensors

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

G1/4“ – Male – Voltage output (3-wire)



General data

Operating voltage	11.4…33 VDC	**Temperature coefficient span T_{ks}**	0.15% of full scale / 10 K
Protection type and class	IP67 / III	**Medium temperature**	-40…125 °C
Operating range	0…10 V (3-wire)	**Ambient temperature**	-40…85 °C
Accuracy (Lin. + Hys. + Rep.)	0.3% of final value BSL	**Housing material**	stainless-steel/plastic, 1.4305 (AISI 303)/PC
Calibration accuracy 0-point	0.3% of final value	**material pressure element**	ceramics Al_2O_3
Calibration accuracy, of final value	0.3% of final value	**Sealing material**	FPM
Response time	3 ms	**Electrical connection**	connector, M12 x 1
Temperature coefficient zero point T_{k0}	0.15% of full scale / 10 K	**Mechanical connection**	G 1/4“ male thread

Types and data – selection table

Type	Measuring range	Admissible overpressure	w	d
PT01VR-14-LU2-H1131	-1…0 bar rel.	3 bar	w099	d476
PT001R-14-LU2-H1131	0…1 bar rel.	3 bar	w099	d476
PT002R-14-LU2-H1131	0…1.6 bar rel.	5 bar	w099	d476
PT003R-14-LU2-H1131	0…2.5 bar rel.	7 bar	w099	d476
PT004R-14-LU2-H1131	0…4 bar rel.	12 bar	w099	d476
PT006R-14-LU2-H1131	0…6 bar rel.	15 bar	w099	d476
PT010R-14-LU2-H1131	0…10 bar rel.	25 bar	w099	d476
PT016R-14-LU2-H1131	0…16 bar rel.	40 bar	w099	d476
PT025R-14-LU2-H1131	0…25 bar rel.	65 bar	w099	d476
PT040R-14-LU2-H1131	0…40 bar rel.	100 bar	w099	d476
PT060R-14-LU2-H1131	0…60 bar rel.	150 bar	w099	d476
PT100R-14-LU2-H1131	0…100 bar rel.	250 bar	w099	d476
PT160R-14-LU2-H1131	0…160 bar rel.	400 bar	w099	d476
PT250R-14-LU2-H1131	0…250 bar rel.	625 bar	w099	d476
PT400R-14-LU2-H1131	0…400 bar rel.	900 bar	w099	d476
PT600R-14-LU2-H1131	0…600 bar rel.	900 bar	w099	d476

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 772 ff

At a glance

Temperature sensors







Temperature sensors – Highly optimized specialists for any requirements

Temperature is a critical factor in many industrial processes and has to be monitored constantly in order to operate machines and systems safely and efficiently. A reliable and practical solution for temperature measurement are electronic temperature sensors and transmitters. Reliability is not just provided through high accuracy and repeatability but also through many available interfaces to the process and the operator.

Temperature measurement in industrial applications is mainly implemented with resistance thermometers or thermoelements. Resistance thermometers detect temperature through the temperature-sensitive resistors. While the resistance of PTCs increases with the rise of temperature, NTCs behave opposite.

Thermoelements are applied to detect temperatures up to +1700 °C and higher. A thermoelement consists of two different interconnected metals or semiconductors. A temperature difference between the two metals causes electric potential of corresponding magnitude at the interconnection. In practice, the temperature of a cold spot is detected with a separate probe from which the temperature of the hot spot is then deduced.

Infrared sensors **M18T** (s. P. 568) are applied for non-contact measurement of surface temperatures in a range between +70 °C and +1000 °C. The distance-spot ratio is thereby of importance, indicating the diameter (S) of the spot at a given distance (D).

The TURCK product portfolio guarantees maximum flexibility for temperature measurement through numerous connection possibilities and output signals.

The intelligent sensors of the **TS series** fulfill all application specific requirements to the optimum through easy programming, flexible process connection and well readable displays. The compact sensors of the **TT/TC series** are available with integrated probe but also with standard M12 plug connection for separate probes. The infrared sensors of the T-Gage series measure temperatures contactless between 0 and +300 °C at wavelengths between 8 and 14 µm. A further important device of the product portfolio is the IP67 rated Pt100 resistance thermometer for temperatures between -50 and +500 °C. The temperature probes of the **TP-series** are available in different lengths and diameters. When using a thermowell for protection, the sensor can be adapted to critical application conditions.

More information on the TS series on p. 542 ff., TT/TC series on p. 553 ff. and TP series on p. 561 ff.

Our strengths...



Made-to-measure solutions

Due to its high accuracy of 0.2 K, the temperature sensors of the TS series handle a large spectrum of applications with only a few devices. Temperature is detected with a Pt100 directly connected to the M12 plug connection or via a standard connection cable. A range between -50 °C and +500 °C is covered and the 4-digit 7-segment LED display makes programming easier. The devices are available with two transistor switching outputs or with one switching and one analog output. High EMC immunity and protection classes IP67/IP69K guarantee reliable operation, even under harsh conditions. All TS sensors are equipped with an IO-Link interface.



Flexible mounting

Inclined by 45° the display is well readable from any position and even from a great distance. Horizontal mounting is also possible. The read direction is reversible by 180° degrees via software.

After locking the pressure connection, the TS500 can be rotated by 320° degrees and moved in any desired position. Once the final position is attained, the device is fixed in place with a second coupling nut. Special mounting aids are not required. With a diameter of only 34 mm, several sensors can be mounted side by side in confined spaces.



Clearly visible display

The bright 4-digit 7-segment display indicates the temperature during normal operation and is easy to program. The sloped display allows the sensors to be mounted on top or in front according to the position of the process connection. The read direction is reversible by 180° degrees via software. Values are thus perfectly readable, even if the sensor is mounted horizontally.



Easy programming

Thanks to the user friendly menu guide the switch and release point, the output function, the analog range and various special functions are easily taught via pushbuttons.

The TS series is programmed with the buttons MODE and SET. Tools are not needed to view the parameter values. To avoid accidental changes of programmed data, the ENTER button for storing the values is recessed. The button can only be pressed with a pointed object, such as a ball pen for example.



Rugged design

The sensor body, temperature and electrical connection are made of stainless steel. All sensors feature excellent EMC properties and are IP67 protected. Absolute operational safety is thus guaranteed even in rough production environments. The mineral-insulated probes are enormously flexible and temperature-resistant. Rugged TURCK connection cables provide the necessary security for connection.

Your advantages...



High system availability

The TS series excels in excellent EMC properties and is IP67 protected. Sensor body, temperature and electrical connection of the programmable devices are made of stainless steel and guarantee tremendous operational safety.

- Excellent EMC properties
- Protection against mechanical impacts thanks to the rugged design
- Minimum maintenance effort through optimized temperature coupling
- Short down-times through high system availability and short replacement times



Extremely service-friendly

Flexible mounting options, user-friendliness and accuracy provide calculable advantages, such as:

- Minimum maintenance effort through optimized performance of the sensors and a streamlined product portfolio.
- Easy configuration and operation via pushbuttons
- Failsafe operation through a recessed button for storage of values
- Large and good readable display
- The upper part of the TS500 sensor is rotatable by 320°
- IO-Link communication
- VDMA menu guide (optional)



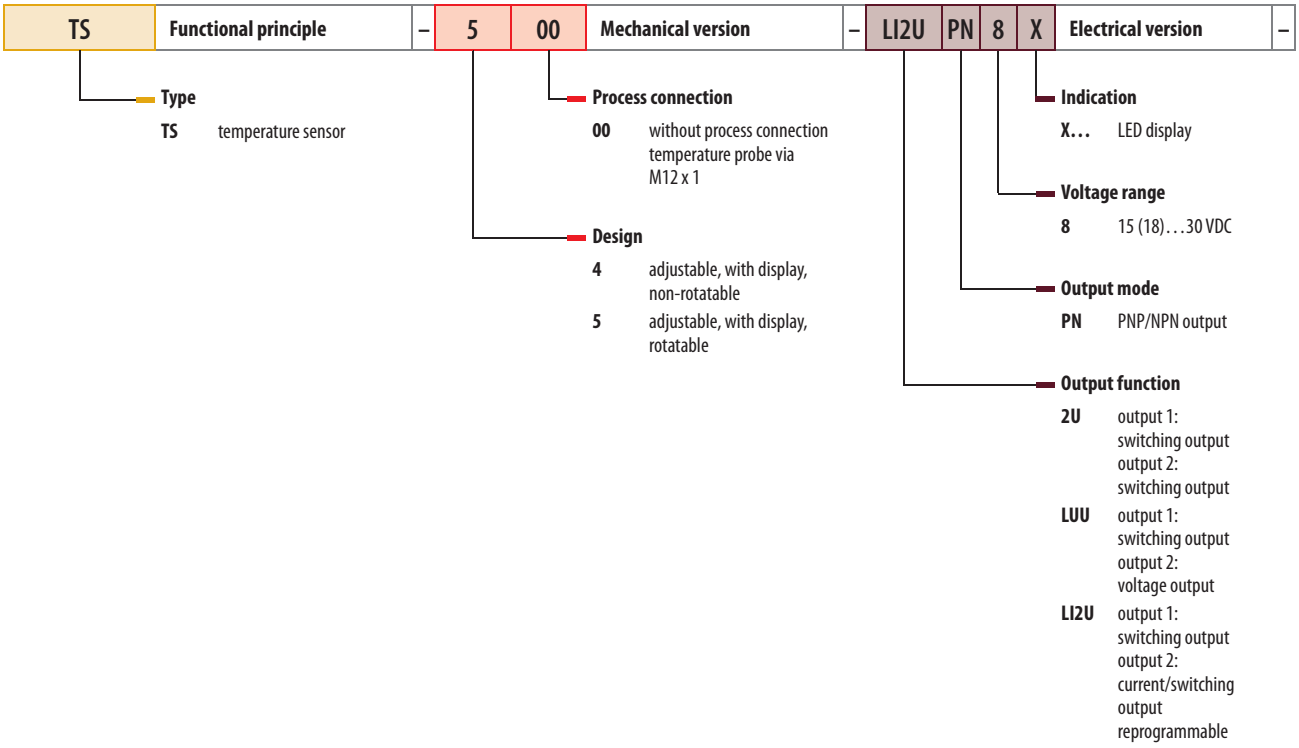
Efficient standardization

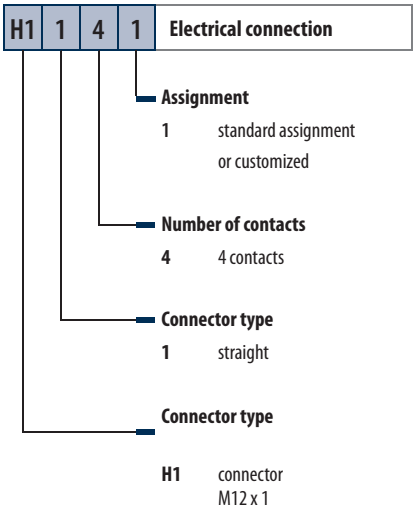
A single sensor replaces many conventional types. The intelligent temperature sensors fulfill many different control tasks and reduce the number of required sensors considerably.

A reduced inventory pays off for you:

- Only a few sensors are needed to cover a large range of applications
- Reduced training effort due to simple and failsafe operation
- High system safety achieved through a rugged design
- 4-pole standard M12 plug connection at the probe and processing unit

Type code


TS
Functional principle
–
5
00
Mechanical version
–
LI2U
PN
8
X
Electrical version
–
Type
TS temperature sensor
Process connection
00 without process connection temperature probe via M12 x 1
Design
4 adjustable, with display, non-rotatable
5 adjustable, with display, rotatable
Indication
X... LED display
Voltage range
8 15 (18)...30 VDC
Output mode
PN PNP/NPN output
Output function
2U output 1: switching output output 2: switching output
LUU output 1: switching output output 2: voltage output
LI2U output 1: switching output output 2: current/switching output reprogrammable


H1 1 4 1
Electrical connection
Assignment
1 standard assignment
or customized
Number of contacts
4 4 contacts
Connector type
1 straight
Connector type
H1 connector
M12 x 1

TS400 series – Pt 100 probe (4-wire)

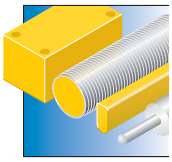


The TS400 processing units are incorporated in a non-rotatable, rugged stainless steel housing. Furthermore, they feature a standard M12 x 1 plug connection for TP probes. The bright 4-digit 7-segment display indicates the temperature during normal operation and guides the operator through the programming menu. Depending on the sensor type, they are available with switching outputs or a combination of switching and analog outputs. IO-Link communication is integrated as a standard.

Features

- M12 x 1 plug connection for TP probes.
- Housing, temperature and electrical connection are made of stainless steel
- Highest flexibility through modular system
- Programming protection through recessed pushbutton and keylock
- Permanent display of temperature (°C, °F, K, Ω)
- Storage of max/min values

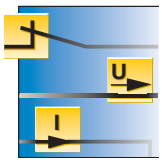
Properties



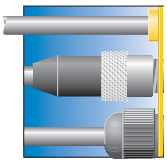
Design
Cylindrical, non-rotatable, with display



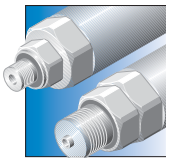
Measuring ranges
-50 …+500 °C



Electrical versions
IO-Link capable, dual-channel, switching, current or voltage output



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
G1/2“ for bores, mounted via clamping ring or thermowell depending on the probe



Special features
Failsafe 3-key operation, VDMA menu guide (optional), IP67, fully encapsulated electronics

Pt100 processing unit – Switching and analog outputs (U/I)



General data

Temperature operating range	-50…500 °C	**Short-circuit protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.2 K	**Reverse polarity protection**	yes
Repeatability	0.1 K	**Output function**	_⟍_/_⊣⟍_ programmable, pnp/npn
Switching point accuracy	0.2 K	**Rated operational current**	0.2 A
Release points	-50…499.8 °C	**Protection class**	IP67
Switching point	-49.8…500 °C	**Protection class**	III
Ambient temperature	-40…+80 °C	**Housing material**	stainless-steel/plastic, V2A (1.4305)
Storage temperature	-40…+80 °C	**Electrical connection**	connector, M12 x 1
Protective measure	SELV; PELV according to EN 50178	**Coupling nut wrench size**	30
Voltage drop at	2 V	**Vibration resistance**	20 g (9…2000 Hz), according to IEC 68-2-6
No-load current I_0	50 mA	**Shock resistance**	50 g (11 ms) g (11 ms) , according to IEC 61508
Switching frequency	180 Hz	**Mechanical connection**	G 1/2“

Types and data – selection table

Type	Operating voltage	Current output	Voltage output	Load	w	d
TS-400-2UPN8X-H1141	15…30 VDC	-	-	-	w101	d479
TS-400-LI2UPN8X-H1141	18…30 VDC	4…20 mA	-	0.5 kΩ	w102	d479
TS-400-LUUPN8X-H1141	18…30 VDC	-	0…10 V	-	w103	d479

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 776 ff

TS500 series fo Pt 100 probe (4-wire)

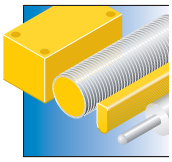


The TS500 processing units are rotatable by 320° and equipped with 4-digit 7-segment displays. A standard M12 x 1 plug connection at the rugged stainless steel housing enables the connection of a TP probe. The display indicates the temperature during normal operation and guides the operator through the programming menu. Depending on the sensor type, they are available with switching outputs or a combination of switching and analog outputs. IO-Link communication is integrated as a standard.

Features

- Sensor rotatable by 320°
- M12 x 1 plug connection for TP probes
- Housing, temperature and electrical connection are made of stainless steel
- Highest flexibility through modular system
- Programming protection through recessed pushbutton and keylock
- Permanent display of temperature (°C, °F, K, Ω)
- Storage of max/min values

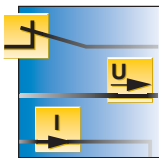
Properties



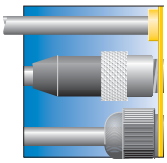
Design
Cylindrical, rotatable, with display



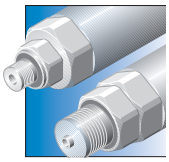
Measuring ranges
-50 …+500 °C



Electrical versions
IO-Link capable, dual-channel, switching, current or voltage output



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
G1/2“ male thread for bracket



Special features
Failsafe 3-key operation, VDMA menu guide (optional), IP67, fully encapsulated electronics

Rotatable Pt100 processing unit – Switching and analog outputs (U/I)



General data

Temperature operating range	-50…500 °C	**Short-circuit protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.2 K	**Reverse polarity protection**	yes
Repeatability	0.1 K	**Output function**	_⟍_/⊣⟍_ programmable, pnp/npn
Switching point accuracy	0.2 K	**Rated operational current**	0.2 A
Release points	-50…499.8 °C	**Protection class**	IP67
Switching point	-49.8…500 °C	**Protection class**	III
Ambient temperature	-40…+80 °C	**Housing material**	stainless-steel/plastic, V2A (1.4305)
Storage temperature	-40…+80 °C	**Electrical connection**	connector, M12 x 1
Protective measure	SELV; PELV according to EN 50178	**Coupling nut wrench size**	30
Voltage drop at	2 V	**Vibration resistance**	20 g (9…2000 Hz), according to IEC 68-2-6
No-load current I_0	50 mA	**Shock resistance**	50 g (11 ms) g (11 ms) , according to IEC 61508
Switching frequency	180 Hz	**Mechanical connection**	G 1/2“

Types and data – selection table

Type	Operating voltage	Current output	Voltage output	Load	w	d
TS-500-2UPN8X-H1141	15…30 VDC	-	-	-	w101	d480
TS-500-LI2UPN8X-H1141	18…30 VDC	4…20 mA	-	0.5 kΩ	w102	d480
TS-500-LUUPN8X-H1141	18…30 VDC	-	0…10 V	-	w103	d480

w Wiring diagrams on page 832 ff d Dimension drawing on page 842 ff a Accessories on page 776 ff

Hans Turck GmbH & Co. KG ▪ Tel. +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

Temperature sensors - TT/TC series



Flexible temperature transmitter and sensor

The sensors of the TT/TC series detect temperature with a Pt100 4-wire probe. Available are compact devices with integrated probe but also with standard M12 connector for separate probes. The temperature transmitters of the TT series feature an analog output 4…20 mA (2-wire).

The devices of the TC series instead feature a switching output. Depending on the combination of sensor and probe, temperatures between -50 °C and +500 °C can be detected. Customer specific modification of the temperature range is possible.

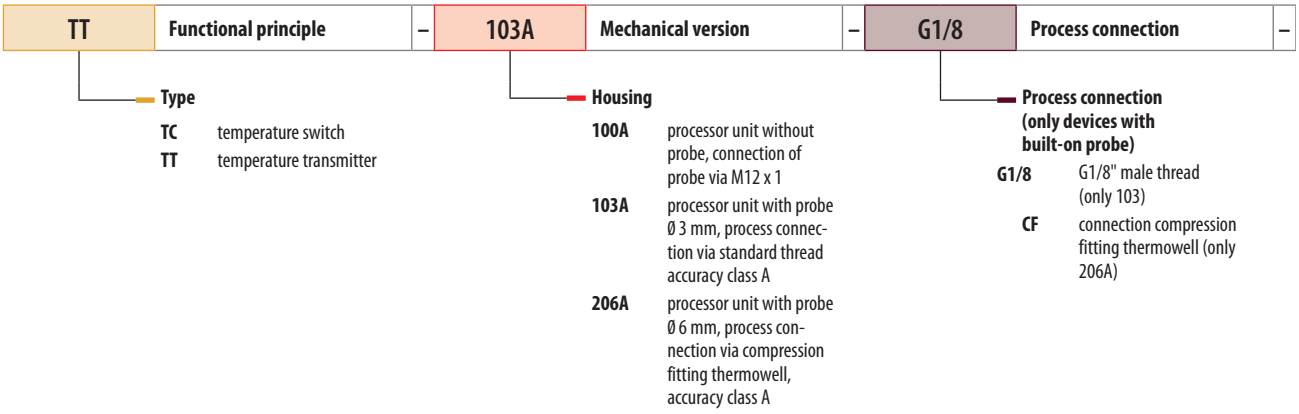


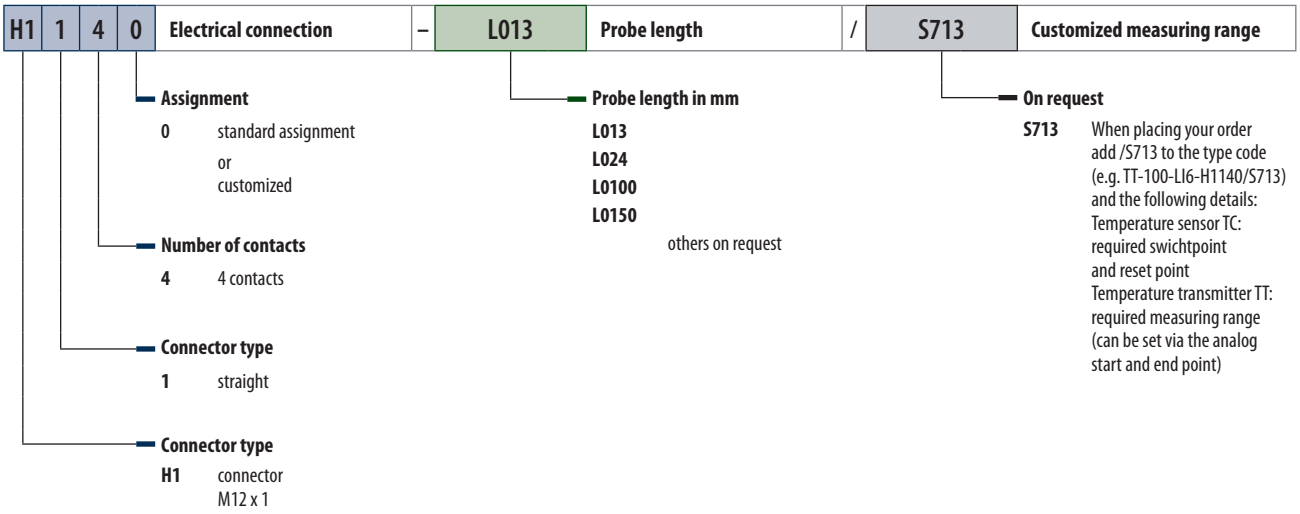
Cost-efficient transmitter solution

Temperature transmitters and switches of the TT/TC series are applied in places where transducers are not required and the customer needs highest flexibility regarding the choice of probe and thermowell:

- Temperature range between -50 °C and +500 °C
- Rugged stainless steel housing, IP67 protected
- Version with integrated probe or without probe
- Connection of separate probes via M12 connector
- Highest flexibility in choice of probe
- Further mounting aids are not required
- Analog output 4…20 mA (TT series) or switching output (TC series)

Type code


TT
Functional principle
–
103A
Mechanical version
–
G1/8
Process connection
–
Type
TC temperature switch
TT temperature transmitter
Housing
100A processor unit without probe, connection of probe via M12 x 1
103A processor unit with probe Ø 3 mm, process connection via standard thread accuracy class A
206A processor unit with probe Ø 6 mm, process connection via compression fitting thermowell, accuracy class A
Process connection (only devices with built-on probe)
G1/8 G1/8" male thread (only 103)
CF connection compression fitting thermowell (only 206A)


H1 1 4 0 Electrical connection
– L013 Probe length
/ S713 Customized measuring range
Assignment
0 standard assignment
or
customized
Number of contacts
4 4 contacts
Connector type
1 straight
Connector type
H1 connector
M12 x 1
Probe length in mm
L013
L024
L0100
L0150
others on request
On request
S713 When placing your order add /S713 to the type code (e.g. TT-100-LI6-H1140/S713) and the following details: Temperature sensor TC: required swichtpoint and reset point Temperature transmitter TT: required measuring range (can be set via the analog start and end point)

TT/ TC series – Temperature transmitters and switches



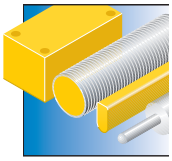
Devices of the TT and the TC series are available with or without probe. The types without probe take any Pt100 (4-wire) probe of the TP series.

The TT temperature transmitters are set to 0…+150 °C by default. The processed signal is provided via an analog current output, 4…20 mA (2-wire). The TC devices feature a switching output, switch and release point are set by default. Customized settings are available on request.

Features

- Operating range -50…+500 °C
- Customized settings
- Transmitters with analog current output 4…20 mA (2-wire), default temperature range 0…+150 °C
- Sensor with PNP output (NO), customized switch and release point

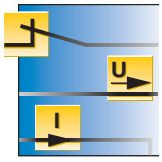
Properties



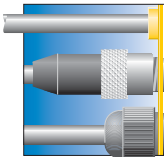
Design
Compact, cylindrical, Ø29 mm



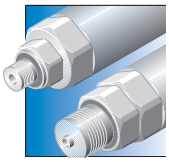
Measuring ranges
-50 …+500 °C



Electrical versions
Analog current output 4…20 mA (2-wire) or PNP switching output (NO)



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
Standard thread, compression fitting or thermowell, depending on the probe



Special features
Customized temperature range, many connection possibilities for the probe

Processing unit without probe – Current output (2-wire)



Type	TT-100-LI6-H1140	**Short-circuit protection**	yes
Temperature operating range	-50…500 °C	**Reverse polarity protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.1% of final value BSL	**Load**	1.2 kΩ
Ambient temperature	-40…+85 °C	**Protection class**	IP67
Storage temperature	-40…+85 °C	**Housing material**	stainless steel, V4A 1.4401 (AISI 316)
Measuring element	for connection to probes of the TP series	**Pressure resistance**	100 bar
Response time	dependent on connected temperature sensor	**Electrical connection**	connector, M12 x 1
Operating voltage	8…35 VDC	**Wiring diagram**	w104
No-load current I_0	20 mA	**Dimension drawing**	d481
Current output	4…20 mA		

Transmitter with compact probe Ø 3 mm – Current output (2-wire)



General data			
Temperature operating range	0…150 °C	**Short-circuit protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.1% of final value BSL	**Reverse polarity protection**	yes
Ambient temperature	-40…+85 °C	**Load**	1.2 kΩ
Storage temperature	-40…+85 °C	**Protection class**	IP67
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Housing material**	stainless steel, V4A 1.4401 (AISI 316)
Accuracy	Class A	**Sensor material**	stainless steel, AISI 316
Operating voltage	8…35 VDC	**Pressure resistance**	100 bar
No-load current I_0	20 mA	**Electrical connection**	connector, M12 x 1
Current output	4…20 mA	**Mechanical connection**	G1/8“ male thread

Types and data – selection table

Type	Immersion depth	w	d
TT-103A-G1/8-LI6-H1140-L013	13 mm	w104	d482
TT-103A-G1/8-LI6-H1140-L024	24 mm	w104	d483

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 776 ff

Transmitter with rod-shaped probe Ø 6 mm – Current output (2-wire)



General data

Temperature operating range	0…150 °C	**Short-circuit protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.1% of final value BSL	**Reverse polarity protection**	yes
Ambient temperature	-40…+85 °C	**Load**	1.2 kΩ
Storage temperature	-40…+85 °C	**Protection class**	IP67
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Housing material**	stainless steel, V4A 1.4401 (AISI 316)
Accuracy	Class A	**Sensor material**	stainless steel, AISI 316
Operating voltage	8…35 VDC	**Pressure resistance**	100 bar
No-load current I_0	20 mA	**Electrical connection**	connector, M12 x 1
Current output	4…20 mA	**Mechanical connection**	for compression ferrule fittings, protective tubing or direct mounting

Types and data – selection table

Type	Immersion depth	w	d
TT-206A-CF-LI6-H1140-L0100	100 mm	w104	d484
TT-206A-CF-LI6-H1140-L0150	150 mm	w104	d485

Processing unit without probe – Switching output



General data

Temperature operating range	-50…500 °C	**Operating voltage**	15…30 VDC
Accuracy (Lin. + Hys. + Rep.)	0.1% of final value BSL	**Short-circuit protection**	yes
Switching point accuracy	0.5 °C	**Reverse polarity protection**	yes
Switch point SP1	customized	**Output function**	_⌒‾_, PNP
Release point rP1	customized	**Rated operational current**	0.1 A
Ambient temperature	-40…+85 °C	**Protection class**	IP67
Storage temperature	-40…+85 °C	**Housing material**	stainless steel, V4A 1.4401 (AISI 316)
Measuring element	for connection to probes of the TP series	**Pressure resistance**	100 bar
Response time	dependent on connected temperature sensor	**Electrical connection**	connector, M12 x 1

Types and data – selection table

Type	w	d
TC-100-AP6-H1140	w105	d481
TC-100-AP6-H1140/S713	w105	d481

Transmitter with compact probe Ø 3 mm – Switching output



General data

Temperature operating range	0…150 °C	**Short-circuit protection**	yes
Accuracy (Lin. + Hys. + Rep.)	0.1% of final value BSL	**Reverse polarity protection**	yes
Switching point accuracy	0.5 °C	**Output function**	_⌒‾⌒_, PNP
Switch point SP1	customized	**Rated operational current**	0.1 A
Release point rP1	customized	**Protection class**	IP67
Ambient temperature	-40…+85 °C	**Housing material**	stainless steel, V4A 1.4401 (AISI 316)
Storage temperature	-40…+85 °C	**Sensor material**	stainless steel, AISI 316
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Pressure resistance**	100 bar
Accuracy	Class A	**Electrical connection**	connector, M12 x 1
Operating voltage	15…30 VDC	**Mechanical connection**	G1/8“ male thread

Types and data – selection table

Type	Immersion depth	w	d
TC-103A-G1/8-AP6-H1140-L013	13 mm	w105	d482
TC-103A-G1/8-AP6-H1140-L024	24 mm	w105	d483

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 776 ff

At a glance

Temperature probes- TP series



Highest possible flexibility

A temperature probe has to be flexible and robust. All Pt100 probes of the TP series are therefore mineral-insulated, equipped with a standard process connection and available ex-stock. Moreover TURCK Pt100 probes are provided in 4-wire technology. The power resistance is thus compensated and a possible influence on the measured value is avoided right from the start when using long cable connections between the probes and the processing units.



High operational safety

The mineral-insulated probes from TURCK are characterized by enormous flexibility and temperature resistance.

Further advantages:
- High accuracy
- Weldability (like a tube)
- Longevity even under extreme conditions (jacked cables oxidize only on one side and thus achieve double life cycles compared to tubes with the same wall thickness)

Type code

TP	Functional principle	–	103A	Mechanical version	–	G1/8	Process connection	–

Type

TP temperature probe

Housing

103A processor unit with probe Ø 3 mm, process connection via standard thread accuracy class A

104A process connection for food applications, probe Ø 4 mm, accuracy class A

203A for compression fitting/ thermowell mounting probe Ø 3 mm, accuracy class A

206A for compression fitting/ thermowell mounting probe Ø 6 mm,

306A cable probe Ø 6 mm

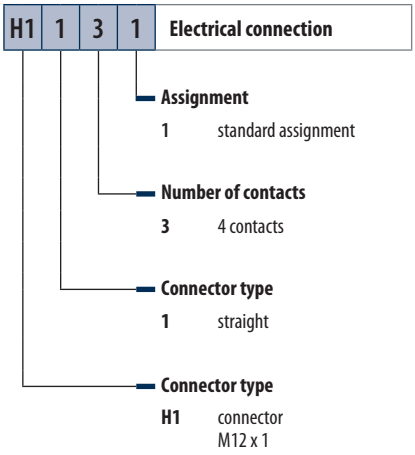
Process connection (only devices with built-on probe)

DN25 DN25 für milk pipe connection DIN 11851

CF connection via compression fitting or thermowell

G1/8 G1/8" male thread

TRI3/4 3/4" Tri-Clamp


H1 1 3 1
Electrical connection
Assignment
1 standard assignment
Number of contacts
3 4 contacts
Connector type
1 straight
Connector type
H1 connector M12 x 1

Pt100 temperature probe in 4-wire technology



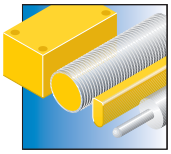
The core element of the TP series is a Pt 100 measuring resistor in 4-wire technology. All probes feature a standard M12 x 1 plug connection.

Resistance thermometers are used in places where temperatures must be detected and monitored to control and optimize processes. Typical applications are process plants, manufacturing facilities and units as well as air-conditioning systems.

Features

- Pt100 probe acc. to DIN EN 60751
- Vibration and shock proof
- class A for temp. < 350 °C
- class B for temp. > 350 °C
- Connection to TS, TT and TC series as well as to IM34, BL20 and BL67

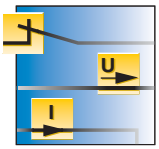
Properties



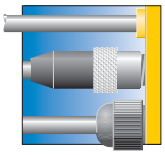
Design
All types with standard process connection, lengths, Ø 3/6 mm, freely selectable



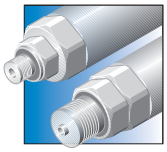
Measuring ranges
-50…+500 °C



Electrical versions
Pt100 4-wire, other types on request



Electrical connections
4-pole M12 x 1 plug connection



Mechanical connections
Depending on the probe, standard thread, compression fitting or thermowell



Special features
Mineral insulated probe, IP68

Compact probe – Ø 3 mm – Process connection



General data

Temperature operating range	-50…120 °C	**Housing material**	stainless-steel/plastic, V4A (1.4404)
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Sensor material**	stainless steel, AISI 316L
Accuracy	class A	**Pressure resistance**	100 bar
Response time	t0.5 = 1.5 s/ t0.9 = 6.0 s in water @ 0.2 m/s	**Electrical connection**	connector, M12 x 1
Reverse polarity protection	yes	**Mechanical connection**	G1/8“ male thread
Protection class	IP67		

Types and data – selection table

Type	Immersion depth	w	d
TP-103A-G1/8-H1141-L013	13 mm	w106	d486
TP-103A-G1/8-H1141-L024	24 mm	w106	d487

Standard rod-shaped probe – Ø 3 mm



General data

Temperature operating range	-50…500 °C	**Protection class**	IP67
Storage temperature	-40…+85 °C	**Housing material**	stainless-steel/plastic, V4A (1.4404)
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Sensor material**	stainless steel, AISI 316L
Accuracy	class A	**Pressure resistance**	100 bar
Response time	t0.5 = 1.5 s/ t0.9 = 6.0 s in water @ 0.2 m/s	**Electrical connection**	connector, M12 x 1
Reverse polarity protection	yes	**Mechanical connection**	for compression ferrule fittings, protective tubing or direct mounting

Types and data – selection table

Type	Immersion depth	w	d
TP-203A-CF-H1141-L100	100 mm	w106	d488
TP-203A-CF-H1141-L150	150 mm	w106	d489
TP-203A-CF-H1141-L250	250 mm	w106	d490
TP-203A-CF-H1141-L200	200 mm	w106	d489
TP-203A-CF-H1141-L300	300 mm	w106	d491

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 776 ff

Standard rod-shaped probe – Ø 6 mm



General data

Temperature operating range	-50…500 °C	**Protection class**	IP67
Storage temperature	-40…+85 °C	**Housing material**	stainless-steel/plastic, V4A (1.4404)
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Sensor material**	stainless steel, AISI 316L
Accuracy	class A	**Pressure resistance**	100 bar
Response time	t0.5 = 6 s/ t0.9 = 15 s in water @ 0.2 m/s	**Electrical connection**	connector, M12 x 1
Reverse polarity protection	yes	**Mechanical connection**	for compression ferrule fittings, protective tubing or direct mounting

Types and data – selection table

Type	Immersion depth	w	d
TP-206A-CF-H1141-L100	100 mm	w106	d492
TP-206A-CF-H1141-L150	150 mm	w106	d493
TP-206A-CF-H1141-L200	200 mm	w106	d494
TP-206A-CF-H1141-L300	300 mm	w106	d495

Cable probe – Ø 6 mm



General data

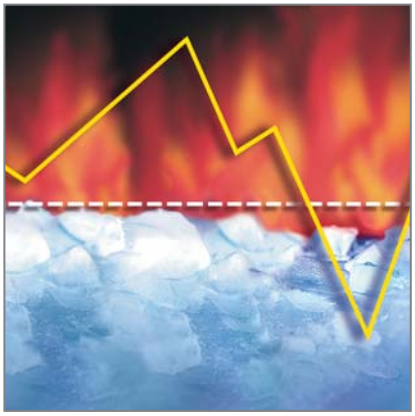
Temperature operating range	-50…105 °C	**Housing material**	stainless steel, V2A (1.4301)
Measuring element	Pt-100 platinum measuring element, DIN EN 60 751	**Sensor material**	rubber, TPE
Accuracy	class A	**Pressure resistance**	15 bar
Response time	t0.5 = 8 s/ t0.9 = 20 s in water @ 0.2 m/s	**Electrical connection**	connector, M12 x 1
Reverse polarity protection	yes	**Mechanical connection**	for compression ferrule fittings, protective tubing or direct mounting
Protection class	IP68		

Types and data – selection table

Type	Immersion depth	w	d
TP-306A-CF-H1141-L1000	1000 mm	w106	d496
TP-306A-CF-H1141-L5000	5000 mm	w106	d497

w Wiring diagrams on page 832 ff
d Dimension drawing on page 842 ff
a Accessories on page 776 ff

Temperature sensors - M18T series



Resistant infrared sensors

Infrared sensors of the M18T series detect heat contactless in a range between 0…+300 °C. The sensors operate as receivers and the objects are the heat emitting sources. The thermal radiation of an object, between 8 and 14 µm, is transformed into an electrical signal by a thermopile and then converted into an output signal.

No matter which device you use, the switchpoint as well as the measuring range are easily taught.



Non-contact detection of temperature

The rugged MT18 infrared sensors monitor hot objects such as bakery products, metals or bottles. They also monitor flame brazing, blasting or straightening processes and also hot glueing applied in packaging stations, book binding and product assembly.

- Temperature range 0…+300 °C
- Versions with analog output 0…10 V or switching output
- Easy teaching of measuring range or swichtpoint.
- Compact and rugged stainless steel housing for harsh environments

Infrared sensors M18T



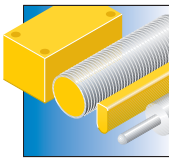
The sensors of the M18T series are essentially passive receivers and operate contactless. The thermal radiation of an object between 8 and 14 µm is transformed into an electrical signal in a thermopile and then converted into an output signal. The distance-spot ratio D:S, specifying the spot size at a defined distance is important in this context. To monitor the surface temperature of the object optimally, this field should be covered completely by the object.

Available are devices with switching output (NO/ PNP) or with analog voltage output 0…10 V. Easy teaching of measuring range or swichtpoint.

Features

- Temperature range 0…+300 °C
- DS-ratio 6:1, 8:1 and 14:1
- Teaching via pushbutton or cable
- Switching PNP/NPN or analog output 0…10 V
- Version with analog output: PNP-alarm output signals end of measuring range at 10 V
- 2 m connection cable or M12 x 1 plug connection

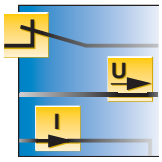
Properties



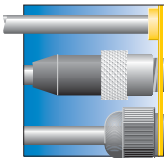
Design
Threaded barrel M18 x 1, stainless steel V2A, length 81.2 … 96.6 mm



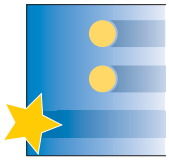
Measuring ranges
Detection of temperature changes between 0 …+ 300 °C



Electrical versions
5-wire DC with switching output (PNP/NO) or analog voltage output 0…10 V



Electrical connections
Connection cable 2 m (5 x 0.5 mm²) or 5-pole M12 x 1 plug connection



Special features
Sensors for different object sizes, spots and distances; distance-spot ration (D:S) 6:1, 8:1, 14:1

M18T – Switching output



General data

Temperature operating range	0…300 °C	**Reverse polarity protection**	yes
Switching point accuracy	0.5 °C	**Output function**	⎯⏥⎯, pnp/npn
Operating voltage	10…30 VDC	**Protection class**	IP67
Switching frequency	20 Hz	**Housing material**	stainless steel, V2A (1.4301)
Short-circuit protection	yes / cyclic		

Types and data – selection table

Type	Electrical connection	Cable quality	Cable cross section	w	d	e
M18TB6E	cable	PVC, 2 m	5 x 0.5 mm²	w107	d498	e096
M18TB6EQ	connector, M12 x 1	-	-	w107	d499	e096
M18TB8	cable	PVC, 2 m	5 x 0.5 mm²	w107	d500	e097
M18TB8Q	connector, M12 x 1	-	-	w107	d501	e097
M18TB14	cable	PVC, 2 m	5 x 0.5 mm²	w107	d502	e098
M18TB14Q	connector, M12 x 1	-	-	w107	d503	e098

M18T – Analog voltage output



General data

Temperature operating range	0…300 °C	**Short-circuit protection**	yes / cyclic
Switching point accuracy	0.5 °C	**Reverse polarity protection**	yes
Operating voltage	10…30 VDC	**Output function**	⎯⏥⎯, PNP/analog output
Switching frequency	20 Hz	**Protection class**	IP67
Voltage output	0…10 V	**Housing material**	stainless steel, V2A (1.4301)

Types and data – selection table

Type	Electrical connection	Cable quality	Cable cross section	w	d	e
M18TUP8	cable	PVC, 2 m	5 x 0.5 mm²	w107	d500	e097
M18TUP8Q	connector, M12 x 1	-	-	w107	d501	e097
M18TUP6E	cable	PVC, 2 m	5 x 0.5 mm²	w107	d498	e096
M18TUP6EQ	connector, M12 x 1	-	-	w107	d499	e096
M18TUP14	cable	PVC, 2 m	5 x 0.5 mm²	w107	d502	e098
M18TUP14Q	connector, M12 x 1	-	-	w107	d503	e098

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff e Excess gain curves on page 922 ff

At a glance
Flow sensors



Flow sensors – Monitoring of limit values and flow patterns

Flow sensors are applied in automated manufacturing to detect deviating flow speeds of gases and liquids quickly and reliably. They monitor coolant circuits, run-dry protection of pumps or control the flow of exhaust air ducts and air conditioning systems.

Flow sensors are not applied to perform precise measurements but to monitor limit values and flow patterns. In other words, the increase or decrease of flow speed. In this context, high repeatability is the most important feature.

The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored.

TURCK insertion flow sensors operate on the thermo-dynamic principle: The flow speed is determined from thermal energy dissipated by a probe. The dissipated heat quantity serves as a measure for the flow speed.

TURCK flow sensors are available as compact devices with integrated signal processor or as insertion or inline sensor with separate processing unit. Sensor and housing are available in different materials and with different connectivity. The connection technology is made for many different industrial application conditions.

- Standard sensors for factory automation
- Sensors for high temperatures and pressures
- Sensors for the food and pharmaceutical industries
- Chemical-resistant sensors
- Sensors for the Ex area
- Flow sensors for the control of gaseous media

Our strengths...



Monitoring of flow speeds and patterns

Flow monitoring of media plays an important role in many applications of factory and process automation. Cooling circuits, run-dry protection of pumps or the flow control of exhaust air ducts and air conditioning systems are typical applications. Electronic flow sensors are increasingly applied to detect critical changes in flow and to signal them to a control unit.



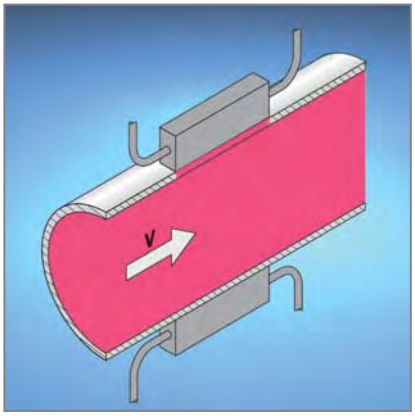
High repeatability

Flow sensors are mainly applied to control flow speeds. Precise and expensive measurement is not the aim but rather the control of limit values. High repeatability is therefore the most important feature. The sensors not only detect limit values of flows but also flow patterns. That is, the increase or decrease of flow speed. The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored.



High performance in a compact housing

A great variety of types are available, such as insertion and inline flow sensors as well as compact sensors and sensors with downstreamed electronics. They are easily integrated in existing line configurations and are space saving alternatives for new constructions. In addition, coolant circuits and temperature cycles but also dosage intervals such as applied in water purification systems are precisely monitored. Limit value monitoring as well as analog linearized switching outputs are available for these tasks.



Calorimetric flow sensors

Calorimetric flow sensors work on the thermodynamic principle and are applied to monitor flow speeds of liquids and gases. Depending on the type, they also measure the media temperature. Short response times within seconds and stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for flow rate monitoring in coolant circuits.



Different designs and versions

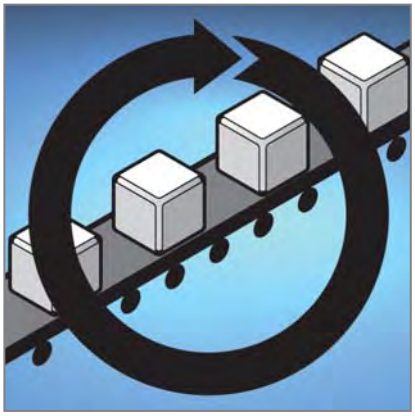
You can choose between insertion and inline flow sensors as well as between compact devices and sensors with downstreamed electronic evaluation system. All sensors are easily integrated in existing line configurations and are space saving alternatives for new constructions. In addition, coolant circuits and temperature cycles but also dosage intervals such as applied in water purification systems are precisely monitored. Limit value and analog switching outputs are available for these tasks.



The right solution for complex applications

Depending on the application, a broad range of different flow sensors is required. TURCK offers them in different material qualities, for liquid as well as for gaseous media. The product portfolio also comprises flow sensors for the Ex-area, extremely chemical-resistant versions, high-temperature and pressure-resistant versions as well as sensors for the pharmaceutical and food industries.

Your advantages...



High system availability

Especially in rough environments of factory and process automation, flow meters proof their outstanding reliability. This is guaranteed through excellent EMC properties as well as protection class IP67. A practical housing, durable mounting aids and a well readable LED chain are the main features considered in the design. Flow meters thus withstand the special ambient conditions of many applications easily. Use these benefits to optimize your production processes.



Maximum freedom

Maximum planning freedom is provided with just a few device types in combination with numerous connection possibilities and many different mounting aids. From polling of single switchpoints over analog output signals to a well readable display, even from a long distanc: Profit from the extensive standard product range of TURCK flow meters providing more flexibility to your application.



User-friendly operation

The compact flow sensors feature user-friendly potentiometers at the front for comfortable adjustment of the switchpoint. The LED chain indicates the current flow state.

Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264



Easy mounting

Unlike insertion sensors, inline types are installed in pipes. The pipe may be connected directly via cutting ring or a matching adapter. With insert nuts at the bottom the sensor can be mounted to a baseplate. Alternatively, the baseplate can be screwed to the housing to enable front mounting of the sensor.



Many different output signals

For further processing of output signals via control system, the flow sensors provide a standard PNP switching and a relay output as well as an analog 4…20 mA output. Parameters such as switchpoint, temperature, start and end value are adjusted with a potentiometer at sensors with analog output signal.



Optimal servicability

Thanks to flexible mounting options, the user-friendly operation and adjustment, the well legible 3-digit 7-segment display and last but not least, the excellent repeatability, flow sensors offer calculable advantages.

For special applications



Sensors for gaseous media

TURCK offers special versions for monitoring gaseous media which are especially adjusted to the low thermal conductivity of gases. They are typically applied in air conditioning and ventilation systems, filling and coating lines as well as in motor ventilation and cabinets.



Sensors for the Ex area

Flow sensors for areas exposed to gas and dust-explosion hazards are ATEX approved and can only be operated in combination with approved external signal processors [Ex ia]. Inline sensors are available for Ex zone 1 and Ex zone 0 and mounted with a T-piece or a weld-on adapter. The inline sensors for Ex zone 1 are mounted directly in pipes with cutting ring screws, ensuring a tight and pressure resistant connection.



Chemical-resistant sensors

Stainless steel 1.4571 is often not resistant enough for aggressive media. Depending on the application, chemical resistant materials such as PTFE and PVDF (Dyflor), stainless steel alloy (Hastelloy) or titanium are used. These materials are highly resistant to many chemicals.



Sensors for high temperatures and pressures

More and more applications require sensors that withstand temperatures outside the standard range. We offer sensors for extreme ambient temperatures of up to +120 °C and operating pressures of up to 500 bar. They are typically applied in production lines and withstand rinsing with hot cleaning liquids or in plastics processing machines. These sensors are identified by D090 or D100 in the type code for high-temperature applications and D500 for high-pressure applications.



Sensors for the food and pharmaceutical industry

The mechanics and electronics have to fullfill special requirements of the food and pharmaceutical industry. Food-safe connections such as Tri-Clamp or dairy screw connections (DIN11851) are conform to the 3A sanitary standard. The standard cleaning cycles CIP and SIP with rapid temperature changes impose severe strain on the electronics and thus require special protective measures. For this reason the sensors are made of special steel 1.4404 and 1.4435. Customized connections such as GEA-Varivent or APV flanges are available as well as other metal based materials.

Type code

FCS	Functional principle	–	G1/2	A4	Design	–

Series flow sensors

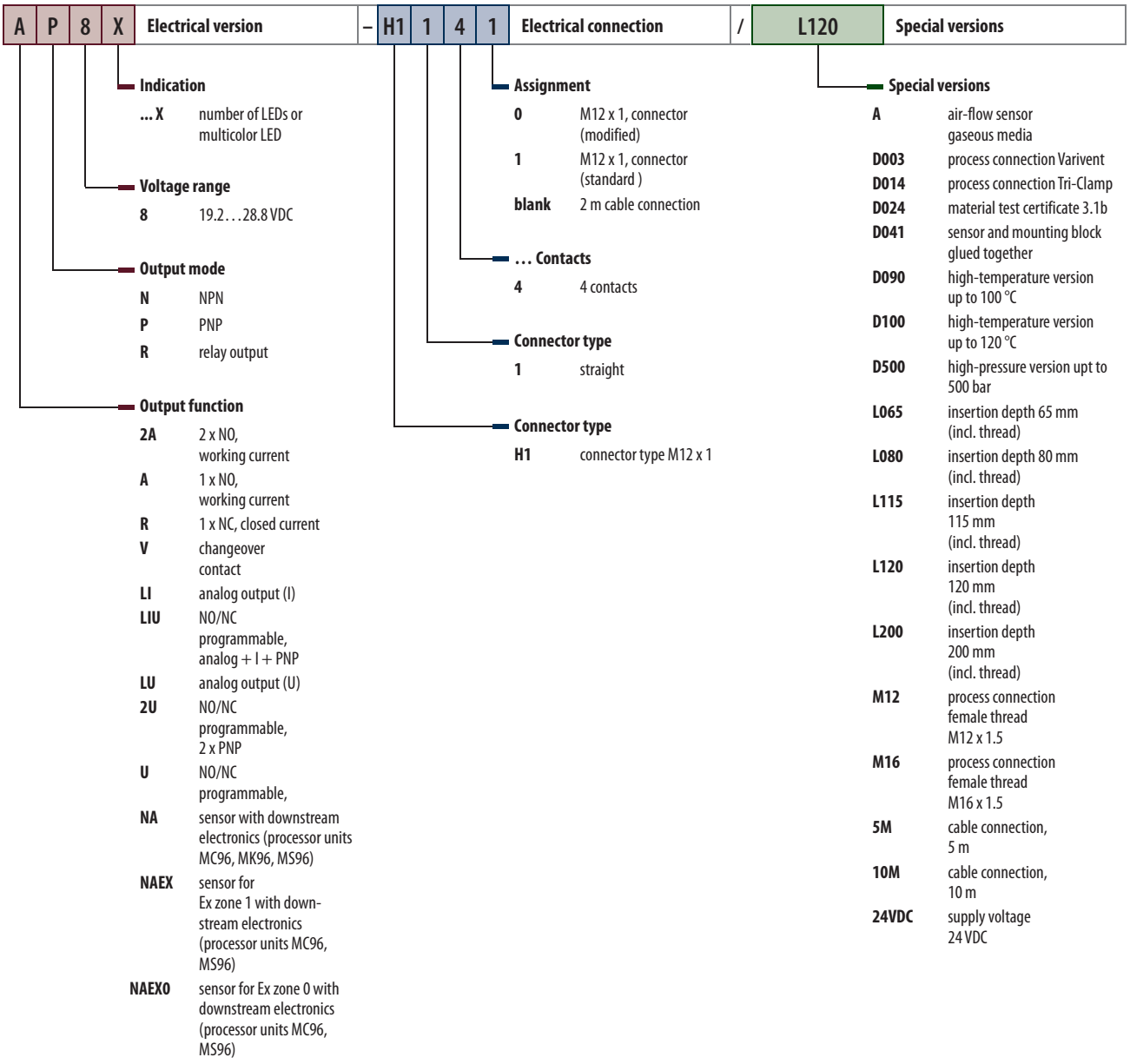
FCI	calorimetric, inline
FCS	calorimetric, insertion

Mechanical connection

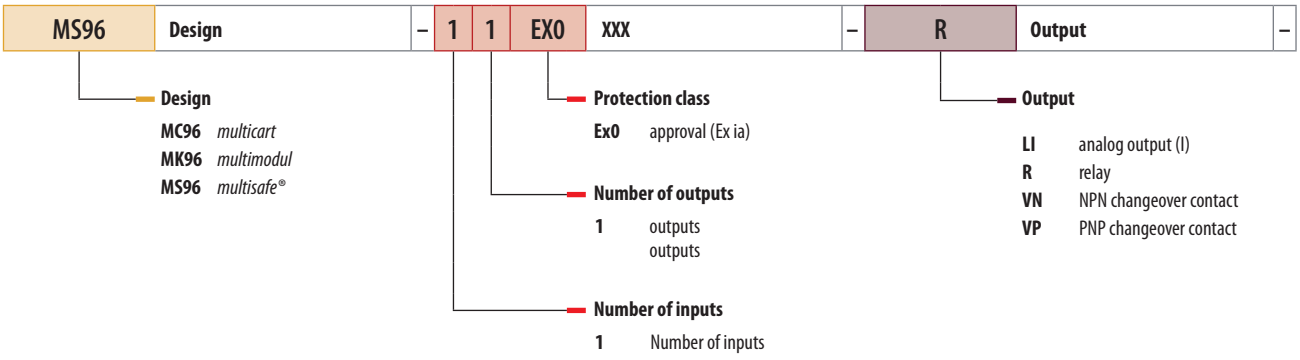
50	Tri-Clamp, Ø 50.5 mm
68	Varivent, Ø 68 mm
10D08	compression fittings for smooth barrel, outer Ø 10 mm
34D10	Tri-Clamp, Ø 34 mm (FCI with barrel Ø 10 mm)
D03	gland, 4 mm barrel Ø
D03	gland, 4 mm barrel Ø
D04	male thread G1/4", 4 mm barrel Ø
D06	female thread G1/4", 6 mm barrel Ø
D09	female thread, 9 mm barrel Ø
D15	male thread G1/2", 15 mm barrel Ø
D20	male thread G3/4", 19 mm barrel Ø
DN25	flange DN25/PN40 or Tri-Clamp DN25
G1/4	thread G1/4",
G1/2	thread G1/2",
GL1/2	thread G1/2", long
GL3/4	thread G3/4", long
K20	smooth barrel Ø 20 mm
M18	threaded barrel M18 x 1
N1/2	thread 1/2 NPT
N3/4	thread 3/4 NPT
TCD04	gland, Ø 4 mm, inline sensor with 3.6 mm barrel Ø

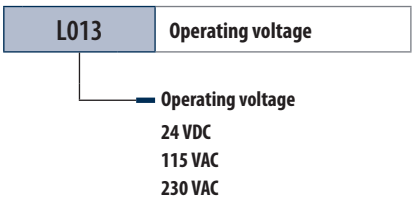
Materials

A4	stainless steel A4 (1.4404 or 1.4571)
A4P	sensor stainless steel A4 (1.4404 or 1.4571), housing plastic,
CT	ceramics/PTFE
DY	PVDF (Dyflor)
HA2P	sensor stainless steel A2 (1.4305), housing plastic with coupling nut
HB2	Hastelloy B2 (2.4617)
HC22	Hastelloy C22 (2.4603)
HC4	Hastelloy C4 (2.4610)
P	plastic housing
T	PTFE
TN	titanium alloy (3.7235)


A P 8 X Electrical version
– H1 1 4 1 Electrical connection
/ L120 Special versions
Indication
... X number of LEDs or multicolor LED
Voltage range
8 19.2...28.8 VDC
Output mode
N NPN
P PNP
R relay output
Output function
2A 2 x NO, working current
A 1 x NO, working current
R 1 x NC, closed current
V changeover contact
LI analog output (I)
LIU NO/NC programmable, analog + I + PNP
LU analog output (U)
2U NO/NC programmable, 2 x PNP
U NO/NC programmable,
NA sensor with downstream electronics (processor units MC96, MK96, MS96)
NAEX sensor for Ex zone 1 with downstream electronics (processor units MC96, MS96)
NAEX0 sensor for Ex zone 0 with downstream electronics (processor units MC96, MS96)
Connector type
H1 connector type M12 x 1
Connector type
1 straight
... Contacts
4 4 contacts
Assignment
0 M12 x 1, connector (modified)
1 M12 x 1, connector (standard)
blank 2 m cable connection
Special versions
A air-flow sensor gaseous media
D003 process connection Varivent
D014 process connection Tri-Clamp
D024 material test certificate 3.1b
D041 sensor and mounting block glued together
D090 high-temperature version up to 100 °C
D100 high-temperature version up to 120 °C
D500 high-pressure version upt to 500 bar
L065 insertion depth 65 mm (incl. thread)
L080 insertion depth 80 mm (incl. thread)
L115 insertion depth 115 mm (incl. thread)
L120 insertion depth 120 mm (incl. thread)
L200 insertion depth 200 mm (incl. thread)
M12 process connection female thread M12 x 1.5
M16 process connection female thread M16 x 1.5
5M cable connection, 5 m
10M cable connection, 10 m
24VDC supply voltage 24 VDC

Type code


MS96
Design
–
1
1
EX0
XXX
–
R
Output
–
Design
MC96 multicart
MK96 multimodul
MS96 multisafe®
Protection class
Ex0 approval (Ex ia)
Number of outputs
1 outputs
outputs
Number of inputs
1 Number of inputs
Output
LI analog output (I)
R relay
VN NPN changeover contact
VP PNP changeover contact


L013
Operating voltage
Operating voltage
24 VDC
115 VAC
230 VAC

Designs and variants

	Page 590	Page 594	Page 598	Page 604
				
	Liquids – Insertion – Compact	**Liquids – Insertion – Compact**	**Liquids – Insertion**	**Liquids – Inline – Compact**
Medium	liquids	liquids	liquids	liquids
Operating range water	3…300 cm/s 2…100 cm/s	3…300 cm/s	3…300 cm/s 2…100 cm/s	4…30 l/min 3…20 l/min 0,1…6 l/min 0,02…3 l/min 0,01…1 l/min 0,001…0,2 l/min
Oil operating range	1…150 cm/s 1…70 cm/s	1…150 cm/s	1…150 cm/s 1…70 cm/s	
Operating range water				
Flow operating range				
Mechanical connection	G 1/4“ G 1/2“ G 1/2“ length NPT 1/2“ Varivent Tri-Clamp 1 1/2“	G 1/4“ G 1/2“ G 1/2“ length NPT 1/2“	NPT 1/2“ G 1/4“ G 1/2“ G 1/2“ length G 3/4“ NPT 3/4“ threaded tube connection per DIN11851 Tri-Clamp 1 1/2“ Varivent	G 3/4“ G 1/2“ G 1/4“ G 1/4“ female thread Tri-Clamp DN 10 tube 4 mm
Medium temperature	-20…80 °C -10…80 °C	-20…80 °C	-20…80 °C -10…70 °C 10…120 °C	-20…80 °C 0…60 °C -20…60 °C
Sensor quality	AISI 316Ti PVDF AISI 316L	AISI 316Ti	AISI 316Ti PTFE AISI 316L	AISI 316Ti Al_2O_3/PTFE AISI 316L
Pressure resistance	5 bar 10 bar 100 bar	100 bar	5 bar 10 bar 100 bar	1 bar 5 bar 20 bar
Housing material	stainless steel plastic	plastic	stainless steel plastic	plastic

	Page 608	Page 610	Page 612	Page 614
				
	Liquids – Inline	**Gases – Insertion – Compact**	**Gases – Insertion**	**Gases – Inline – Compact**
Medium	liquids	air	air	air
Air operating range		0.5…30 m/s	0.5…30 m/s	0.5…40 m/s
Oil operating range	15…300 ml/min 90…1800 ml/min			
Flow operating range	0,005…0,15 l/min 0,03…0,9 l/min			
Mechanical connection	M12 x 1.5 M16 x 1,5	G 1“ female thread per DIN 3852 G 1/2“ length	G 1/2“ length	G 1/4“
Medium temperature	-20…80 °C	-20…80 °C	10…120 °C -20…80 °C	-20…80 °C
Sensor quality	AISI 316Ti	AISI 303	AISI 303	AISI 316Ti
Ex approval acc. to conformity certificate				
Pressure resistance	10 bar 16 bar	3 bar 30 bar	30 bar	20 bar
Housing material	stainless steel	plastic	stainless steel	plastic

Designs and variants

	Page 616	Page 620	Page 622	Page 624
				
	Liquids – Insertion – Ex zone 1	**Liquids – Inline – Ex zone 1**	**Gases – Insertion – Ex zone 1**	**Liquids – Insertion – Ex zone 0**
Medium	liquids	liquids	air	liquids
Air operating range			2…20 m/s	
Oil operating range	3…200 cm/s			3…200 cm/s
Oil operating range		25…300 ml/min 150…1800 ml/min		
Operating range water	1…100 cm/s			1…100 cm/s
Flow operating range		0,01…0,15 l/min 0,05…0,9 l/min		
Mechanical connection	G 1/4“ G 1/2“ NPT 1/2“ G 1/2“ length	M12 x 1.5 M16 x 1,5	G 1/2“ length	G 3/4“ G 1/4“ G 1/2“
Medium temperature	-20…85 °C	-20…70 °C	-20…85 °C	-20…60 °C
Sensor quality	AISI 316Ti	AISI 316Ti	AISI 316Ti	AISI 316Ti
Ex approval acc. to conformity certificate	TÜV 99 ATEX 1518	TÜV 96 ATEX 1101	TÜV 99 ATEX 1518	TÜV 99 ATEX 1517X
Pressure resistance	60 bar	6 bar	10 bar	60 bar
Housing material	stainless steel	stainless steel	stainless steel	stainless steel

Page 628



	Gases – Insertion – Ex zone 0
Medium	air
Air operating range	2…20 m/s
Mechanical connection	G 1/2" length
Medium temperature	-20…60 °C
Sensor quality	AISI 316Ti
Ex approval acc. to conformity certificate	TÜV 99 ATEX 1517X
Pressure resistance	10 bar
Housing material	stainless steel

Designs and variants

	Page 631	Page 631, 635	Page 632, 635
			
	MK96	**MS96**	**MC96**
Design	terminal chambers	terminal chambers	Eurocard
Protection type		[Ex ia] IIC [Ex ib] IIC	[Ex ia] IIC [Ex ib] IIC
Output function	4 … 20 mA, analog output , NPN , PNP , relay output	, relay output	, relay output
Design	terminal chambers	terminal chambers	Eurocard
Protection class	IP20	IP20	IP20
Local admissible ambient temperature	-20…+60 °C	-20…+60 °C	-20…+60 °C -20…+40 °C

Compact insertion devices for liquid media – stainless steel

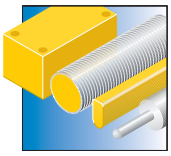


The compact devices incorporate sensor and signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

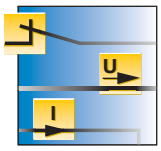
Features

- Insertion flow sensor in a stainless steel housing
- Sensor and signal processor enclosed in the housing
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1…300 cm/s
- Switchpoint freely adjustable within the operating range
- LED chain for status indication
- Transistor or relay output
- Chemical-resistant materials
- Pressure-resistant up to 100 bar

Properties



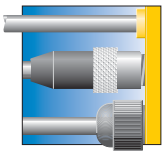
Design
Compact insertion flow sensors, for all pipe diameters of DN20 and larger



Electrical versions
PNP/NPN transistor output or relay output (NO)



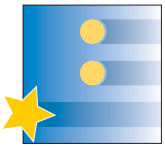
Monitoring range
Adjustable to flow speeds between 1…300 cm/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Housing and sensor material stainless steel 1.4571 (A4)



Special features
Switchpoint adjusted via potentiometer, LED chain for status indication

G1/4“ – stainless steel A4 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Sensor quality**	AISI 316Ti
Medium	liquids	**Housing quality**	V4A (1.4571)
Oil operating range	3…300 cm/s	**Mechanical connection**	G 1/4“
Operating range water	1…150 cm/s	**Electrical connection**	connector, M12 x 1
Medium temperature	-20…80 °C	**Pressure resistance**	100 bar

Types and data – selection table

Type	Output function	w	d
FCS-G1/4A4-AP8X-H1141	_⎍_, PNP	w108	d504
FCS-G1/4A4-ARX-H1140	_⎍_, relay output	w109	d504

G1/2“ – stainless steel A4 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Sensor quality**	AISI 316Ti
Medium	liquids	**Housing quality**	V4A (1.4571)
Oil operating range	3…300 cm/s	**Mechanical connection**	G 1/2“
Operating range water	1…150 cm/s	**Electrical connection**	connector, M12 x 1
Medium temperature	-20…80 °C	**Pressure resistance**	100 bar

Types and data – selection table

Type	Output function	w	d
FCS-G1/2A4-AP8X-H1141	_⎍_, PNP	w108	d505
FCS-G1/2A4-AN8X-H1141	_⎍_, NPN	w110	d505

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

G1/2“ – Dyflor – M12 x 1 plug connection



Type	FCS-G1/2DY-AP8X-H1141	**Sensor quality**	PVDF
Operating voltage	21…26 VDC	**Housing quality**	PVDF
Medium	liquids	**Mechanical connection**	G 1/2“
Oil operating range	2…100 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…70 cm/s	**Pressure resistance**	5 bar
Medium temperature	-10…80 °C	**Wiring diagram**	w108
Output function	_⌒_, PNP	**Dimension drawing**	d505

G1/2“ – Dyflor – Cable connection



Type	FCS-G1/2DY-AP8X	**Sensor quality**	PVDF
Operating voltage	21…26 VDC	**Housing quality**	PVDF
Medium	liquids	**Mechanical connection**	G 1/2“
Oil operating range	2…100 cm/s	**Electrical connection**	cable
Operating range water	1…70 cm/s	**Pressure resistance**	5 bar
Medium temperature	-10…80 °C	**Wiring diagram**	w111
Output function	_⌒_, PNP	**Dimension drawing**	d506

GL1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	G 1/2“ length
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	_⌒_, PNP	**Dimension drawing**	d507

N1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-N1/2A4-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	NPT 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	_⌒‾, PNP	**Dimension drawing**	d508

Varivent – stainless steel A4 – M12 x 1 plug connection



Type	FCS-68A4-AP8X-H1141/D003	**Sensor quality**	AISI 316L
Operating voltage	21…26 VDC	**Housing quality**	V4A (1.4404)
Medium	liquids	**Mechanical connection**	Varivent
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	10 bar
Medium temperature	0…80 °C	**Wiring diagram**	w108
Output function	_⌒‾, PNP	**Dimension drawing**	d509

1 1/2“ TriClamp – stainless steel A4 – M12 x 1 plug connection



Type	FCS-50A4-AP8X-H1141/D014	**Sensor quality**	AISI 316L
Operating voltage	21…26 VDC	**Housing quality**	V4A (1.4404)
Medium	liquids	**Mechanical connection**	Tri-Clamp 1 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	10 bar
Medium temperature	0…80 °C	**Wiring diagram**	w108
Output function	_⌒‾, PNP	**Dimension drawing**	d510

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Compact insertion devices for liquid media – plastic

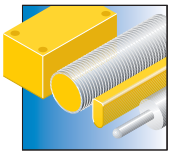


The compact devices incorporate sensor and signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

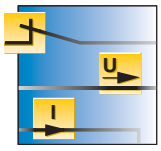
Features

- Insertion flow sensor in a plastic housing
- Sensor and signal processor enclosed in the housing
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1…300 cm/s
- Switchpoint freely adjustable within the operating range
- LED chain for status indication
- Transistor or relay output
- Chemical-resistant materials
- Pressure-resistant up to 100 bar

Properties



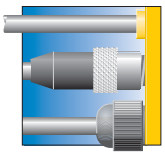
Design
Compact insertion flow sensor, for pipe diameters of DN20 and larger



Electrical versions
PNP/NPN transistor output or relay output (change-over)



Monitoring range
Adjustable to flow speeds in a range between 1…300 cm/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
plastic housing, sensor material stainless steel 1.4571 (A4)



Special features
Switchpoint adjusted via potentiometer, LED chain for status indication

G1/4“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/4A4P-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	G 1/4“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	_⌒_, PNP	**Dimension drawing**	d511

G1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/2A4P-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	G 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	_⌒_, PNP	**Dimension drawing**	d512

G1/2“ – stainless steel A4 – Cable connection



General data

Medium	liquids	**Housing quality**	PBT
Oil operating range	3…300 cm/s	**Mechanical connection**	G 1/2“
Operating range water	1…150 cm/s	**Electrical connection**	cable
Medium temperature	-20…80 °C	**Pressure resistance**	100 bar
Sensor quality	AISI 316Ti		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Types and data – selection table

Type	Operating voltage	Output function	w	d
FCS-G1/2A4P-VRX/24VDC	19.2…28.8 VDC	, relay output	w112	d513
FCS-G1/2A4P-AP8X/D092 1.5M	21…26 VDC	, NPN	w110	d514

GL1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4P-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	G 1/2“ length
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	, PNP	**Dimension drawing**	d515

GL1/2“ – stainless steel A4 – Cable connection



Type	FCS-GL1/2A4P-VRX/230VAC	**Sensor quality**	AISI 316Ti
Operating voltage	195…264 VAC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	G 1/2“ length
Oil operating range	3…300 cm/s	**Electrical connection**	cable
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w113
Output function	, relay output	**Dimension drawing**	d516

N1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-N1/2A4P-AP8X-H1141	**Sensor quality**	AISI 316Ti
Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	NPT 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w108
Output function	⎓, PNP	**Dimension drawing**	d517

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Insertion flow sensors for liquid media

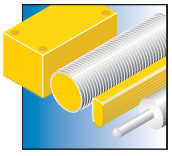


The insertion flow sensors are operated with an external signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available with transistor, relay or analog current output, depending on the signal processor used. They are also available with different mechanical process connections and probe lengths.

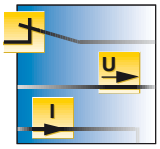
Features

- Insertion flow sensors
- Separate sensor and signal processor
- Values adjusted and displayed at the signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1…300 cm/s
- Switchpoint freely adjustable via potentiometer within the operating range
- Transistor, relay or current output
- High temperature version up to +120 °C
- Chemical resistant materials

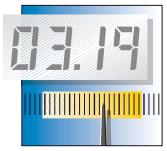
Properties



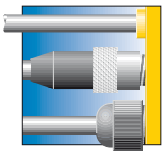
Design
Insertion flow sensors, ideal for pipe diameters of DN20 and larger



Electrical versions
Transistor, relay or analog current output 4…20 mA



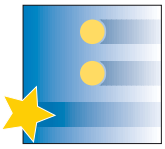
Monitoring range
Adjustable to flow speeds in a range between 1…300 cm/s



Electrical connections
Via A-coded M12 x 1 plug connection or sensor cable



Materials
Sensor material stainless steel 1.4571 (A4) or PTFE



Special features
Pressure-resistant up to 100 bar, high-pressure version up to 500 bar, high-temperature version up to +120 °C

G1/4“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/4A4-NA-H1141	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	G 1/4“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d518

G1/4“ – PTFE – Cable connection



Type	FCS-G1/4T-NA	**Housing quality**	PTFE
Medium	liquids	**Mechanical connection**	G 1/4“
Oil operating range	2…100 cm/s	**Electrical connection**	FEP cable
Operating range water	1…70 cm/s	**Pressure resistance**	5 bar
Medium temperature	-10…70 °C	**Wiring diagram**	w115
Sensor quality	PTFE	**Dimension drawing**	d519

G1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/2A4-NA-H1141	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	G 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d520

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

GL1/2 – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4-NA-H1141	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	G 1/2" length
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d521

GL1/2 – PTFE – Cable connection



Type	FCS-GL1/2T-NA	**Housing quality**	PTFE
Medium	liquids	**Mechanical connection**	G 1/2" length
Oil operating range	2…100 cm/s	**Electrical connection**	FEP cable
Operating range water	1…70 cm/s	**Pressure resistance**	5 bar
Medium temperature	-10…70 °C	**Wiring diagram**	w115
Sensor quality	PTFE	**Dimension drawing**	d522

G3/4" – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G3/4A4-NA-H1141	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	G 3/4"
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d523

N1/2“ – stainless steel A4 – Cable connection



Type	FCS-N1/2A4-NA	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	NPT 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	PVC cable
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w115
Sensor quality	AISI 316Ti	**Dimension drawing**	d524

N3/4“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-N3/4A4-NA-H1141	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	NPT 3/4“
Oil operating range	3…300 cm/s	**Electrical connection**	connector, M12 x 1
Operating range water	1…150 cm/s	**Pressure resistance**	100 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d525

DN25 – Dairy screw connection – A4 – Cable connection



Type	FCS-DN25A4-NA/D100	**Housing quality**	V4A (1.4404)
Medium	liquids	**Mechanical connection**	threaded tube connection per DIN11851
Oil operating range	3…300 cm/s	**Electrical connection**	FEP cable
Operating range water	1…150 cm/s	**Pressure resistance**	10 bar
Medium temperature	10…120 °C	**Wiring diagram**	w115
Sensor quality	AISI 316L	**Dimension drawing**	d526

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

1 1/2“ TriClamp – stainless steel A4 – Cable connection



Type	FCS-50A4-NA/D014	**Housing quality**	V4A (1.4404)
Medium	liquids	**Mechanical connection**	Tri-Clamp 1 1/2“
Oil operating range	3…300 cm/s	**Electrical connection**	FEP cable
Operating range water	1…150 cm/s	**Pressure resistance**	10 bar
Medium temperature	10…120 °C	**Wiring diagram**	w115
Sensor quality	AISI 316L	**Dimension drawing**	d527

Varivent – stainless steel A4 – Cable connection



Type	FCS-68A4-NA/D011	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	Varivent
Oil operating range	3…300 cm/s	**Electrical connection**	PVC cable
Operating range water	1…150 cm/s	**Pressure resistance**	10 bar
Medium temperature	10…120 °C	**Wiring diagram**	w115
Sensor quality	AISI 316Ti	**Dimension drawing**	d528

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Compact inline devices for liquid media

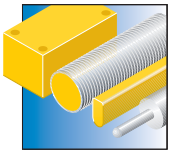


The compact inline devices incorporate sensor and signal processor. They have very fast response times and are suited for simple control tasks, such as monitoring low flow rates. For this purpose they are mounted directly in pipes. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

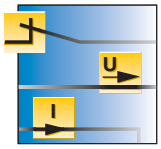
Features

- Inline flow sensor in a plastic housing
- Sensor and signal processor enclosed in the housing
- Ideal for smaller pipe diameters of up to DN20
- Adjustable to flow rates between 0.001…30 l/min
- Switchpoint freely adjustable within the operating range
- LED chain for status indication
- Transistor, relay or analog current output
- No disturbing components, free pipe profile, no pressure loss
- Fast response times within seconds

Properties



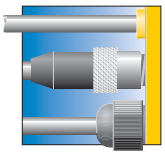
Design
Inline flow sensors, ideal for all pipe diameters of up to DN20.



Electrical versions
PNP transistor, relay or analog current output 4…20 mA



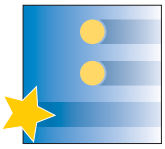
Monitoring range
Adjustable to flow rates between 1 ml/min … 30 l/min.



Electrical connections
M12 x 1 plug connection, A-coded



Materials
plastic housing, sensor material stainless steel 1.4571 (A4)



Special features
Switchpoint adjusted via potentiometer, LED chain for status indication

4 mm pipe connection – stainless steel A4 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	tube 4 mm
Flow operating range	0.001…0.2 l/min	**Electrical connection**	connector, M12 x 1
Medium temperature	0…60 °C	**Pressure resistance**	1 bar
Sensor quality	AISI 316Ti	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FCI-TCD04A4P-AP8X-H1141	_⌒‾, PNP	w108	d529
FCI-TCD04A4P-LIX-H1141	4…20 mA, analog output	w116	d530
FCI-TCD04A4P-ARX-H1140	_⌒‾, relay output	w109	d529

TriClamp DN 10 – stainless steel A4 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	Tri-Clamp DN 10
Flow operating range	0.1…6 l/min	**Electrical connection**	connector, M12 x 1
Sensor quality	AISI 316L	**Pressure resistance**	20 bar
		Ambient temperature	0…60 °C

Types and data – selection table

Type	Medium temperature	Output function	w	d
FCI-34D10A4P-ARX-H1140	-20…80 °C	_⌒‾, relay output	w109	d531
FCI-34D10A4P-LIX-H1141	-20…60 °C	4 … 20 mA, analog output	w116	d532
FCI-34D10A4P-AP8X-H1141	-20…80 °C	_⌒‾, PNP	w108	d531

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

G1/4“ – Male – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D04A4P-LIX-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 1/4“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	0.01…1 l/min	**Pressure resistance**	20 bar
Medium temperature	-20…80 °C	**Ambient temperature**	0…60 °C
Output function	4… 20 mA, analog output	**Wiring diagram**	w116
Sensor quality	AISI 316Ti	**Dimension drawing**	d533

G1/4“ – Female – Ceramics/PTFE – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	G 1/4“ female thread
Flow operating range	0.02…3 l/min	**Electrical connection**	connector, M12 x 1
Medium temperature	0…60 °C	**Pressure resistance**	5 bar
Sensor quality	Al_2O_3/PTFE	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FCI-D06CTP-ARX-H1140	_⌒_, relay output	w109	d534
FCI-D06CTP-LIX-H1141	4 … 20 mA, analog output	w116	d535
FCI-D06CTP-AP8X-H1141	_⌒_, PNP	w108	d534

G1/4“ – Male – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D10A4P-ARX-H1140	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 1/4“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	0.1…6 l/min	**Pressure resistance**	20 bar
Medium temperature	-20…80 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_, relay output	**Wiring diagram**	w109
Sensor quality	AISI 316Ti	**Dimension drawing**	d536

G1/2“ – Male – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D15A4P-AP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 1/2“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	3…20 l/min	**Pressure resistance**	20 bar
Medium temperature	-20…80 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_, PNP	**Wiring diagram**	w108
Sensor quality	AISI 316Ti	**Dimension drawing**	d537

G3/4“ – Male – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D20A4P-AP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 3/4“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	4…30 l/min	**Pressure resistance**	20 bar
Medium temperature	-20…80 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_, PNP	**Wiring diagram**	w108
Sensor quality	AISI 316Ti	**Dimension drawing**	d538

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Inline flow sensors for liquid media

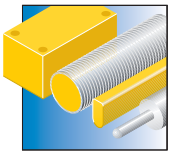


The inline flow sensors are operated with an external signal processor. For this purpose they are mounted directly in pipes. They have very fast response times and are suited for simple control tasks, such as monitoring low flow rates. The integrated LED chain indicates the current flow state. The sensors are available with transistor, relay or analog current output, depending on the signal processor used. They are also available with different mechanical process connections.

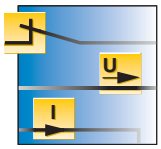
Features

- Inline flow sensors
- Separate sensor and signal processor
- Values adjusted and displayed at the signal processor
- Ideal for small pipe diameters of up to DN10
- Adjustable to flow rates between 5…900 ml/min
- Switchpoint freely adjustable within the operating range
- Transistor, relay or current output
- No disturbing components, free pipe profile, no pressure loss
- Fast response times within seconds

Properties



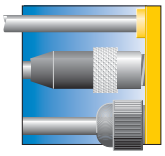
Design
Inline flow sensors, ideal for all pipe diameters of up to DN10



Electrical versions
Transistor, relay or analog current output 4…20 mA



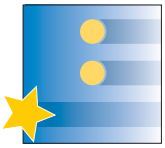
Monitoring range
Adjustable to flow rates between 5 … 900 ml/min



Electrical connections
M12 x 1 plug connection, A-coded



Materials
Sensor material stainless steel 1.4571 (A4) or Delrin



Special features
Pressure-resistant 5, 10, or 16 bar, temperature range -20…+80 °C

M12x1.5 – Female – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D03A4-NA-H1141/M12	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	M12 x 1.5
Oil operating range	15…300 ml/min	**Electrical connection**	connector, M12 x 1
Flow operating range	0.005…0.15 l/min	**Pressure resistance**	10 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d539

M16x1.5 – Female – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D09A4-NA-H1141/M16	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	M16 x 1.5
Oil operating range	90…1800 ml/min	**Electrical connection**	connector, M12 x 1
Flow operating range	0.03…0.9 l/min	**Pressure resistance**	16 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 316Ti	**Dimension drawing**	d540

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Compact insertion devices for gaseous media

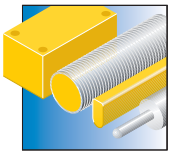


The compact devices incorporate sensor and signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

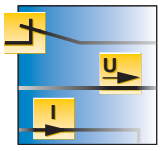
Features

- Insertion flow sensor in a plastic housing
- Sensor and signal processor enclosed in the housing
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 0.5…30 m/s
- Switchpoint freely adjustable within the operating range
- LED chain for status indication
- Transistor, relay or analog current output
- Pressure-resistant up to 30 bar

Properties



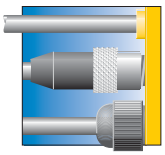
Design
Compact insertion flow sensors, ideal for all pipe diameters of DN20 and larger.



Electrical versions
PNP transistor, relay or current output
4…20 mA



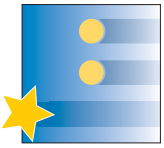
Monitoring range
Adjustable to flow speeds between
0.5 … 30 m/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
Switchpoint adjusted via potentiometer, LED chain for status indication,
pressure-resistant up to 30 bar

GL1/2“ – stainless steel A2 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	air	**Mechanical connection**	G 1/2“ length
Air operating range	0.5…30 m/s	**Electrical connection**	connector, M12 x 1
Medium temperature	-20…80 °C	**Pressure resistance**	30 bar
Sensor quality	AISI 303		

Types and data – selection table

Type	Output function	w	d
FCS-GL1/2A2P-AP8X-H1141/A	_⟍_, PNP	w108	d541
FCS-GL1/2A2P-LIX-H1141/A	4 … 20 mA, analog output	w116	d541

G 1“ – Female – Coupling nut – stainless steel A2 – M12 x 1 connector



Type	FCS-HA2P-VRX/230VAC/AL115	**Housing quality**	PBT-GF30-V0
Operating voltage	195…264 VAC	**Mechanical connection**	G 1“ female thread per DIN 3852
Medium	air	**Electrical connection**	cable
Air operating range	0.5…30 m/s	**Pressure resistance**	3 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w113
Output function	_⟍_, relay output	**Dimension drawing**	d543
Sensor quality	AISI 303		

G 1“ – Female – with coupling nut – stainless steel A2 – M12 x 1 plug connection



Type	FCS-HA2P-LIX-H1141/AL115	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 1“ female thread per DIN 3852
Medium	air	**Electrical connection**	connector, M12 x 1
Air operating range	0.5…30 m/s	**Pressure resistance**	3 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w116
Output function	4 … 20 mA, analog output	**Dimension drawing**	d542
Sensor quality	AISI 303		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Insertion flow sensors for gaseous media

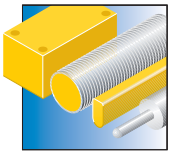


The insertion flow sensors are operated with an external signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The sensors are available with transistor, relay or analog current output, depending on the signal processor used. They are also available with different mechanical process connections and probe lengths. In addition, we offer sensors for high-temperature applications.

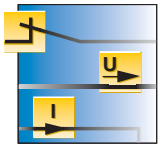
Features

- Insertion flow sensors
- Separate sensor and signal processor
- Values adjusted and displayed at the signal processor
- Ideal for all pipe diameters of up to DN20
- Adjustable to flow speeds between 0.5…30 m/s
- Switchpoint freely adjustable within the operating range
- Transistor, relay or current output
- Pressure-resistant up to 30 bar

Properties



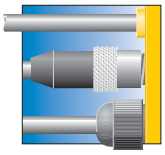
Design
Insertion flow sensors, ideal for all pipe diameters of DN20 and larger.



Electrical versions
Transistor, relay or analog current output 4…20 mA



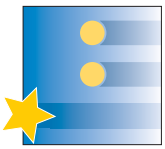
Monitoring range
Adjustable to flow speeds between 0.5 … 30 m/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
High-temperature version up to +120 °C

Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

GL1/2 – stainless steel A2 – M12 x 1 plug connection



Type	FCS-GL1/2A2-NA-H1141/A	**Mechanical connection**	G 1/2" length
Medium	air	**Electrical connection**	connector, M12 x 1
Air operating range	0.5…30 m/s	**Pressure resistance**	30 bar
Medium temperature	-20…80 °C	**Wiring diagram**	w114
Sensor quality	AISI 303	**Dimension drawing**	d544
Housing quality	V2A (1.4305)		

GL1/2 – stainless steel A2 – Cable connection



Type	FCS-GL1/2A2-NA/A/D100	**Mechanical connection**	G 1/2" length
Medium	air	**Electrical connection**	FEP cable
Air operating range	0.5…30 m/s	**Pressure resistance**	30 bar
Medium temperature	10…120 °C	**Wiring diagram**	w115
Sensor quality	AISI 303	**Dimension drawing**	d545
Housing quality	V2A (1.4305)		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Compact inline device for gaseous media

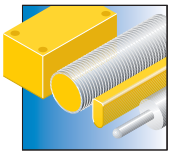


The compact devices incorporate sensor and signal processor. Inline sensors have very fast response times and are suited for simple control tasks, such as monitoring low flow rates. For this purpose they are mounted directly in pipes. The integrated LED chain indicates the current flow state. The sensors are available either with transistor, relay switching or analog current output. They are also available with different mechanical process connections.

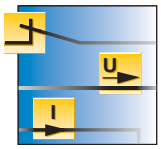
Features

- Inline flow sensor in a plastic housing
- Sensor and signal processor enclosed in the housing
- Ideal for small pipe diameters of up to DN10
- Adjustable to flow speeds between 0.5 … 40 m/s
- Switchpoint freely adjustable within the operating range
- LED chain for status indication
- Transistor or analog current output
- No disturbing components, free pipe profile, no pressure loss
- Fast response times within seconds

Properties



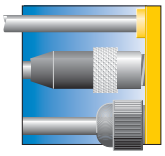
Design
Inline flow sensors, ideal for all pipe diameters of up to DN10.



Electrical versions
Transistor or analog current output
4…20 mA



Monitoring range
Adjustable to flow speeds between 0.5 … 40 m/s



Electrical connections
M12 x 1 plug connection, A-coded



Materials
plastic housing, sensor material stainless steel 1.4571 (A4)



Special features
Switchpoint adjustable via potentiometer, LED chain for status indication

G1/4“ – Male – stainless steel A4 – M12 x 1 plug connection



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	air	**Mechanical connection**	G 1/4“
Air operating range	0.5…40 m/s	**Electrical connection**	connector, M12 x 1
Medium temperature	-20…80 °C	**Pressure resistance**	20 bar
Sensor quality	AISI 316Ti	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FCI-D10A4P-AP8X-H1141/A	_⌒_, PNP	w108	d536
FCI-D10A4P-LIX-H1141/A	4 … 20 mA, analog output	w116	d536

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Insertion flow sensors for liquid media – Ex zone 1

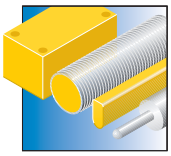


Insertion flow sensors for liquid media are also available for Ex zone 1. The devices are operated with an external Ex signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The devices are available with transistor or relay output, depending on the type of signal processor used. They are also available with different mechanical process connections and probe lengths.

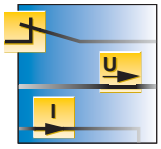
Features

- Insertion flow sensor for Ex zone 1
- Separate sensor and signal processor
- Values adjusted and displayed at the Ex signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1…200 cm/s
- Switchpoint freely adjustable via potentiometer within the operating range
- Transistor or relay output
- Pressure-resistant up to 60 bar
- High temperature version up to +120 °C
- High pressure version up to 500 bar
- Chemical-resistant materials

Properties



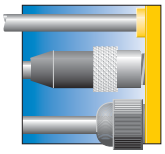
Design
Insertion flow sensors, ideal for all pipe diameters of DN20 and larger.



Electrical versions
Transistor or relay output



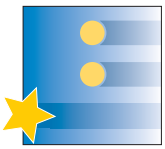
Monitoring range
Adjustable to flow speeds between 1…200 cm/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
For Ex zone 1, high-pressure version 500 bar max., high-temperature version +120 °C max.

G1/4“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/4A4-NAEX-H1141	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/4“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w117
Medium temperature	-20…85 °C	**Dimension drawing**	d518
Sensor quality	AISI 316Ti		

G1/4“ – stainless steel A4 – Cable connection



Type	FCS-G1/4A4-NAEX	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/4“
Medium	liquids	**Electrical connection**	PUR cable
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w118
Medium temperature	-20…85 °C	**Dimension drawing**	d546
Sensor quality	AISI 316Ti		

G1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/2A4-NAEX-H1141	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/2“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w117
Medium temperature	-20…85 °C	**Dimension drawing**	d520
Sensor quality	AISI 316Ti		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

GL1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4-NAEX-H1141	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/2“ length
Medium	liquids	**Electrical connection**	connector, M12 x 1
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w117
Medium temperature	-20…85 °C	**Dimension drawing**	d521
Sensor quality	AISI 316Ti		

N1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-N1/2A4-NAEX-H1141	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	NPT 1/2“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w117
Medium temperature	-20…85 °C	**Dimension drawing**	d547
Sensor quality	AISI 316Ti		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Inline flow sensors for liquid media – Ex zone 1

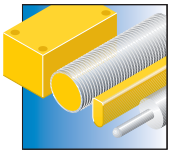


Inline flow sensors for liquid media are also available for Ex zone 1. The devices are operated with an external Ex signal processor. For this purpose they are mounted directly in pipes. They have very fast response times and are suited for simple control tasks, such as monitoring low flow rates. The integrated LED chain indicates the current flow state. A transistor or relay output are available, depending on the type of signal processor used. They are also available with different mechanical process connections.

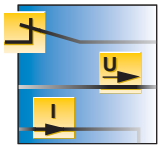
Features

- Inline flow sensors for Ex zone 1
- Separate sensor and signal processor
- Values adjusted and displayed at the Ex signal processor
- Ideal for small pipe diameters of up to DN10
- Adjustable to flow rates between 10 and 900 ml/min
- Switchpoint freely adjustable within the operating range
- Transistor or relay output
- No disturbing components, free pipe profile, no pressure loss
- Fast response times within seconds
- Pressure-resistant up to 6 bar

Properties



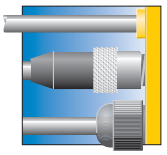
Design
Inline flow sensors, ideal for all pipe diameters of up to DN10.



Electrical versions
Transistor or relay output



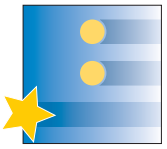
Monitoring range
Adjustable to flow rates between
10 ml/min … 0.9 l/min



Electrical connections
M12 x 1 plug connection, A-coded



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
Application in Ex zone 1, pressure resistant up to 6 bar

M12x1.5 – Female – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D03A4-NAEX-H1141/M12	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	M12 x 1.5
Oil operating range	25…300 ml/min	**Electrical connection**	connector, M12 x 1
Flow operating range	0.01…0.15 l/min.	**Pressure resistance**	6 bar
Medium temperature	-20…70 °C	**Wiring diagram**	w117
Sensor quality	AISI 316Ti	**Dimension drawing**	d539

M16x1.5 – Female – stainless steel A4 – M12 x 1 plug connection



Type	FCI-D09A4-NAEX-H1141/M16	**Housing quality**	V4A (1.4571)
Medium	liquids	**Mechanical connection**	M16 x 1.5
Oil operating range	150…1800 ml/min	**Electrical connection**	connector, M12 x 1
Flow operating range	0.05…0.9 l/min.	**Pressure resistance**	6 bar
Medium temperature	-20…70 °C	**Wiring diagram**	w117
Sensor quality	AISI 316Ti	**Dimension drawing**	d540

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Insertion flow sensors for gaseous media – Ex zone 1

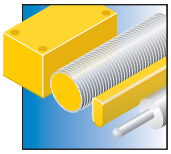


Insertion flow sensors for liquid media are also available for Ex zone 1. The devices are operated with an external Ex signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. A transistor or relay output are available, depending on the type of signal processor used. They are also available with different mechanical process connections and probe lengths.

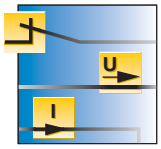
Features

- Insertion flow sensor for Ex zone 1
- Separate sensor and signal processor
- Values adjusted and displayed at the Ex signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 2…20 m/s
- Switchpoint freely adjustable within the operating range
- Transistor or relay output
- Pressure-resistant up to 10 bar
- High temperature version up to +120 °C

Properties



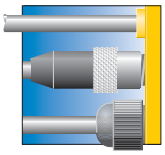
Design
Insertion flow sensors, ideal for all pipe diameters of DN20 and larger



Electrical versions
Transistor or relay output



Monitoring range
Adjustable to flow speeds between 2…20 m/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
Application in Ex zone 1, pressure-resistant up to 10 bar

GL1/2“ – stainless steel A4 – Cable connection



Type	FCS-GL1/2A4-NAEX/A	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/2“ length
Medium	air	**Electrical connection**	PUR cable
Air operating range	2…20 m/s	**Pressure resistance**	10 bar
Medium temperature	-20…85 °C	**Wiring diagram**	w118
Sensor quality	AISI 316Ti	**Dimension drawing**	d545

GL1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4-NAEX-H1141/A	**Housing quality**	V4A (1.4571)
Protection type	Ex ib IIC	**Mechanical connection**	G 1/2“ length
Medium	air	**Electrical connection**	connector, M12 x 1
Air operating range	2…20 m/s	**Pressure resistance**	10 bar
Medium temperature	-20…85 °C	**Wiring diagram**	w117
Sensor quality	AISI 316Ti	**Dimension drawing**	d544

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Insertion flow sensors for liquid media – Ex zone 0

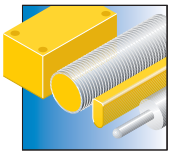


Insertion flow sensors for liquid media are also available for Ex zone 0. The devices are operated with an external Ex signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. A transistor or relay output are available, depending on the type of signal processor used. They are also available with different mechanical process connections and probe lengths.

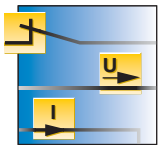
Features

- Insertion flow sensor for Ex zone 0
- Separate sensor and signal processor
- Values adjusted and displayed at the Ex signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 1…200 cm/s
- Switchpoint freely adjustable via potentiometer within the operating range
- Transistor or relay output
- Pressure-resistant up to 60 bar
- Chemical resistant materials

Properties



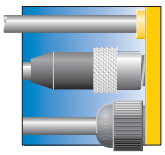
Design
Insertion flow sensors, ideal for all pipe diameters of DN20 and larger.



Electrical versions
Transistor or relay output



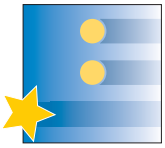
Monitoring range
Adjustable to flow speeds between 1…200 cm/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
Application in Ex zone 0, pressure-resistant up to 60 bar, high-pressure version up to 500 bar, high-temperature version up to +120 °C

G1/4“ – stainless steel A4 – Cable connection



Type	FCS-G1/4A4-NAEX0	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 1/4“
Medium	liquids	**Electrical connection**	PUR cable
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w118
Medium temperature	-20…60 °C	**Dimension drawing**	d546
Sensor quality	AISI 316Ti		

G1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-G1/2A4-NAEX0-H1141	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 1/2“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w117
Medium temperature	-20…60 °C	**Dimension drawing**	d520
Sensor quality	AISI 316Ti		

G1/2“ – stainless steel A4 – Cable connection



Type	FCS-G1/2A4-NAEX0	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 1/2“
Medium	liquids	**Electrical connection**	PUR cable
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w118
Medium temperature	-20…60 °C	**Dimension drawing**	d548
Sensor quality	AISI 316Ti		

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

G3/4“ – stainless steel A4 – Cable connection



Type	FCS-G3/4A4-NAEX0	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 3/4“
Medium	liquids	**Electrical connection**	PUR cable
Oil operating range	3…200 cm/s	**Pressure resistance**	60 bar
Operating range water	1…100 cm/s	**Wiring diagram**	w118
Medium temperature	-20…60 °C	**Dimension drawing**	d549
Sensor quality	AISI 316Ti		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Insertion flow sensors for gaseous media – Ex zone 0

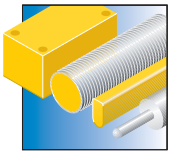


Insertion flow sensors for liquid media are also available for Ex zone 0. The devices are operated with an external Ex signal processor. They are mounted with a T-piece, a weld-on adapter or with a matching adapter block. The probe is inserted in the pipe and has direct contact with the medium. The integrated LED chain indicates the current flow state. The devices are available with transistor or relay output, depending on the type of signal processor used. They are also available with different mechanical process connections and probe lengths.

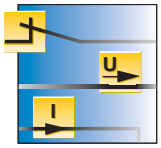
Features

- Insertion flow sensor for Ex zone 0
- Separate sensor and signal processor
- Values adjusted and displayed at the Ex signal processor
- Ideal for all pipe diameters of DN20 and larger
- Adjustable to flow speeds between 2…20 m/s
- Switchpoint freely adjustable within the operating range
- Transistor or relay output
- Pressure-resistant up to 10 bar

Properties



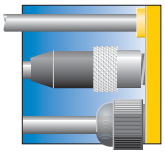
Design
Insertion flow sensors, ideal for all pipe diameters of DN20 and larger.



Electrical versions
Transistor or relay output



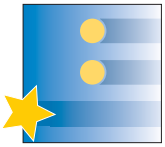
Monitoring range
Adjustable to flow speeds between 2…20 m/s



Electrical connections
Via A-coded M12 x 1 plug connection or connection cable



Materials
Sensor material stainless steel 1.4571 (A4)



Special features
Application in Ex zone 0, pressure-resistant up to 10 bar

GL1/2“ – stainless steel A4 – M12 x 1 plug connection



Type	FCS-GL1/2A4-NAEX0-H1141/A	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 1/2“ length
Medium	air	**Electrical connection**	connector, M12 x 1
Air operating range	2…20 m/s	**Pressure resistance**	10 bar
Medium temperature	-20…60 °C	**Wiring diagram**	w117
Sensor quality	AISI 316Ti	**Dimension drawing**	d544

GL1/2“ – stainless steel A4 – Cable connection



Type	FCS-GL1/2A4-NAEX0/A	**Housing quality**	V4A (1.4571)
Protection type	Ex ia IIC	**Mechanical connection**	G 1/2“ length
Medium	air	**Electrical connection**	PUR cable
Air operating range	2…20 m/s	**Pressure resistance**	10 bar
Medium temperature	-20…60 °C	**Wiring diagram**	w118
Sensor quality	AISI 316Ti	**Dimension drawing**	d545

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Signal processors for flow sensors

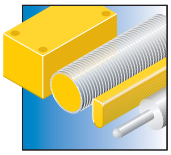


The MK96, MS96 and MC96F are used for power supply and signal processing of flow sensors. The switchpoints resp. operating range are adjusted via 2 potentiometers. The flow state is indicated continuously via a multicolor LED chain. The MS96 features moreover an output for temperature monitoring and an adjustable switch-off delay. The MC96 is designed as a 19" card to fit in 19" module racks. It features an output for temperature monitoring as well as a DIP switch to enable or disable the switch-on/off delay.

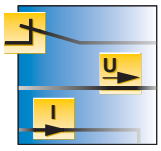
Features

- Signal processors for the connection of insertion and inline flow sensors
- Separate sensor and signal processor
- Compact version with minimal space requirements
- Values adjusted and displayed at the signal processor
- Adjustment via potentiometer, easy handling
- Available types MK96, MS96, MC96
- MS96 and MC96 additionaly with temperature monitoring
- Transistor, relay or analog current output

Properties



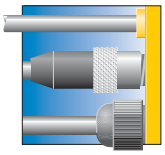
Design
Modular housing MK96 for flow monitoring; modular housing MS96 and 19" card MC96 for flow and temperature monitoring



Electrical versions
MK96 with transistor, relay or current output MS96 and MC96 with relay outputs for flow and temperature monitoring



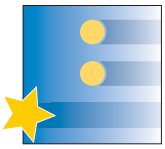
Monitoring range
Depending on connected flow sensors



Electrical connections
MK96 and MS96 junction box; MC96 series plug connection 19" card



Materials
plastic housing, polycarbonate (ABS)



Special features
Simple adjustment via potentiometer, MS96 and MC96 additionally with temperature monitoring

MK96 – Modular housing



General data

Operating voltage	19.2…28.8 VDC	**Protection class**	IP20
Design	terminal chambers	**Local admissible ambient temperature**	-20…+60 °C
Housing material	Polycarbonate/ABS		

Types and data – selection table

Type	Output function	w	d
MK96-LI01	4 … 20 mA, analog output	w119	d550
MK96-VN01	_⌒/⊣⌒, NPN	w120	d550
MK96-VP01	_⌒/⊣⌒, PNP	w121	d550
MK96-11-R/24VDC	_⌒, relay output	w122	d550

MS96 – Modular housing



General data

Output function	⊣⌒, relay output	**Protection class**	IP20
Design	terminal chambers	**Local admissible ambient temperature**	-20…+60 °C
Housing material	Polycarbonate/ABS		

Types and data – selection table

Type	Operating voltage	w	d
MS96-12R/24VDC	19…29 VDC	w123	d551
MS96-12R/115VAC	92…127 VAC	w124	d551
MS96-12R/230VAC	184…265 VAC	w124	d551

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

MC96 – 19“ card



Type	MC96-22-R/24VDC	**Protection class**	IP20
Operating voltage	19.2…28.8 VDC	**Local admissible ambient temperature**	-20…+60 °C
Output function	, relay output	**Wiring diagram**	w125
Design	Eurocard	**Dimension drawing**	d552
Housing material	metal/plastic		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Signal processors for Ex flow sensors

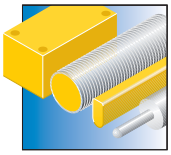


The MK96 and MS96 are used for power supply and signal processing of Ex flow sensors. The switchpoints resp. operating range are adjusted via 2 potentiometers. The flow state is indicated continuously via a multicolor LED chain. The MC96 is designed as a 19" card to fit in 19" module racks. In addition, they feature an output for temperature monitoring as well as an adjustable switch-on or off delay. The MS96 is additionally equipped with an adjustable switch-off delay.

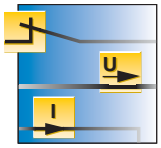
Features

- [Ex ia] signal processors for Ex insertion and inline flow sensors
- Separate sensor and signal processor
- Compact version with minimal space requirements
- Values adjusted and displayed at the signal processor
- Adjustment via potentiometer, easy handling
- Available types MS96 and MC96
- MC96 additionally with temperature monitoring
- Transistor and relay output

Properties



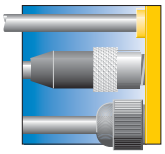
Design
Modular housing MS96 for flow monitoring; 19" card MC96 for flow and temperature monitoring



Electrical versions
MS96 with relay output for flow monitoring, and MC96 with relay outputs for flow and temperature monitoring



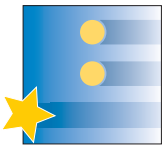
Monitoring range
Depending on connected flow sensor



Electrical connections
MS96 junction box; MC96 series plug connection 19" card



Materials
plastic housing, polycarbonate (ABS)



Special features
Simple adjustment via potentiometer, MC96 additionally with temperature monitoring

MS96 – Modular housing



General data

Output function	, relay output	**Protection class**	IP20
Design	terminal chambers	**Local admissible ambient temperature**	-20…+60 °C
Housing material	Polycarbonate/ABS		

Types and data – selection table

Type	Operating voltage	Protection type	w	d
MS96-11EX0-R/24VDC	21…28 VDC	[Ex ia] IIC	w126	d551
MS96-11EX0-R/230VAC	198…242 VAC	[Ex ia] IIC	w127	d551
MS96-11EX0-R/115VAC	99…121 VAC	[Ex ia] IIC	w127	d551
MS96-11EX-R/230VAC	207…253 VAC	[Ex ib] IIC	w127	d551
MS96-11EX-R/24VDC	22…26 VDC	[Ex ib] IIC	w126	d551
MS96-11EX-R/115VAC	104…127 VAC	[Ex ib] IIC	w127	d551

MC96 – 19“ card



General data

Operating voltage	19.2…28.8 VDC	**Housing material**	metal/plastic
Output function	, relay output	**Protection class**	IP20
Design	Eurocard		

Types and data – selection table

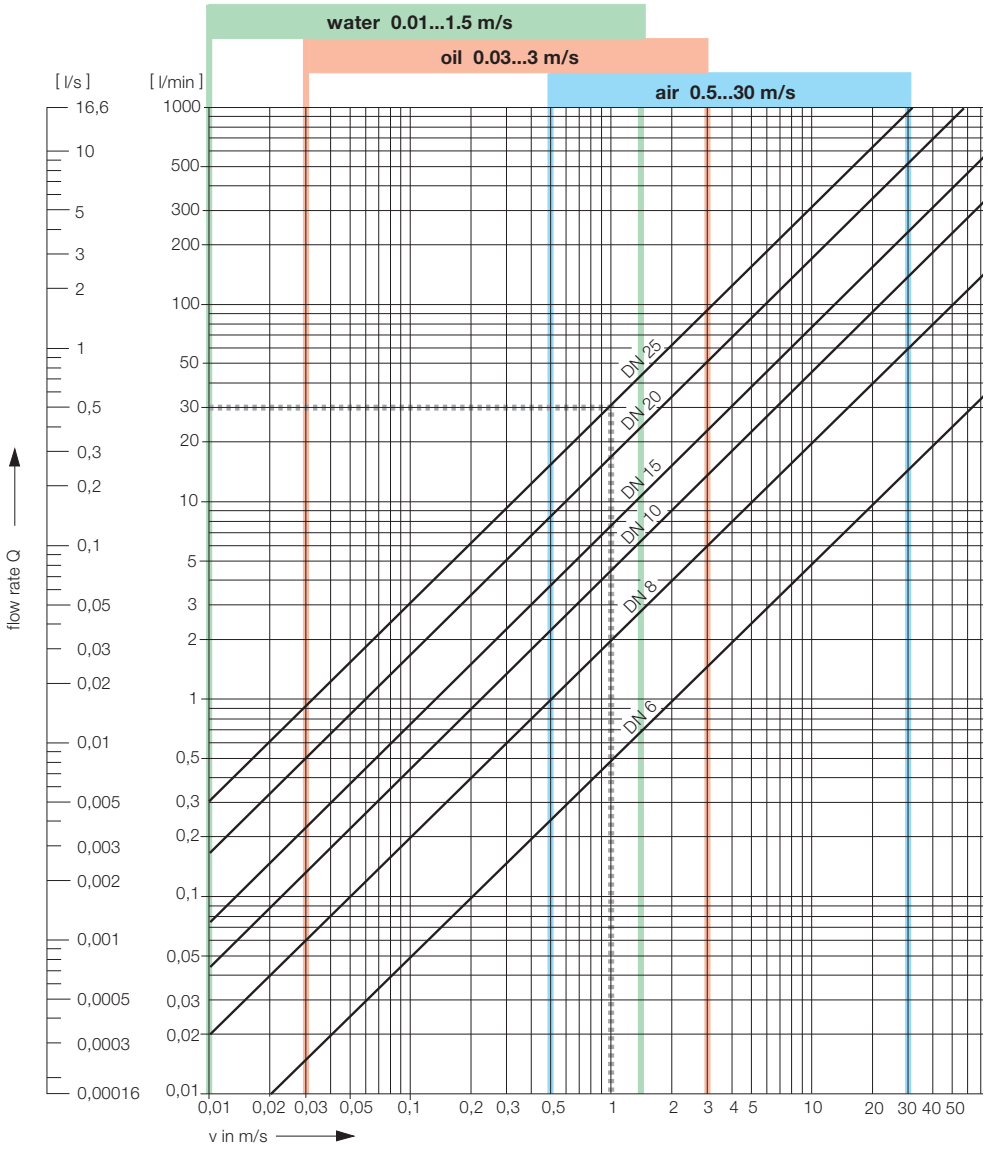
Type	Local admissible ambient temperature	Protection type	w	d
MC96-12EX0-R/24VDC	-20…+60 °C	[Ex ia] IIC	w128	d552
MC96-12EX-R/24VDC	-20…+40 °C	[Ex ib] IIC	w128	d552

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 786 ff

Flow sensors

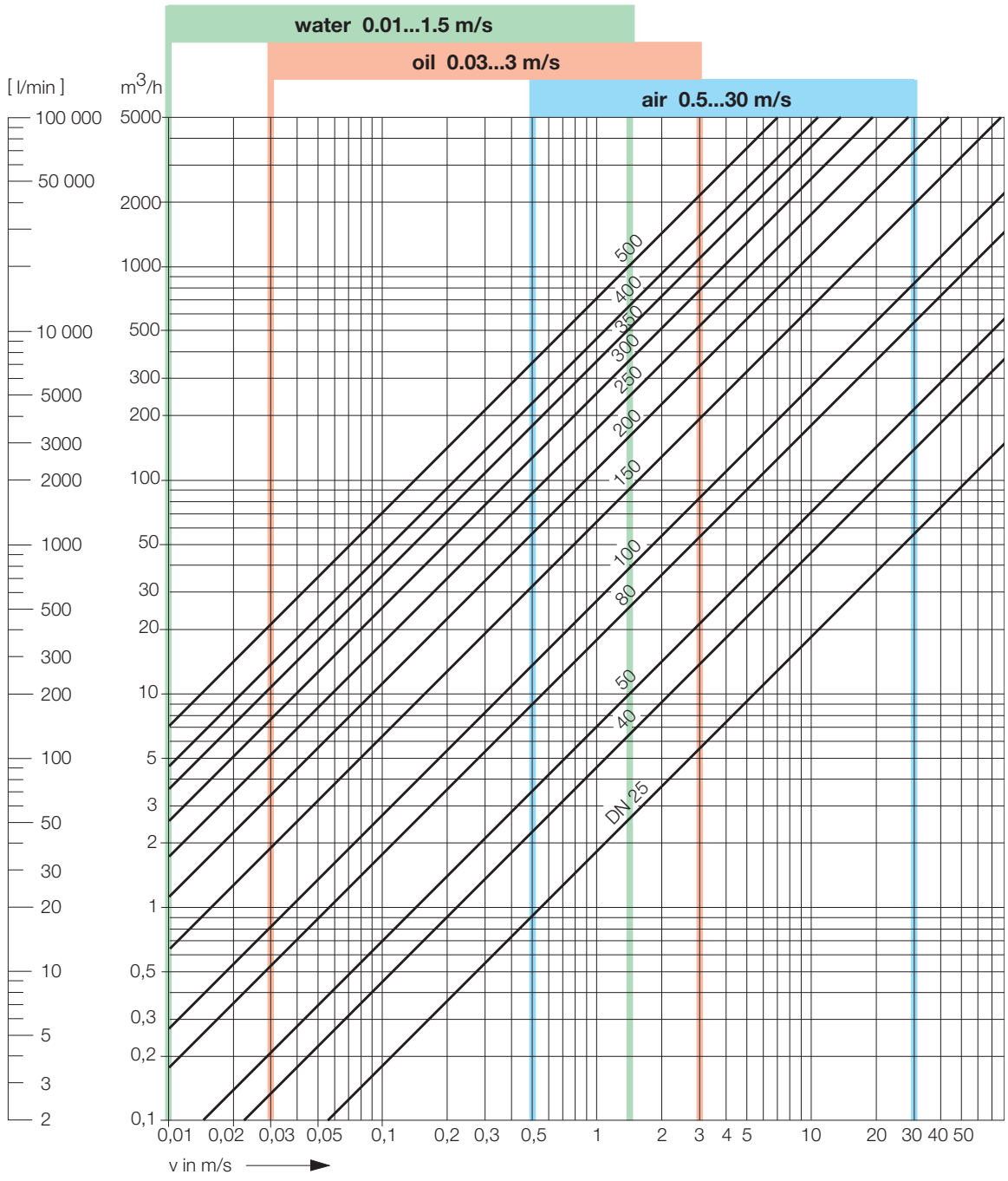
Nomogram (pipe diameter DN 6...25)

The nomogram is used to convert volume flow rates (l/min) into flow speed (m/s) in relation to the pipe diameter (DN), as shown in the example below. If the flow speed is outside the detection range, the speed can be adjusted through changing the pipe diameter. For example: At a flow rate of 30 l/min and a pipe diameter of DN25, the flow speed is 1 m/s



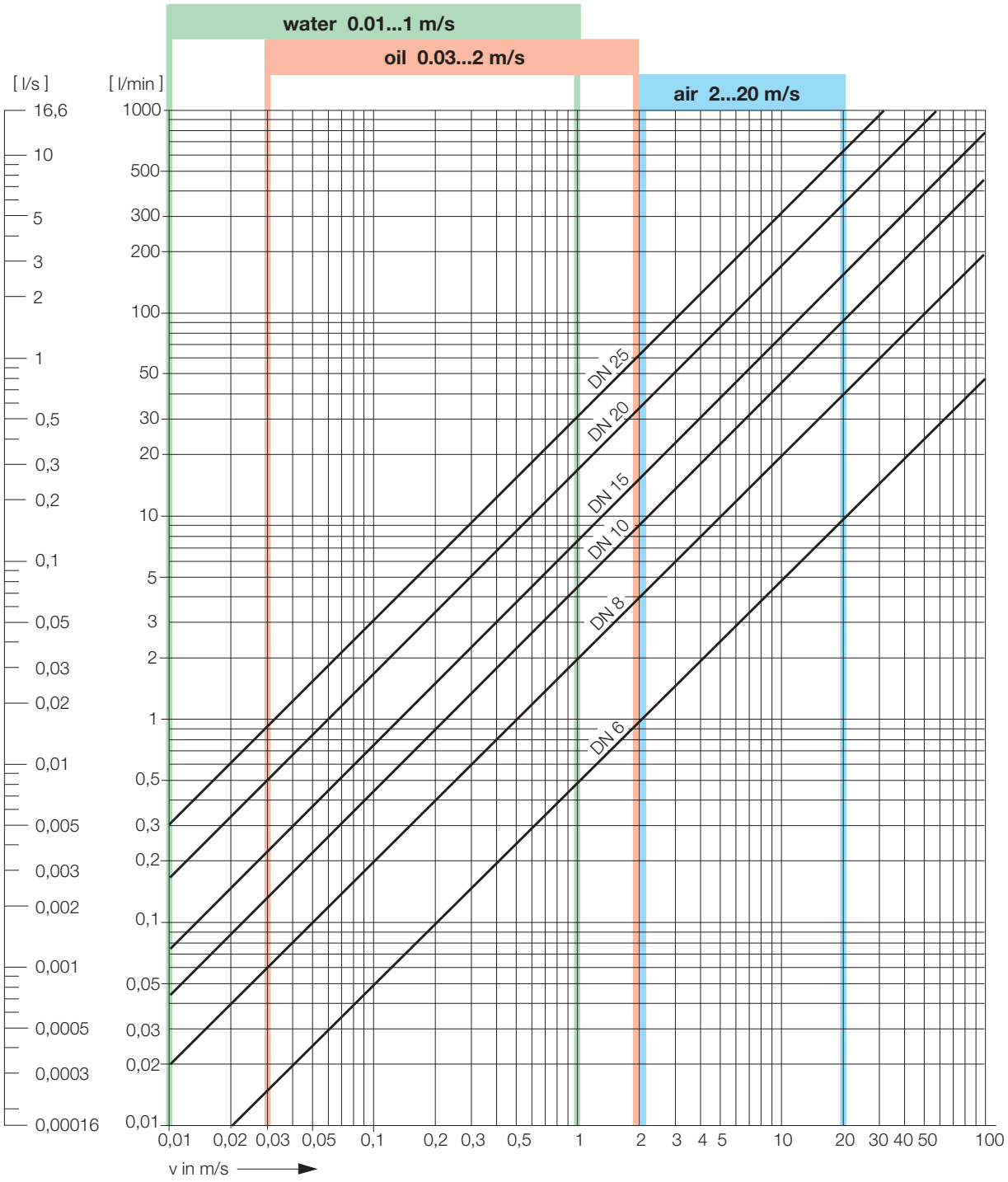
Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

Nomogram (pipe diameter DN 25...500)



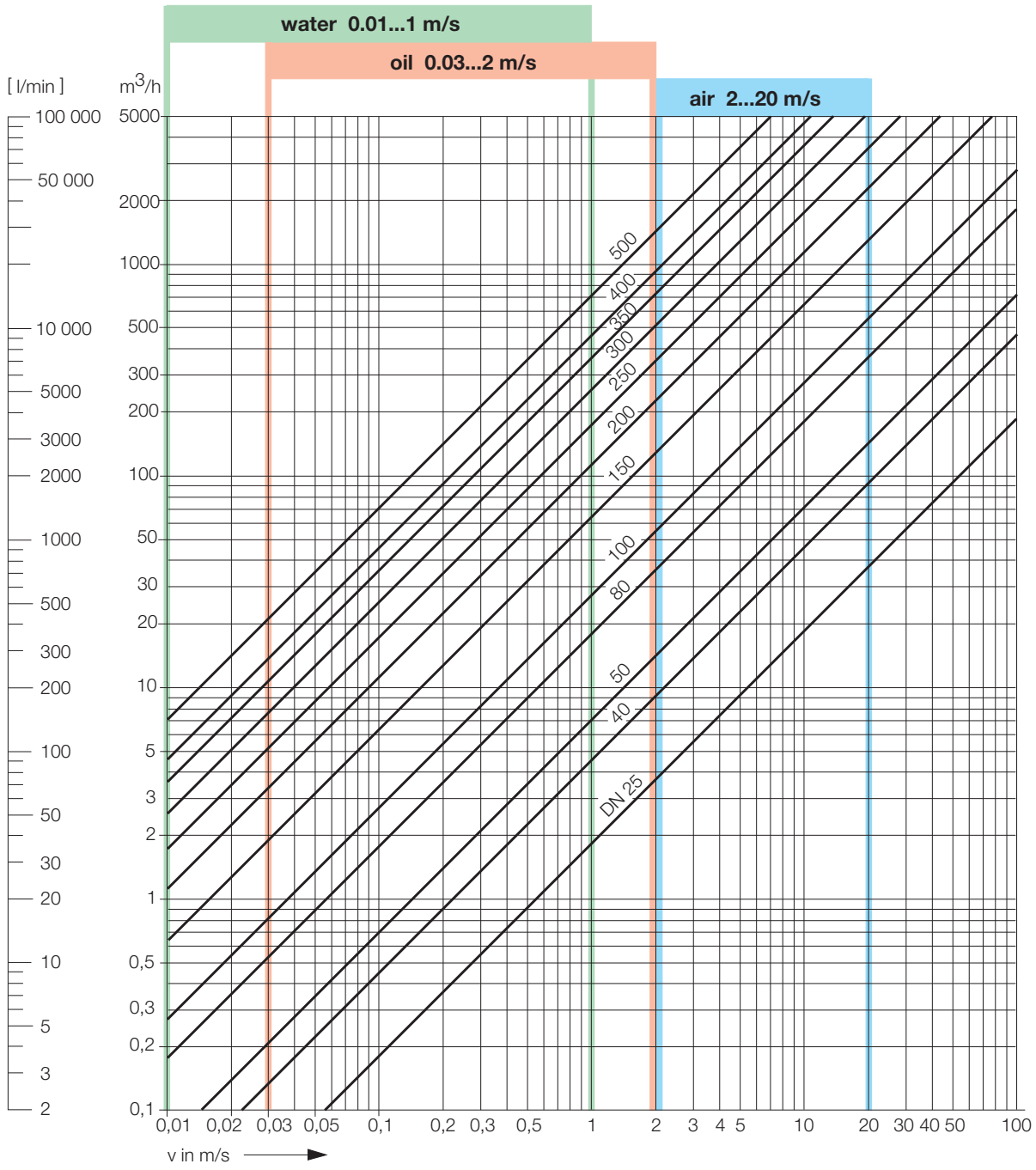
Flow sensors

Nomogram for Ex flow sensor (pipe diameters DN 6...25)



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Nomogram for Ex flow sensors (pipe diameters DN 25...500)



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Flow meters



Flow meters – Continuous and precise measuring of flow rates

In order to guarantee smooth operation and consistent quality, many processes require constant in and outflow of liquid or gaseous media. Flow sensors measure the speed and flow meters measure continuously the volume per time unit relative to the defined pipe cross-section.

Flow measurement requires high repeatability and accuracy. TURCK sensors apply different methods for electronic measurement of flow rates, such as the calorimetric, the magnetic-inductive as well as the Vortex principle.

TURCK flow meters indicate the flow rate via display and via an analog current output. The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored. The programmable devices are characterized by a long service life and are thus almost maintenance-free.

The FTCI flow meters operate according to the thermodynamic principle. They are favourably priced and work reliably. Due to the different thermal conductivity of media, the devices are preferably applied in water or water-glycol mixtures. Short response times within seconds and stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for flow rate monitoring in cooling circuits.

FCMI flow meters operate according to the magnetic-inductive principle. They measure the flow rate of many low-conductive liquids. Blistering and non-abrasive solids content have only little influence on the measurement. The operating range between 0.2 and 80 l/min is ideal for all applications with small to medium flow rates.

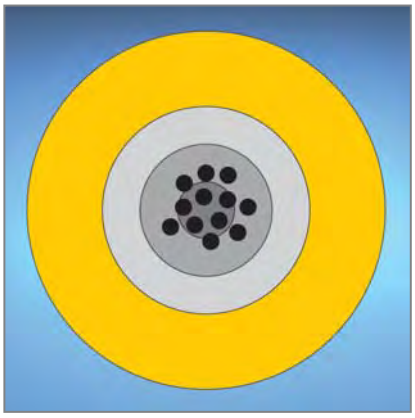
FCVI vortex flow meters are insensitive to pressure and temperature changes and are thus suited for applications requiring a high repeatability. Flow rates between 2 and 20 l/min are detected with a repeatability of 2 % f.s. The extremely responsive and temperature-stable flow meter is preferably applied in return and coolant circuits.

Our strengths...



Measuring and monitoring of flow rates

Flow monitoring of media plays an important role in many applications of factory and process automation. For example, the monitoring of coolant circuits, run-dry protection of pumps or the flow control of exhaust air ducts and air conditioning systems. In order to detect critical changes in flow and to indicate them to a control unit, electronic flow sensors are increasingly applied.



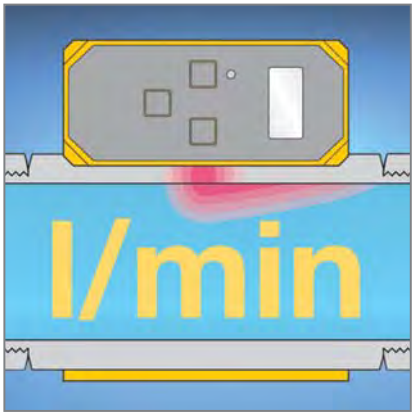
High repeatability

Unvarying processes and smooth operation require a constant inflow of media. Flow rate measuring in such processes thus requires high repeatability. TURCK flow meters indicate the flow rate via display and analog current output. The output signal can either be analog or binary, depending on whether continuous flow or a limit value is to be monitored.



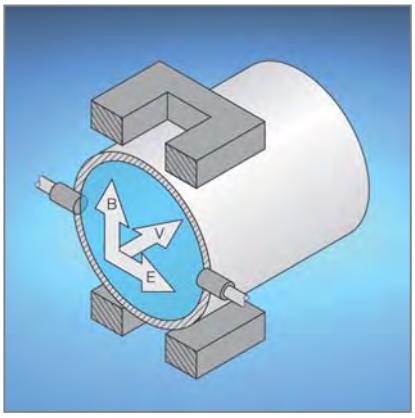
High performance in a compact design

The combination of a highly precise measuring system and a compact housing is characteristic for inline flow meters made by TURCK. They are easily integrated in existing line configurations and are space saving alternatives for new constructions. Not only coolant circuits and temperature cycles are precisely monitored but also dosage intervals, like in water purification systems. Limit value monitoring as well as an analog linearized switching output are available for these tasks.



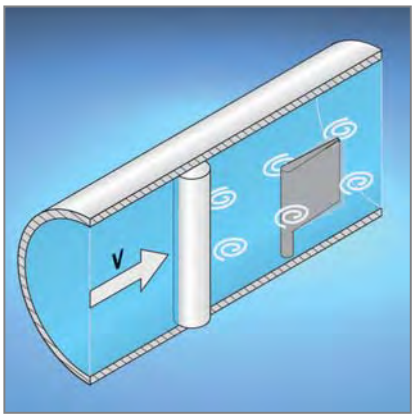
Calorimetric flow meter

The FTCI flow meter working on the calorimetric principle measures and monitors either the media temperature or the flow rate. The FTCI is therefore suited for many different applications. Flow rates between 1 and 40 l/min are detected with a repeatability of 10 % f.s. Short response times within seconds and stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for flow rate monitoring in coolant circuits.



Magnetic-inductive flow meter

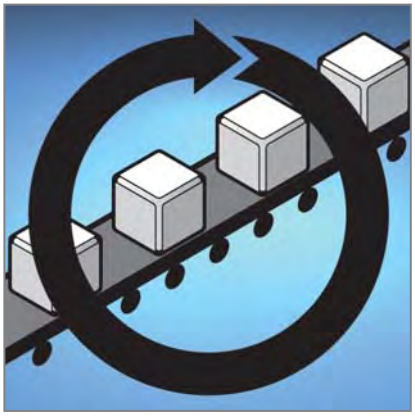
The magnetic-inductive flow meter FCMI measures flow rates of low-conductive liquids. The FCMI is therefore suited for many different applications. Outstanding features of the magnetic-inductive flow meter are a high measuring range dynamics and a repeatability of 2 % f.s. The operating range between 0.2 and 80 l/min is ideal for all applications with small to medium flow rates.



Vortex flow meter

The FCVI vortex flow meter works on the principle of the Karman vortex street. It is thus especially suited for high-precision measurement of water flow rates. Flow rates between 2 and 20 l/min are detected with a measuring accuracy of 2 % f.s. Short response times within seconds and stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for flow rate monitoring in return and coolant circuits.

Your advantages...



High system availability

Especially in rough environments of factory and process automation, the inline flow meters proof their outstanding reliability. This is guaranteed through excellent EMC properties as well as protection class IP67. An application-optimized housing, durable mounting aids and a well readable display are the main features considered in the design. Flow meters thus withstand the special ambient conditions of many applications without any problems. Use these benefits to optimize your production processes.



Maximum planning freedom

Many solutions are implementable with only a few device types, numerous connection possibilities, simple mounting and flexible mounting aids. From polling of single switchpoints, over analog output signals, to remote readable of displays, profit from the extensive standard product range of TURCK flow meters. They provide more flexibility to your application.



User-friendly operation

The inline flow meters have two front panel buttons to perform adjustements. The menu and flow rates [l/min] are well readable on a 3-digit 7-segment display. Programming functions are only accessible with a code. Without the access code, only the stored values of the switchpoints and parameters are displayed. Commissioning times are reduced and process safety is improved through a simply structured menu.



Easy mounting

The inline flow meters are built in pipelines. The pipe may be connected directly via cutting ring or adapter. With a threaded bushing at the housing bottom the flow meters can be mounted on a baseplate. Alternatively, the baseplate can also be mounted on the sensor. In combination with the baseplate the sensor can also be mounted at the front.



Many different output signals

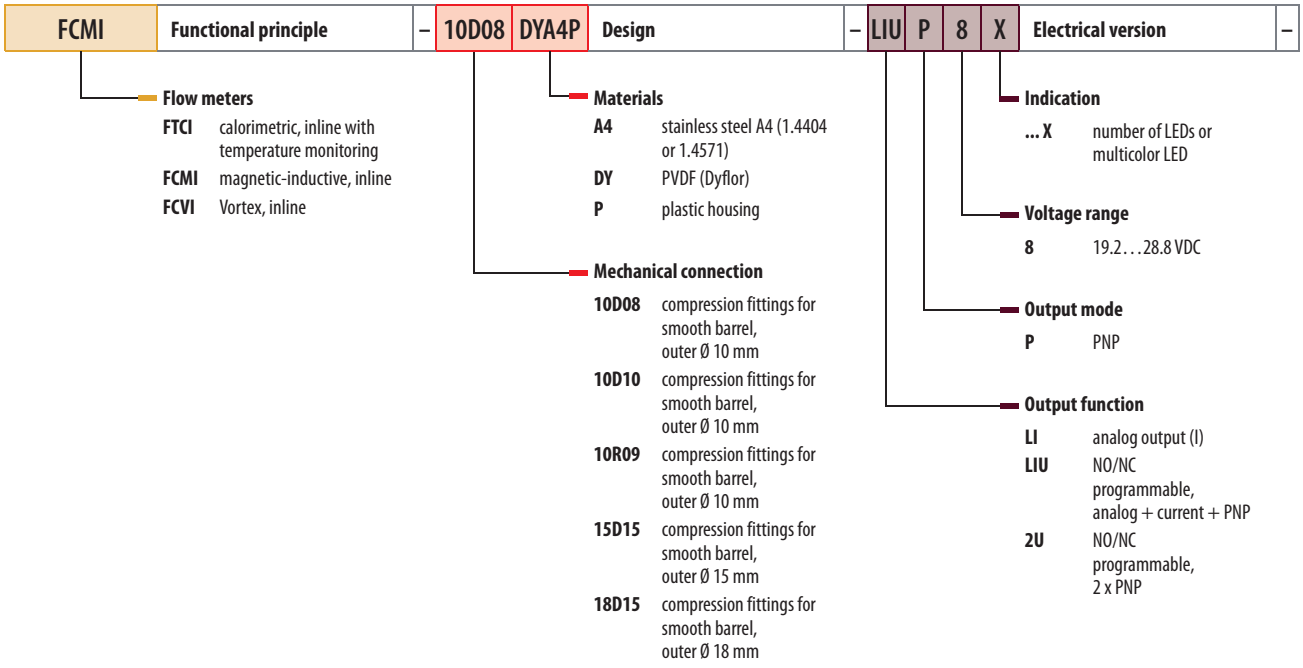
For further processing of output signals via control system, the flow meters provide a standard switching as well as an analog 4…20 mA output signal. Initial and end value are adjusted in the programming mode. Upon error in the measurement system, 2 mA are provided at the output. If the direction of flow is opposed to the mounting direction, the flow rate is displayed as a negative value and the output current remains stable at 4 mA. The measuring range shown in the display is limited to -9.9 l/min.

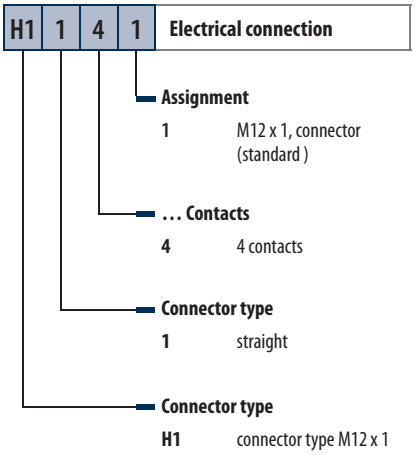


High servicability

Thanks to the many application possibilities, user-friendly operation and adjustment, the well legible 3-digit 7-segment display and last but not least the excellent repeatability, inline flow meters offer calculable advantages.

Type code


FCMI
Functional principle
–
10D08
DYA4P
Design
–
LIU
P
8
X
Electrical version
–
Flow meters
FTCI calorimetric, inline with temperature monitoring
FCMI magnetic-inductive, inline
FCVI Vortex, inline
Materials
A4 stainless steel A4 (1.4404 or 1.4571)
DY PVDF (Dyflor)
P plastic housing
Mechanical connection
10D08 compression fittings for smooth barrel, outer Ø 10 mm
10D10 compression fittings for smooth barrel, outer Ø 10 mm
10R09 compression fittings for smooth barrel, outer Ø 10 mm
15D15 compression fittings for smooth barrel, outer Ø 15 mm
18D15 compression fittings for smooth barrel, outer Ø 18 mm
Indication
... X number of LEDs or multicolor LED
Voltage range
8 19.2...28.8 VDC
Output mode
P PNP
Output function
LI analog output (I)
LIU NO/NC programmable, analog + current + PNP
2U NO/NC programmable, 2 x PNP


H1 1 4 1
Electrical connection
Assignment
1 M12 x 1, connector (standard)
… Contacts
4 4 contacts
Connector type
1 straight
Connector type
H1 connector type M12 x 1

Designs and variants

	Page 651	Page 651	Page 652	Page 655
				
	FTCI-D10	**FTCI-D15**	**FTCI-D18**	**FCMI-D10**
Medium	liquids	liquids	liquids	liquids
Mechanical connection	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)	compression ferrule fittings for pipes Ø 15 x 1.5 (EN10305-1)	compression ferrule fittings for pipes Ø 18 x 1.5 (EN10305-1)	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)
Flow operating range	1…10 l/min	2…20 l/min	4…40 l/min	0…40 l/min
Medium temperature	-10…90 °C	-10…90 °C	-10…90 °C	5…60 °C
Sensor quality	V4A (1.4571)	AISI 316Ti	AISI 316Ti	V4A (1.4571)/PVDF
Pressure resistance	20 bar	20 bar	20 bar	10 bar
Housing material	plastic	plastic	plastic	plastic

	Page 655	Page 655	Page 657
			
	FCMI-D15	**FCMI-3/4“**	**FCVI-D10**
Medium	liquids	liquids	liquids
Mechanical connection	compression ferrule fittings for pipes Ø 15 x 1.5 (EN10305-1)	G 3/4“	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)
Flow operating range	0…80 l/min	0…75 l/min	2…20 l/min
Medium temperature	5…60 °C	5…60 °C	5…60 °C
Sensor quality	V4A (1.4571)/PVDF	V4A (1.4571)/PVDF	V4A (1.4571)/PVDF
Pressure resistance	10 bar	10 bar	10 bar
Housing material	plastic	plastic	plastic

Flow meters for water and water-glycol mixtures



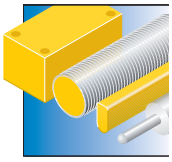
The FTCIs are particularly suited for flow rate monitoring in coolant circuits. Short response times within seconds and stable values displayed even under the influence of strong temperature fluctuations, make these sensors particularly suited for welding applications of the automotive industry. A 3-digit 7-segment display indicates the flow rate and the cooling capacity continuously.

To prevent icing, industrial air conditioning systems use water-glycol mixtures in secondary circuits. In order to provide a reliable indication of flow rate values, the glycol amount is adjusted at the flow meter. The devices are programmable via three pushbuttons at the front. Either the measured value or the sensor parameters are displayed, depending on the adjustment.

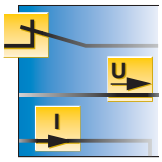
Features

- Measurement of small to medium water flow rates and water-glycol mixtures
- Ideal for small pipe diameters of up to DN20
- Temperature monitoring
- Switchpoint freely adjustable within the operating range
- No disturbing built-ins, free pipe profile, no pressure loss
- Fast response times within seconds
- Adjustable to flow rates between 1…40 l/min
- Repeatability < 10 % f.s.
- Two transistor outputs or one transistor and one analog current output

Properties



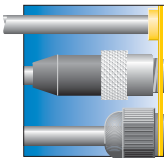
Design
Rugged plastic housing with display, ideal for small pipe diameters of up to DN20



Electrical versions
Two PNP transistor outputs or one PNP transistor and one linear analog current output 4…20 mA



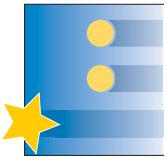
Measuring ranges
Adjustable to flow rates between 1 … 40 l/min, repeatability < 10 % f.s.



Electrical connections
M12 x 1 plug connection, A-coded



Materials
PBT housing, sensor made of stainless steel 1.4571 and FKM O-ring



Special features
Programmable switchpoint, output, hysteresis, switch ON/OFF delay, glycol amount, flow rate correction, averaging and access code

10 mm cutting ring



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)
Flow operating range	1…10 l/min	**Electrical connection**	connector, M12 x 1
Medium temperature	-10…90 °C	**Pressure resistance**	20 bar
Sensor quality	AISI 316Ti	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FTCI-10D10A4P-LIUP8X-H1141	_⌒/⊐⌒ programmable, PNP/analog output	w129	d553
FTCI-10D10A4P-2UP8X-H1141	_⌒/⊐⌒ programmable, 2 x PNP	w130	d554

15 mm cutting ring



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	compression ferrule fittings for pipes Ø 15 x 1.5 (EN10305-1)
Flow operating range	2…20 l/min	**Electrical connection**	connector, M12 x 1
Medium temperature	-10…90 °C	**Pressure resistance**	20 bar
Sensor quality	AISI 316Ti	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FTCI-15D15A4P-LIUP8X-H1141	_⌒/⊐⌒ programmable, PNP/analog output	w129	d555
FTCI-15D15A4P-2UP8X-H1141	_⌒/⊐⌒ programmable, 2 x PNP	w130	d556

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

18 mm cutting ring



General data

Operating voltage	21…26 VDC	**Housing quality**	PBT
Medium	liquids	**Mechanical connection**	compression ferrule fittings for pipes Ø 18 x 1.5 (EN10305-1)
Flow operating range	4…40 l/min	**Electrical connection**	connector, M12 x 1
Medium temperature	-10…90 °C	**Pressure resistance**	20 bar
Sensor quality	AISI 316Ti	**Ambient temperature**	0…60 °C

Types and data – selection table

Type	Output function	w	d
FTCI-18D15A4P-LIUP8X-H1141	programmable, PNP/analog output	w129	d557
FTCI-18D15A4P-2UP8X-H1141	programmable, 2 x PNP	w130	d558

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Compact devices for electrically conductive media

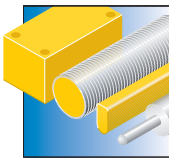


The FCMIs are designed for continuous measurement of many conductive liquids. The operating range covers small to medium flow rates. Operating on the magnetic-inductive principle, they are applied in many different areas to measure quantities and dosages of many different media. The strengths of the magnetic-inductive flow meters include a high measuring range dynamics and excellent repeatability. A 3-digit 7-segment display indicates the flow rate continuously. The devices are programmable via three pushbuttons at the front. Either the measured value or the sensor parameters are displayed, depending on the adjustment.

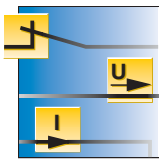
Features

- Measurement of small to medium flow rates of conductive liquids > 20 µS/cm
- Ideal for small pipe diameters of up to DN15
- Switchpoint freely adjustable within the operating range
- No disturbing built-ins, free pipe profile, no pressure loss
- Fast response times within seconds
- Adjustable to flow rates between 1…80 l/min
- Repeatability < 20 % f.s.
- Transistor and analog current output

Properties



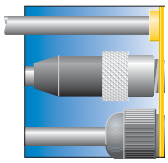
Design
Rugged plastic housing with display, ideal for small pipe diameters of up to DN15



Electrical versions
Configurable PNP transistor output, linear analog current output 4…20 mA



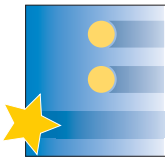
Measuring ranges
Adjustable to flow rates between 1 … 80 l/min, repeatability < 2 % f.s.



Electrical connections
M12 x 1 plug connection, A-coded



Materials
PBT housing, sensor material PVDF and stainless steel 1.4571



Special features
Programmable switchpoint, output, hysteresis, switch ON/OFF delay, averaging and access code

10 mm cutting ring



Type	FCMI-10D08DYA4P-LIUP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	0…40 l/min	**Pressure resistance**	10 bar
Medium temperature	5…60 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_/⊐⌒_ programmable, PNP/analog output	**Wiring diagram**	w129
Sensor quality	V4A (1.4571)/PVDF	**Dimension drawing**	d553

15 mm cutting ring



Type	FCMI-15D12DYA4P-LIUP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	compression ferrule fittings for pipes Ø 15 x 1.5 (EN10305-1)
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	0…80 l/min	**Pressure resistance**	10 bar
Medium temperature	5…60 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_/⊐⌒_ programmable, PNP/analog output	**Wiring diagram**	w129
Sensor quality	V4A (1.4571)/PVDF	**Dimension drawing**	d555

G 3/4“ – Male



Type	FCMI-3/4D12DYA4P-LIUP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	G 3/4“
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	0…75 l/min	**Pressure resistance**	10 bar
Medium temperature	5…60 °C	**Ambient temperature**	0…60 °C
Output function	_⌒_/⊐⌒_ programmable, PNP/analog output	**Wiring diagram**	w129
Sensor quality	V4A (1.4571)/PVDF	**Dimension drawing**	d559

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Flow meters for water applications

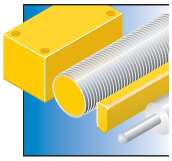


The Vortex flow meter FCVI is especially suited for applications with high demands on linearity and repeatability. The devices detect flow rates between 2 and 20 l/min with a repeatability of 2 % f.s. Short response times within seconds and stable values despite strong temperature fluctuation of the medium, make the FCVI especially suited for flow rate measurements of return and coolant circuits. A 3-digit 7-segment display indicates the flow rate continuously. The devices are programmed via three pushbuttons at the front. Either the measured value or the sensor parameters can be displayed, depending on the adjustment.

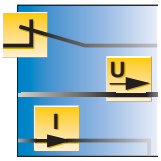
Features

- Measurement of small to medium water flow rates
- Ideal for small pipe diameters of up to DN10
- Switchpoint freely adjustable within the operating range
- Fast response times within seconds
- Adjustable to flow rates between 2…20 l/min
- Repeatability < 2 % f.s.
- Transistor and analog current output

Properties



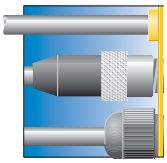
Design
Robust plastic housing with display, ideal for small pipe diameters of up to DN10



Electrical versions
Configurable PNP transistor output and linear analog current output 4…20 mA



Measuring ranges
Adjustable to flow rates between 2…20 l/min, repeatability < 2 % f.s.



Electrical connections
M12 x 1 plug connection, A-coded



Materials
PBT housing, sensor made of PVDF and stainless steel 1.4571



Special features
Programmable switchpoint, output, hysteresis, switch ON/OFF delay, averaging and access code

10 mm cutting ring



Type	FCVI-10R09DYA4P-LIUP8X-H1141	**Housing quality**	PBT
Operating voltage	21…26 VDC	**Mechanical connection**	compression ferrule fittings for pipes Ø 10 x 1 (EN10305-1)
Medium	liquids	**Electrical connection**	connector, M12 x 1
Flow operating range	2…20 l/min	**Pressure resistance**	10 bar
Medium temperature	5…60 °C	**Ambient temperature**	0…60 °C
Output function	_⌒‾/⊣⌒‾ programmable, PNP/analog output	**Wiring diagram**	w129
Sensor quality	V4A (1.4571)/PVDF	**Dimension drawing**	d553

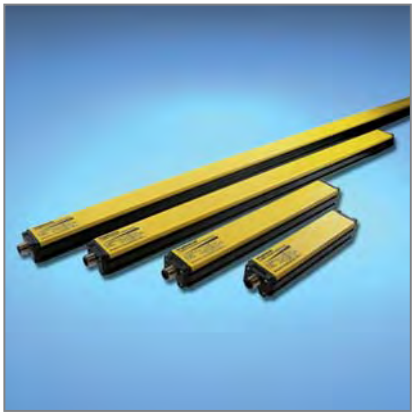
Flow meters

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 786 ff

Hans Turck GmbH & Co. KG ▪ Tel. +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

At a glance

Linear position sensors



Linear position sensors - Inductive or magnetic position detection

Position measuring systems are available in most varying designs and for many different applications; from potentiometric position sensors, over magnetostrictive systems up to high-resolution glass scales. The increasing trend towards analog measurement aims at optimizing production processes, simplifying quality assurance and reducing production costs and failure rates.

High repeatability and linearity, simple installation, a rugged design and wear-free measurement, last but not least a large measuring range and short blind zones are the features which an industrial-suited position detection system should have.

The new LI series of inductive linear position sensors can replace expensive magnetostrictive position detection systems as well as cheap but susceptible potentiometers. Thanks to a new revolutionary measuring principle, position is not detected via a positioning magnet but via an inductive oscillating circuit. The sensors are thus completely immune to magnetic fields such as generated by large motors for example.

Injection moulding or metal processing are typical applications for LI sensors. Metal chips or external magnetic fields, both impair the functionality of positioning magnets heavily.

The LI series comprises three device types with different outputs: Current/voltage, high-end IO-Link and SSI. No matter the combination of sensor size and positioning element, the user always gets the optimum solution for short ranges of 100 mm as well as long ranges of up to 1000 mm.

The WIM-Q25L sensors are magnetically actuated and feature measuring ranges of up to 200 mm. Working on the basis of the Hall principle, they achieve high linearity and repeatability and have extremely short blind zones. The magnet of WIM type sensors is axially magnetized, allowing the sensors to be mounted directly on pneumatic cylinders, flow meters or lift valves.

Our strengths - Your advantages



Inductive linear position sensors

The new Li…-Q25L inductive linear position sensors operate on the basis of a completely new, revolutionary measuring principle, combining the positive features of standard measuring sytems. Position is not detected via a positioning magnet but via an inductive oscillating circuit, making the devices completely immune to magnetic fields, such as generated by large motors for example. The sensors operate wear-free, feature short blind zones and excellent EMC properties. The measuring range is adjusted via pushbutton. Thanks to the extremely short blind zones, the sensors are very compactly shaped.



Rugged and leakproof housing

The aluminium cast housing and the high-quality plastic inlay provide high mechanical stability. Moreover, the sensors are perfectly resistant to most chemicals and oils and can be mounted in many ways. In combination with the extensive range of accessories, they are safely, flexibly and easily mounted in your system. The housing is of course available in the proven quality and features protection class IP67.



Short blind zones

Very short blind zones provide highest mounting flexibility for many different applications. Even when mounted in confined spaces, the entire measuring range is covered. The measuring range of the devices with analog output is either pin-programed or set via teach adapter within seconds. The teach-in process is comfortably controlled via LED at the sensor.

advantages



Flexible process connection

Different output types such as analog current or voltage but also SSI enable connection to the higher level control system. The signal is thus easily coupled to different fieldbuses via the TURCK remote I/O systems for example. A standard M12 x 1 plug connection makes the use of other special connectors redundant. In addition, we also offer IO-Link operable devices.



Highest accuracy

The standard version already achieves a very high degree of linearity and repeatability, sufficient for most applications. If the standard version should not comply with your demands in this respect, the high-end series does. Frequency converters, large motors, ferritic metals or permanent magnets are no problem at all. Inductive RLC coupling makes the sensors immune to magnetic fields and provides excellent EMC properties. Mechanical interferences are also hold off. The distance between sensor and positioning element as well as vibration and roughness in the guidance have no effect on the output signal.



Magnetic linear position sensors

The WIM-Q25L series of magnetically actuated linear position sensors features measuring ranges of up to 200 mm. Working on the basis of the Hall principle, they achieve high linearity and repeatability and have extremely short blind zones. The Q25L sensor family is thus perfectly suited for applications requiring precise signal transmission over long distances, such as in pneumatic pumps, slides, blanking or moulding systems.

Type code

Inductive linear position sensors

LI	100	P1	Inductive linear position sensor	–	Q25L	M1	Design	–	E	LiUPN8	X3	Electrical version	–

Positioning element

P0	without positioning element
P1	P1-Li-Q25L
P2	P2-Li-Q25L
P3	P3-Li-Q25L
P4	P4-Li-Q25L

Measuring range [mm]

100 mm up to 1000 mm, variable in 100 mm steps

Functional principle

LI	Linear inductive

Mounting aid

M0	without mounting aid
M1	M1-Q25L
M2	M2-Q25L
M4	M4-Q25L

Design

Q25L	rectangular, 25 x 35 mm

Resolution

E	increased resolution

Output mode

LiUPN8	IO-Link capable analog output, switching output
LIU5	analog output (I/U) 4 . . . 20 mA, 0 . . . 10 V
SG25	SSI, Gray 24/25/26 bit
SB25	SSI, binary 24/25/26 bit

Number of LEDs

X3	3 x LED

H1	1	5	1	Electrical connection

Assignment

1	standard assignment or customized

. . . Contacts

5	5-pole
8	8-pole

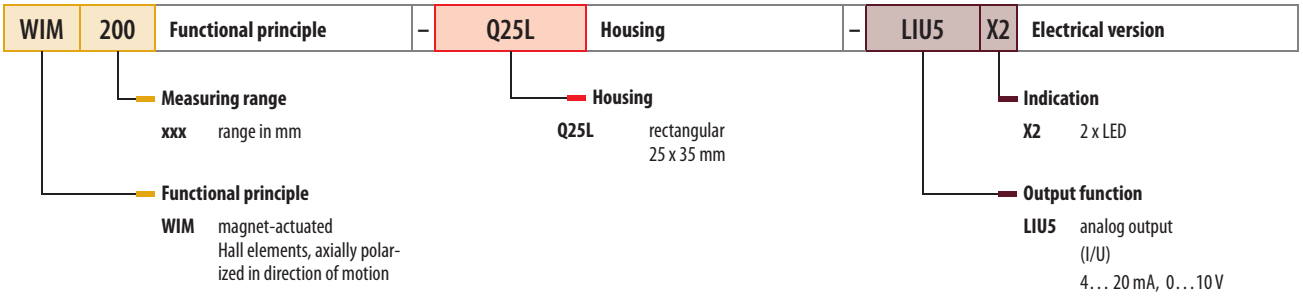
Connector type

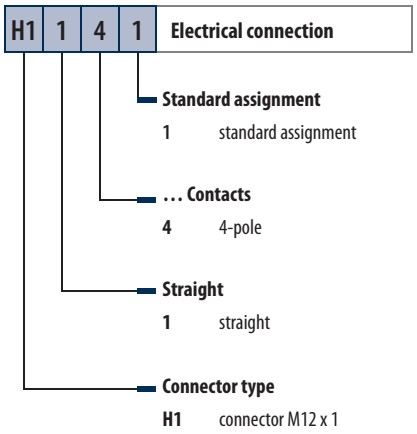
1	straight

Connector type

H1	connector M12 x 1

Magnetic linear position sensors





Inductive linear position sensors Li-Q25L

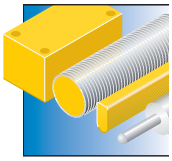


The new Li-Q25L series of linear position sensors offers devices ranging from 100 mm up to 1000 mm. They operate wear-free, feature short blind zones and excellent EMC properties. The measuring range is adjusted via pushbutton and thanks to the extremely short blind zones they are very compactly designed.

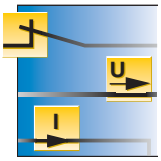
Features

- Rugged aluminium strand cast housing
- Watertight polycarbonate inlay
- Many different mounting options
- Programmable measuring range
- Standard plug connection M12 x 1, 5-pole
- Measuring range indicated via LED
- Not affected by external magnetic fields
- Extremely short blind zones

Properties



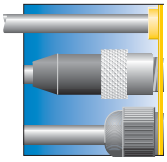
Design
Compact design, short blind zones



Electrical versions
Analog outputs 4…20 mA, 0…10 V, IO-Link , SSI interface



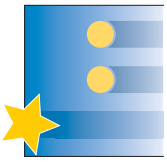
Measuring ranges
Smallest version 100 mm, largest 1000 mm



Electrical connections
M12 x 1 plug connection for simple installation



Materials
Aluminium strand cast housing with plastic inlay



Special features
Teachable measuring range

Q25L – Standard series with current and voltage output



General data

Resolution	12 bit	**Temperature drift**	0.003% / K
analog output	4…20 mA, 0…10 V	**Operating voltage**	15…30 VDC
Output function	analog output	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Ambient temperature**	-25…+70 °C
Linearity deviation	0.1% of full scale	**Housing material**	aluminium

More information on positioning elements and mounting aids in chapter Accessories

Types and data – selection table

Type	Dimensions	Measuring range	w	d
LI100P0-Q25LM0-LIU5X3-H1151	35 x 25 x 158 mm	100 mm	w131	d560
LI200P0-Q25LM0-LIU5X3-H1151	35 x 25 x 258 mm	200 mm	w131	d560
LI300P0-Q25LM0-LIU5X3-H1151	35 x 25 x 358 mm	300 mm	w131	d560
LI400P0-Q25LM0-LIU5X3-H1151	35 x 25 x 458 mm	400 mm	w131	d560
LI500P0-Q25LM0-LIU5X3-H1151	35 x 25 x 558 mm	500 mm	w131	d560
LI600P0-Q25LM0-LIU5X3-H1151	35 x 25 x 658 mm	600 mm	w131	d560
LI800P0-Q25LM0-LIU5X3-H1151	35 x 25 x 858 mm	800 mm	w131	d560
LI1000P0-Q25LM0-LIU5X3-H1151	35 x 25 x 1058 mm	1000 mm	w131	d560

Q25L – High-end E series with SSI interface



General data

Resolution	0,001 mm	**Operating voltage**	15…30 VDC
Output function	SSi, 25 Bit, Gray coded	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Ambient temperature**	-25…+70 °C
Linearity deviation	0.1% of full scale	**Housing material**	aluminium
Temperature drift	0.0001% / K		

More information on positioning elements and mounting aids in chapter Accessories

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 768 ff

Types and data – selection table

Type	Dimensions	Measuring range	w	d
LI100P0-Q25LM0-ESG25X3-H1181	35 x 25 x 158 mm	100 mm	w132	d560
LI200P0-Q25LM0-ESG25X3-H1181	35 x 25 x 258 mm	200 mm	w132	d560
LI300P0-Q25LM0-ESG25X3-H1181	35 x 25 x 358 mm	300 mm	w132	d560
LI400P0-Q25LM0-ESG25X3-H1181	35 x 25 x 458 mm	400 mm	w132	d560
LI500P0-Q25LM0-ESG25X3-H1181	35 x 25 x 558 mm	500 mm	w132	d560
LI600P0-Q25LM0-ESG25X3-H1181	35 x 25 x 658 mm	600 mm	w132	d560
LI800P0-Q25LM0-ESG25X3-H1181	35 x 25 x 858 mm	800 mm	w132	d560
LI1000P0-Q25LM0-ESG25X3-H1181	35 x 25 x 1058 mm	1000 mm	w132	d560

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 768 ff

Magnetically actuated linear position sensors WIM-Q25L

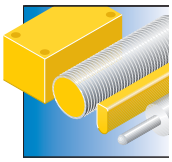


The WIM-Q25L series features magnetically actuated linear position sensors with measuring ranges of up to 200 mm. The sensors work on the basis of the Hall principle such as the compact analog magnetic field sensors WIM45. Typical features are high repeatability, linearity and extremely short blind zones. The Q25L sensor family is thus perfectly suited for applications requiring precise signal transmission over long distances, such as in pneumatic pumps, slides, blanking or moulding systems.

Features

- Many different mounting options
- Measuring range indicated via LED
- Not affected by external magnetic fields
- Extremely short blind zones

Properties



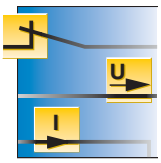
Design
4 lengths, compact housing, short blind zones



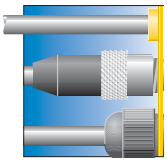
Measuring ranges
Smallest version 100 mm, largest 200 mm



Materials
Strand cast aluminium with plastic inlay



Electrical versions
analog outputs 4…20 mA and 0…10 V



Electrical connections
M12 x 1 plug connection for simple installation

Q25L



General data

Repeatability	0.1% of the measurement range	**Temperature drift**	0.006% / K
analog output	4…20 mA, 0…10 V	**Operating voltage**	15…30 VDC
Output function	analog output	**Protection class**	IP67
Electrical connection	connector, M12 x 1	**Ambient temperature**	-25…+70 °C
Linearity deviation	1% of full scale	**Housing material**	aluminium

Types and data – selection table

Type	Dimensions	Measuring range	w	d
WIM100-Q25L-LIU5X2-H1141	35 x 25 x 141 mm	100 mm	w051	d561
WIM125-Q25L-LIU5X2-H1141	35 x 25 x 166 mm	125 mm	w051	d561
WIM160-Q25L-LIU5X2-H1141	35 x 25 x 201 mm	160 mm	w051	d561
WIM200-Q25L-LIU5X2-H1141	35 x 25 x 241 mm	200 mm	w051	d561

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 768 ff

Hans Turck GmbH & Co. KG ▪ Tel. +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

At a glance

Encoders



Encoders

Encoders measure rotation speed, sense, position, angle and length. For this purpose, they convert mechanical motion in electrical signals.

There are incremental and absolute encoders. Signal periods provided by incremental encoders are used as a measure for rotation speed or position. The dual-channel incremental encoder detects positions bidirectionally as well as the rotation sense of shafts.

With absolute encoders instead, each incremental angle is assigned a code pattern. The position is detected at any time, even in the event of power failure without having to perform a reference run. Single-turn encoders set back the coding to the initial value after each full revolution. Absolute encoders detect angles, positions and inclinations precisely. Tasks that are typically found in robotics, positioning and process technology.

Encoders are available as solid and hollow shaft types. Hollow shaft encoders can be mounted without couplings, brackets or other mounting aids. The hollow shaft encoder is shifted on the drive shaft, then clamped and if necessary fixated with a pin.

TURCK encoders are available in diverse mechanical designs, as versions for incremental or absolute position detection, as hollow or solid shafts and in various sizes with diameters from 24 mm to 102 mm. They fulfill different positioning tasks with a resolution of up to 14 bits (digital devices) and of up to 36,000 pulses per revolution (incremental types).

If simple length measurements have to be performed such as cutting paper or fabrics to length, encoders with a prefixed measuring wheel are the right choice. They are reasonably priced and operate highly accurate.

Encoders with a prefixed draw-wire mechanism (1 to 40 m long) are the best solution for direct length measurements. Thanks to the excellent repeatability rating of 0.05 mm, they solve position control tasks highly precise in systems in which only complex equipment has been operated successfully until now. Whether applied to control the filling levels, position of pumps in tanks, alignment of elevating platforms or orientation of cranes: Just select an encoder of the right size and with the appropriate output configuration and combine it with a draw-wire mechanism of the right length.

Our strengths - Your advantages



Many different designs

We offer the appropriate encoder for almost any application. Incremental and absolute encoders in different sizes are available as hollow or solid shaft types. From miniature versions, over IP69K rated types, up to encoders for the heavy industry. A broad range of connection possibilities provide tailor-made solutions for any application. Equally beneficial is the large range of available output types, making the connection to the control system very easy. Many of the devices are UL approved and also available with ATEX approval if desired.



High-precision measurement

Whether optical or magnetic scanning, measured signals produced by TURCK encoders are always highly precise and provide the basis for high-resolution output signals and excellent repeatability. Incremental encoders achieve a maximum resolution of 36000 pulses per revolution, whereas absolute encoders achieve 17 bits per revolution at a maximum of 4096 revolutions.

Integrated temperature compensation ensures a stable signal quality for the entire operating temperature range. TURCK encoders can be applied wherever highest precision is required as a standard.



Aging compensation

Encoders are made of high-quality component. In order to guarantee longterm durability, the devices also feature a so called aging compensation to neutralize the loss of luminosity of the internal optical scanning. Downtimes produced by faulty encoder signals are thus prevented in the long run.

advantages - your



Rugged Safety-Lock™ and Safety-Lockplus™ design

The extremely rugged bearing assembly in Safety-Lock™ design provides high stability and protection against vibration and other mechanical strain exerted on the shaft. Blocked bearings, large distances between the bearings and extra strong outer bearings prevent interferences and downtimes emerging as a result of intense load, to which mechanically complex applications are often exposed. The mechanically protected shaft seal Safety-Lockplus™ is a high-level and durable protection against adverse conditions.



Large product range

NOTE: The product range of TURCK encoders offers nearly all combination possibilities and the largest possible number of variants. The type codes on the following pages provide the best overview over the product range and features.

A detailed description of the entire product range would exceed the scope of this catalog.

Type code

Type code

Incremental, solid shaft, diameter 50 mm

T8.5000	Series	•	X	X	X	X	Identification 1	•	XXXX	Identification 2

Series

Connection mode

1	cable axial (1 m PVC cable)
2	cable radial (1 m PVC cable)
3	8-pole M12 connector axial
4	8-pole M12 connector radial
7	12-pole M23 connector axial
8	12-pole M23 connector radial
Y	10-pole mil.- connector radial

Pulse rate/rotation

1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000 other pulse rates on request

Output circuit and supply voltage

1	RS422 (with inverting function), power supply 5…30 V
2	push-pull (7272 with inverting function), power supply 5…30 V
4	RS422 (with inverting function), power supply 5 V
5	push-pull (with inverting function), power supply 10…30 V

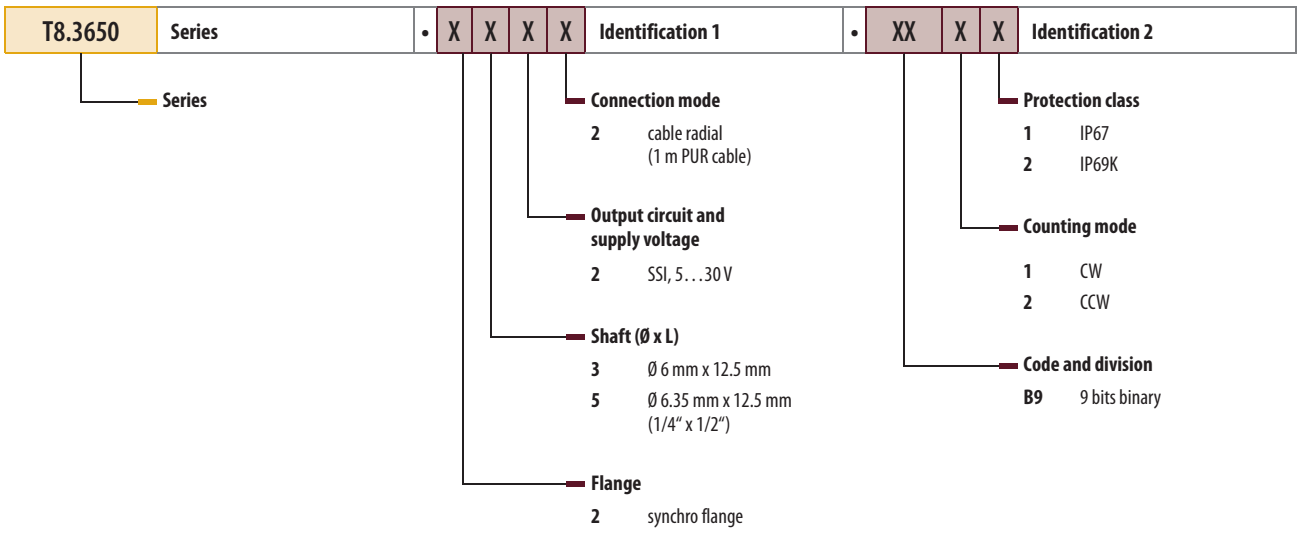
Flange

5	synchro flange Ø 50.8 mm, IP67
6	synchro flange Ø 50.8 mm, IP65
7	clamping flange, metric, Ø 58 mm, IP67
8	clamping flange, metric, Ø 58 mm, IP65
A	synchro flange Ø 58 mm, IP67
B	synchro flange Ø 58 mm, IP65
C	square flange 63,5 mm (2.5"), IP67
D	square flange 63,5 mm (2.5"), IP65

Shaft (Ø x L)

1	Ø 6 mm x 10 mm
2	Ø 1/4" x 5/8" (6.35 mm x 15.86 mm)
3	Ø 10 mm x 20 mm
4	Ø 3/8" x 5/8" (9.52 x 15,86 mm)
5	Ø 12 mm x 20 mm
6	Ø 8 mm x 15 mm

Incremental, solid shaft, diameter 36 mm



Type code

Type code

Incremental, hollow shaft, diameter 50 mm

T8.5020	Series	•	X	X	X	X	Identification 1	•	XXXX	Identification 2

Series

Connection mode

1	cable radial (1 m PVC cable)
2	8-pole M12 connector radial without mating connector
4	12-pole M23 connector radial without mating connector
7	10-pole mil.- connector radial

Pulse rate/rotation

1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000
other pulse rates on request

Output circuit and supply voltage

1	RS422 with inverting function power supply 5…30 V
2	push-pull 7272 with invert. function power supply 5…30 V
4	RS422 with inverting function- power supply 5…30 V
5	push-pull with inverting function power supply 10…30 V

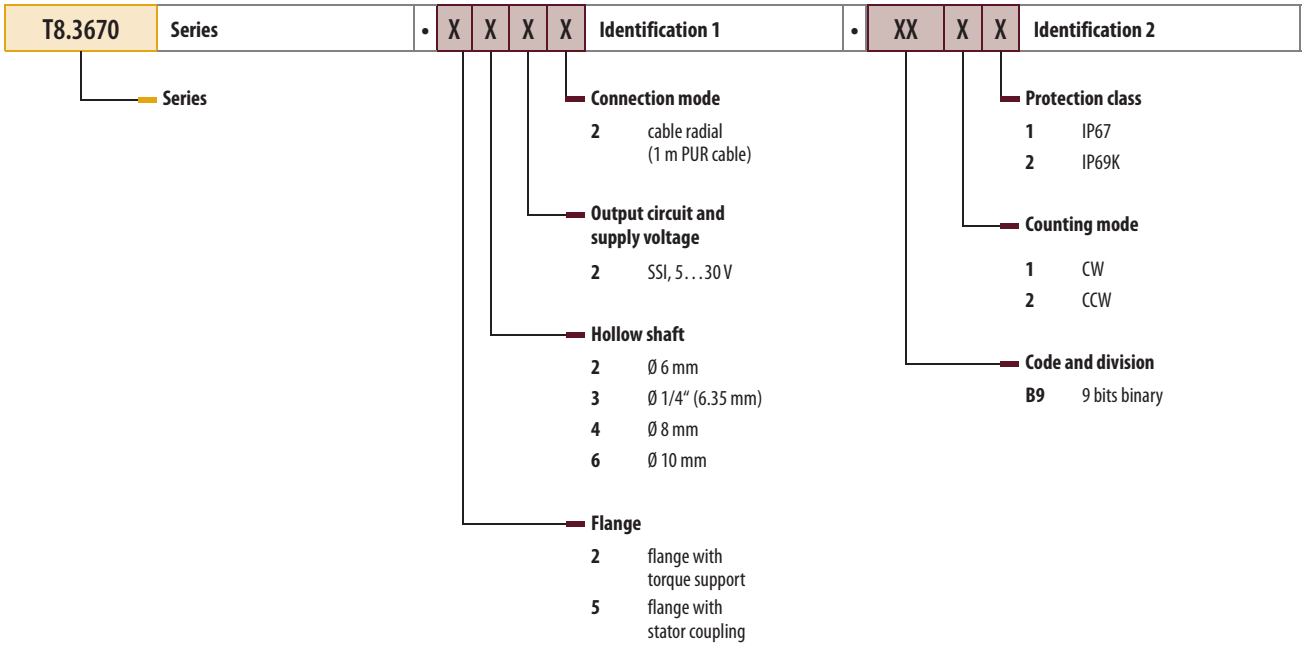
Flange

1	flange with torque support, IP67
2	flange with torque support, IP65
3	flange with mounting bracket, IP67
4	flange with mounting bracket, IP65
7	flange with stator coupling, Ø 65 mm, IP67
8	flange with stator coupling, Ø 65 mm, IP65
C	flange with stator coupling, Ø 63 mm, IP67
D	flange with stator coupling, Ø 63 mm, IP65

Hollow shaft

1	Ø 6 mm
2	Ø 1/4" (6.35 mm)
3	Ø 10 mm
4	Ø 3/8" (9.52 mm)
5	Ø 12 mm
6	Ø 1/2" (12.75 mm)
7	Ø 5/8" (15.875 mm)
8	Ø 15 mm
9	Ø 8 mm
A	Ø 14 mm

Incremental, hollow shaft, diameter 36 mm



Type code

Type code

Absolute, solid shaft, diameter 58 mm

T8.58X3	Series	.	X	X	X	X	Identification 1	.	X	X	X	X	Identification 2

Series

5	single turn
6	multiturn

Flange

1	clamping flange Ø 58 mm, IP65
2	synchro flange Ø 58 mm, IP65
3	clamping flange Ø 58 mm, IP67
4	synchro flange Ø 58 mm, IP67
5	square flange, 2.5" (63.5 mm) , IP65
7	square flange, 2.5" (63.5 mm) , IP67
C	flange with stator coupling, Ø 63 mm, IP67
D	flange with stator coupling, Ø 63 mm, IP65

Solid shaft
(Ø x L see table)

1	Ø 6 mm x 10 mm
2	Ø 10 mm x 20 mm
3	Ø 1/4" x 7/8"
5	Ø 3/8" x 7/8"
5	square flange, 2.5" (63.5 mm) , IP65
7	square flange, 2.5" (63.5 mm) , IP67
C	flange with stator coupling, Ø 63 mm, IP67
D	flange with stator coupling, Ø 63 mm, IP65

Connection mode

1	cable axial (1 m PVC cable)
2	cable radial (1 m PVC cable)
3	12-pole M23 connector axial
4	12-pole M23 connector radial
5	8-pole M12 connector axial
6	8-pole M12 connector radial

Output circuit and supply voltage

1	SSI or BiSS, 5 VDC
2	SSI or BiSS, 10…30 V
3	SSI or BiSS, and 2048 ppr SinCosSpur, 5 VDC
4	SSI or BiSS, and 2048 ppr SinCos, 10…30 VDC
5	SSI or BiSs,5 VDC, with sensor output for voltage monitoring at encoder
6	SSI or BiSS and 2048 ppr SinCos, 5 VDC, with sensor output for voltage monitoring at encoder
7	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 5 VDC
8	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 10…30 VDC
9	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 5 VDC, with sensor output for voltage monitoring at encoder

Code

B	SSI, binary
C	BiSS, binary
G	SSI, Gray

Resolution

A	10 bit ST + 12 bit MT
1	11 bit ST + 12 bit MT
2	12 bit ST + 12 bit MT
3	13 bit ST + 12 bit MT
4	14 bit ST + 12 bit MT
7	17 bit ST + 12 bit MT

I/Os

2	Input SET, DIR additional status output

Options (service)

1	no option
2	status LED
3	SET button and status LED

Absolute, hollow shaft, diameter 58 mm

T8.58X3	Series	.	X	X	X	X	Identification 1	.	X	X	X	X	Identification 2

Series

7	single turn
8	multiturn

Flange

1	flange with torque support, IP65
2	flange with torque support, IP67
3	flange with stator coupling TK65, IP65
4	flange with stator coupling TK65, IP67
5	flange with stator coupling TK63, IP65
6	flange with stator coupling TK63, IP67

Hollow shaft

3	Ø 10 mm
4	Ø 12 mm
5	Ø 14 mm
6	Ø 15 mm (blind hole, hollow shaft)
8	Ø 9.52 mm (3/8")
9	Ø 12,7 mm (1/2")

Connection mode

2	cable radial (1 m PVC cable)
4	12-pole M23 connector radial
6	8-pole M12 connector radial
E	tangential cable outlet (1 m PVC cable)

Output circuit and supply voltage

1	SSI or BiSS, 5 VDC
2	SSI or BiSS, 10…30 V
3	SSI or BiSS and 2048 ppr SinCosSpur, 5 VDC
4	SSI or BiSS and 2048 ppr SinCos, 10…30 VDC
5	SSI or BiSs, 5 VDC, with sensor output for voltage monitoring at encoder
6	SSI or BiSS and 2048 ppr SinCos, 5 VDC, with sensor output for voltage monitoring at encoder
7	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 5 VDC
8	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 10…30 VDC
9	SSI or BiSS and 2048 ppr incremental signals RS422, TTL comp., 5 VDC, with sensor output for voltage monitoring at encoder

Options (service)

1	no option
2	status LED
3	SET button and status LED

I/Os

2	intput SET, DIR additional status output

Resolution

A	10 bit ST + 12 bit MT
1	11 bit ST + 12 bit MT
2	12 bit ST + 12 bit MT
3	13 bit ST + 12 bit MT
4	14 bit ST + 12 bit MT
7	17 bit ST + 12 bit MT

Code

B	SSI, binary
C	BiSS, binary
G	SSI, Gray

Hans Turck GmbH & Co. KG ▪ Tel. +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

At a glance
Inclinometers



Inclinometers – Solutions for many applications

No matter if applied in harvesters, agricultural and construction machinery, in vehicles and airplanes or in machines, robots and solar plants: Sensors for measuring and monitoring inclination are universally applicable and help to improve the safety and efficiency of operations.

Inclination is defined as the relative angular tilt to the horizon or perpendicular. Inclinometers use the local gravity respectively acceleration of gravity as a reference to measure angular tilt. The measuring principle is similar to that of perpendicular drop, whereby the mass is directly related to the gravitational field. Following this principle, inclinometers use mechanical pendulums, bending beams or liquids like in water-levels.

TURCK inclinometers incorporate a micromechanical pendulum based on MEMS technology (Mikro Elektro Mechanic Systems). The core piece is a capacitive sensor element consisting of two parallely arranged plate electrodes with a dielectric in the middle.

The dielectric of this differential capacitor is designed as a resilient pendulum. If the position of the sensor changes, the dielectric in the middle moves, causing the capacitance ratio between both electrodes to change. This change in capacitance is exactly measured and processed to detect the angular tilt.

The extremely rugged TURCK inclinometers are also suited for fast production sequences and withstand impacts. The standard product portfolio comprises rectangular shaped, biaxially operating inclinometers Q20L60, with angular ranges of ±10°, ±45° and ±60°. It also includes devices with analog voltage, current or ratiometric output as well as 20 mm uniaxial versions with freely adjustable measuring range 0° … 360° and analog or digital output.

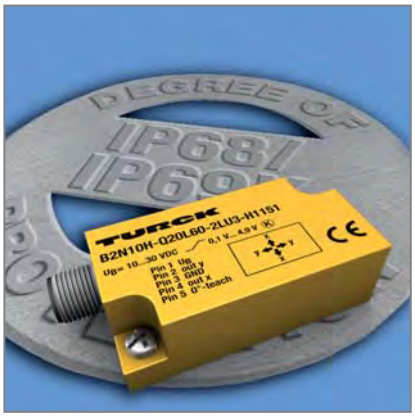
The Q42 complementing the product range, features a standard CANopen interface (CiA DS-301). These sensors provide baud rates of 10 kbps up to 1Mbps, high sampling rates and bandwidths as well as parameterizable vibrostability.

Our strenghts - Your advantages



High repeatability

The Q20L60 series is the right solution for high-precision applications, operating with a repeatability of 0.1% f.s. Q20L60 and Q42 inclinometers both feature a resolution of up to 0.04°.



High protection rating

The sensors are IP68 and IP69K protected, fulfilling high requirements such as:

- 24 hrs. continuous storage at +70 °C
- 24 hrs. continuous storage at -25 °C
- 7 days submersed, depth 1m
- 10 thermal shock changes from
- +70 °C to -25 °C, dwell cycle per temperature 1 hour
- Suited for high pressure steam-jet cleaning acc. to DIN 40050-9, following EN 60529



360° freely selectable range

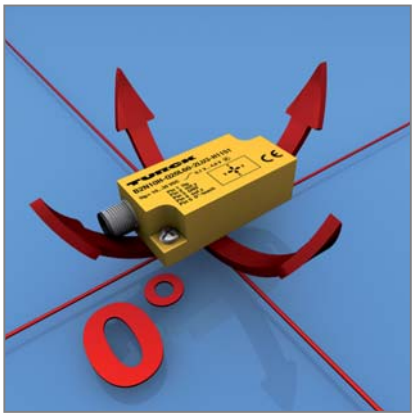
The uniaxial inclinometers operate over the full angular range of 360°. The required measuring range is set via teach adapter. Select the start value and press the teach adapter VB2-SP3 for 1 sec. Then select the end value and press the teach adapter for 3 seconds.

advantages



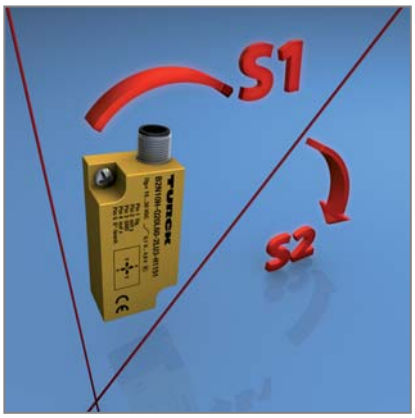
Compact CANopen interface

The inclinometers with CANopen interface (CIA DS-301) provide baud rates of 10 kbps up to 1Mbps, high sampling rates and bandwidths as well as parameterizable vibrostability.



Easy setting of zero point

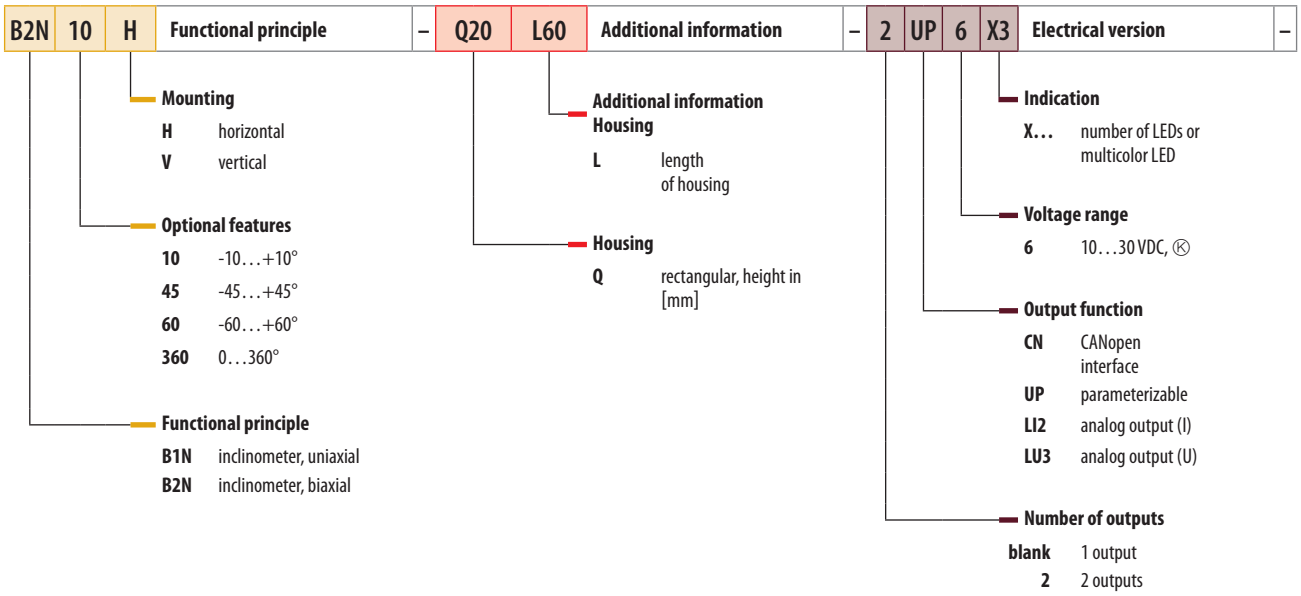
The home position (zero point) is easily set with the teach adapter VB2-SP3. Move the sensor in the wanted position, press the teach adapter for just 1 second and the sensor is calibrated!

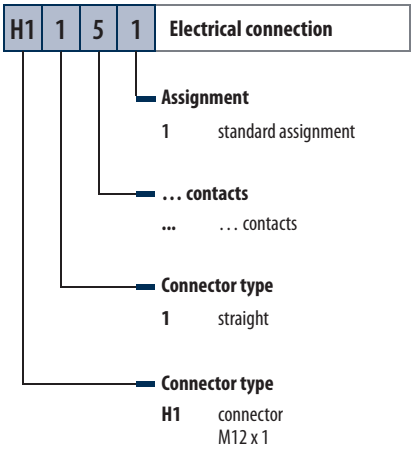


Programmable switchpoints

The inclinometer with digital output features two programmable switchpoints that can be set with the teach adapter TX1-Q20L60. Different positions at cranes and utility vehicles are thus detected and monitored for example.

Type code


B2N 10 H Functional principle – Q20 L60 Additional information – 2 UP 6 X3 Electrical version –
Mounting
H horizontal
V vertical
Optional features
10 -10…+10°
45 -45…+45°
60 -60…+60°
360 0…360°
Functional principle
B1N inclinometer, uniaxial
B2N inclinometer, biaxial
Additional information Housing
L length of housing
Housing
Q rectangular, height in [mm]
Indication
X... number of LEDs or multicolor LED
Voltage range
6 10…30 VDC, Ⓚ
Output function
CN CANopen interface
UP parameterizable
LI2 analog output (I)
LU3 analog output (U)
Number of outputs
blank 1 output
2 2 outputs


H1 1 5 1
Electrical connection
Assignment
1 standard assignment
… contacts
... … contacts
Connector type
1 straight
Connector type
H1 connector M12 x 1

Inclinometers for all applications



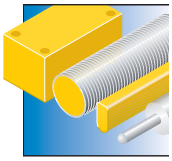
The standard product portfolio comprises rectangular shaped, biaxially operating inclinometers Q20L60, with angular ranges of ±10°, ±45° and ±60°. It also includes devices with analog voltage, current or ratiometric output as well as 20 mm uniaxial versions with freely adjustable measuring range 0° … 360° and analog or digital output.

The Q42 complementing the product range, features a standard CANopen interface (CiA DS-301). These sensors provide baud rates of 10 kbps up to 1 Mbps, high sampling rates and bandwidths as well as a parameterizable vibrostability.

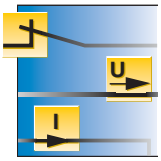
Features

- Compact rectangular design
- High-speed measurement
- Sensitive and precise
- Long-term stable and reliable
- Zero-offset compensation
- High protection classes IP68 and IP69K
- Extremely robust
- Simple alignment
- Adjustable measuring range
- Adjustable switchpoints

Properties



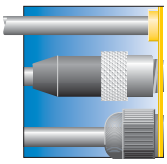
Design
Compact housing, 20 x 42 mm



Electrical versions
Digital as well as analog current and voltage outputs



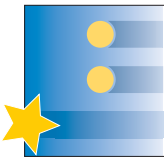
Measuring ranges
Angular ranges ±10°, ±45°, ±60°, ±85° and 360°



Electrical connections
M12 x 1 plug connection for simple installation



Materials
Rugged plastic housings, fully encapsulated, chemical-resistant



Special features
Zero point setting

Q20L60 – Voltage output 0.1…4.9 V



General data

Dimensions	30 x 20 x 60 mm	**Ambient temperature**	-30…+70 °C
Voltage output	0.1…4.9 V	**Protection class**	IP68 / IP69K
Operating voltage	10…30 VDC	**Material housing**	PC

Types and data – selection table

Type	Measuring range	Absolute accuracy (at 25 °C)	Temperature coefficient typical	Resolution	w	d
B2N10H-Q20L60-2LU3-H1151	-10…10°	0.3 °	0.01 °/K	0.04 °	w133	d562
B2N45H-Q20L60-2LU3-H1151	-45…45°	0.5 °	0.03 °/K	0.1 °	w133	d562
B2N60H-Q20L60-2LU3-H1151	-60…60°	0.5 °	0.03 °/K	0.14 °	w133	d562
B2N85H-Q20L60-2LU3-H1151	-85…85°	0.5	0.03 °/K	0.14 °	w133	d562

Q20L60 – Current output 4…20 mA



General data

Dimensions	30 x 20 x 60 mm	**Ambient temperature**	-30…+70 °C
Current output	4…20 mA	**Protection class**	IP68 / IP69K
Operating voltage	10…30 VDC	**Material housing**	PC

Types and data – selection table

Type	Measuring range	Absolute accuracy (at 25 °C)	Temperature coefficient typical	Resolution	w	d
B2N10H-Q20L60-2LI2-H1151	-10…10°	0.3 °	0.01 °/K	0.04 °	w134	d562
B2N45H-Q20L60-2LI2-H1151	-45…45°	0.5 °	0.03 °/K	0.1 °	w134	d562
B2N60H-Q20L60-2LI2-H1151	-60…60°	0.5 °	0.03 °/K	0.14 °	w134	d562
B2N85H-Q20L60-2LI2-H1151	-85…85°	0.5 °	0.03 °/K	0.14 °	w134	d562

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 736 ff

Q20L60 – Ratiometric voltage output



General data

Dimensions	30 x 20 x 60 mm	**Ambient temperature**	-30…+70 °C
Ratiometric output voltage	2…98 % U_b	**Protection class**	IP68 / IP69K
Operating voltage	4.75…5.25 VDC	**Material housing**	PC

Types and data – selection table

Type	Measuring range	Absolute accuracy (at 25 °C)	Temperature coefficient typical	Resolution	w	d
B2N60H-Q20L60-2LU5-H1151	-60…60°	0.5 °	0.03 °/K	0.14 °	w133	d562
B2N10H-Q20L60-2LU5-H1151	-10…10°	0.3 °	0.01 °/K	0.04 °	w133	d562
B2N45H-Q20L60-2LU5-H1151	-45…45°	0.5 °	0.03 °/K	0.1 °	w133	d562
B2N85H-Q20L60-2LU5-H1151	-85…85°	0.5 °	0.03 °/K	0.14 °	w133	d562

Q20L60 – Adjustable measuring range



General data

Dimensions	30 x 20 x 60 mm	**Operating voltage**	10…30 VDC
Measuring range	0…360 °	**Ambient temperature**	-30…+70 °C
Absolute accuracy (at 25°C)	0.5 °	**Protection class**	IP68 / IP69K
Temperature coefficient typical	0.03 °/K	**Material housing**	PC
Resolution	0.14 °		

Types and data – selection table

Type	Current output	Voltage output	w	d
B1N360V-Q20L60-LI2-H1151	4…20 mA	-	w135	d563
B1N360V-Q20L60-LU3-H1151	-	0.1…4.9 V	w136	d563

Q20L60 – Two programmable switchpoints



Type	B1N360V-Q20L60-2UP6X3-H1151	**Operating voltage**	10…30 VDC
Dimensions	30 x 20 x 60 mm	**Ambient temperature**	-30…+70 °C
Measuring range	0…360°	**Protection class**	IP68 / IP69K
Output	programmable, 2 x PNP	**Material housing**	PC
Absolute accuracy (at 25°C)	0.5 °	**Wiring diagram**	w137
Resolution	0.14 °	**Dimension drawing**	d564

Q42 – CANopen interface



General data			
Dimensions	52 x 42 x 68 mm	**Ambient temperature**	-40…+80 °C
Absolute accuracy (at 25°C)	0.1 °	**Protection class**	IP68 / IP69K
Temperature coefficient typical	0.008 °/K	**Material housing**	PA
Operating voltage	10…30 VDC		

Types and data – selection table

Type	Resolution	Measuring range	w	d
B2N10H-Q42-CNX2-2H1150	0.05 °	-10…+10 °	w138	d565
B2N45H-Q42-CNX2-2H1150	0.1 °	-45…+45 °	w138	d565
B2N60H-Q42-CNX2-2H1150	0.1 °	-60…+60 °	w138	d565

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 736 ff

At a glance

Ultrasonic sensors



Ultrasonic sensing – Versatile solutions for many applications

Ultrasonic sensors detect a multitude of objects contactless and wear-free with ultrasonic waves. In contrast to other sensing technologies, it is not important whether the object is transparent or opaque, metallic or non-metallic, firm, liquid or powdery. More important is the surface of the objects. The smoother the surface, the better the reflectivity and the larger the range.

The application possibilities for ultrasonic sensors are nearly infinite. Whether level or height detection, measurement of distance or object counting, ultrasonic sensors detect objects of different material qualities and within a large range. Environmental conditions such as spray, dust or rain hardly affect their functionality.

Ultrasonic diffuse mode sensors detect all objects that echo back ultrasonic waves. For this purpose the sensor emits ultrasonic pulses in cyclic periods. The echo is reverberated and transformed into an electrical signal through the sensor's transducer. The distance between the sensor and object is determined through the echo propagation principle, whereby the period between pulse emission and reverberation is related to a given sonic speed.

Ultrasonic sensors are also available as opposed and diffuse mode devices. In opposed mode, ultrasonic waves are continuously propagating between emitter and receiver. If an object crosses the wave, reverberation is cut off and the sensor produces a switching signal.

TURCK's ultrasonic sensors are available in many different designs, measuring ranges, beam angles and output types. Most of them feature temperature compensation, noise suppression and a connection cable for autosynchronization (protection against crosstalk).

Sensors with two switching outputs are suited for the control of minimum and maximum levels for example. Analog sensors are available with current and voltage output. Sensors with external transducer are best suited for confined spaces.

Small objects are detected with pinpoint accuracy, using versions with a narrow beam angle of approx. 6°. Devices with wider beam angle of 12° to 15° are also available. Sensors with a beam angle of 60° are best suited for monitoring very large areas. They detect smooth and even surfaces easily and are insensitive to tilt.

Our strengths - Your advantages



Broad product range – Different designs and beam angles

TURCK ultrasonic sensors are available as metal threaded barrels M18/M30 or plastic rectangular Q30 devices with a narrow beam angle of 6°. They detect very small objects with pinpoint accuracy. The Q30 with a beam angle of 6° achieve ranges of up to 8 m. Q45U and T30U with beam angles of 12° to 15° achieve longer ranges. The beam angle of CP40 types is 60°. These sensors monitor large areas and are insensitive to tilt when detecting objects with smooth and even surfaces.

The right choice for confined spaces is the Q45U with external transducer.



Highly efficient – Extremely accurate at any given range

The achievable range of ultrasonic sensors depends on the wavelength respectively the frequency used. The greater the wavelength/lower the frequency, the larger the range. Compact sensors achieve ranges from 300 mm up to 500 mm. With large wavelengths of 5 mm ranges of 8 m and more can be achieved.

The accuracy of ultrasonic sensing is not only limited by the wavelength but also by the fluctuation of sonic speed caused by temperature changes. Therefore most of the sensors are equipped with temperature compensation. This enables analog sensors to achieve a resolution of up to 0.6 mm over a wide temperature range.



Protection against interferences – Noise suppression and synchronization

Signal processing is not influenced by metallic clink or compressed air hissing. Such unwanted ambient noises are filtered out through an optimally selected frequency range and a patented noise suppression circuit. Crosstalk between ultrasonic sensors is inhibited through multiplexing or synchronization.

Most sensors feature autosynchronization. For this purpose they emit ultrasonic pulses synchronously and behave like one single sensor with extended beam angle, provided they are accordingly arranged. Park distance controls in cars are based on ultrasonic sensors technology.

advantages – your benefits



T30UX – Accurately measured values and minimal influence of temperature

Thanks to a powerful transducer and temperature compensation, the T30UX provide very accurately measured values. The diffuse mode versions achieve ranges of up to 3 m and have short blind zones of only 10 % f.s. Through the integrated temperature compensation failure rates are reduced by approx. 90 %.

Within the defined temperature window of -40…+70 °C the range limits are kept stable with a slight drift of only 2.2 %. The IP67 rated sensors are applied in different industrial sectors such as the automotive (detection of glass), paper manufacturing (sag control), pharmaceutical (level control) and many other fields of application.



M25U – All-metal ultrasonic sensors for aseptic applications

The M25U are fully encapsulated in stainless steel and IP68/IP69K rated. They meet all requirements on hygenic design of the food and beverage as well as the pharmaceutical industry. The stainless steel housing not only resists chemicals and aggressive cleaning agents, it is also thermal-shock proof. The sensors resist hot cleaning at +60 °C immediately followed by cold rinsing at +10 °C easily.

The ultrasonic opposed mode sensor can be adjusted to two sensitivities: Normal sensitivity, max. range 1 m, for objects sizing Ø 30 mm and larger; high sensitivity, max. range 40 cm, for objects sizing Ø 15 mm and larger.



QS18U – Also available with focussing adapter

The beam of some ultrasonic sensors such as the QS18U can be focussed with the UWG18 adapter. This allows small objects to be detected free from interfering ambient conditions. Measurements in tubes and barrels are also possible.

Designs and variants

	Page 723	Page 727	Page 708	Page 704
				
	QS18U	**S18U**	**M18K**	**M18**
Design	rectangular, 15 x 35 x 33.5 mm	cylindrical/threaded, Ø18 x 80.8 mm, Ø18 x 85.1 mm, Ø18 x 90.9 mm, Ø18 x 95.1 mm	cylindrical/threaded, Ø18 x 63 mm, Ø18 x 81 mm	cylindrical/threaded, Ø18 x 101 mm, Ø18 x 104 mm
Output function	PNP	pnp/npn Analog output	frequency PNP	PNP Analog output
Protection class	IP67 IP68	IP67	IP67	IP67
Ambient temperature	-20…+60 °C	-20…+60 °C	-25…+70 °C	-25…+70 °C
Max. range	50 cm	30 cm	70 cm	100 cm

	Page 714	Page 729	Page 725	Page 720
				
	M30	**T30U**	**QT50**	**Q30**
Design	cylindrical/threaded, Ø30 x 141.5 mm, Ø65 x 163.5 mm, Ø30 x 160.5 mm, Ø30 x 131 mm, Ø47.5 x 150 mm	cylindrical/threaded, Ø40 x 45 mm	rectangular, 74 x 84.2 x 67.4 mm, 74 x 100.2 x 67.4 mm	rectangular, 65 x 30 x 88 mm
Output function	PNP PNP/analog output	PNP PNP/analog output Analog output	PNP Analog output	PNP Analog output
Protection class	IP65	IP67	IP67	IP65
Ambient temperature	-25…+70 °C	-20…+70 °C -40…+70 °C	-20…+70 °C	0…+55 °C
Max. range	600 cm	300 cm	800 cm	100 cm

Designs and variants

	Page 700	Page 711
		
	CP40	**M25**
Design	rectangular, 40 x 40 x 160 mm, 40 x 40 x 177.5 mm	smooth barrel, Ø25 x 106 mm
Output function	PNP Analog output	pnp/npn
Protection class	IP40	IP67 / IP69K
Ambient temperature	0…+70 °C	-20…+70 °C
Max. range	180 cm	50 cm

Rectangular CP40



The CP40 detect glass or metal objects with a smooth surface, even with oblique incidence of the sensing beam. They cover a wide sensing range of 5 cm to 180 cm with a beam angle of 60°.

They are available with PNP transistor or Analog output 0…10 VDC / 0…20 mA

Features

- Compact rectangular design, 160 x 40 x 40 mm
- plastic housing
- Protection class IP40
- Ambient temperature 0 C°…+70 °C
- Diffuse mode
- Max. range 180 cm
- Beam angle 60°
- Change of beam direction through movable sensor head
- Analog or switching output
- LEDs indicate switching status /object detected
- Operating range adjusted via potentiometer

Type code CP40, M18, M18K, M30, Q12, Q30

RUR	70	M18KS	AP8X	H1141

RUR	Series	70	Sensing range	M18KS	Design

Series

RU	ultrasonic sensor, diffuse mode
RUC	ultrasonic sensor, programmable synchronizable, multiplex function diffuse mode
RUN	ultrasonic sensor, diffuse mode
RUR	ultrasonic sensor, retroreflective mode

Sensing range

70	max. sensing range in cm

Design

CP40	rectangular, plastic 40 x 40 x 160 mm or 40 x 40 x 177.5 mm
EM18	cylinder/thread M18, stainless steel, Ø 18 mm
EM30	cylinder/thread M30 stainless steel, Ø 30 mm
EMT18	cylinder/thread, M18, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
EMT30	cylinder/thread M30, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 30 mm
M18	cylinder/thread, M18, metal, CuZn nickel-plated, Ø 18 mm
M18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated Ø 18 mm
M18KS	compact design,side emission, cylinder/thread M18, metal, CuZn, nickel-plated, Ø 18 mm
M30	cylinder/thread M30, metal CuZn, nickel-plated, Ø 30 mm
M3047	cylinder/thread M30, metal CuZn, nickel-plated sonic transducer Ø 47 mm
M3065	cylinder/thread M30, metal CuZn nickel-plated sonic transducer Ø 65 mm, Ø 18 mm
MT18	cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 18 mm
MT18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
MT3047	cylinder/thread M30, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), ultrasonic transducer Ø 47 mm
Q12	compact, rectangular plastic 31 x 12 x 20 mm
Q30	compact, rectangular plastic, 65 x 30 x 88 mm

AP8X	Electrical version	H1141	Electrical connection

Electrical version

A	NO
2A	2 x NO
F	frequency output
I	analog output 0 . . . 20 mA or 4 . . . 20 mA
L	analog
N	NPN
P	PNP
U	analog output 0 . . . 10 V
X	LED display
X2	2 x LEDs
6	10 . . . 30 VDC input current
8	18 . . . 35 VDC input current

Electrical connection

H1141	connector, M12 x 1, 4-pole
H1151	connector, M12 x 1, 5-pole
V1141	connector, M8 x 1, 4-pole
blank	cable connection, 2 m, with CP40 = terminal chamber

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w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

CP40 – Switching output



General data

Operating voltage	10…30 VDC	**Ambient temperature**	0…+70 °C
Display, Object detected	LED	**Range**	5…180 cm
Type			
Output	⎽◺⎽, PNP	**Approach speed**	1 m/s
Switching frequency	≤ 3 Hz	**Converter ring material**	plastic
Protection class	IP40	**Converter ring quality**	PBT
Housing material	plastic, PBT-GF30-V0	**Ultrasound frequency**	40 kHz

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
RU100-CP40-AP6X2	40 x 40 x 160 mm	terminal chamber	w011	d566
RU100-CP40-AP6X2-H1141	40 x 40 x 177.5 mm	connector, M12 x 1	w001	d567

CP40 – Analog output



Type	RU100-CP40-LIUX	**Analog output**	0…20 mA, 0…10 V
Operating voltage	15…30 VDC	**Load**	≥ 4700…≤ 500 Ω
Power-on, indicator	LED	**Response time**	150 ms
Display, Object detected	LED	**Approach speed**	1 m/s
Type			
Dimensions	40 x 40 x 160 mm	**Converter ring material**	plastic
Protection class	IP40	**Converter ring quality**	PBT
Housing material	plastic, PBT-GF30-V0	**Ultrasound frequency**	40 kHz
Electrical connection	terminal chamber	**Wiring diagram**	w054
Ambient temperature	0…+70 °C	**Dimension drawing**	d568
Range	5…180 cm		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Cylindrical design M18 – Threaded barrel



The M18 detect small objects with pinpoint accuracy. They are IP67 rated and thus also applicable in rough environments.

The electronics is incorporated in a small 18 mm threaded barrel made of nickel-plated brass. Different types are available with operating ranges of 30 cm or 100 cm and with switching or Analog output. In order to avoid crosstalk, up to six devices can be synchronized simply by connecting the power supply. Alternate operation of several sensors is also possible through external control.

Features

- M18, threaded barrel
- Nickel-plated brass
- Protection class IP67
- Ambient temperature -25…+70 °C
- Diffuse mode
- Max. range 100 cm
- Beam angle 6°
- Switching or Analog output
- LED indicates the switching status
- Operating range adjusted via potentiometer and programming device
- Synchronizing/enable input

Type code CP40, M18, M18K, M30, Q12, Q30

RUR	70	M18KS	AP8X	H1141

RUR	Series	70	Sensing range	M18KS	Design

Series

RU	ultrasonic sensor, diffuse mode
RUC	ultrasonic sensor, programmable synchronizable, multiplex function diffuse mode
RUN	ultrasonic sensor, diffuse mode
RUR	ultrasonic sensor, retroreflective mode

Sensing range

70	max. sensing range in cm

Design

CP40	rectangular, plastic 40 x 40 x 160 mm or 40 x 40 x 177.5 mm
EM18	cylinder/thread M18, stainless steel, Ø 18 mm
EM30	cylinder/thread M30 stainless steel, Ø 30 mm
EMT18	cylinder/thread, M18, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
EMT30	cylinder/thread M30, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 30 mm
M18	cylinder/thread, M18, metal, CuZn nickel-plated, Ø 18 mm
M18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated Ø 18 mm
M18KS	compact design,side emission, cylinder/thread M18, metal, CuZn, nickel-plated, Ø 18 mm
M30	cylinder/thread M30, metal CuZn, nickel-plated, Ø 30 mm
M3047	cylinder/thread M30, metal CuZn, nickel-plated sonic transducer Ø 47 mm
M3065	cylinder/thread M30, metal CuZn nickel-plated sonic transducer Ø 65 mm, Ø 18 mm
MT18	cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 18 mm
MT18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
MT3047	cylinder/thread M30, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), ultrasonic transducer Ø 47 mm
Q12	compact, rectangular plastic 31 x 12 x 20 mm
Q30	compact, rectangular plastic, 65 x 30 x 88 mm

AP8X	Electrical version	H1141	Electrical connection

Electrical version

A	NO
2A	2 x NO
F	frequency output
I	analog output 0 . . . 20 mA or 4 . . . 20 mA
L	analog
N	NPN
P	PNP
U	analog output 0 . . . 10 V
X	LED display
X2	2 x LEDs
6	10 . . . 30 VDC input current
8	18 . . . 35 VDC input current

Electrical connection

H1141	connector, M12 x 1, 4-pole
H1151	connector, M12 x 1, 5-pole
V1141	connector, M8 x 1, 4-pole
blank	cable connection, 2 m, with CP40 = terminal chamber

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

M18 – Switching output



General data

Operating voltage	20…30 VDC	**Ambient temperature**	-25…+70 °C
Output	_⌒‾, PNP	**Converter ring material**	plastic
Protection class	IP67	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Switching frequency	Dimensions	Housing material	Range	Approach speed	Ultrasound frequency	w	d
RU30-M18-AP8X-H1141	≤ 5 Hz	Ø18 x 101 mm	metal, CuZn, nickel-plated	5…30 cm	4 m/s	400 kHz	w081	d569
RU100-M18-AP8X-H1141	≤ 4 Hz	Ø18 x 104 mm	metal, CuZn, nickel-plated	15…100 cm	8 m/s	230 kHz	w081	d570
RU100-MT18-AP8X-H1141	≤ 4 Hz	Ø18 x 104 mm	metal, CuZn, nickel-plated	15…100 cm	8 m/s	230 kHz	w081	d570
RU30-EM18-AP8X-H1141	≤ 5 Hz	Ø18 x 101 mm	stainless steel, V2A (1.4305), nickel-plated	5…30 cm	4 m/s	400 kHz	w081	d569
RU100-EM18-AP8X-H1141	≤ 4 Hz	Ø18 x 104 mm	stainless steel, V2A (1.4305), nickel-plated	15…100 cm	8 m/s	230 kHz	w081	d570

M18 – Analog output



General data

Operating voltage	20…30 VDC	**Analog output**	4…20 mA
Protection class	IP67	**Converter ring material**	plastic
Electrical connection	connector, M12 x 1	**Converter ring quality**	PBT
Ambient temperature	-25…+70 °C		

Types and data – selection table

Type	Dimensions	Housing material	Range	Response time	Approach speed	Ultrasound frequency	w	d
RU100-M18-LIX-H1141	Ø18 x 104 mm	metal, CuZn, nickel-plated	15…100 cm	120 ms	8 m/s	230 kHz	w139	d571
RU30-M18-LIX-H1141	Ø18 x 101 mm	metal, CuZn, nickel-plated	5…30 cm	100 ms	4 m/s	400 kHz	w139	d572
RU100-MT18-LIX-H1141	Ø18 x 104 mm	metal, CuZn, nickel-plated	15…100 cm	120 ms	8 m/s	230 kHz	w139	d571
RU30-EMT18-LIX-H1141	Ø18 x 101 mm	stainless steel, V2A (1.4305), nickel-plated	5…30 cm	100 ms	4 m/s	400 kHz	w139	d572

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

M18K – Threaded barrel



The M18K detect small objects with pinpoint accuracy. They are IP67 rated and thus also applicable in rough environments.

The sensors come in a small 18 mm threaded barrel made of nickel-plated brass. Available are diffuse mode devices with a max. range of 20 cm and retroreflective mode devices with a max. range of 70 cm. Both versions are either equipped with a PNP transistor or analog frequency output.

Features

- M18K, threaded barrel
- Nickel-plated brass
- Protection class IP67
- Diffuse mode (RU/RUN) and retroreflective mode (RUR) devices
- Max. range 70 cm
- Beam angle 6°
- Version with lateral emission (M18KS)
- Switching or analog frequency output
- LED indicates the switching status and teach mode
- Adjustments via teach input

Type code CP40, M18, M18K, M30, Q12, Q30

RUR	70	M18KS	AP8X	H1141

RUR	Series	70	Sensing range	M18KS	Design

Series

RU	ultrasonic sensor, diffuse mode
RUC	ultrasonic sensor, programmable synchronizable, multiplex function diffuse mode
RUN	ultrasonic sensor, diffuse mode
RUR	ultrasonic sensor, retroreflective mode

Sensing range

70	max. sensing range in cm

Design

CP40	rectangular, plastic 40 x 40 x 160 mm or 40 x 40 x 177.5 mm
EM18	cylinder/thread M18, stainless steel, Ø 18 mm
EM30	cylinder/thread M30 stainless steel, Ø 30 mm
EMT18	cylinder/thread, M18, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
EMT30	cylinder/thread M30, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 30 mm
M18	cylinder/thread, M18, metal, CuZn nickel-plated, Ø 18 mm
M18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated Ø 18 mm
M18KS	compact design,side emission, cylinder/thread M18, metal, CuZn, nickel-plated, Ø 18 mm
M30	cylinder/thread M30, metal CuZn, nickel-plated, Ø 30 mm
M3047	cylinder/thread M30, metal CuZn, nickel-plated sonic transducer Ø 47 mm
M3065	cylinder/thread M30, metal CuZn nickel-plated sonic transducer Ø 65 mm, Ø 18 mm
MT18	cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 18 mm
MT18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
MT3047	cylinder/thread M30, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), ultrasonic transducer Ø 47 mm
Q12	compact, rectangular plastic 31 x 12 x 20 mm
Q30	compact, rectangular plastic, 65 x 30 x 88 mm

AP8X	Electrical version	H1141	Electrical connection

Electrical version

A	NO
2A	2 x NO
F	frequency output
I	analog output 0 . . . 20 mA or 4 . . . 20 mA
L	analog
N	NPN
P	PNP
U	analog output 0 . . . 10 V
X	LED display
X2	2 x LEDs
6	10 . . . 30 VDC input current
8	18 . . . 35 VDC input current

Electrical connection

H1141	connector, M12 x 1, 4-pole
H1151	connector, M12 x 1, 5-pole
V1141	connector, M8 x 1, 4-pole
blank	cable connection, 2 m, with CP40 = terminal chamber

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

M18K – Analog frequency output



General data

Operating voltage	20…30 VDC	**Ambient temperature**	-25…+70 °C
Protection class	IP67	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

Versions with lateral emission (M18KS)

Types and data – selection table

Type	Dimensions	Range	Ultrasound frequency	w	d
RU20-M18K-LFX-H1141	Ø18 x 63 mm	3…20 cm	400 kHz	w140	d573
RU70-M18K-LFX-H1141	Ø18 x 63 mm	10…70 cm	200 kHz	w140	d573
RU20-M18KS-LFX-H1141	Ø18 x 81 mm	3…20 cm	400 kHz	w140	d574
RU70-M18KS-LFX-H1141	Ø18 x 81 mm	10…70 cm	200 kHz	w140	d574

M18K – Switching output (Diffuse mode sensor)



General data

Operating voltage	20…30 VDC	**Electrical connection**	connector, M12 x 1
Output	⎓, PNP	**Ambient temperature**	-25…+70 °C
Protection class	IP67	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT

Versions with lateral emission (M18KS)

Types and data – selection table

Type	Switching frequency	Dimensions	Range	Ultrasound frequency	w	d
RUN20-M18K-AP8X-H1141	≤ 10 Hz	Ø18 x 63 mm	3…20 cm	400 kHz	w141	d573
RUN70-M18K-AP8X-H1141	≤ 5 Hz	Ø18 x 63 mm	10…70 cm	200 kHz	w141	d573
RUN20-M18KS-AP8X-H1141	≤ 10 Hz	Ø18 x 81 mm	3…20 cm	400 kHz	w141	d574
RUN70-M18KS-AP8X-H1141	≤ 5 Hz	Ø18 x 81 mm	10…70 cm	200 kHz	w141	d574

M18K – Switching output (retroreflective sensor)



General data

Operating voltage	20…30 VDC	**Electrical connection**	connector, M12 x 1
Output	⎓, PNP	**Ambient temperature**	-25…+70 °C
Protection class	IP67	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT

Versions with lateral emission (M18KS)

Types and data – selection table

Type	Switching frequency	Dimensions	Range	Ultrasound frequency	w	d
RUR20-M18K-AP8X-H1141	≤ 10 Hz	Ø18 x 63 mm	0…20 cm	400 kHz	w141	d573
RUR70-M18K-AP8X-H1141	≤ 5 Hz	Ø18 x 63 mm	0…70 cm	200 kHz	w141	d573
RUR20-M18KS-AP8X-H1141	≤ 10 Hz	Ø18 x 81 mm	0…20 cm	400 kHz	w141	d574
RUR70-M18KS-AP8X-H1141	≤ 5 Hz	Ø18 x 81 mm	0…70 cm	200 kHz	w141	d574

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

M25U - Smooth barrel



The M25U are fully encapsulated in stainless steel and are IP68/IP69K rated. This makes them ideally suited for tasks in aseptic applications of the food and beverage as well as the pharmaceutical industry. The ultrasonic opposed mode version incorporates emitter and receiver and achieves a max. range of 75 mm. The device is available with PNP/NPN switching output. Two sensitivities can be adjusted: Normal sensitivity, max. range 1m (for objects sizing Ø 30 mm and larger); high sensitivity, max. range 40 cm (for objects sizing Ø 15 mm and larger).

Features

- All-metal ultrasonic sensor M25U
- Hygenic design, smooth barrel, stainless steel, Ø 25 mm
- Opposed mode, emitter/receiver
- Max. range 75 mm
- Protection rating IP67 / IP69K
- Resistant to aggressive cleaning agents and disinfectants
- Designed for 200,000 cleaning cycles,15 min, water +80 °C, rapid cool down
- PNP/NPN switching output
- High sensitivity for small objects (minimum size Ø 15 mm)

Type code M25U

M25U	E	B	Q

M25U	Series	E	Operating mode	B	Electrical output

Series
M25U cylinder, smooth stainless steel V4A, IP68/IP69K Ø 25 mm, length: 106 mm

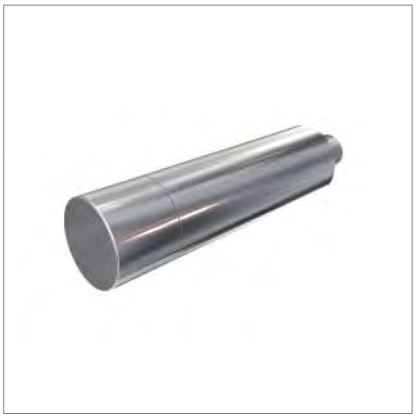
Operating mode
E opposed mode emitter
R receiver

Electrical output
B PNP/NPN

Q	Electrical connection

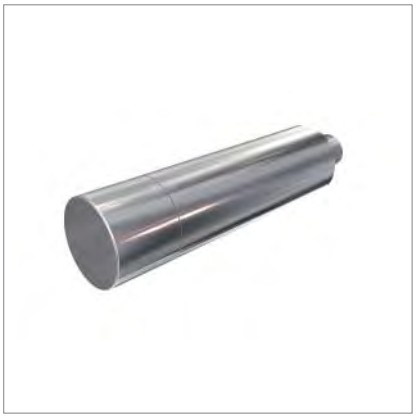
Electrical connection
Q connector, M12 x 1

M25 – Opposed mode sensor – Emitter



Type	M25UEQ	**Electrical connection**	connector, M12 x 1
Operating voltage	10…30 VDC	**Ambient temperature**	-20…+70 °C
Power-on, indicator	LED	**Range**	0…50 cm
Dimensions	Ø25 x 106 mm	**Ultrasound frequency**	140 kHz
Protection class	IP67 / IP69K	**Wiring diagram**	w068
Housing material	metal, V4A 1.4401 (AISI 316)	**Dimension drawing**	d575

M25 – Opposed mode sensor – Receiver



Type	M25URBQ	**Housing material**	metal, V4A 1.4401 (AISI 316)
Operating voltage	10…30 VDC	**Electrical connection**	connector, M12 x 1
Power-on, indicator	LED	**Ambient temperature**	-20…+70 °C
Output	_⌒‾, pnp/npn	**Range**	0…50 cm
Switching frequency	≤ 250 Hz	**Wiring diagram**	w142
Dimensions	Ø25 x 106 mm	**Dimension drawing**	d576
Protection class	IP67 / IP69K		

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Cylindrical design M30 – Threaded barrel



The M30 detect small objects with pinpoint accuracy and are hosted in a 30 mm threaded barrel made of nickel-plated brass. Available are versions with 30, 130, 300 and 600 cm range, switching output, switching and Analog output or with two switching outputs.

In order to avoid crosstalk, up to six RUC devices can be synchronized simply by connecting the power supply. Alternate operation of several sensors is also possible via external control or synchronizing/enable input.

Features

- M30 housing, threaded barrel
- Nickel-plated brass
- Protection class IP65
- Ambient temperature -25…+70 °C
- Diffuse mode
- Max. range 600 cm
- Beam angle 6°
- Switching or Analog output or two switching outputs
- LED indicates the switching status
- Operating range adjusted via potentiometer and programming device
- Devices with synchronizing/enable input
- 3GD version for explosion hazardous areas

Type code CP40, M18, M18K, M30, Q12, Q30

RUR	70	M18KS	AP8X	H1141

RUR	Series	70	Sensing range	M18KS	Design

Series

RU	ultrasonic sensor, diffuse mode
RUC	ultrasonic sensor, programmable synchronizable, multiplex function diffuse mode
RUN	ultrasonic sensor, diffuse mode
RUR	ultrasonic sensor, retroreflective mode

Sensing range

70	max. sensing range in cm

Design

CP40	rectangular, plastic 40 x 40 x 160 mm or 40 x 40 x 177.5 mm
EM18	cylinder/thread M18, stainless steel, Ø 18 mm
EM30	cylinder/thread M30 stainless steel, Ø 30 mm
EMT18	cylinder/thread, M18, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
EMT30	cylinder/thread M30, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 30 mm
M18	cylinder/thread, M18, metal, CuZn nickel-plated, Ø 18 mm
M18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated Ø 18 mm
M18KS	compact design,side emission, cylinder/thread M18, metal, CuZn, nickel-plated, Ø 18 mm
M30	cylinder/thread M30, metal CuZn, nickel-plated, Ø 30 mm
M3047	cylinder/thread M30, metal CuZn, nickel-plated sonic transducer Ø 47 mm
M3065	cylinder/thread M30, metal CuZn nickel-plated sonic transducer Ø 65 mm, Ø 18 mm
MT18	cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 18 mm
MT18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
MT3047	cylinder/thread M30, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), ultrasonic transducer Ø 47 mm
Q12	compact, rectangular plastic 31 x 12 x 20 mm
Q30	compact, rectangular plastic, 65 x 30 x 88 mm

AP8X	Electrical version	H1141	Electrical connection

Electrical version

A	NO
2A	2 x NO
F	frequency output
I	analog output 0 . . . 20 mA or 4 . . . 20 mA
L	analog
N	NPN
P	PNP
U	analog output 0 . . . 10 V
X	LED display
X2	2 x LEDs
6	10 . . . 30 VDC input current
8	18 . . . 35 VDC input current

Electrical connection

H1141	connector, M12 x 1, 4-pole
H1151	connector, M12 x 1, 5-pole
V1141	connector, M8 x 1, 4-pole
blank	cable connection, 2 m, with CP40 = terminal chamber

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

M30 – Switching output



General data

Operating voltage	20…30 VDC	**Ambient temperature**	-25…+70 °C
Output	⎓, PNP	**Converter ring material**	plastic
Protection class	IP65	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Switching frequency	Dimensions	Housing material	Range	Approach speed	Ultrasound frequency	w	d
RU30-M30-AP8X-H1141	≤ 8 Hz	Ø30 x 141.5 mm	metal, CuZn, nickel-plated	6…30 cm	4 m/s	400 kHz	w001	d577
RU30-EM30-AP8X-H1141	≤ 8 Hz	Ø30 x 141.5 mm	stainless steel, V2A (1.4305)	6…30 cm	4 m/s	400 kHz	w143	d577
RU30-EMT30-AP8X-H1141	≤ 8 Hz	Ø30 x 141.5 mm	stainless steel, V2A (1.4305)	6…30 cm	4 m/s	400 kHz	w143	d577
RU100-M30-AP8X-H1141	≤ 4 Hz	Ø30 x 141.5 mm	metal, CuZn, nickel-plated	20…130 cm	10 m/s	200 kHz	w001	d577
RU100-EM30-AP8X-H1141	≤ 4 Hz	Ø30 x 141.5 mm	stainless steel, V2A (1.4305)	20…130 cm	10 m/s	200 kHz	w143	d577
RUC30-M30-AP8X-H1141	≤ 8 Hz	Ø30 x 141.5 mm	metal, CuZn, nickel-plated	6…30 cm	4 m/s	400 kHz	w081	d577
RUC130-M30-AP8X-H1141	≤ 4 Hz	Ø30 x 141.5 mm	metal, CuZn, nickel-plated	20…130 cm	10 m/s	200 kHz	w081	d577
RUC300-M3047-AP8X-H1141	≤ 2 Hz	Ø30 x 160.5 mm	metal, CuZn, nickel-plated	40…300 cm	16 m/s	120 kHz	w081	d578
RUC600-M3065-AP8X-H1141	≤ 1 Hz	Ø65 x 163.5 mm	metal, CuZn, nickel-plated	60…600 cm	18 m/s	80 kHz	w081	d579

M30 – Two switching outputs



General data

Operating voltage	20…30 VDC	**Electrical connection**	connector, M12 x 1
Output	2 x ⎓, PNP	**Ambient temperature**	-25…+70 °C
Protection class	IP65	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT

Types and data – selection table

Type	Switching frequency	Dimensions	Range	Approach speed	Ultrasound frequency	w	d
RUC30-M30-2AP8X-H1151	≤ 8 Hz	Ø30 x 141.5 mm	6…30 cm	4 m/s	400 kHz	w144	d577
RUC130-M30-2AP8X-H1151	≤ 4 Hz	Ø30 x 141.5 mm	20…130 cm	10 m/s	200 kHz	w144	d577
RUC300-M3047-2AP8X-H1151	≤ 2 Hz	Ø30 x 160.5 mm	40…300 cm	16 m/s	120 kHz	w144	d578
RUC600-M3065-2AP8X-H1151	≤ 1 Hz	Ø65 x 163.5 mm	60…600 cm	18 m/s	80 kHz	w144	d579

M30 – Switching and Analog output



General data

Operating voltage	20…30 VDC	**Ambient temperature**	-25…+70 °C
Output	_⌒‾, PNP/analog output	**Analog output**	4…20 mA
Protection class	IP65	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Switching frequency	Dimensions	Range	Approach speed	Ultrasound frequency	w	d
RUC30-M30-LIAP8X-H1151	≤ 8 Hz	Ø30 x 131 mm	6…30 cm	4 m/s	400 kHz	w145	d577
RUC130-M30-LIAP8X-H1151	≤ 4 Hz	Ø30 x 131 mm	20…130 cm	10 m/s	200 kHz	w145	d577
RUC300-M3047-LIAP8X-H1151	≤ 2 Hz	Ø47.5 x 150 mm	40…300 cm	16 m/s	120 kHz	w145	d578
RUC600-M3065-LIAP8X-H1151	≤ 1 Hz	Ø65 x 163.5 mm	60…600 cm	18 m/s	80 kHz	w145	d579

w Wiring diagrams on page 832 ff d Dimension drawings on page 842 ff a Accessories on page 806 ff

M30 – Switching and Analog output – Ex-area



General data

Operating voltage	20…30 VDC	**Ambient temperature**	-25…+70 °C
Output	⎓, PNP/analog output	**Analog output**	4…20 mA
Protection class	IP65	**Converter ring material**	plastic
Housing material	metal, CuZn, nickel-plated	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

ATEX category II 3 G, Ex zone 2 – ATEX category II 3 D, Ex zone 22

Types and data – selection table

Type	Switching frequency	Dimensions	Range	Approach speed	Ultrasound frequency	w	d
RUC130-M30-LIAP8X-H1151/3GD	≤ 4 Hz	Ø30 x 131 mm	20…130 cm	10 m/s	200 kHz	w145	d577
RUC300-M3047-LIAP8X-H1151/3GD	≤ 2 Hz	Ø47.5 x 150 mm	40…300 cm	16 m/s	120 kHz	w145	d578

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Compact rectangular design Q30



The Q30 detect small objects with pinpoint accuracy. They are available as diffuse mode sensors with sensing ranges of 30 cm respectively 100 cm, optionally with switching or Analog output.

In order to avoid crosstalk, up to six devices can be synchronized simply by connecting the power supply. Alternate operation of several sensors is also possible via external control or synchronizing/enable input.

Features

- Compact rectangular design 88 x 65 x 30 mm
- plastic housing
- Protection class IP65
- Ambient temperature 0…+55 °C
- Diffuse mode
- Max. range 100 cm
- Beam angle 6°
- Analog or switching output
- LEDs indicate switching status/object detected
- Easy adjustment of operating range via potentiometer
- Synchronizing/enable input

Type code CP40, M18, M18K, M30, Q12, Q30

RUR	70	M18KS	AP8X	H1141

RUR	Series	70	Sensing range	M18KS	Design

Series

RU	ultrasonic sensor, diffuse mode
RUC	ultrasonic sensor, programmable synchronizable, multiplex function diffuse mode
RUN	ultrasonic sensor, diffuse mode
RUR	ultrasonic sensor, retroreflective mode

Sensing range

70	max. sensing range in cm

Design

CP40	rectangular, plastic 40 x 40 x 160 mm or 40 x 40 x 177.5 mm
EM18	cylinder/thread M18, stainless steel, Ø 18 mm
EM30	cylinder/thread M30 stainless steel, Ø 30 mm
EMT18	cylinder/thread, M18, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
EMT30	cylinder/thread M30, stainless steel, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 30 mm
M18	cylinder/thread, M18, metal, CuZn nickel-plated, Ø 18 mm
M18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated Ø 18 mm
M18KS	compact design,side emission, cylinder/thread M18, metal, CuZn, nickel-plated, Ø 18 mm
M30	cylinder/thread M30, metal CuZn, nickel-plated, Ø 30 mm
M3047	cylinder/thread M30, metal CuZn, nickel-plated sonic transducer Ø 47 mm
M3065	cylinder/thread M30, metal CuZn nickel-plated sonic transducer Ø 65 mm, Ø 18 mm
MT18	cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), Ø 18 mm
MT18K	compact design, cylinder/thread M18, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone) Ø 18 mm
MT3047	cylinder/thread M30, metal, CuZn, nickel-plated, PTFE-coated ultrasonic transducer surface (containing silicone), ultrasonic transducer Ø 47 mm
Q12	compact, rectangular plastic 31 x 12 x 20 mm
Q30	compact, rectangular plastic, 65 x 30 x 88 mm

AP8X	Electrical version	H1141	Electrical connection

Electrical version

A	NO
2A	2 x NO
F	frequency output
I	analog output 0 . . . 20 mA or 4 . . . 20 mA
L	analog
N	NPN
P	PNP
U	analog output 0 . . . 10 V
X	LED display
X2	2 x LEDs
6	10 . . . 30 VDC input current
8	18 . . . 35 VDC input current

Electrical connection

H1141	connector, M12 x 1, 4-pole
H1151	connector, M12 x 1, 5-pole
V1141	connector, M8 x 1, 4-pole
blank	cable connection, 2 m, with CP40 = terminal chamber

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Q30 – Switching output



General data

Operating voltage	18…35 VDC	**Electrical connection**	connector, M12 x 1
Output	⎯⎽⎺⎽⎯, PNP	**Ambient temperature**	0…+55 °C
Dimensions	65 x 30 x 88 mm	**Converter ring material**	plastic
Protection class	IP65	**Converter ring quality**	PBT
Housing material	plastic, PBT-GF30-V0		

Types and data – selection table

Type	Switching frequency	Switching frequency	Range	Approach speed	Ultrasound frequency	w	d
RU30-Q30-AP8X-H1141	≤ 8 Hz	-	6…30 cm	4 m/s	400 kHz	w081	d580
RU100-Q30-AP8X-H1141	≤ 5 Hz	≤ 0.005 kHz	20…100 cm	8 m/s	230 kHz	w081	d580

Q30 – Analog output



General data

Operating voltage	18…35 VDC	**Ambient temperature**	0…+55 °C
Display, Object detected Type	LED	**Analog output**	0…10 V
Dimensions	65 x 30 x 88 mm	**Load**	≥ 1000 Ω
Protection class	IP65	**Converter ring material**	plastic
Housing material	plastic, PBT-GF30-V0	**Converter ring quality**	PBT
Electrical connection	connector, M12 x 1		

Types and data – selection table

Type	Range	Response time	Approach speed	Ultrasound frequency	w	d
RU30-Q30-LUX-H1141	6…30 cm	70 ms	4 m/s	400 kHz	w146	d580
RU100-Q30-LUX-H1141	20…100 cm	90 ms	8 m/s	230 kHz	w146	d580

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Compact rectangular design QS18U



The QS18U are suited for confined spaces. They withstand rough environments thanks to protection rating IP67/IP68.

The sensors fit in almost any space. They are optionally available with M18 thread and can thus replace M18 threaded barrel sensors. Diffuse and retroreflective mode devices offer sensing ranges of 5 cm respectively 50 cm. They are available with PNP or NPN switching output.

Features

- Very compact rectangular design, 33.5 x 15 x 35 mm
- plastic housing
- Protection classes IP67/IP68
- Ambient temperature -20…+60 °C
- Diffuse mode
- Retroreflective mode (with adjustable switching output)
- Max. sensing range 500 mm
- Switching output
- LEDs indicate power ON and switching status
- Easy teaching, remote or via pushbutton

Type code QS18U

QS18U	P	A	E	Q8

QS18U	Series	P	Output	A	Sensing range

Series
QS18U cuboid-shaped, 15 x 35 x 33.5 mm

Output
P PNP
N NPN

Sensing range
A 50 . . . 500 mm

E	Design	Q8	Electrical connection

Design
E protection class IP68 without teach button
blank protection class IP67 with teach button

Electrical connection
blank connection cable, 2 m
Q pigtail with connector, Ø 8 mm
Q5 pigtail with connector, M12 x 1
Q7 connector, Ø 8 mm
Q8 connector, M12 x 1

QS18U – Switching output



General data

Operating voltage	12…30 VDC	**Ambient temperature**	-20…+60 °C
Output	⎓, PNP	**Range**	5…50 cm
Switching frequency	≤ 33 Hz	**Converter ring material**	plastic
Dimensions	33.5 x 15 x 35 mm	**Converter ring quality**	PBT
Housing material	plastic, ABS	**Ultrasound frequency**	300 kHz

QS18U…E, IP68 rated, without pushbutton

Types and data – selection table

Type	Protection class	Electrical connection	w	d
QS18UPA	IP67	cable	w147	d581
QS18UPAQ8	IP67	connector, M12 x 1	w147	d582
QS18UPAE	IP68	cable	w147	d583
QS18UPAEQ8	IP68	connector, M12 x 1	w147	d584

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

QT50U



The QT50U are available as diffuse mode sensors with sensing ranges of 20 cm or 800 cm and with switching or Analog output.

Many configurations can be set via DIP switch, allowing the sensors to be mounted in nearly any application. The fully encapsulated device is ideally suited for monitoring filling levels of liquids and solids. Versions with Analog output are best suited for continuous monitoring. Versions with two digital outputs allow limit values for close and distant range to be adjusted separately for each output.

Features

- Compact rectangular design, 67.4 x 74 x 84.2 mm
- plastic housing
- Protection class IP67
- Ambient temperature -20…+70 °C
- Diffuse mode
- Max. range 800 cm
- Beam angle 12°
- Analog and switching output
- LEDs indicate the signal strength
- Configuration via DIP/rotary switch
- Easy teaching via pushbutton or external cable

Type code QT50U

QT50U	LB	Q

QT50U	Design	LB	Electrical output	Q6	Electrical connection

Design

QT50U rectangular
74 x 84.2 x 67.4 mm
74 x 100.2 x 67.4 mm

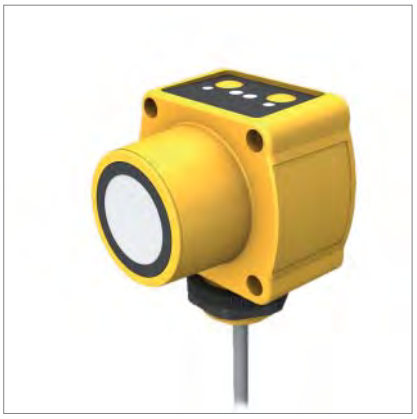
Electrical output

LB 2 x analog outputs, PNP or NPN
DB 2 x switching outputs
0 . . . 10 V or 4 . . . 20 mA

Electrical connection

M12 x 1 connector, M12 x 1, 5-pole
blank cable connection, 2 m

QT50 – Two switching outputs



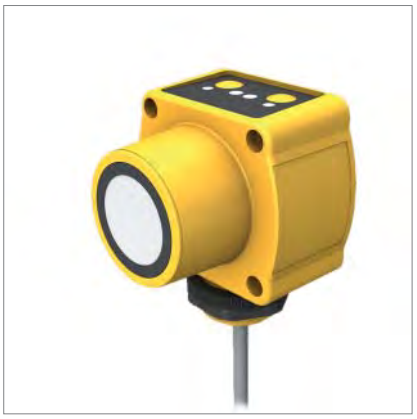
General data

Operating voltage	10…30 VDC	**Ambient temperature**	-20…+70 °C
Display, Object detected Type	LED	**Range**	20…800 cm
Output	2x ⎍, PNP	**Converter ring material**	plastic
Switching frequency	≤ 5 Hz	**Converter ring quality**	PBT
Protection class	IP67	**Ultrasound frequency**	75 kHz
Housing material	plastic, ABS		

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
QT50UDB	74 x 84.2 x 67.4 mm	cable	w148	d585
QT50UDBQ6	74 x 100.2 x 67.4 mm	connector, M12 x 1	w148	d586

QT50 – Analog output



General data

Operating voltage	10…30 VDC	**Analog output**	4…20 mA, 0…10 V
Display, Object detected Type	LED	**Load**	≥ 1000…≤ 500 Ω
Protection class	IP67	**Converter ring material**	plastic
Housing material	plastic, ABS	**Converter ring quality**	PBT
Ambient temperature	-20…+70 °C	**Ultrasound frequency**	75 kHz
Range	20…800 cm		

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
QT50ULB	74 x 84.2 x 67.4 mm	cable	w149	d585
QT50ULBQ6	74 x 100.2 x 67.4 mm	connector, M12 x 1	w149	d586

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Cylindrical design S18U – Threaded barrel



The S18U detect small objects with pinpoint accuracy. They withstand rough environments thanks to protection rating IP67.

The sensors come in an 18 mm threaded barrel made of plastic. They are available as diffuse or retroreflective mode devices with sensing ranges between 3 cm to 30 cm and with switching or Analog output.

Features

- M18, threaded barrel
- plastic housing, straight/angled
- Protection class IP67
- Ambient temperature -20…+60 °C
- Diffuse mode
- Retroreflective sensing mode adjustable (with switching output)
- Max. range 30 cm
- Beam angle 6°
- Analog or switching output
- Easy teaching via pushbutton or external cable

Type code S18U

S18U	B	A	R	Q

S18U	Series	B	Output	A	Range

Series

S18U	cylinder, plastic, thread Ø 18 mm

Output

B	PNP/NPN transistor output adjustable to retroreflective mode switching range adjustable via teach-in
U	0 . . . 10 V, measuring range adjustable via teach-in
I	4 . . . 20 mA, measuring range adjustable via teach-in

Range

A	3 . . . 30 cm

R	Design	Q	Electrical connection

Design

R	housing, angled
blank	housing, straight

Electrical connection

Q	connector, M12 x 1
blank	connection cable, 2 m

S18U – Switching output



General data

Operating voltage	10…30 VDC	**Ambient temperature**	-20…+60 °C
Display, Object detected	LED	**Range**	3…30 cm
Type			
Output	⎽◺⎽, pnp/npn	**Response time**	5 ms
Switching frequency	≤ 8 Hz	**Converter ring material**	plastic
Protection class	IP67	**Converter ring quality**	PBT
Housing material	plastic, PBT	**Ultrasound frequency**	300 kHz

Types and data – selection table

Type	Dimensions	Electrical connection	w	d
S18UBA	Ø18 x 80.8 mm	cable	w107	d587
S18UBAR	Ø18 x 85.1 mm	cable	w107	d588
S18UBAQ	Ø18 x 90.9 mm	connector, M12 x 1	w107	d589
S18UBARQ	Ø18 x 95.1 mm	connector, M12 x 1	w107	d590

S18U – Analog output



General data

Operating voltage	10…30 VDC	**Range**	3…30 cm
Display, Object detected	LED	**Response time**	3 ms
Type			
Protection class	IP67	**Converter ring material**	plastic
Housing material	plastic, PBT	**Converter ring quality**	PBT
Ambient temperature	-20…+60 °C	**Ultrasound frequency**	300 kHz

Types and data – selection table

Type	Dimensions	Electrical connection	Analog output	Load	w	d
S18UUA	Ø18 x 80.8 mm	cable	0…10 V	≥ 2500 Ω	w077	d587
S18UIA	Ø18 x 80.8 mm	cable	4…20 mA	-	w077	d587
S18UIAR	Ø18 x 85.1 mm	cable	4…20 mA	-	w077	d588
S18UUAR	Ø18 x 85.1 mm	cable	0…10 V	≥ 2500 Ω	w077	d588
S18UIAQ	Ø18 x 90.9 mm	connector, M12 x 1	4…20 mA	-	w077	d589
S18UUAQ	Ø18 x 90.9 mm	connector, M12 x 1	0…10 V	≥ 2500 Ω	w077	d589
S18UIARQ	Ø18 x 95.1 mm	connector, M12 x 1	4…20 mA	-	w077	d590
S18UUARQ	Ø18 x 95.1 mm	connector, M12 x 1	0…10 V	≥ 2500 Ω	w077	d590

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Cylindrical design T30U – Threaded barrel



The T30U offer many output configurations in a universal housing. They are applied to monitor filling levels in tanks or detect transparent materials.

Available are versions with two switching outputs as well as one switching and one Analog output for current or voltage. Thus measurements and switching operations can be implemented simultaneously. Switching and measuring outputs can be programmed the same or different operating ranges.

The sensors are available as diffuse mode devices with max. sensing ranges of 100, 200 or 300 cm.

Features

- T30U, plastic housing with M30 thread
- Protection class IP67
- Ambient temperature -20…+70 °C
- Diffuse mode
- Max. ranges 100, 200, 300 cm
- Analog and switching output or two switching outputs
- The outputs can either be programmed together or separately with rising or falling Analog output curve.
- LEDs indicate power ON, signal strength and output status
- Easy teaching via pushbuttons or external cable
- Chemical-resistant and PTFE-coated versions

Type code T30U

T30U	P	B	Q8

T30U	Series	DP	Output	B	Range

Series

T30U	cylinder, thread Ø 40 mm length 45 mm, without temperature compensation
T30UX	cylinder, thread Ø 40 mm length 45 mm, with temperature compensation

Output

DP	PNP (2 x)
UP	PNP, analog output 0 . . . 10 V
IP	PNP, analog output 4 . . . 20 mA

Range

A	15 . . . 100 cm
B	30 . . . 200 cm
C	40 . . . 300 cm

Q8	Electrical connection

Electrical connection

Q8	connector, M12 x 1
blank	connection cable, 2 m

T30U – Two switching outputs



General data

Operating voltage	12…24 VDC	**Housing material**	plastic, Polyester
Output	2x ⎓, PNP	**Ambient temperature**	-20…+70 °C
Dimensions	Ø40 x 45 mm	**Converter ring material**	plastic
Protection class	IP67	**Converter ring quality**	Epoxy-resin

Types and data – selection table

Type	Switching frequency	Electrical connection	Range	Ultrasound frequency	w	d
T30UDPA	≤ 20 Hz	cable	15…100 cm	230 kHz	w148	d591
T30UDPB	≤ 10 Hz	cable	30…200 cm	120 kHz	w148	d591
T30UDPAQ	≤ 20 Hz	connector, M12 x 1	15…100 cm	230 kHz	w148	d592
T30UDPBQ	≤ 10 Hz	connector, M12 x 1	30…200 cm	120 kHz	w148	d592

T30UX – Switching output – Temperature compensation



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, Polyester
Display ‚Object detected' Type	LED	**Ambient temperature**	-40…+70 °C
Output	⎓, PNP	**Converter ring material**	plastic
Dimensions	Ø40 x 45 mm	**Converter ring quality**	PBT
Protection class	IP67		

Types and data – selection table

Type	Switching frequency	Electrical connection	Range	Response time	Ultrasound frequency	w	d
T30UXDA	≤ 10 Hz	cable	10…100 cm	45 ms	224 kHz	w081	d591
T30UXDB	≤ 5 Hz	cable	20…200 cm	92 ms	174 kHz	w081	d591
T30UXDC	≤ 3 Hz	cable	30…300 cm	135 ms	114 kHz	w081	d591
T30UXDAQ8	≤ 10 Hz	connector, M12 x 1	10…100 cm	45 ms	224 kHz	w081	d592
T30UXDBQ8	≤ 5 Hz	connector, M12 x 1	20…200 cm	92 ms	174 kHz	w081	d592
T30UXDCQ8	≤ 3 Hz	connector, M12 x 1	30…300 cm	135 ms	114 kHz	w081	d592

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

T30U – Switching and Analog output



General data

Operating voltage	15…24 VDC	**Housing material**	plastic, Polyester
Display‚Object detected'	LED	**Ambient temperature**	-20…+70 °C
Type			
Output	_⌒‾, PNP/analog output	**Converter ring material**	plastic
Dimensions	Ø40 x 45 mm	**Converter ring quality**	Epoxy-resin
Protection class	IP67		

Types and data – selection table

Type	Switching frequency	Electrical connection	Range	Analog output	Load	Ultrasound frequency	w	d
T30UIPA	≤ 20 Hz	cable	15…100 cm	4…20 mA	-	230 kHz	w150	d591
T30UIPB	≤ 10 Hz	cable	30…200 cm	4…20 mA	-	120 kHz	w150	d591
T30UUPA	≤ 20 Hz	cable	15…100 cm	0…10 V	≥ 1000 Ω	230 kHz	w150	d591
T30UUPB	≤ 10 Hz	cable	30…200 cm	0…10 V	≥ 1000 Ω	120 kHz	w150	d591
T30UIPAQ	≤ 20 Hz	connector, M12 x 1	15…100 cm	4…20 mA	-	230 kHz	w150	d592
T30UIPBQ	≤ 10 Hz	connector, M12 x 1	30…200 cm	4…20 mA	-	120 kHz	w150	d592
T30UUPBQ	≤ 10 Hz	connector, M12 x 1	30…200 cm	0…10 V	≥ 1000 Ω	120 kHz	w150	d592
T30UUPAQ	≤ 20 Hz	connector, M12 x 1	15…100 cm	0…10 V	≥ 1000 Ω	230 kHz	w150	d592

T30UX – Analog output – Temperature compensation



General data

Operating voltage	10…30 VDC	**Housing material**	plastic, Polyester
Display‚Object detected'	LED	**Ambient temperature**	-40…+70 °C
Type			
Dimensions	Ø40 x 45 mm	**Converter ring material**	plastic
Protection class	IP67	**Converter ring quality**	PBT

Types and data – selection table

Type	Electrical connection	Range	Analog output	Load	Response time	Ultrasound frequency	w	d
T30UXUC	cable	30…300 cm	0…10 V	≥ 2500 Ω	135 ms	114 kHz	w146	d591
T30UXUB	cable	20…200 cm	0…10 V	≥ 2500 Ω	92 ms	174 kHz	w146	d591
T30UXIC	cable	30…300 cm	4…20 mA	-	135 ms	114 kHz	w139	d591

Type	Electrical connection	Range	Analog output	Load	Response time	Ultrasound frequency	w	d
T30UXUA	cable	10…100 cm	0…10 V	≥ 2500 Ω	45 ms	224 kHz	w146	d591
T30UXIB	cable	20…200 cm	4…20 mA	-	92 ms	174 kHz	w139	d591
T30UXIA	cable	10…100 cm	4…20 mA	-	45 ms	224 kHz	w139	d591
T30UXUAQ8	connector, M12 x 1	10…100 cm	0…10 V	≥ 2500 Ω	45 ms	224 kHz	w146	d592
T30UXUCQ8	connector, M12 x 1	30…300 cm	0…10 V	≥ 2500 Ω	135 ms	114 kHz	w146	d592
T30UXICQ8	connector, M12 x 1	30…300 cm	4…20 mA	-	135 ms	114 kHz	w139	d592
T30UXIAQ8	connector, M12 x 1	10…100 cm	4…20 mA	-	45 ms	224 kHz	w139	d592
T30UXUBQ8	connector, M12 x 1	20…200 cm	0…10 V	≥ 2500 Ω	92 ms	174 kHz	w146	d592
T30UXIBQ8	connector, M12 x 1	20…200 cm	4…20 mA	-	92 ms	174 kHz	w139	d592

w Wiring diagrams on page 832 ff
d Dimension drawings on page 842 ff
a Accessories on page 806 ff

Hans Turck GmbH & Co. KG ▪ Phone +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

At a glance

Connecting and Mounting accessories



Connection technology

TURCK connectors fulfill many different requirements of the automation industry. The standard and universally applicable product series help to minimize installation efforts and storage space.

M8/M12 x 1 female or male outputs are available, straight and angled, 3 and 4-pole. The M12 is also available as 5-pole version. The entire product family is IP67 rated.



Mounting accessories

TURCK offers the appropriate accessories for quick mounting, optimal operation and protection of the sensors. Accessories for:

- Proximity sensors
- Dual sensors for rotary actuators
- Magnetic field sensors
- Pressure sensors
- Temperature sensors
- Flow sensors
- Ultrasonic sensors

More accessories for photoelectric and inspection sensors are listed at the end.

Plug connections



The product range features flit plugs with injection-moulded cables, connection cables and field attachable plugs. You find a short overview of the standard flit plugs with stripped cable end further below in this chapter.

Please visit our website for more details on our entire product range.

Automation-Line plug connections

- Trailing capability
- Free from halogen, silicone and PVC
- UL approved
- Resistant to weld splatter, chemicals and oils
- Resistant to microbes and hydrolysis
- Flame-retardant

FB+ plug connections

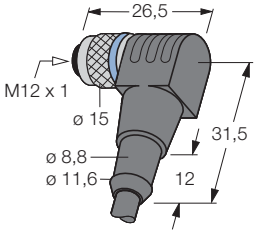
- IP68/IP69K rated
- Resistant to cleaning agents
- Stainless steel coupling nut

Plug connections



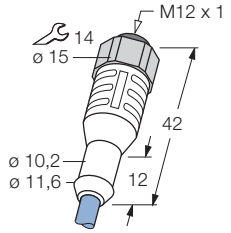
Female
M12 x 1 straight
Cable length 2 m

3-pole	AL-WAK3-2/S370
4-pole	AL-WAK4-2/S370
5-pole	AL-WAK4.5-2/S370



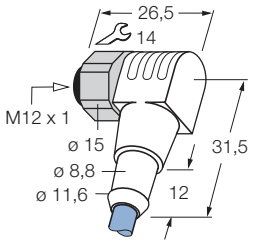
Female
M12 x 1 angled
Cable length 2 m,
Food industry

3-pole	AL-WWAK3-2/S370
4-pole	AL-WWAK4-2/S370
5-pole	AL-WWAK4.5-2/S370



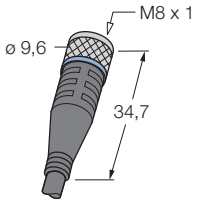
Female
M12 x 1 straight
Cable length 2 m
Food industry

4-pole	FB-WAK4-2/S2300



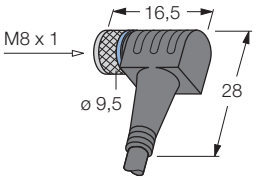
Female
M12 x 1 angled
Cable length 2 m,
Food industry

4-pole	FB-WWAK4-2/S2300



Female
M8 x 1 straight
Cable length 2 m

3-pole	AL-SKP3-2/S370
4-pole	AL-SKP4-2/S370



Female
M8 x 1 angled
Cable length 2 m

3-pole	AL-SWKP3-2/S370
4-pole	AL-SWKP4-2/S370

For other cable lengths see www.turck.com

Accessories for proximity sensors

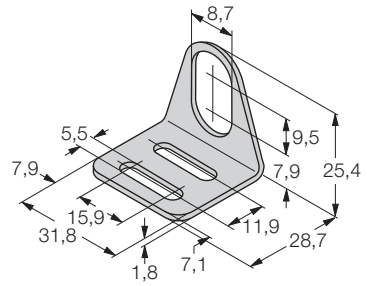


Our scope of delivery comprises accessories for operating, mounting and protection of proximity sensors. We offer function supporting accessories and actuating elements, accessories for easy and safe mounting as well as protective aids to hold up mechanical damage.

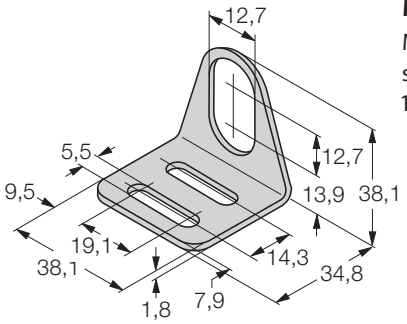
Features

- Protective housing and mounting rails for CP40 sensors
- Fixing clamps for smooth and threaded barrel sensors
- PTFE caps for M12, M18 and M30 threads protect against weld splatter
- Test box to check the functionality of sensors
- Universal signal transducer for sensors with M12 connector
- Brackets provide highest mounting flexibility

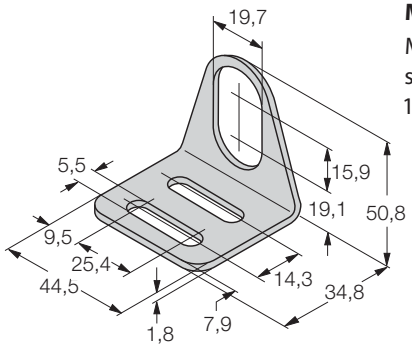
Mounting brackets



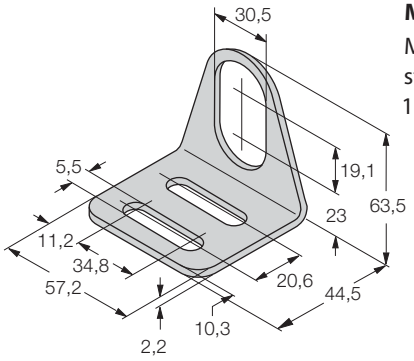
MW-08
Mounting bracket;
stainless steel A2
1.4301 (AISI 304)



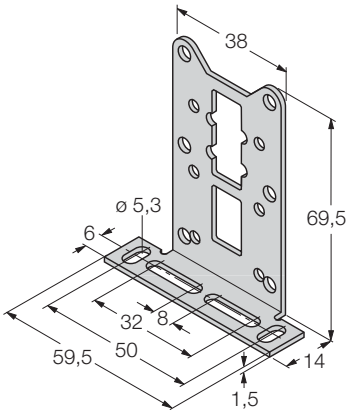
MW-12
Mounting bracket;
stainless steel A2
1.4301 (AISI 304)



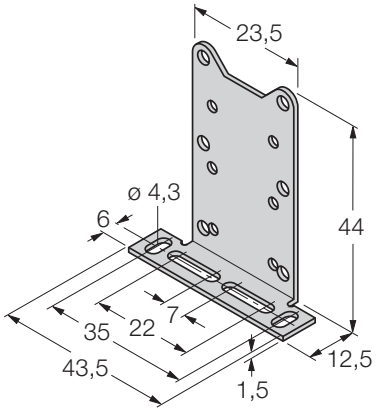
MW-18
Mounting bracket;
stainless steel A2
1.4301 (AISI 304)



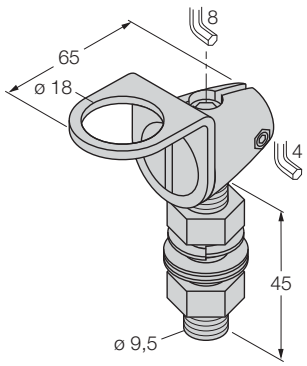
MW-30
Mounting bracket;
stainless steel A2
1.4301 (AISI 304)



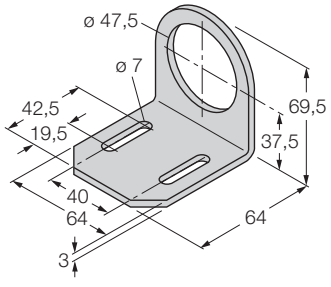
MW-Q14/Q20
Mounting bracket;
VA 1.4301



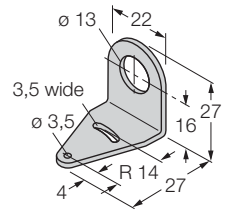
MW-Q08/Q10
Mounting bracket;
VA 1.4301



SMB18FA
Mounting bracket;
VA 1.4401

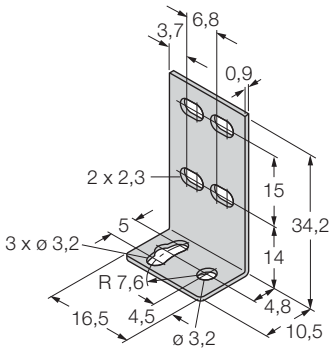


MW 47
Mounting bracket;
steel plate, zinc-plated



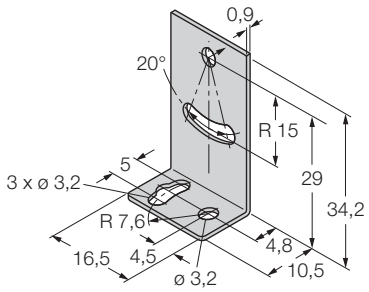
SMBQS12PD

Mounting bracket; VA 1.4401, for Q12 series



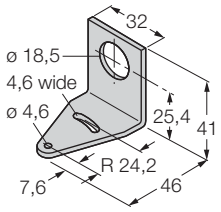
SMBQ12T

Mounting bracket; VA 1.4401, for photo-electric sensor, Q12 series



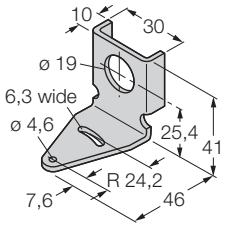
SMBQ12A

Mounting bracket; VA 1.4401, for photo-electric sensor, Q12 series



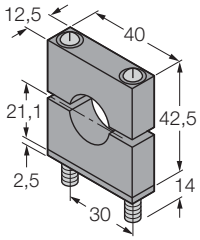
SMB18A

Mounting bracket for threaded barrels, stainless steel



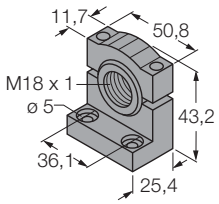
SMB18Q

Mounting bracket for threaded barrels, stainless steel



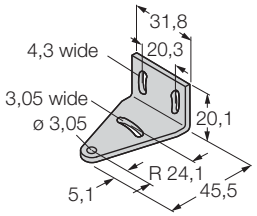
SMB18C

Mounting bracket, PBT black; 2 screws M5 x 0.8



SMB18SF

Mounting bracket, PBT black

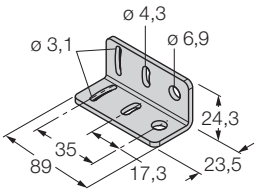


SMB312S

Mounting bracket for threaded barrels, stainless steel

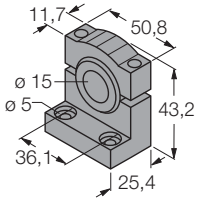
SMB312B

Mounting bracket for threaded barrels, stainless steel



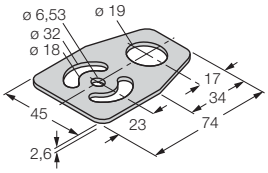
SMB1815SF

Mounting bracket, PBT black



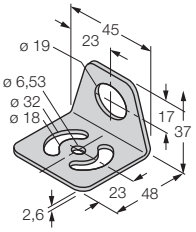
SMBAMS18P

Backplane, stainless steel



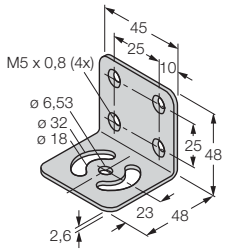
SMBAMS18RA

Mounting bracket, stainless steel



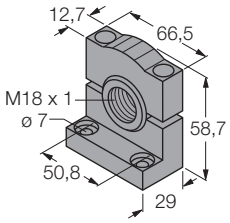
SMBAMSBRA

Mounting bracket, stainless steel



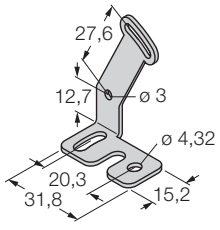
SMB3018SC

Mounting bracket, PBT black



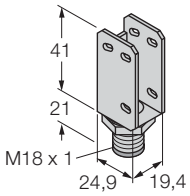
SMBQS18AF

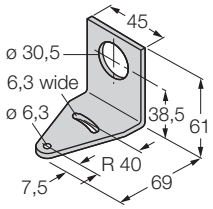
Mounting bracket, stainless steel, for QS18AF series



SMBQS18A

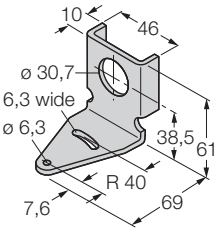
Mounting bracket, stainless steel, for QS18 series





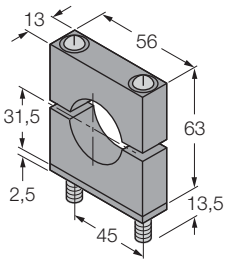
SMB30A

Mounting bracket for threaded barrels, stainless steel



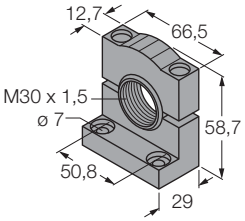
SMB30Q

Mounting bracket for threaded barrels, stainless steel



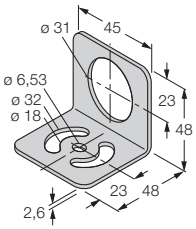
SMB30C

Mounting bracket, PBT black; 2 screws M5 x 0.8



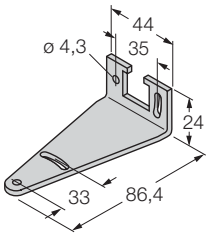
SMB30SC

Mounting bracket, PBT black; 4 screws M5 x 0.8



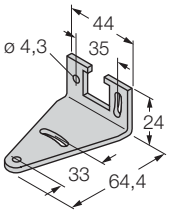
SMBAMS30RA

Mounting bracket, stainless steel



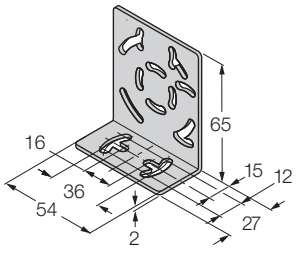
SMBQS30LT

Mounting bracket, stainless steel, for QS30 series



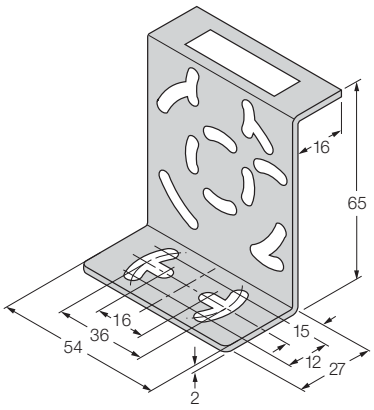
SMBQS30L

Mounting bracket, stainless steel, for QS30 series



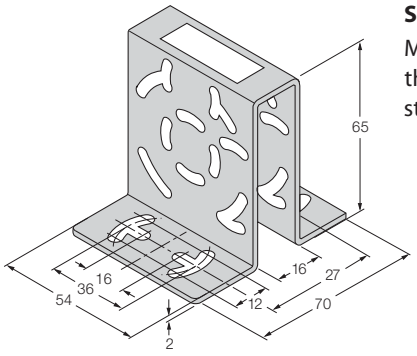
SMB46L

Mounting bracket for threaded barrels, stainless steel



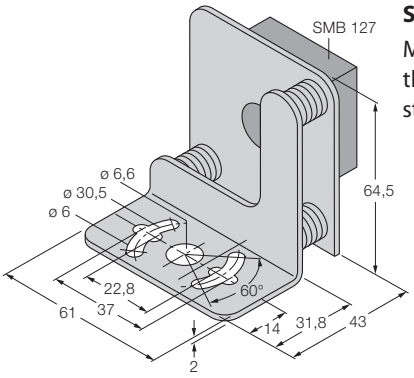
SMB46S

Mounting bracket for threaded barrels, stainless steel



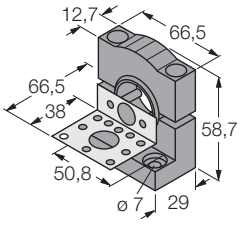
SMB46U

Mounting bracket for threaded barrels, stainless steel



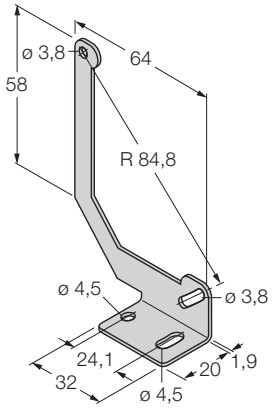
SMB46A

Mounting bracket for threaded barrels, stainless steel



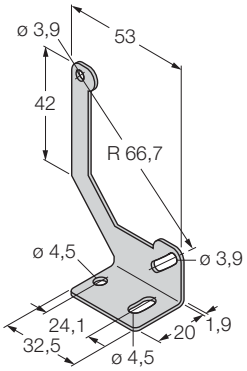
SMB30SK

Mounting bracket, PBT black



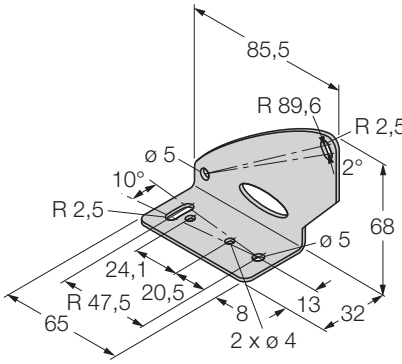
SMBQ50

Mounting bracket, stainless steel, for Q50 series



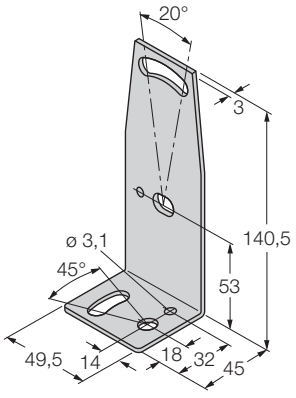
SMBQ60

Mounting bracket, stainless steel, for Q60 series

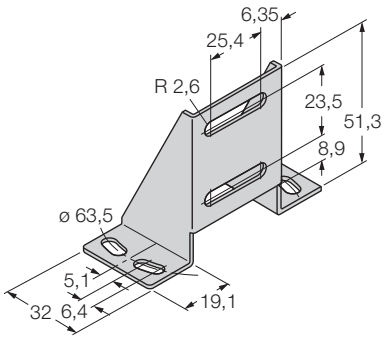


SMBLT31

Mounting bracket, stainless steel, for LT3 series

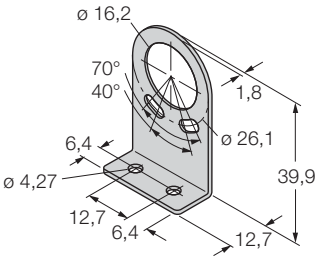


Mounting bracket, stainless steel, for LT3 series



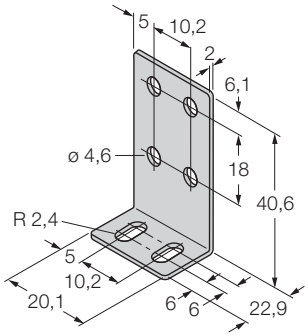
SMBLXR

Foot, for LX series



SMBLX

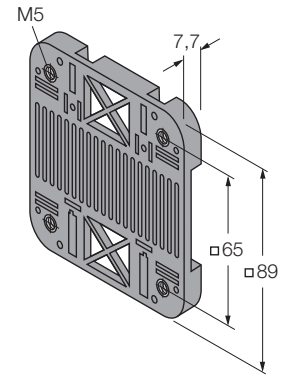
Mounting bracket, stainless steel, LX series



SMBPVA1

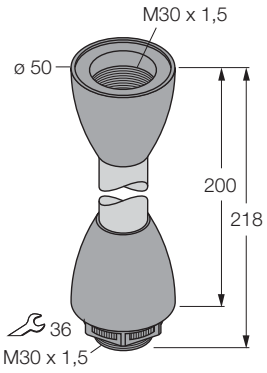
Mounting bracket, stainless steel, for PVA series

Mounting aids



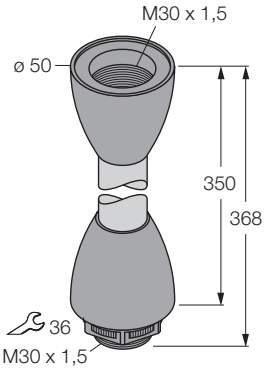
SMBDX80DIN

Backplane for DIN rail, suited for CP80, DX80, K80, Q80



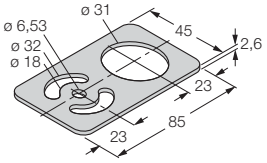
SOK-K50L-150SS

Foot for signal light K50L, stainless-steel round bar, adapter made of Acetal



SOK-K50L-300SS

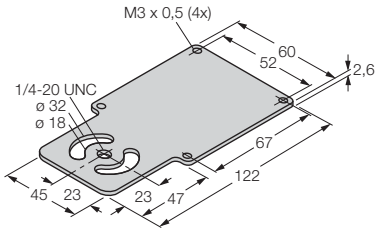
Foot for signal light K50L, stainless-steel round bar, adapter made of Acetal



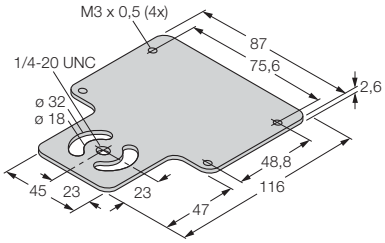
SMBAMS30P

Backplane, stainless steel

SMBAMSQ60P
Backplane, stainless steel, for Q60 series

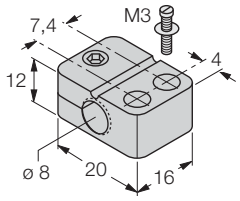


SMBAMSLT3P
Backplane, stainless steel, for LT3 series

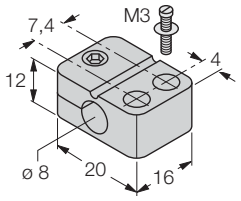


Fixing clamps

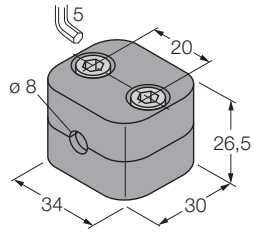
BST-08B
Fixing clamp with dead-stop; PA6



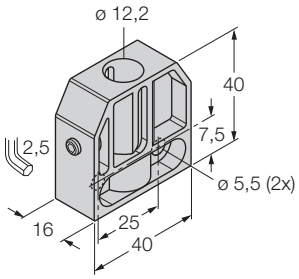
BST-08N
Quick-mount fixing clamp without dead-stop; PA6



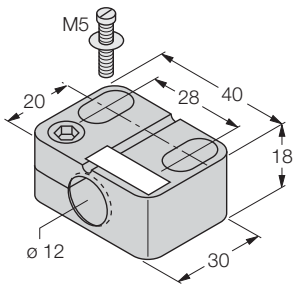
BSS-08
Fixing clamp; polypropylene



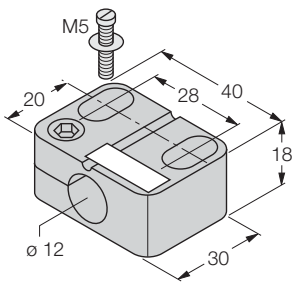
BS 12
Fixing clamp; PBT-GF20



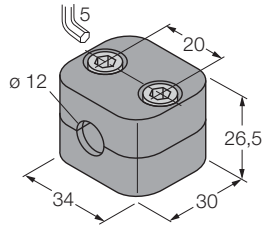
BST-12B
Fixing clamp with dead-stop; PA6



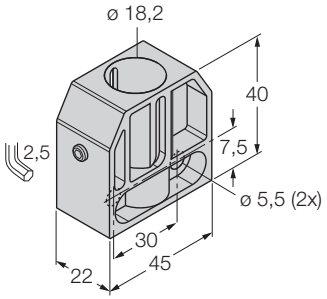
BST-12N
Quick-mount fixing clamp without dead-stop; PA6



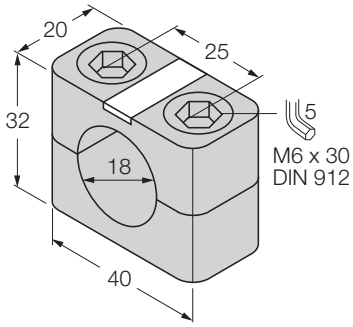
BSS-12
Fixing clamp; polypropylene



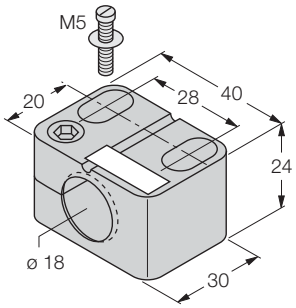
BS 18
Fixing clamp; PA66-GF



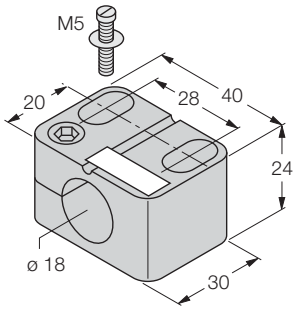
BSN 18
Fixing clamp; PA66-GF



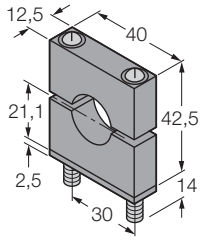
BST-18B
Fixing clamp with dead-stop; PA6



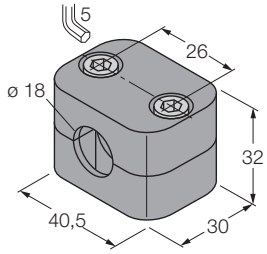
BST-18N
Quick-mount fixing clamp without dead-stop; PA6



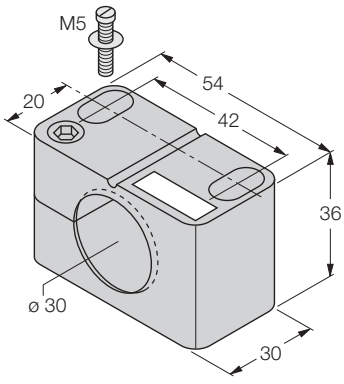
SMB18C
Mounting bracket, PBT black; 2 screws M5 x 0.8

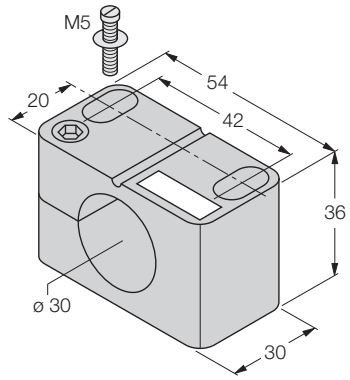


BSS-18
Fixing clamp; polypropylene



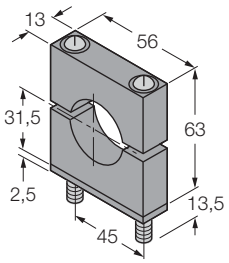
BST-30B
Fixing clamp with dead-stop; PA6





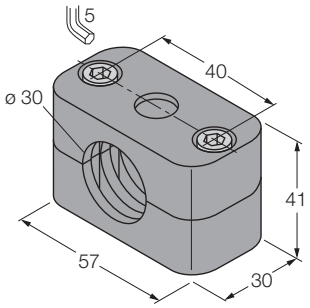
BST-30N

Quick-mount fixing clamp without dead-stop; PA6



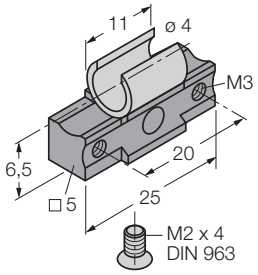
SMB30C

Mounting bracket, PBT black; 2 screws M5 x 0.8



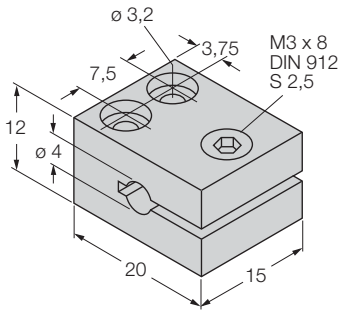
BSS-30

Fixing clamp; polypropylene



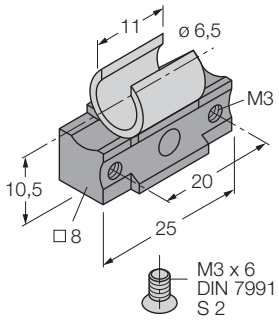
BS 540

Fixing clamp; mounting block made (anodized aluminium); clamp sleeve (steel)



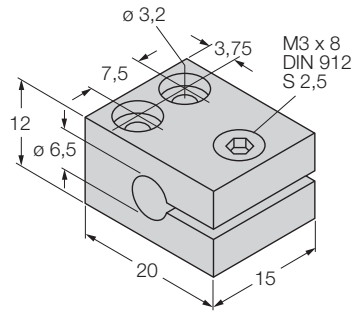
MBS40

Fixing clamp; mounting block (anodized aluminium)



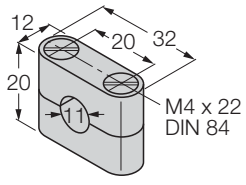
BS 865

Fixing clamp; mounting block (anodized aluminium); clamp sleeve (steel)



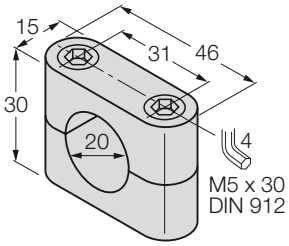
MBS65

Fixing clamp; mounting block (anodized aluminium)

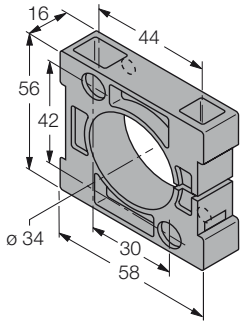


BS 11

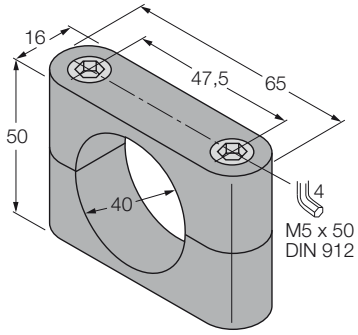
Fixing clamp; mounting block: PBT



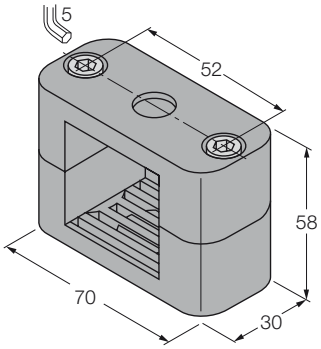
BS 20
Fixing clamp; mounting block PBT



BS34.1
Fixing clamp; mounting block (PBT-GF20-V0); dimensions (58 mm x 56 mm x 16 mm), included in delivery (2 M5 screws for base mounting)

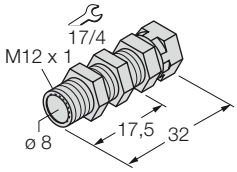


BS 40
Fixing clamp; mounting block PBT

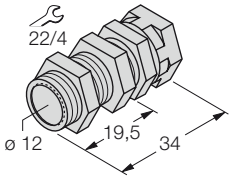


BSS-CP40
Fixing clamp, polypropylene

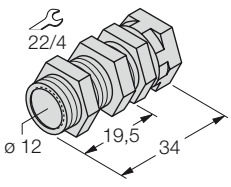
Quick-mount brackets



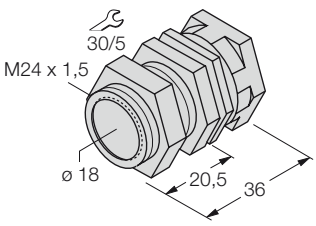
QM-08
Quick-mount bracket with dead-stop; chrome-plated brass male thread M12 x 1. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.



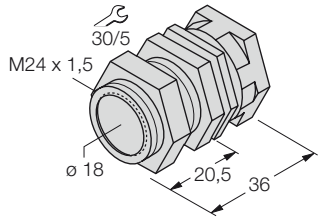
QM-12
Quick-mount bracket with dead-stop; chrome-plated brass male thread M16 x 1. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.



QMT-12
Quick-mount bracket with dead-stop; PTFE-coated brass male thread M16 x 1. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.

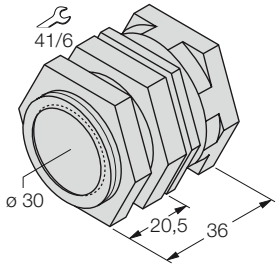


QM-18
Quick-mount bracket with dead-stop; chrome-plated brass male thread M24 x 1.5. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.



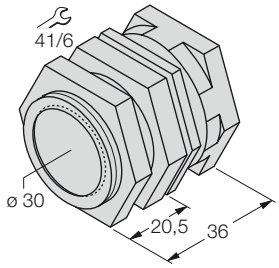
QMT-18

Quick-mount bracket with dead-stop; PTFE-coated brass male thread M24 x 1.5. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.



QM-30

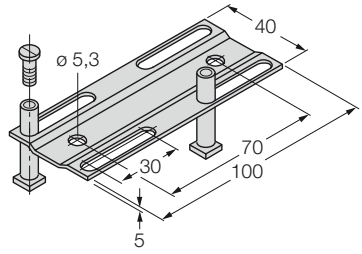
Quick-mount bracket with dead-stop; chrome-plated brass male thread M36 x 1.5. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.



QMT-30

Quick-mount bracket with dead-stop; PTFE-coated brass male thread M36 x 1.5. Note: The switching distance of proximity switches may be reduced by the use of quick-mount brackets.

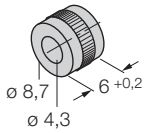
Mounting rail



JS 025/037

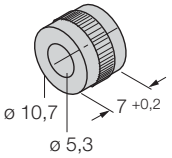
Mounting rail; VA 1.4301

Spacer rollers



MH-Q14

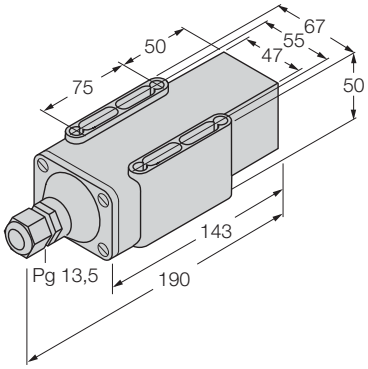
Mounted with active face downwards, for Q14



MH-Q20

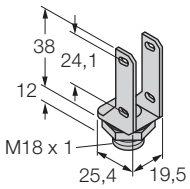
Mounted with active face downwards, for Q20

Protective housings



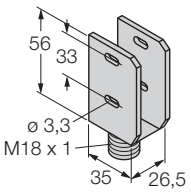
SG40/2 (ULTEM)

Protective housing; housing/cover material: ULTEM; temperature resistant up to +170 °C, especially UV and ozone resistant; protection class IP 68, 5 m wh.



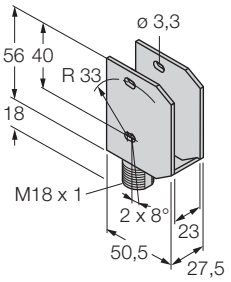
SMBQS18Y

Protective housing, stainless steel, for QS18 series



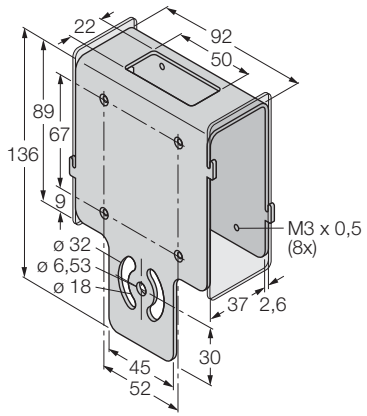
SMBQS30Y

Protective housing, stainless steel, for QS30 series

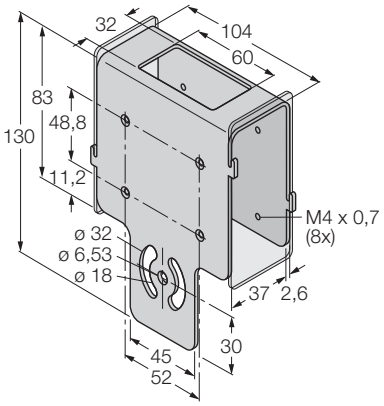


SMBQS30YL

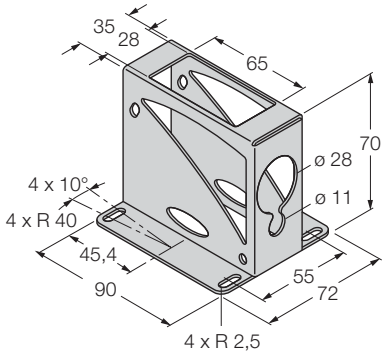
Protective housing with safety glass panel, stainless steel, for QS30 series



SMBAMSQ60IP
Protective housing with safety glass panel, stainless steel, for Q60

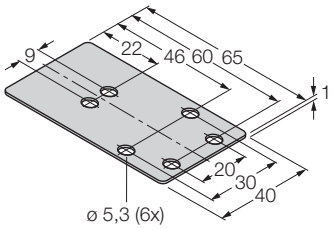


SMBAMSLT3IP
Protective housing with safety glass panel, for LT3 series

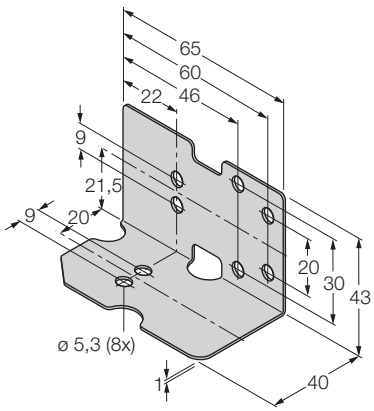


SMBLT32
Protective housing, stainless steel, for LT3 series

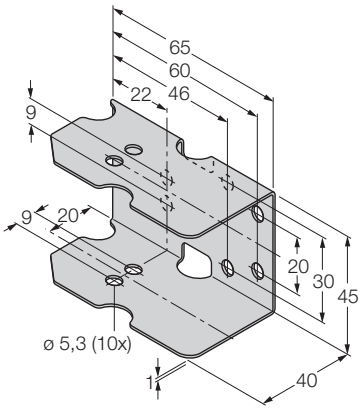
Protective frames



MF-CK40-1S
Protective frame (I-profile)

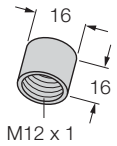


MF-CK40-2S
Protective frame (L-profile)

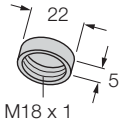


MF-CK40-3S
Protective frame (U-profile)

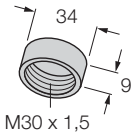
Protective caps



SKN/M12
Protective teflon cap; PTFE; for use in welding systems and grinding machinery exposed to strong sparking

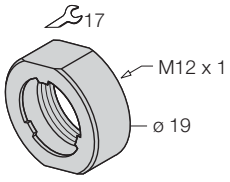


SKN/M18
Protective teflon cap; PTFE; for use in welding systems and grinding machinery exposed to strong sparking

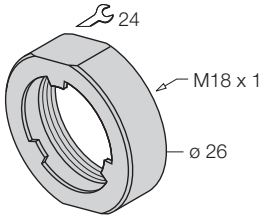


SKN/M30
Protective teflon cap; material PTFE; for use in welding systems and grinding machinery exposed to strong sparking

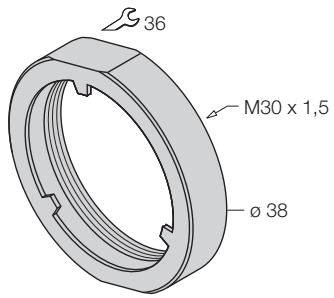
Screw caps



PN-M12
Screw cap; stainless steel A2 1.4305 (AISI 303)

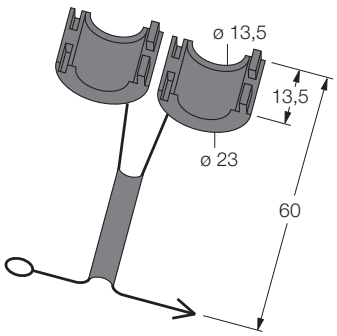


PN-M18
Screw cap; stainless steel A2 1.4305 (AISI 303)

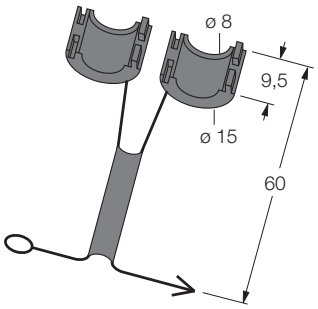


PN-M30
Screw cap; stainless steel A2 1.4305 (AISI 303)

Safety clips

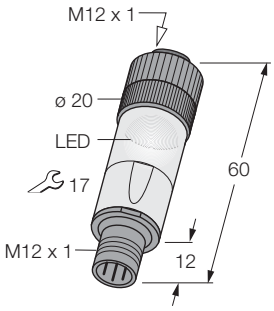


SC-M12/3GD
Safety clip for sensors with M12 x 1 plug connection and approval according to ATEX II 3 G or II 3 D

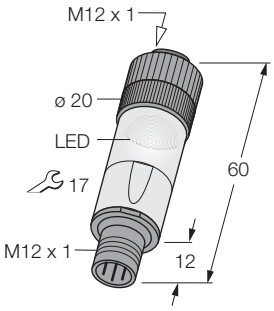


SC-M8/3GD
Safety clip for sensors with M8 x 1 plug connection and approval according to ATEX II 3 G or II 3 D

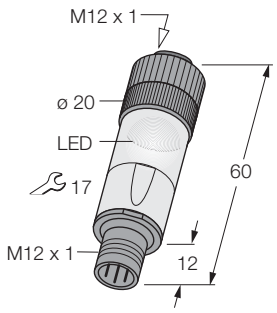
Adapters



SPF1-AP6X
Adapter for rotation speed monitor

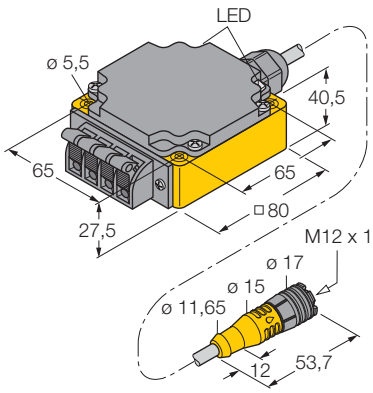


SPN1-AP6-ARN6X
Adapter for PNP/NPN switching function

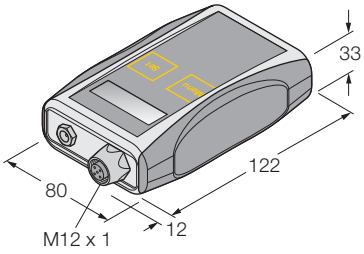


SPT1-AP6X
Adapter with switch-ON/OFF delay

Test boxes



TB3-CP80
Universal test box for PNP, NPN and NAMUR sensors



TB4
Universal test and configuration box for analog an binary sensors.

Accessories for dual sensors

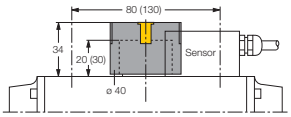


TURCK offers a comprehensive range of sensors and matching accessories for position feedback. This allows cost-effective planning, commissioning and operation of systems. Different actuating elements can be applied for clockwise and counterclockwise rotating actuators and changing switchpoints.

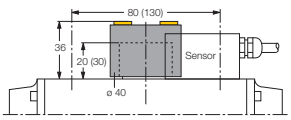
Features

- Broad range of actuating elements and accessories
- Highly resistant to chemicals and cleaning agents
- For all standard actuators
- Rugged design

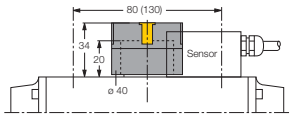
Dual sensors DSU35



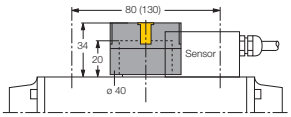
BTS-DSU35-EB1
Actuation kit (puck); end position damped; hole pattern on flange surface 80 x 30 mm and 130 x 30 mm; interconnecting shaft (shaft extension) height 20 (30) mm / Ø max. 30 mm



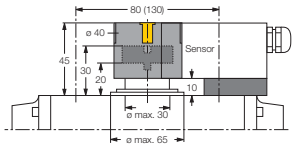
BTS-DSU35-EU2
Actuation kit (puck); end position damped for clockwise or counter-clockwise drives; hole pattern on flange surface 80 x 30 mm and 130 x 30 mm; interconnecting shaft (shaft extension) height 20 (30) mm / Ø max. 30 mm



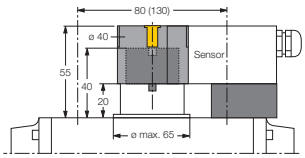
BTS-DSU35-EBE1
Actuation kit (puck), end position damped and switchpoint adjustable; hole pattern on flange surface 80 x 30 mm (130 x 30 mm); interconnecting shaft (shaft extension) height 20 / Ø max. 30 mm



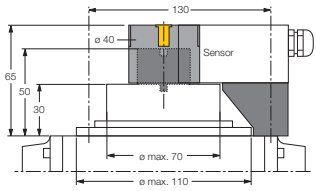
BTS-DSU35-EBE3
Actuation kit (puck), end position damped; „open“ and „closed“ switch-point infinitely adjustable; hole pattern on flange surface 80 x 30 mm and 130 x 30 mm; interconnecting shaft (shaft extension) height 20 / Ø max. 30 mm



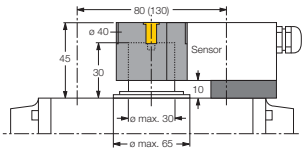
BTS-DSU35-Z01
Mounting kit for larger rotary actuators: Ø disc and snap ring max. 65 mm; hole pattern on flange surface 30 x 80 mm (30 x 130 mm); interconnecting shaft (shaft extension) height 30 mm / Ø max. 30 mm



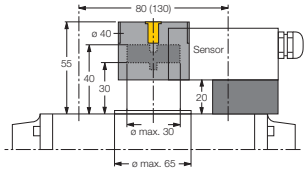
BTS-DSU35-Z02
Mounting kit for larger rotary actuators: Ø disc and snap ring max. 65 mm; hole pattern on flange surface 30 x 80 mm (30 x 130 mm); interconnecting shaft (shaft extension) height 20 (30) mm / Ø max. 40 mm



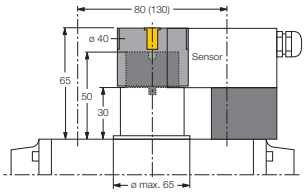
BTS-DSU35-Z03
Mounting kit for larger rotary actuators: Ø disc and snap ring max.110 mm; hole pattern on flange surface 30 x 130 mm; interconnecting shaft (shaft extension) height 30 mm / Ø max. 70 mm



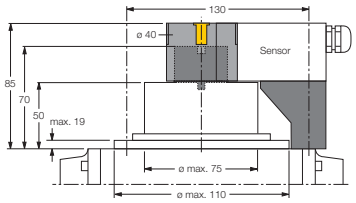
BTS-DSU35-Z04
Mounting kit for larger rotary actuators: Ø disc and snap ring max. 65 mm; hole pattern on flange surface 30 x 80 mm (30 x 130 mm); interconnecting shaft (shaft extension) height 30 mm / Ø max. 30 mm



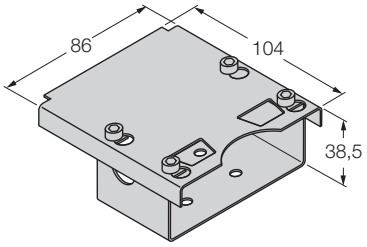
BTS-DSU35-Z05
Mounting kit for larger rotary actuators: Ø disc and snap ring max. 65 mm; hole pattern on flange surface 30 x 80 mm (30 x 130 mm); interconnecting shaft (shaft extension) height 30 mm / Ø max. 30 mm



BTS-DSU35-Z06
Mounting kit for larger rotary actuators: Ø disc and snap ring max. 65 mm; hole pattern on flange surface 30 x 80 mm (30 x 130 mm); interconnecting shaft (shaft extension) height 30 mm / Ø max. 40 mm

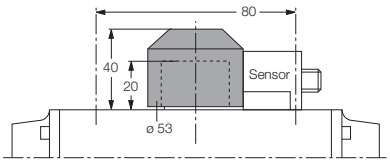


BTS-DSU35-Z07
Mounting kit for larger rotary actuators: Ø disc and snap ring max.110 mm; hole pattern on flange surface 30 x 130 mm; interconnecting shaft (shaft extension) height 30 mm / Ø max. 75 mm

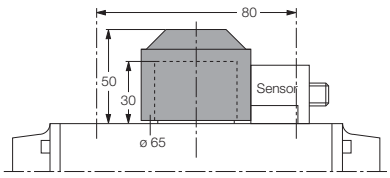


SG-DSU35TC
Protective housing for dual sensors, series DSU35, for mechanically protected installation in the explosion hazardous area

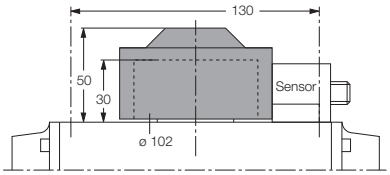
Dual sensors DSC26



BTS-DSC26-EB1
Actuation kit (puck); end position damped; hole pattern on flange surface 80 x 30 mm and 130 x 30 mm; interconnecting shaft (shaft extension) height 20 mm / Ø max. 35 mm



BTS-DSC26-EB2
Actuation kit (puck); end position damped; hole pattern on flange surface 80 x 30 mm and 130 x 30 mm; interconnecting shaft (shaft extension) height 30 mm / Ø max. 50 mm



BTS-DSC26-EB3
Actuation kit (puck); end position damped; hole pattern on flange surface 30 x 130 mm; interconnecting shaft (shaft extension) height 30 mm / Ø max. 85 mm

Accessories for magnetic field sensors

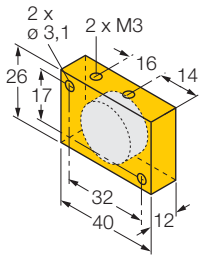


The permanent magnets are used as actuating elements for magnetic inductive proximity sensors or as positioning elements for magnetic inductive linear-position sensors. Despite the small size, they achieve larger switching distances compared to inductive sensors. They fit in narrow spaces and are ideal for difficult sensing conditions, such as hangar doors with poor guiding control.

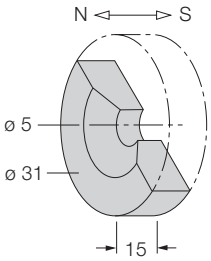
Features

- Strontium ferrite magnets, rugged and resistant to chemicals
- Block-shaped polyamide magnet
- Switching distance up to 90 mm on BIM-(E)M12 sensors
- Switching distance up to 78 mm on BIM-EG08 sensors
- Recommended distance between magnet and WIM-Q25L positioning sensor: 3 to 5 mm

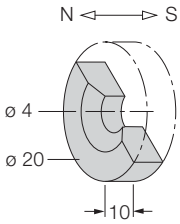
Actuating magnets



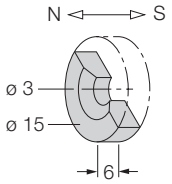
DM-Q12
Actuating magnet; block-shaped, plastic; sensing range 58 mm on BIM-(E)M12 sensors resp. 49 mm on BIM-EG08 sensors; in combination with Q25: Recommended distance between sensor and magnet: 3 … 5 mm



DMR31-15-5
Actuating magnet, Ø 31 mm (Ø 5 mm), h: 15 mm; sensing range 90 mm on BIM-(E)M12 sensors resp. 78 mm on BIM-EG08 sensors; in combination with Q25L: Recommended distance between sensor and magnet: 3 … 5 mm

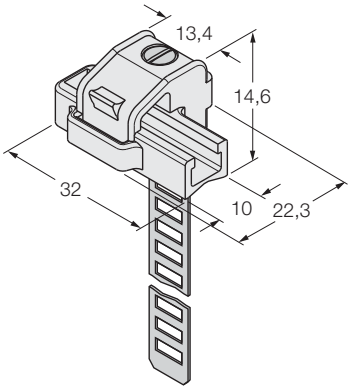


DMR20-10-4
Actuating magnet; Ø 20 mm (Ø 4 mm), height 10 mm; sensing range 59 mm on BIM-(E)M12 sensors resp. 50 mm on BIM-EG08 sensors; in combination with Q25L: Recommended distance between sensor and magnet: 3 … 4 mm

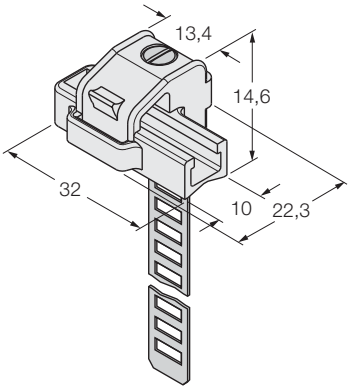


DMR15-6-3
Actuating magnet, Ø 15 mm (Ø 3 mm), height 6 mm; sensing range 36 mm on BIM-(E)M12 sensors resp. 32 mm on BIM-EG08 sensors; in combination with Q25L: Recommended distance between sensor and magnet: 3 … 4 mm

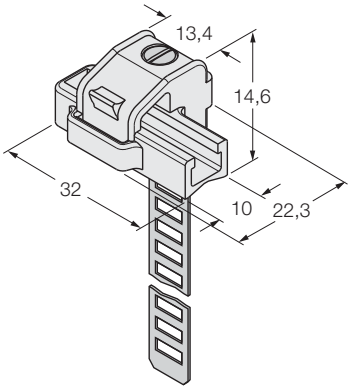
Accessories for UNT



KLRC-UNT1
Mounting aid for ◯ cylinders; Ø 8…25 mm; PA 6I/6T / nickel silver; fire-hazard classification acc. to UL94 - V2

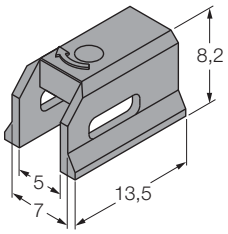


KLRC-UNT2
Mounting aid for ◯ cylinders; Ø 25…63 mm; PA 6I/6T / nickel silver; fire-hazard classification acc. to UL94 - V2



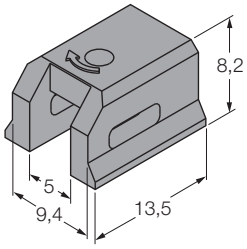
KLRC-UNT3

Mounting aid for ◯ cylinders; Ø 63…130 mm; PA 6I/6T / nickel silver; fire-hazard classification acc. to UL94 - V2



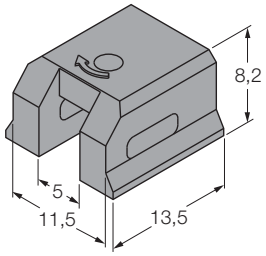
KLDT-UNT2

Mounting aid for ⬚ dovetail groove cylinders; groove width 7 mm; PPS



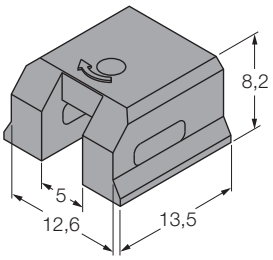
KLDT-UNT3

Mounting aid for ⬚ dovetail groove cylinders; groove width 9.4 mm; PPS



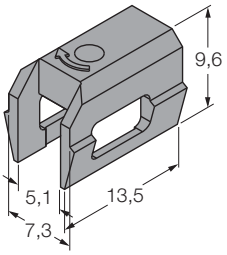
KLDT-UNT4

Mounting aid for ⬚ dovetail groove cylinders; groove width 11.5 mm; PPS



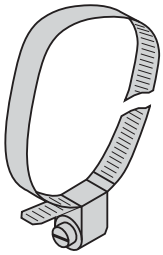
KLDT-UNT5

Mounting aid for ⬚ dovetail groove cylinders; groove width 12.6 mm; PPS



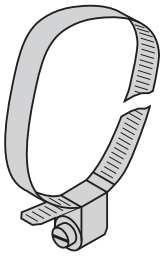
KLDT-UNT6

Mounting aid for ⬚ dovetail groove cylinders; groove width 7.35 mm; PPS



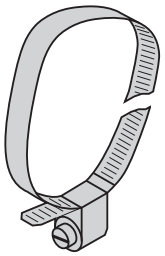
ASB-1

Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 7…11 mm.

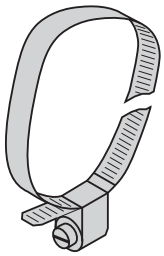


ASB-2

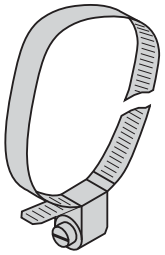
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 11…19 mm.



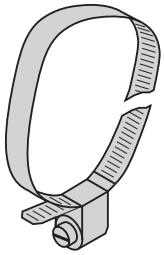
ASB-3
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 18…29 mm.



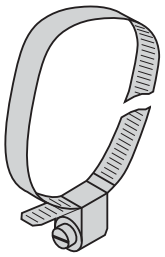
ASB-4
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 28…39 mm.



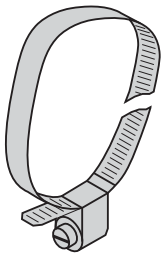
ASB-5
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 38…49 mm.



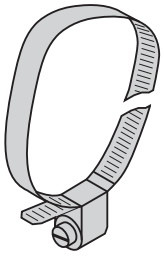
ASB-6
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 48…59 mm.



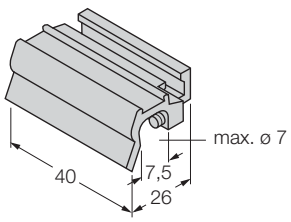
ASB-7
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 58…69 mm.



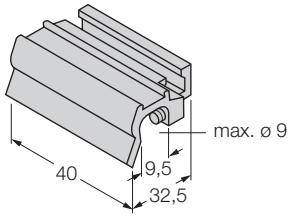
ASB-8
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 68…79 mm.



ASB-9
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 78…89 mm.

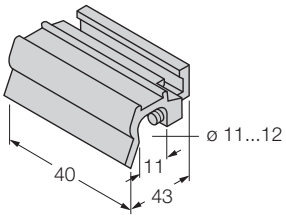


KLZ1-INT
Mounting aid for ◯ tie-rod cylinder Ø 32…40 mm; aluminium; further mounting accessories for other cylinder diameters on request



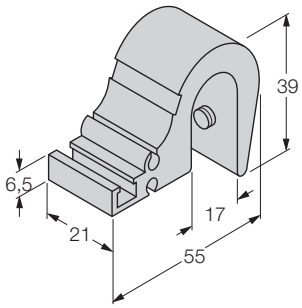
KLZ2-INT

Mounting aid for ◯ tie-rod cylinder Ø 50…63 mm; aluminium; further mounting accessories for other cylinder diameters on request



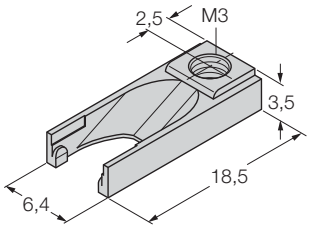
KLZ3-INT

Mounting aid for ◯ tie-rod cylinder; Ø 80…100 mm; aluminium; further mounting accessories for other cylinder diameters on request



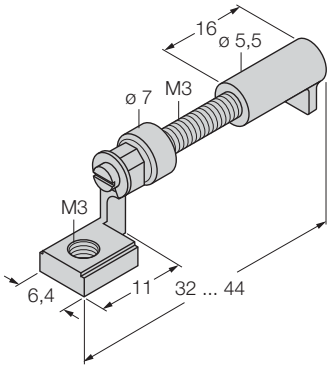
KLZ5-INT

Mounting aid for ◯ tie-rod cylinder; Ø 160…200 mm; aluminium; further mounting accessories for other cylinder diameters on request



UNT-Stopper

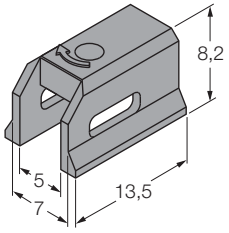
Mounting aid for fine-tuning of switch-point on ⊏⊐ T-groove cylinders; snap-lock mounting in the sensor fixture; suited for multiple use; plastic



UNT-Justage

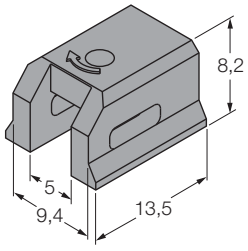
Mounting aid for fine-tuning of switch-point on ⊏⊐ T-groove cylinders; snap-lock mounting in the sensor fixture; suited for multiple use; metal/plastic

Accessories for WIM



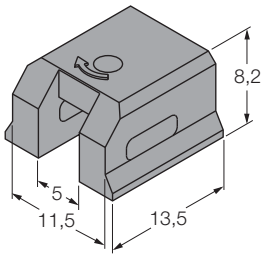
KLDT-UNT2

Mounting aid for ⊏⊐ dovetail groove cylinders; groove width: 7 mm; PPS

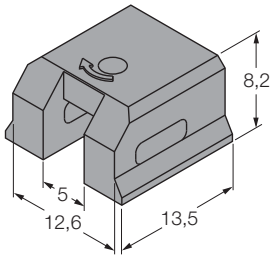


KLDT-UNT3

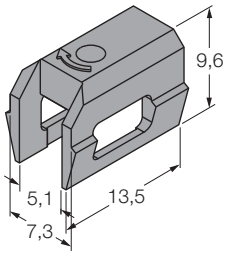
Mounting aid for ⊏⊐ dovetail groove cylinders; groove width: 9.4 mm; PPS



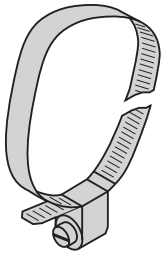
KLDT-UNT4
Mounting aid for dovetail groove cylinders; groove width: 11.5 mm; PPS



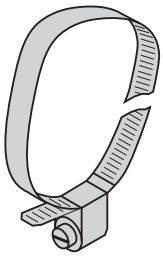
KLDT-UNT5
Mounting aid for dovetail groove cylinders; groove width: 12.6 mm; PPS



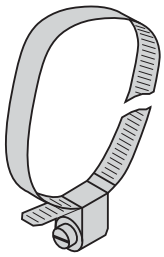
KLDT-UNT6
Mounting aid for dovetail groove cylinders; groove width: 7.35 mm; PPS



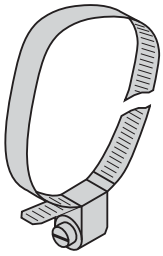
ASB-1
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 7…11 mm.



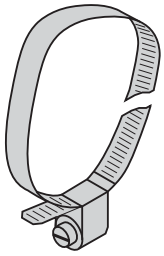
ASB-2
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 11…19 mm.



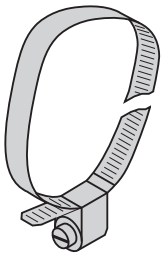
ASB-3
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 18…29 mm.



ASB-4
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders with diameters of 28…39 mm.

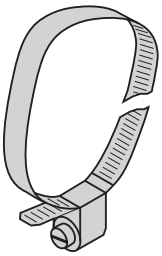


ASB-5
Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders with diameters of 38…49 mm.



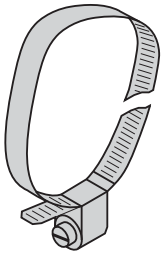
ASB-6

Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 48…59 mm.



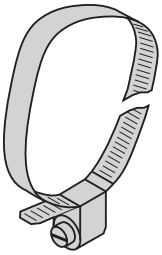
ASB-7

Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 58…69 mm.



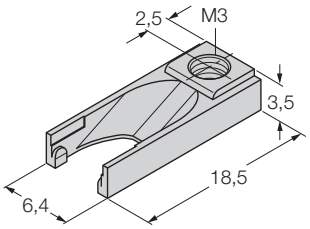
ASB-8

Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 68…79 mm.



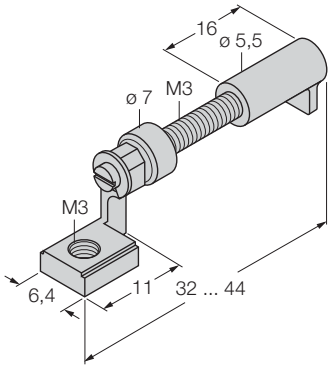
ASB-9

Clip collar to mount BIM-UNT in combination with KLDT-UNT2 on round cylinders Ø 78…89 mm.



UNT-stopper

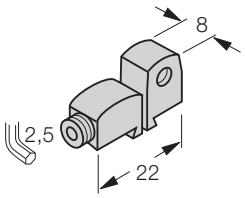
Mounting aid for fine-tuning of switch-point on ⬚ T-groove cylinders; snap-lock mounting in the sensor fixture; suited for multiple use; plastic



UNT-fine adjustment

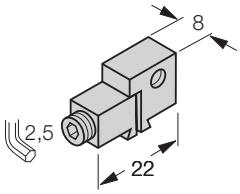
Mounting aid for fine-tuning of switch-point on ⬚ T-groove cylinders; snap-lock mounting in the sensor fixture; suited for multiple use; metal/plastic

Accessories for NST



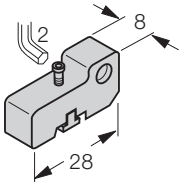
KLN 1

Clamping piece for ⬚ dovetail groove cylinders or ⬚ T-groove cylinders; clamping width 5.2…13.5 mm; anodized aluminium



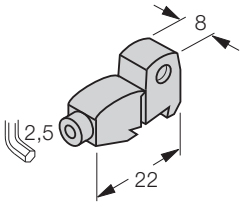
KLN 3

Clamping piece for ⬚ dovetail groove cylinders or ⬚ T-groove cylinders; clamping width 5.2…13.5 mm; anodized aluminium



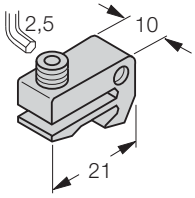
KLN-SMC

Clamping piece for SMC cylinders; clamping width 4 mm; anodized aluminium



KLF 1

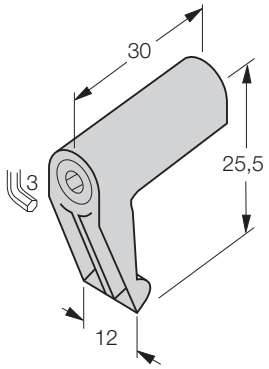
Clamping piece for external dovetail grooves; for all cylinder diameters, material: Anodized aluminium



KLF 2

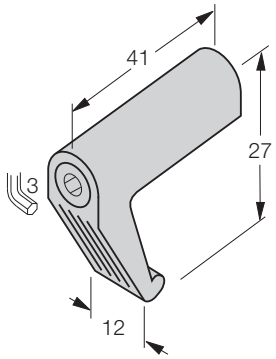
Clamping piece for external dovetail grooves (IMI Norgrem) or all cylinder diameters, anodized aluminium

Accessories for IKT



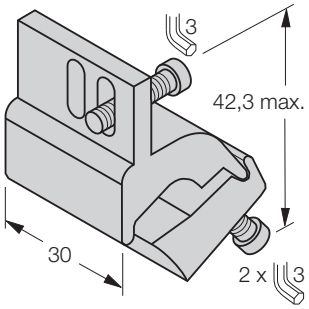
KLI 1

Clamping piece for tie-rod cylinders; Ø 32…100 mm; die-cast zinc



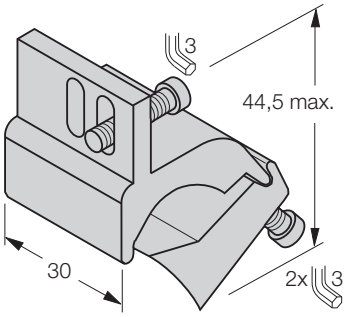
KLI 3

Clamping piece for tie-rod cylinders; Ø 63…160 mm; die-cast zinc



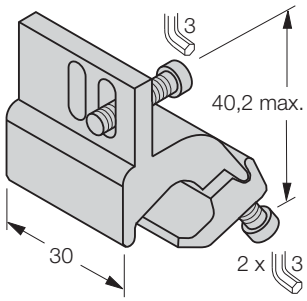
KLI 5Z

Clamping piece for tie-rod cylinders; Ø 32…63 mm; aluminum

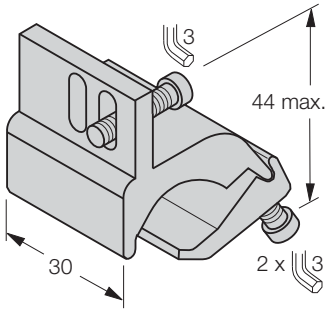


KLI 6Z

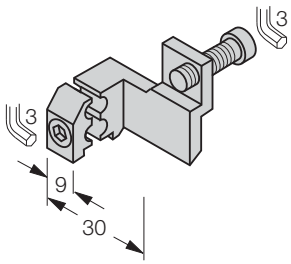
Clamping piece for tie-rod cylinders; Ø 50…125 mm; aluminum



KLI 5
Clamping piece for ⬚ profile cylinder; Ø 32…50 mm; aluminium



KLI 6
Clamping piece for ⬚ profile cylinder; Ø 50…100 mm; aluminium



KLI 7
Clamping piece for ⬚ profile cylinder with external dovetail grooves; Ø 32…200 mm; aluminium

Accessories for linear position sensors

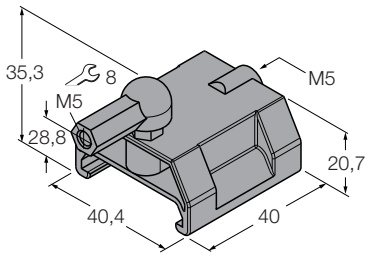


The range of accessories includes guided and floating positioning elements as well as different mounting aids for linear position sensors. The measuring range is set via pushbutton at the teach adapter. The sensors are thus easily adjusted to the correspondent application. The programmed measuring range is tested with the analog test box.

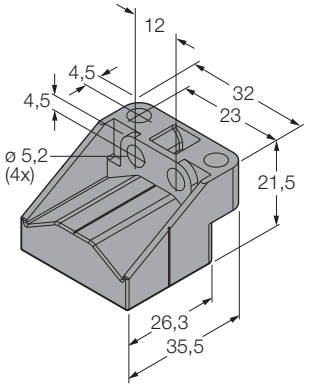
Features

- Broad range of positioning elements and mounting accessories
- Highest mounting flexibility
- Guided and floating positioning elements

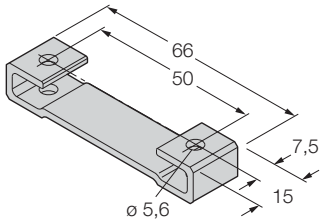
Li-Q25L



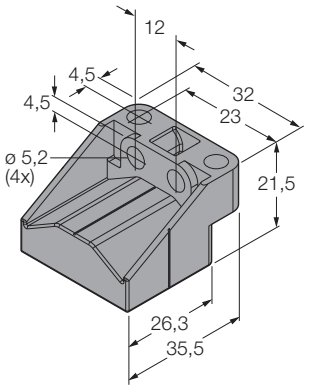
P1-Li-Q25L
Guided positioning element. The positioning magnet is inserted in the sensor guide.



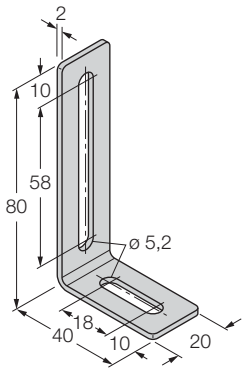
P2-Li-Q25L
Floating positioning element



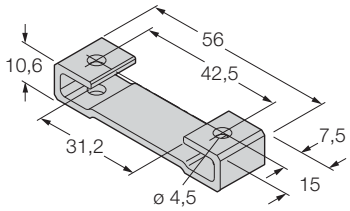
M1-Q25L
Mounting foot for linear position sensor Q25L; aluminium; 2 pcs. per bag



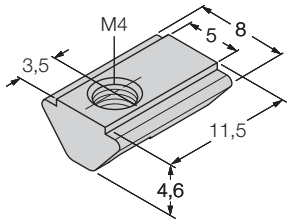
P3-Li-Q25L
Floating positioning element, right-angle mounting



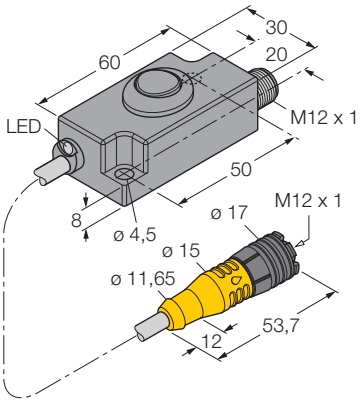
M4-Q25L
Mounting bracket for linear position sensor Q25L; material Stainless steel; 2 pcs. per bag



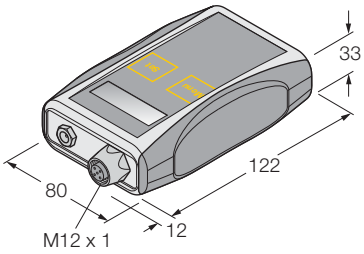
M2-Q25L
Mounting foot for linear position sensor Q25L; aluminium; 2 pcs. per bag



MN-M4-Q25
Sliding block with M4 thread for the backside profile of the Q25L; material Brass; 10 pcs. per bag

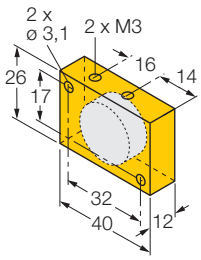


TX1-Q20L60
Teach adapter:

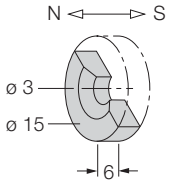


TB4
Universal test and configuration box for analog an binary sensors.

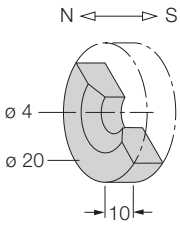
WIM-Q25L



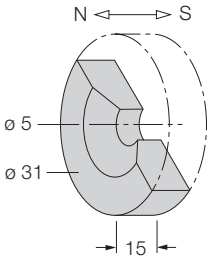
DM-Q12
Actuation magnet; block-shaped, plastic; sensing range 58 mm on BIM-(E)M12 sensors resp. 49 mm on BIM-EG08 sensors; recommended distance between sensor and magnet 3…5 mm when used with Q25L



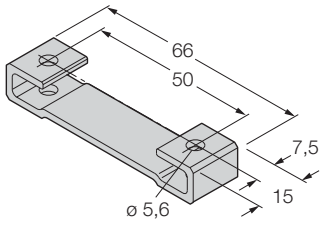
DMR15-6-3
Actuation magnet, Ø 15 mm (Ø 3 mm), height 6 mm; sensing range 36 mm on BIM-(E)M12 sensors resp. 32 mm on BIM-EG08 sensors; recommended distance between sensor and magnet 3…4 mm when used with Q25L



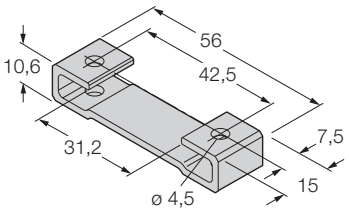
DMR20-10-4
Actuation magnet; Ø 20 mm (Ø 4 mm), height 10 mm; sensing range 59 mm on BIM-(E)M12 sensors resp. 50 mm on BIM-EG08 sensors; recommended distance between sensor and magnet 3…4 mm when used with Q25L



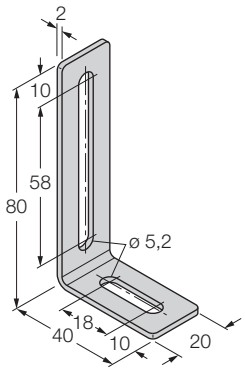
DMR31-15-5
Actuation magnet, Ø 31 mm (Ø 5 mm), height 15 mm; sensing range 90 mm on BIM-(E)M12 sensors resp. 78 mm on BIM-EG08 sensors; recommended distance between sensor and magnet 3…5 mm when used with Q25L



M1-Q25L
Mounting foot for linear position sensor Q25L; aluminium; 2 pcs. per bag

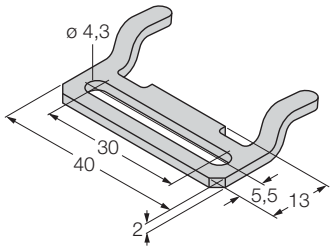


M2-Q25L
Mounting foot for linear position sensor Q25L; aluminium; 2 pcs. per bag



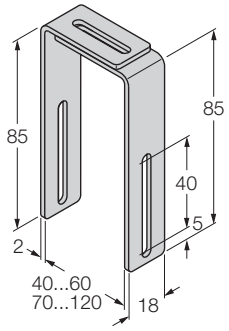
M4-Q25L

Mounting bracket for linear position sensor Q25L; stainless steel; 2 pcs. per bag



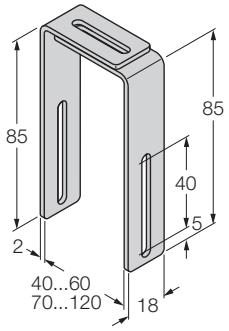
MB1-Q25

Mounting clip for linear position sensor Q25L; stainless steel; 2 pcs. per bag



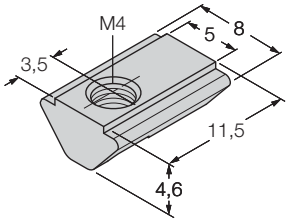
MB2.1-Q25

Mounting bracket for linear position sensors Q25L; mounting on pneumatic cylinders (40…60mm); stainless steel; 4 pcs. per bag



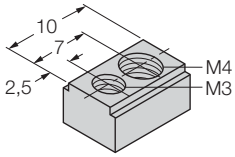
MB2.2-Q25

Mounting bracket for linear position sensors Q25L; mounting on pneumatic cylinders (70…120mm); stainless steel; 4 pcs. per bag



MN-M4-Q25

Sliding block with M4 thread for backside profile of the Q25L; brass; 10 pcs. per bag



MN-C1

Sliding block for T-groove cylinder, 2 pcs. per bag

Accessories for pressure sensors



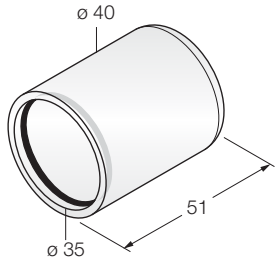
The range of accessories comprises aids for mounting, operating and protecting pressure sensors of the PK and PS series. It also includes a heat sink to reduce high ambient temperatures.

Features

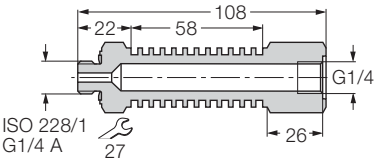
- Protective cap for the PS series
- Reduction of temperature for the PS and PT series
- Mounting accessories for the PK series

PS series

PTS-Cover
Protective cap

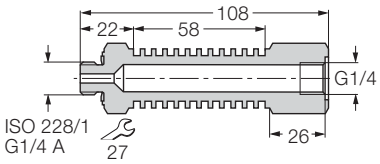


PCS-G1/4A4
Heat sink



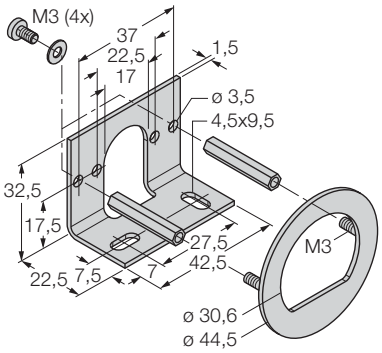
PT series

PCS-G1/4A4
Heat sink

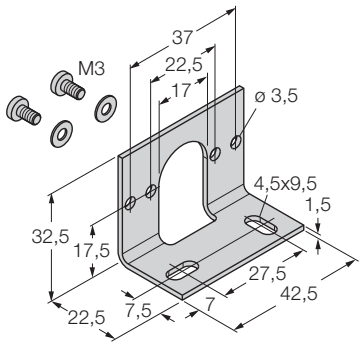


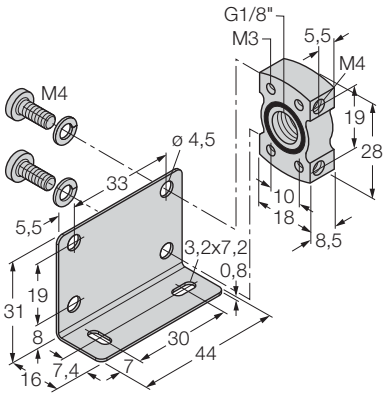
PK series

PK-N-MZ-001
Mounting kit PK-N

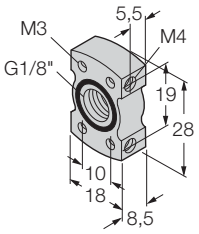


PK-N-MZ-002
Mounting kit PK-N





PK-P-MZ-001
Mounting kit PK-P



PK-P-MZ-002
Flange connection PK-P

Accessories for temperature sensors



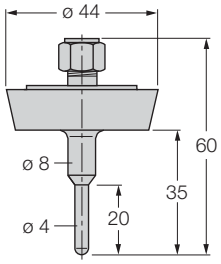
We offer a large range of function supporting accessories such as compression and cutting ring fittings for easy and safe mounting, as well as protective aids such as thermowells and caps. They are tailored to the correspondent sensor types and protect them against mechanical stresses.

Features

- Compression fittings for temperature probes with different process connections
- Thermowells

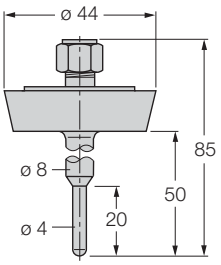
THW-3 – Thermowells for 3 mm probes

THW-3-DN25K-L035



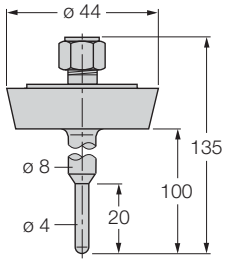
Thermowell for temperature probes

THW-3-DN25K-A4-L050



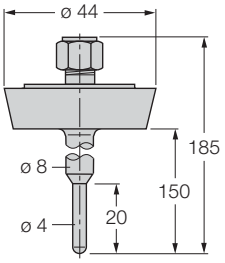
Thermowell for temperature probes

THW-3-DN25K-A4-L100



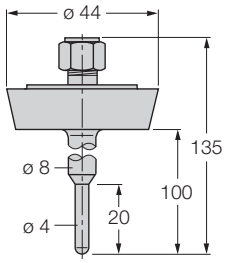
Thermowell for temperature probes

THW-3-DN25K-A4-L150



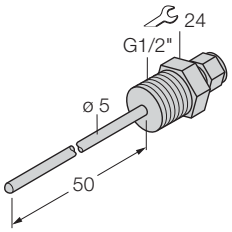
Thermowell for temperature probes

THW-3-DN25K-A4-L250



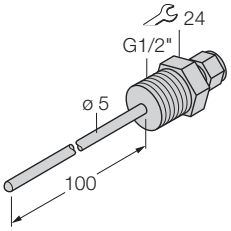
Thermowell for temperature probes

THW-3-G1/2-A4-L050



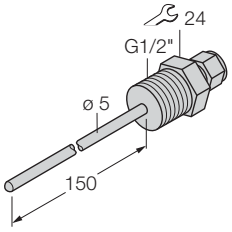
Thermowell for temperature probes

THW-3-G1/2-A4-L100

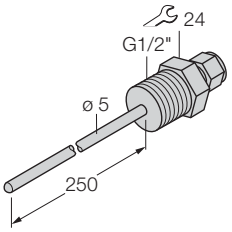


Thermowell for temperature probes

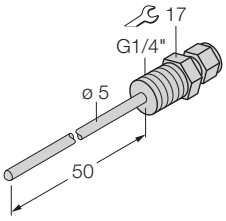
THW-3-G1/2-A4-L150



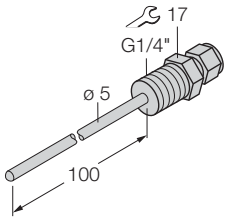
Thermowell for temperature probes



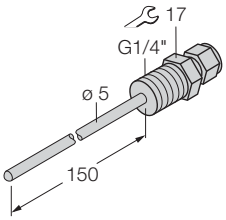
THW-3-G1/2-A4-L250
Thermowell for temperature probes



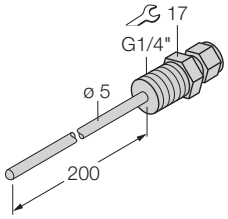
THW-3-G1/4-A4-L050
Thermowell for temperature probes



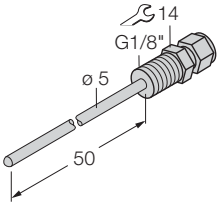
THW-3-G1/4-A4-L100
Thermowell for temperature probes



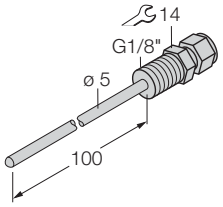
THW-3-G1/4-A4-L150
Thermowell for temperature probes



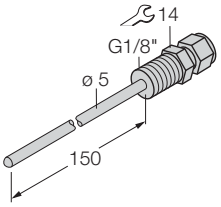
THW-3-G1/4-A4-L200
Thermowell for temperature probes



THW-3-G1/8-A4-L050
Thermowell for temperature probes



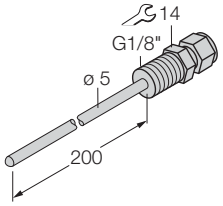
THW-3-G1/8-A4-L100
Thermowell for temperature probes



THW-3-G1/8-A4-L150
Thermowell for temperature probes

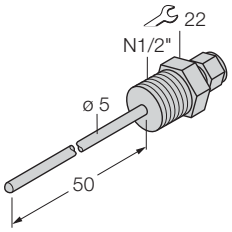
THW-3-G1/8-A4-L200

Thermowell for temperature probes



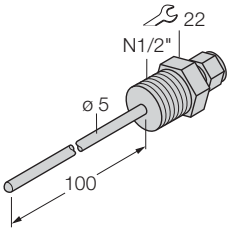
THW-3-N1/2-A4-L050

Thermowell for temperature probes



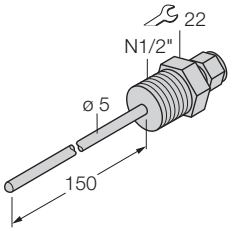
THW-3-N1/2-A4-L100

Thermowell for temperature probes



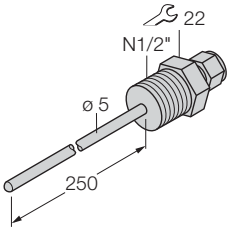
THW-3-N1/2-A4-L150

Thermowell for temperature probes



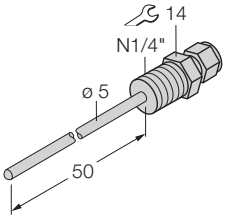
THW-3-N1/2-A4-L250

Thermowell for temperature probes



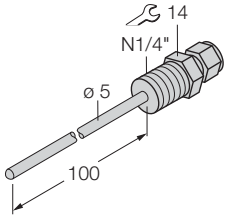
THW-3-N1/4-A4-L050

Thermowell for temperature probes



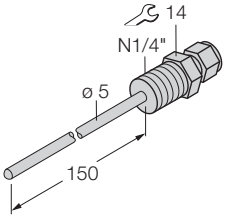
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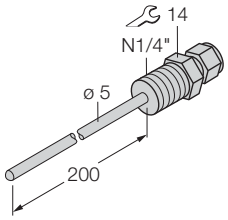
Thermowell for temperature probes



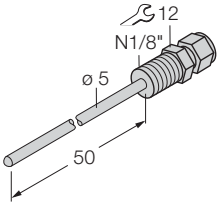
THW-3-N1/4-A4-L150

Thermowell for temperature probes

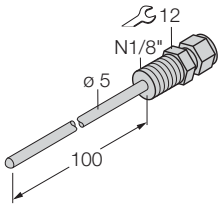




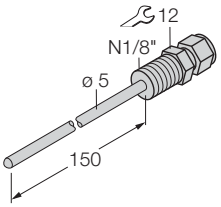
THW-3-N1/4-A4-L200
Thermowell for temperature probes



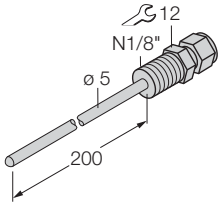
THW-3-N1/8-A4-L050
Thermowell for temperature probes



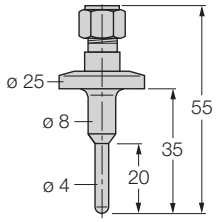
THW-3-N1/8-A4-L100
Thermowell for temperature probes



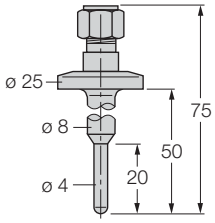
THW-3-N1/8-A4-L150
Thermowell for temperature probes



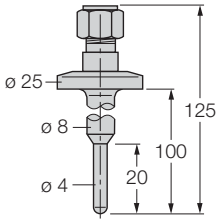
THW-3-N1/8-A4-L200
Thermowell for temperature probes



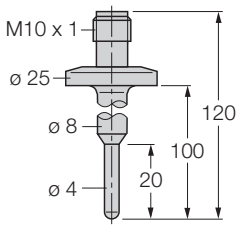
THW-3-TRI3/4-A4-L035
Thermowell for temperature probes



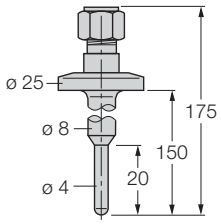
THW-3-TRI3/4-A4-L050
Thermowell for temperature probes



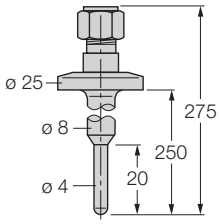
THW-3-TRI3/4-A4-L100
Thermowell for temperature probes



THW-3-TRI3/4-A4-L100
Thermowell for temperature probes

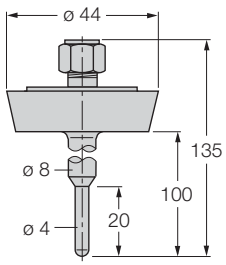


THW-3-TRI3/4-A4-L150
Thermowell for temperature probes

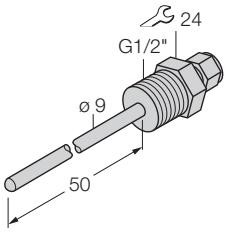


THW-3-TRI3/4-A4-L250
Thermowell for temperature probes

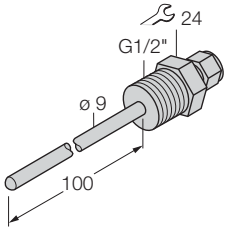
THW-6 – Thermowells for 6 mm probes



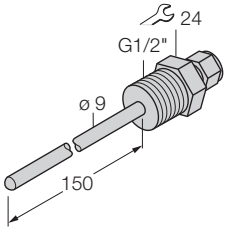
THW-6-DN25K-A4-L100
Thermowell for temperature probes



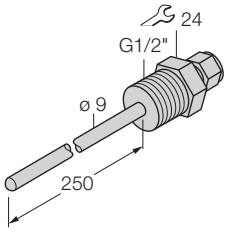
THW-6-G1/2-A4-L050
Thermowell for temperature probes



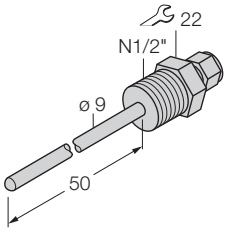
THW-6-G1/2-A4-L100
Thermowell for temperature probes



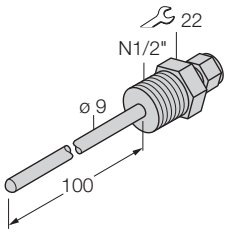
THW-6-G1/2-A4-L150
Thermowell for temperature probes



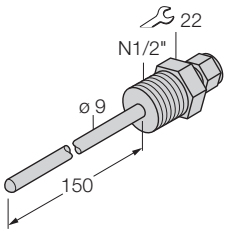
THW-6-G1/2-A4-L250
Thermowell for temperature probes



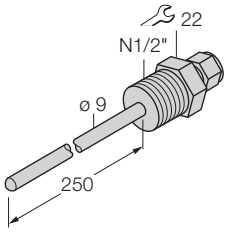
THW-6-N1/2-A4-L050
Thermowell for temperature probes



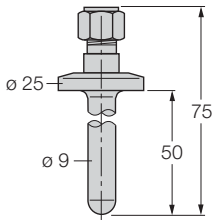
THW-6-N1/2-A4-L100
Thermowell for temperature probes



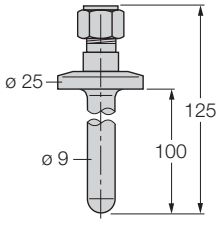
THW-6-N1/2-A4-L150
Thermowell for temperature probes



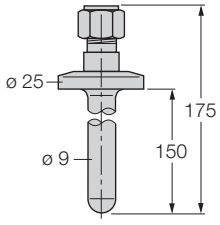
THW-6-N1/2-A4-L250
Thermowell for temperature probes



THW-6-TRI3/4-A4-L050
Thermowell for temperature probes



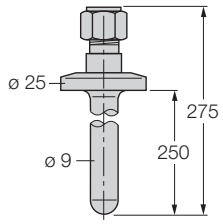
THW-6-TRI3/4-A4-L100
Thermowell for temperature probes



THW-6-TRI3/4-A4-L150
Thermowell for temperature probes

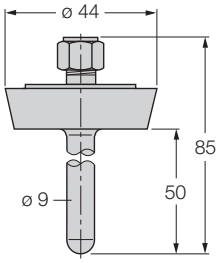
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Thermowell for temperature probes



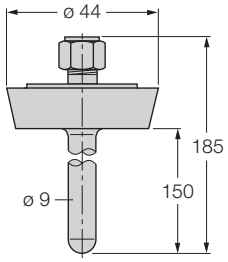
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Thermowell for temperature probes



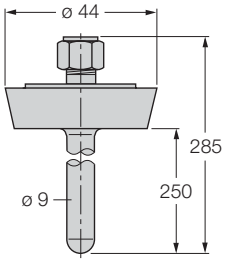
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Thermowell for temperature probes



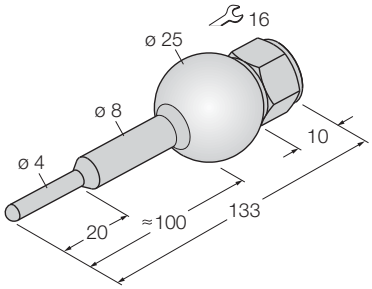
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Thermowell for temperature probes



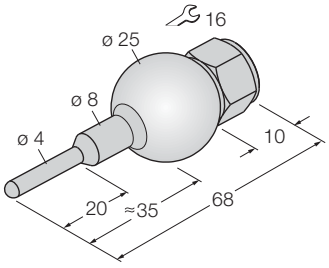
THW-3-UNI25-A4-L100

Thermowell for temperature probes



THW-3-UNI25-A4-L035

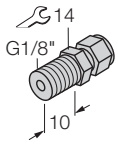
Thermowell for temperature probes



CF-3 – Compression fittings for 3 mm probes

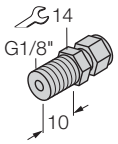
CF-M-3-G1/8-A4

Compression fitting for temperature probes

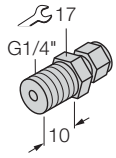


CF-M-3-N1/8-A4

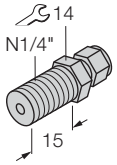
Compression fitting for temperature probes



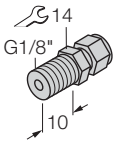
CF-M-3-G1/4-A4
Compression fitting for direct mounting of temperature probes



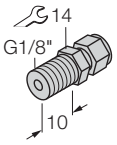
CF-M-3-N1/4-A4
Compression fitting for direct mounting of temperature probes



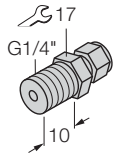
CF-P-3-G1/8-A4
Compression fitting for direct mounting of temperature probes



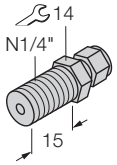
CF-P-3-N1/8-A4
Compression fitting for direct mounting of temperature probes



CF-P-3-G1/4-A4
Compression fitting for direct mounting of temperature probes

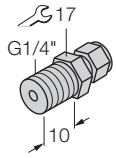


CF-P-3-N1/4-A4
Compression fitting for direct mounting of temperature probes

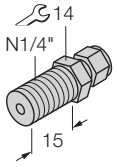


CF-6 – Compression fittings for 6 mm probes

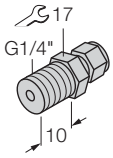
CF-M-6-G1/4-A4
Compression fitting for direct mounting of temperature probes



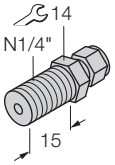
CF-M-6-N1/4-A4
Compression fitting for direct mounting of temperature probes



CF-P-6-G1/4-A4
Compression fitting for direct mounting of temperature probes

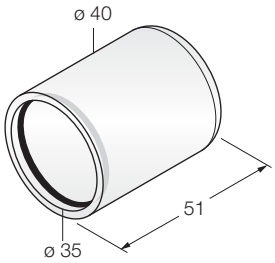


CF-P-6-N1/4-A4
Compression fitting for direct mounting of temperature probes



Accessories

PTS-Cover
Protective cap



Accessories for flow sensors / flow meters

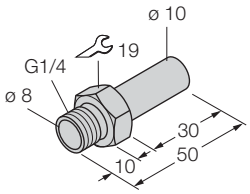


We offer a large range of function supporting accessories for easy and safe mounting, different adapters and mounting kits as well as protective aids to hold up mechanical stress.

Features

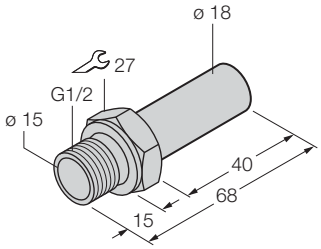
- Adapters for flow meters, D18, D15, D10 on G1/2
- Other connection types on request
- Mounting aids for FTCI, FCVI and FCMI flow meters

Adapters and mounting kits



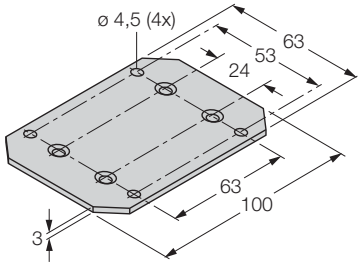
FTCI-G1/4A4-D10/ L050

Adapter for G1/4 thread; stainless steel A4 (1.4571/AISI 316Ti)



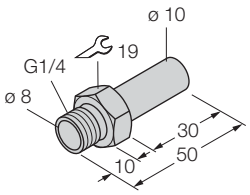
FTCI-G1/2A4-D18/ L068

Adapter for G1/2 thread, stainless steel A4 (1.4571/AISI 316Ti)



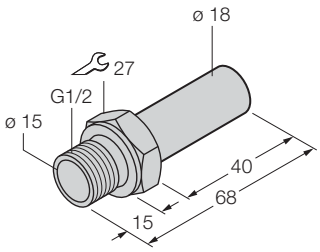
FTCI-MP01AL

Aluminium mounting panel for front mounting



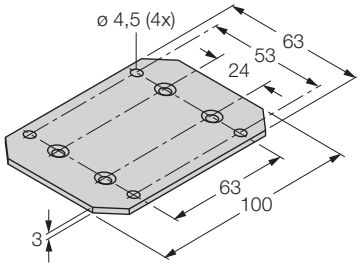
FTCI-G1/4A4-D10/ L050

Adapter for G1/4 thread, stainless steel A4 (1.4571/AISI 316Ti)



FTCI-G1/2A4-D18/ L068

Adapter for G1/2 thread, stainless steel A4 (1.4571/AISI 316Ti)



FTCI-MP01AL

Aluminium mounting panel for front mounting

Reflectors



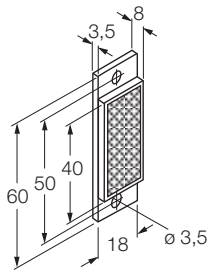
The use of reflectors and reflective foils requires sufficient excess gain (excess radiated power). „Excess gain 1" means, the sensor operates without excess of radiancy. If dust, fume or mist is expected to contaminate the lens or the beam path, excess gain of the system has to be enlarged (> 1.5) compared to a clean environments (1.5).

Unless otherwise indicated, the ranges of the retroreflective sensors stated are based on the use of a BRT-3 reflector with a diameter of 75 mm.

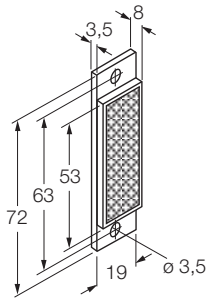
Features

- Reflectors and reflective foils are available in different sizes and with different mounting arrangements.
- Reflectors for rough environments and high temperatures

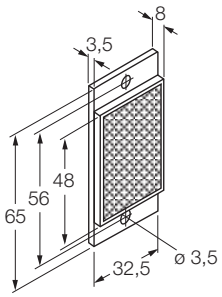
Rectangular reflectors



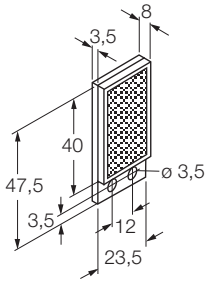
BRT-40X18A
Rectangular reflector, reflection coefficient 1.0, acrylic, ambient temperatures -20 … +60 °C



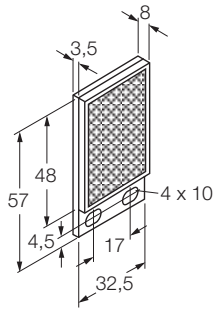
BRT-53X19A
Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures max. +50 °C



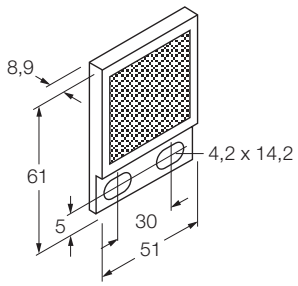
BRT-48X32A
Rectangular reflector, reflection coefficient 1.0, acrylic, ambient temperatures max. +50 °C



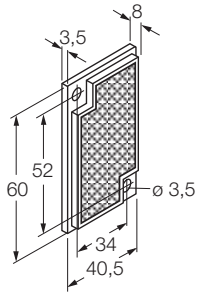
BRT-40X23B
Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures max. +50 °C



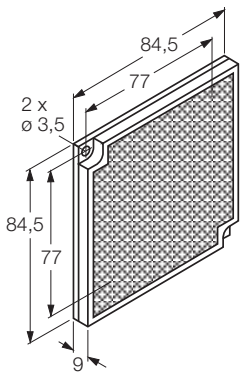
BRT-48X32B
Rectangular reflector, reflection coefficient 1.0, acrylic, ambient temperatures -20 °C … +60 °C



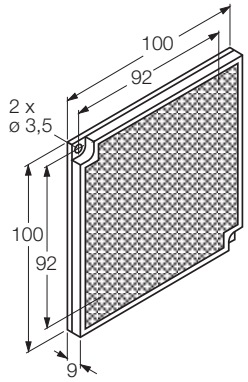
BRT-46
Rectangular reflector, reflection coefficient 1.8, acrylic, ambient temperatures max. +50 °C



BRT-60X40C
Rectangular reflector, reflection coefficient 1.48, acrylic, ambient temperatures max. +50 °C

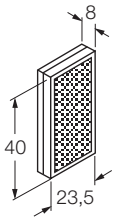


BRT-77X77C
Rectangular reflector, reflection coefficient 2.0, acrylic, ambient temperatures -20 °C … +60 °C



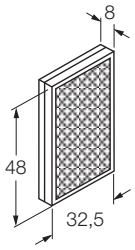
BRT-92 x92C

Rectangular reflector, reflection coefficient 3.0, acrylic, ambient temperatures
-20 °C… +60 °C



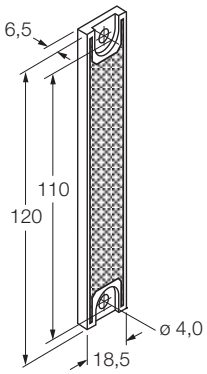
BRT-40X23

Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures
-20 °C… +60 °C



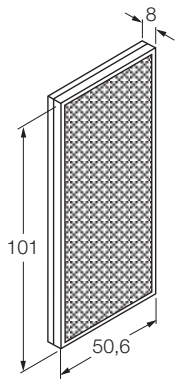
BRT-48X32

Rectangular reflector, reflection coefficient 1.0, acrylic, ambient temperatures
-20 °C… +60 °C



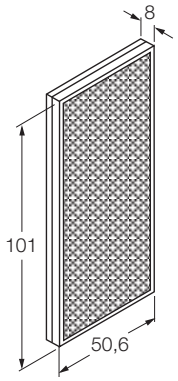
BRT-100X18A

Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures
-20 °C… +60 °C



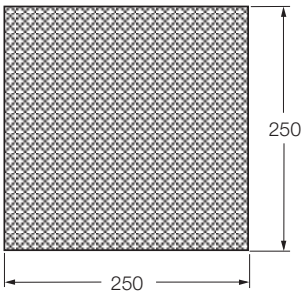
BRT-100X50

Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures
-20 °C… +60 °C



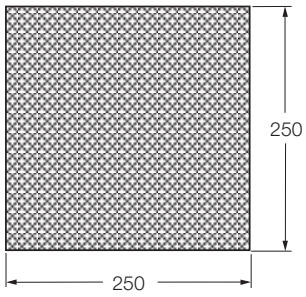
BRT-100X55A

Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures
-20 °C… +60 °C



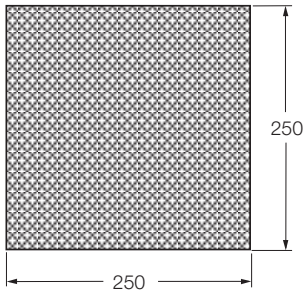
BRT-250

Special rectangular reflector for LT7PLVQ sensor, aluminium, ambient temperatures
-20 °C… +50 °C



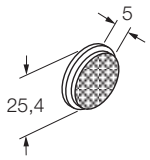
BRT-4HT

Rectangular reflector, reflection coefficient 0.15, aluminium, ambient temperatures max. +480 °C

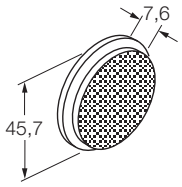


BRT-50X60H
Rectangular reflector, reflection coefficient 1.4, acrylic, ambient temperatures
max. +110 °C

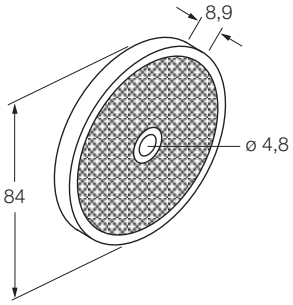
Round reflectors



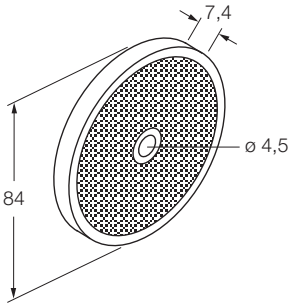
BRT-25
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
max. +65 °C



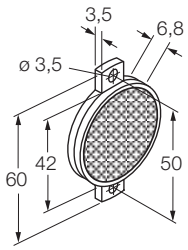
BRT-40
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
max. +65 °C



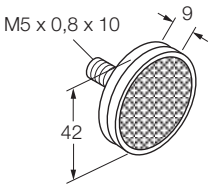
BRT-75
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
max. +65 °C



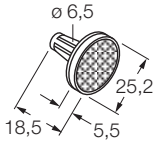
BRT-84
Round reflector, reflection coefficient 1.4, acrylic, ambient temperatures
-20 °C… +60 °C



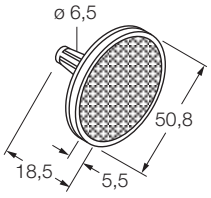
BRT-42A
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
-20 °C… +60 °C



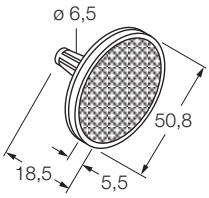
BRT-42D
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
-20 °C… +60 °C



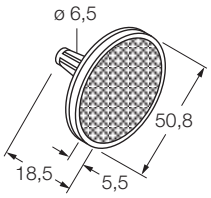
BRT-25R
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
-20 °C… +60 °C



BRT-50R
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
max. +50 °C

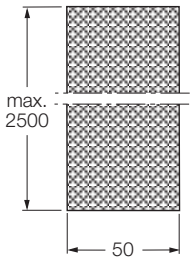


BRT-2A
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
max. +65 °C

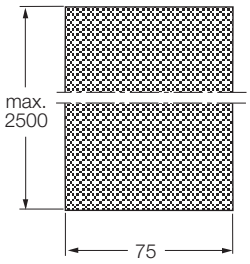


BRT-41AHT
Round reflector, reflection coefficient 1.0, acrylic, ambient temperatures
-20 °C… +200 °C

Reflective foils



BRF50H (1M)
Self-adhesive reflective foil made of epoxy resin; length 1 m, reflection coefficient 0.7, ambient temperature max. +60 °C



BRF75H (1M)
Self-adhesive reflective foil made of epoxy resin; length 1 m, reflection coefficient 0.7, ambient temperature max. +60 °C

Glass fibers



In many applications objects can only be detected through the use of fiber optics. If light beams have to be piped through very hot, humid or chemically aggressive ambients, glass or plastic fibers are the ideal solution.

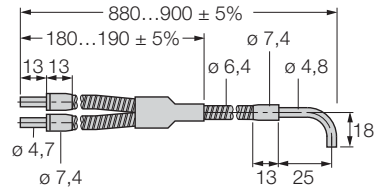
Glass fibers are available in different sizes, lengths and qualities, as monofilaments for opposed mode sensors and as bifurcated or double bifurcated fibers for diffuse mode sensors.

Unlike plastic fibers, glass fibers have a bigger inner bending radius and are not suited for frequent bending.

Features

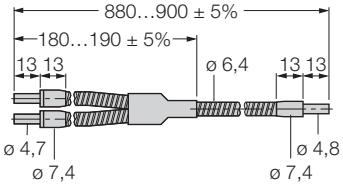
- Standard and special types for demanding application conditions
- High chemical resistance
- Broad temperature range: -140 °C…+480 °C
- Immune to moisture
- Resistant to impacts and vibration
- High interference immunity
- Robust design, for application in vacuum chambers
- Mounted with brackets

Glass fibers – diffuse mode



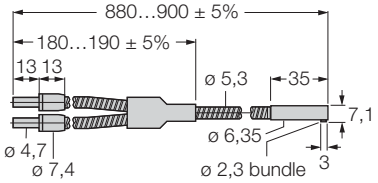
BA23S

Glass fiber, diffuse mode, angled head (90°), flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



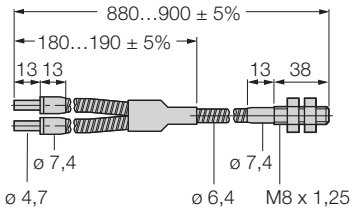
BF23S

Glass fiber, diffuse mode, flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



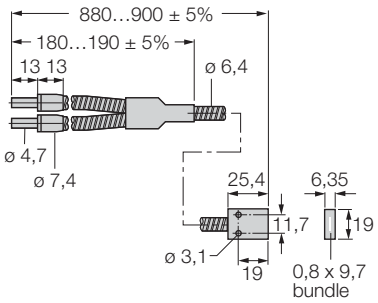
BA1.53SMTA

Glass fiber, diffuse mode, head ø 1.5 mm angled (90°), flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



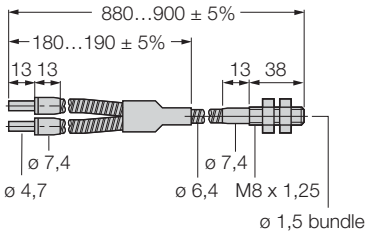
BT23SM8

Glass fiber, diffuse mode, threaded brass bushing M8 x 1.25, bundle diameter 3.2 mm, flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



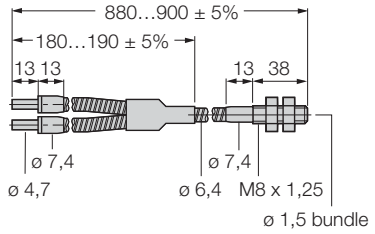
BR23S

Glass fiber, diffuse mode, rectangular beam, flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



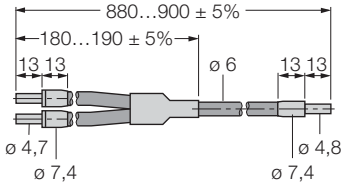
BT13SM8

Glass fiber, diffuse mode, threaded brass bushing M8 x 1.25, bundle diameter 1,6 mm, flexible stainless steel sheath, ambient temperatures
-140 °C …+250 °C



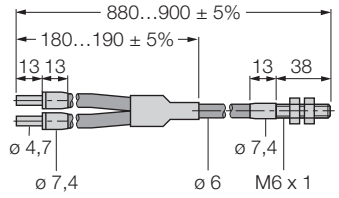
BP13P

Glass fiber, diffuse mode, bendable tip, galvanized PVC jacket, ambient temperatures
-140 °C…+250 °C

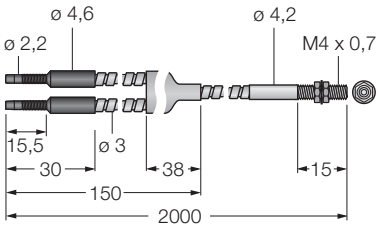


BF23P

Glass fiber, sensing mode: Diffuse mode sensor, galvanized PVC jacket;
ambient temperatures
-40 °C…+105 °C

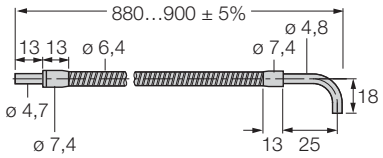


BT23PM6
Glass fiber, diffuse mode , PVC cable; ambient temperatures -40 °C…+105 °C

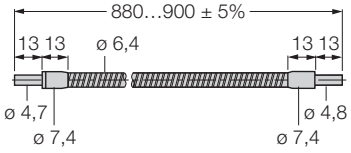


BMT16.6S-HT
Glass fiber, diffuse mode, compact head, high temperature proof up to +315 °C, threaded brass bushing M4 x 0.7, flexible stainless steel sheath

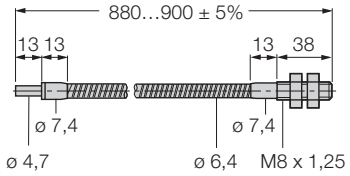
Glass fibers – opposed mode



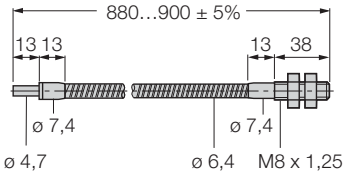
IA23S
Glass fiber, opposed mode, angled head 90°, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C



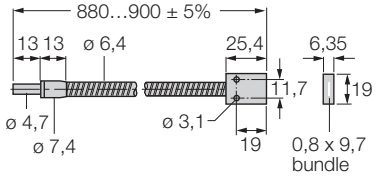
IF23S
Glass fiber, opposed mode, flexible stainless steel sheath, ambient temperatures -140 °C…+250 °C



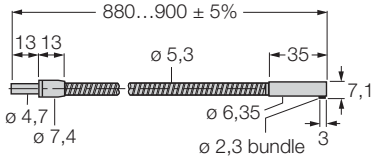
IT23SM8
Glass fiber, opposed mode, threaded brass bushing M8 x 1.25, bundle diameter 3.2 mm, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C



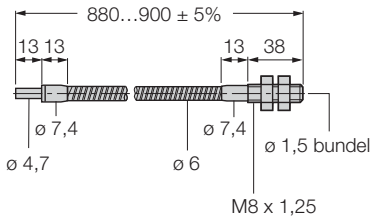
IR2.53S
Glass fiber, opposed mode, rectangular beam, bundle diameter 4 mm, flexible stainless steel sheath, ambient temperatures -140 °C...+250 °C



IR23S
Glass fiber, opposed mode, rectangular beam, bundle diameter 3.2 mm, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C

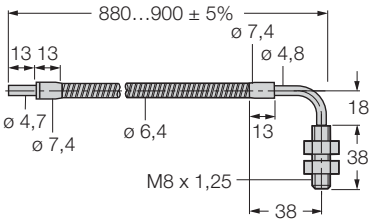


IA1.53SMTA
Glass fiber, opposed mode, compact head ø 1.5 mm, angled 90°, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C



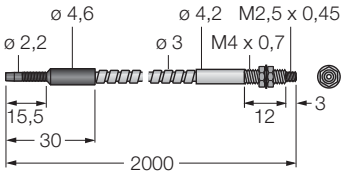
IT13SM8

Glass fiber, opposed mode, threaded brass bushing M8 x 1.25, bundle diameter 1.6 mm, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C



IAT23SM8

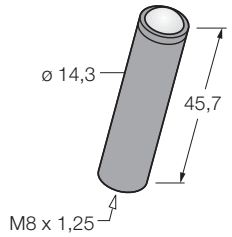
Glass fiber, opposed mode, angled head 90°, threaded brass bushing M8 x 1.25, flexible stainless steel sheath, ambient temperatures -140 °C …+250 °C



IMT.756.6S-HT

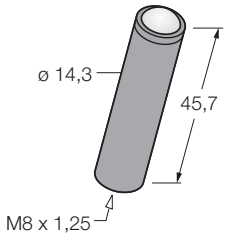
Glass fiber, opposed mode, compact head, temperature proof up to +315 °C, threaded brass bushing M4 x 0.7, flexible stainless steel sheath

Glass fibers – lenses



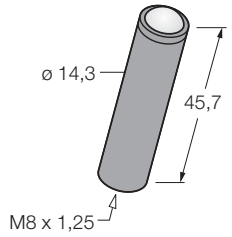
L9M8

Glass lens in a blue galvanized aluminium sheath, for glass fibers, range extension of opposed mode sensing, ambient temperatures up to +315 °C



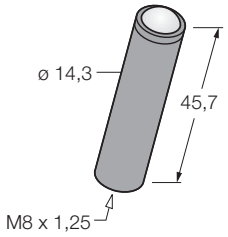
L10M8

Convergent glass lens in a red galvanized aluminium sheath to focus the light of bifurcated fiber optic sensors, e.g. for print/color mark detection, focal distance 5 mm ± 1 mm, ambient temperatures up to +315 °C



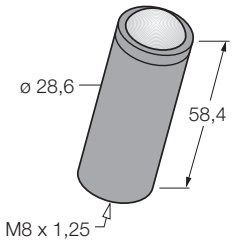
L16FM8

Glass lens in plastic jacket for glass fibers; range extension of opposed mode sensing, ambient temperatures up to +105 °C



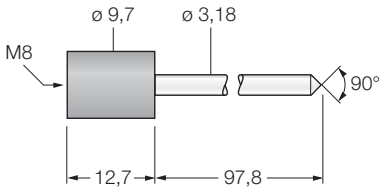
L16FALM8

Glass lens in a galvanized aluminium sheath; for glass fibers, range extension of opposed and retro-reflective sensing mode, long range, ambient temperatures up to +315 °C



L16FSSM8
Glass lens in a stainless steel sheath; for glass fiber optics, range extension of opposed and retroreflective mode sensing, long range, ambient temperatures up to +480 °C

Glass fibers – monitoring of filling levels



TGRM8 mm
Monitoring of filling levels with bifurcated glass fibers, M8 thread (types „B…M8“), end tip screwed on the fiber, chemical-resistant glass tip, ambient temperatures -140 °C…+250 °C

Plastic fibers



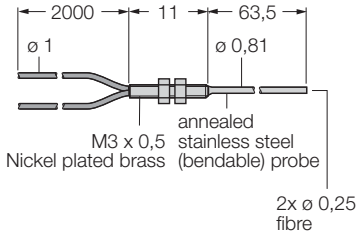
The very flexible plastic fibers are a well-priced solution for applications with poorly accessible spaces.

Plastic fibers can be cut to the required length. They are freely bendable and fit in the respective space. For applications in which the fibers need to be bended in all directions, TURCK offers extremly flexible coiled version with the following diameters: 0.25, 0.5, 0.75, 1 and 1.5 mm. They are sold in pairs.

Features

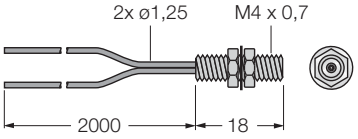
- Well-priced solution for confined spaces
- Easy fitting
- Coiled plastic fibers, freely bendable
- Highly flexible
- Cut to fit
- Extremely small bending radii, more than 1,000.000 bending cycles
- Ambient temperatures: -30…+70 °C
- Mounting brackets are available

Plastic fibers – diffuse mode



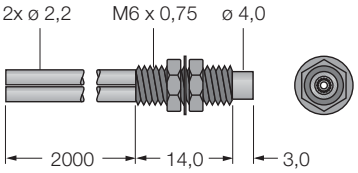
PBP16U

Plastic fiber, diffuse mode, bendable tip, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



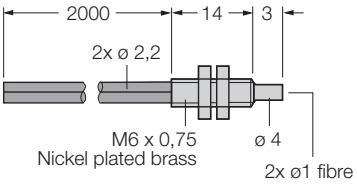
PBCT26U

Plastic fiber, diffuse mode, coaxial, threaded bushing M4 x 0.7 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



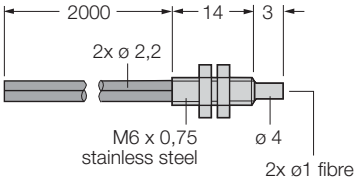
PBCT46U

Plastic fiber, diffuse mode, coaxial, threaded bushing M6 x 0.75 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



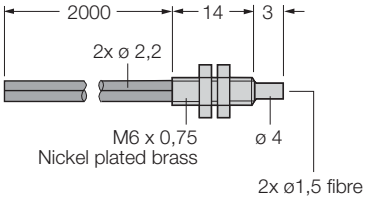
PBT46UHF

Plastic fiber, diffuse mode, threaded bushing M6 x 0.75 mm, highly bendable DURA-BEND™ multicore fiber, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



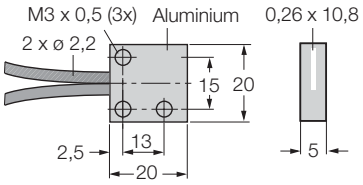
PBT46UHT1

Plastic fiber, diffuse mode, threaded bushing
M6 x 0.75 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures up to +125 °C



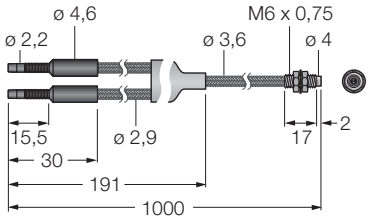
PBT66U

Plastic fiber, diffuse mode, threaded bushing
M6 x 0.75 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



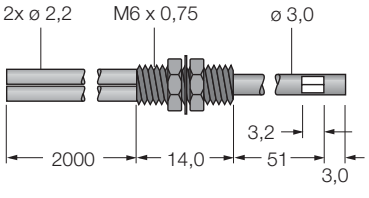
PBR1X326U

Plastic fiber, diffuse mode, rectangular beam, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C

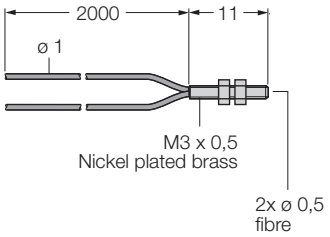


PBT43TMB5

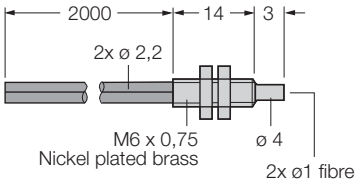
Plastic fiber, diffuse mode, threaded bushing
M6 x 0.75 mm, pluggable end tip (for D12 sensor), polyethylene jacket, ambient temperatures
-30 °C…+70 °C



PBPS46UMT
Plastic fiber, diffuse mode, lateral beam, head with bendable tip, threaded bushing M6 x 0.75 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C

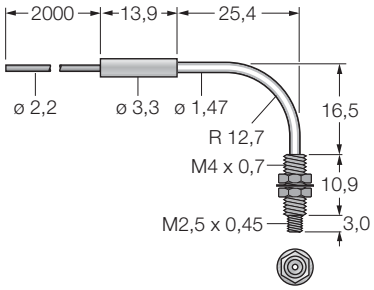


PBT26U
Plastic fiber, diffuse mode, threaded bushing M3 x 0.75 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C

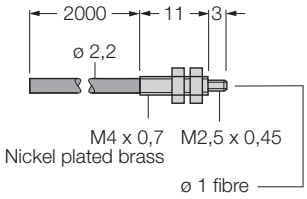


PBT46U
Plastic fiber, diffuse mode, polyethylene cable; ambient temperatures
-30 °C…+70 °C

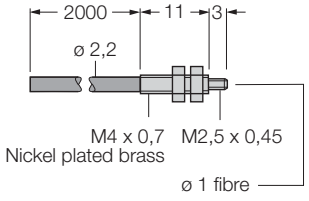
Plastic fibers – opposed mode



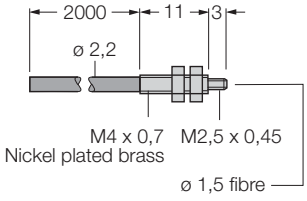
PIAT46U
Plastic fiber, opposed mode, angled head 90°, threaded bushing M2.5 x 0.45 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



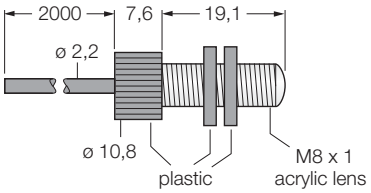
PIT46UHF
Plastic fiber, opposed mode, threaded bushing M2.5 x 0.45 mm, highly bendable DURA-BEND™ multicore fiber, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



PIT46UHT1
Plastic fiber, opposed mode, threaded bushing M2.5 x 0.45 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures up to +125 °C

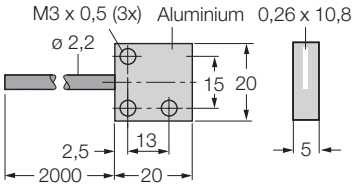


PIT66U
Plastic fiber, opposed mode, bundle diameter Ø 1.5 mm, threaded bushing M2.5 x 0.45 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



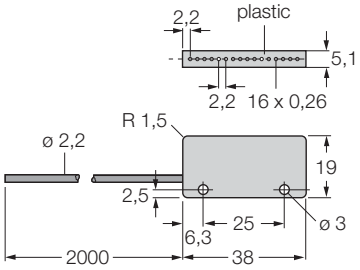
PIL46U

Plastic fiber, opposed mode, with acrylic lens, threaded bushing M8 x 1, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



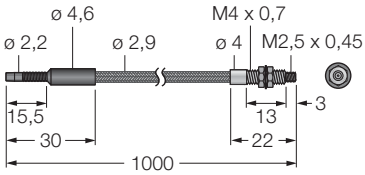
PIR1X166U

Plastic fiber, opposed mode, compact head, rectangular/straight beam, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



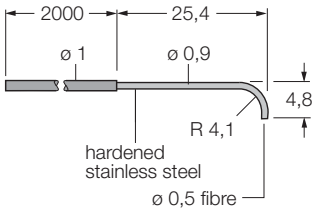
PIRS1X166UMPMAL

Plastic fiber, opposed mode, rectangular beam, side emission, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



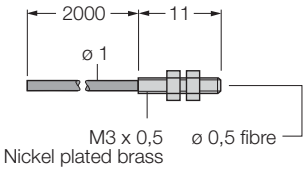
PIT43TMB5

Plastic fiber, opposed mode, threaded bushing
M2.5 x 0.45 mm, pluggable end tip (for D12 sensor), polyethylene jacket, ambient temperatures
-30 °C…+70 °C



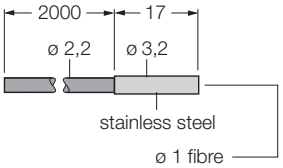
PIA26U

Plastic fiber, opposed mode, angled head 90°, polyethylene jacket, ambient temperatures
-30 °C …+70 °C



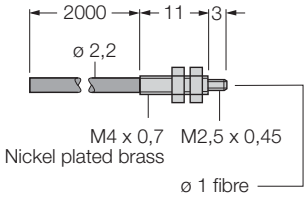
PIT26U

Plastic fiber, opposed mode, threaded bushing
M3 x 0.5 mm, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



PIF46U

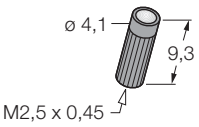
Plastic fiber, opposed mode, smooth bushing Ø 3.2, preassembled wire without end tip, polyethylene jacket, ambient temperatures
-30 °C…+70 °C



PIT46U

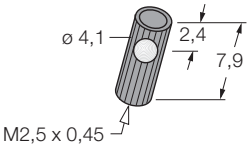
Plastic fiber, opposed mode, polyethylene cable; ambient temperatures
-30 °C…+70 °C

Plastic fibers – Lenses



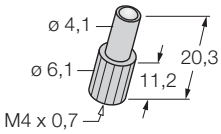
L2

Glass lens in nickel-plated brass jacket, for range extension, ambient temperatures -60 …+350 °C



L2RA

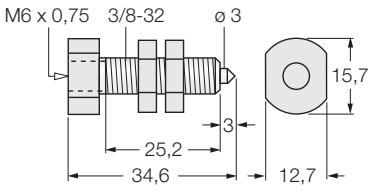
Glass lens (prism) in nickel-plated brass jacket, lateral beam emission, for range extension, ambient temperatures -60 …+300 °C



L4C6

Accessory lens in anodized aluminium jacket to focus the light, range 6 mm ± 1 mm, spot size Ø 2.5 mm, ambient temperatures -40 …+70 °C

Plastic fibers – Monitoring of filling levels



TGR3/8MPFMQ

Monitoring of filling levels with bifurcated plastic fiber PBT46U and PBT26UM6M.1, polypropylene jacket, quartz glass tip, ambient temperatures -30 °C…+70 °C.

Accessories for ultrasonic sensors

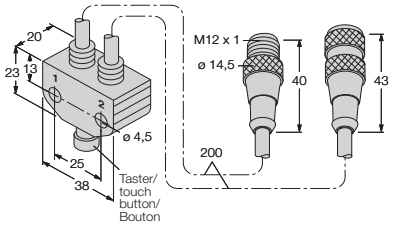


TURCK offers a large selection of accessories for operating, mounting and protection of ultrasonic sensors. .

Features

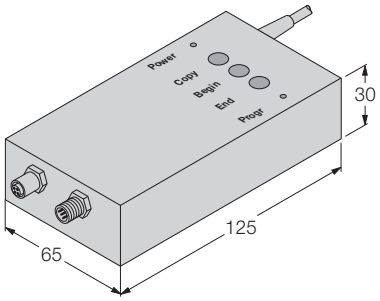
- Teach adapter
- Programming device
- Ultrasonic adapter

Ultrasonic sensors



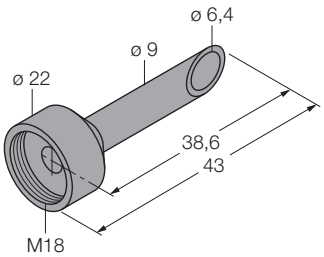
VB2-SP2

Teach adapter for ultrasonic sensors, types RUN and RUR



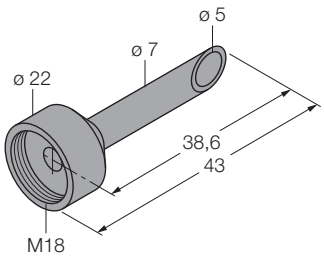
RU-PDI

Programming device for configuration of ultrasonic sensors types RU…-M18 and RUC…-M30



UWG18-6.4

Ultrasonic focussing-adapter for QS18U and S18U, internal diameter 6.4 mm



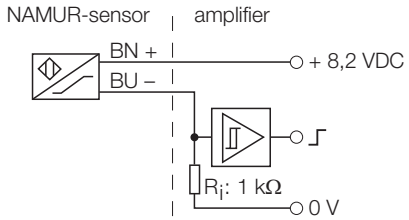
UWG18-5.0

Ultrasonic focussing-adapter for QS18U and S18U, internal diameter 5.0 mm

Electrical versions

NAMUR

NAMUR sensors according to EN 60947-5-6 are polarized 2-wire sensors which change their internal resistance depending on the damping (constant distance/current characteristic). They are designed for connection to external switching amplifiers which convert the current change into a binary output signal.



Advantages of NAMUR sensors

Applicable in explosion hazardous areas in conjunction with an approved switching amplifier.
Permantent wire-break and short-circuit protection via switching amplifier.
Sensors with NAMUR output are suited for detection of fast movements and high rotation speed. NAMUR sensors have the same housing style but feature a higher switching frequency.

Nominal operating values

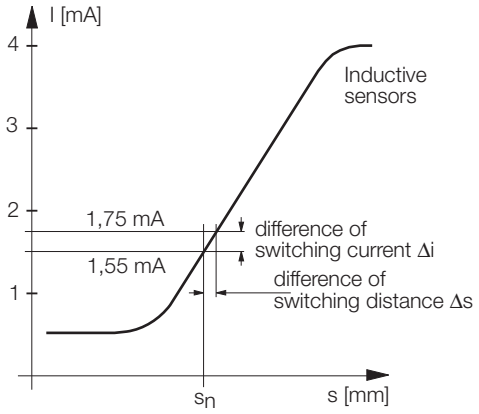
The nominal values according to EN 60947-5-6:

- U_0 = 8,2 VDC
- R_i = 1000 Ω
- $I_{activated} \leq$ 1.2 mA
- $I_{non\text{-}activatedt} \geq$ 2.1 mA
- Please note that capacitive magnetic field sensors feature an inverted characteristic due to their functional principle.

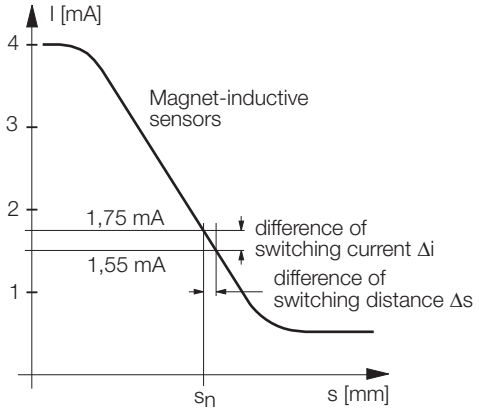
TURCK-NAMUR sensors are adjusted at 1.55 mA for s_n and 1.75 mA for s_n + Δs, precisely in the middle of the "NAMUR-window" (see characteristics).

- Reverse polarity protected
- Hysteresis H: 1…10 %
- Temperature drift < ± 10 % (nominal temperature range -20…+70 °C) < ± 20 % (extended temperature range -40/-25…+100/120 °C)
- Repeatability R: < 2 %

NAMUR characteristic, inductive sensors



NAMUR characteristic, capacitive and magnetic field sensors



Status display (LED)

Based on the special functional principle, inductive sensors with NAMUR output feature an inverted LED function: The LED lights up in undamped and not in damped state. This is so, because in damped state only a weak current flow is produced (see NAMUR-characteristics). This is not enough to drive an LED. In undamped state instead enough current is provided for an LED signal.

Ambient conditions

Protection rating (IEC 60529/EN 60529) IP67
Pollution degree 3
Shock resistance 30 x g (11 ms)
Vibration resistance 55 Hz (1 mm)

Use in explosion hazardous areas

If applied in explosion hazardous areas, NAMUR sensors must be connected to approved switching amplifiers with intrinsically safe control circuits. TURCK offers a wide range of approved switching amplifiers.

- Supply and output via approved external switching amplifiers Coding: …-Y1.
- Class Ex ia IIC T4…T6 (approved for use in explosion hazardous areas; EC type examination certificate according to EN 60079-0 and EN 61214-0; approval according to directive 94/9/EG, KEMA 02 ATEX 1090 X).
- Avoid static charging when using sensor types CA40, CK40, CP40, CP80, DSU26, DSU35, K40, K90, MP, Q80.
- Mounting conditions according to certificate and instruction manual.

Use in safety-related applications IEC 61508

Nearly all NAMUR sensors of the TURCK product portfolio are suited for the application in safety systems (inclusive of SIL2 according to IEC 61508). This has been certified by an independent test body (TÜV). The certificate is valid for all TURCK sensors with standard NAMUR output. These sensors are 100 % compatible with all standard NAMUR signal processors i.e. SPS systems with NAMUR inputs.
Failure probability (PFD_{avg})

- 7.00×10^{-6} test interval 1 year
- 3.50×10^{-6} test interval 5 years
- Safe failure fraction (SFF): 0.9

Series or parallel connection of NAMUR sensors

Not permitted with TURCK switching amplifiers.

Maximum cable length

In order to determine the maximum cable length, two conditions have to be considered:
Condition 1:
A maximum cable resistance of 50 Ω is predefined by the EN 60947-5-6
standard. The maximum cable length can be calculated taking this value in relation to the core diameter:
$l = R \times Q / \delta$
l = max. core length, m
R = max. resistance, Ω
Q = core diameter, mm^2
δ = specific resistance of the core materials (0.0175 for copper), Ω x mm^2 x m
Example for copper core with a core diameter of Q = 0.34 mm^2:
$l = 50 \times 0.34 / 0.0175 = 971$ m
As NAMUR sensors are operated with two cores, the determined value has to be devided by two. Concerning our example, the calculated maximum cable length would be:
971 / 2 = 485.5 m

Note: Additional resistances, like corrosion or transfer resistance of connection terminals are not included in this calculation!

Condition 2:
If the sensor is operated in explosion hazardous areas, the maximum inductivity and capacity has to be considered. The correspondent values are listed on the data sheets of NAMUR sensors and isolating switching amplifiers.

Example:
– Isolating switching amplifier IM1-22Ex-R:
  C_{max} 830 nF ; L_{max} 5 mH (for EEx ia IIC)

– Sensor Bi5-EG18SK-Y1X:
  C_i = 150 nF; L_i = 150 µH

If the values of isolating switching amplifiers and sensors are subtracted, the following values result:
C = 680 nF ; L = 4.85 mH.

Values for inductivity and capacity per meter are usually indicated by the cable vendor. 110 nF/km and 1 mH/km are index values for inductivity and capacity of the cables. The following maximum cable lengths can be calculated on the basis of these standard values:
max. cable length based on 110 nF/km:
680 nF / 110 nF = 6.18 km
max. cable length based on 1 mH/km:
4.85 mH / 1 mH = 4.85 km
The maximally allowed cable length is the smallest value which was calculated on the basis of the two conditions.
This example lead to the following results:
– Condition 1: Cable resistance: 485.5 m
– Condition 2:
a) Cable inductivity: 6.18 km
b) Cable capacity: 4.85 km

Considering both conditions, the maximum cable length in this example is 485.5 m.

Sensors with transistor output 3/4-wire DC

Advantages

- Very low leakage current
- Easy connection to relays or PLCs
- Series or parallel connection possible

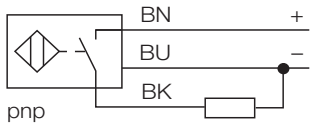
Power supply

- Operating voltage: U_B: 10…30 VDC, 10…55 VDC or 10…65 VDC
- Ripple W_{ss}: 10 %

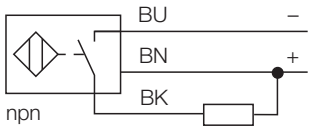
Switching output

- Normally open (NO) or normally closed (NC) with 3-wire sensors
- Exclusive OR (XOR) with 4-wire sensors
- Cyclic short circuit protection
- Wire-break protection
- Reverse polarity protection
- Usage category 13
- Rated insulation voltage U_i = 0.5 kV
- Rated conditional short-circuit current 100 A

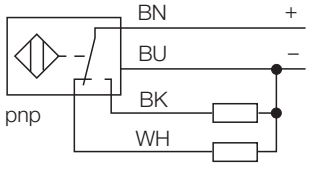
3-wire DC (PNP)



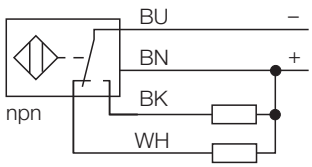
3-wire DC (NPN)



4-wire DC (PNP)



4-wire DC (NPN)



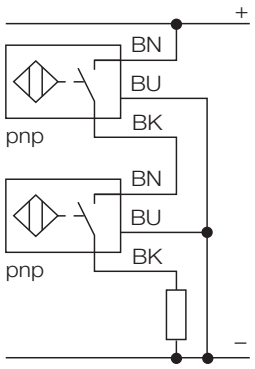
Ambient conditions

- Protection rating (IEC 60529/EN 60529) IP67/IP68/IP69K (depending on sensor type)
- Pollution degree 3
- Shock resistance 30 x g (11 ms)
- Vibration resistance 55 Hz (1 mm)

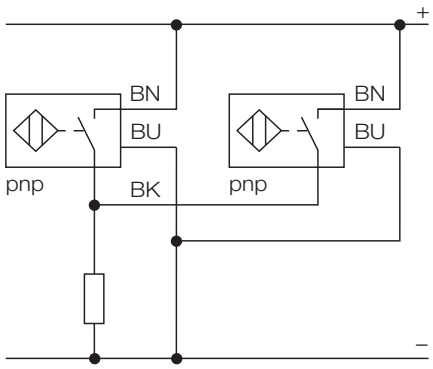
Series or parallel connection

When sensors are series connected, voltage drops and readiness delays of the individual sensors add up.

3-wire DC series connection



3-wire DC parallel connection



Sensors with transistor output 2-wire DC

Advantages

- Only two wires
- Short-circuit proof

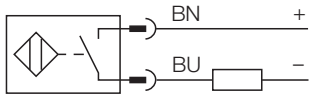
Power supply

- Operating voltage U_B: 10...30 VDC or 10…65 VDC (see type code)
- Ripple W_{ss}: 10 %

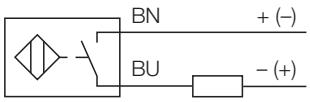
Switching behaviour

- Normally open (NO)
- Cyclic short-circuit protection (overload trip point > I_e + 20 mA
- Reverse polarity protection
- Off-state current I_r: ≤ 0.6 mA
- Voltage drop U_d: non-polarized version (AD) < 5 V, polarized version (AG) < 4.2 V
- Usage category 13

2-wire DC (polarized)



2-wire DC (non-polarized)



Ambient conditions

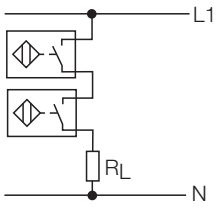
- Protection rating, minimum IP65
- Pollution degree 3
- Shock resistance: 30 x g (11 ms)
- Vibration resistance: 55 Hz (1 mm)

Series connection of 2-wire sensors

- Normally open (NO): AND logic
- Normally closed (NC): NOR logic

When sensors are series connected, voltage drops of the individual sensors add up. This reduces the usable voltage at the load. Care must be taken not to underrange the minimum admissible supply voltage.

Series connection of 2-wire sensors



2-wire AC/DC sensors

Advantages

- Only two wires
- AC/DC connection
- Short-circuit proof (types: ADZ, RDZ, FDZ)

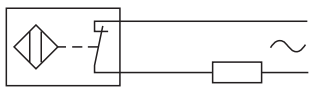
Power supply

- Operating voltage of inductive and capacitive sensors U_B: 20...250 VAC oder 10...300 VDC
- Except for sensors with selective functions (NF) and sensors with extended temperature range up to +120 °C

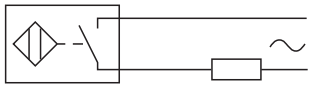
Switching behaviour

- Normally open (NO), coding: ...ADZ/AZ
- Normally closed (NC), coding: ...RDZ/RZ
- Normally open (NO) and normally closed (NC) programmable connection, coding: ...FDZ/FZ
- Off-state current: $I_r \leq$ 1.7 mA (AC), $I_r \leq$ 1.5 mA (DC)
- Latching short-circuit protection, types ADZ, RDZ, FDZ; surge current ≤ 8 A (≤ 5 ms, max. 5 Hz); overload trip point > 500 mA
- Voltage drop $U_d < 6\ V_{eff}$
- Hysteresis H: 3...15 %
- Temperature drift < ± 10 % (default temperature range -25...+70 °C), < ± 20 % (extended temperature range -40/ -25...+100/120 °C)
- Repeatability R: < 2 %
- Usage category: AC 140/DC 13
- Rated insulation voltage U_i = 1.5 kV
- Rated conditional short-circuit 100 A
- Should the ambient temperature exceed + 40 °C the rated operating current is limited.

2-wire AC/DC, NC



2-wire AC/DC, NO



Ambient conditions

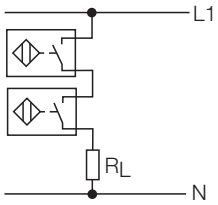
- Protection rating (IEC 60529/EN 60529): IP67
- Pollution degree: 3
- Shock resistance: 30 x g (11 ms)
- Vibration resistance: 55 Hz (1 mm)

Series connection of 2-wire AC/DC sensors

- Normally closed (NO): AND logic
- Normally open (NC): NOR logic

When sensors are series connected, voltage drops of the individual sensors add up. This reduces the usable voltage at the load. Care must be taken not to underrange the minimum admissible supply voltage.

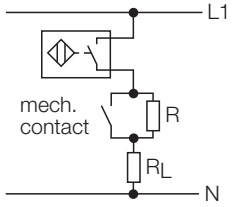
Series connection of 2-wire AC/DC sensors



Mechanical switches and AC/DC sensors connected in series

The open contact interrupts the supply voltage of the sensor. If the sensor is damped while the mechanical contact closes, a short time delay will occur. The readiness delay before availability (t ≤ 80 ms) prevents immediate switching
Solution: A resistor connected in series with the contact ensures the minimum voltage supply to the sensor. Thus, the time delay before availability after opening of the mechanical contact is avoided
Formular to calculate the resistance value:
$R = 10\ V / I_{Load}$ $P = I^2_{Load} \times R$

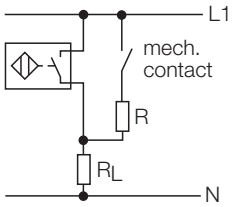
Series connection with mechanical switches



Mechanical switches and AC/DC sensors connected in parallel

The closed contact interrupts the supply voltage of the sensor. The sensor is ready for operation after opening the contact and following time delay (t = 80 ms)
Solution: A resistor connected in parallel to the mechanical contact supplies the sensor in open contact state, so that the time delay before availability effect is avoided. For 230 VAC the resistance value is approx. 91 kΩ/1 W.
Approximate resistance value 400 Ω/V

Parallel connection with mechanical switches



Sensors with analog output

Advantages

- Linear characteristic (except SiU)
- Mineature design with extended sensing range and non-linearized output (SiU)
- Variable outputs: Current, voltage, frequency, adjustable switching output.

Power supply

- Operating voltage U_B: 15...30 VDC
- Ripple W_{ss}: 10 %

Ambient conditions

- Protection rating, minimum IP65
- Pollution degree 3
- Shock resistance: 30 x g (11 ms)
- Vibration resistance: 55 Hz (1 mm)

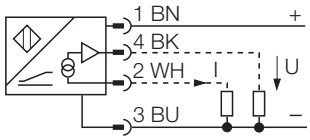
Standard data

- Repeatability R: < 1 %; R < 0.5 % after warm-up time 30 min.
- Temperature drift: ≤ 0.06 % / °C
- Usage category: 13
- Rated insulation voltage: U_i = 0.5 kV

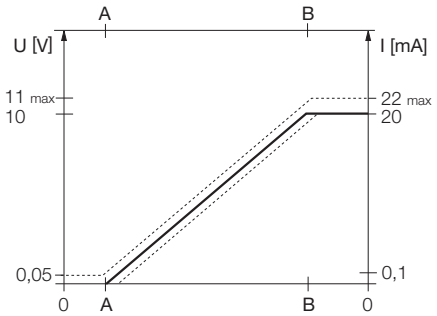
Load resistance

- Current output: < 0.4 kΩ
- Voltage output: ≥ 4.7 kΩ
- Frequency output: < 1 kΩ

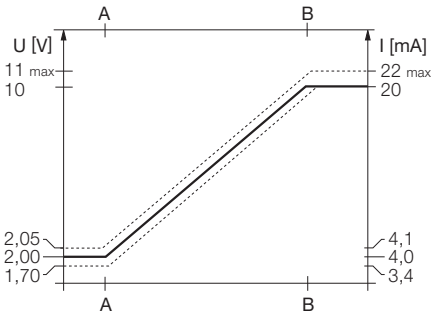
Wiring diagram of sensors with voltage and current output (example)



Output characteristic of sensors with 0...10 V/0...20 mA output (example)



Output characteristic of sensors with 2...10 V/4...20 mA output (example)



Standards and directives (if applicable)

Standards

EN 60947-5-2

Low voltage switchgear and control-gear, part 5: Control units and switching elements, main section 2: Proximity switches

EN 60079-0

Electrical apparatus for use in explosion hazardous locations, General requirements

EN 60079-11

Electrical apparatus for use in explosion hazardous locations Intrinsic safety „i“

EN 60079-15

Electrical apparatus for use in explosion hazardous locations type of protection „n“

EN 61241-0

General requirements for electrical equipment applied in areas exposed to flammable dust

EN 61241-1

Electrical equipment for application in dust exposed areas, protected by housing

EN 61000-6-4

Electromagnetic compatibility (EMC), generic emission standard

EN 61000-6-2

Electromagnetic compatibility (EMC), generic immunity standard

EN 60529/IEC 60529/DIN VDE 0470-1

Protection ratings (IP code) of the housings indicating the degree of protection against the ingress of dust and humidity.

EN 60947-5-6 (NAMUR)

Control units and switching elements/proximity switches, DC interface for proximity sensors and switching amplifiers (NAMUR)

IEC 61508 (SIL)

Functional safety of safety related, electronic and programmable electronic systems

Directives

2006/95/EG

Low voltage directive

2004/108/EG

Electromagnetic compatibility;
CE marking

94/9/EG

Explosion protection (ATEX)

CE

The CE-symbol is neither a seal of quality nor a test mark but serves for free trade within the European Community. Manufacturers assure that the protective aims of the applicable directives are fulfilled by CE-labeled products.

Housing materials

Housing materials – abbreviations and explanations

ABS

Acrylnitril-Butadien-Styrol
impact resistant, rigid

AL

Aluminium
low specific weight, good oxidation resistance

CuZn-Cr

Chrome-plated brass
standard housing material

CuZn-OP

Optaloy-coated brass
standard housing material

CuZn-T

PTFE-coated brass
protection against weld splatter

DURO

Duroplast
excellent mechanical strength and temperature resistance

EPTR

Thermoplastic rubber
good mechanical strength, temperature and chemical-resistant

FEP

Fluorpolymer
high temperature resistance, high abrasion resistance, resistant to acids, alcalis, solvents, lacquer, benzine and oils

GD-Al

Die-cast aluminium
low specific weight, excellent tightness and durability

GD-Zn

Die-cast, zinc
excellent tightness and durability

LCP

Liquid crystal copolyester
excellent stability, low thermal expansion, excellent chemical resistance and flame retardant properties (UL94-V0)

PA

Polyamide
good mechanical strength, temperature resistance, PA6/12 approved for the food industry

PA-T

PTFE-coated polyamide
protection against weld splatter

PA-X

Irradiated polyamide
excellent mechanical strength, high temperature resistance, PA6/12 approved for the food industry

PBT

Polybutylenterephthalate
excellent mechanical strenght and temperature resistance, good resistance against chemicals, flame retardant and self-extinguishing (UL94-V0), transparent and UV-resistant

PC

Polycarbonate
highly impact-resistant

PEEK

Polyethertetherketone
good mechanical properties at high temperatures, high dimensional stability and chemical resistance

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POM

Polyoxymethylene
high impact resistance, good mechanical and chemical resistance

PP

Polypropylene
excellent chemical resistance, even against acids, alkalis and solvents. High temperature and mechanical resistance.

PTFE

PTFE
excellent resistance to high temperatures and chemicals

PUR

Polyurethane
elastic, abrasion-proof, impact resistant; oil, grease and solvent resistant

PVC

Polyvinylchlorid
good mechanical strength, impact and chemical resistance

PVDF

Polyvinylidenfluorid
high temperature resistance, good chemical resistance (similar to PTFE),high mechanical strength

SrFe

Strontium-Ferrite
properties are similar to ceramic material with respect to rigidity and brittleness, good resistance to corrosion and chemicals

Trogamid

Polyamide
transparent, hard, rigid, good chemical resistance

ULTEM (PEI)

Polyetherimide
excellent mechanical strenght and temperature resistance, good chemical resistance, (PEI) flame retardant and self-extinguishing (UL94-V0), transparent and UV-resistant

V4A

Top-quality stainless steel
Excellent corrosion resistance, specified for high requirements, especially for the food industry

VA

Stainless steel
excellent corrosion resistance, specified for high requirements of the food industry

VA-T

PTFE-coated stainless steel
protection against weld splatter

VES

Vestamid (PA)
good mechanical strength and excellent temperature resistance

Sensor cables

PVC cable jacket with PVC wire insulation

Standard quality, fine-wire litz construction, highly flexible (LifYY)

PUR cable jacket with PVC wire insulation

Resistant to all industrial oils and lubricants. Fine-wire litz construction. Resistant to vibration and bending stress; small bending radius
Identification: .../S90

Silicone cable jacket with silicone Adernisolation

For use at high or low ambient temperatures (-50…+180 °C) moderate mechanical strength, average resistance to alkalis, acids, oils and solvents
Identification:
.../S140 or .../S120 (+120 °C)
SiHSi, 2 x 0.5 mm^2, 16 x 0.2
SiHSi, 3 x 0.5 mm^2, 16 x 0.2
SiHSi, 3 x 0.25 mm^2, 14 x 0.15

PTFE cable jacket with PTFE wire insulation

Optimum resistance to high temperatures and chemicals
Identification:
.../S120 (+120 °C)
.../S907 (+160 °C)
.../S200 (+200 °C)

FEP cable jacket FEP wire insulation

Suited for low temperature applications
Temperature range -100...+180 °C
Identification: .../S939 (-60 °C)

Ölflex PUR cable jacket with PVC wire insulation

Good resistance to oils, extremely abrasion and friction-resistant, firm, antiseptic and hydrolysis resistant, temperature range -5…+70 °C
Identification: .../S396 (underwater)

TPE cable jacket with TPE wire insulation

Good temperature and chemical resistance (-40...+130 °C)
Identification: ...EG08.../S100

Terms and definitions

Active face

The point where the high-frequency magnetic field leaves the sensor. Regarding threaded barrel sensors, the active face is at the front. Concerning rectangular plastic sensors, the zone of the active face is marked with a target.

AID alignment indicating device **(photoelectric sensors)**

The AID emitts pulses at a rate proportional to the quantity of received light. The higher the pulse frequency, the higher the amount of light. A pulse rate of 1 Hz indicates that the sensor receives just the right amount of light it needs to switch. Slight contamination may cause malfunctioning. A pulse rate of 3 Hz or more ensures reliable operation of the sensor.

Air pressure (ultrasonic sensors)

Normal atmospheric changes of ± 5 % (for a local reference point) can lead to a deviation of the sensing range of about ± 0.6 %.

Air streams (ultrasonic sensors)

Air streams influence the echo time, however, air flow speeds of up to 10 m/s are insignificant. In conditions where turbulences prevail, e.g. above glowing metal, the use of ultrasonic sensors is not recommended, because the echo of distorted sound waves is difficult to evaluate.

Air temperature and humidity (ultrasonic sensors)

Both air temperature and air humidity influence the sonic pulse duration. An increase of temperature by 20 °C causes a change of the sensing distance of max. 8 %. An increase of humidity results in an increase of sound speed of max. 2 %. The distance to the object seemingly decreases with a higher sound speed.

Alarm output

The alarm output indicates low excess gain or overload. Many sensors mentioned in this catalog feature an alarm output.

Ambient conditions (photoelectric sensors)

The ambient conditions determine the sensor's reliability. Working at its maximum range in demanding ambients, the sensor will soon perform less efficiently and finally be inoperable due to dirt covering the lens. If the same sensor works at half its distance in the same environment, the good performance may be kept stable for a longer time. The optimal range for each sensor and the individual ambient conditions is determined with the excess gain curve.

Analog output signal

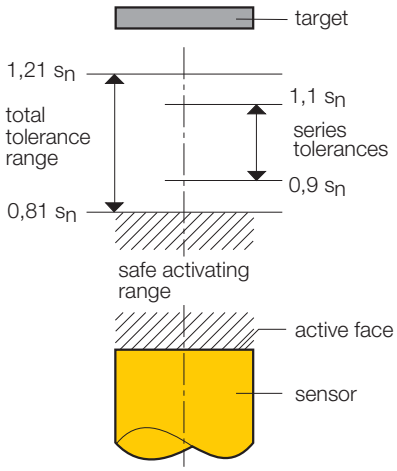
The analog output signal is provided at the output either at 4…20 mA, 0…10 V or a similar power rate.

Assured switching distance (s_a) inductive sensors

"Distance at which the sensor securely switches". Correlation to rated switching distance s_n: $s_a < 0.81 \times s_n$

Assured switching distance (s_a) capacitive sensors

- Distance at which the sensor securely switches
- Correlation to rated switching distance s_n: $s_a < 0.72 \times s_n$



Background suppression (photoelectric sensors)

Normal diffuse mode sensors switch on when the level of light reflected back to the receiver exceeds the sensor's threshold. A dark object that is close and a bright object that is further away reflect the same quantity of light. It is recommended that, in order to have an acceptable contrast, any object that has to be ignored, should be at least four times further away than the actual target to be detected. Background suppression sensors not only detect the amount of energy returned to the sensor but also determine the distance to the object reflecting the light. A background suppression sensor detects objects reliably up to a set distance (the cutoff point) while ignoring other objects that are slightly further away regardless of the their surface reflectivity.

Blind zone (ultrasonic and linear position sensors)

Diffuse mode ultrasonic sensors are not capable of detecting targets located directly in front of the sonic transducer. The area between the sonic transducer surface and the beginning of the detection range is called blind zone and must always be kept free. With regard to linear position sensors, the blind zone marks the area in which the positioning element can not be detected

Burst pressure (pressure sensors)

The minimum pressure a sensor must withstand without damage. If the minimum pressure is exceeded, the sensor may leak or be destroyed..

Close-up range suppression (capacitive sensors)

Dirt deposits and humidity are blanked out through integrated self-compensation.

Color effects (photoelectric sensors)

Colored objects may affect the measurement accuracy of photoelectric sensors. White, red, yellow and orange objects reflect more light than green, blue or black ones. All values indicated in this catalog are related to the official white Kodak test card.

Contrast (photoelectric sensors)

The most important factor for reliable operation of photoelectric sensors is the contrast. Contrast is the degree of difference between two sensing conditions, light and dark. For example, a thick cardboard box breakes a retroreflective beam. The contrast is determined through adjusting first the light condition. For this purpose the sensitivity is reduced to the minimum level (counter clockwise rotation of button). Subsequently the level of sensitivity is increased until the status LED lights up. Next the dark condition is established when the sensor switches off. Subsequently the sensitivity is increased until the status LED lights up again. The best contrast is achieved if the difference between both switching states covers more than a third of the adjustable range. Sensors without sensitivity adjustment are not suited for low contrast applications.

Convergent mode sensors (photoelectric sensors)

Convergent mode sensors use a lens system that focuses the emitted light to an exact point in front of the sensor and focuses the receiver element at the same point. They operate like diffuse mode sensors, detecting an object through its reflectivity. Small objects, edges and transparent materials are reliably detected. It is important though that the objects are within the near-field depth. The near-field depth is defined as the area in front and behind the focal point in which objects are detected. The higher the reflectivity of an object the deeper the field. Through bundling light in the focal point, convergent mode sensors are capable of detecting objects with low reflectivity. They detect transparent materials easily, such as glass bottles on conveyor belts. Convergent mode sensors working with visible light are suited for the detection of color marks.

Correction factors

see Reduction factors

Crosstalk (ultrasonic sensors)

Crosstalk occures when ultrasonic sensors are mounted side by side. It can either be avoided through minimum distances kept between the sensors, alternate operation or synchronization (see multiplexing).

Degree of pollution

§ 6.1.3.2 of IEC 60947-1 defines 4 pollution degrees:
TURCK proximity sensors belong to category 3 as per IEC 60947-1 conductive or dry, non-conductive dirt that becomes conductive due to condensation.

Designs and beam angle (ultrasonic sensors)

TURCK ultrasonic sensors are available as threaded barrels M18/M30 or rectangular Q30 devices with a narrow beam angle of 6°. They detect very small objects with pinpoint accuracy up to a distance of 8 m. Q45U and T30U types feature beam angles of 12° to 15° and achieve longer ranges. CP40 types with a beam angle of 60° monitor large areas and are immune to tilt when detecting objects with smooth and even surfaces.

Diffuse mode sensors (photoelectric sensors)

Like retroreflective sensors, diffuse mode sensors host emitter and receiver circuitry in the same housing. In this sensing mode, an object is not detected through the interruption of a light beam but through the reflectivity of an object. An object is detected when sufficient light is reflected back to the emitter. The switching distance of diffuse mode sensors depends largely on the reflectivity of the object.

Diffuse mode sensors with background suppression (photoelectric sensors)

Diffuse mode sensors with background suppression operate with an emitter an several receivers. They not only detect the amount of light returned but also the distance to the object and figure out if the object is within or outside the sensing range. They are available either with fixed or adjustable field

Digital output

Digital output signals are ON/OFF signals which are produced when continuous measurement reaches a given value. They are usualy produced with PNP/NPN transistors or an electromagnetic relay.

Distance measuring gauge (inductive sensors)

Square metal plate to determine the measuring range s_n:
- Material: St37
- Thickness: 1 mm
- Edge lenth 3 x s_n, if 3 x s_n is greater than the diameter of the active face, otherwise just the diameter of the active face.

Dynamic output

Sensors with dynamic output respond highly sensitive and create a short pulse upon damping.

EMC (electromagnetic capability)

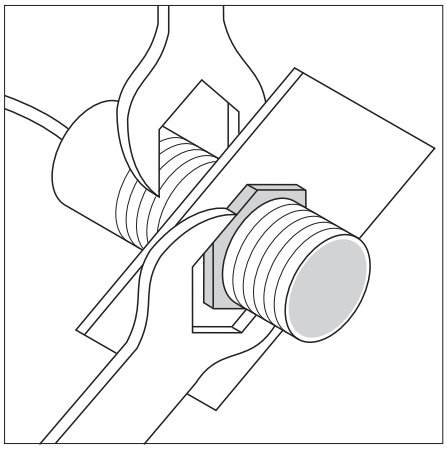
The abbility of an electrical device to operate failure-free and without negative influence on the operating environment.

Excess gain (photoelectric sensors)

Excess gain indicates how much light a sensor receives under certain conditions. This value is compared to the amount of light the sensor needs to switch. Excess gain 1 indicates that the sensor receives a minimum quantity of light, just enough to work. Excess gain 50 indicates that the sensor receives fifty times more light then needed for proper operation. In a clean environment, excess gain 1.5 is sufficient to ensure proper operation of the sensor in case of offset or gradual consumption of the LED. If dust, fume or mist is expected to contaminate the lens, excess gain should be higher than 1.5. All values for the sensing ranges stated in this catalog refer to excess gain 1.

Fixing torque

Concerning threaded barrel sensors, the maximum moment of force to be observed in order to avoid torsional stress. You find the corresponding values on the data sheets. If exposed to strong vibrations, use liquid threaded fastener on anaerobic base (e.g. loctite 242).



Flush and non-flush mounting (inductive and capacitive sensors)

Flush mountable sensors can be mounted in metal up to the active face. Non-flush mountable sensors have to protrude the metal, they have larger sensing ranges.
Non-flush mountable *uprox*®+ sensors with integrated self-compensation can be embedded partially (see technical data).
Flush mountable *uprox*®+ with integrated self-compensation can be recessed (see technical data).

Hysteresis function (pressure sensors)

This function is used to establish a stable switching state, independent of system-related pressure fluctuations near the adjusted set point. The switching range is limited by a switchpoint (sP) and a release point (rP) adjusted by the user.

Linearity deviation

Indicated by sensors with analog output. Admissable deviation of the output signal from an ideal linear curve, indicated in % f.s. of the output signal.

Magnetic field immune

Magnetic-field immune sensors with ferrite core are insensitive to magnetic fields occuring in welding systems for example. All *uprox*®+ and *uprox*® sensors are immune to magnetic DC or AC fields.

Measurement accuracy

The closeness of the measured value to the nominal value. See also Measurement deviation

Measurement deviation

Deviation of a measured value from a nominal value according to DIN 1319-1:1995.

Measurement error

see Measurement deviation

Measuring range

Indicated by sensors with analog output.
The range within which the output signal is changed.

Media temperature (flow sensors)

The temperature range in which the sensor operates according to its measurement properties.

Minimum operating current (Im)

Minimum current in ON state to maintain the functionality. Indicated for 2-wire sensors only.

Multiplexing (ultrasonic sensors)

Mutual influence is impossible with alternately operating ultrasonic sensors. The more sensors are operated alternately, the lower the switching frequency. The X1-line of the sensor series RUC-M30, RU-Q30 and RU-M18 can also be used as an enable input for multiplexing. If the X1-line is connected to +24 V, the sensor is enabled; if the X1-line is connected to 0 V, the sensor is disabled. Multiplexing via the X1-line has the advantage that for each enable-operation only the response time and not the time-delay before availability has to be considered. Once connected to the X1 line, most sensors can be programmed with the RU-PDI to multiplex automatically.

Noise suppression (ultrasonic sensors)

Noise such as metal clink or roaring pressure have no influence on the evaluation of signals thanks to the optimally adjustable frequency range and the patented noise suppression circuitry.

No-load current (Io)

Current flow between supply voltage and 0 V. Indicated for 3 and 4-wire sensors only.

Object color (photoelectric sensors)

The color as well as the transparency of objects has no influence on the sensing range. Glass or perspex are reliably detected.

Object surface (photoelectric sensors)

Sometimes the surface quality of an object helps to choose the right sensor. Photoelectric sensors are usually not the right choice for mirror-like surfaces. Measuring errors are likely to occur even with semi-transparent and porous surfaces such as plastic or foam.

Operating range (flow sensors)

The operating ranges vary from one type of fluid to the other. They are proportional to the speed of the fluid that the sensor can detect. At the same flow rate compared to water, air can only conduct away a fraction of the heat from the heating element. Therefore different operating ranges apply for water, oil or air.

Operating range (pressure sensors)

Is the tolerance, in which deviation of pressure is permitted.

Operating range (temperatur sensors)

Is the tolerance in which deviation of temperature is permitted.

Operating modes (ultrasonic and photoelectric sensors)

Ultrasonic sensors are mainly used in the diffuse mode. An object in front of the sensor is detected by the partly reflected sound wave. They are also used in opposed and retroreflective mode. An ultrasonic opposed mode sensor consists of an emitter and a receiver which listen to each other permanently. The ultrasonic sound is interrupted by an object between emitter and receiver, causing the sensor to switch. Photoelectric sensors operate according to the same principles using light instead of sound

Opposed mode sensors (photoelectric sensors)

Opposed mode sensors consist of emitter and receiver mounted in separate housings. They are installed directly opposite each other in such a way that the light from the emitter is aimed directly at the receiver. When an object interrupts or weakens the light beam, the sensor switches. Opposed mode sensors are the most reliable photoelectric sensors for detection of opaque targets.

Optical fibers

Optical fibers are suited for many applications:
- Detection of small objects
- Fit in confined spaces
- High-temperature resistant
- Immune to strong magnetic fields
- Vibration proof
- Resistant to aggressive gases
- Suited for explosion hazardous areas

Optical fibers made of glass or plastic are used to pipe light from the sensor to the object and back. They are passive components of a photoelectric system. Because of their passiveness and the absence of moving parts, light can be piped in hazardous areas. They are also immune to electromagnetic interference. The strands are incased in a cladding that reflects light to the core. The cladding has a lower refractive index than the core. The law of total internal reflection defines, when a light beam hits the medium boundary between two media with different refractive index, it is totally reflected, provided the angle of incidence does not exceed a determined critical angle.

Output function

NAMUR: Standard output signal according to EN 60947-5-6
Normally open (NO): The output is open when the sensor is non-activated and closed when the sensor is activated.
Normally closed (NC): The output is closed when the sensor is non-activated and open when the sensor is activated.
Antivalent: One of the two outputs is closed when the sensor is non-acitvated and the other one when the sensor is activated.
Analog output: The signal provided at the output is either 4...20 mA or 0...10 V.
SSI output: Digital output transmitting measured values directly to the control unit or via remote I/O fieldbus station.

Overpressure (pressure sensors)

The maximum pressure load exerted on the sensor occasionally without impeding its functionality, yet allowing the tolerances to be exceeded.

Precipitation and humidity (ultrasonic sensors)

Normal concentrations of rain or snow do not affect the sensor's operability. The CP40 transducers are not protected against humidity (protection class IP40). All other types are not damaged by water but correct functionality may be impaired. Ultrasonic transducers should generally be protected against direct wetting.

Predamping protection

Self-compensation inhibits predamping of non-flush mountable sensors and enabales partial embedding of the same with reduced switching distances.

Pressure range (pressure sensors)

The operating range in which deviation of pressure is permitted.

Principle of photoelectric sensing

Photoelectric sensors operate on the principle of emitting and receiving light. All sensors in this catalog are compact devices having optics, amplifier and switching output in the same housing. A diode emits a light beam which is either cut off (opposed mode) or reflected by an object (retroreflective/diffuse mode). The sensor detects a change in light intensity causing the output to switch. Photoelectric sensors operate with modulated light in order to blank out unwanted influence of ambient light.

Polarizing filter (photoelectric sensors)

If strong reflecting objects have to be detected with retroreflective sensors a polarizing filter is required. A tripel reflector redirects the light beam by 90°, maintaining the polarization of the light reflected by the object's surface. The polarizing filter enables the sensor to distinguish between light thrown back from the object or from the reflector .

Power consumption

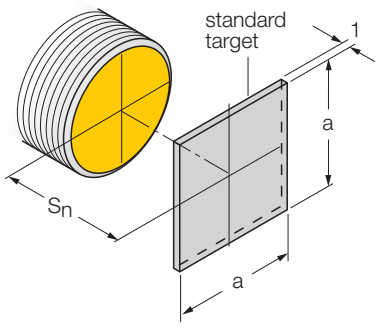
The power needed to operate a sensor. For sensors with switching output the power consumption is indicated without load

Protection rating

Protection against contact with and ingress of foreign bodies and water:
- IP65: Full protection against dust and hose water
- IP67: Full protection against dust and water. Watertight at a depth of 1 m, for a period of 30 min. and constant ambient temperature.
- IP68: Sensors for higher demands; 24 hrs. continuous storage at +70 °C; 24 hrs. continuous storage at –25 °C; 7 days submerged at a depth of 1 m; 10 temperature cycles + 70 °C…-25 °C, dwell cycle per temperature 1hrs.
- IP69K: Suited for high pressure cleaning acc. to DIN 40050-9 following EN 60529

Rated operating distance (sn)

The rated operating distance is measured through the axial approach of a standard target. Manufacturing tolerances and external influences such as temperature and voltage are not considered. The tables only indicate the rated operating distances.



Readiness delay

Sensors feature a readiness delay of < 80 ms to suppress failure pulses occuring in the period between power-on and operational readiness.

Real switching distance (Sr)

Real switching distance (s_r)
- Switching distance under fixed temperature and supply conditions
- Factory set tolerances are taken into account
- Correlation to rated operating distance 0.9 s_n < s_r < 1.1 s_n.

Reduction factor

The switching distance of inductive ferrite core sensors depends on the material of the actuating element. The maximum switching distance is attained with mild steel St37, whereas with other metals only smaller switching distances are achieved.
The reduction factor indicates to which fraction the switching distance is reduced by using other metals than St37.
Typical reduction factor values : Mild steel (St37): 1;
brass: 0.35 - 0.5; copper: 0.25 - 0.45; aluminium: 0.35 - 0.50;
stainless steel: 0.6 - 1

uprox® and *uprox*®+ sensors have the same switching distance for all metals. The reduction factor is always 1.

Reflectivity of surfaces (photoelectric sensors)

An object has to reflect sufficient light in order to be detected by a diffuse or a convergent mode sensor. The amount of light received, depends on the emitting power of the sensor and the reflectivity of the object. A dark object reflects less light than a bright one (see Excess gain). A smooth, mirror-like surface has to be aligned perpendicular to the sensor's axis. Otherwise, the light is not reflected back.

Reflectors and filters (photoelectric sensors)

All sensing ranges of photoelectric sensors and excess gain curves of retroreflective sensors mentioned in this catalog were determined with the BRT75 reflector. Retroreflectors are designed in such a way that light is reflected back in the same direction. The amount of light reflected back to the sensor depends on two factors:
1. The size of the reflecting surface
2. The reflector's reflectivity.

Short distances require a reflector with Ø 25 mm which is capable of reflecting the light as good as a Ø 75 mm reflector. A Ø 75 mm reflector reflects up to nine times more light than a Ø 25 mm and is suited for longer distances..

Refreshing rate

The period a value takes to be formed in an application in device A, to be sent on line to a device B and made available to the application there. The refreshing rate should not be confused with the response time, which is slower in most cases. A floating average value can be formed for a data volume of 10 ms and given out every 1 ms. In this case the refreshing rate is 1/1 ms resp. 1 kHz, while the response time is 6 ms.

Release point (pressure sensors)

In hysteresis mode, the output switches at the release point (rP) when system pressure decreases. In window mode, the output switches at the rP independent of whether system pressure increases or decreases.

Repeatability

Repeatability is defined as the deviation of the switchpoint after often repeated switching, under identical conditions and with the same digital sensor.
For example, a laser sensor is programmed to switch at 100 mm. The actual distance is measured twenty times with a micro-meter. The standard deviation measured is 0.01 mm.; the two sigma repeatability is 0.02 mm.

Repeatability

Sensors with switching output (digital):
Deviation of the switchpoint after often repeated switching, under identical conditions and with the same sensor. Sensors with analog output: Change of the output value under the same conditions and with the same sensor. Value of the measured range indicated in percentage.

Residual current (Ir)

2-wire sensors: The current which flows in non-active condition.
3 and 4-wire sensors: The current which flows in non-active condition between the output and 0 V (PNP output), resp. between output and supply voltage (NPN output).

Resolution

Analog signals converted to digital signals by a DA converter. Each digital signal is individually resolved. The resolution indicates the increment of the signal, meaning the smallest possible change of the analog output signal.

Response time (flow sensors)

Is the time a sensor takes to react to a given change of an input signal.
Example: A temperature sensor working at 0 °C is instantly immersed in 100 °C hot water. After 4 seconds, the sensor indicates 63 °C. The response time is thus 4 seconds.

Retroreflective sensors (photoelectric sensors)

Retroreflective sensors host both emitter and receiver circuitry in the same housing. A light beam is established between the emitter, reflector and receiver. An object is sensed when it interrupts the beam. Retroreflective sensors share some advantages with opposed mode sensors such as good contrast and high excess gain. Moreover, only one device has to be installed and wired. A retroreflective target is an optical device that reflects the light back in the direction of the light source. Retroreflective sensing mode allows reliable detection over a relatively long distance without the need to wire up two electrical devices.

Reverse polarity protection

Protection against false connection.

Ripple

Residual AC voltage superimposed on the DC supply voltage. Usually 10 % ripple (peak to peak) of the applied supply voltage is tolerable.

Sensing conditions (ultrasonic sensors)

The ultrasonic transducers are especially optimized for the medium „air". They can also be used for other gaseous media. In this case the sensitivity and the range need to be adjusted.

Standby time (flow sensors)

The time a flow sensor needs to achieve a stable state after it has been turned on.

Static output (ring sensors)

Sensors with a static output produce a constant pulse as long as they are damped. In principle, all proximity sensors feature a static output. The term is used in connection with ring sensors (see also dynamic output).

Storage temperature

The storage temperature may range from -30...+85 °C.

Surface roughness (ultrasonic sensors)

Ultrasonic sensors detect objects with a surface roughness exceeding 0.15 mm. On the one hand, the surface need not be aligned exactly towards the sensor but on the other hand the sensing range has to be reduced.

Surge current

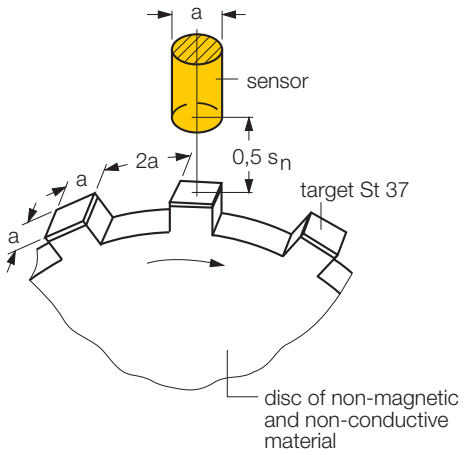
Inrush current transiently flowing through the output.

Switching distance (s)

Distance at which a change of signal is produced with axial approach of the object.

Switching frequency

The switching frequency indicates the number of status changes per second. The higher the switching frequency the more often switching can be repeated per second resp. the faster the switching operation. Concerning proximity switches, the switching frequency indicates the maximum number of changes between damped and undamped state per second (Hz). Maximum switching frequency at an operating distance $s = S_n/2$, measured with a gauge wheel.



Short-circuit protection

Protection against overload.

Switching frequency (max.)

The maximum switching frequency indicates how many status changes per second are possible.

Switch element function

see Output function

Switch-off time (flow sensors)

Time the flow sensor needs to measure and display the drop in flow speed.

Switchpoint (pressure and temperatur sensors)

In hysteresis mode, the output switches at the switchpoint (sP) when system pressure or temperature increases. In window mode, the output switches at the sP independent of whether system pressure or temperature increases or decreases.

Switchpoint accuracy (pressure and temperature sensors)

The switchpoint accuracy defines the maximum admissible deviation of an adjusted value from the actual switchpoint value.

Switching delay

Is the period between attaining a switchpoint and resulting change of status at the output.

Switch-on time (flow sensors)

Time the flow sensor needs to measure and display the increase in flow speed.

Synchronization (ultrasonic sensors)

Crosstalk can be avoided through synchronization. Most sensors of the RUC-M30, RU-M18 and RU-Q30 series synchronize themselves by simply connecting the synchronization line. They emit sonic pulses simultaneously, performing like a single sensor with extended angle of detection.

System pressure (pressure sensors)

The media pressure exerted on the pressure sensor.

Temperature drift

Temperature-dependent change of switchpoint or output value.

Temperature gradient (flow sensors)

The temperature gradient defines the max. temperature rise that a flow sensor can adapt to without damage. The sensors have the ability to compensate temperature jumps within specified tolerances. Excess of these tolerances may lead to malfunction. In this case, the sensor has to be adjusted to the new temperature range to ensure correct detection of flow.
Unit of measure: °C/min. or K/min.

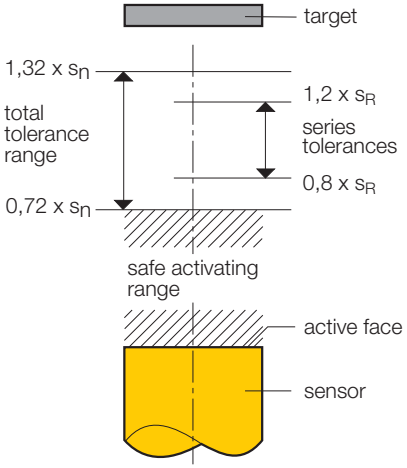
Transparent objects (photoelectric sensors)

Transparent objects are hardly detected by opposed mode sensors as they reflect the light beam only partially. Retroreflective sensors are better suited for this task because the light beam passes the object twice. This improves the contrast considerably. Anyhow, the switchpoint has to be adjusted precisely which is only possible with sensors featuring sensitivity adjustment. Diffuse mode or convergent mode sensors are best suited for this job.

Usable operating distance (Su) (capacitive sensors)

Operating distance which is guaranteed within the permitted temperature and voltage range.
Correlation to rated operating distance:

- $0.8 \times s_r < s_u < 1.2 \times s_r$
- $0.72 \times s_n < s_u < 1.32 \times s_n$

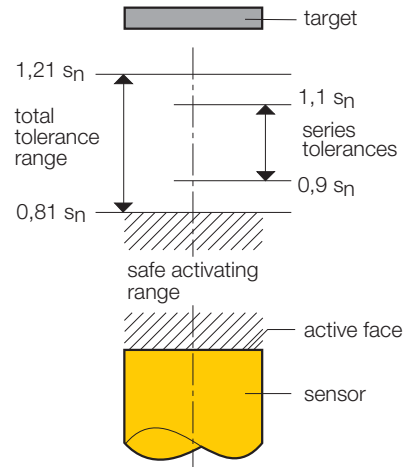


Usable operating distance (Su) (inductive sensors)

Operating distance which is guaranteed within the permitted temperature and voltage range

Correlation to rated operating distance

- $0.9 \times s_r < s_u < 1.1 \times s_r$
- $0.81 \times s_n < s_u < 1.21 \times s_n$



Utilization categorie

The utilization category indicates the area in which sensors can be operated. Category IEC 60947-5-2 is defined in relation to the correspondent rated current, rated voltage and the load current. Inductive sensors by TURCK fulfill the following categories:
DC-13: Control of electromagnets
AC-140: Control of smaller electromagnetic loads with holding current > 0.2 A

Voltage drop (Ud)

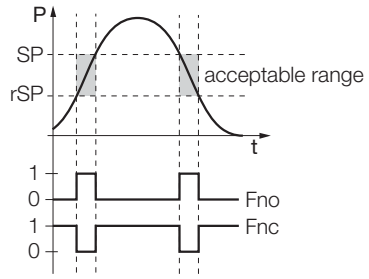
Voltage drop is the reduction in voltage of a connected output.

Weld-proof

Weld-resistant sensors can be applied in welding systems. They incorporate a special ferrite core which makes them immune to magnetic AC and DC fields (see Magnetic field immune).

Window function

An adjustable range, in which the sensor operates in a defined switching state. The window (switching range) is limited by an upper and lower value set by the operator.

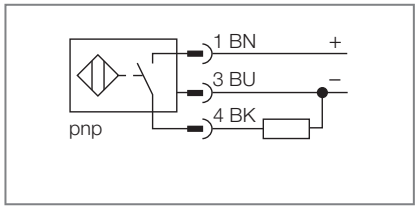


Wire-break protection

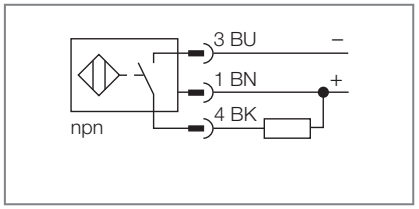
If the supply cable is cut, the output stays off (no failure).

Wiring diagrams

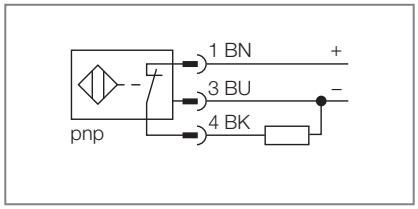
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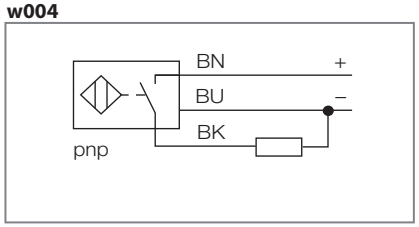
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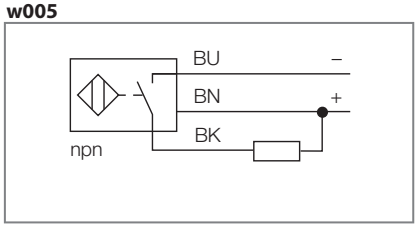
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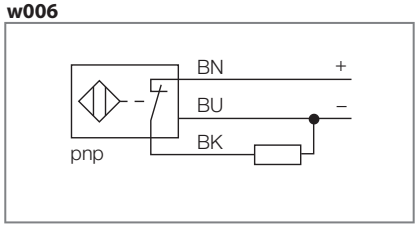
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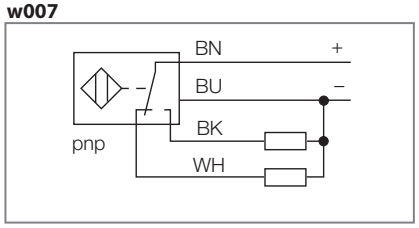
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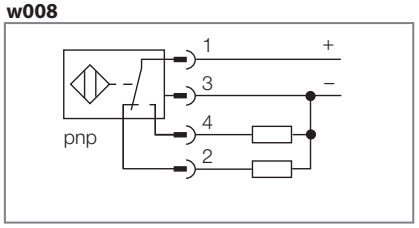
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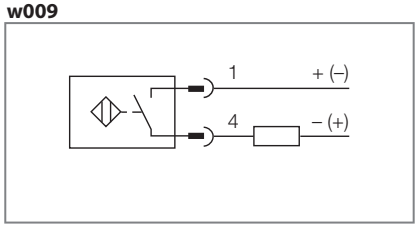
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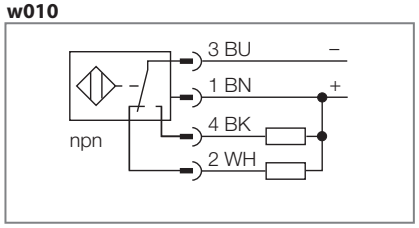
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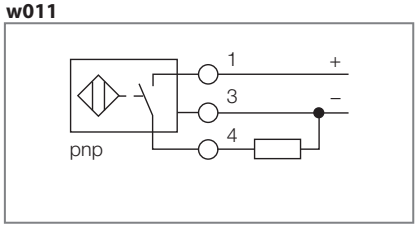
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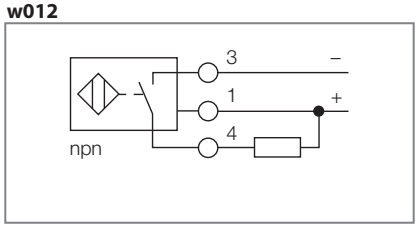
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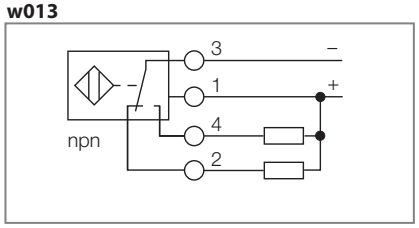
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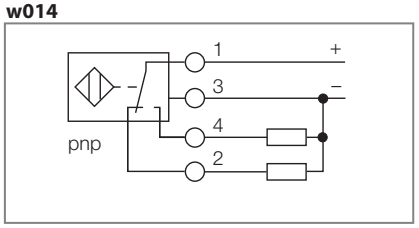
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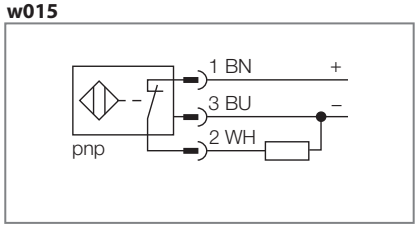
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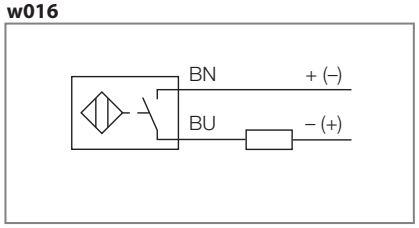
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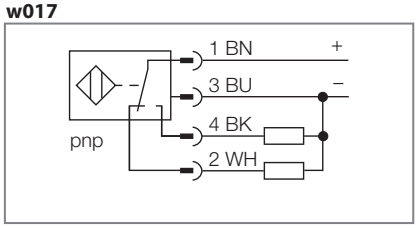
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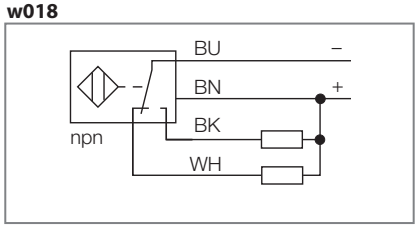
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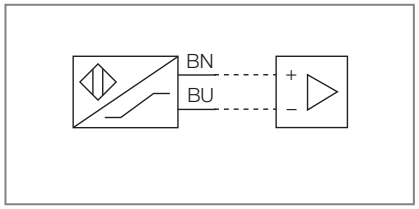


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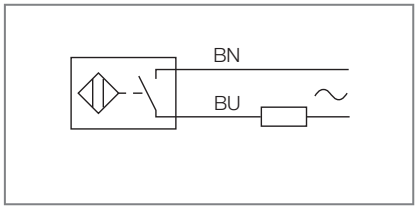


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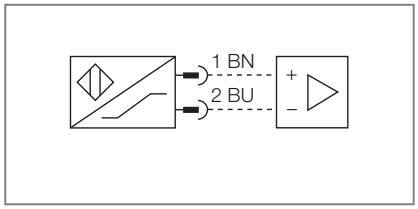
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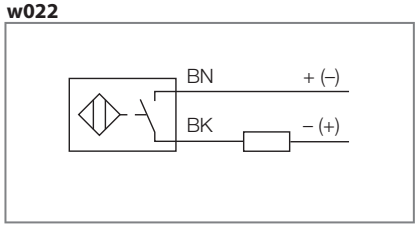
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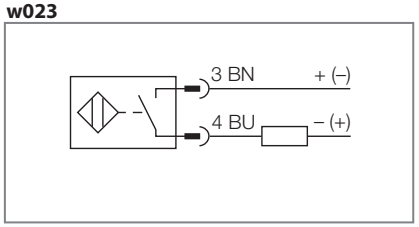
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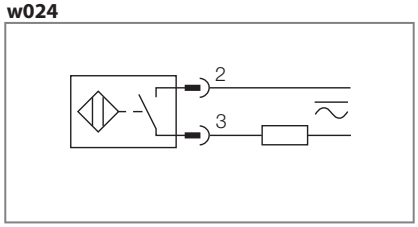
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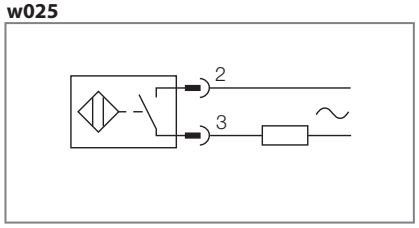
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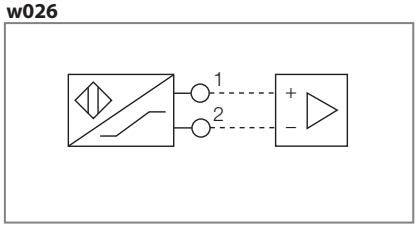
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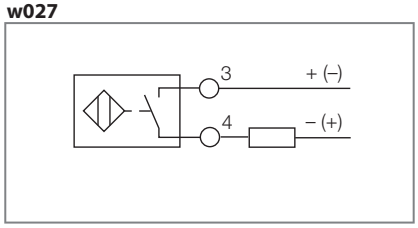
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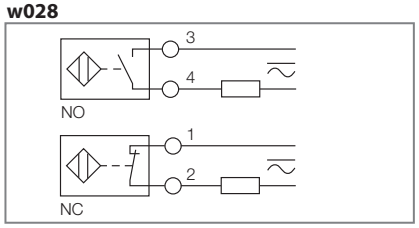
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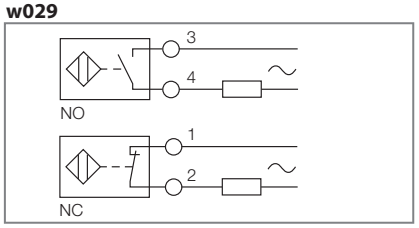
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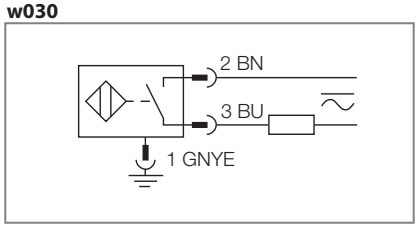
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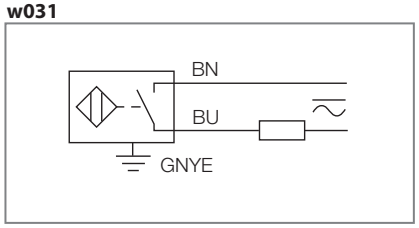
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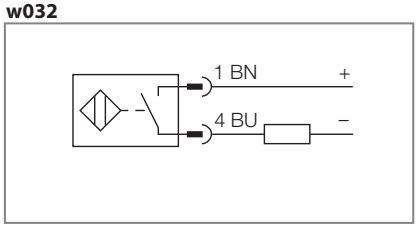
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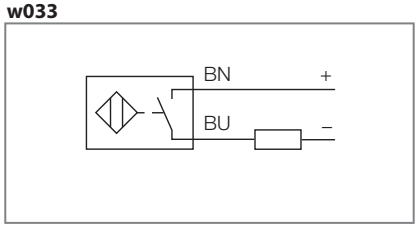
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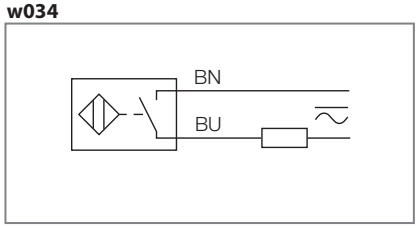
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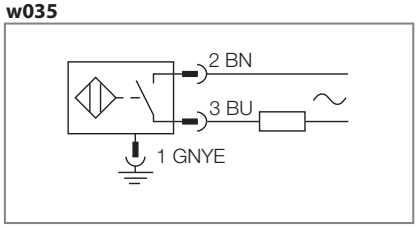
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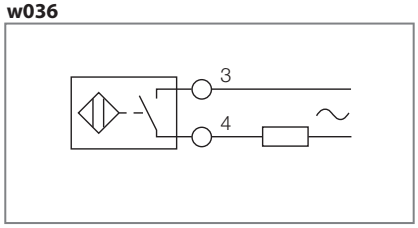
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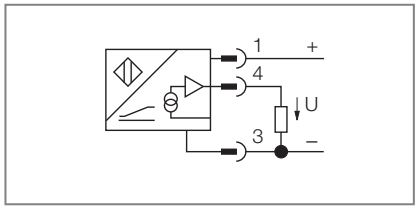


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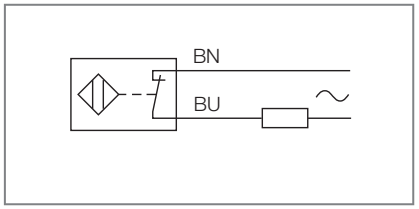


Wiring diagrams

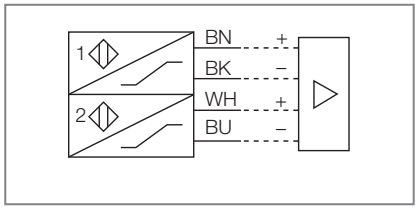
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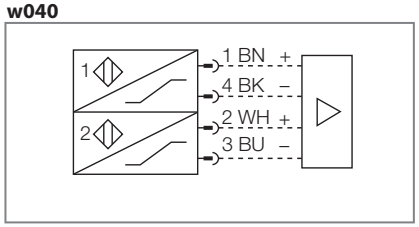
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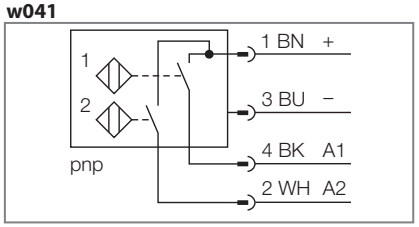
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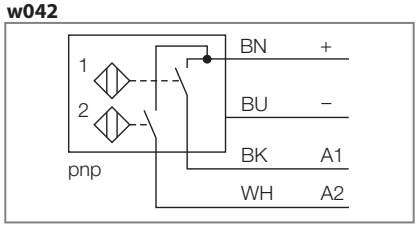
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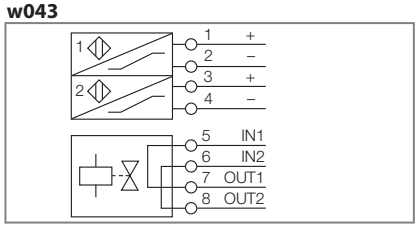
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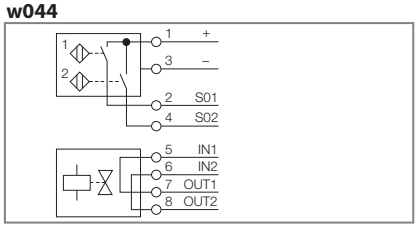
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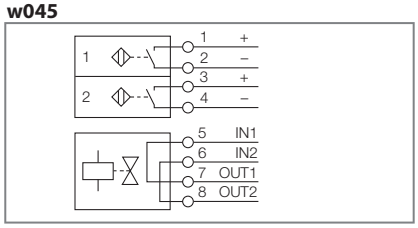
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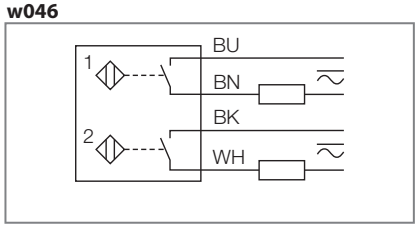
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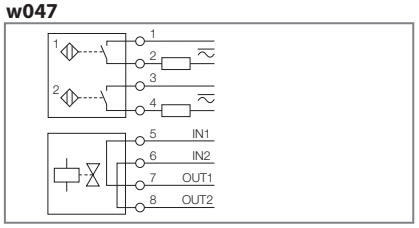
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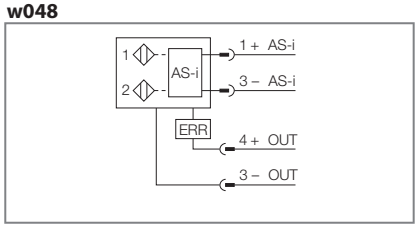
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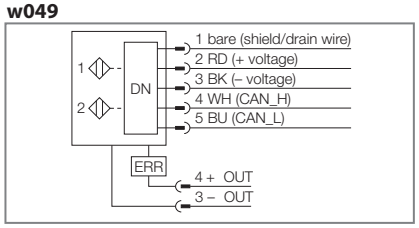
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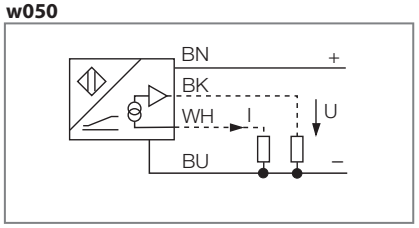
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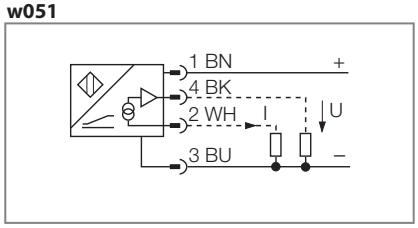
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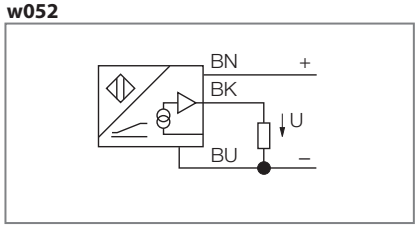
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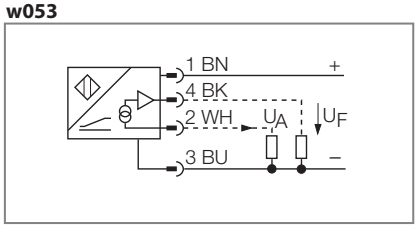
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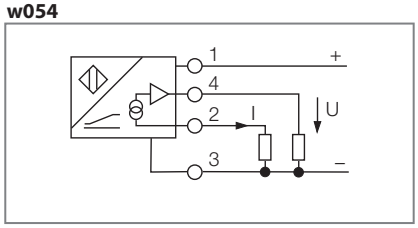
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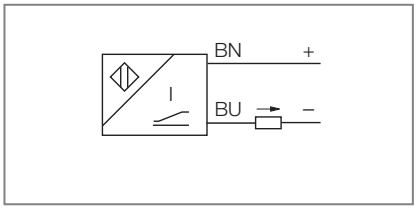


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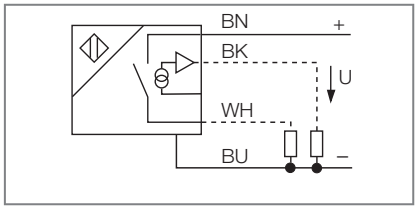


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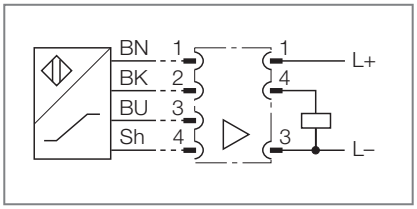
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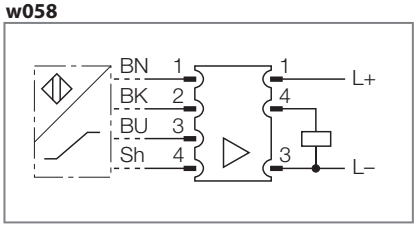
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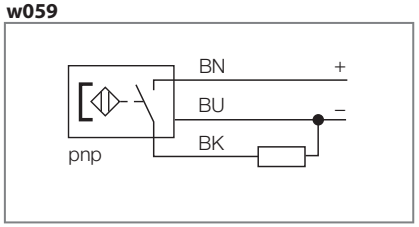
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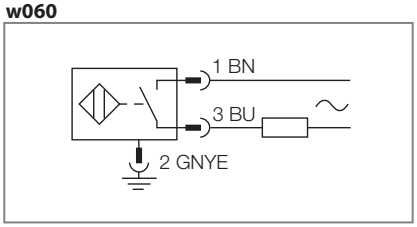
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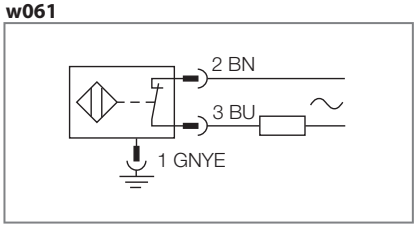
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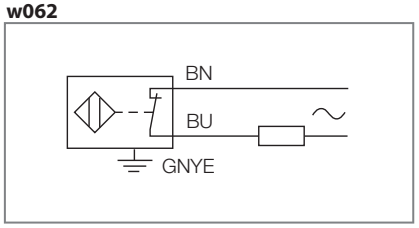
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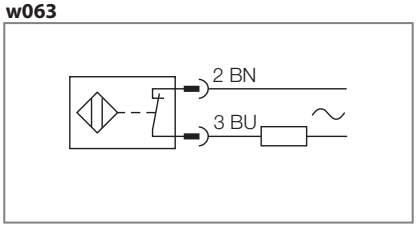
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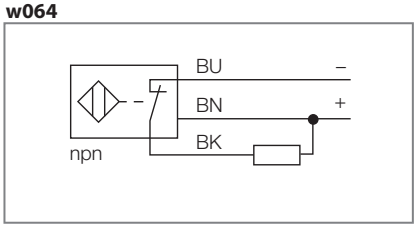
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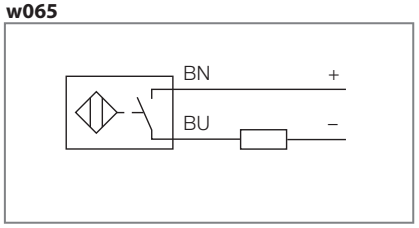
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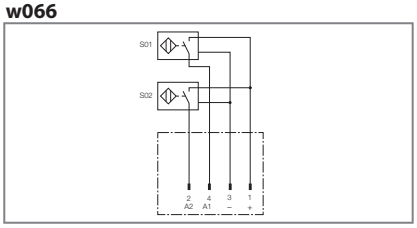
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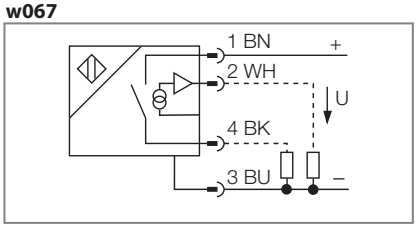
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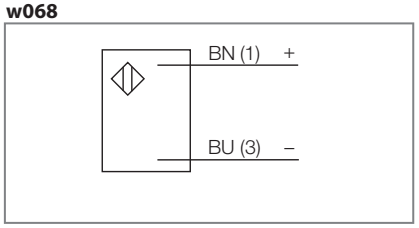
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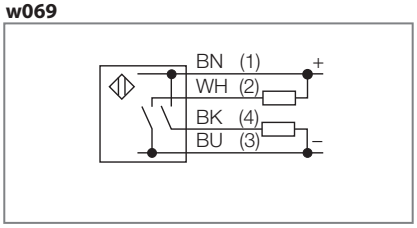
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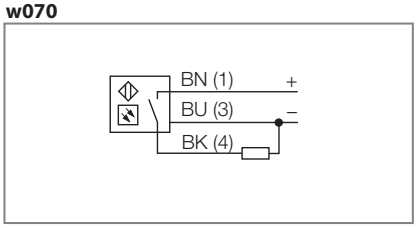
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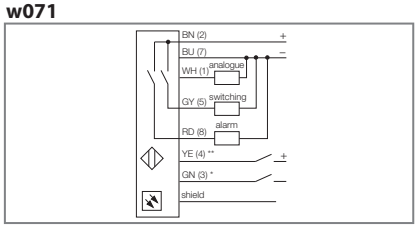
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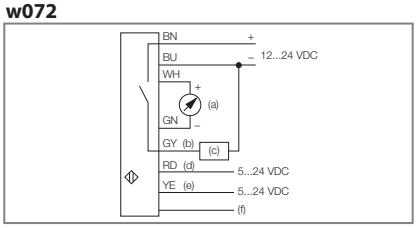
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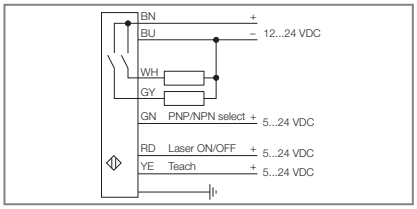


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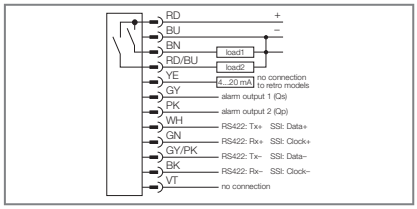


Wiring diagrams

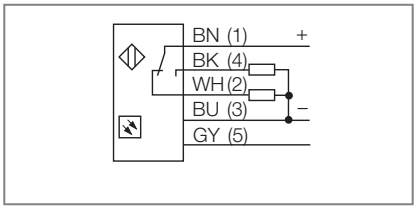
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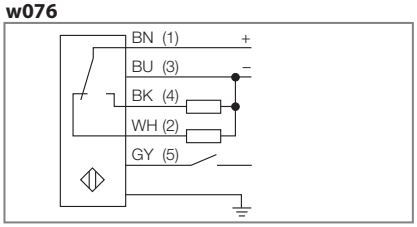
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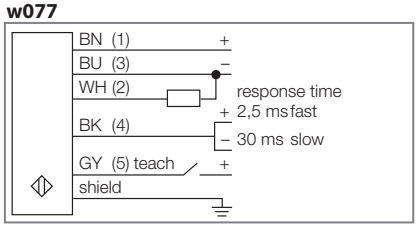
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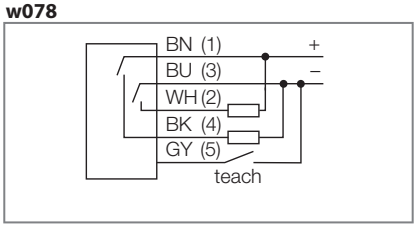
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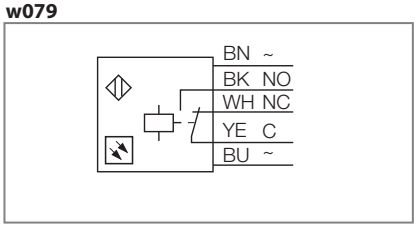
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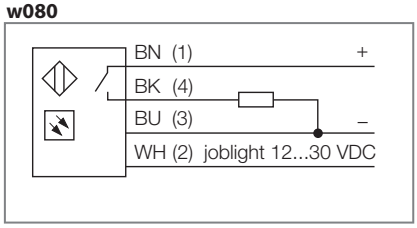
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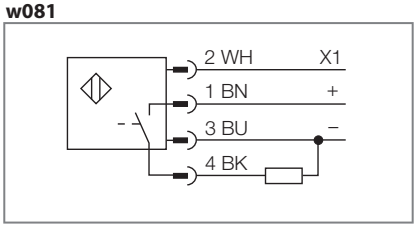
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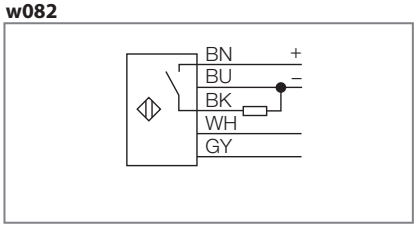
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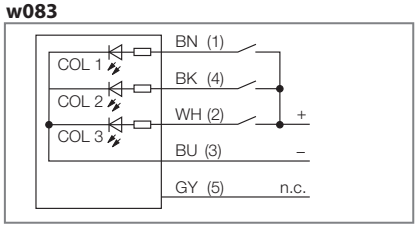
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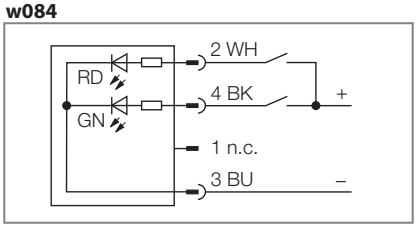
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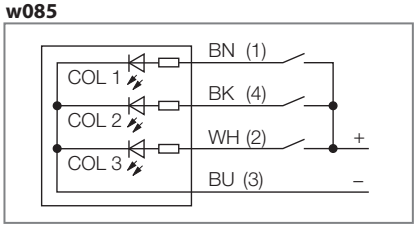
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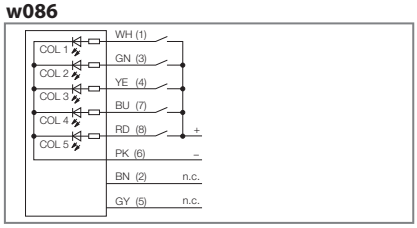
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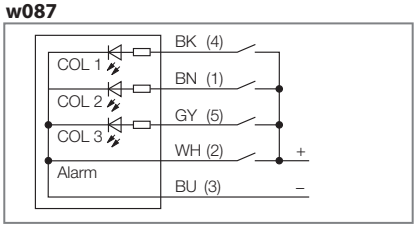
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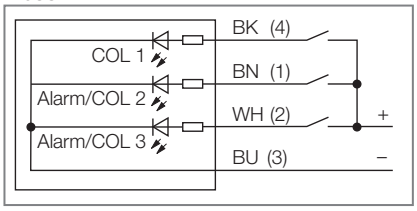
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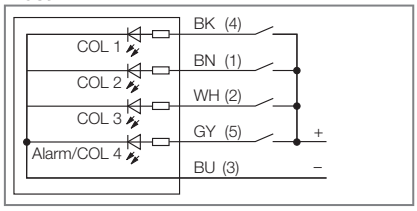
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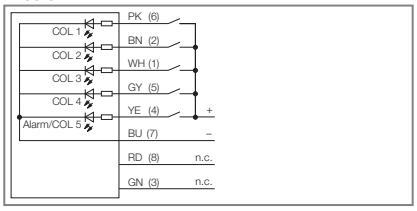
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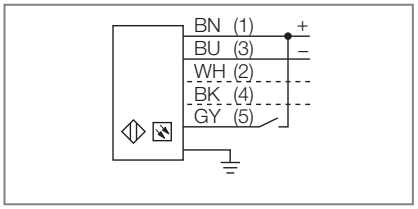


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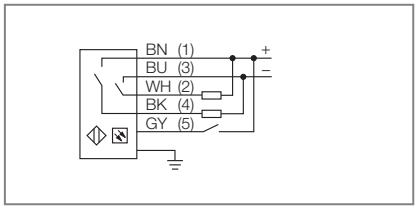


Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

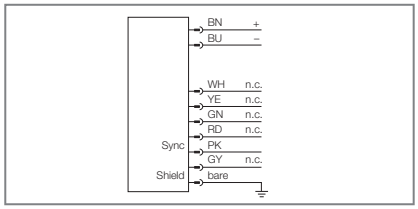
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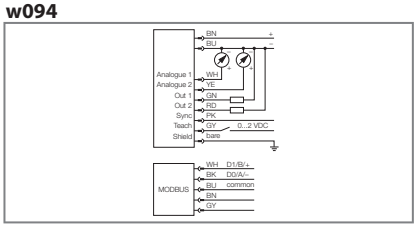
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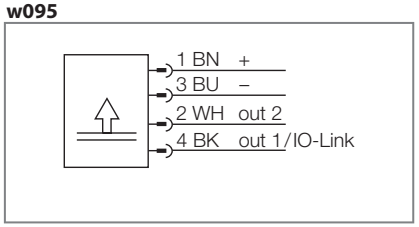
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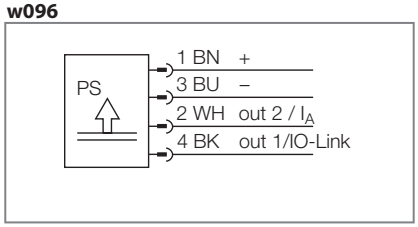
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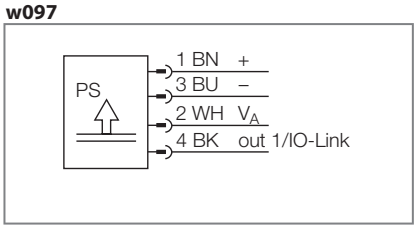
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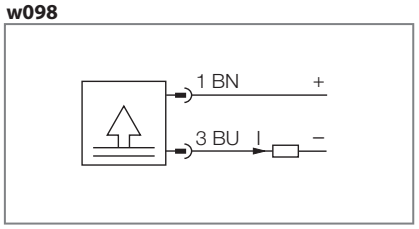
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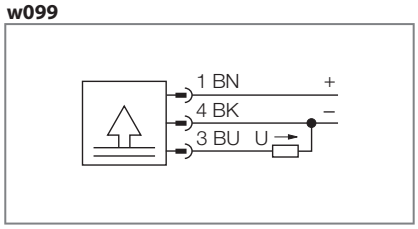
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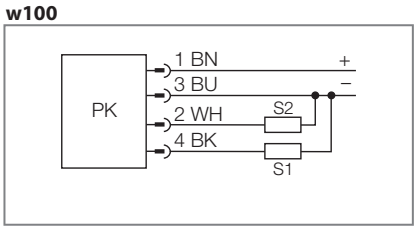
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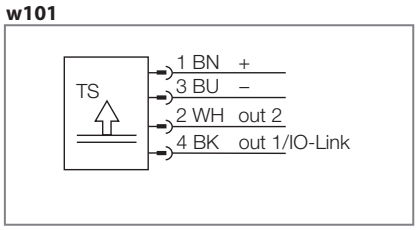
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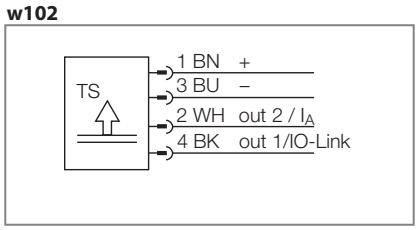
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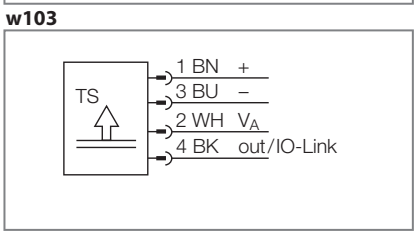
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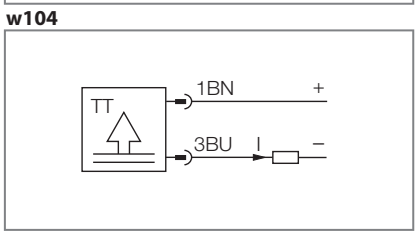
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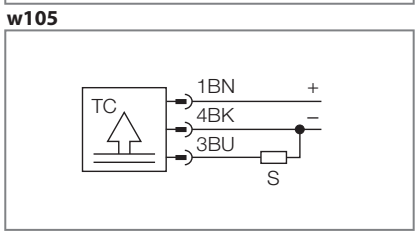
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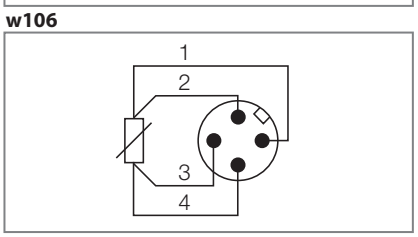
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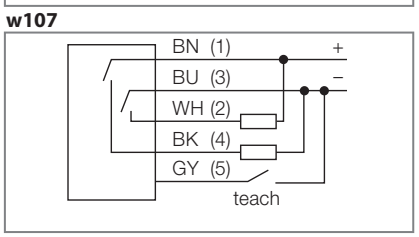
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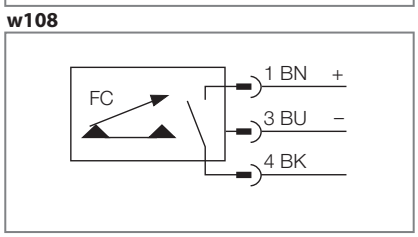
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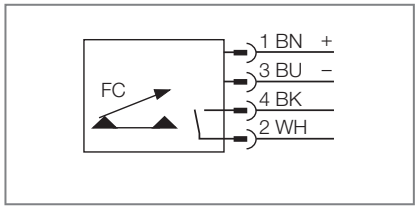


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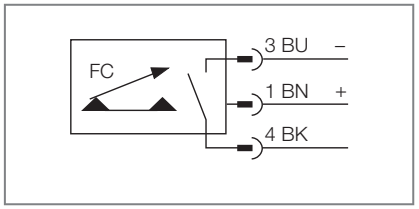


Wiring diagrams

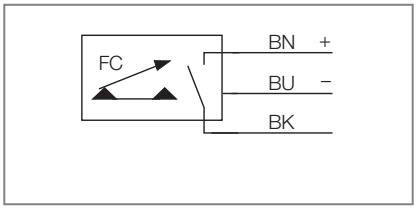
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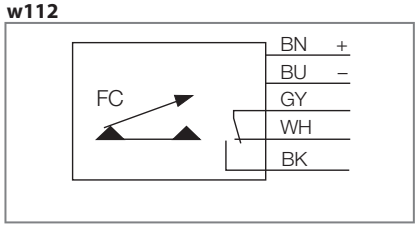
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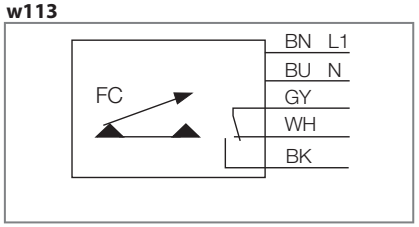
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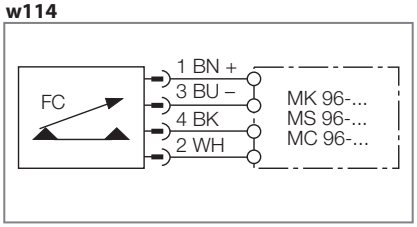
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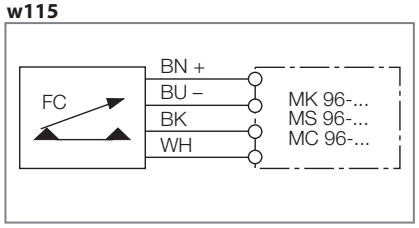
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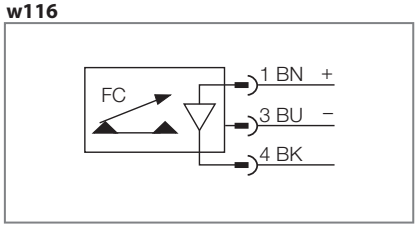
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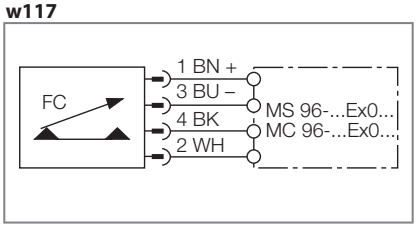
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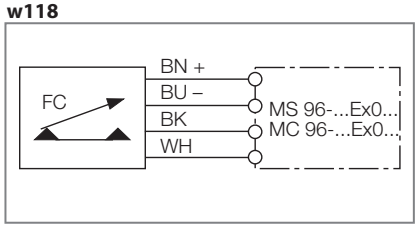
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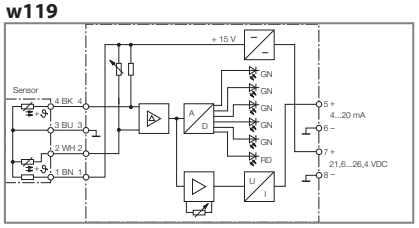
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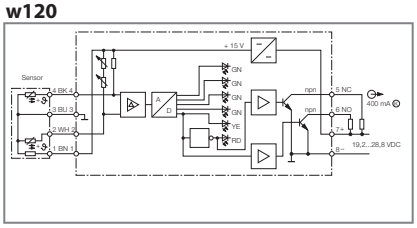
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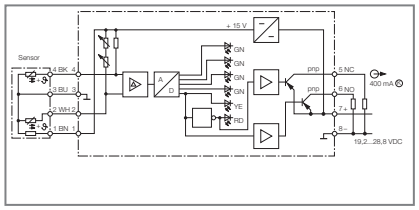
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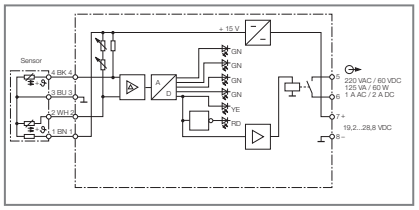
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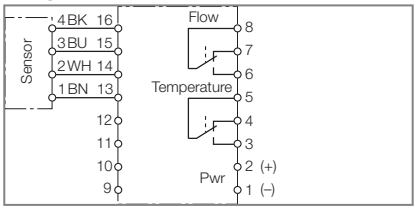
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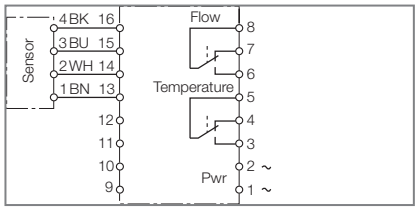
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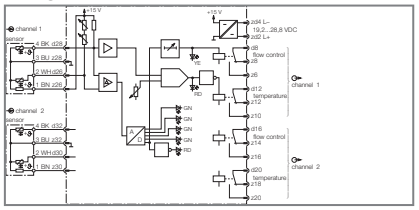
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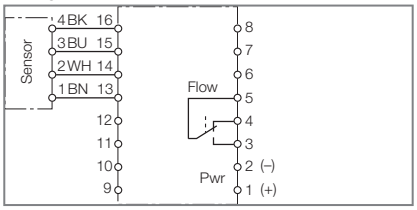
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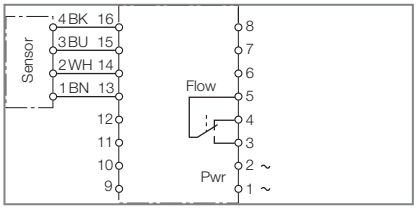


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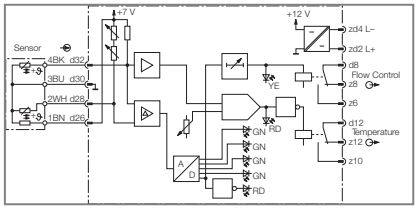


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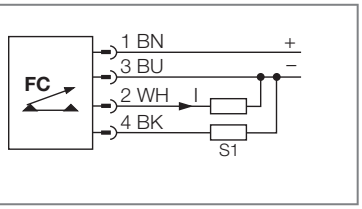
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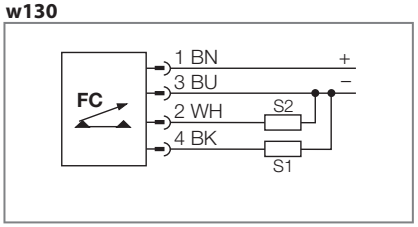
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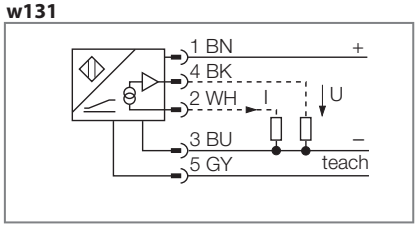
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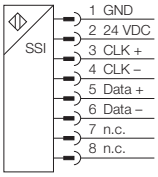
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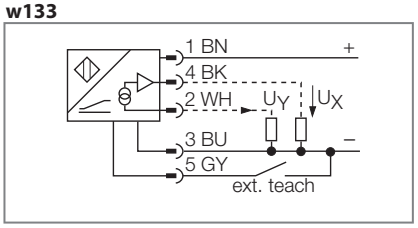
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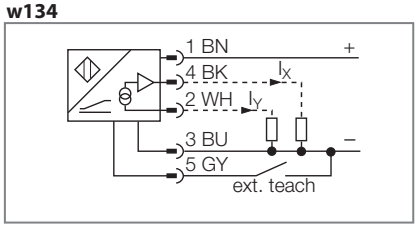
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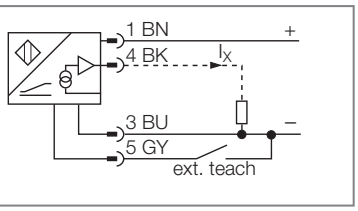
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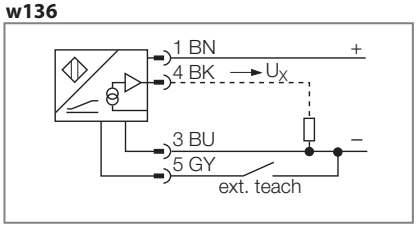
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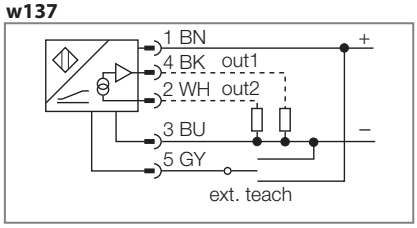
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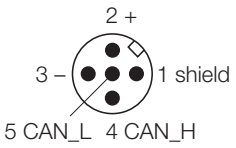
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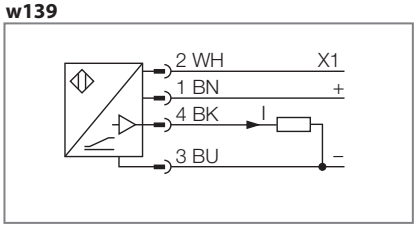
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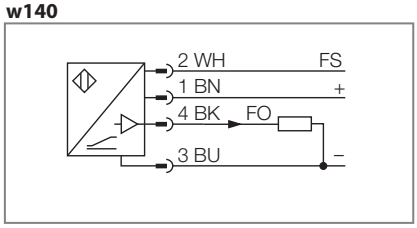
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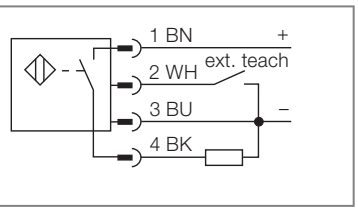
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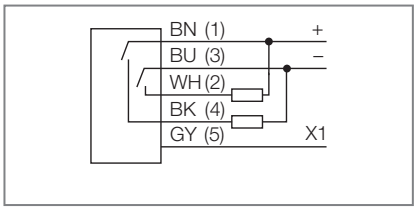
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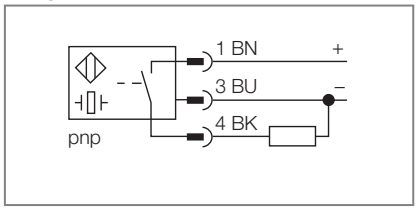
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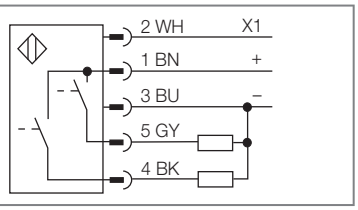
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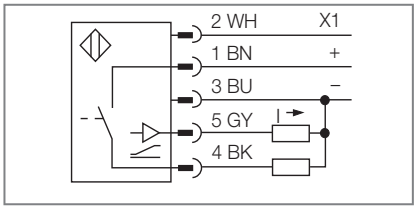


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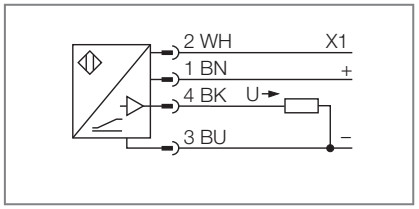


Wiring diagrams

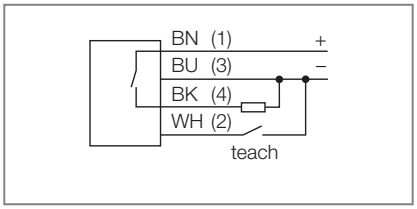
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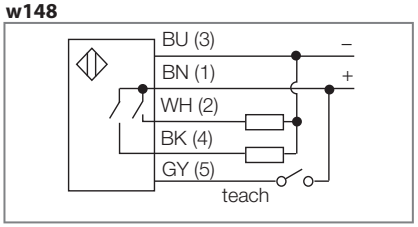
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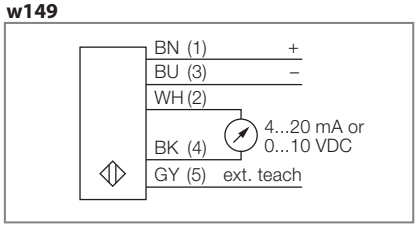
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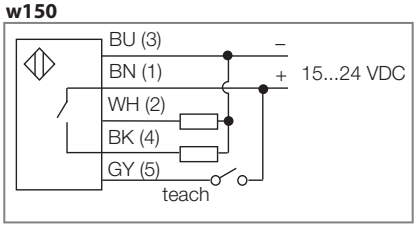
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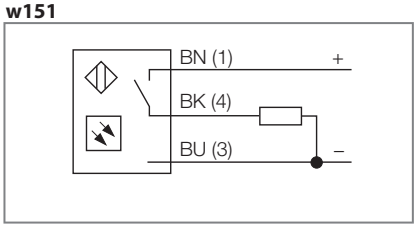
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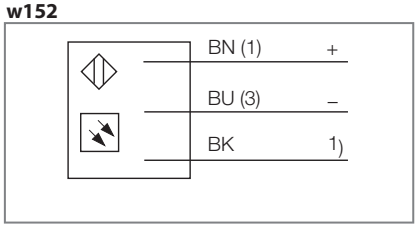
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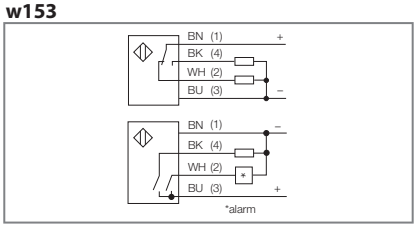
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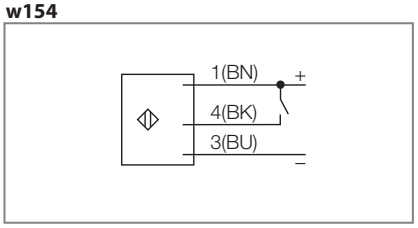
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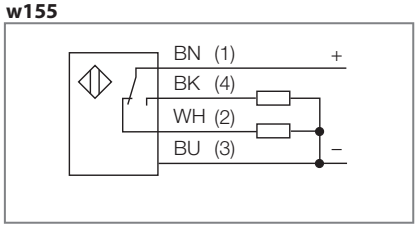
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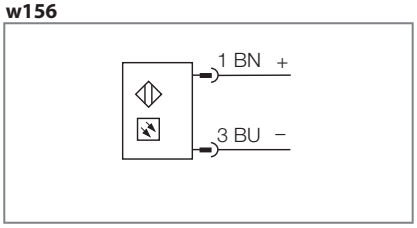
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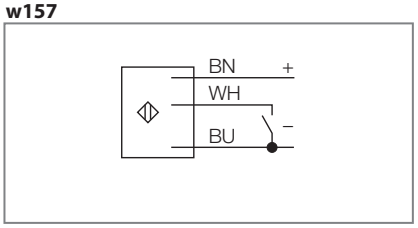
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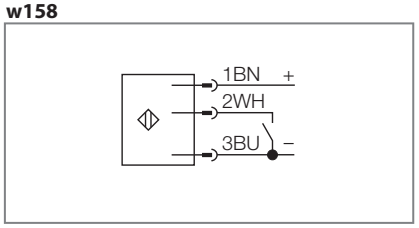
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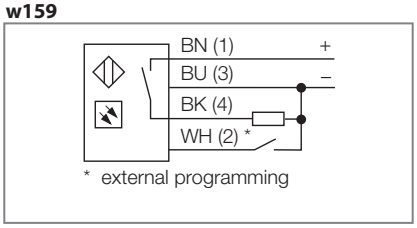
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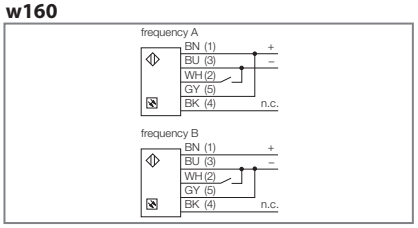
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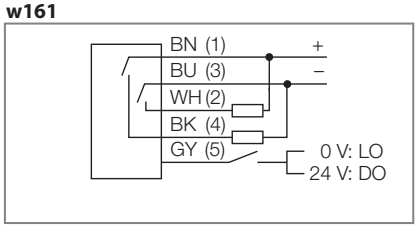
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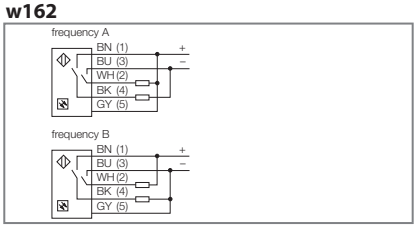
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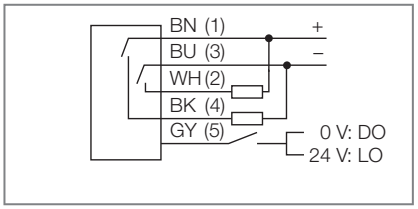


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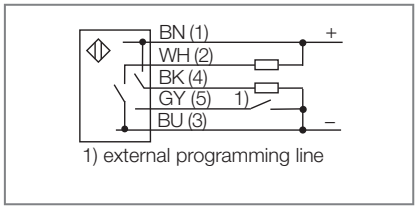


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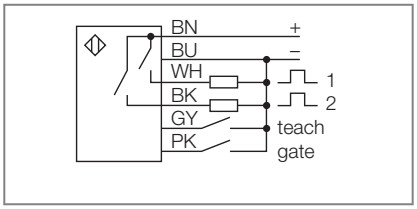
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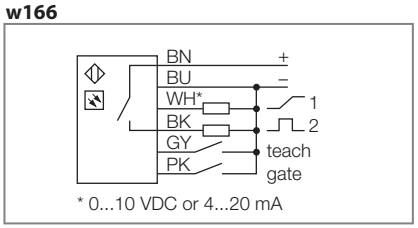
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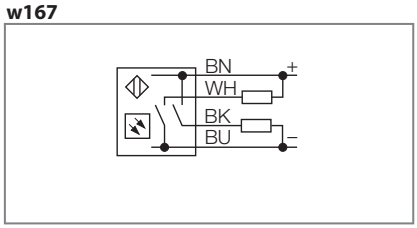
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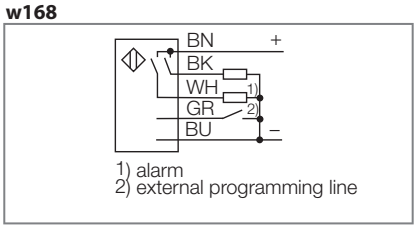
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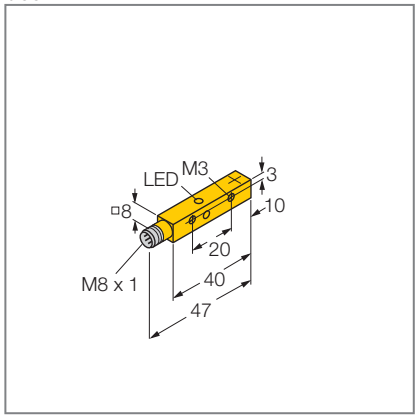


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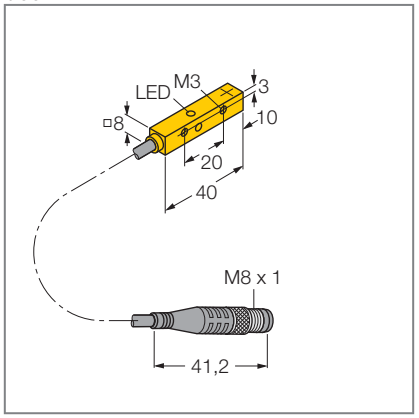


Dimension drawings

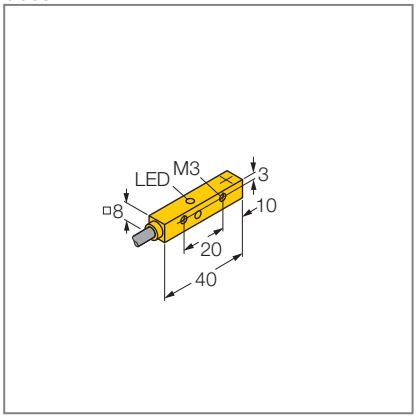
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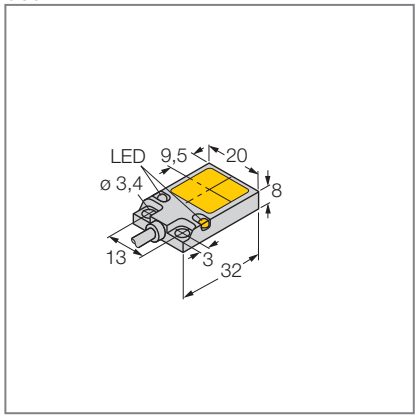
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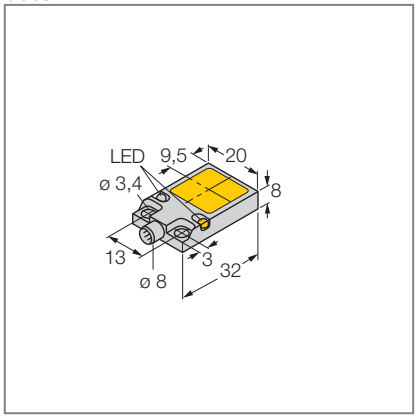
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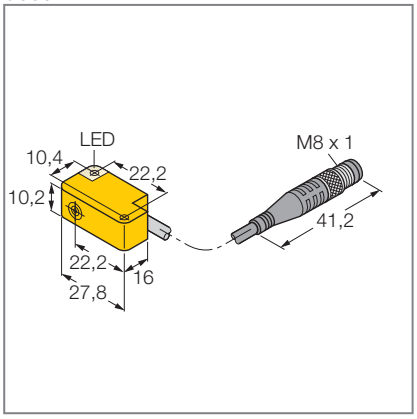
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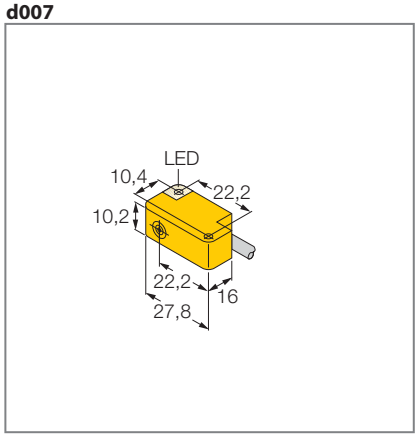
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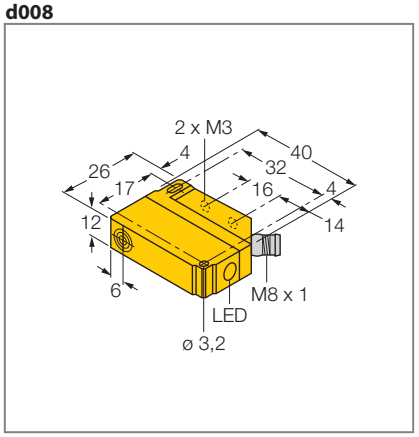
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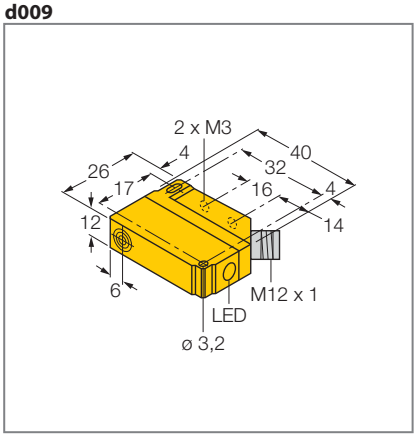
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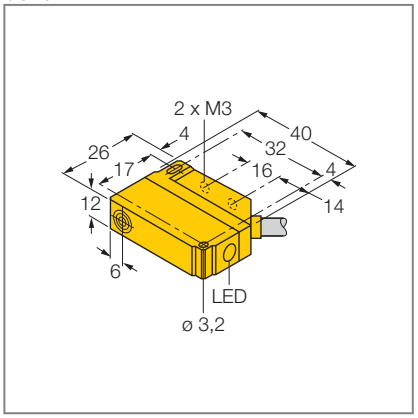


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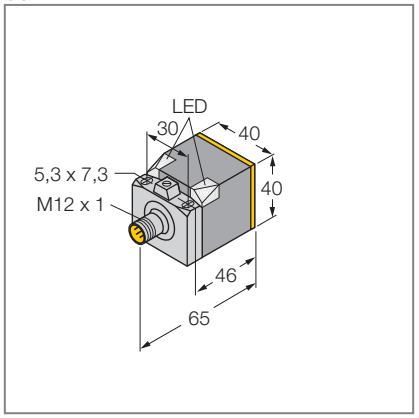


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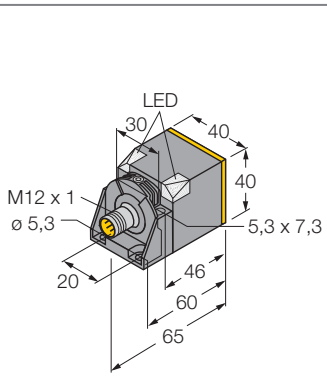
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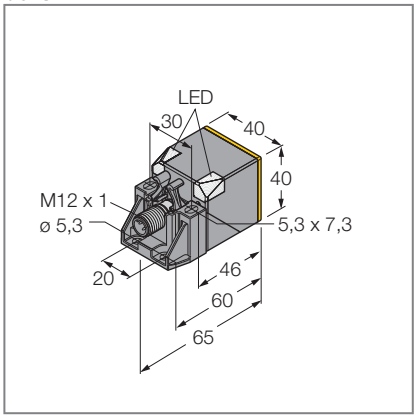
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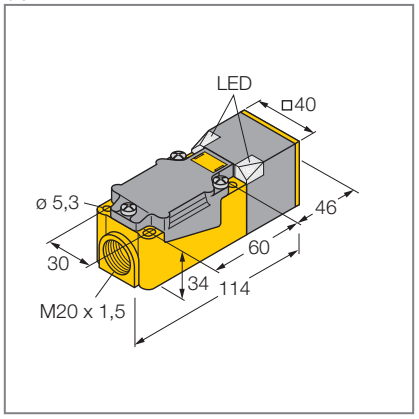
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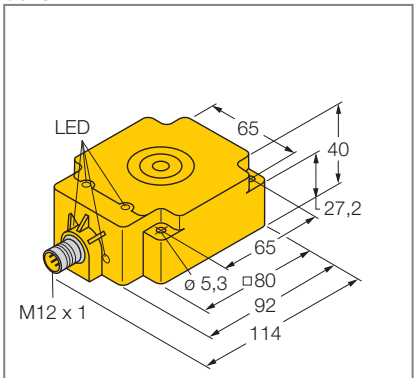
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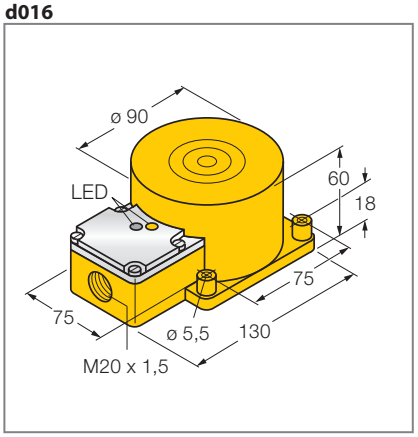
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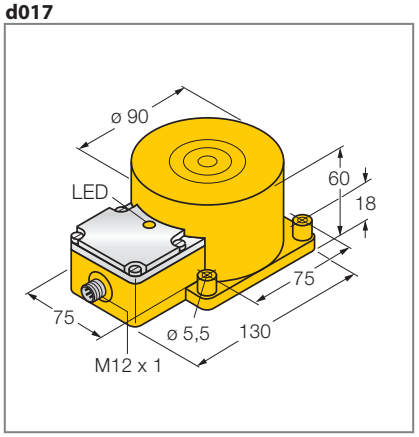
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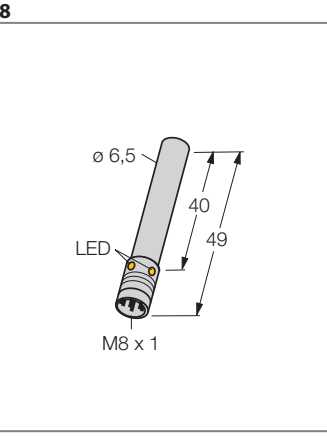
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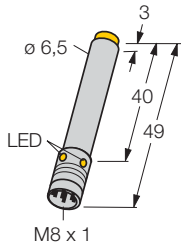


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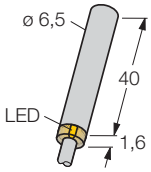


Dimension drawings

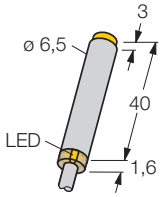
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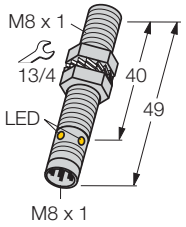
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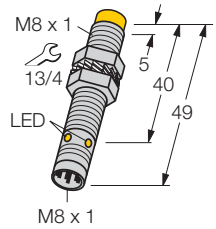
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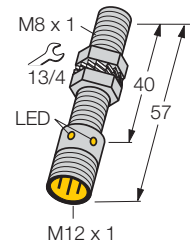
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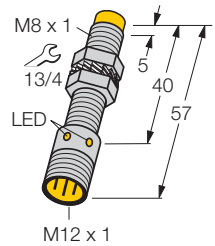
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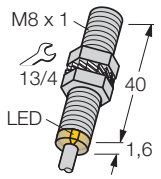
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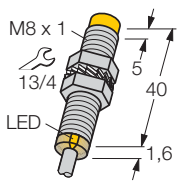
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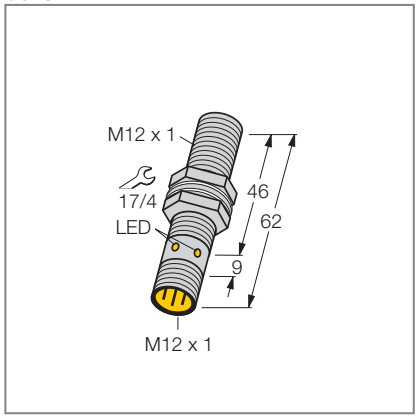


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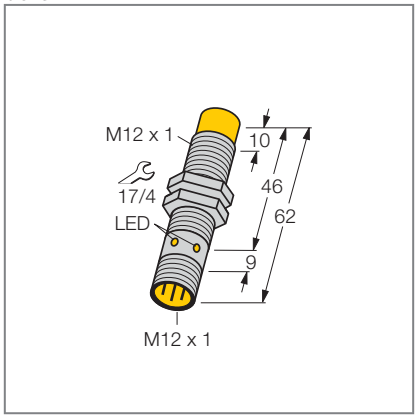


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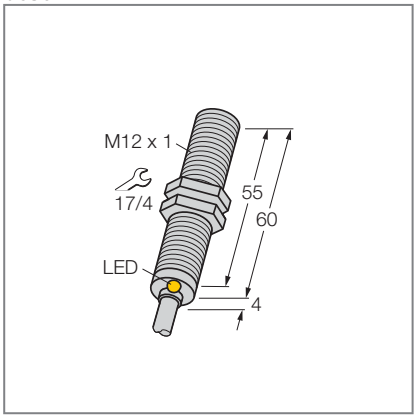
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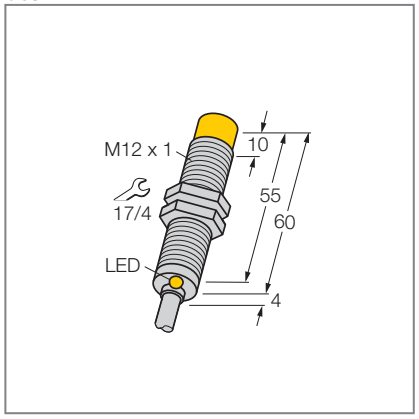
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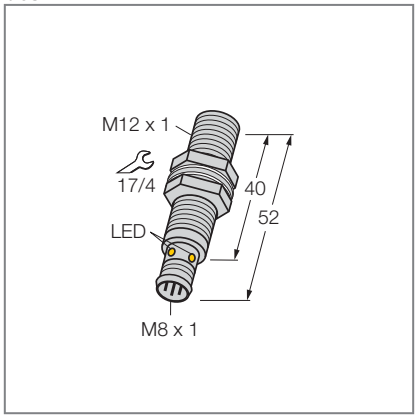
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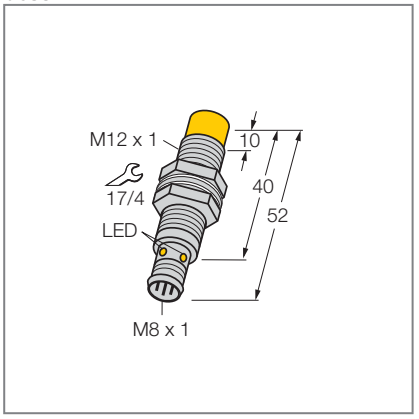
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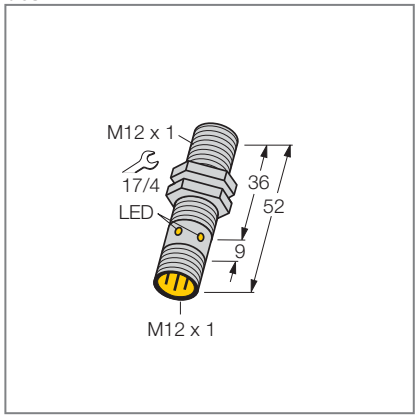
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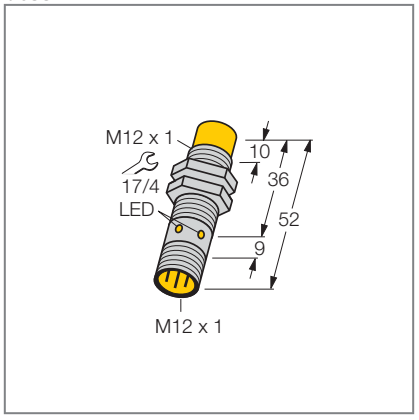
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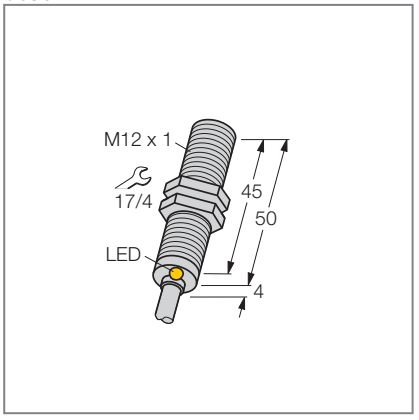
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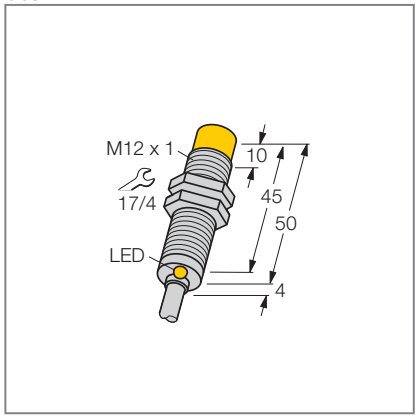


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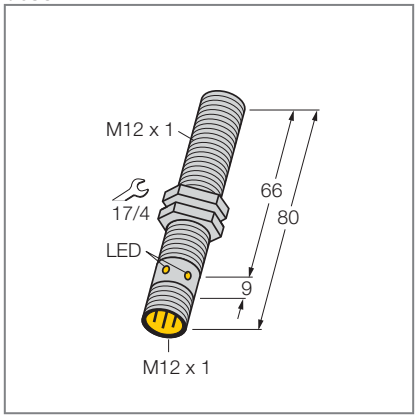


Dimension drawings

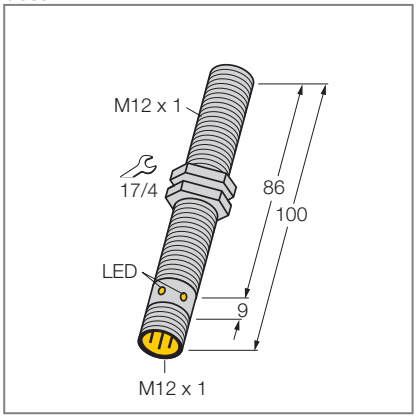
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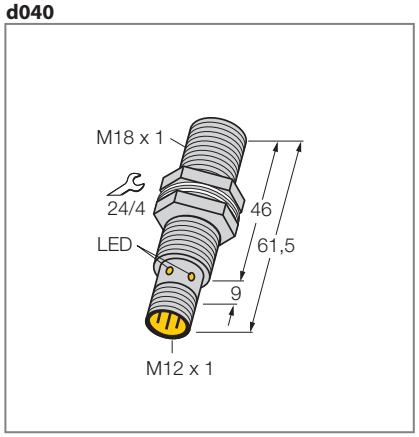
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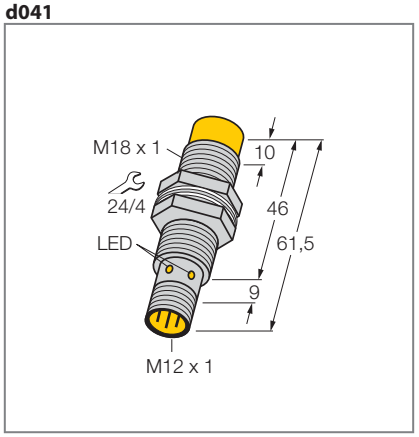
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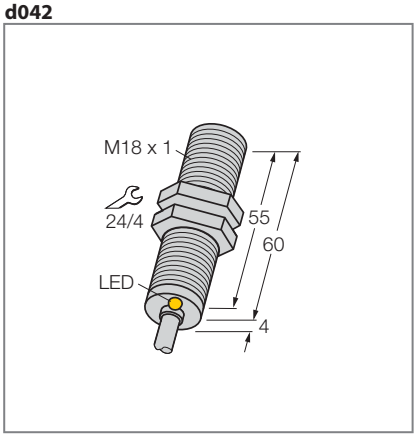
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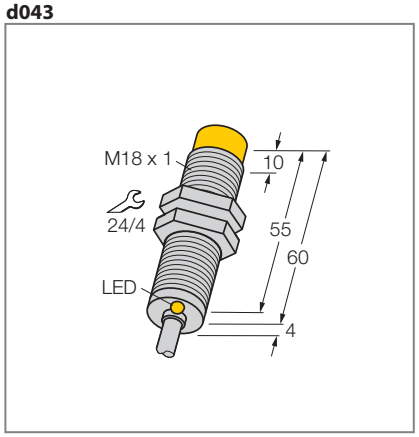
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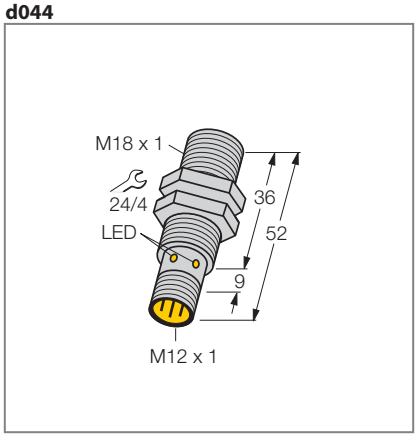
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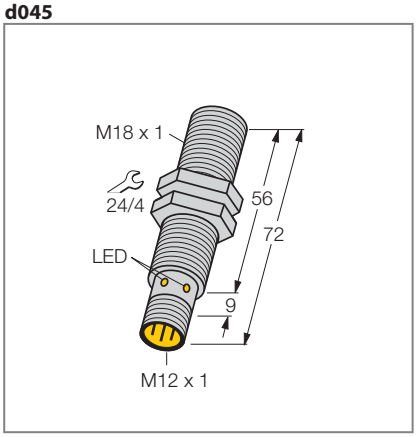
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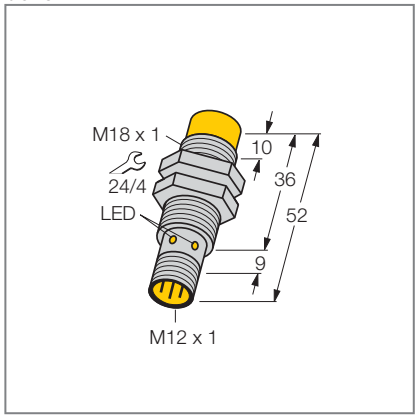


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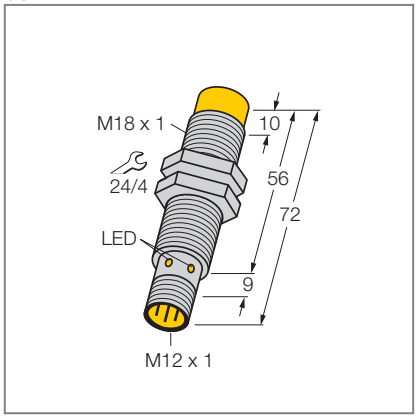


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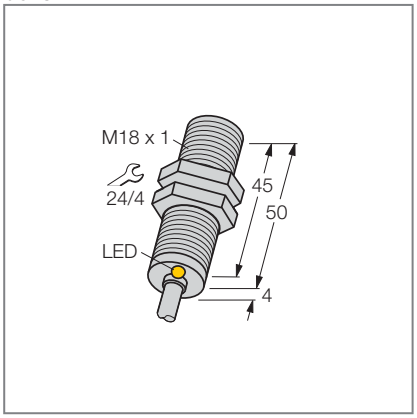
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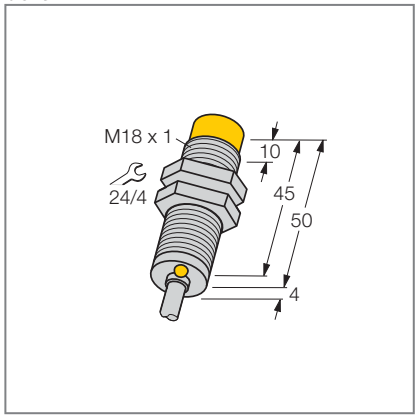
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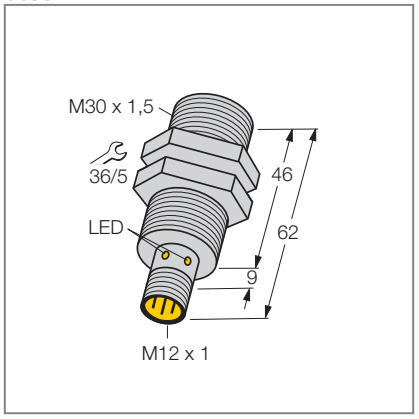
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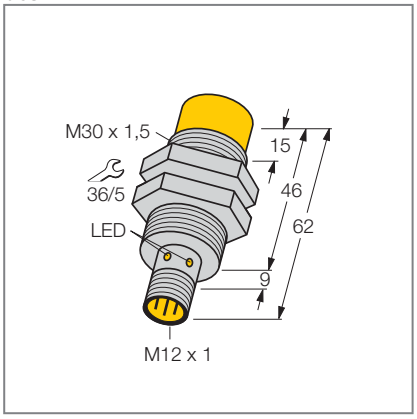
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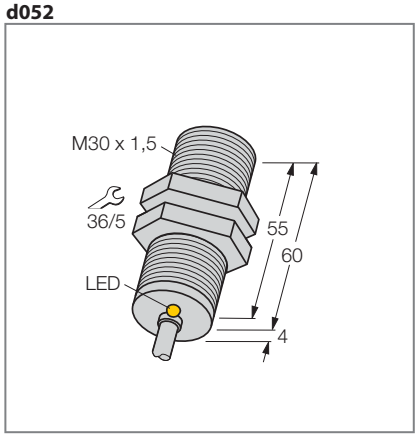
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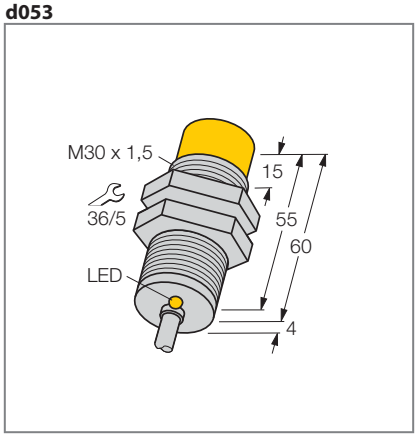
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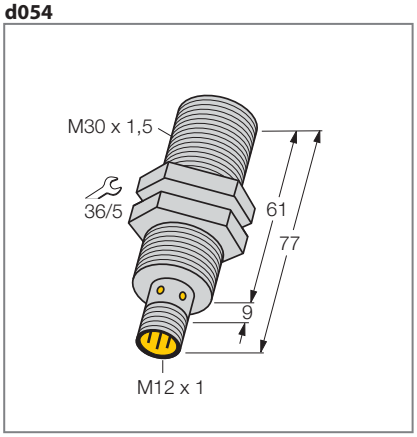
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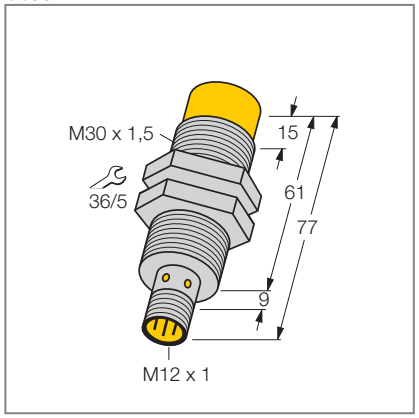


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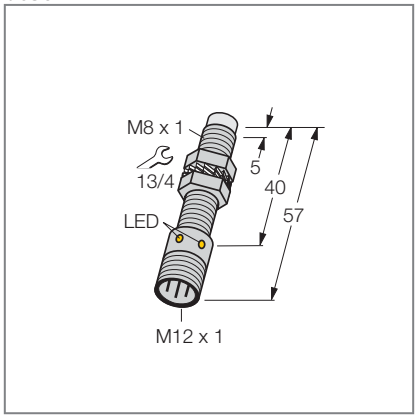


Dimension drawings

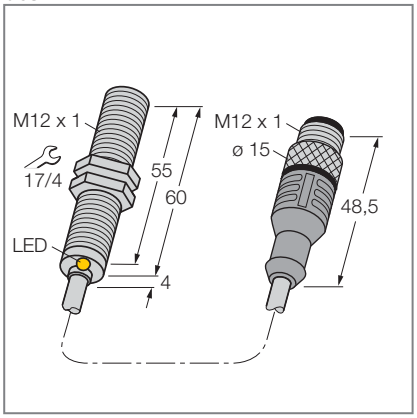
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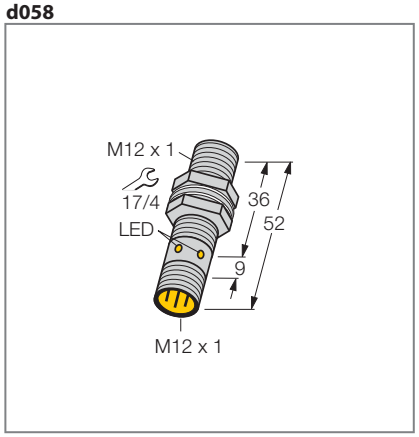
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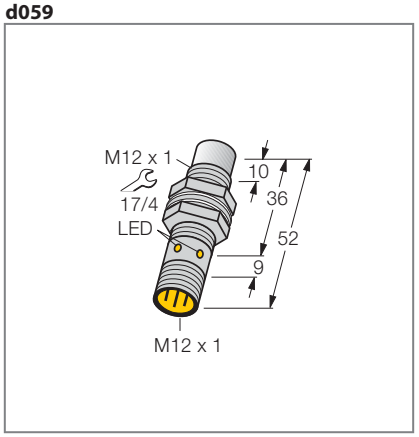
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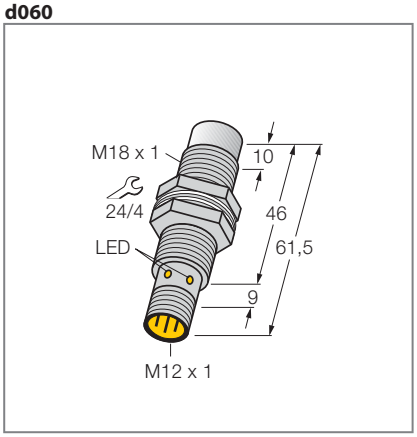
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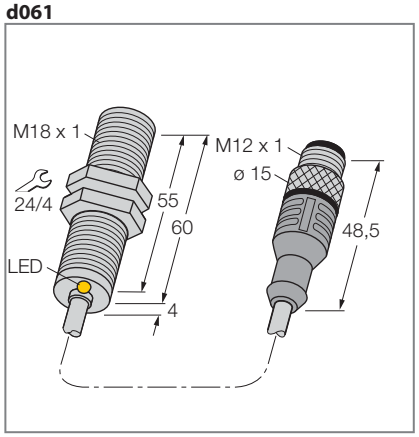
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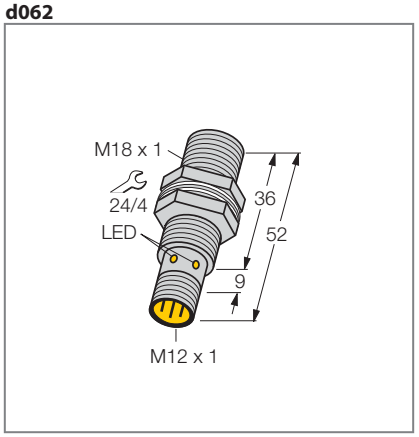
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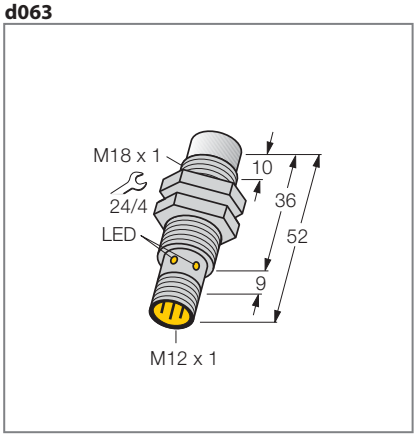
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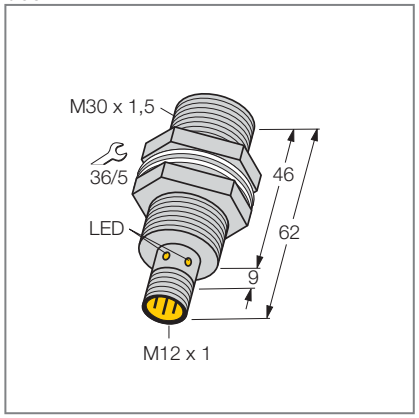


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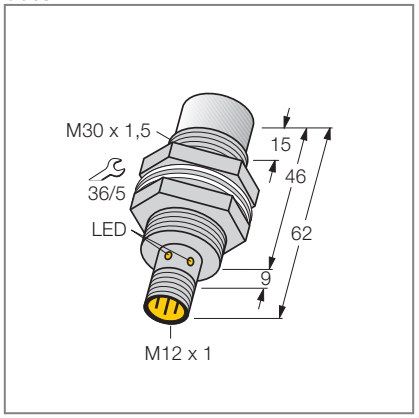


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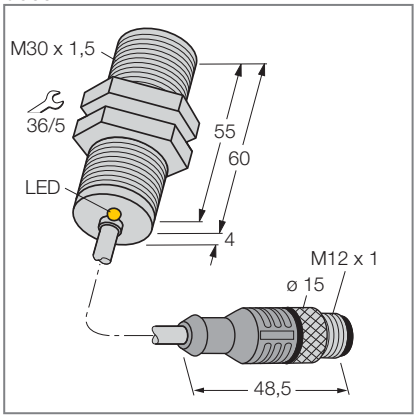
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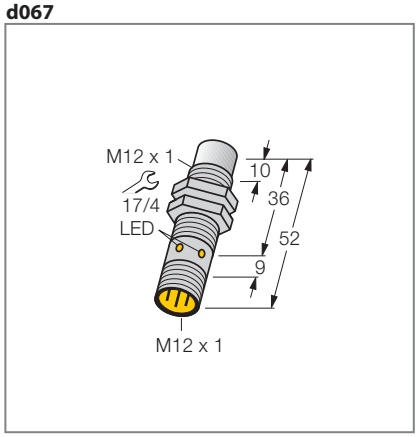
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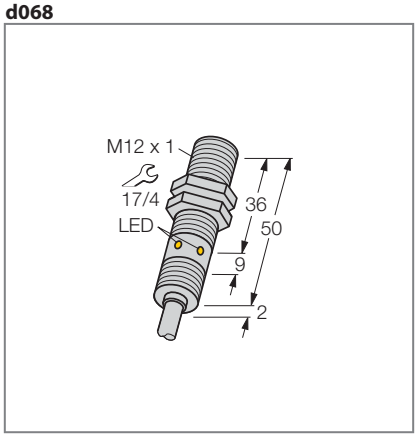
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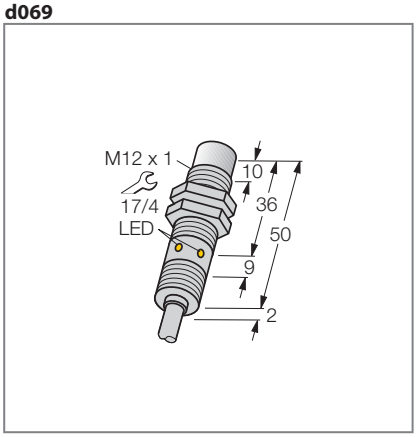
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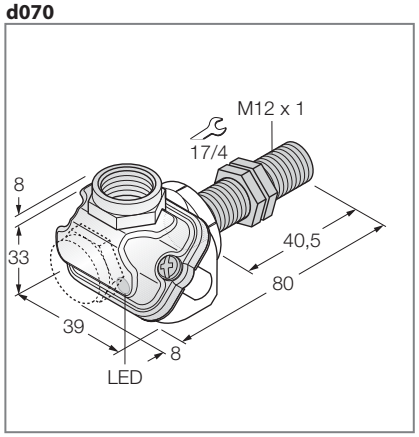
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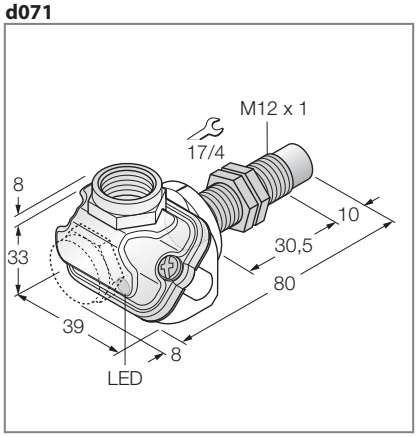
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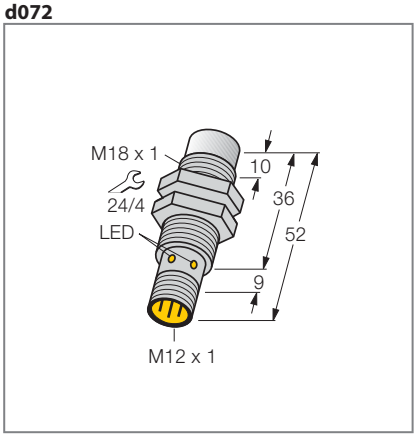
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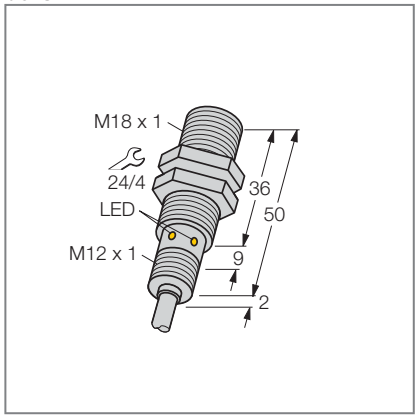


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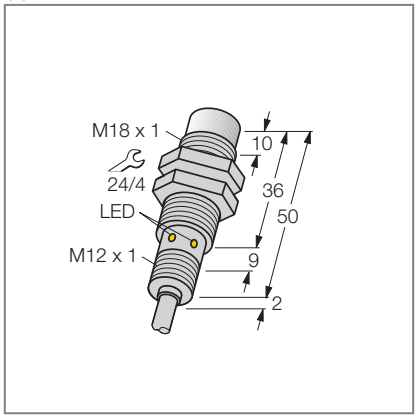


Dimension drawings

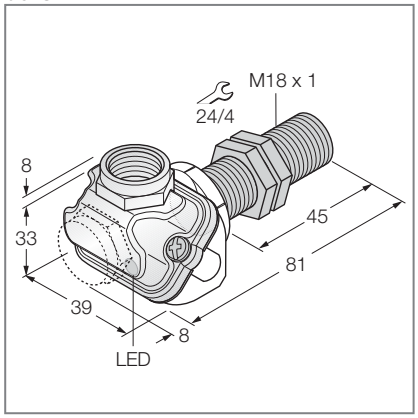
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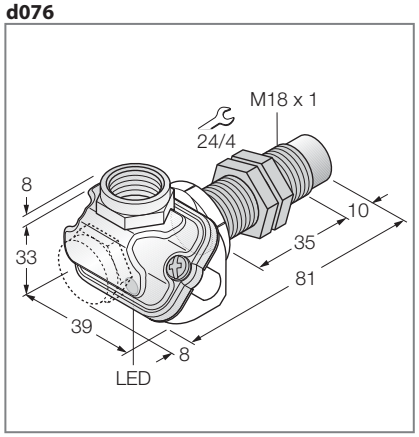
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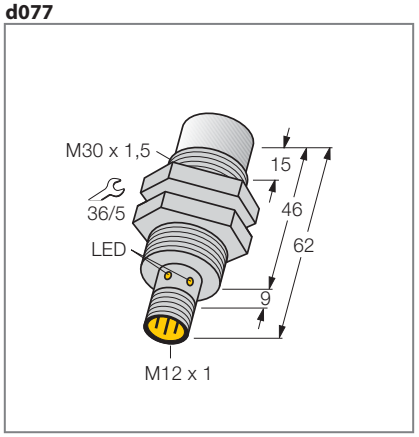
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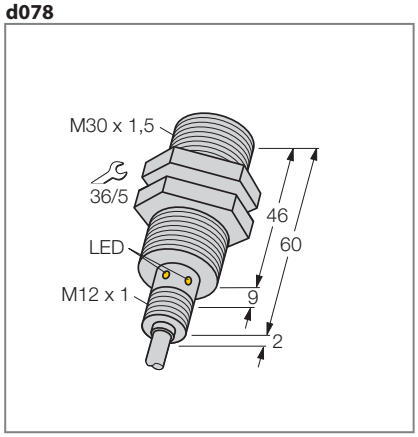
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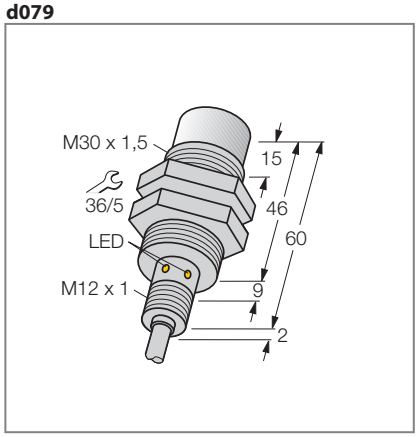
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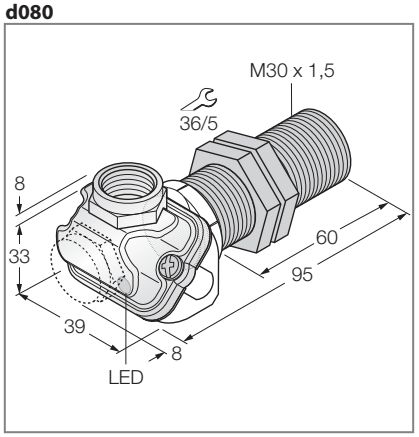
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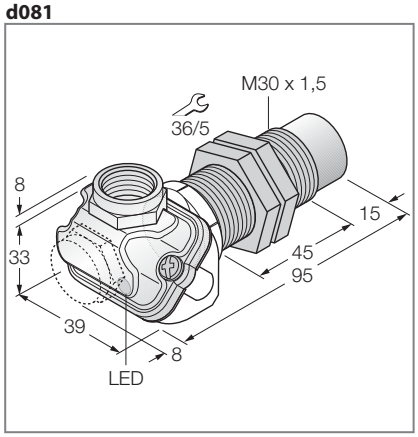
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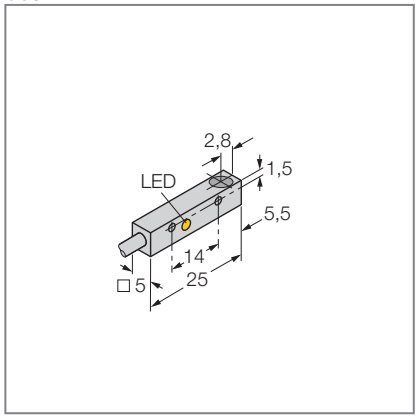


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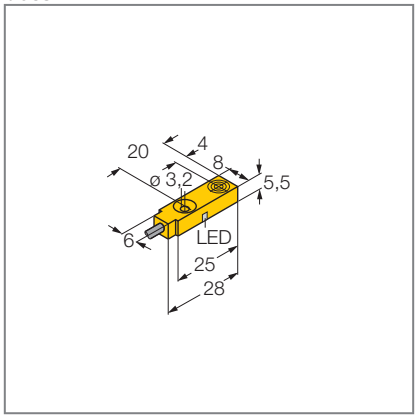


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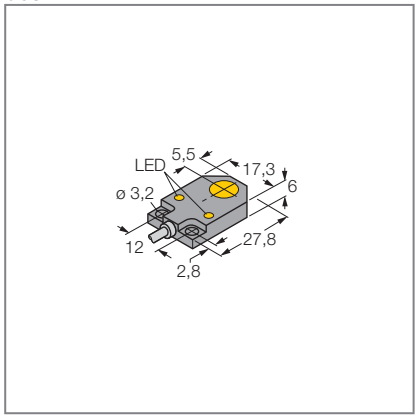
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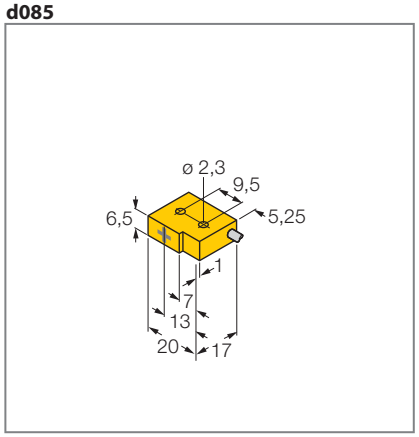
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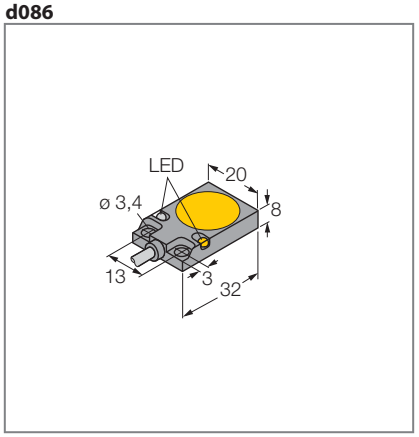
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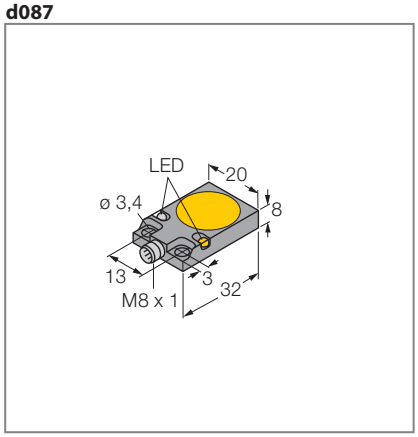
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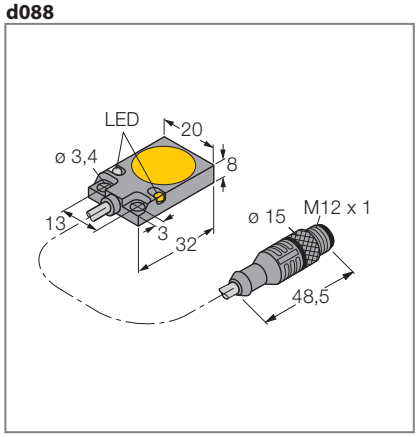
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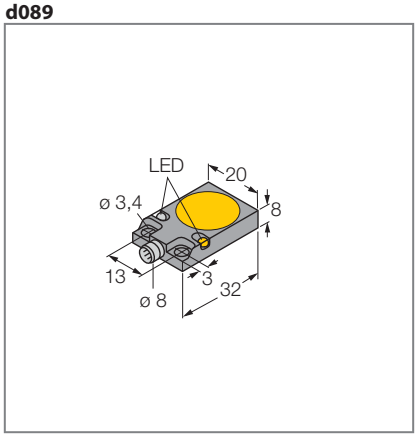
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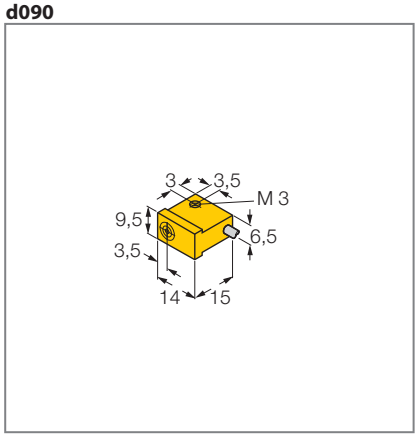
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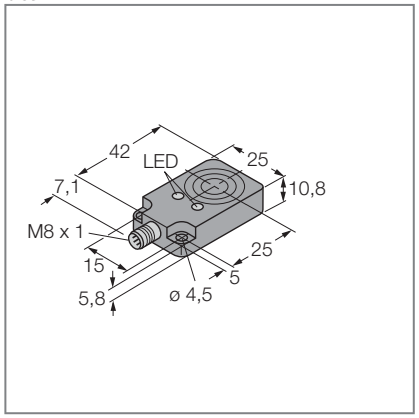


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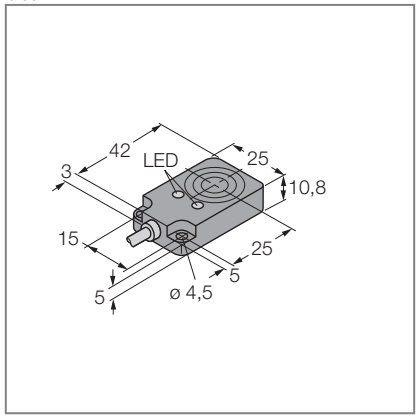


Dimension drawings

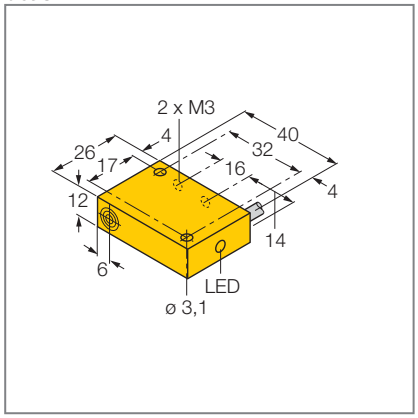
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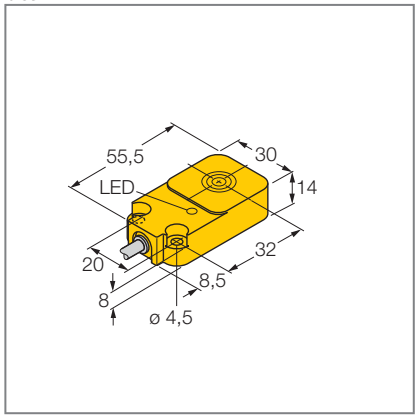
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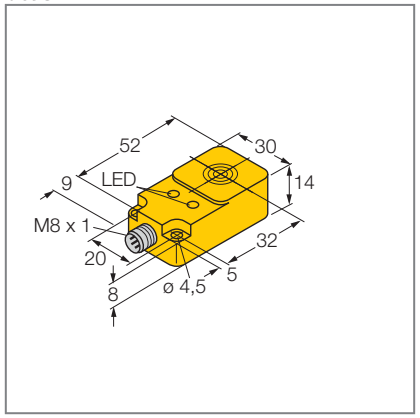
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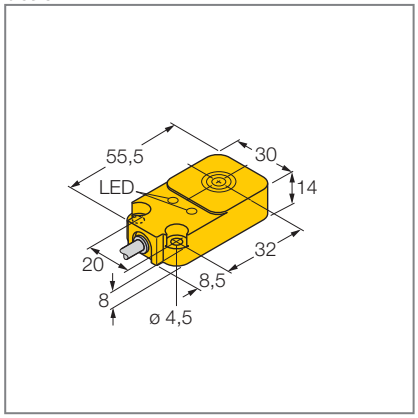
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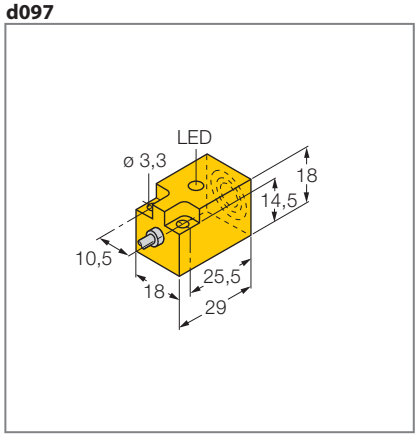
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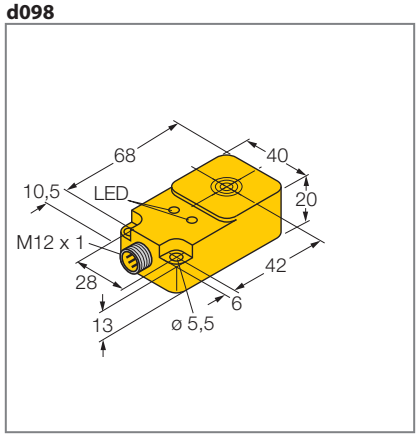
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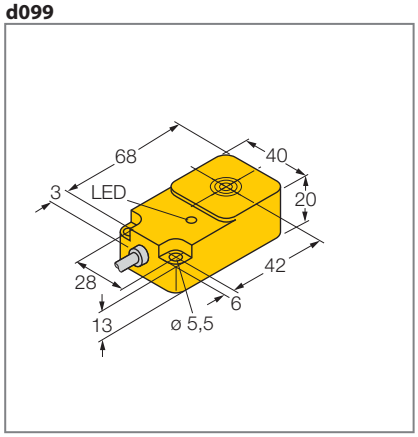
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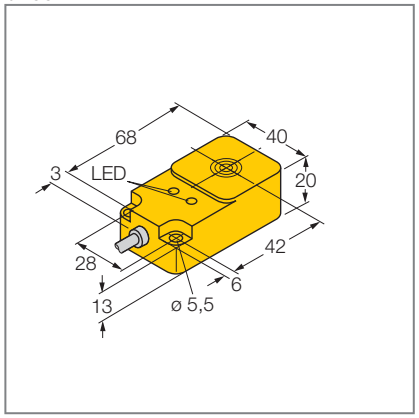


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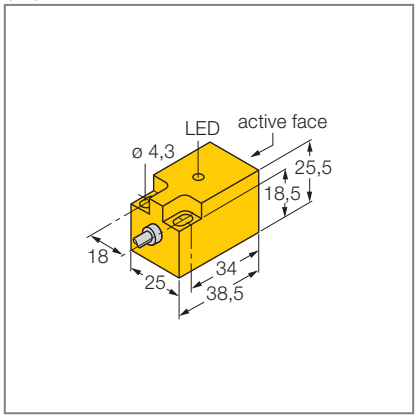


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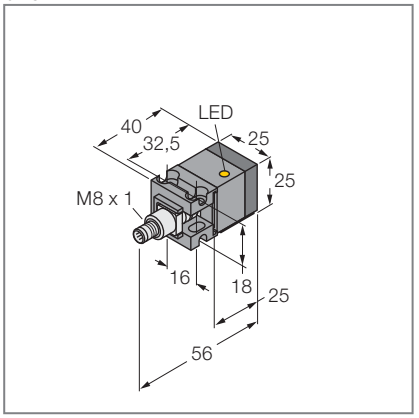
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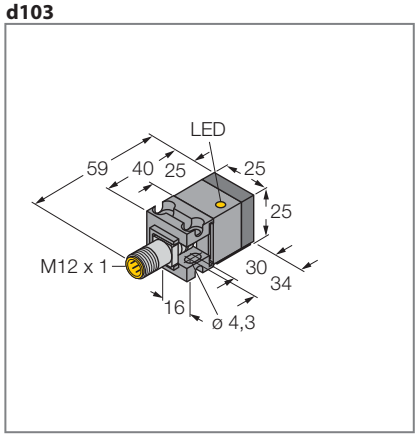
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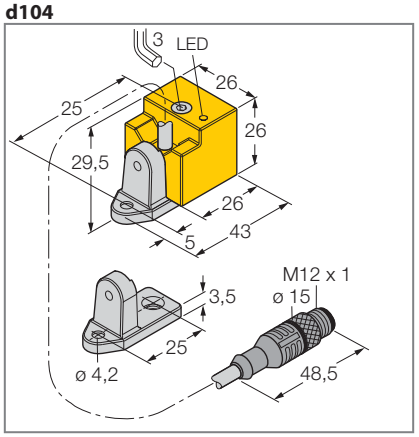
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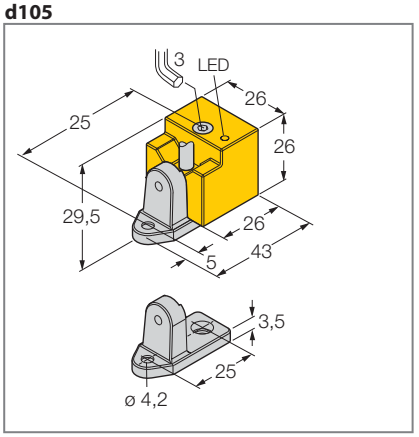
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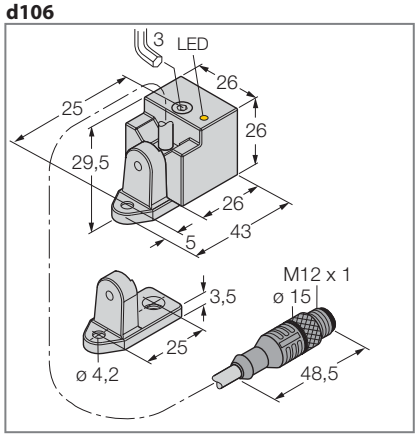
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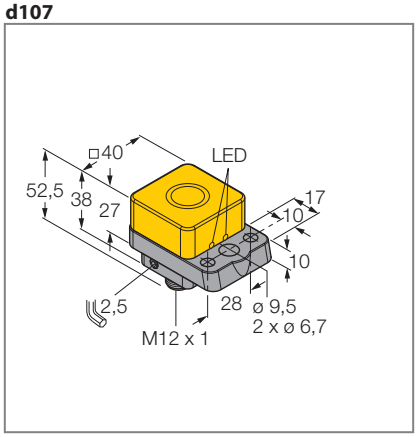
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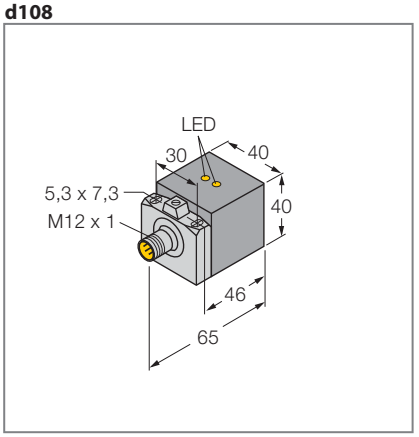
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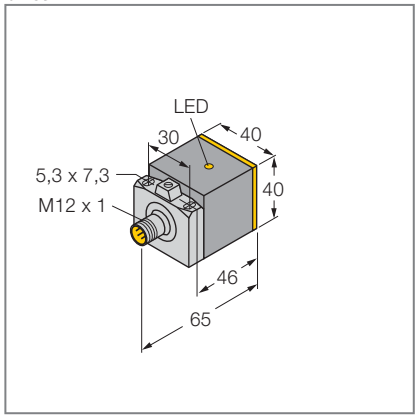


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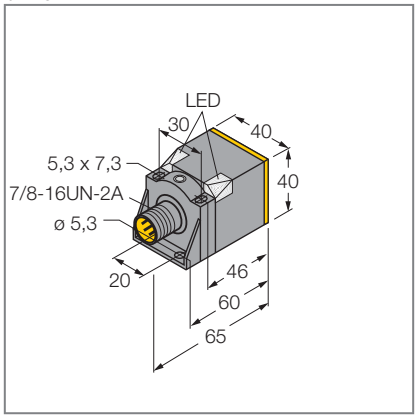


Dimension drawings

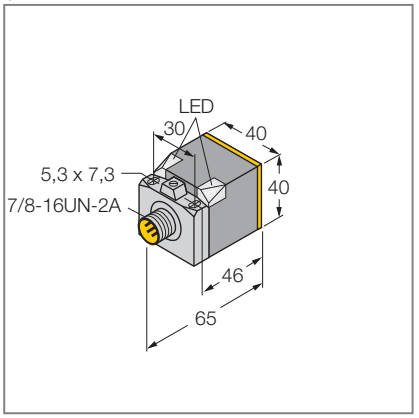
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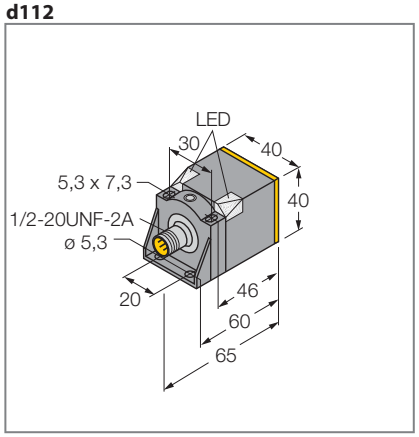
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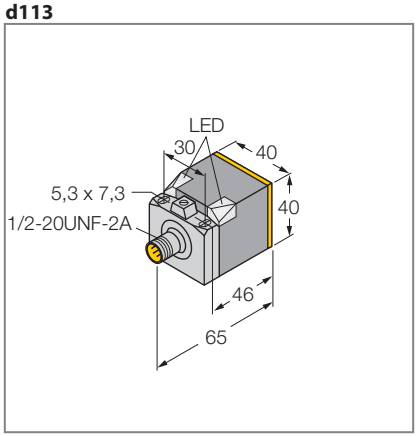
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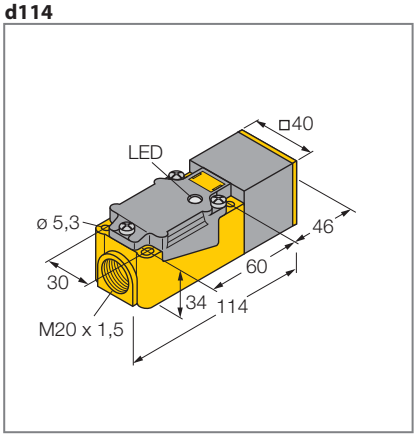
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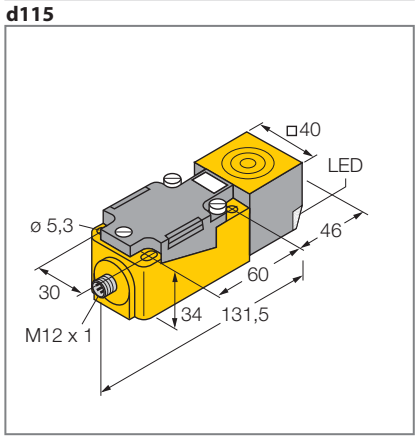
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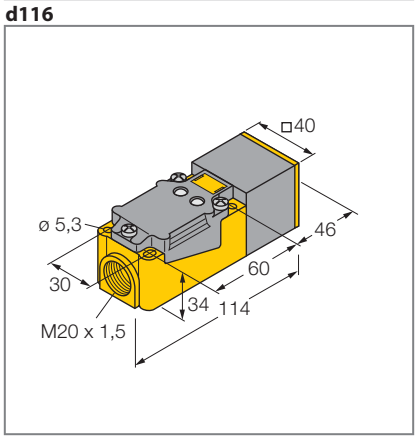
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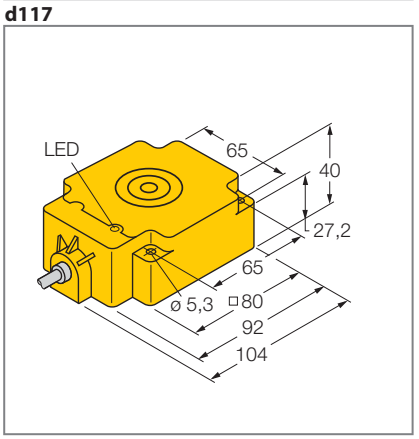
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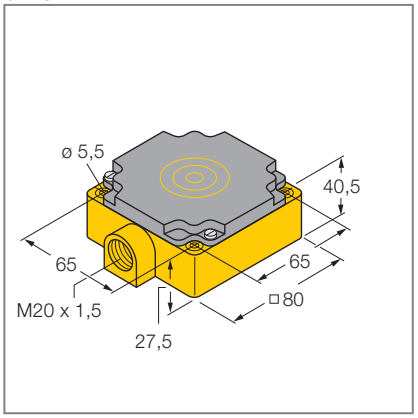


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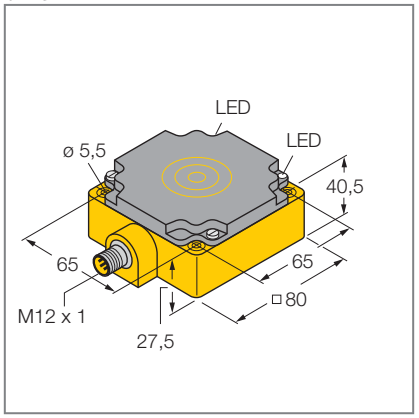


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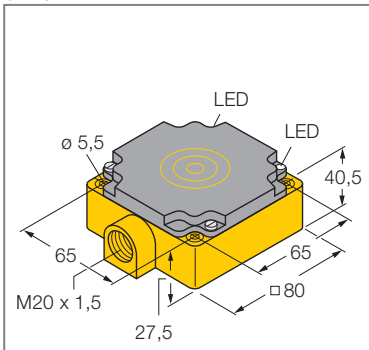
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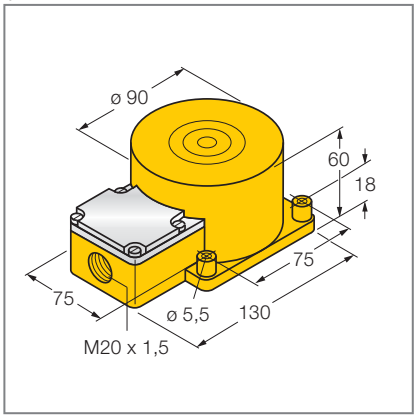
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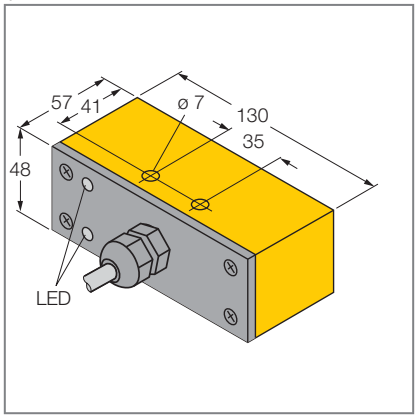
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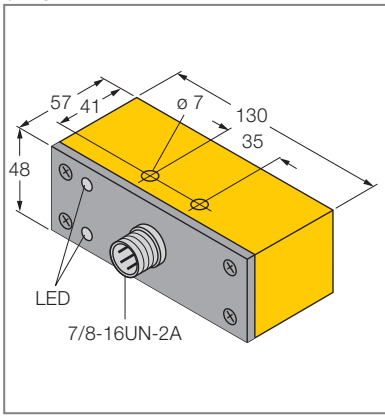
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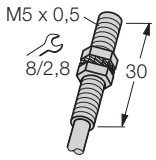
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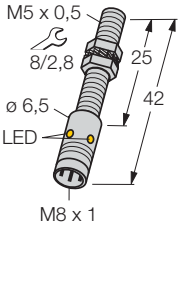
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d124



d125

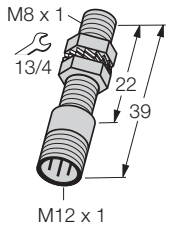


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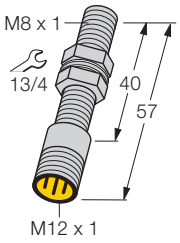


Dimension drawings

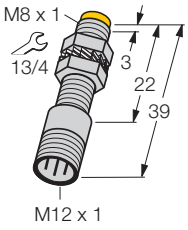
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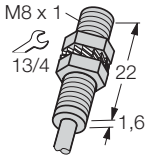
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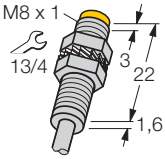
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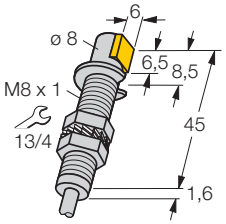
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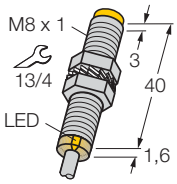
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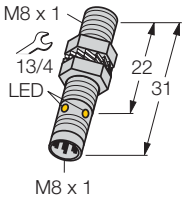
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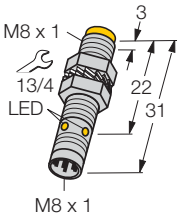
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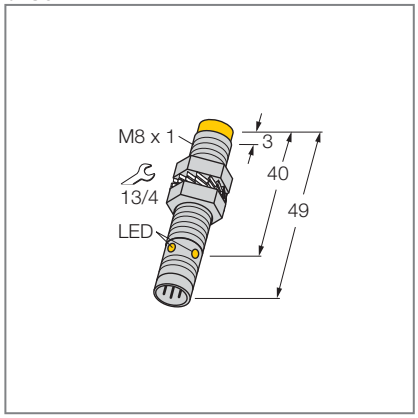


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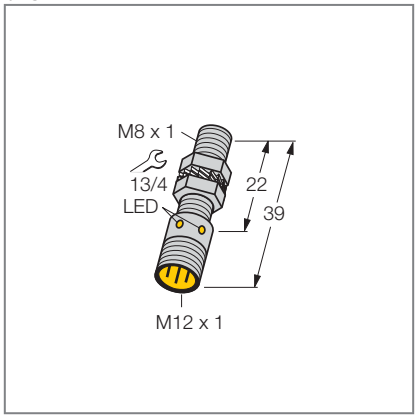


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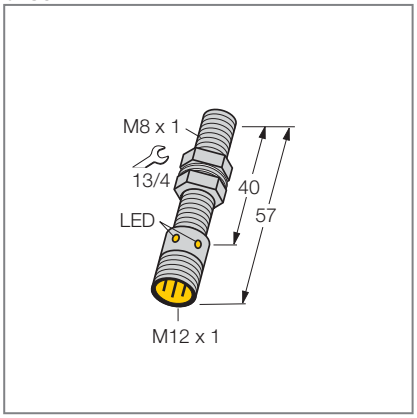
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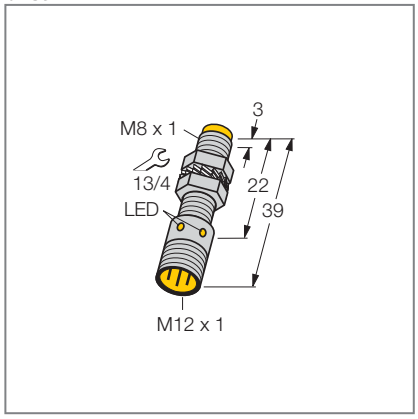
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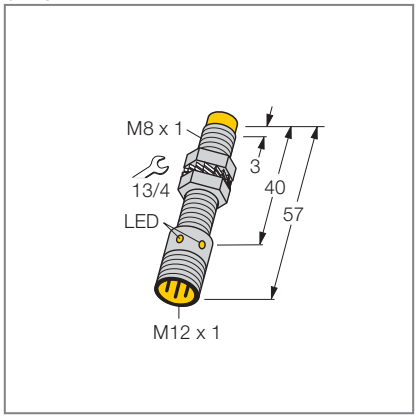
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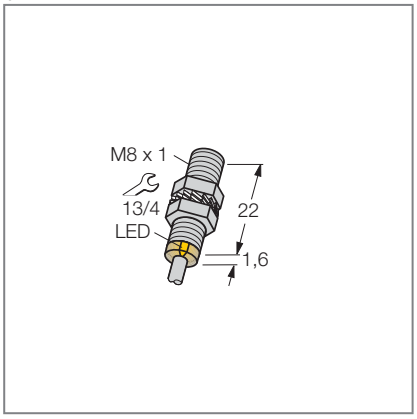
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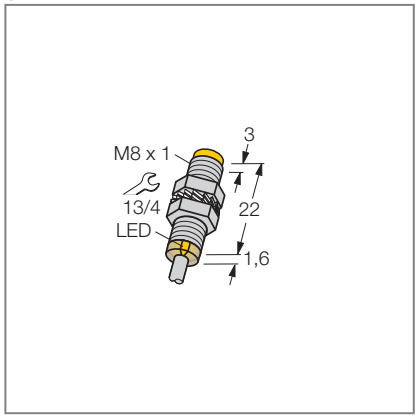
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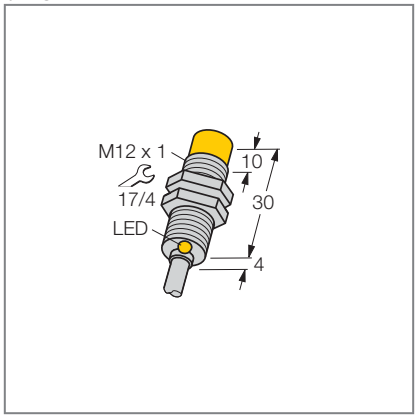
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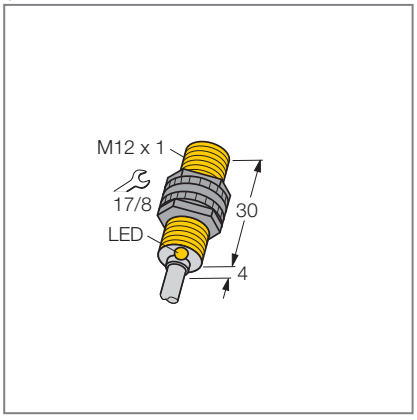
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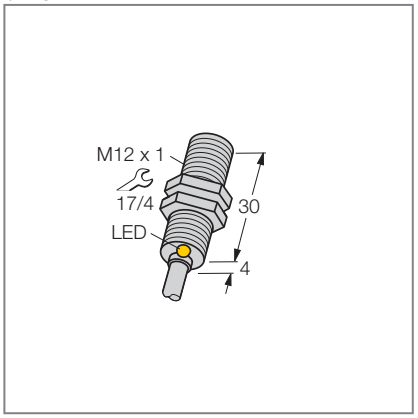


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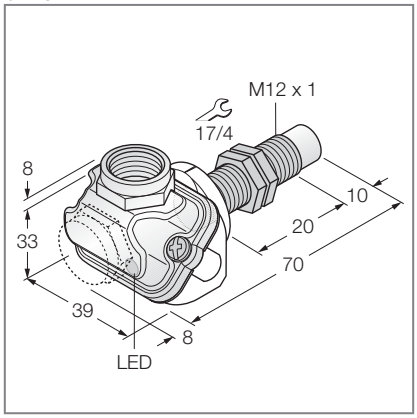


Dimension drawings

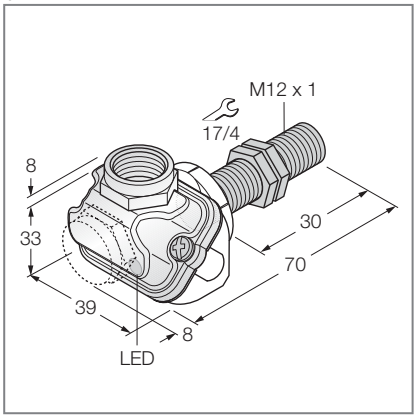
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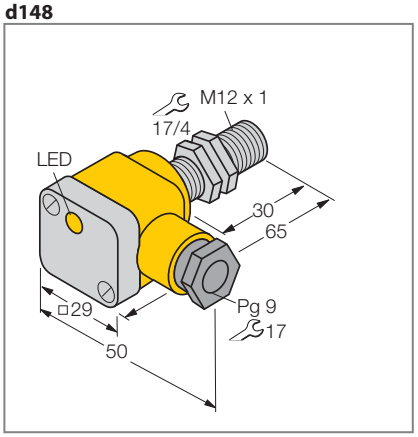
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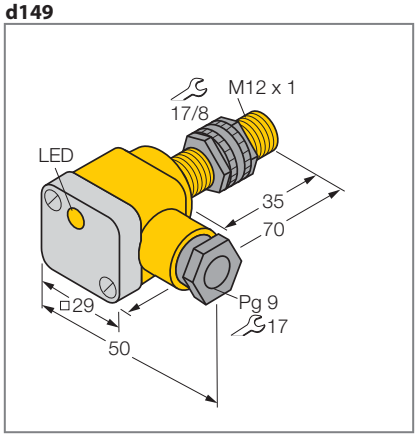
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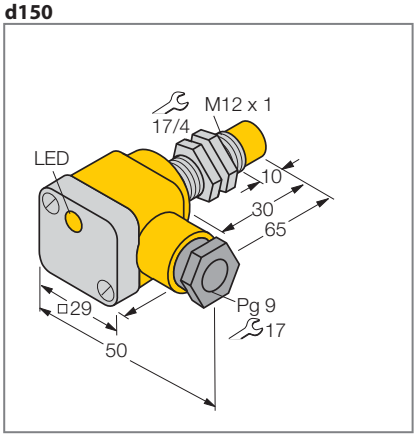
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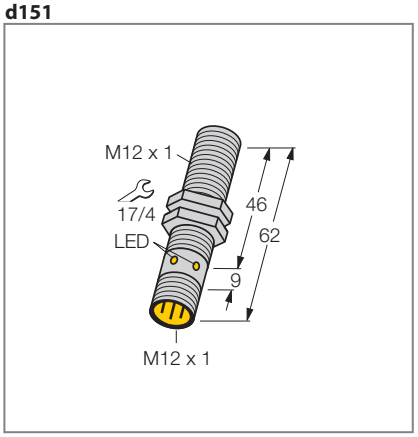
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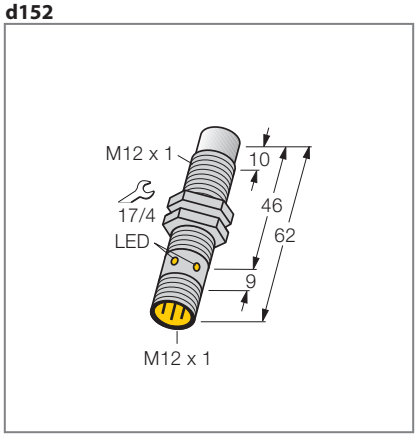
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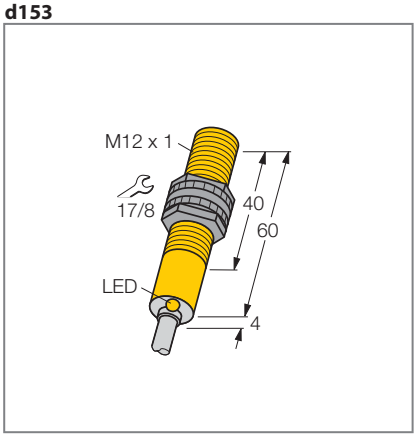
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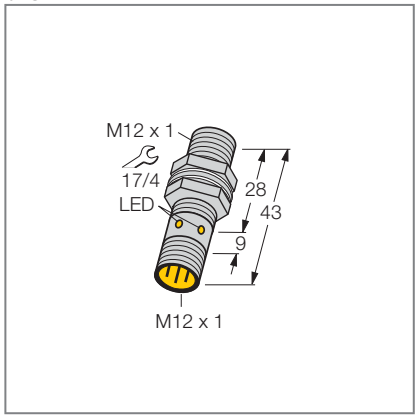
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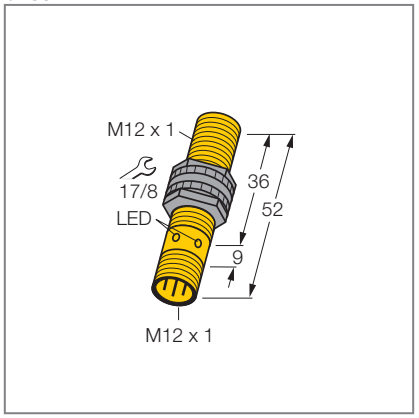
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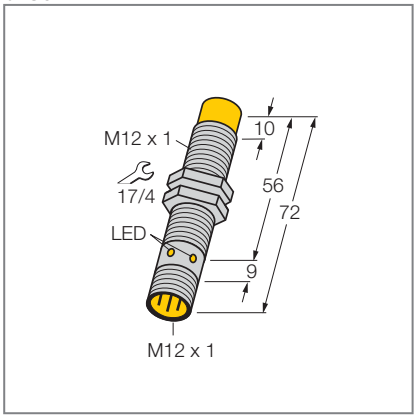
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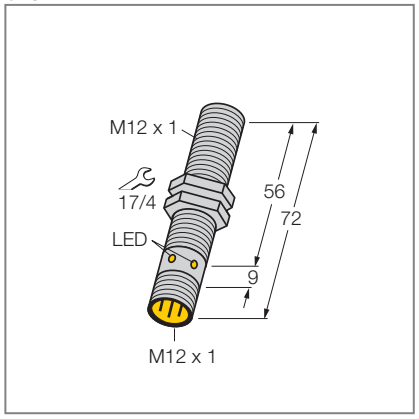
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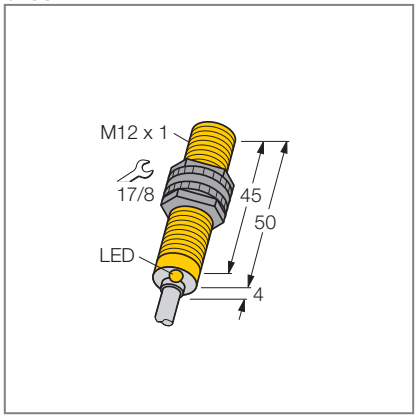
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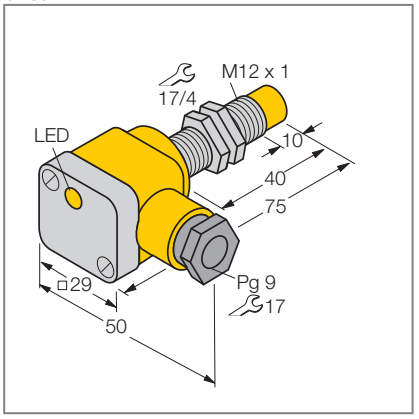
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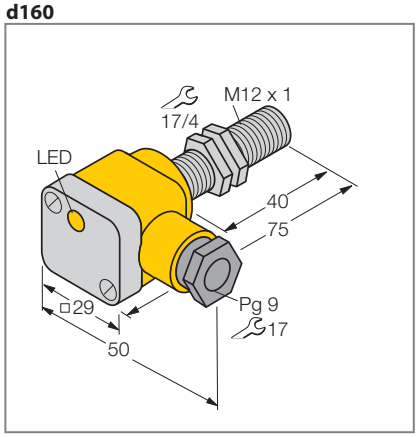
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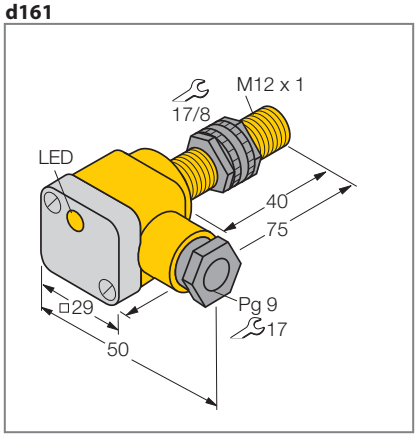
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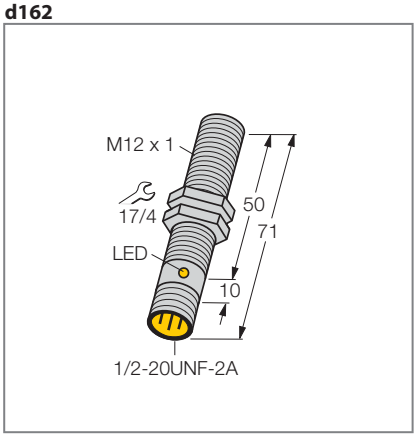
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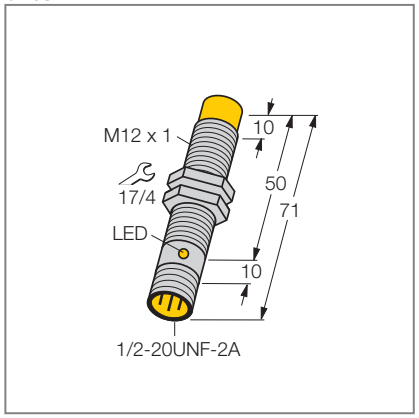


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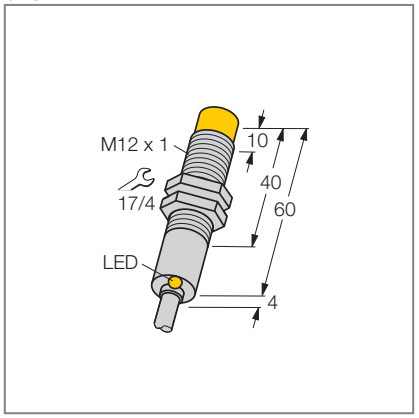


Dimension drawings

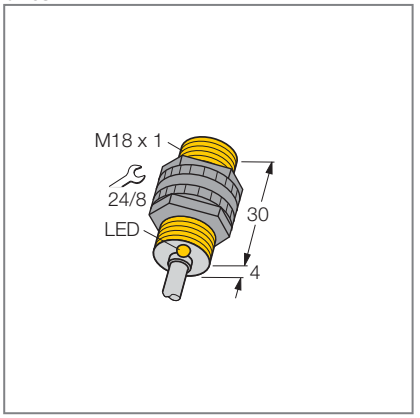
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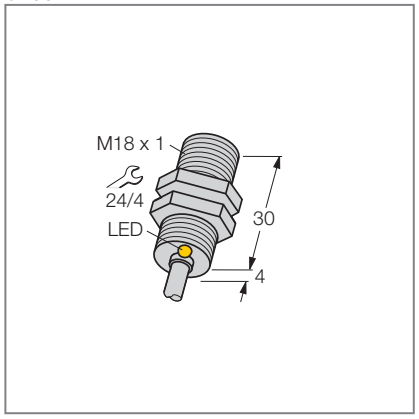
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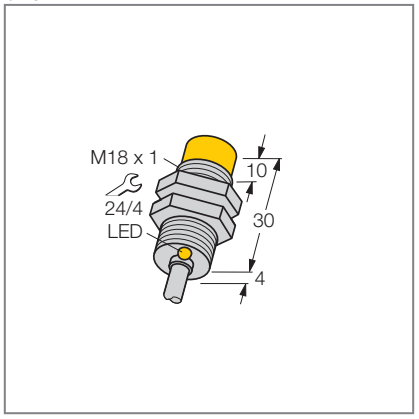
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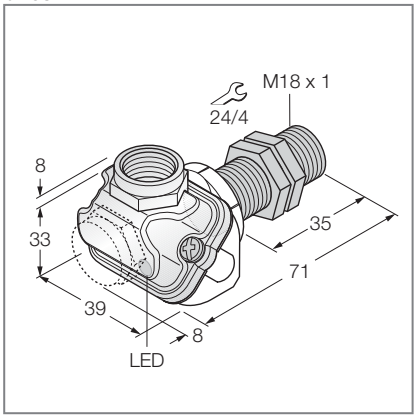
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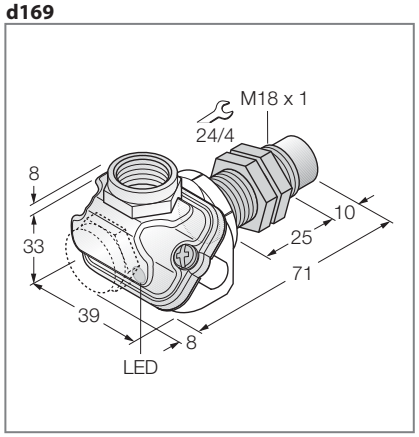
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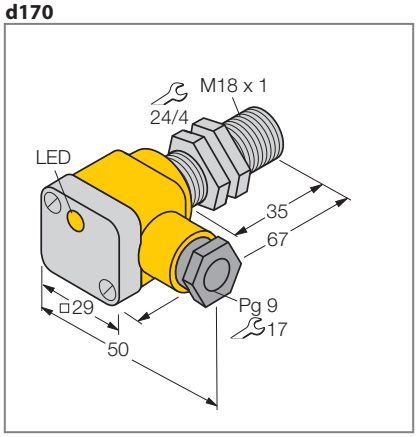
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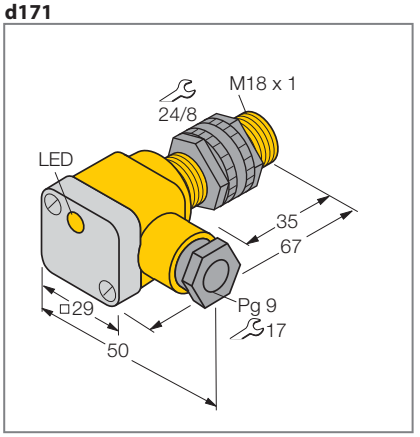
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d170

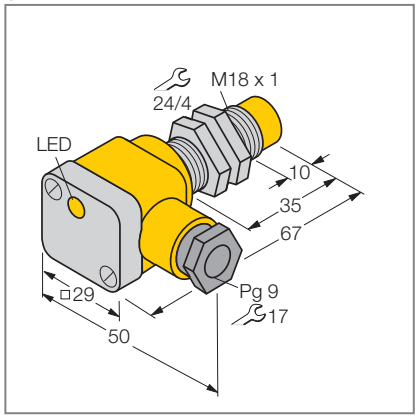


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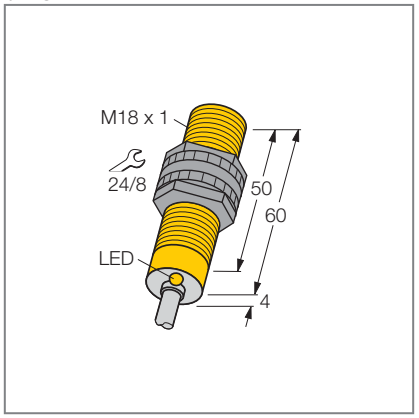


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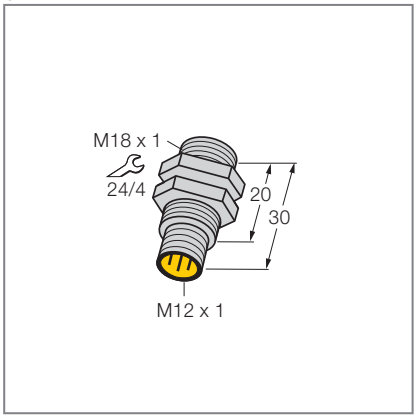
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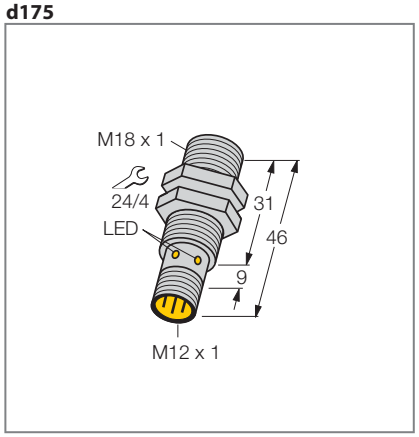
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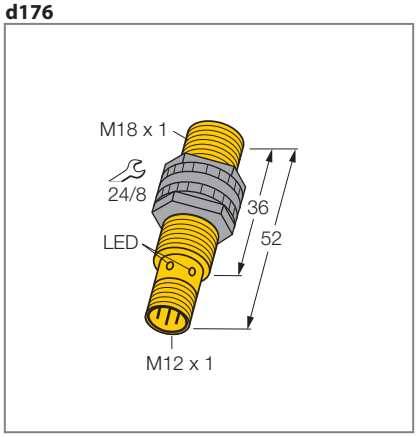
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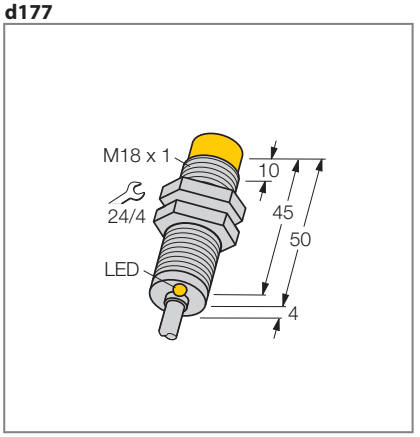
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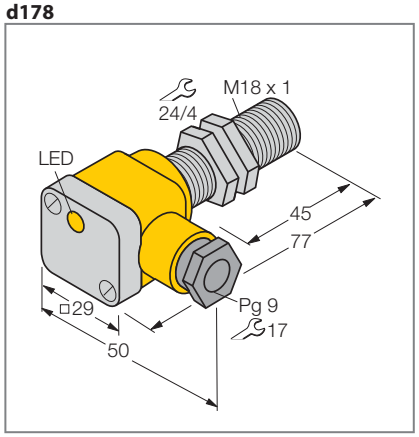
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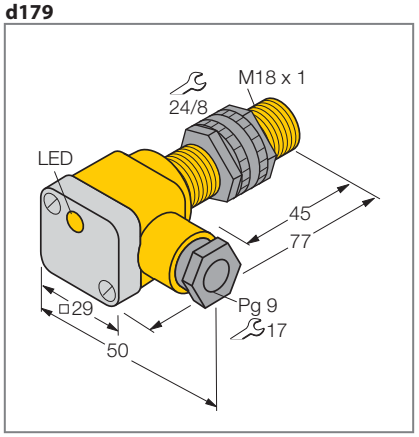
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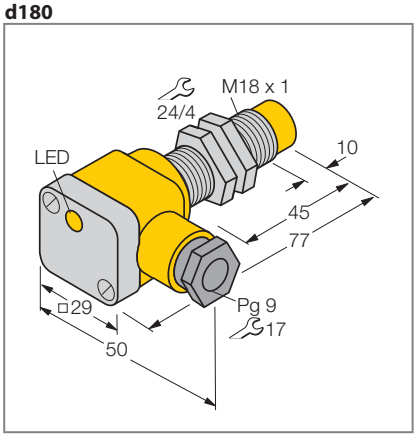
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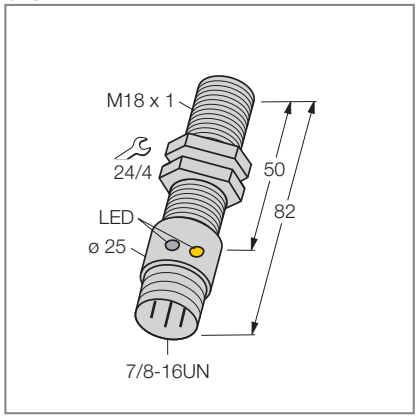


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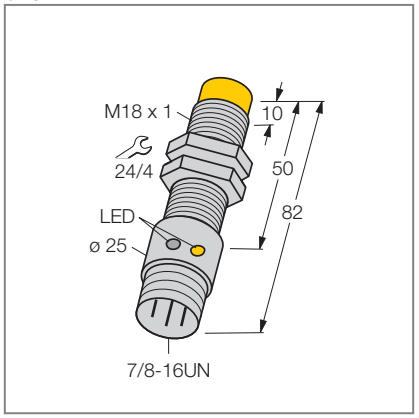


Dimension drawings

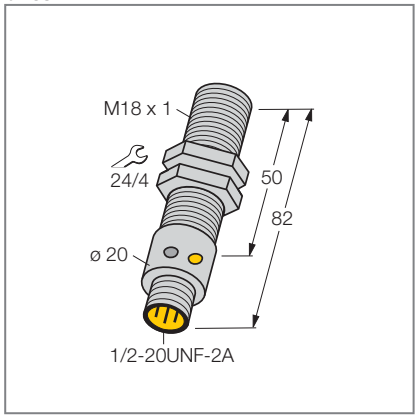
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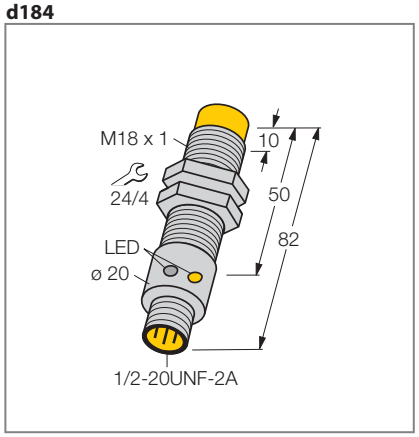
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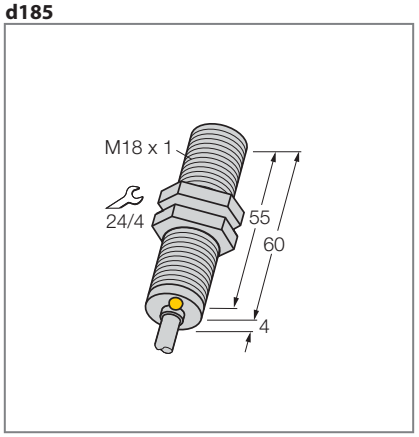
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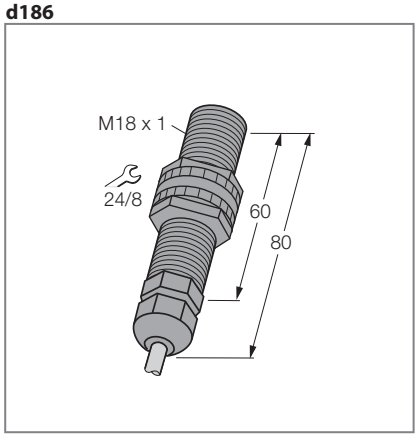
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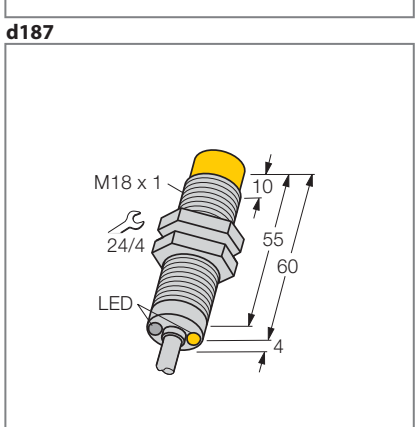
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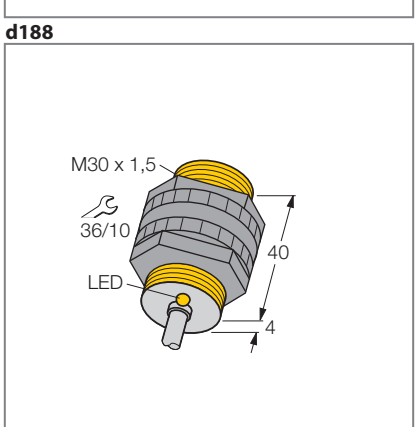
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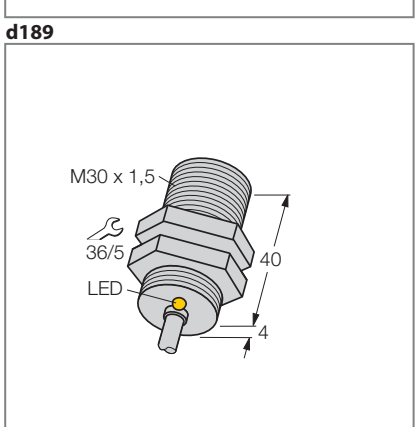
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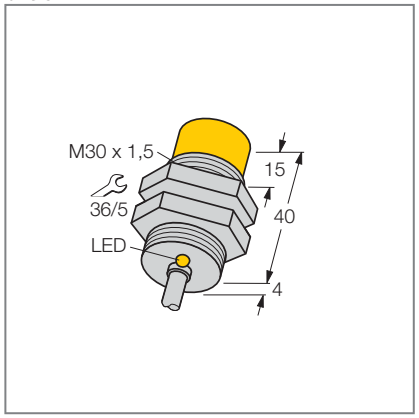


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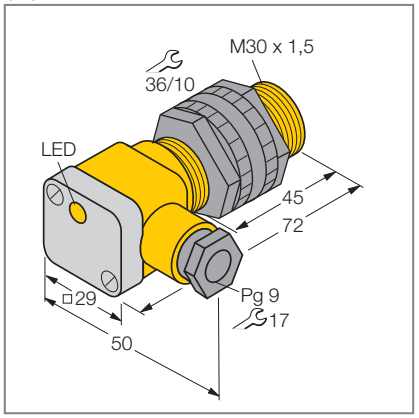


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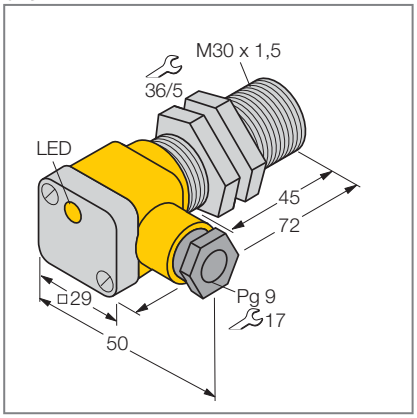
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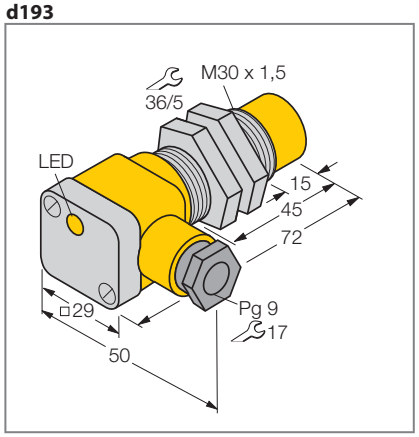
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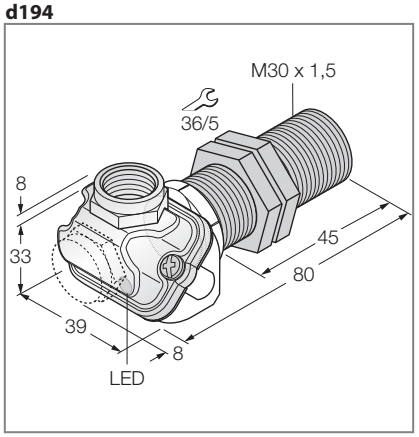
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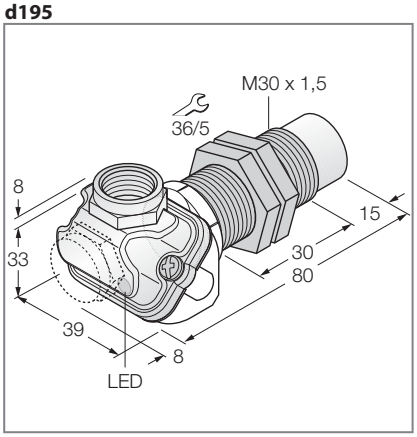
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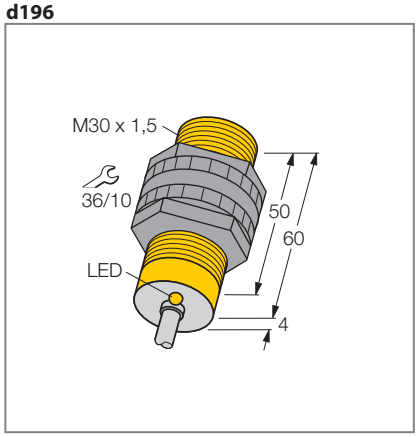
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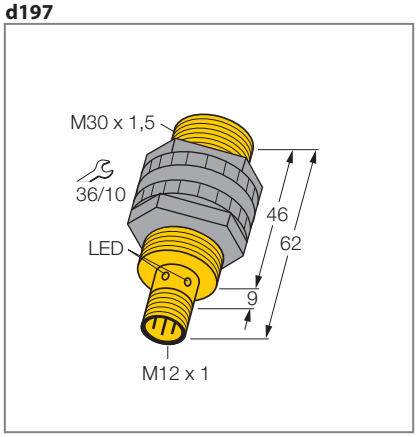
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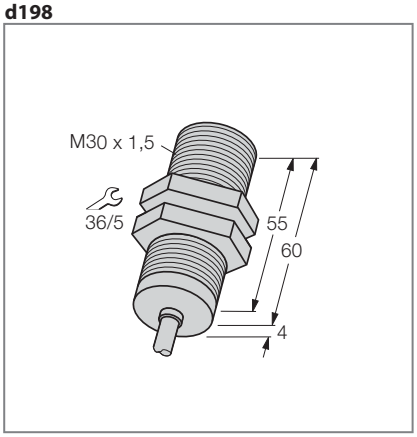
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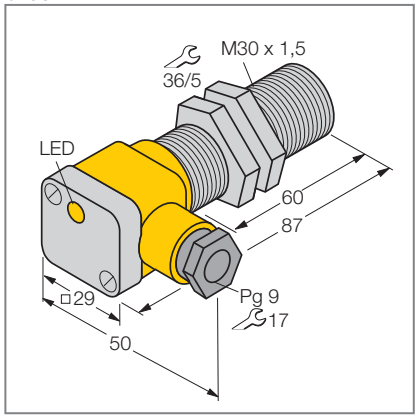


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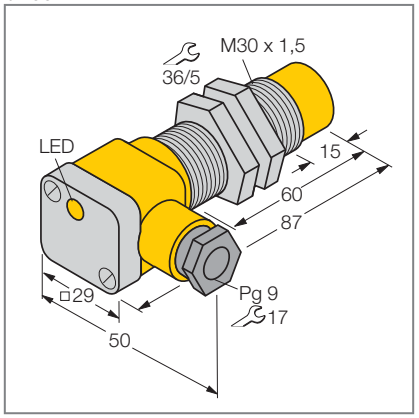


Dimension drawings

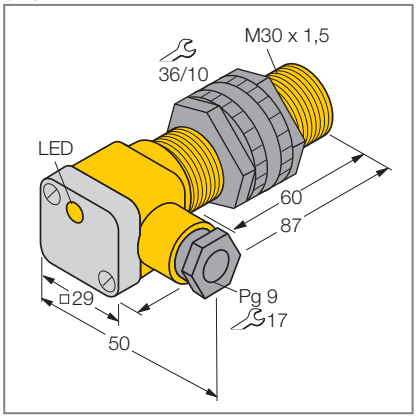
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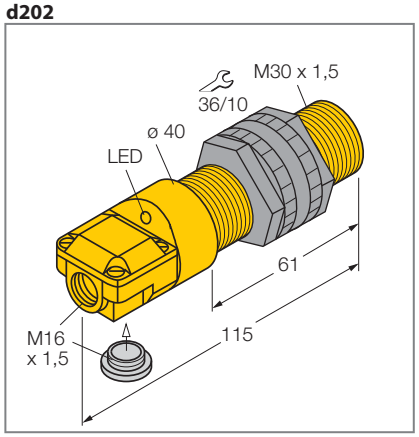
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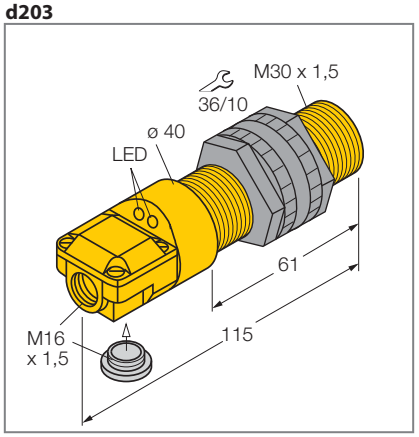
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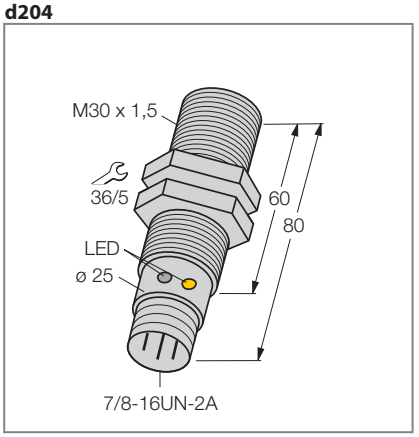
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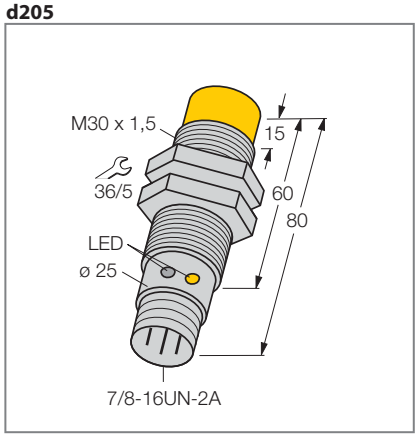
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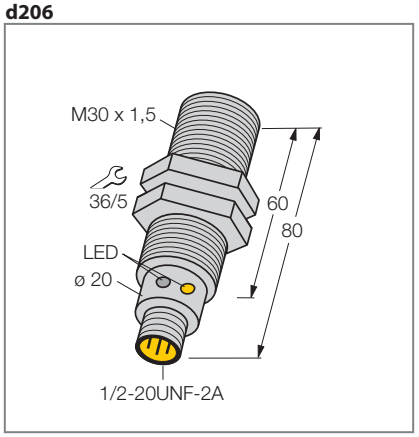
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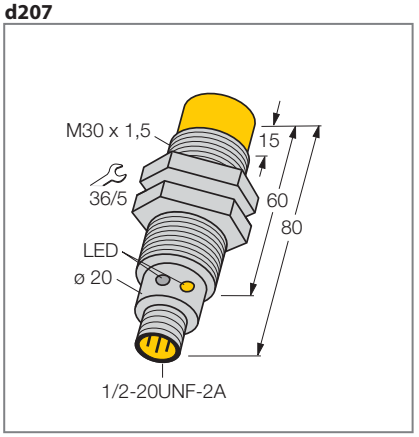
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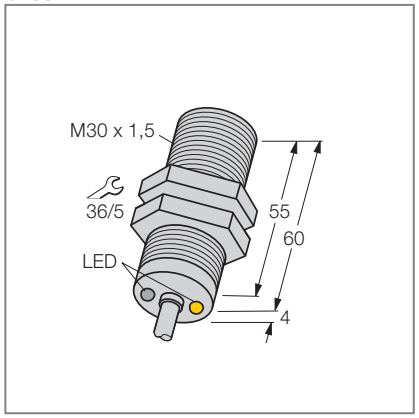


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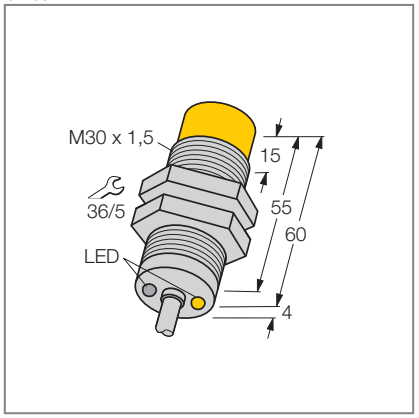


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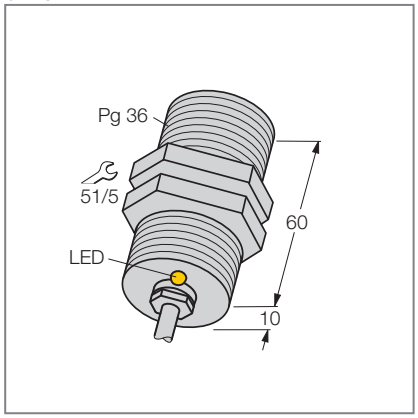
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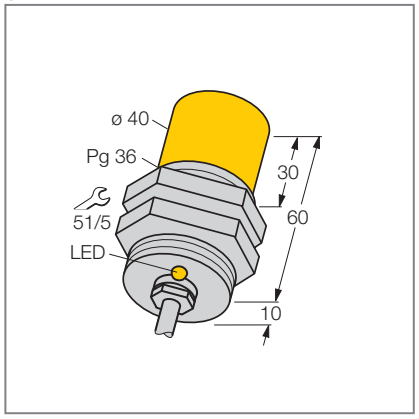
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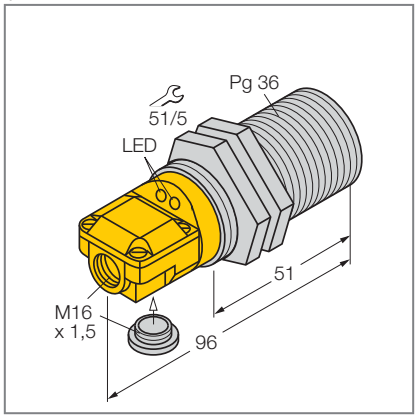
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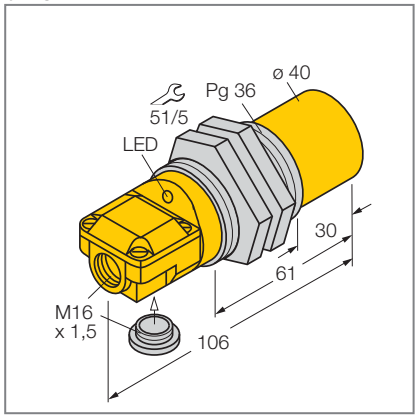
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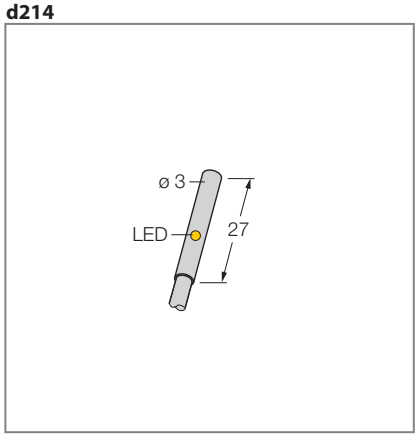
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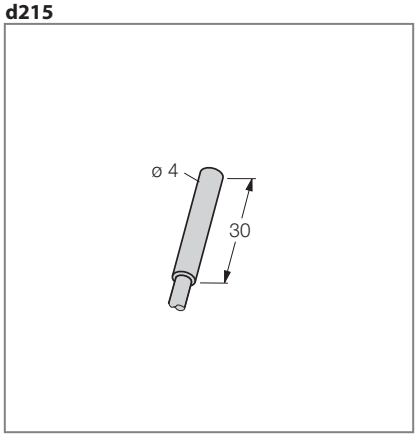
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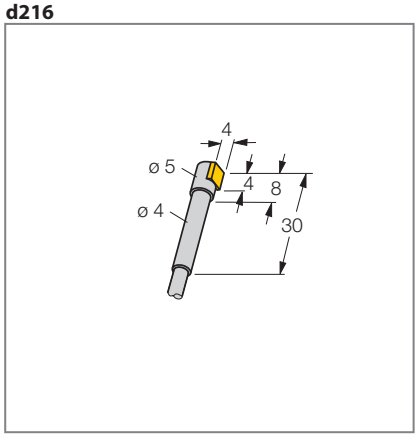
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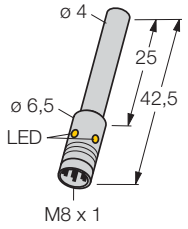


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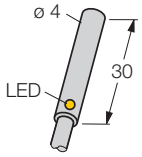


Dimension drawings

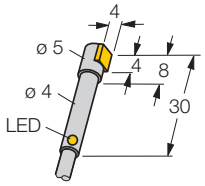
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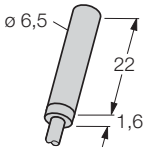
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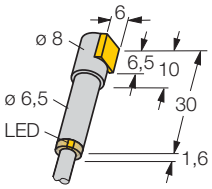
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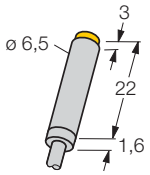
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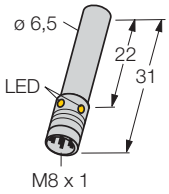
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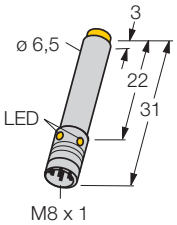
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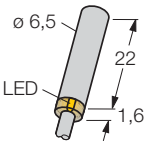
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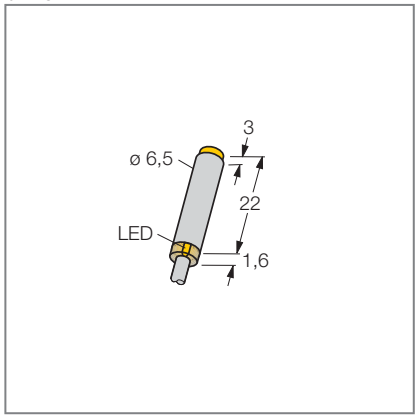


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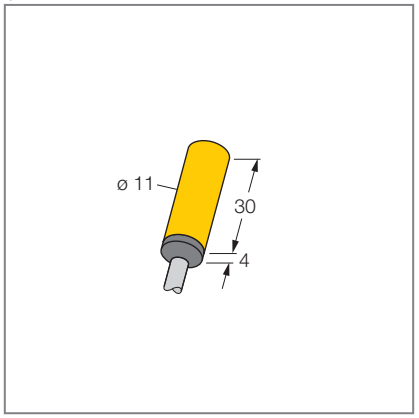


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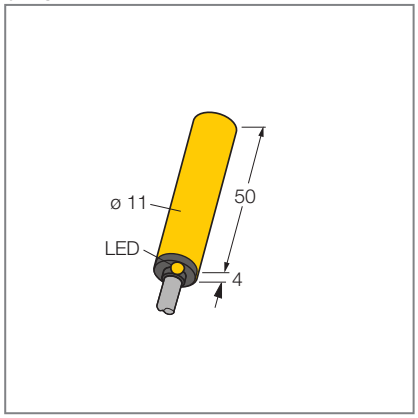
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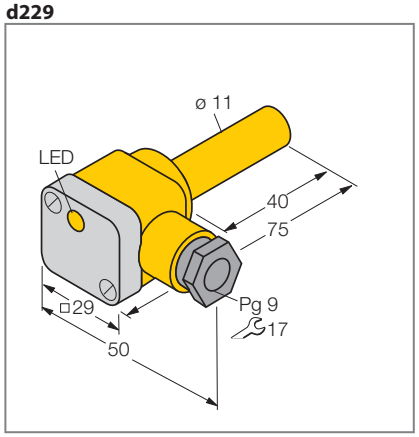
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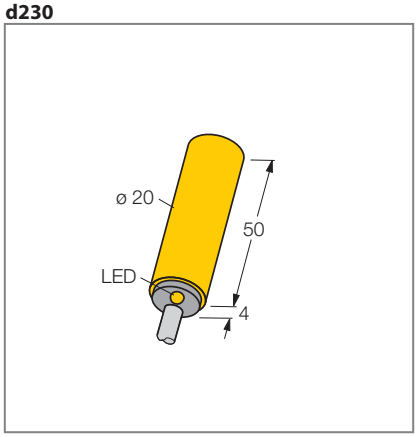
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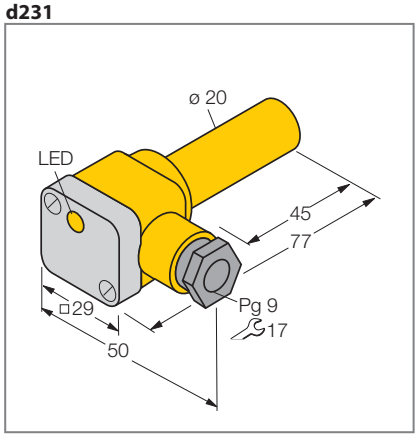
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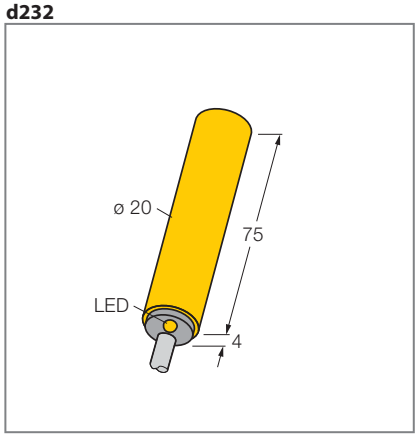
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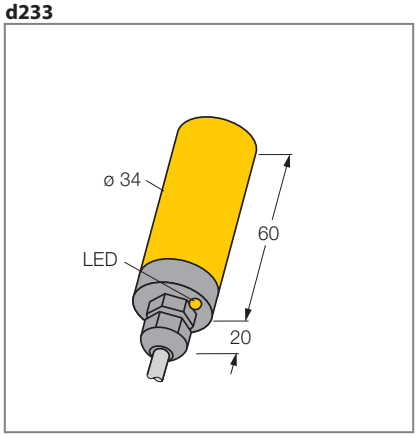
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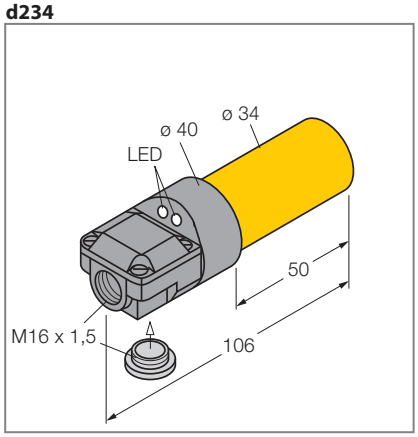
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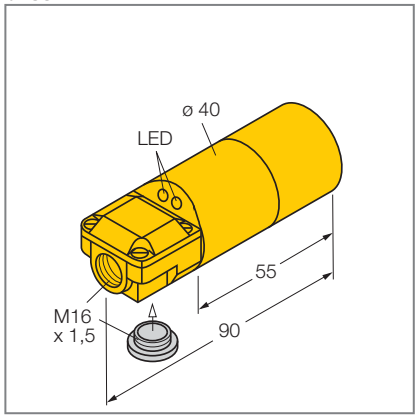


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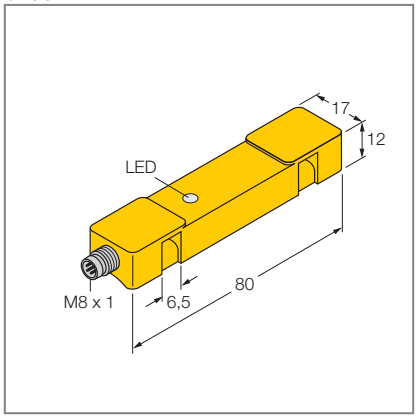


Dimension drawings

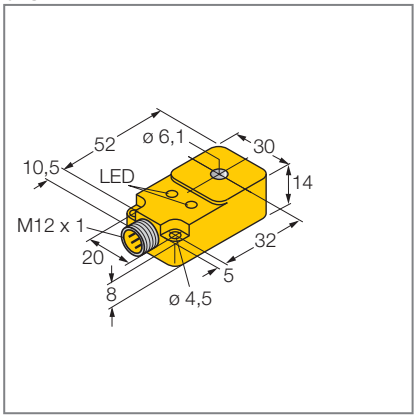
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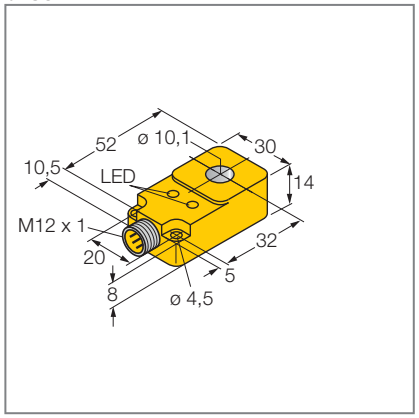
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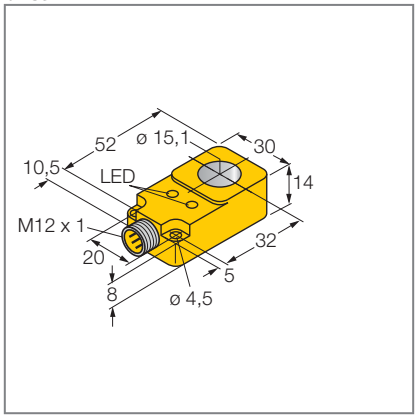
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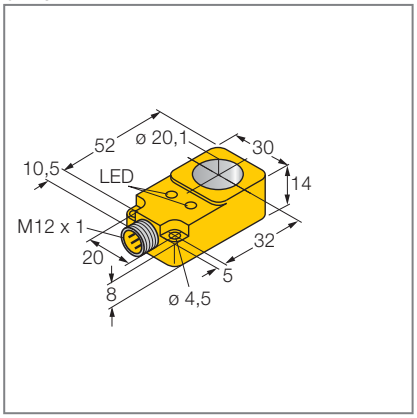
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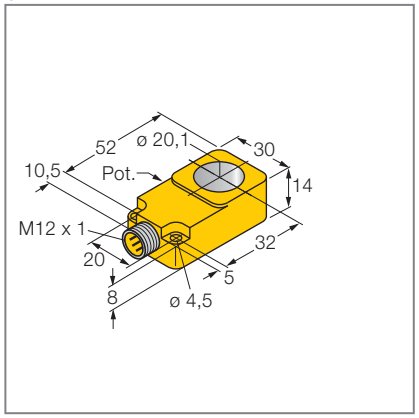
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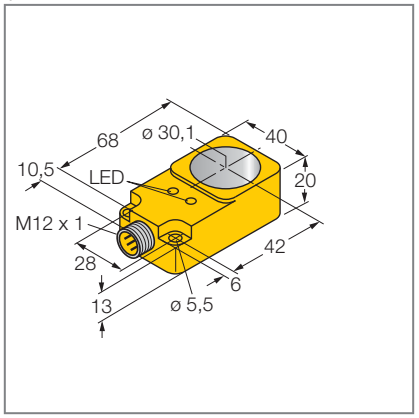
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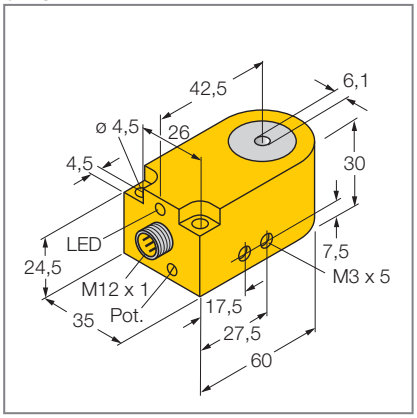
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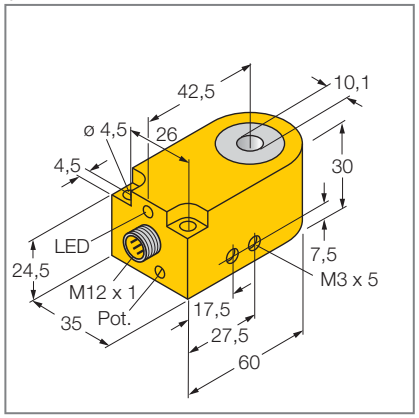
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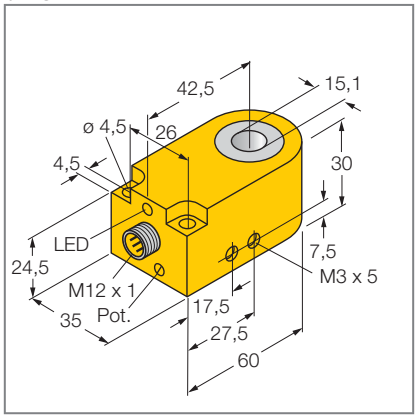
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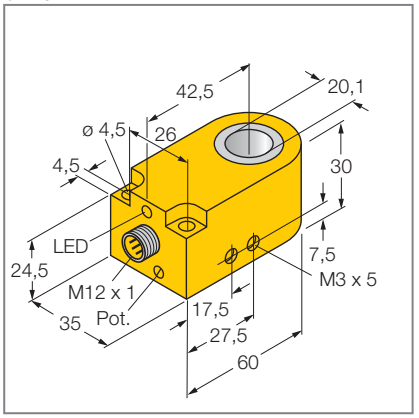
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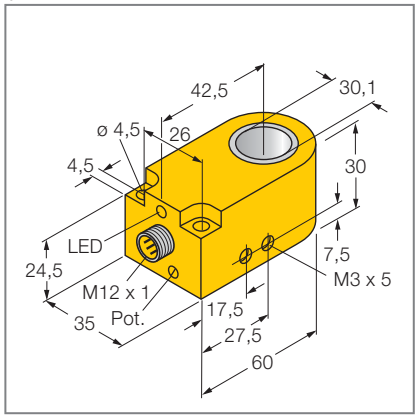
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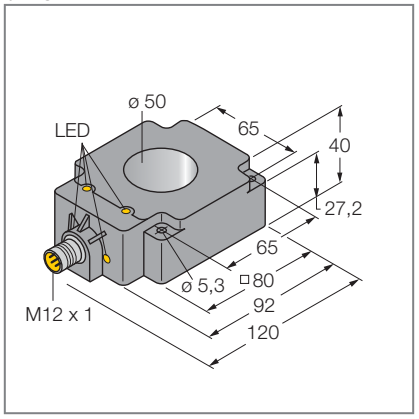
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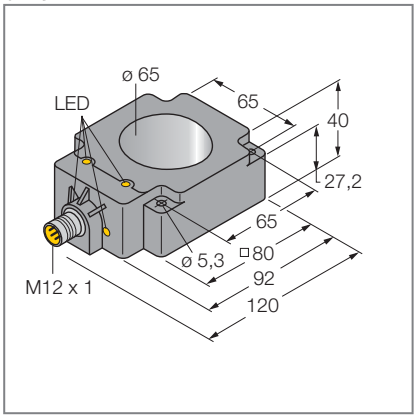
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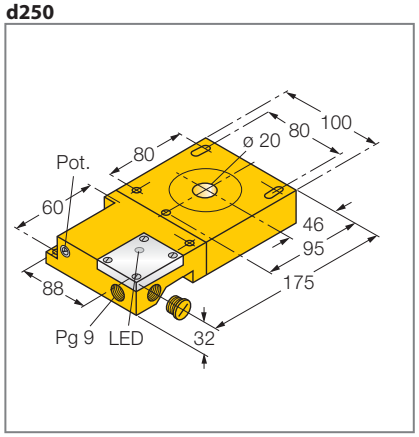
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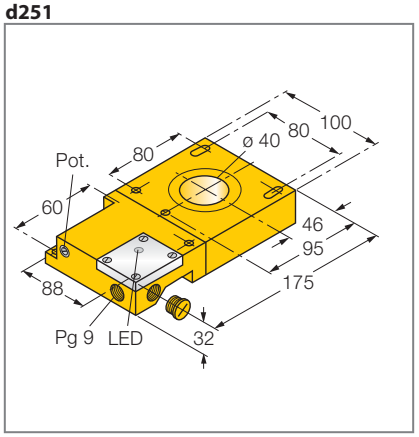
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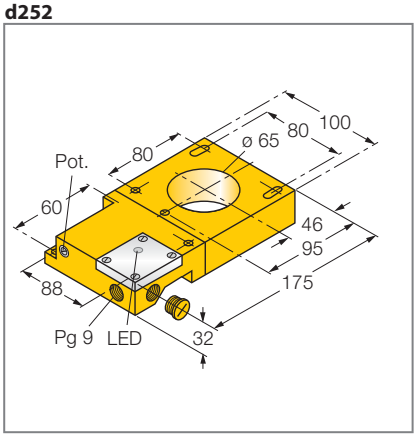
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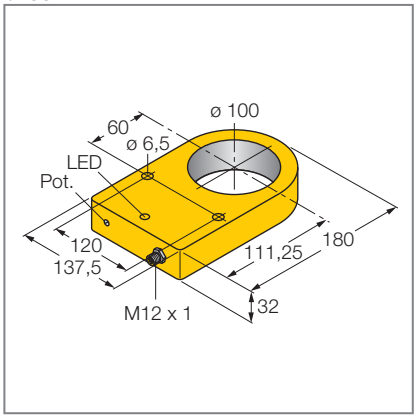


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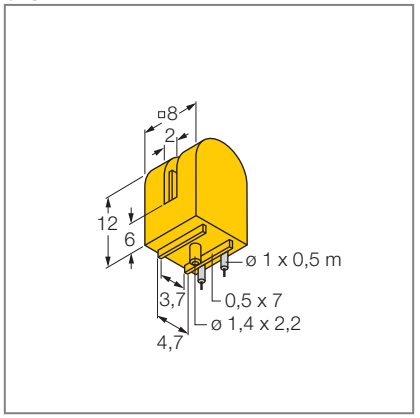


Dimension drawings

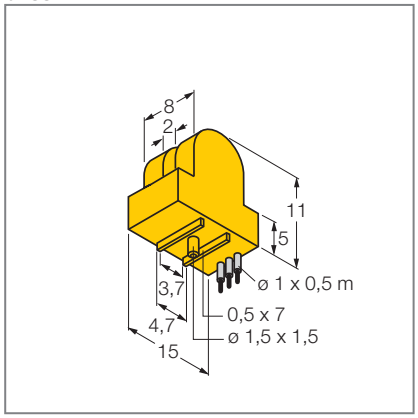
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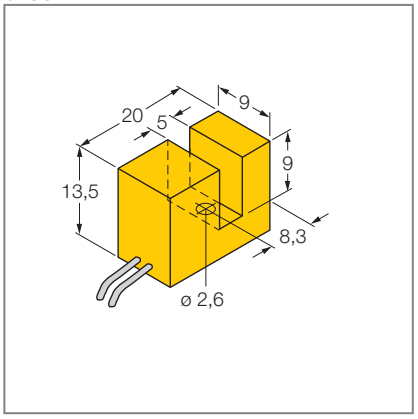
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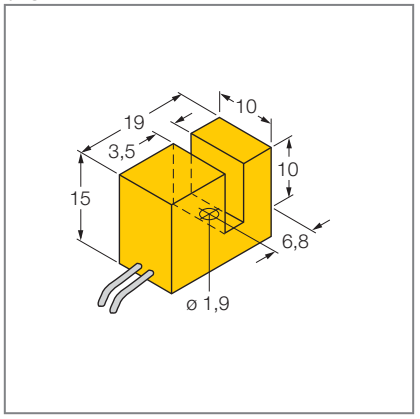
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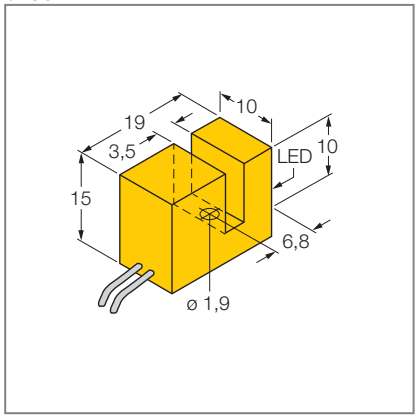
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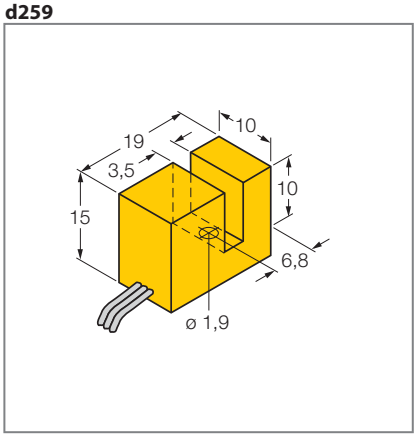
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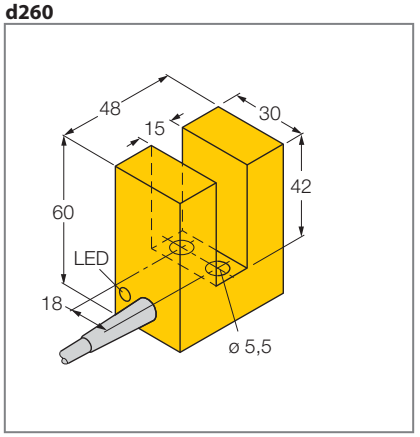
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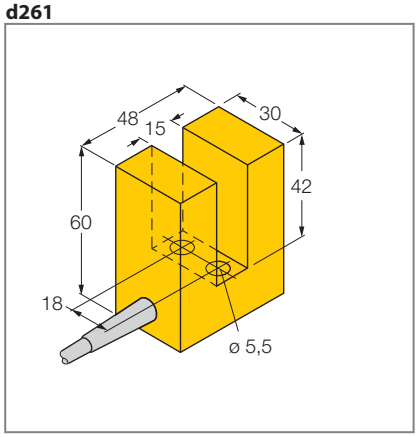
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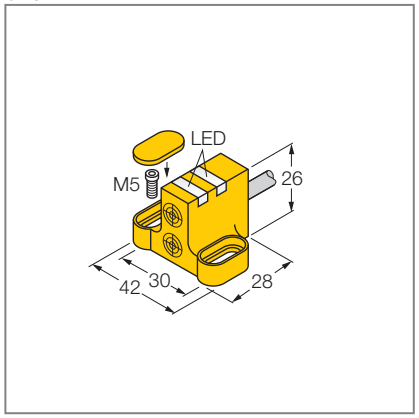


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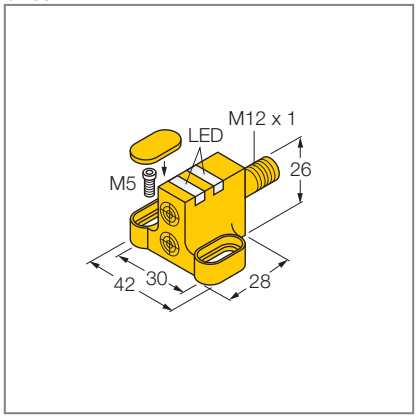


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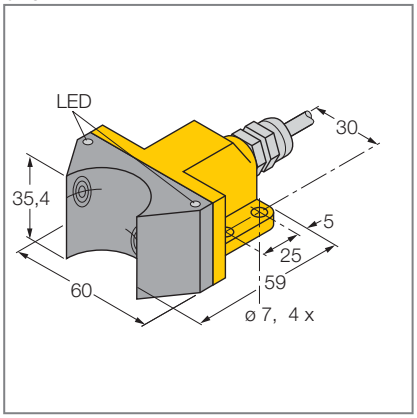
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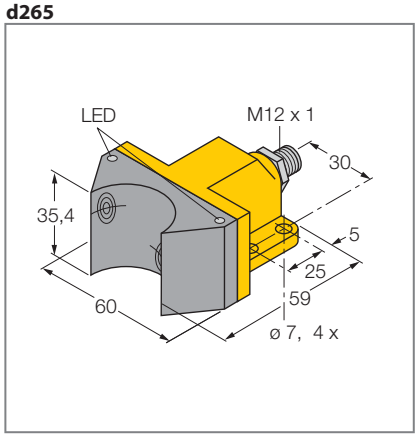
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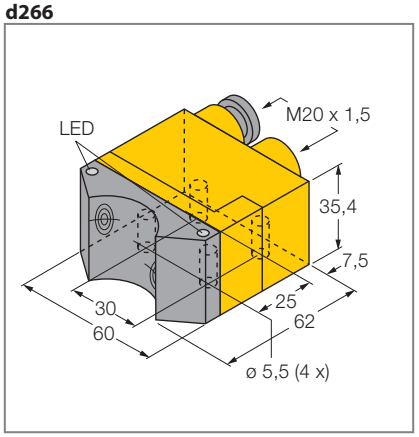
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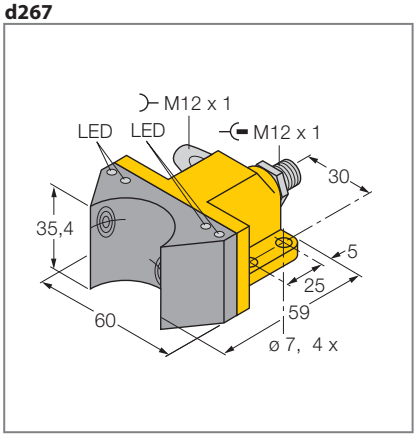
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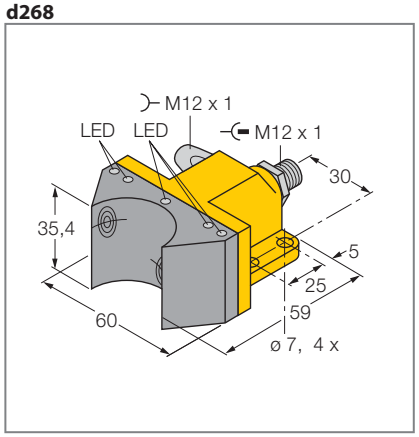
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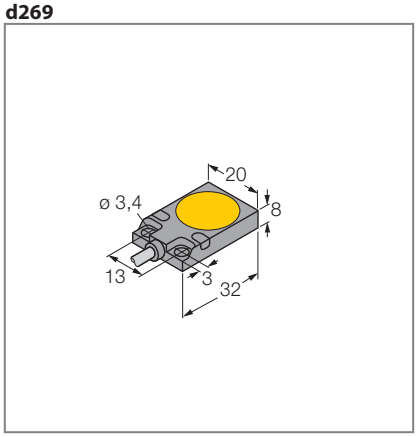
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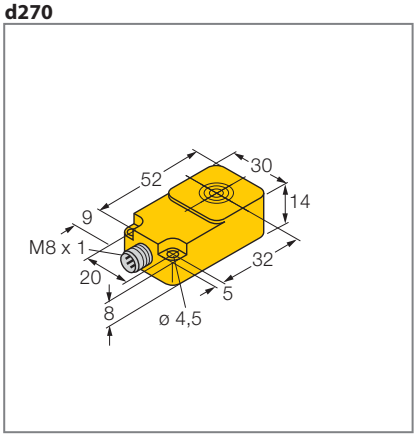
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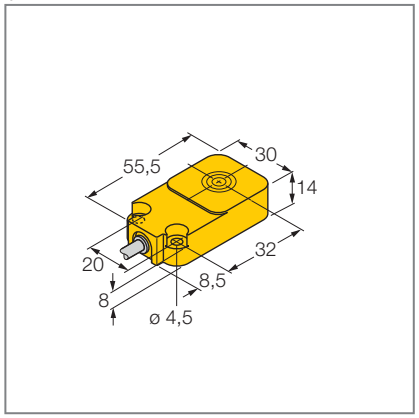


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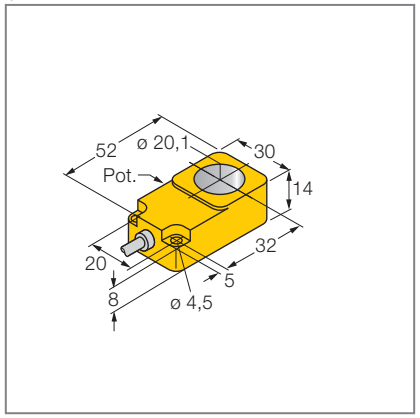


Dimension drawings

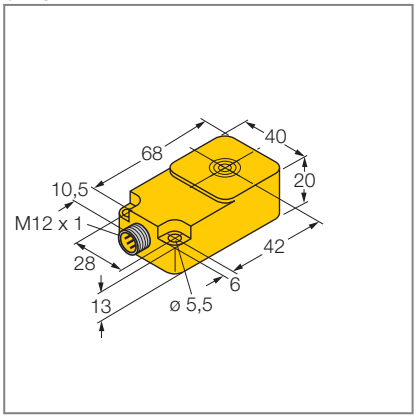
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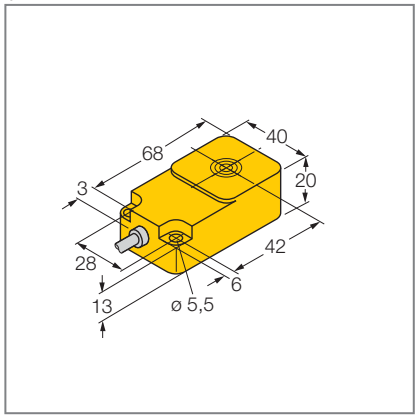
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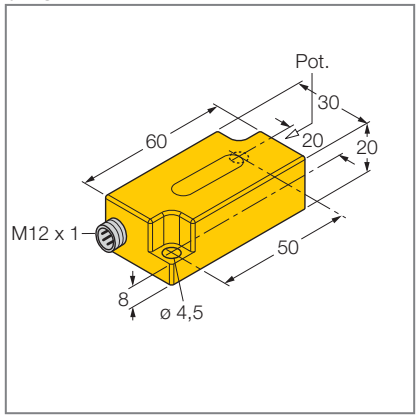
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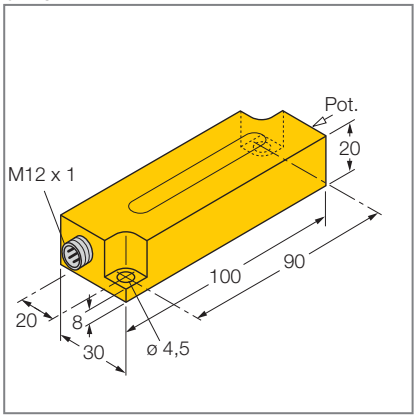
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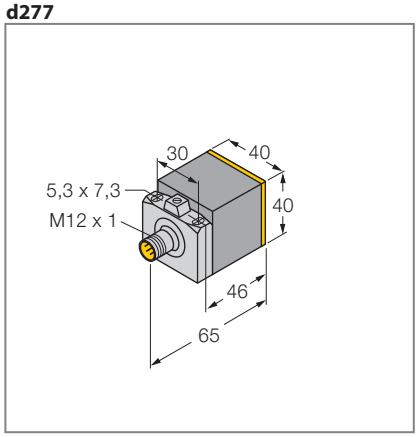
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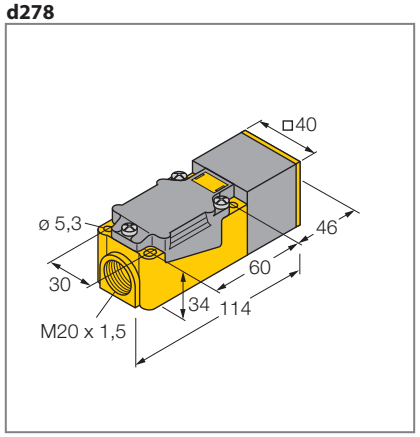
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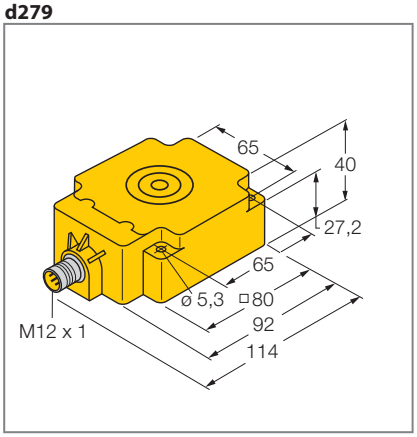
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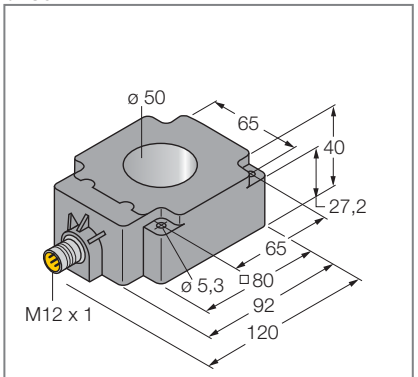


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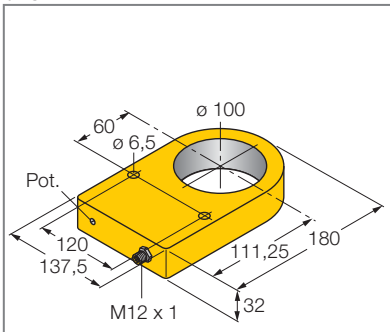


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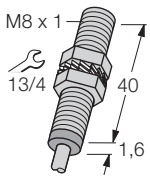
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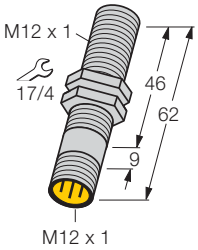
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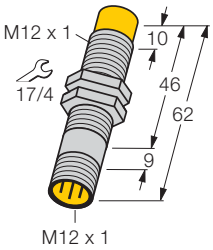
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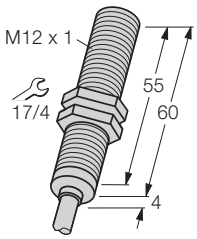
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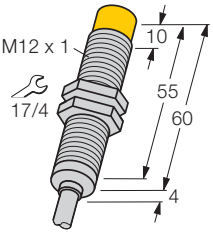
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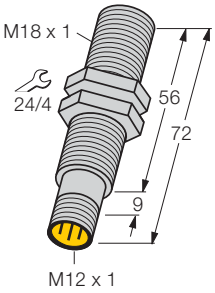
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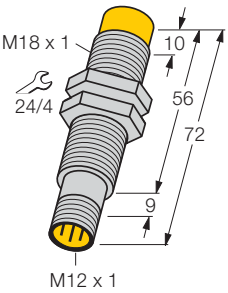
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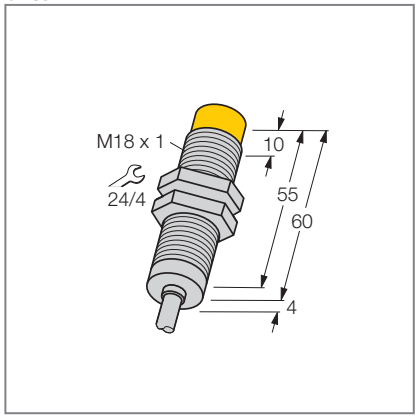


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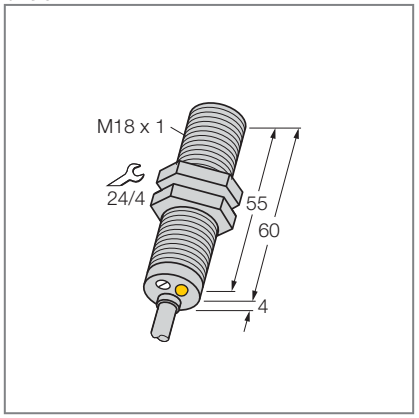


Dimension drawings

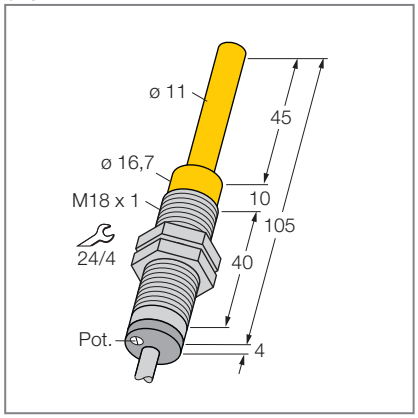
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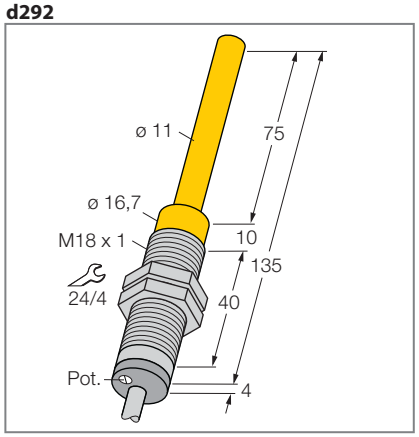
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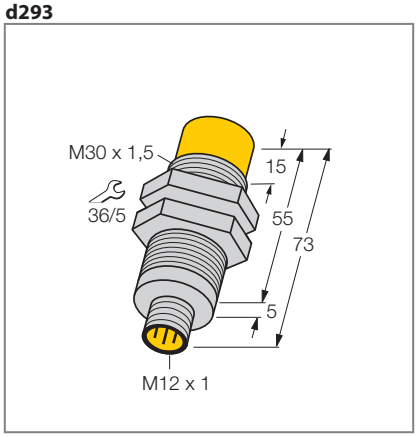
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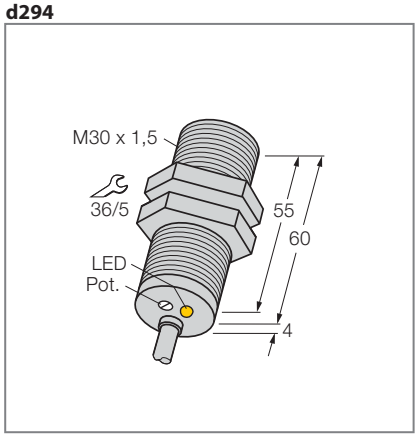
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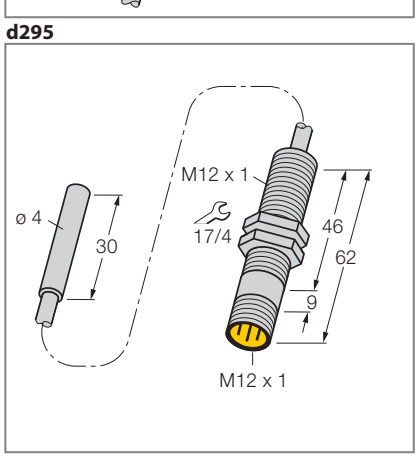
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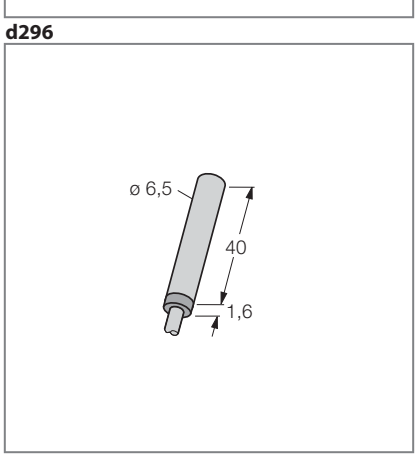
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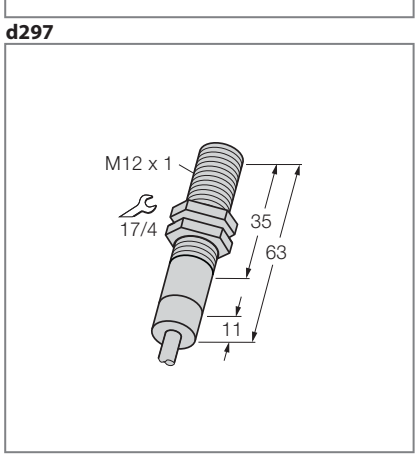
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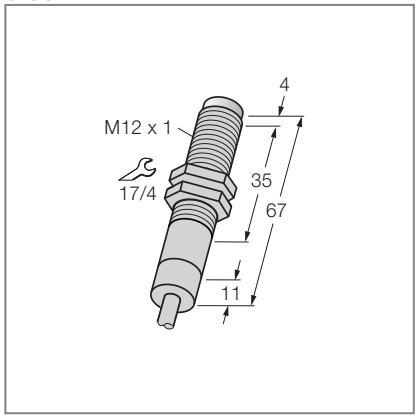


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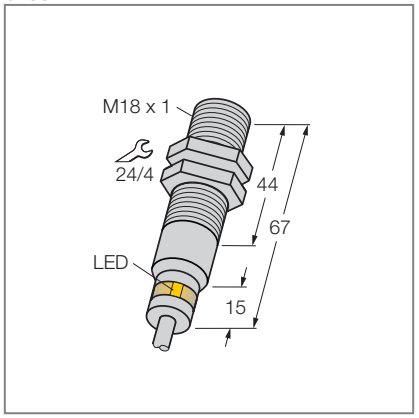


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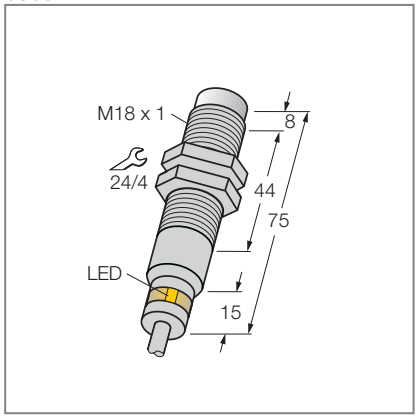
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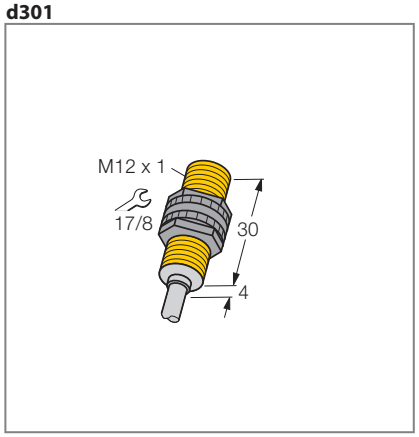
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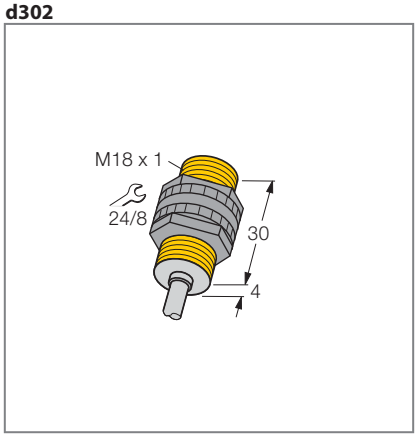
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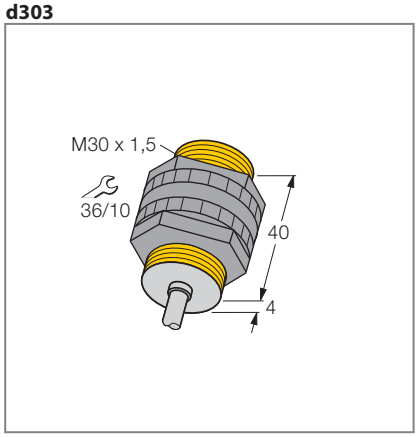
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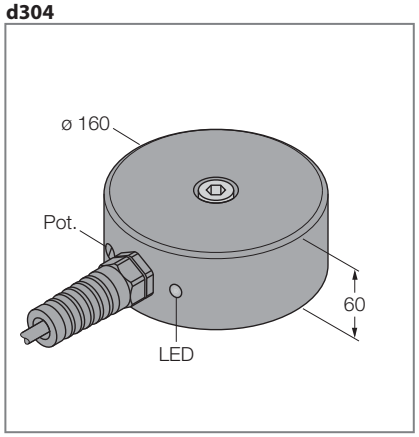
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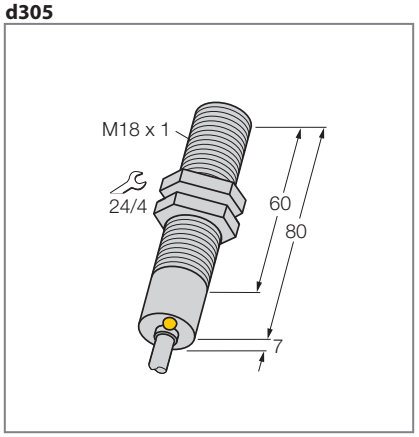
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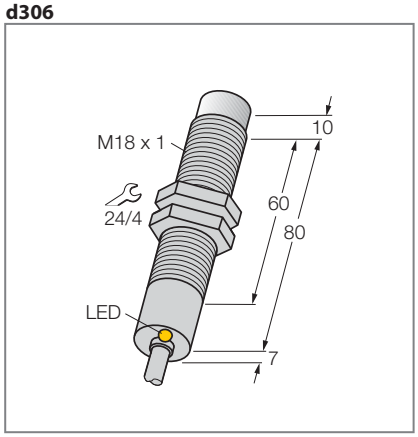
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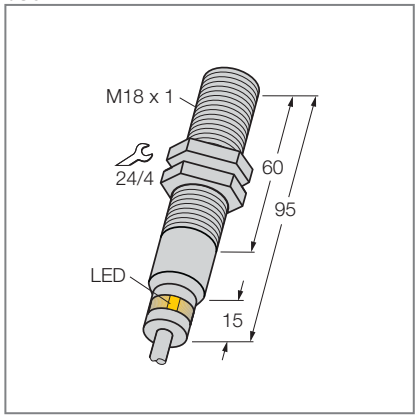


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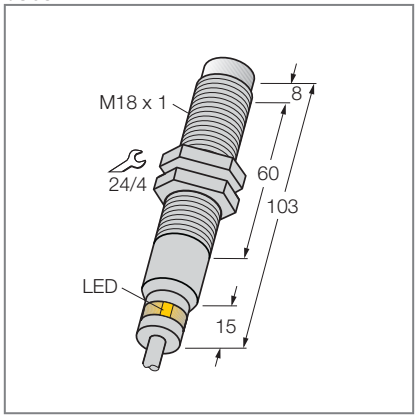


Dimension drawings

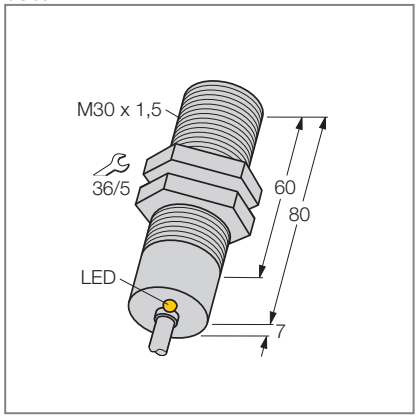
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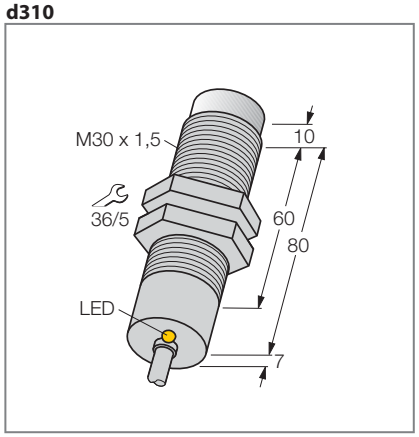
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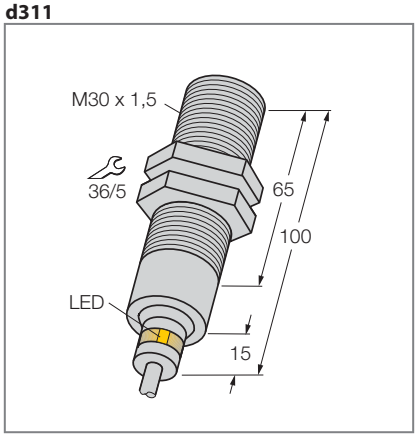
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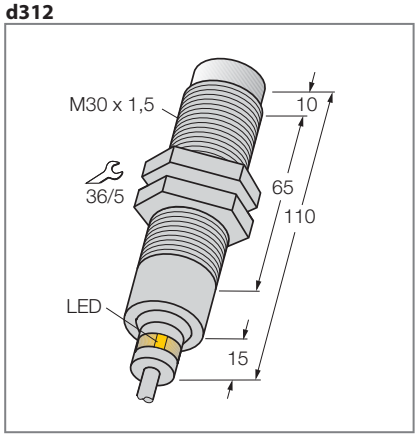
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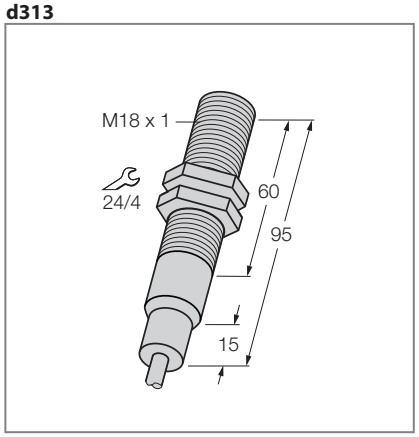
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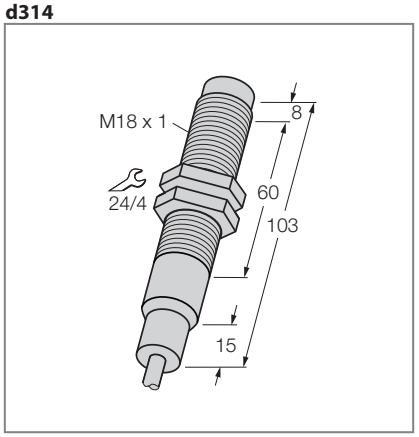
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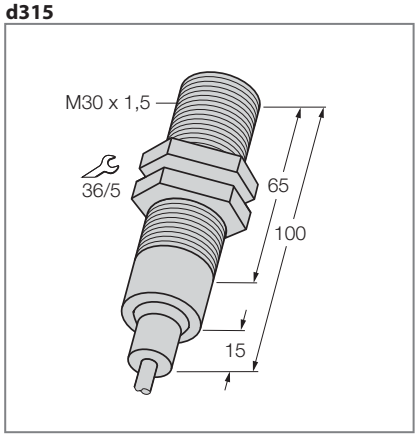
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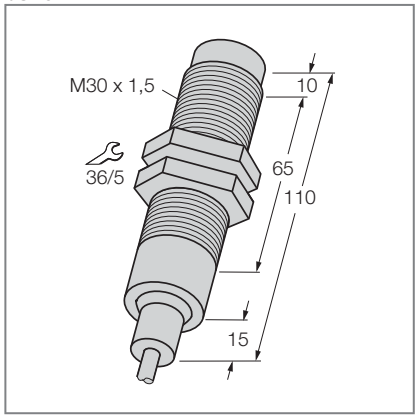


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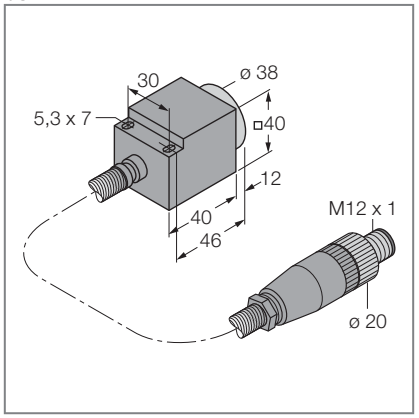


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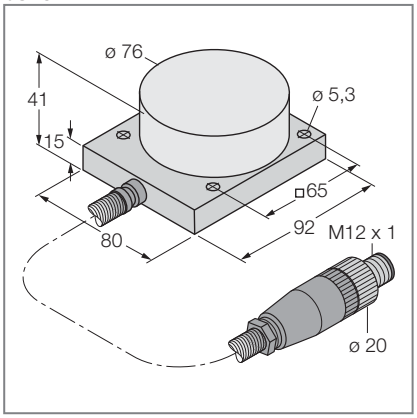
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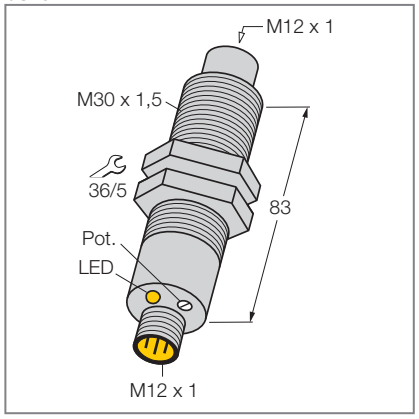
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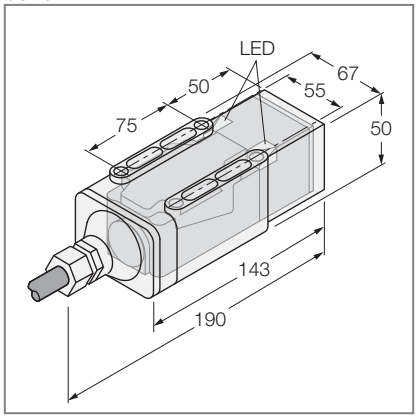
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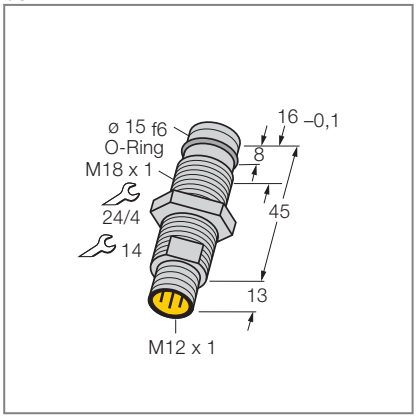
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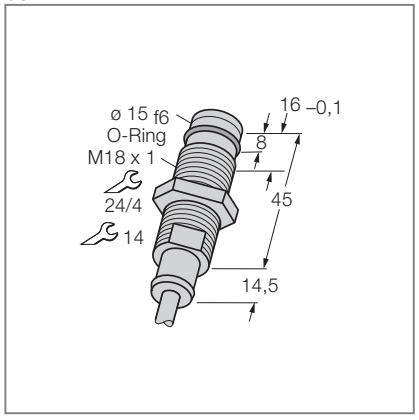
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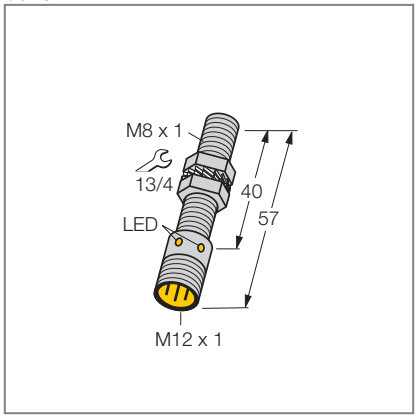
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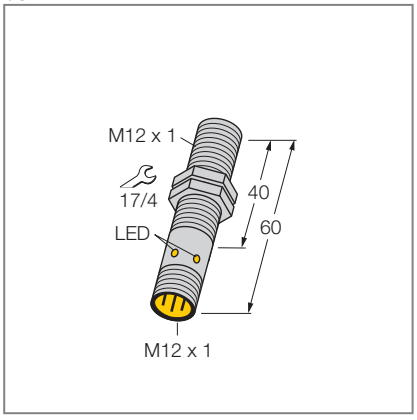
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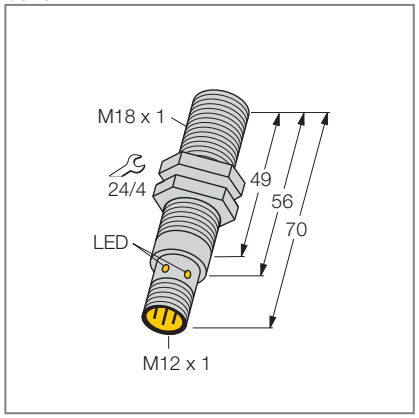


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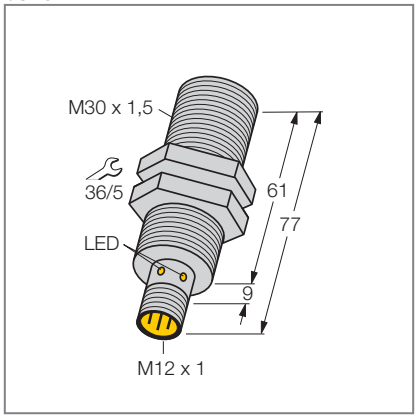


Dimension drawings

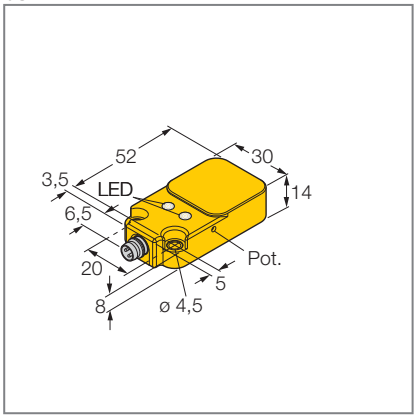
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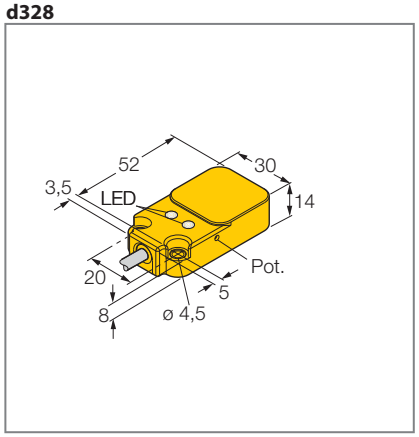
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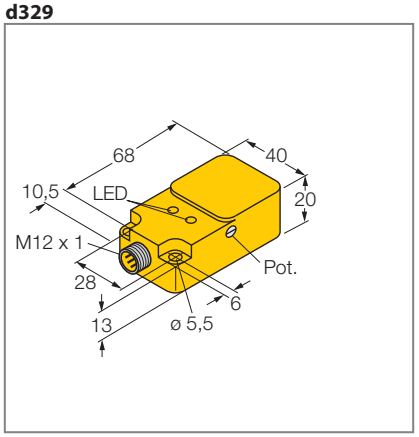
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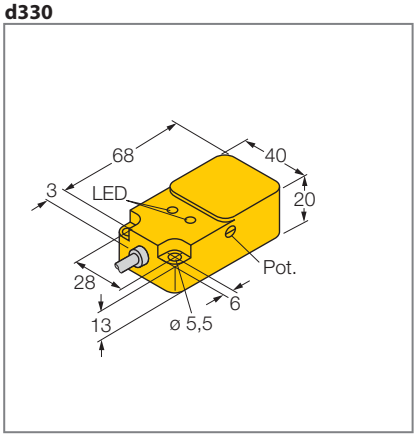
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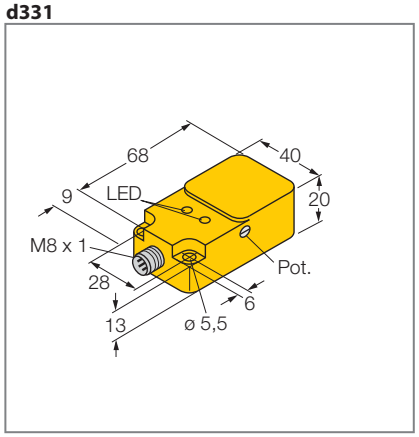
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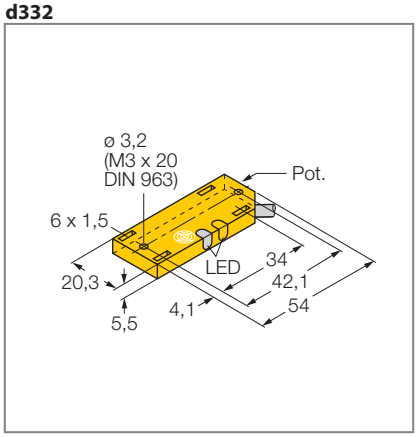
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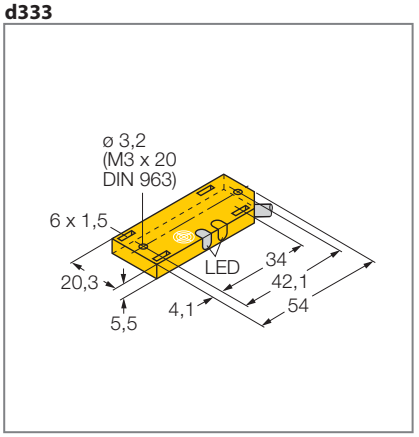
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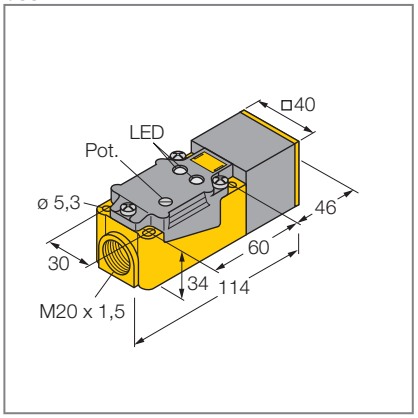


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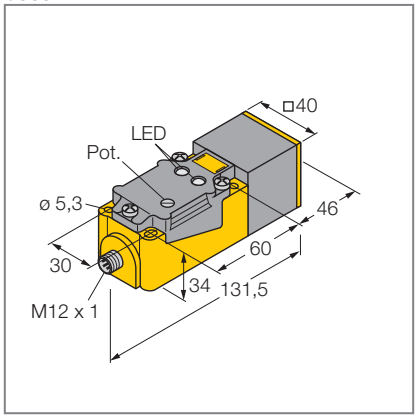


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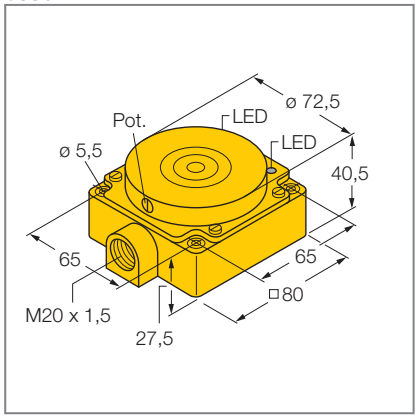
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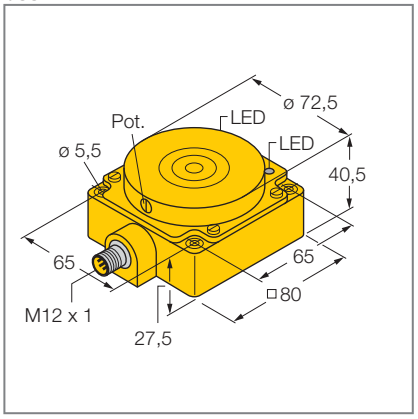
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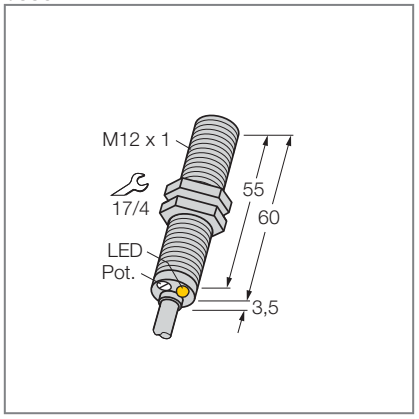
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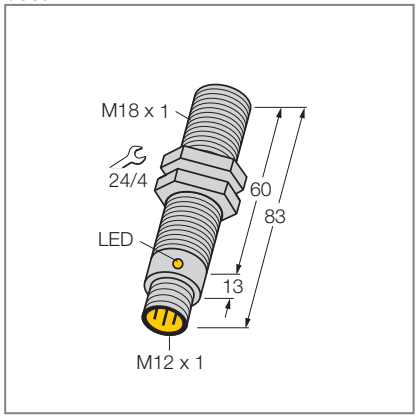
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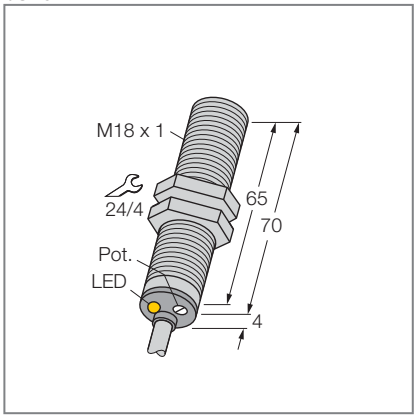
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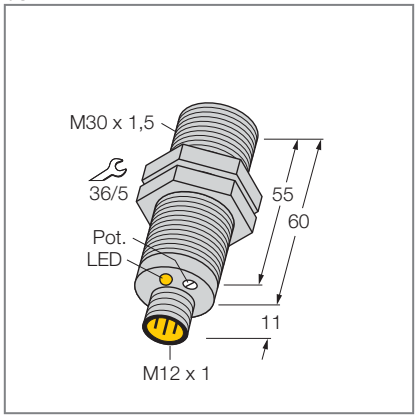
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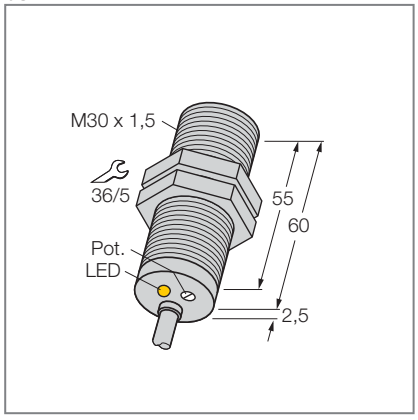
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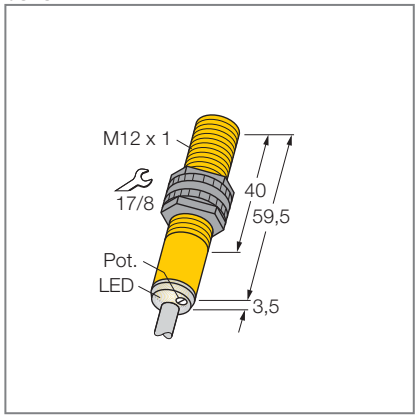


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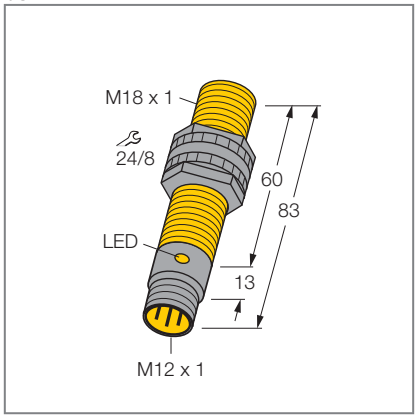


Dimension drawings

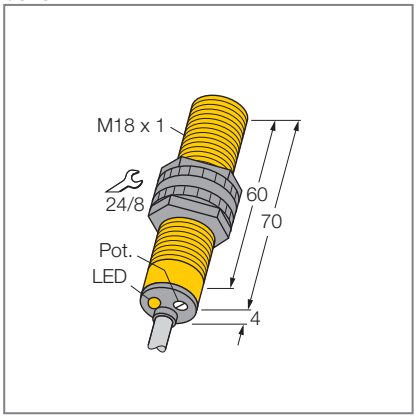
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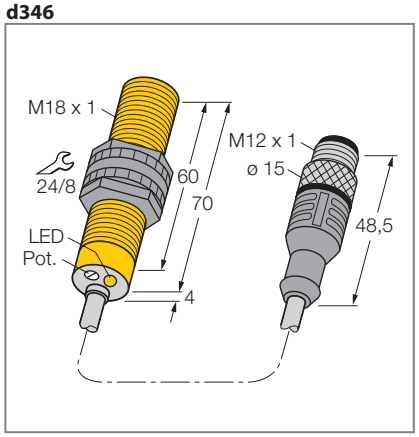
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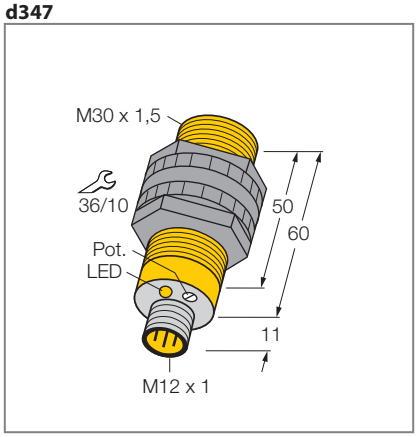
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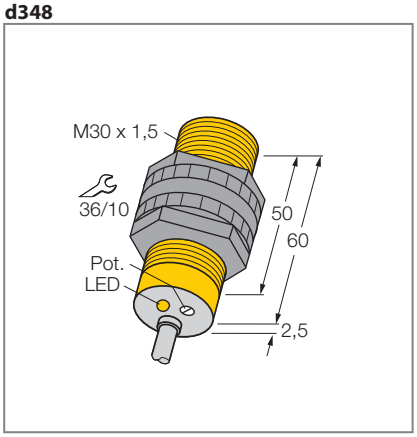
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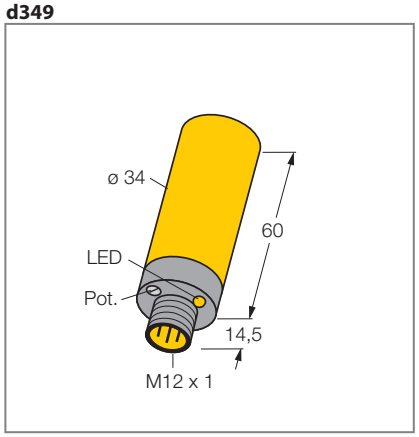
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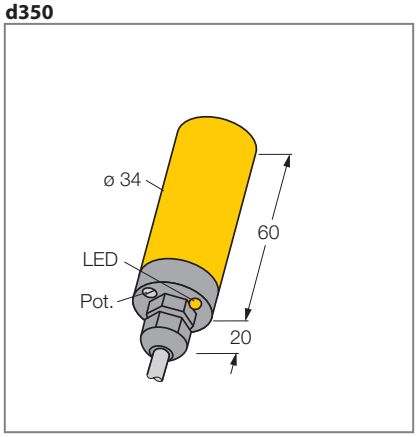
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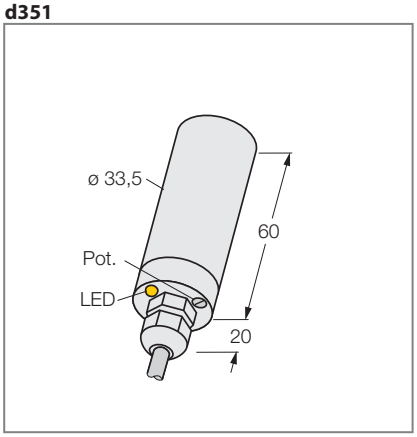
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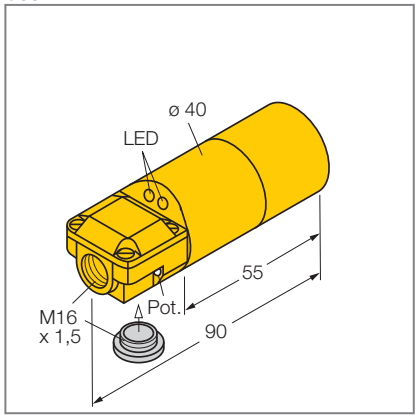


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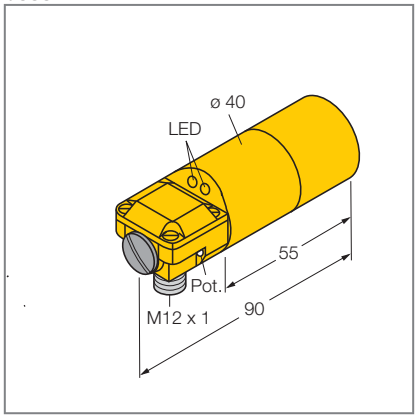


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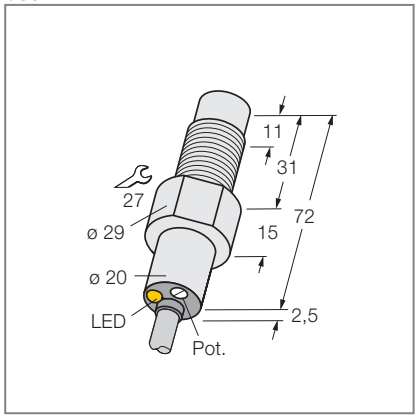
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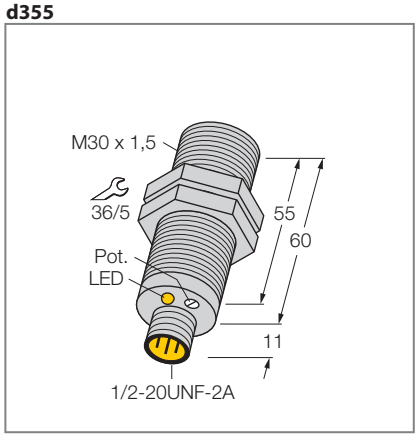
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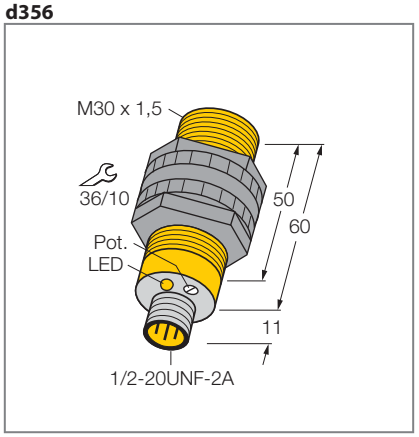
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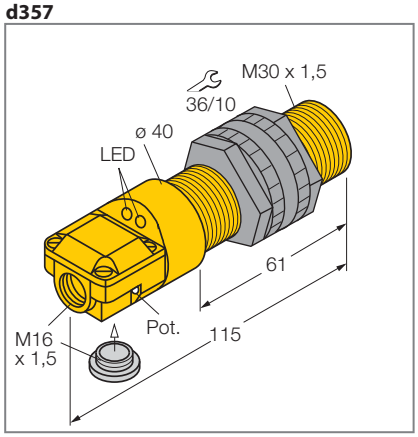
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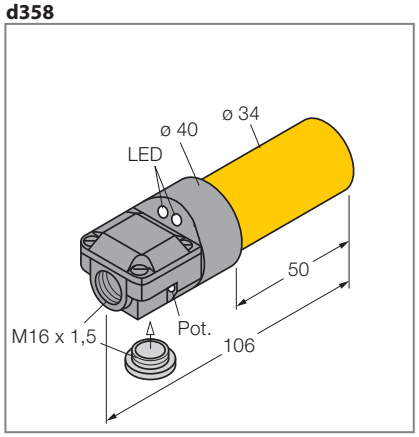
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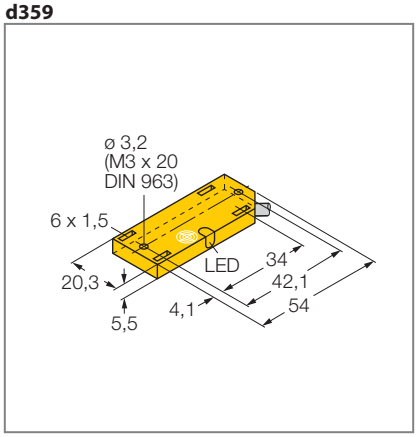
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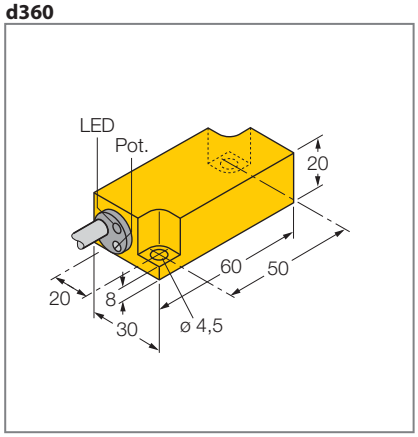
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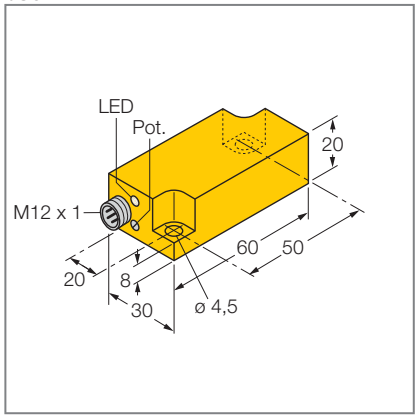


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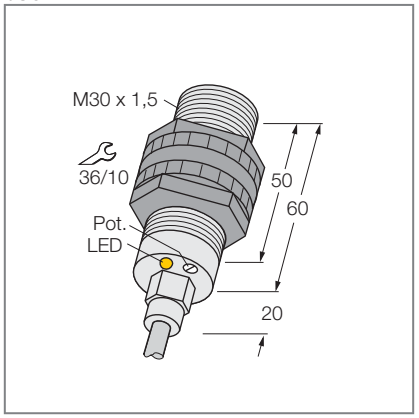


Dimension drawings

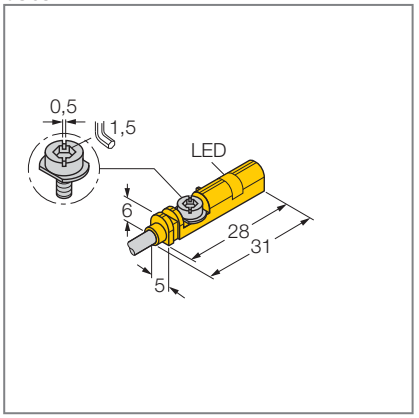
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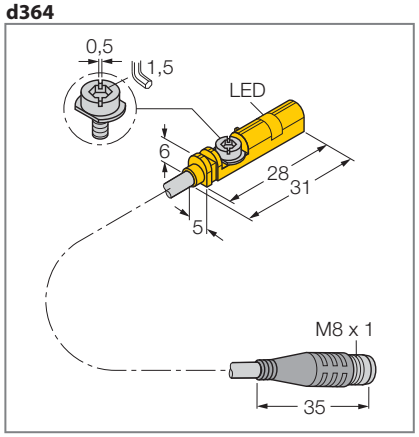
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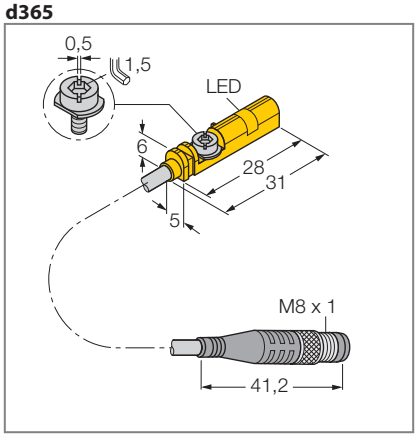
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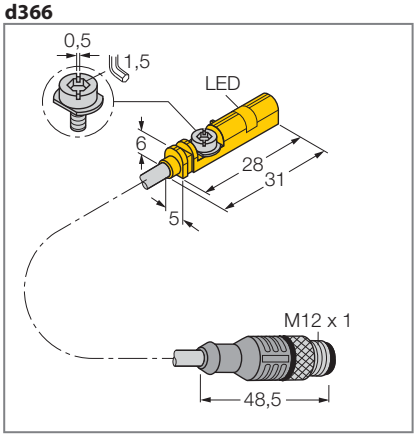
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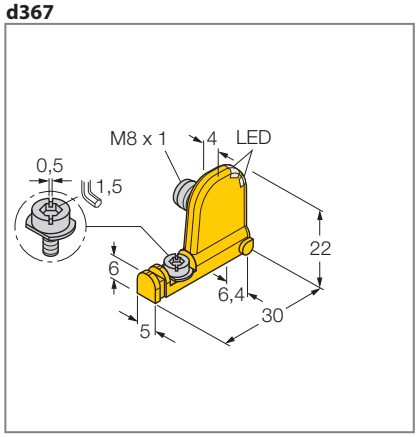
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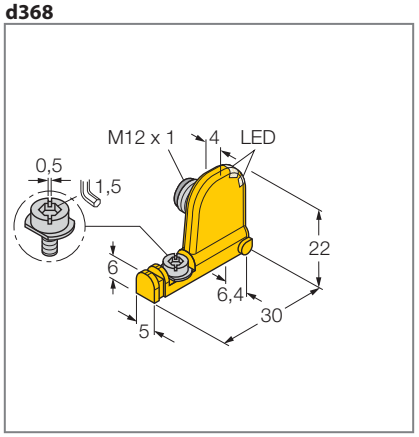
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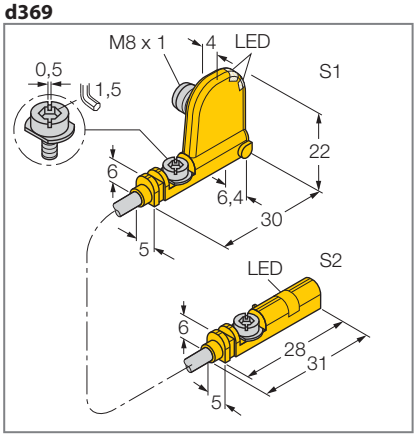
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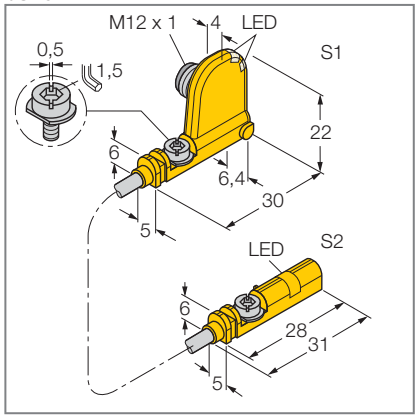


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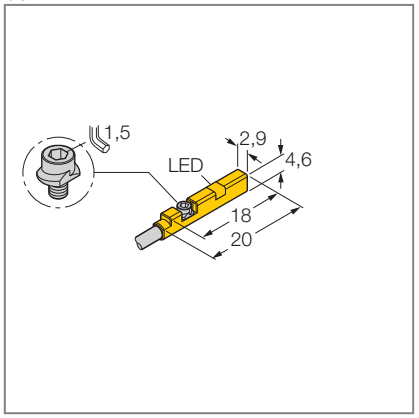


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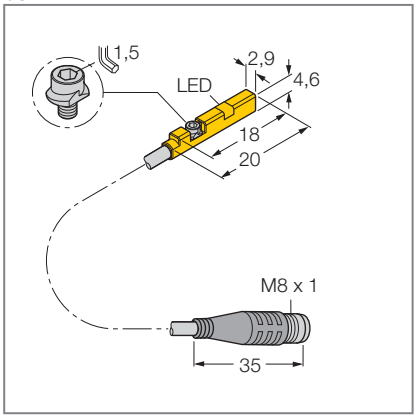
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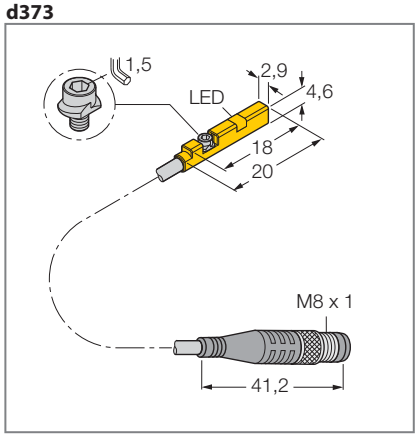
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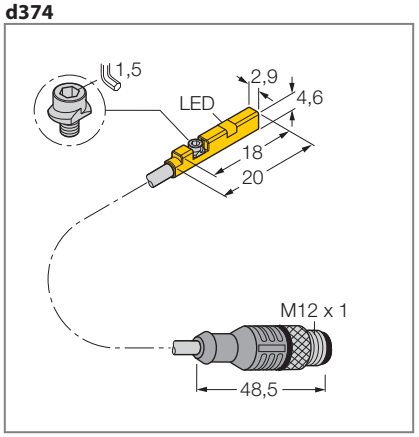
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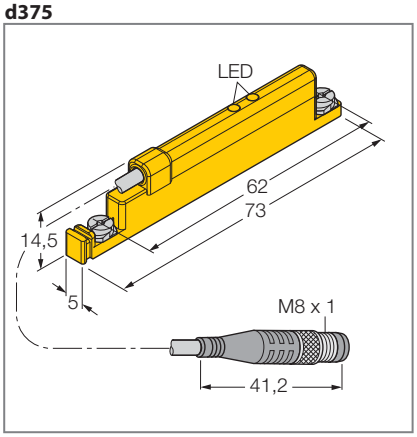
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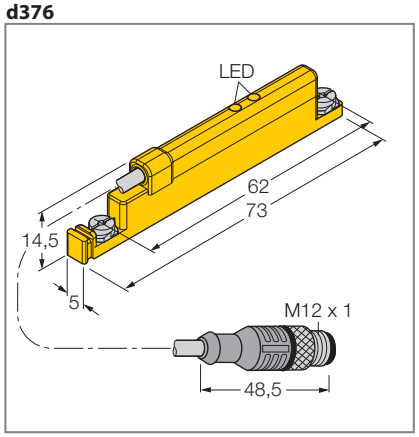
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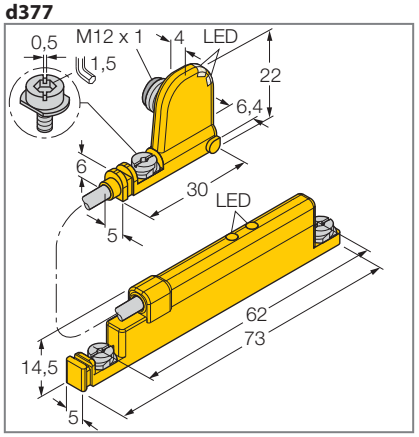
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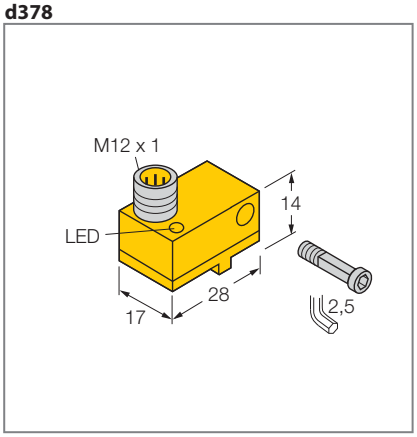
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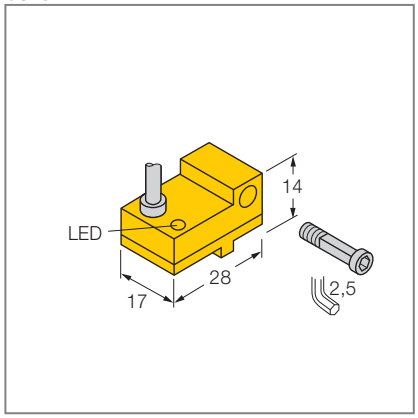


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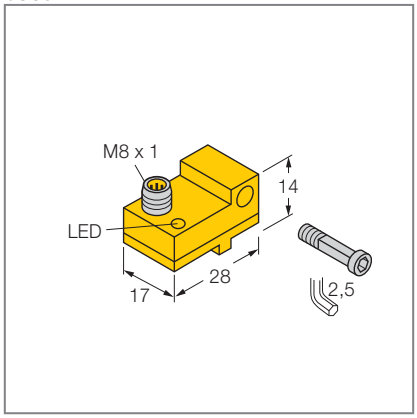


Dimension drawings

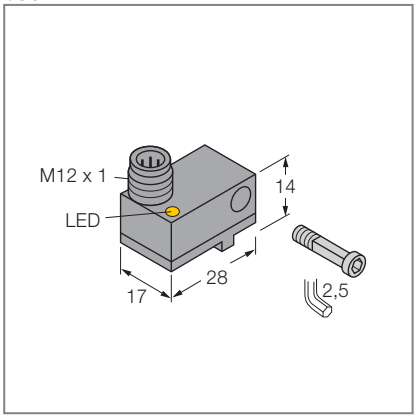
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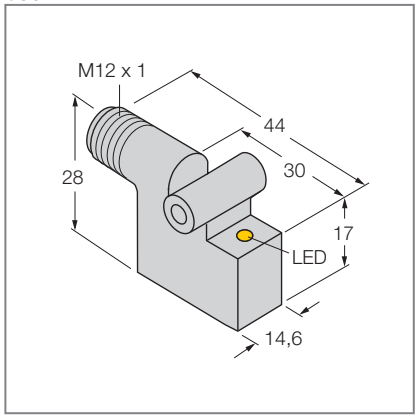
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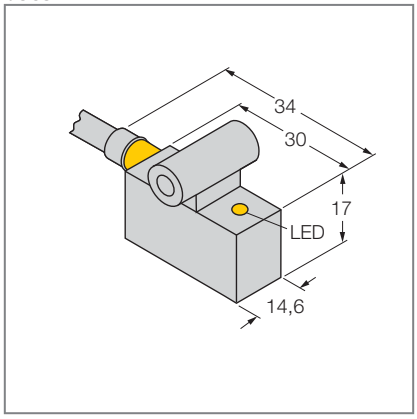
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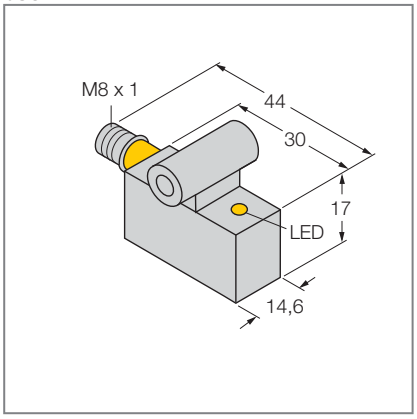
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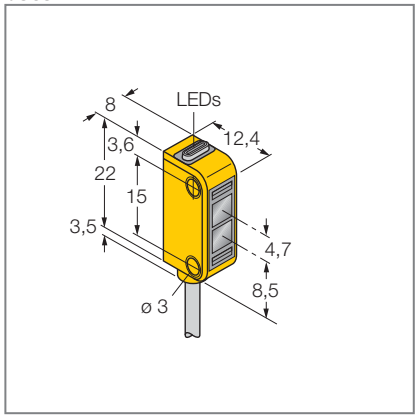
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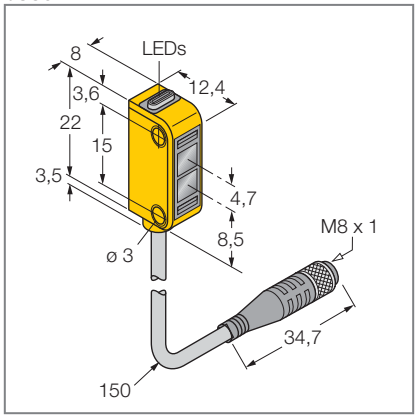
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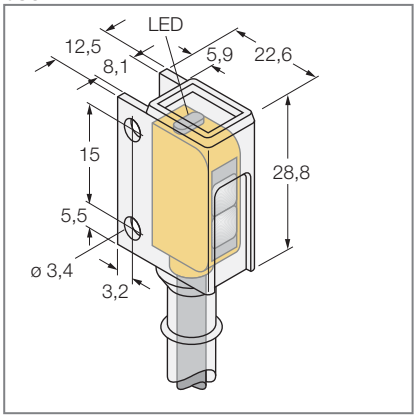
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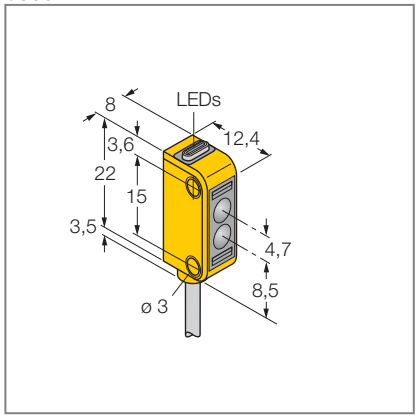


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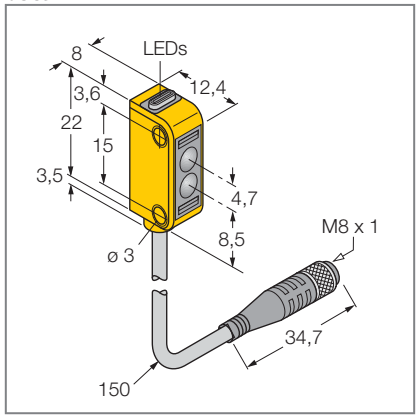


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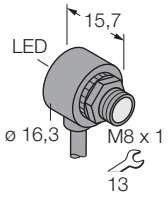
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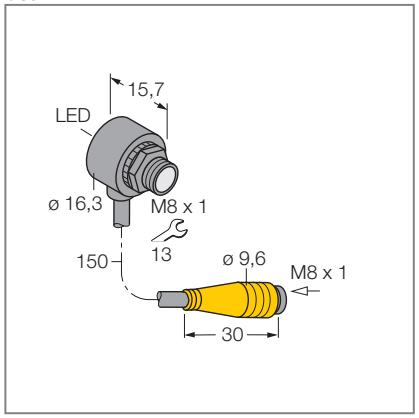
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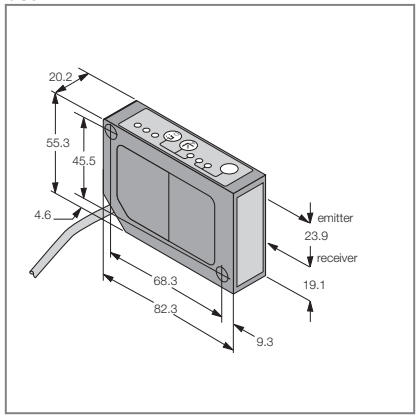
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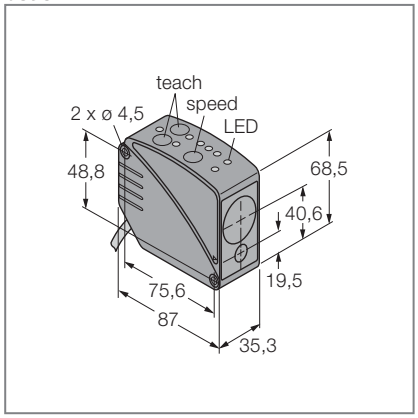
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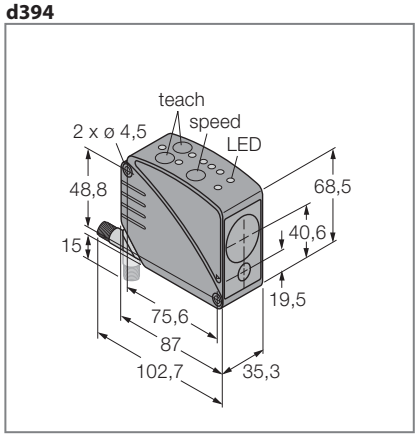
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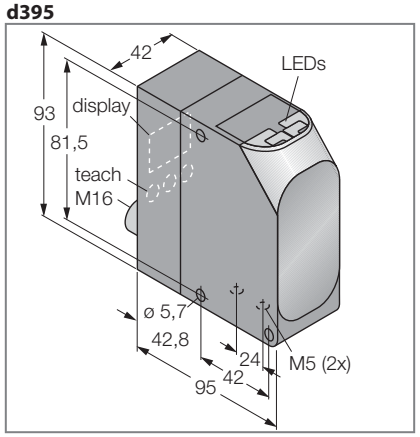
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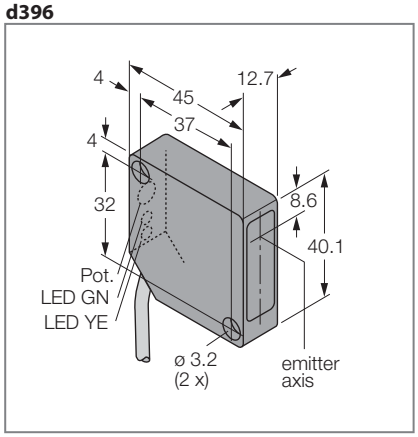
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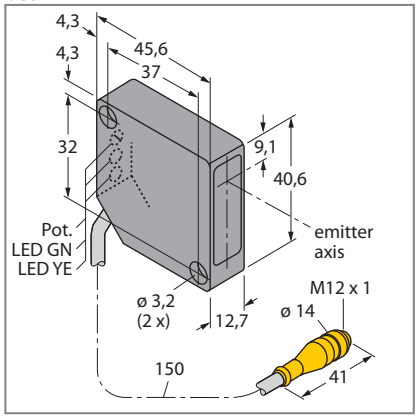


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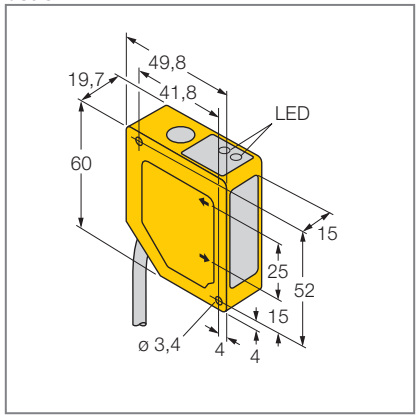


Dimension drawings

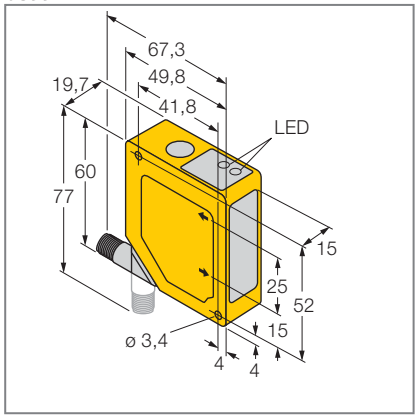
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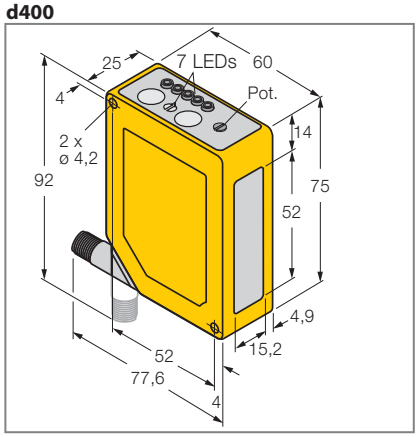
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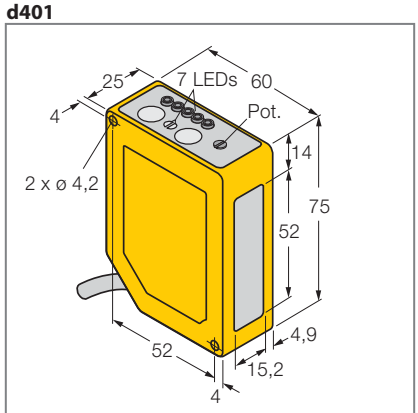
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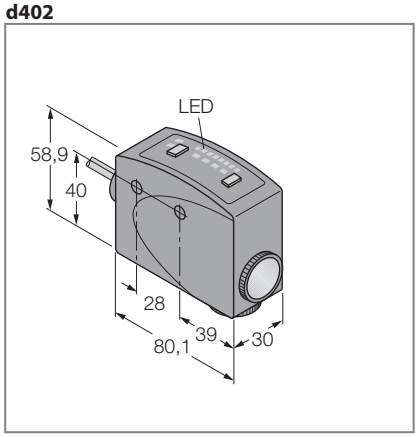
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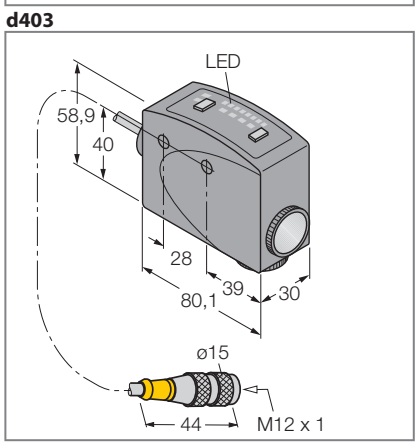
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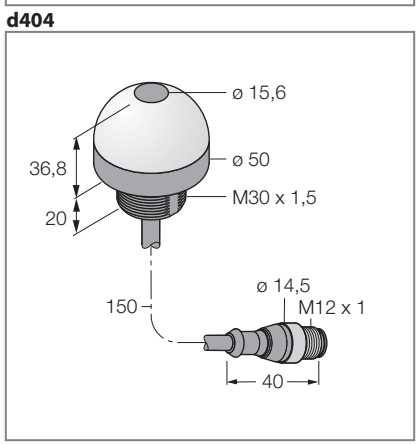
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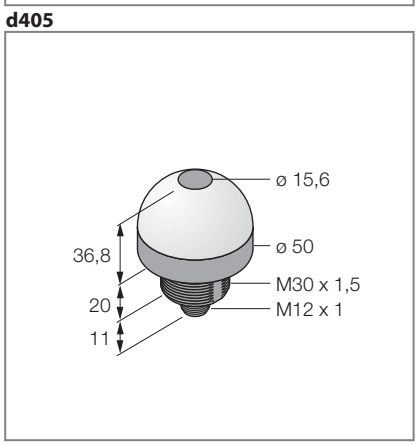
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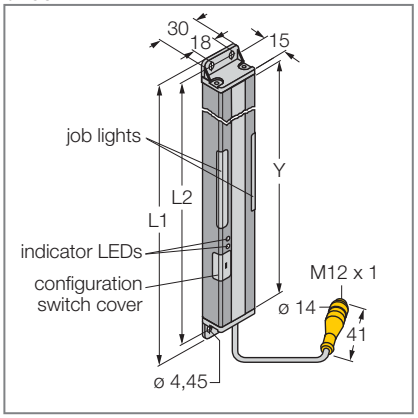


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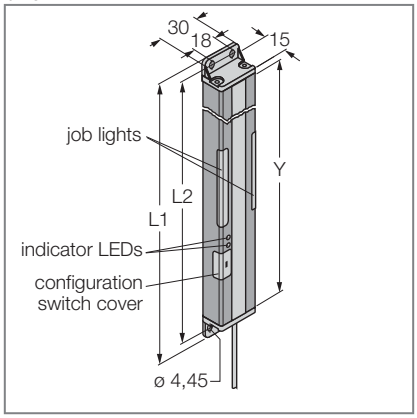


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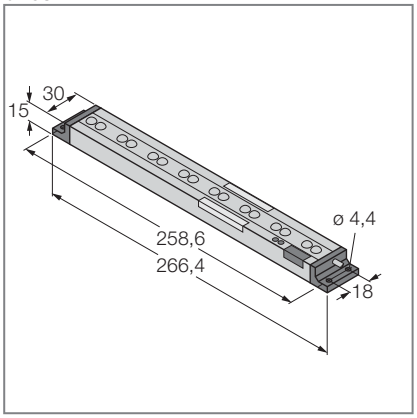
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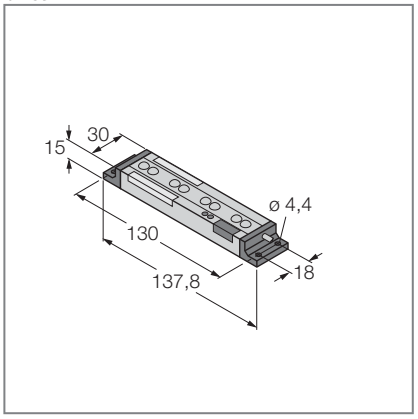
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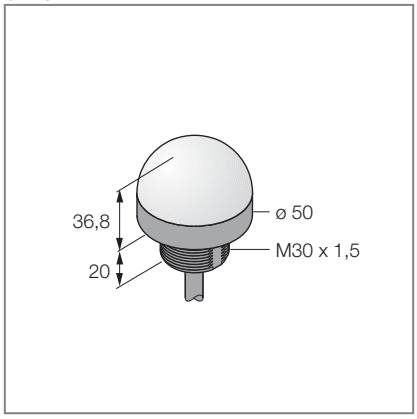
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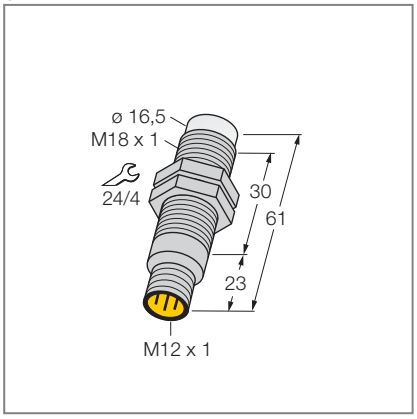
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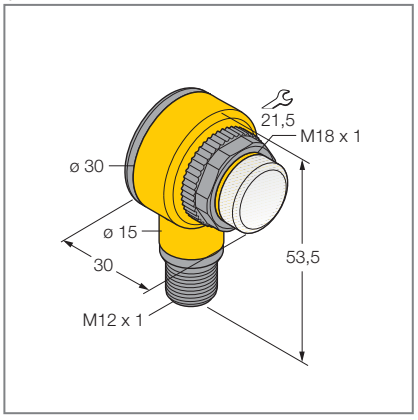
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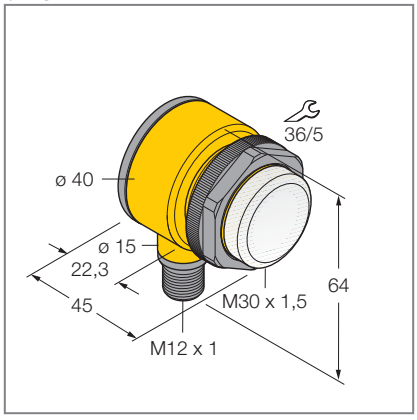
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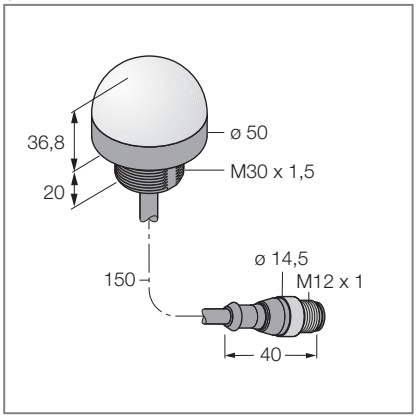
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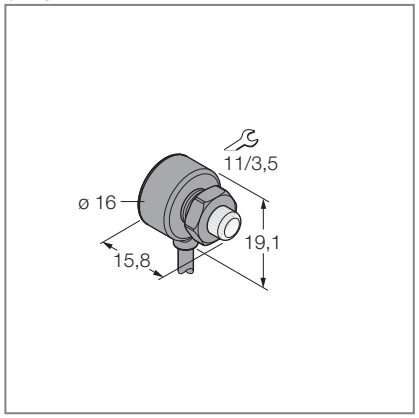


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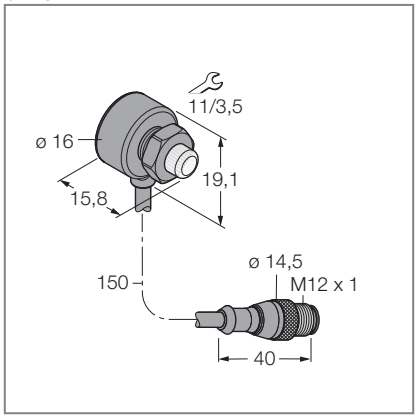


Dimension drawings

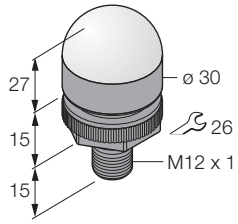
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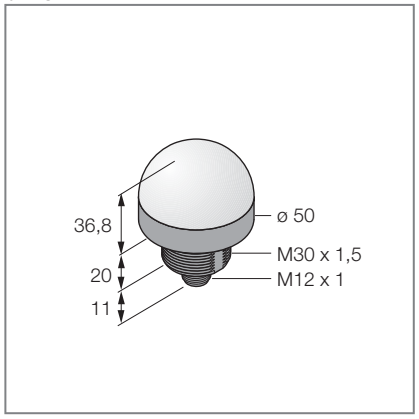
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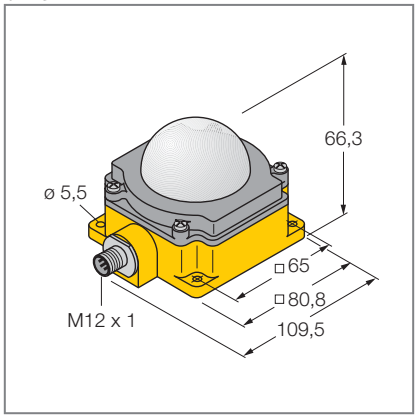
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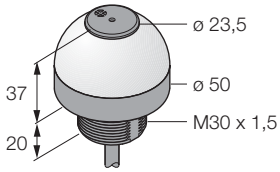
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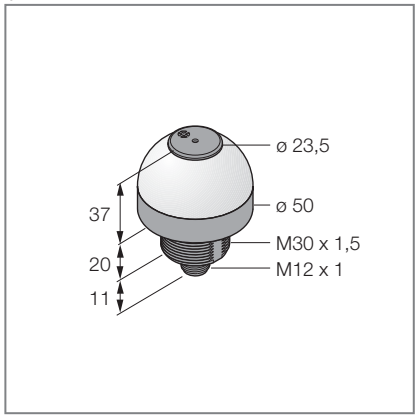
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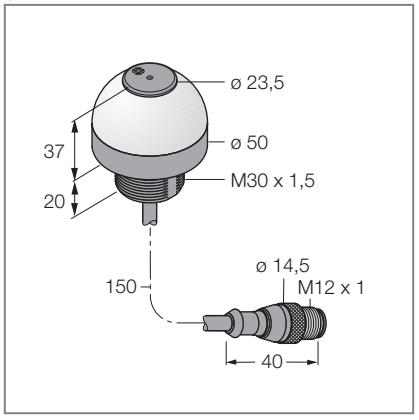
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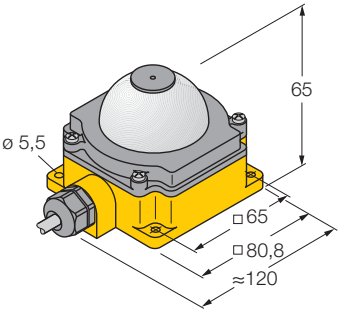
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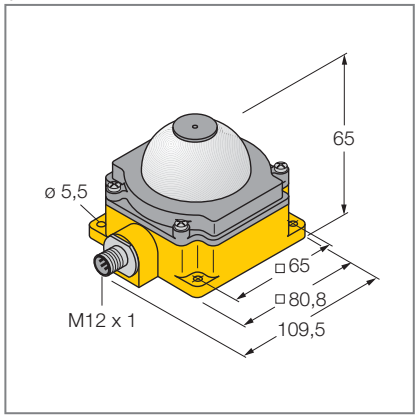


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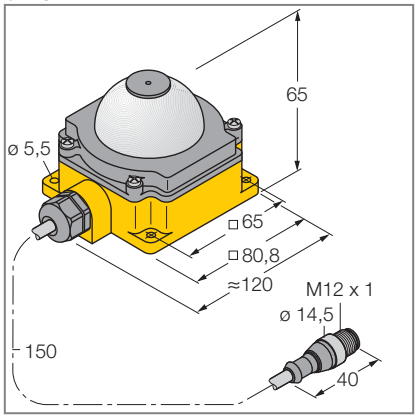


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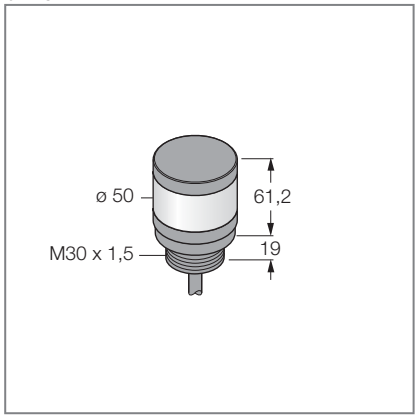
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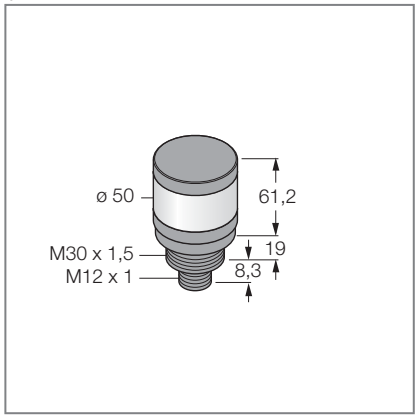
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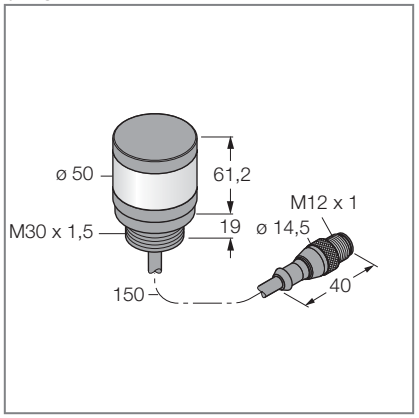
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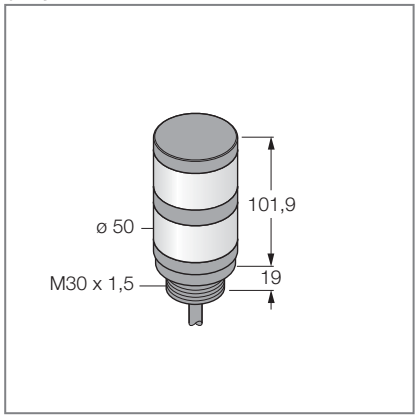
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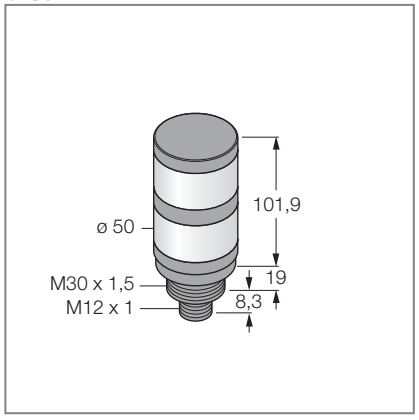
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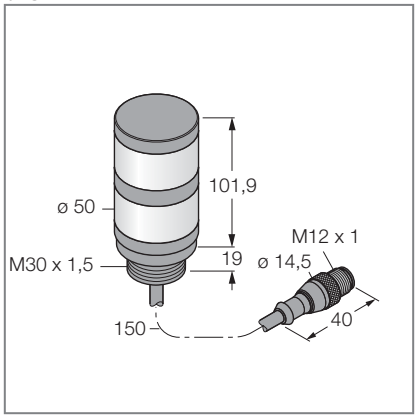
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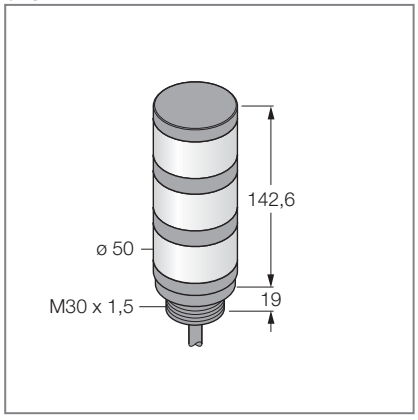
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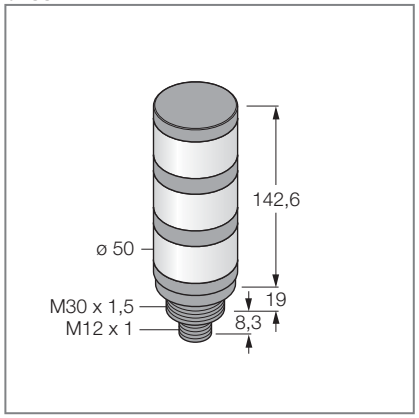


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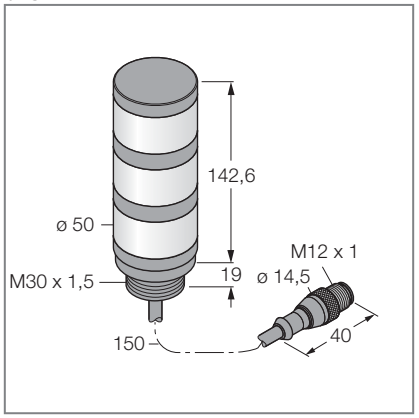


Dimension drawings

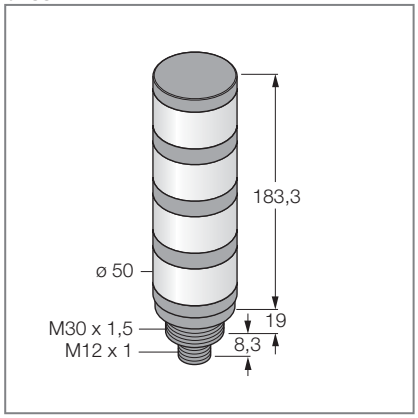
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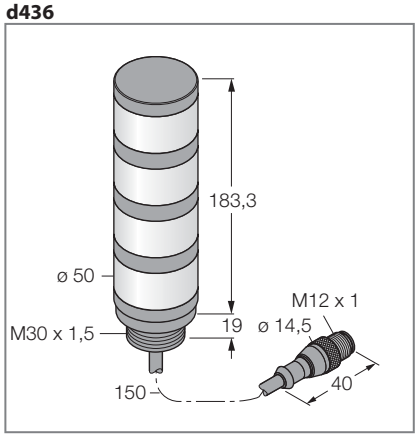
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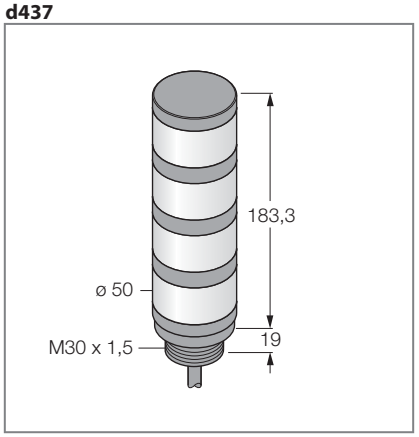
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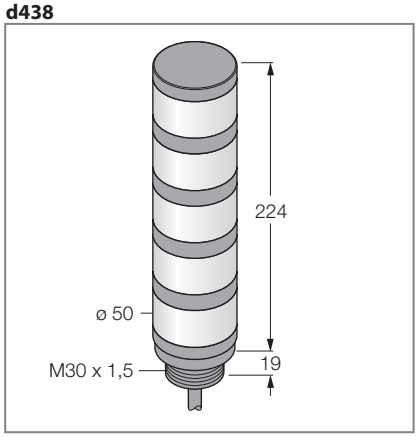
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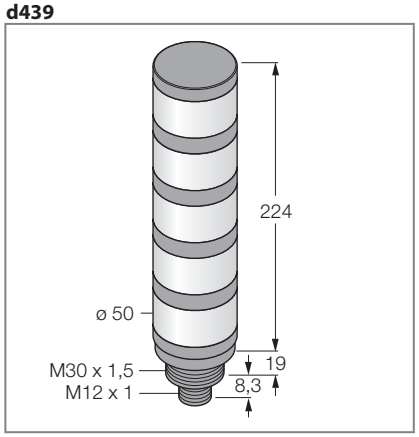
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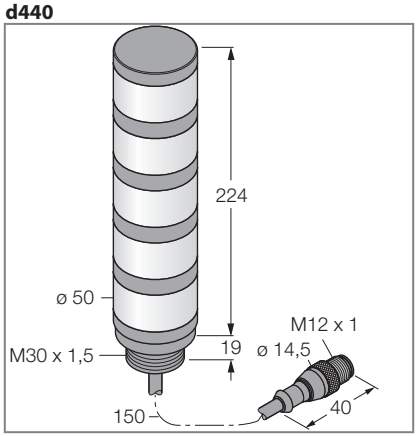
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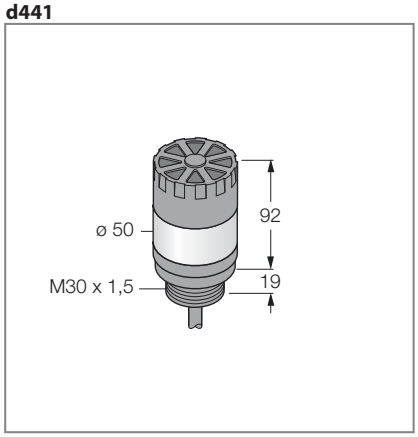
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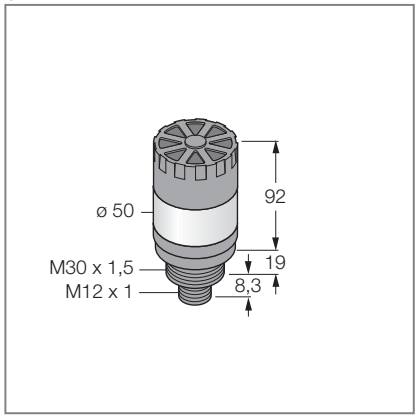


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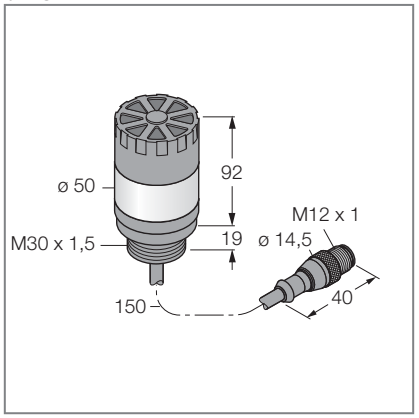


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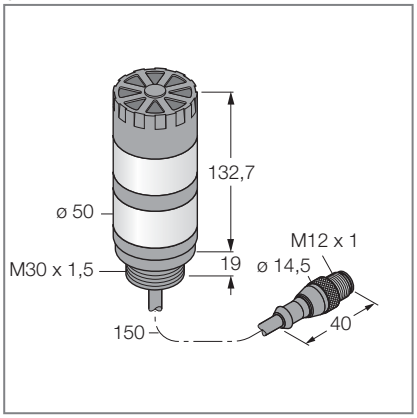
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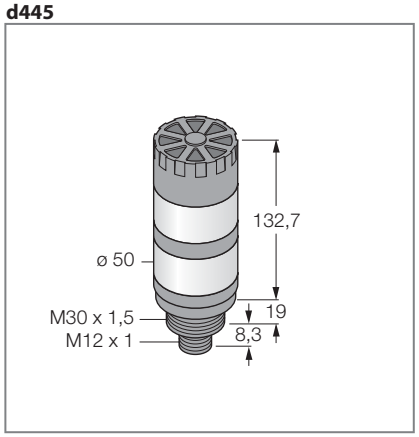
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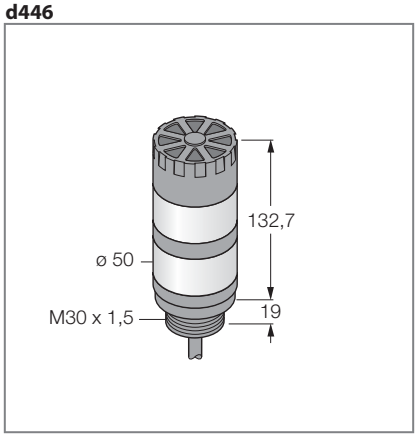
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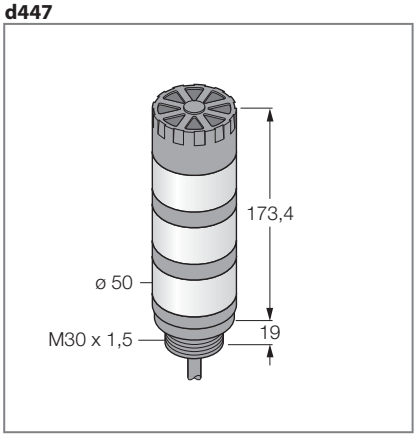
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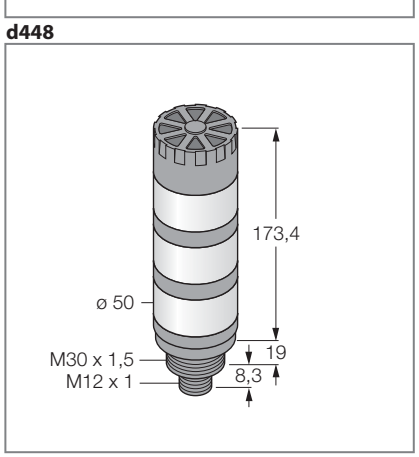
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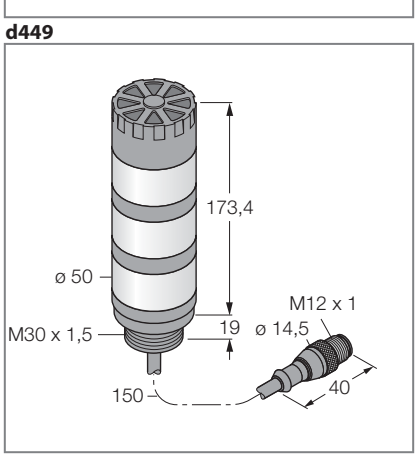
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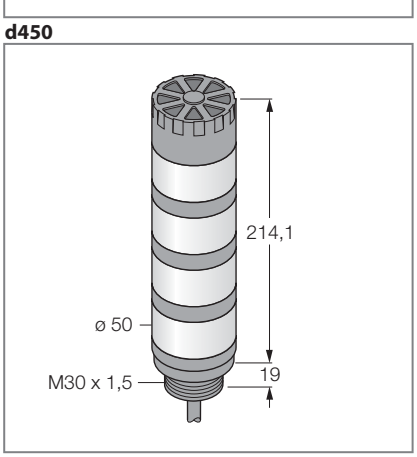
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d449

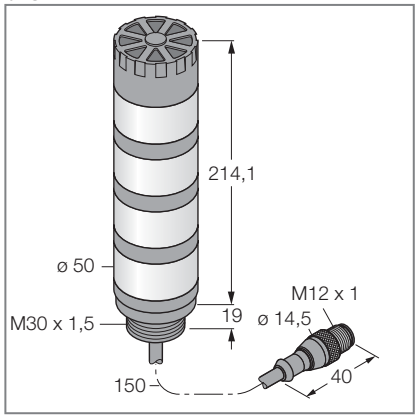


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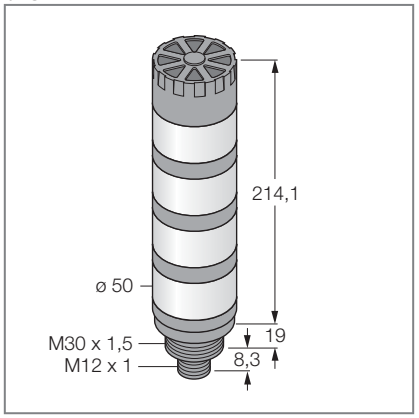


Dimension drawings

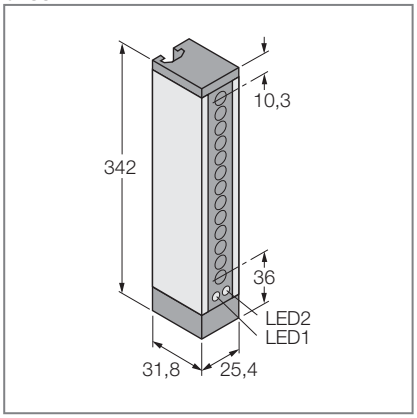
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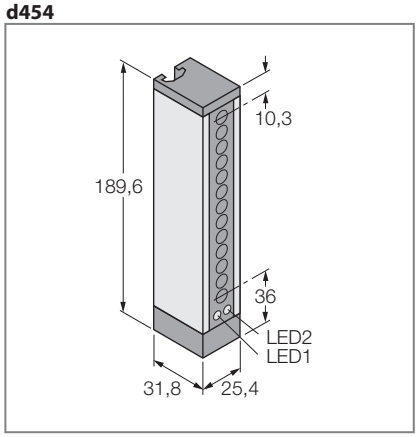
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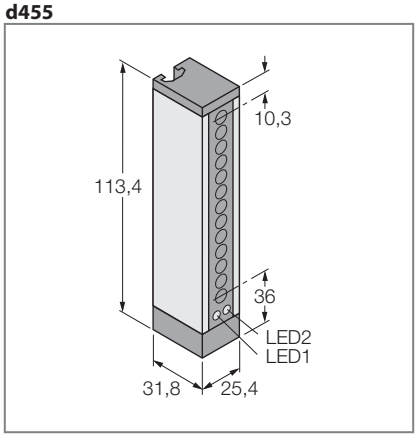
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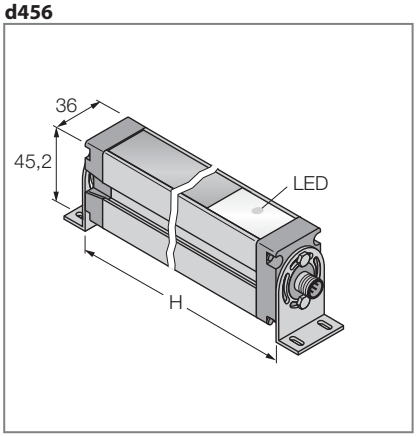
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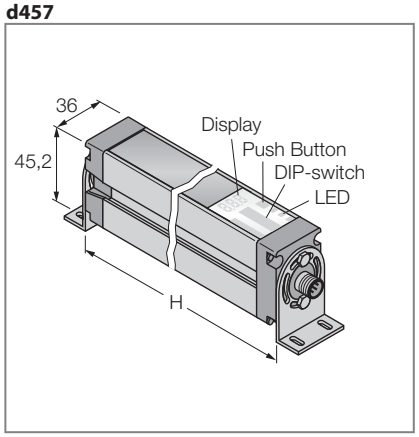
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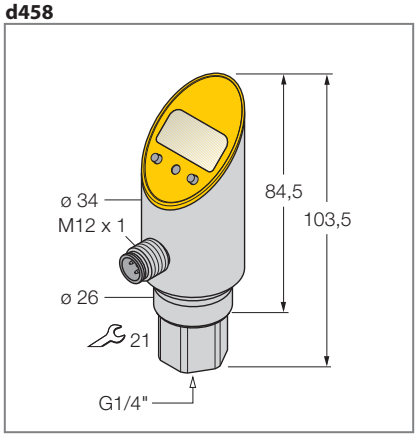
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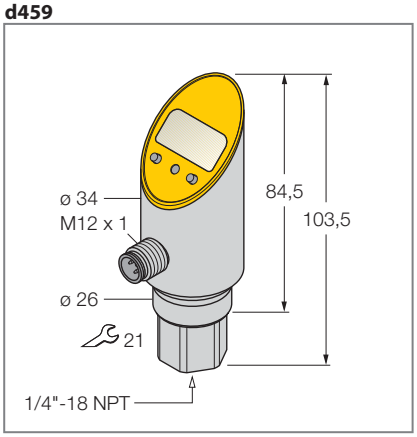
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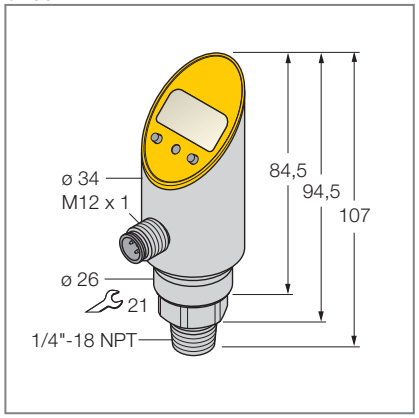


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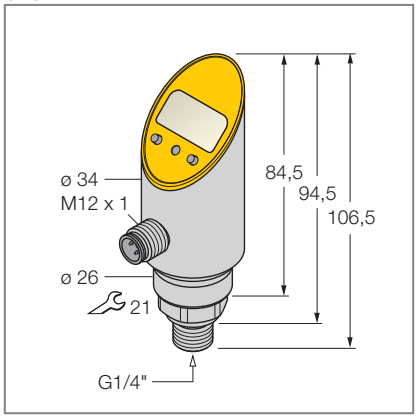


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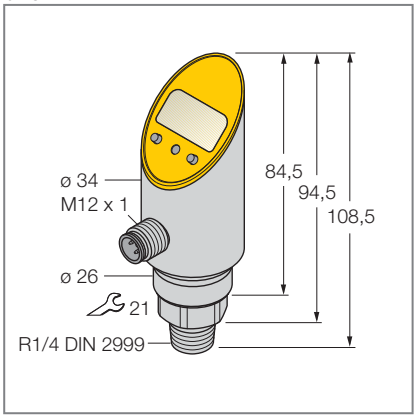
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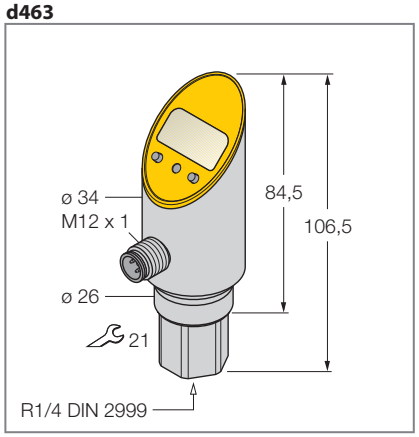
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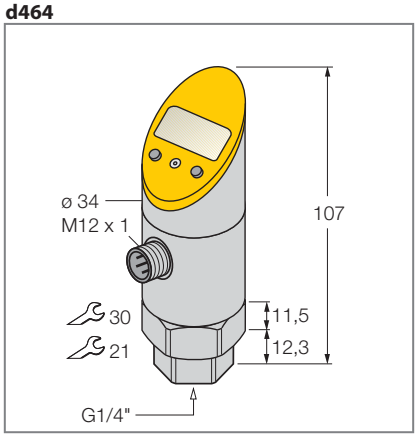
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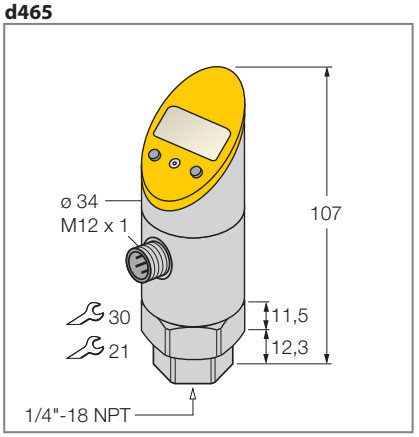
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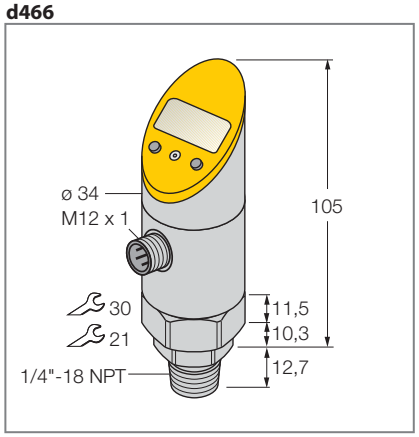
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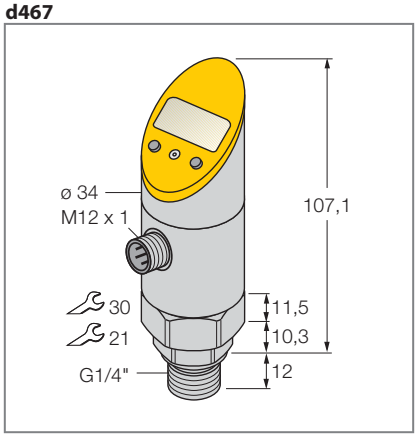
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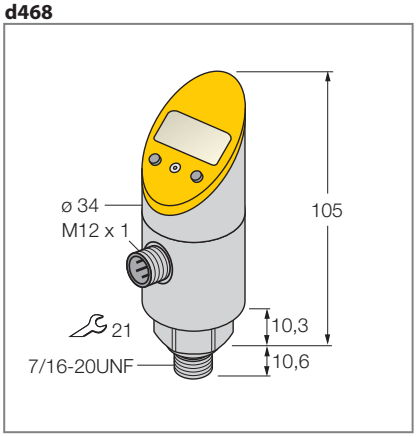
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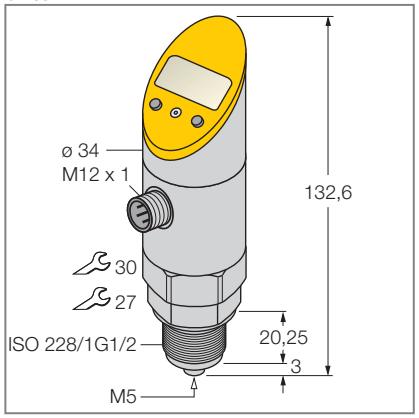


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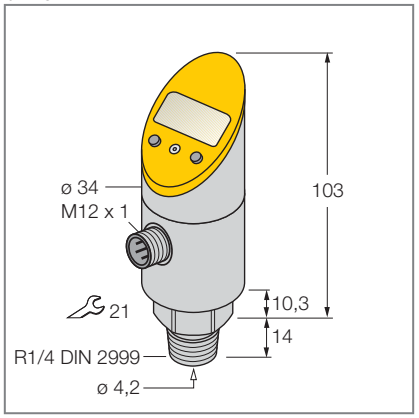


Dimension drawings

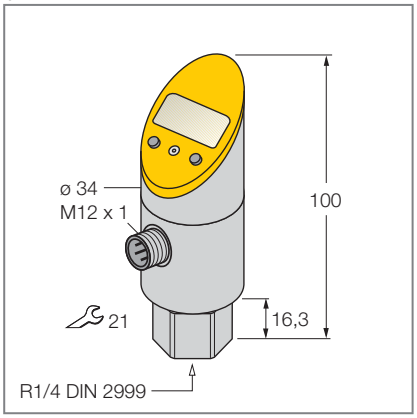
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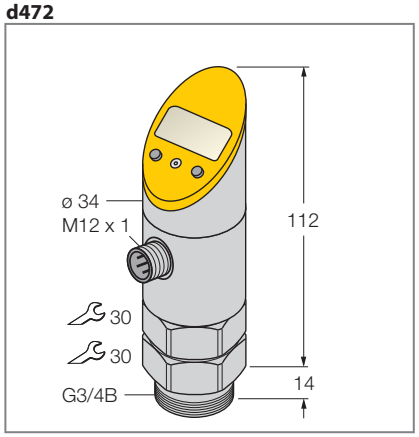
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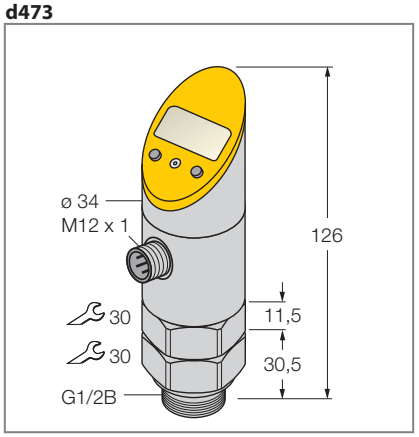
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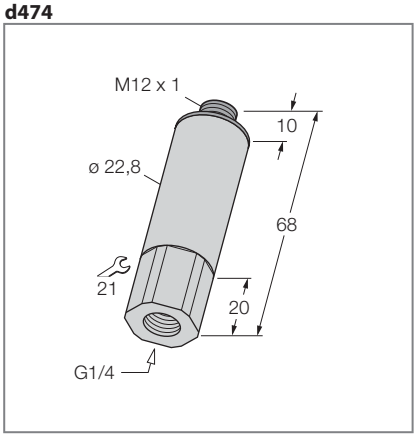
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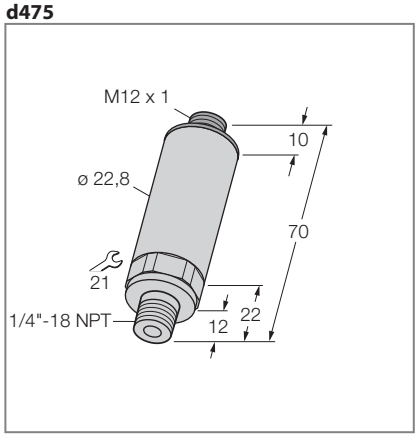
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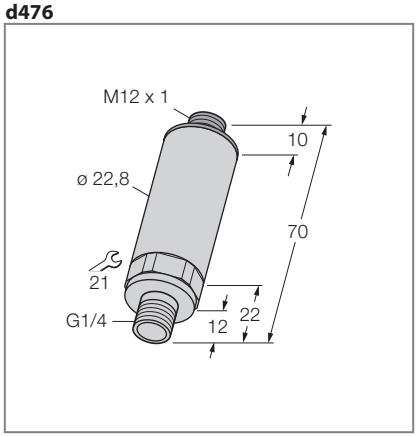
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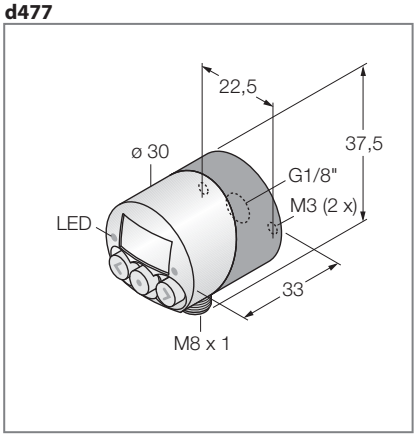
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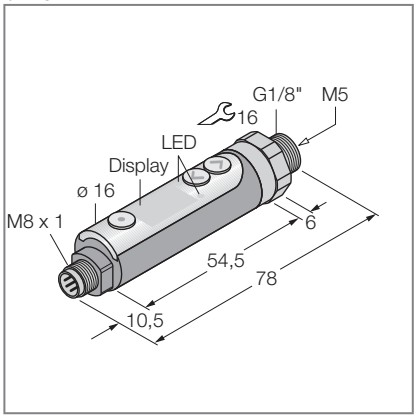
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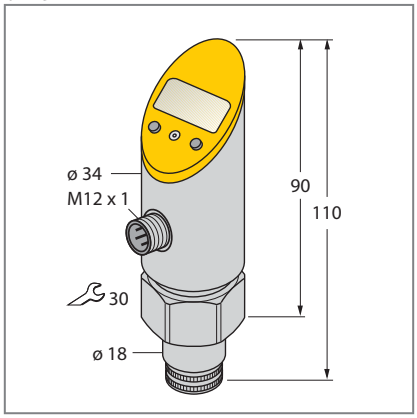
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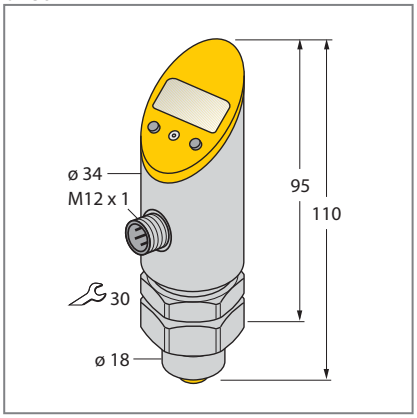
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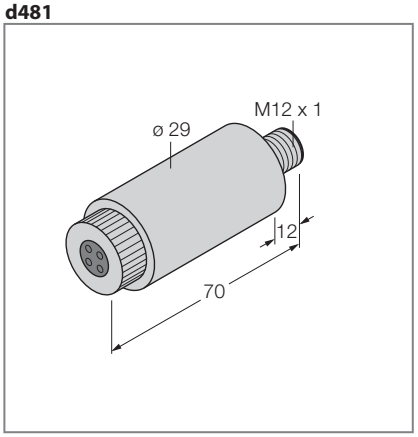
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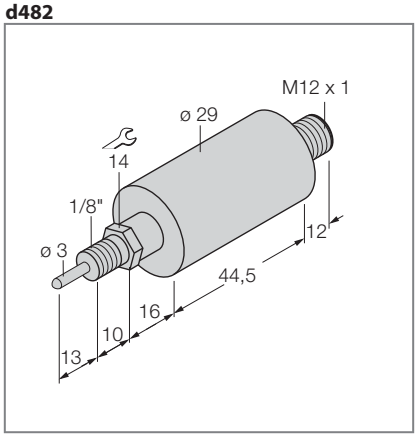
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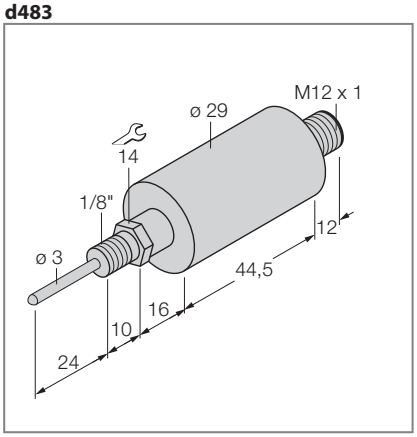
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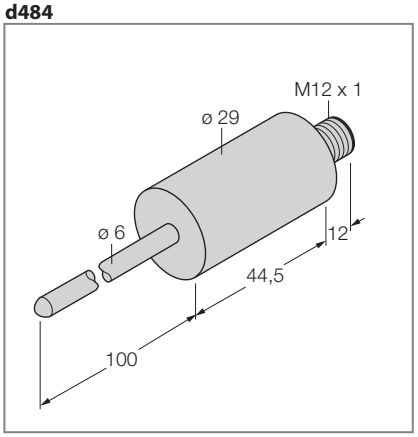
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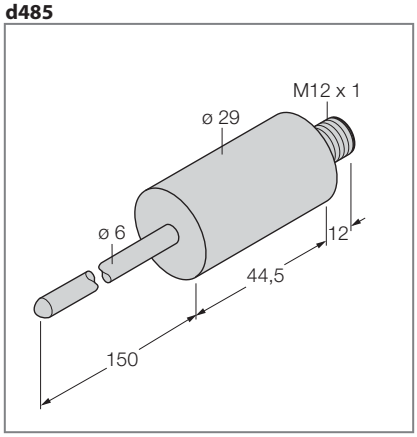
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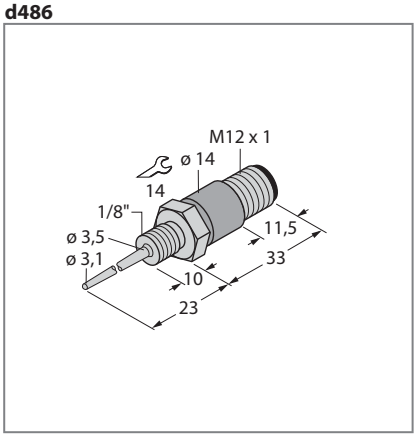
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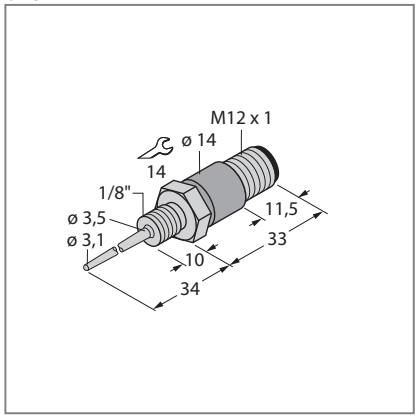


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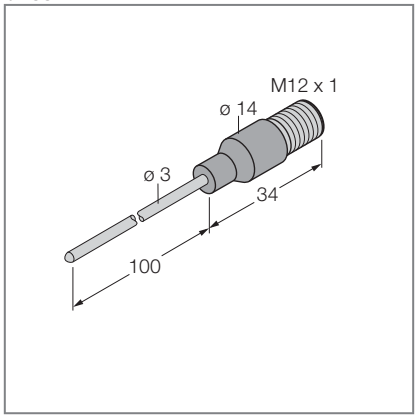


Dimension drawings

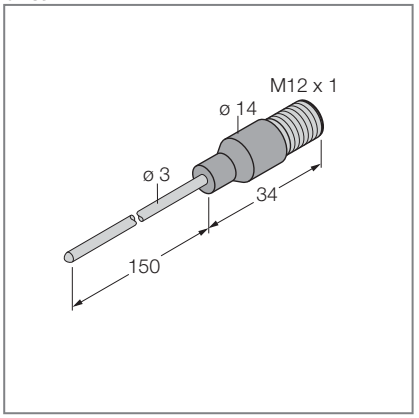
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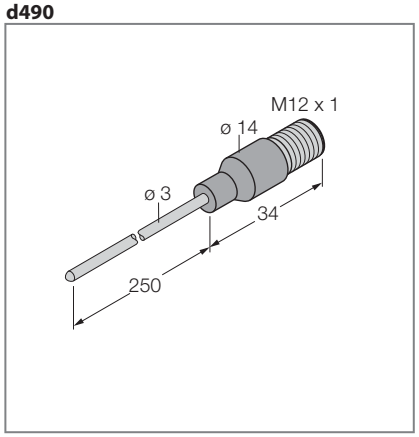
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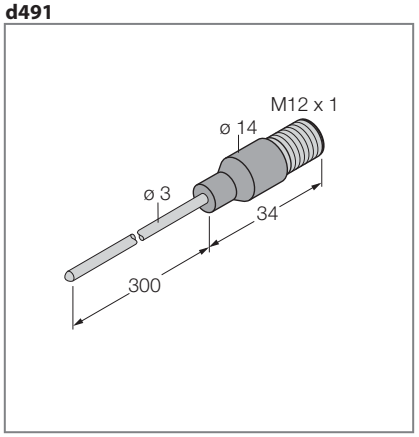
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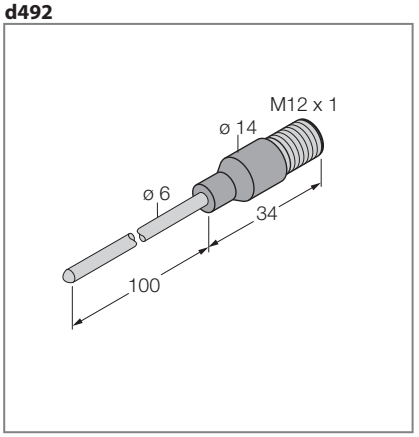
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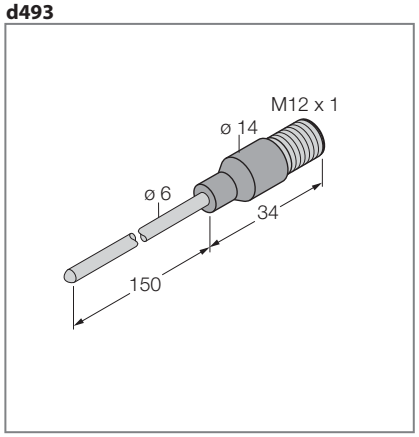
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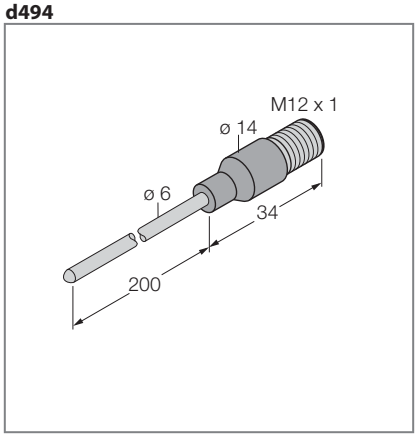
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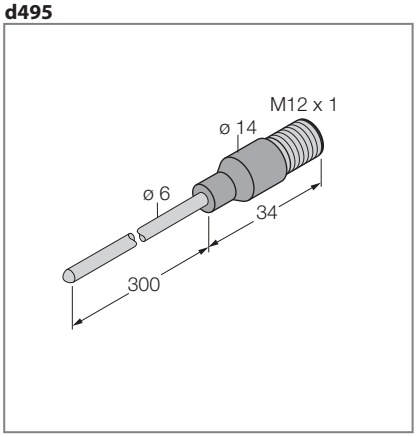
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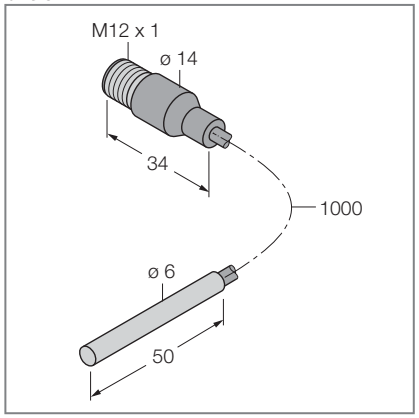


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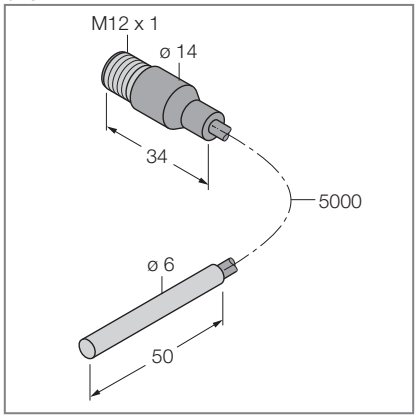


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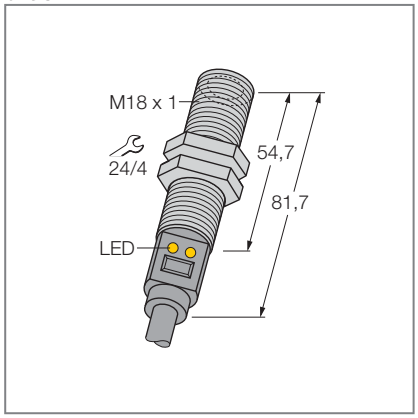
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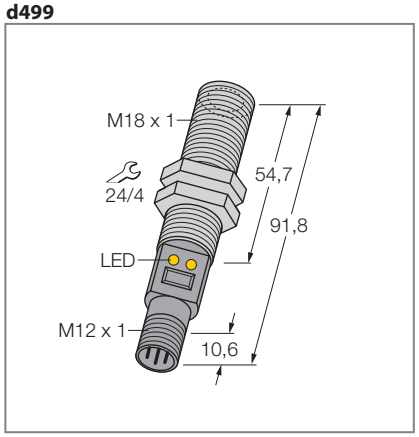
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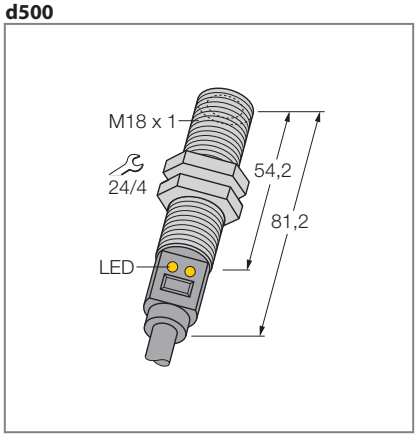
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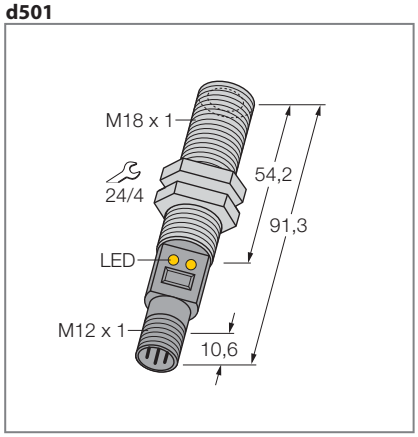
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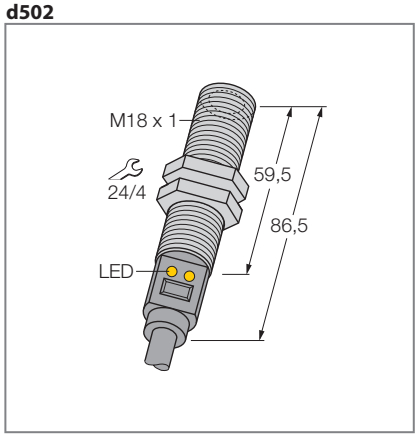
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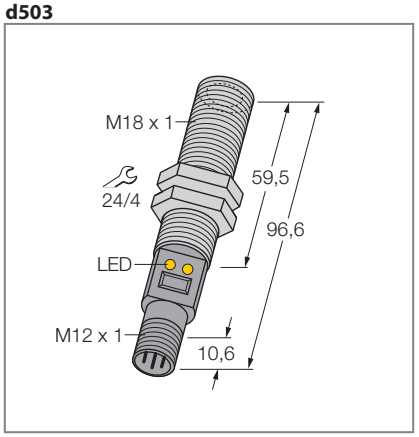
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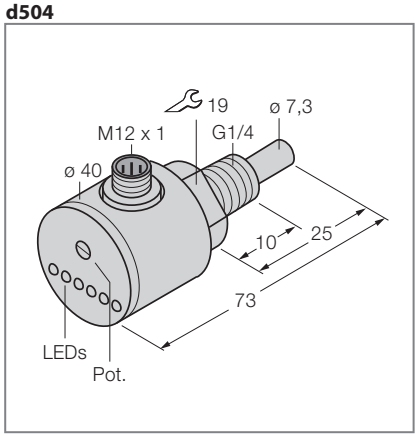
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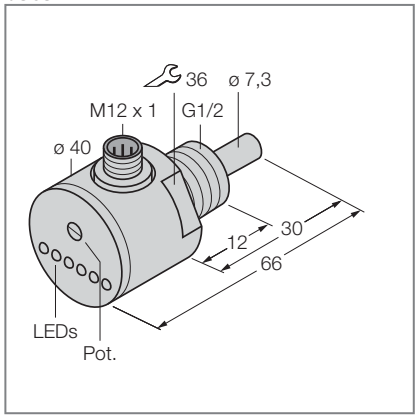


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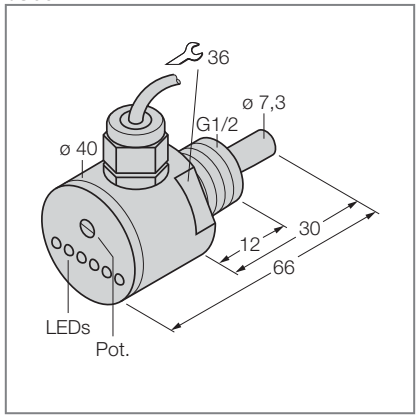


Dimension drawings

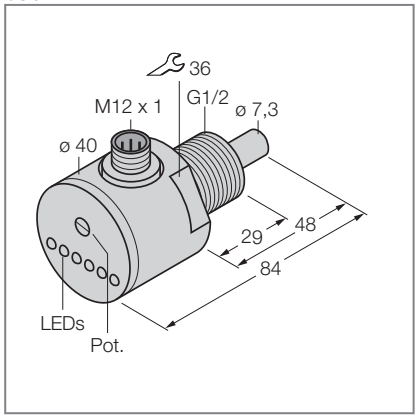
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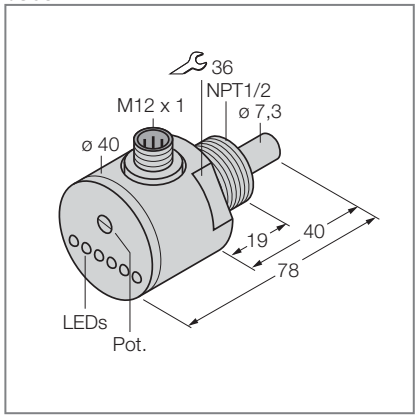
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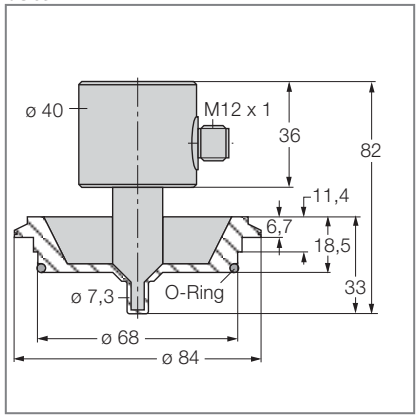
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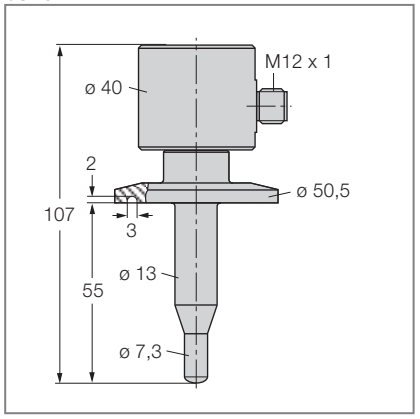
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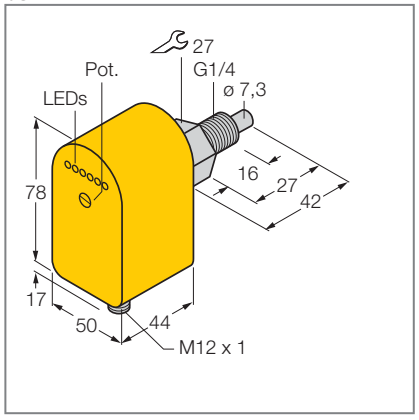
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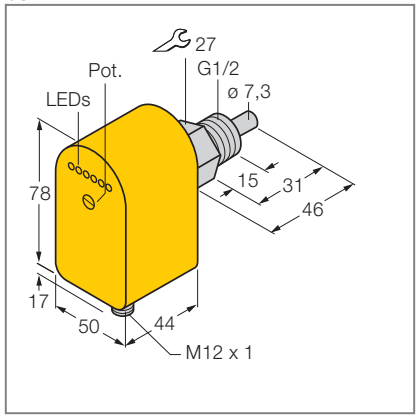
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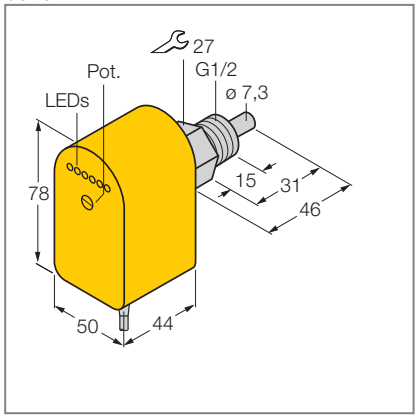
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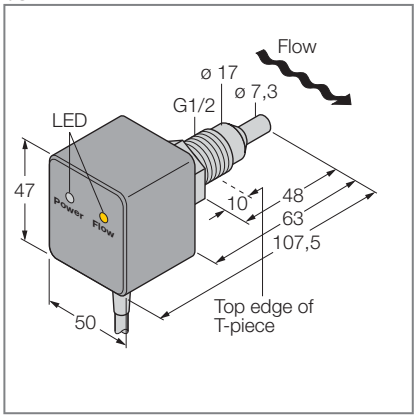


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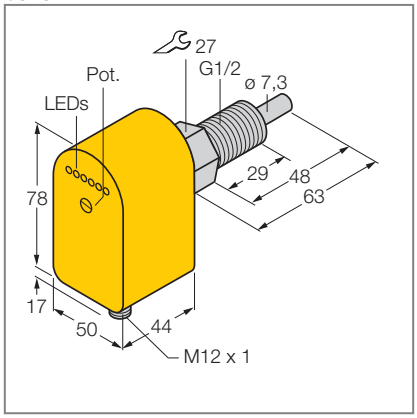


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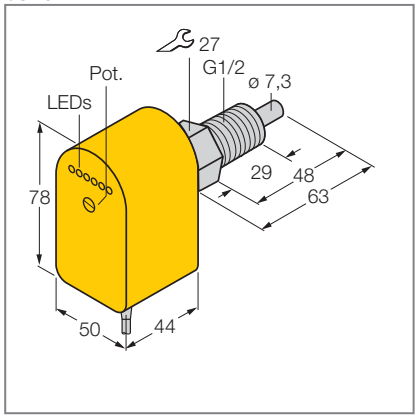
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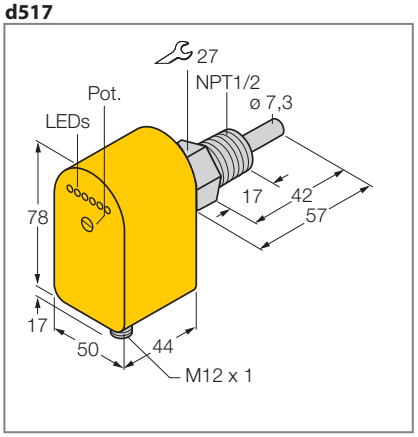
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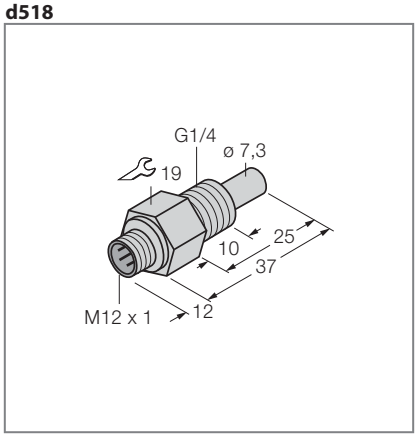
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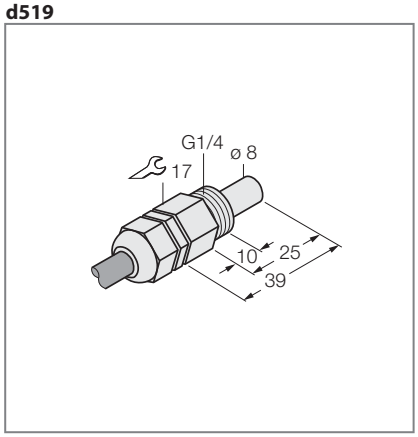
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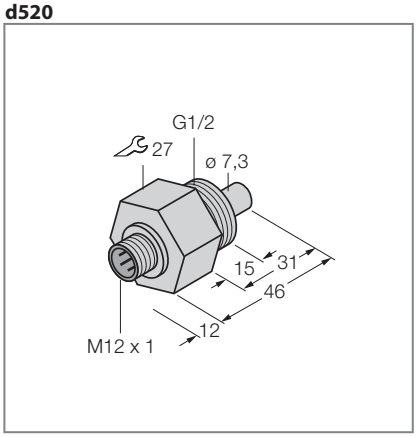
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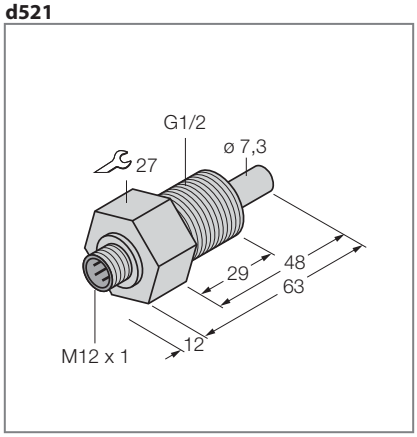
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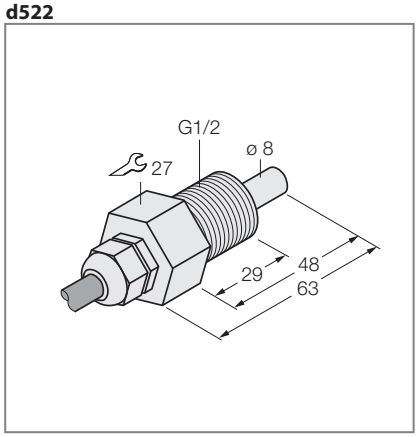
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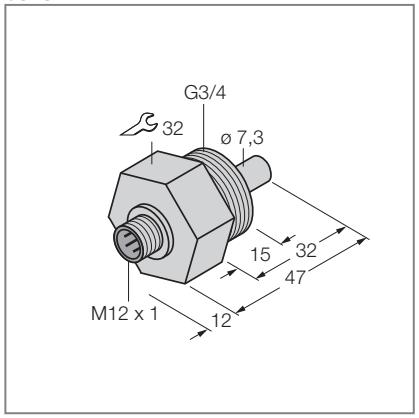


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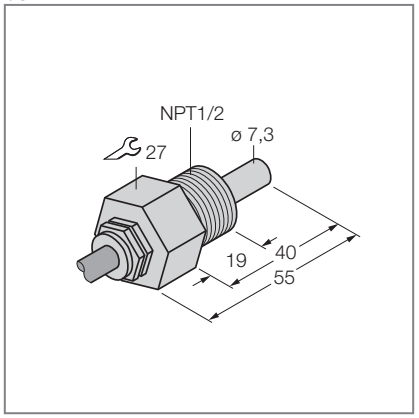


Dimension drawings

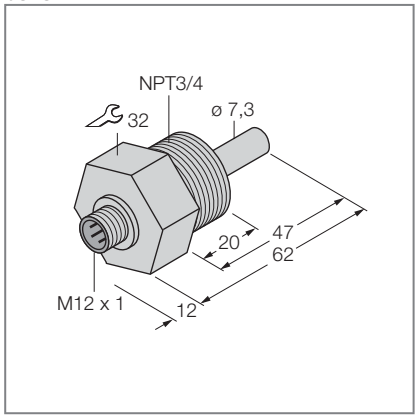
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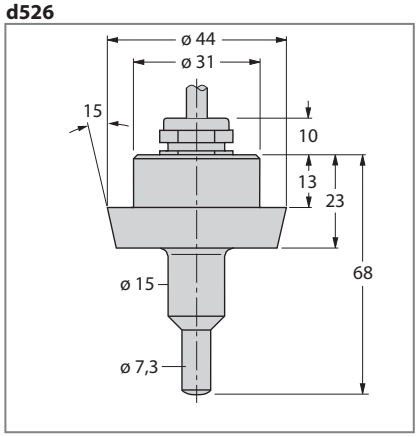
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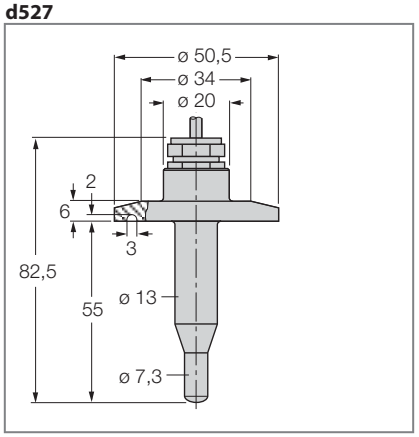
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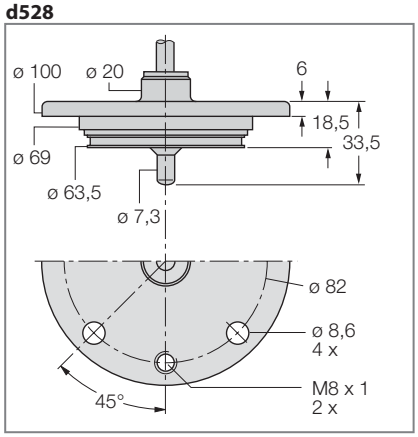
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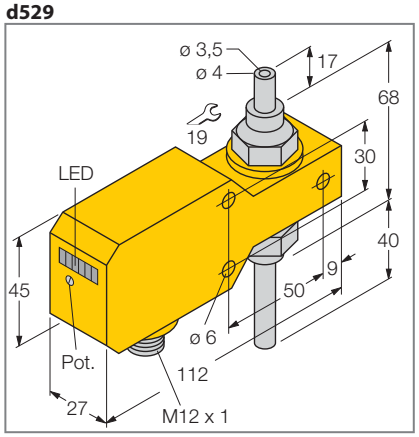
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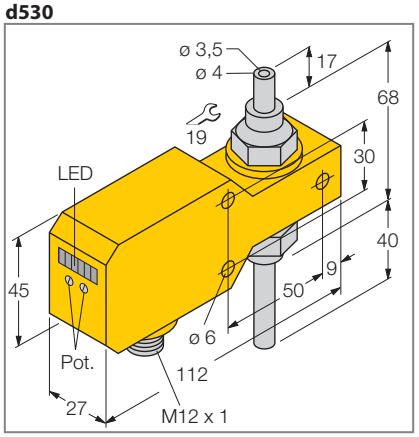
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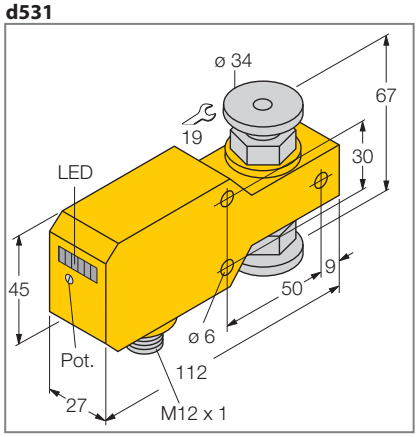
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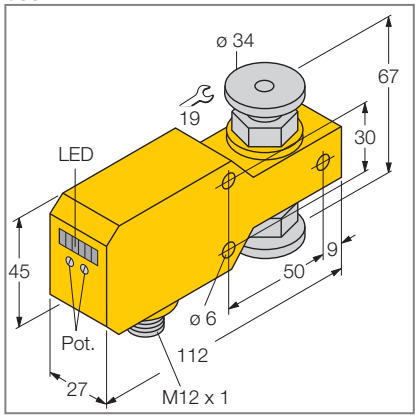


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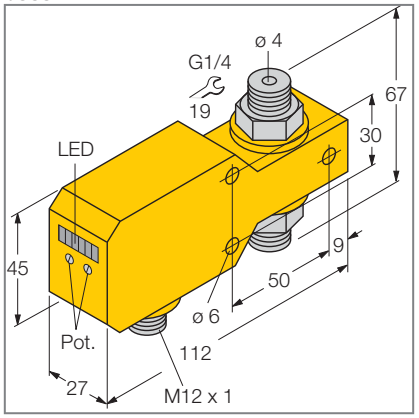


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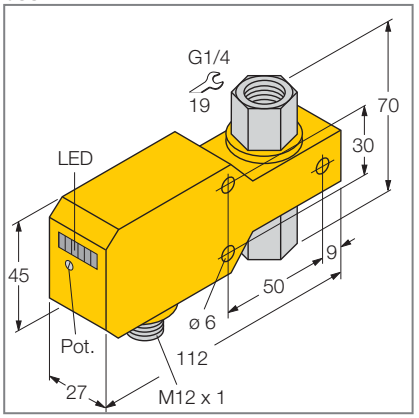
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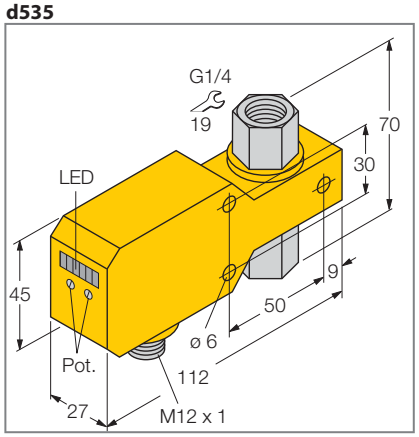
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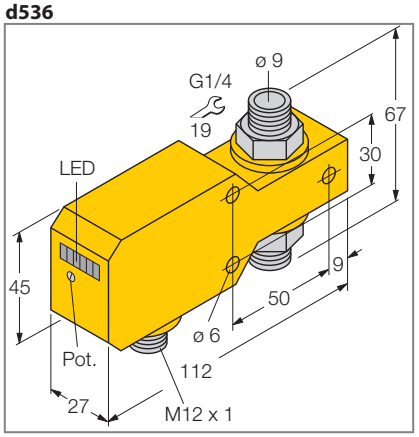
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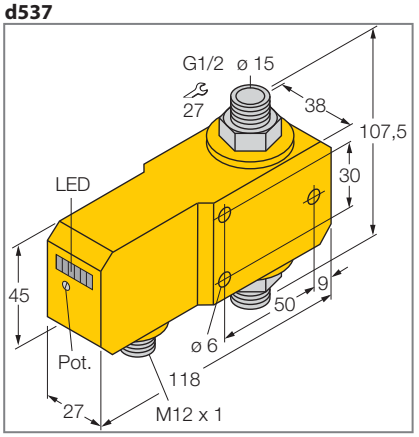
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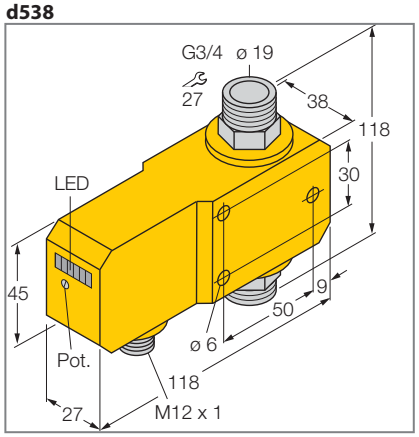
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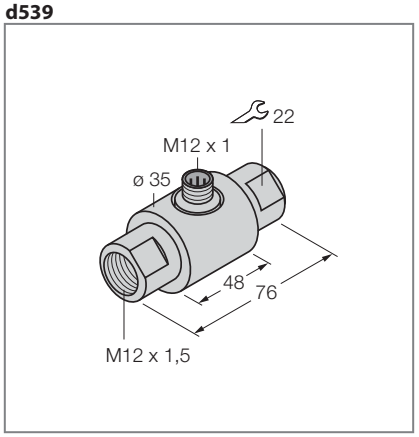
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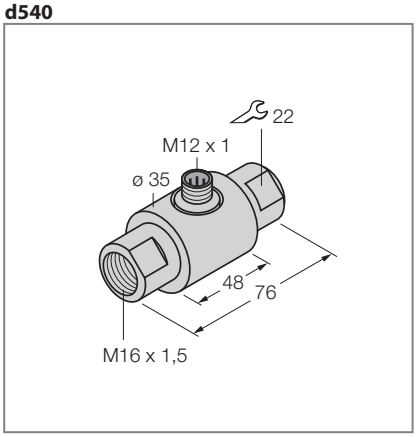
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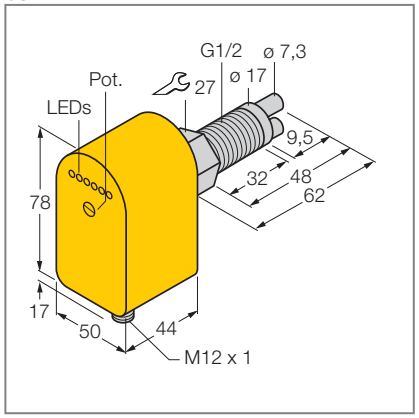


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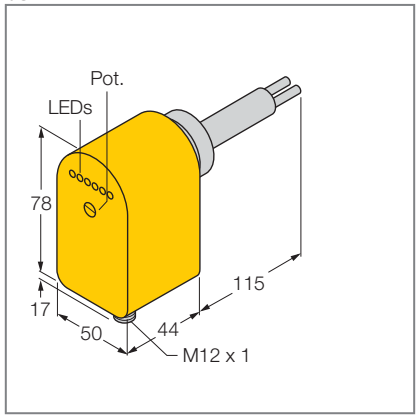


Dimension drawings

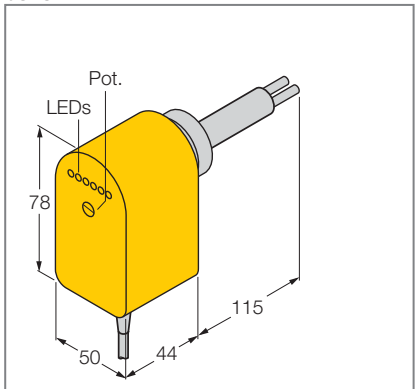
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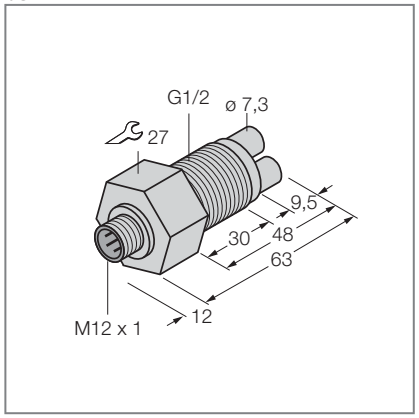
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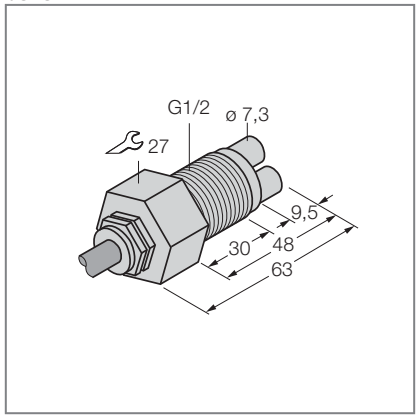
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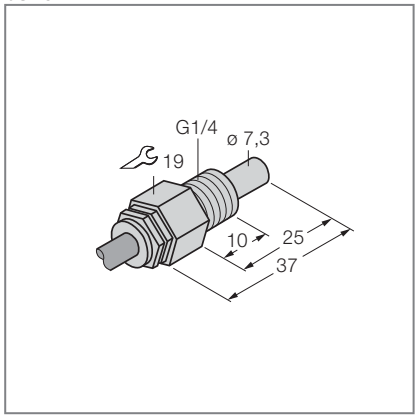
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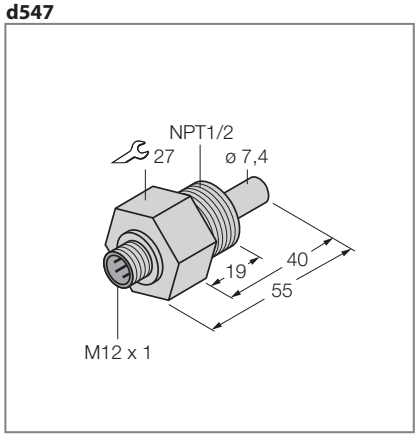
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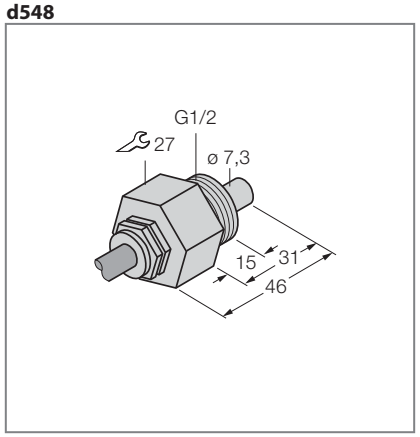
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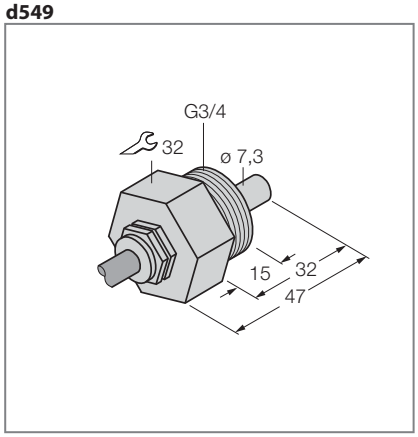
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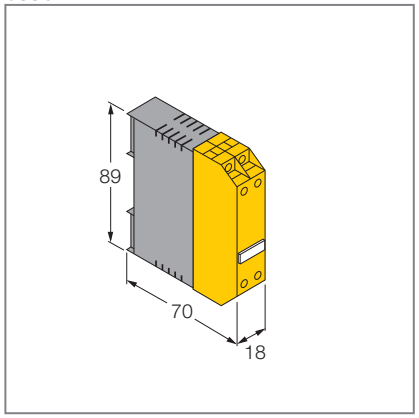


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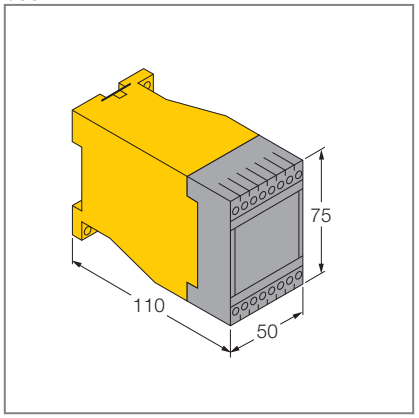


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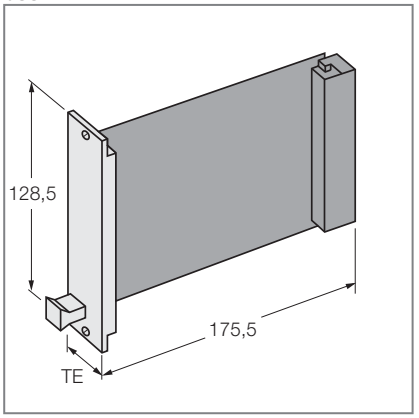
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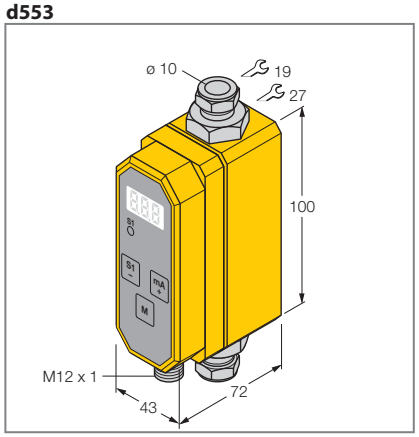
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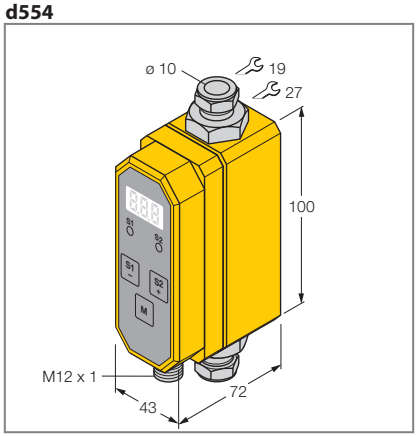
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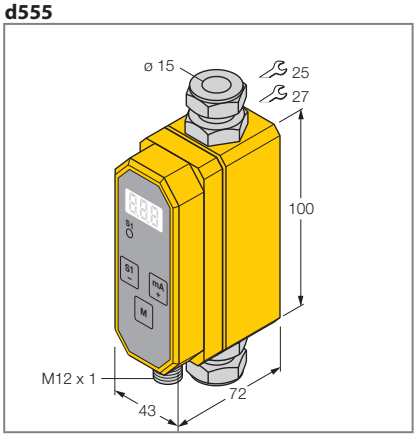
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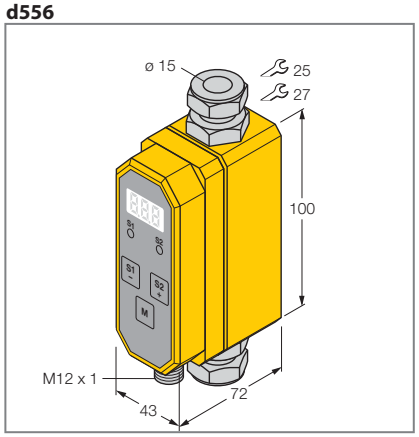
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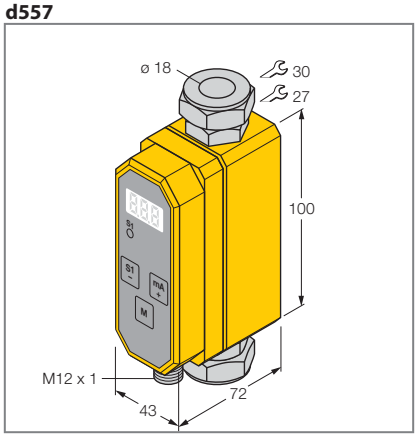
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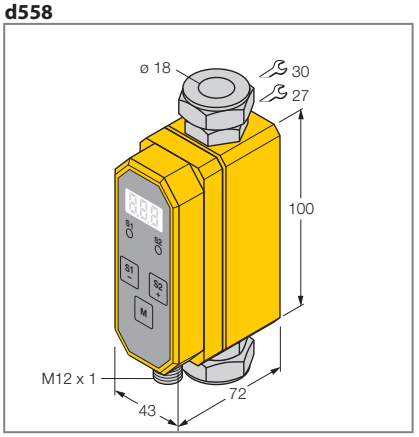
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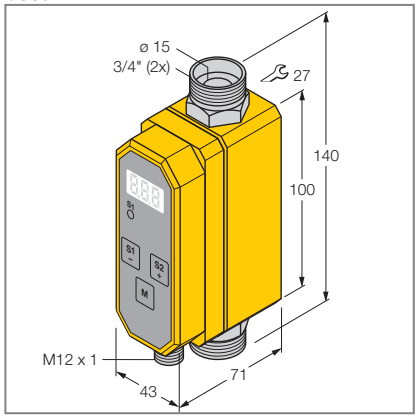


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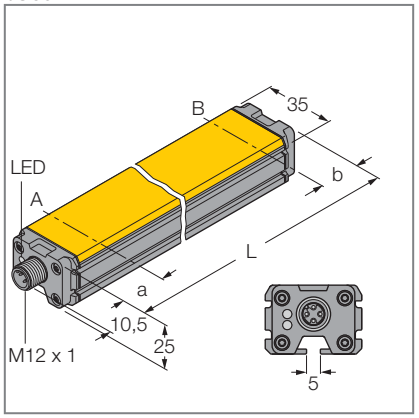


Dimension drawings

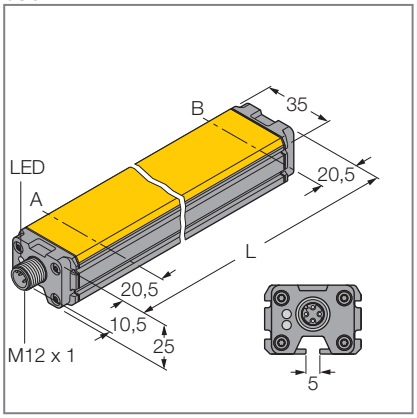
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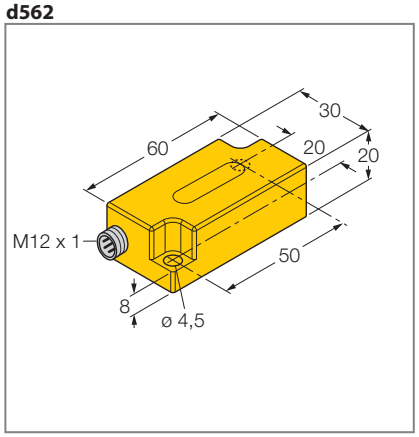
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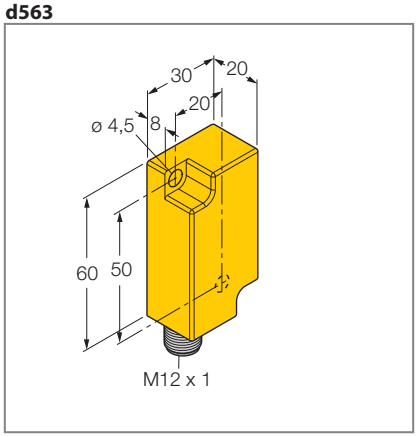
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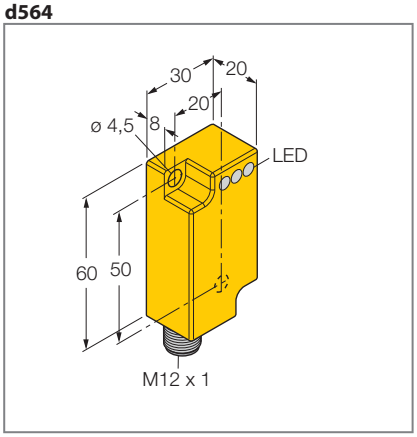
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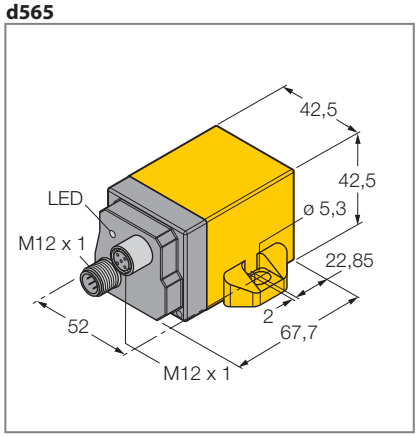
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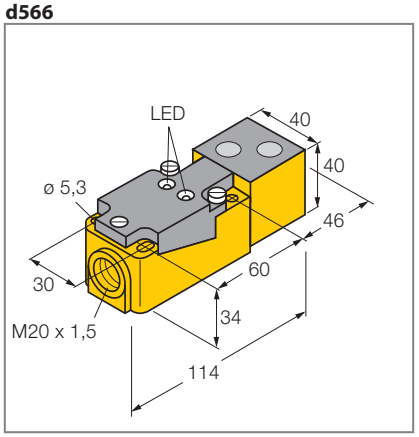
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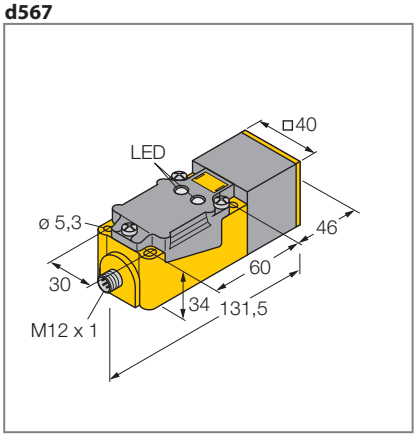
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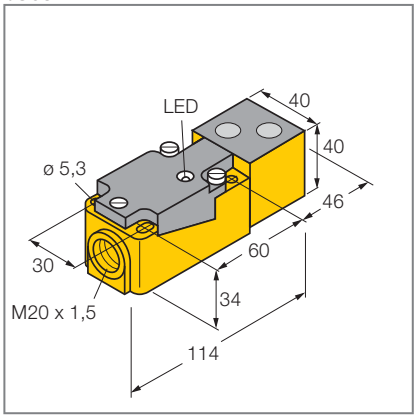


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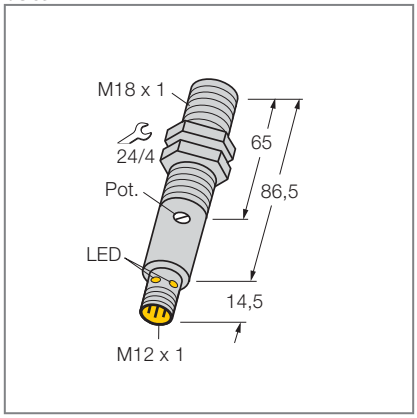


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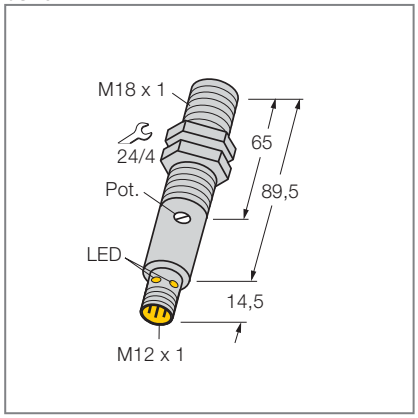
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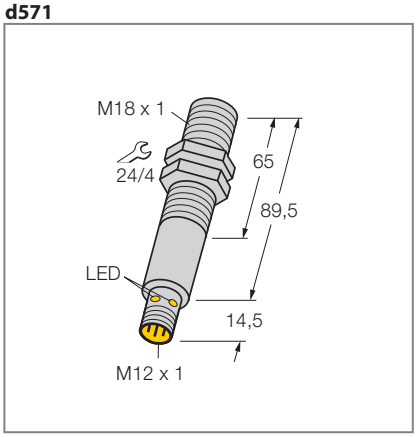
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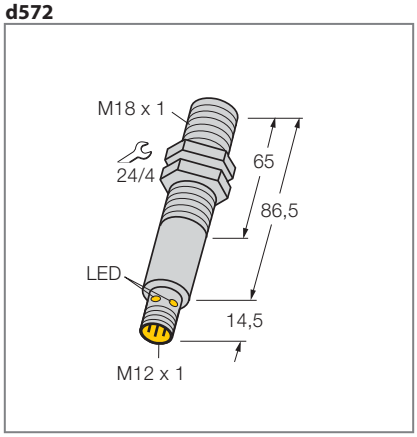
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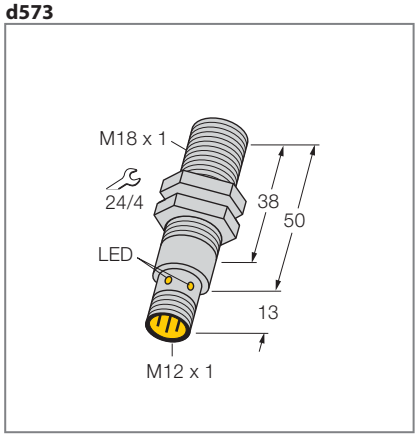
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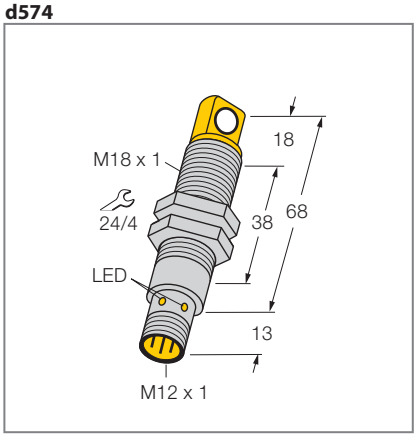
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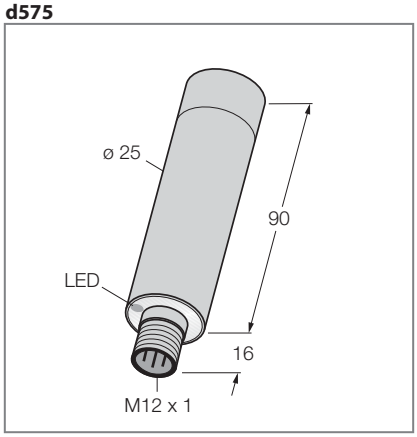
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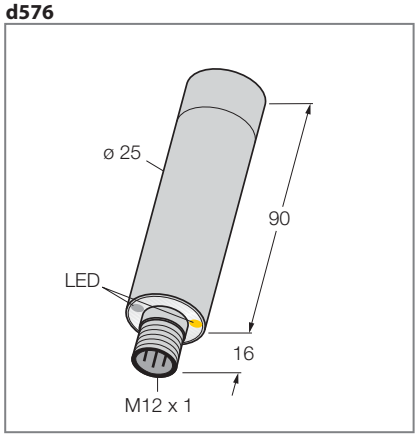
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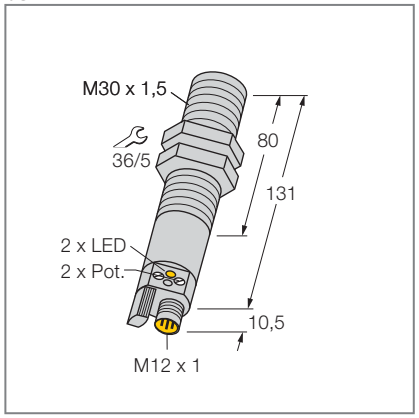


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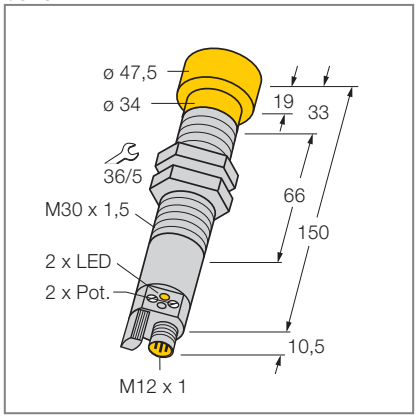


Dimension drawings

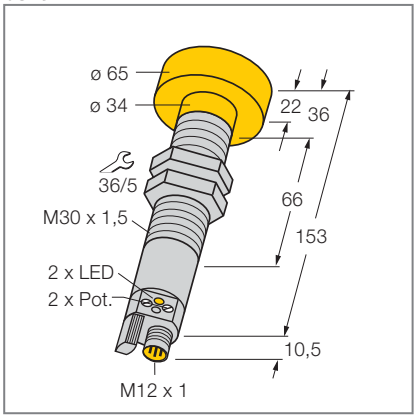
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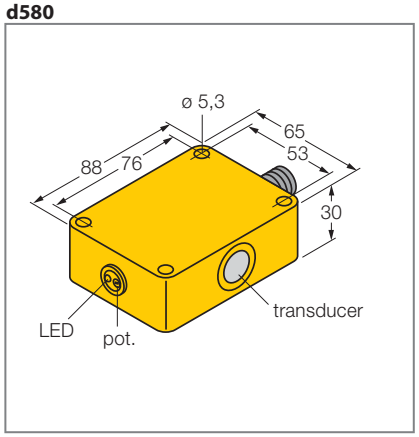
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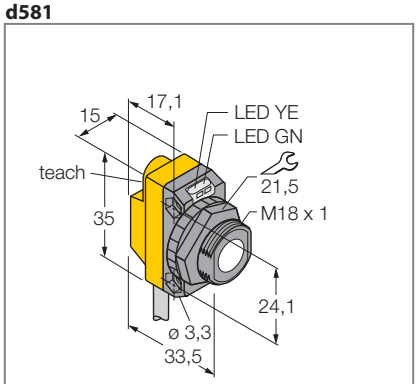
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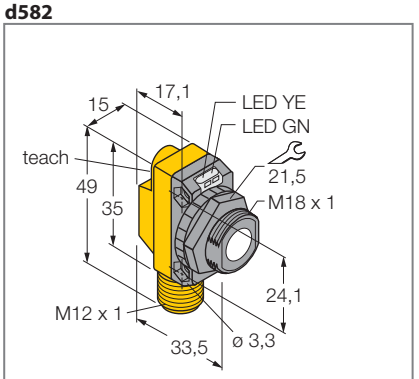
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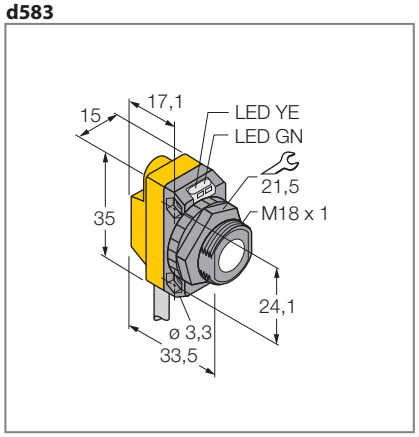
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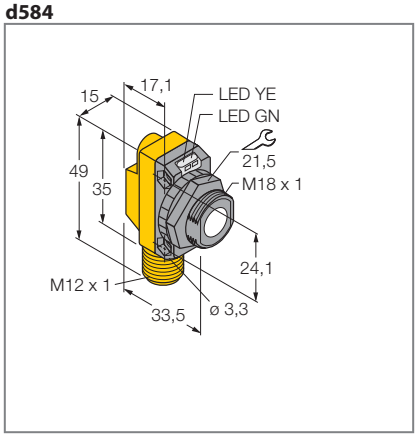
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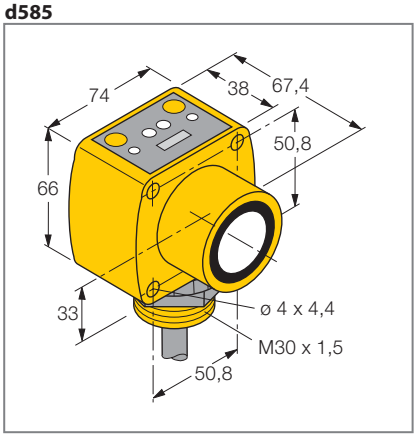
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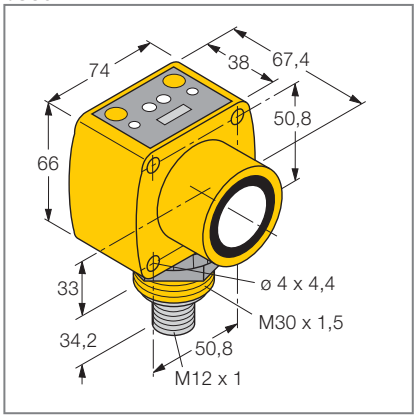


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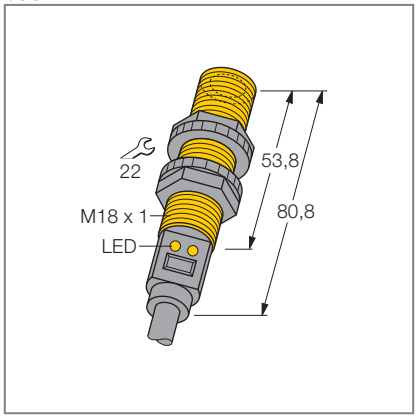


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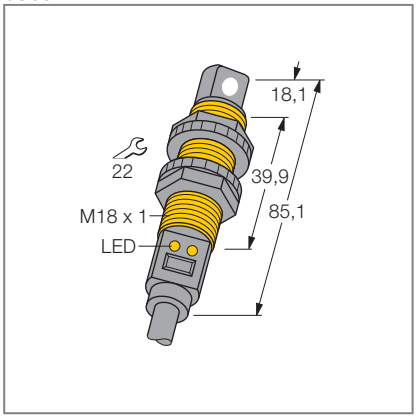
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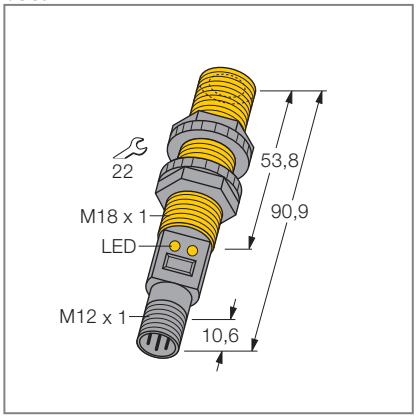
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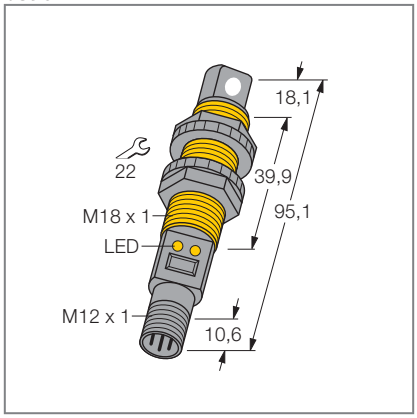
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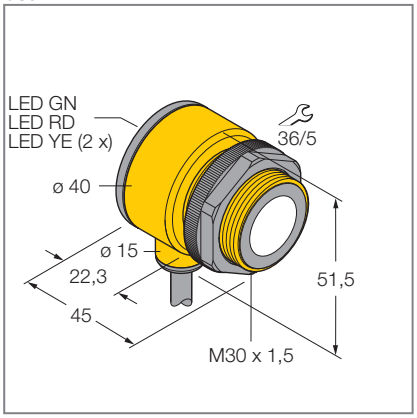
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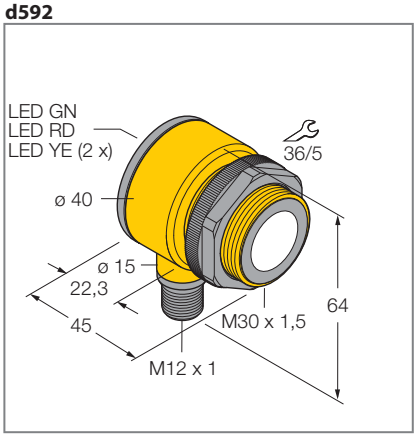
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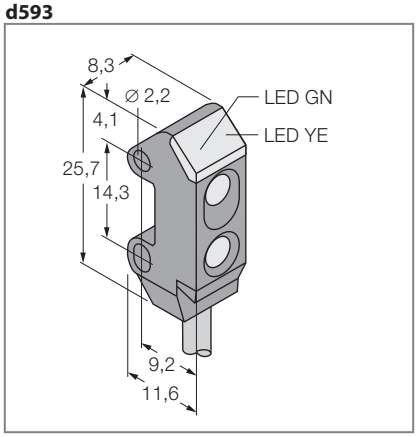
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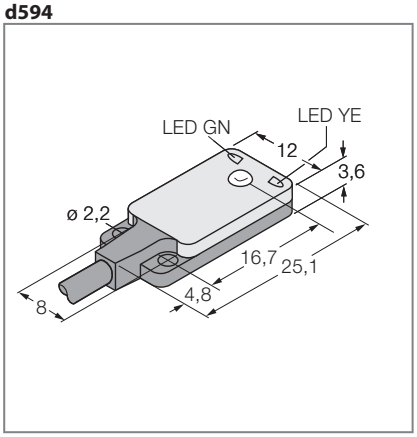
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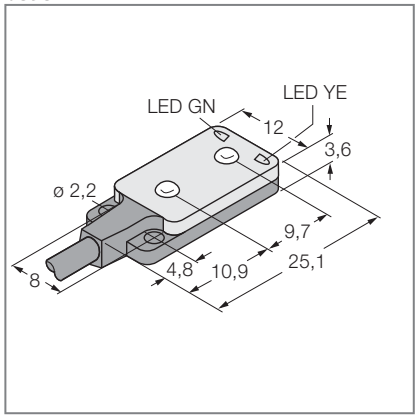


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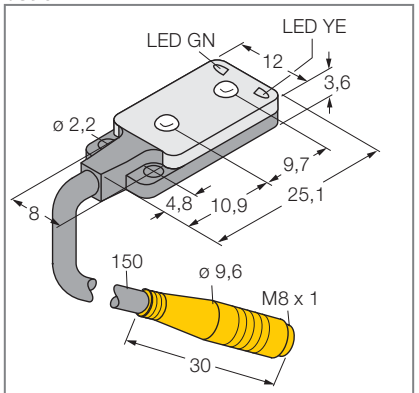


Dimension drawings

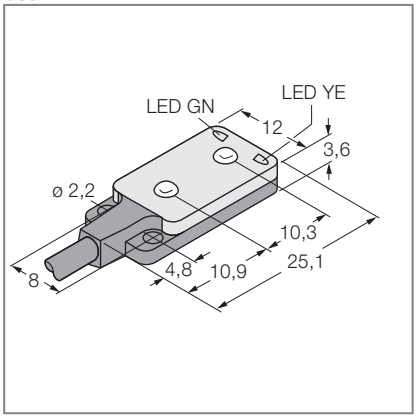
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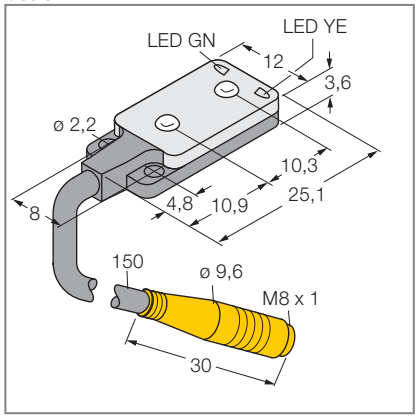
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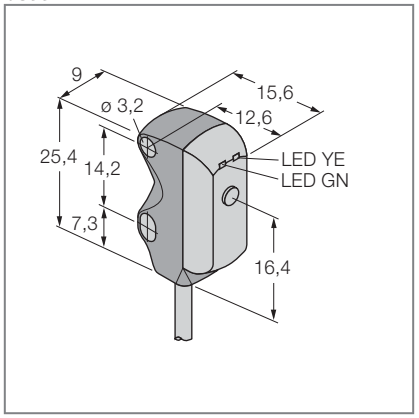
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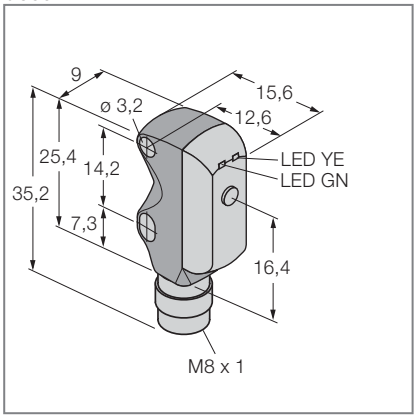
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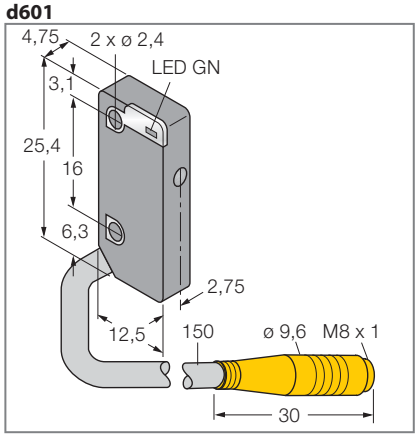
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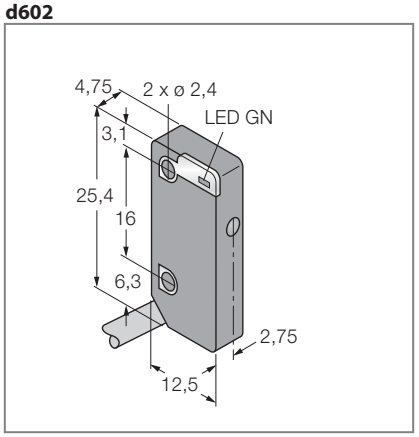
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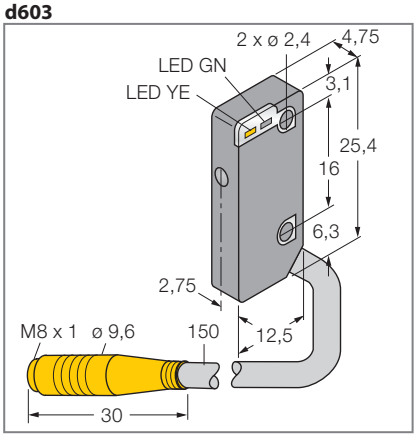
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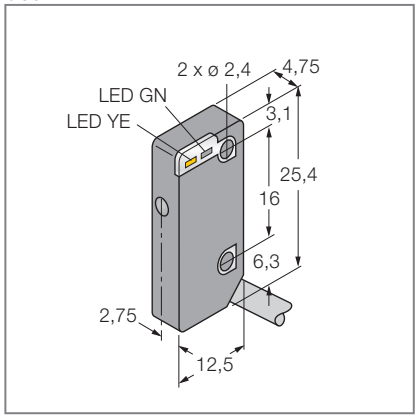
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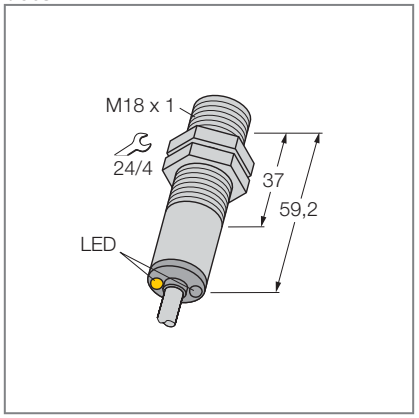
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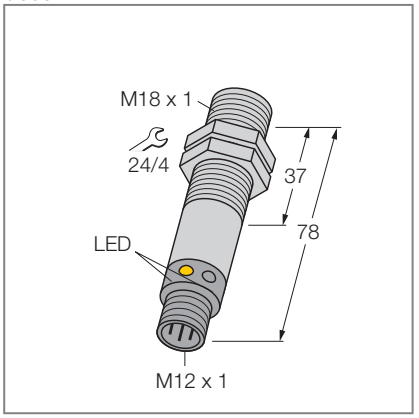
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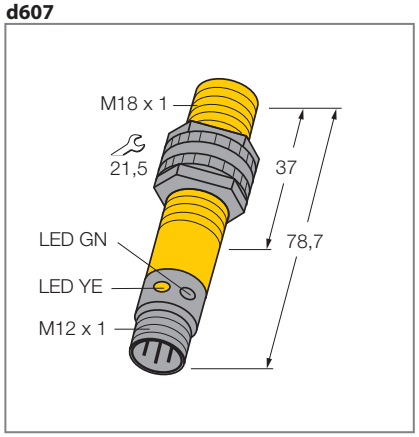
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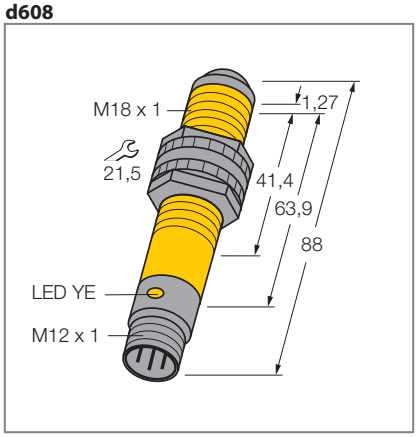
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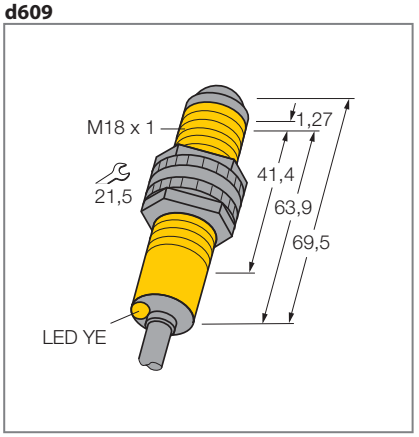
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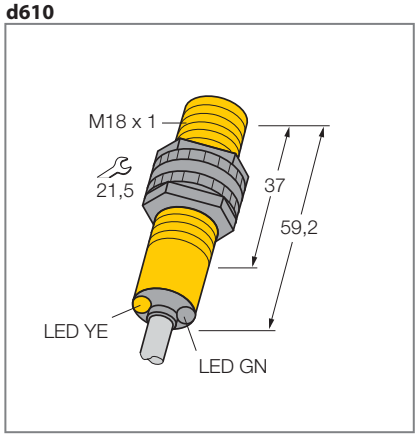
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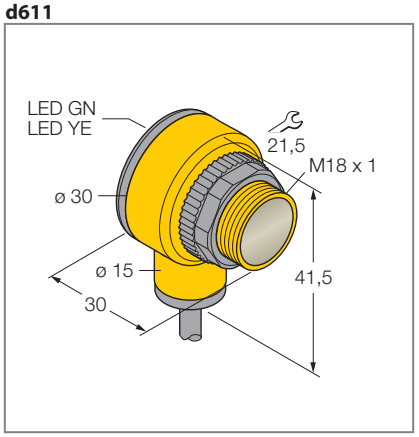
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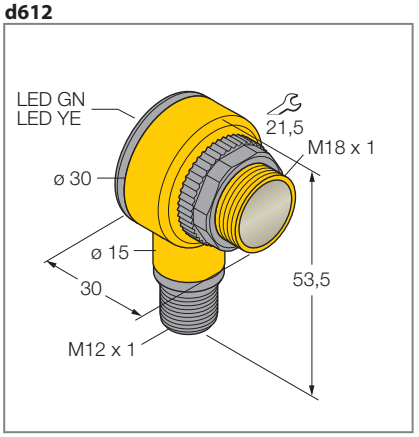
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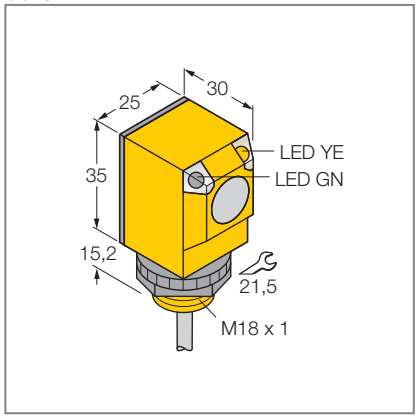


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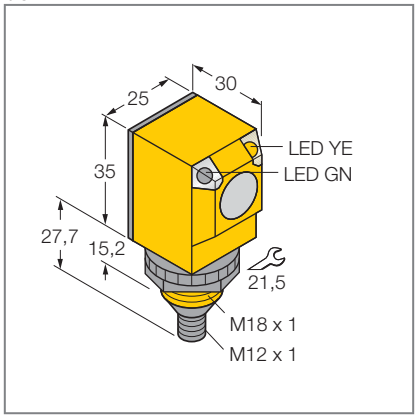


Dimension drawings

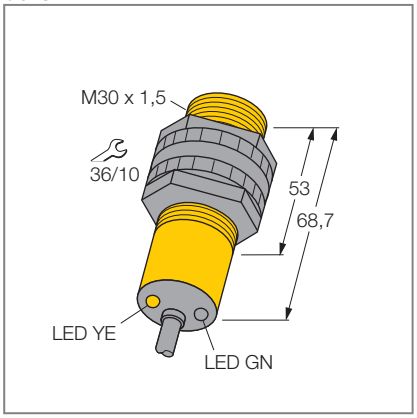
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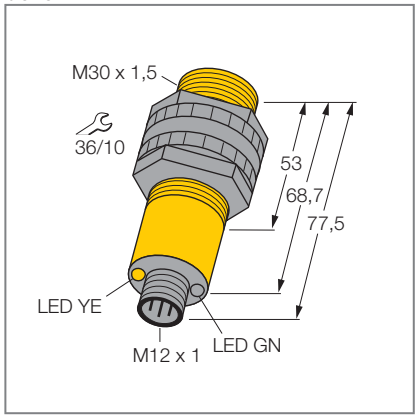
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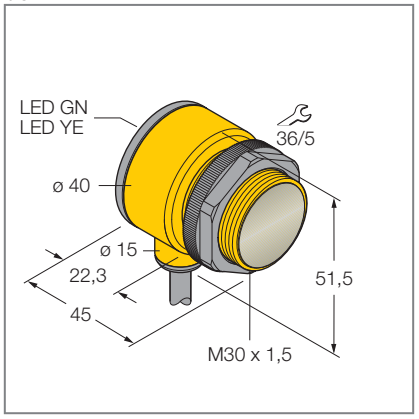
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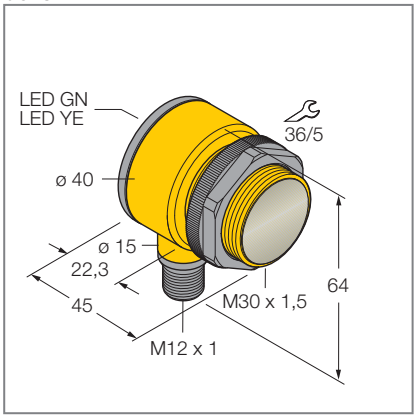
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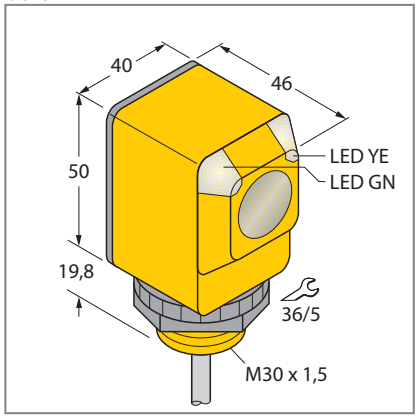
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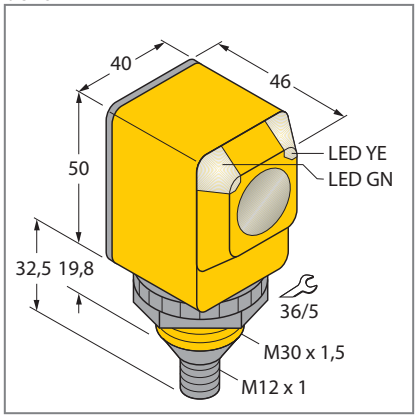
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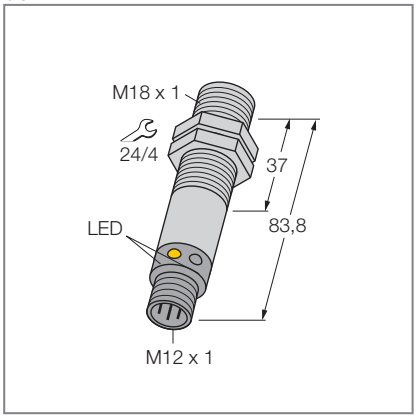
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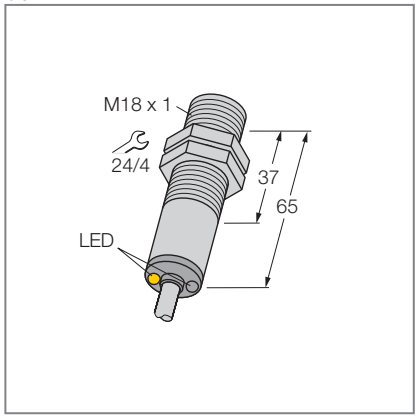


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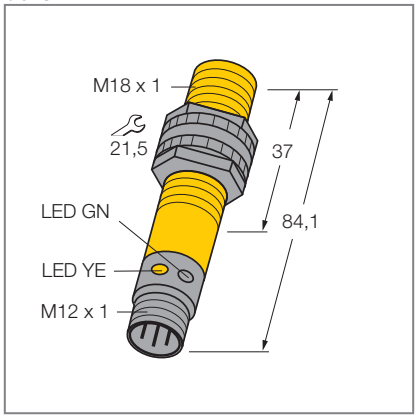


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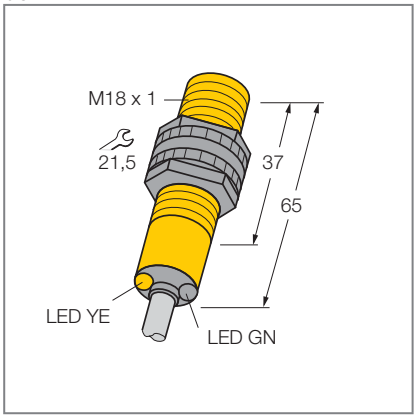
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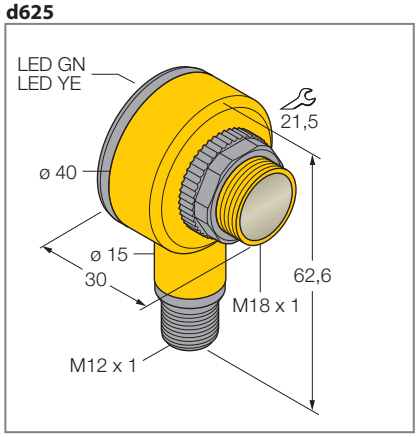
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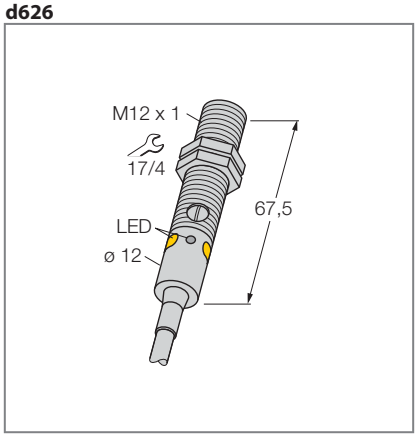
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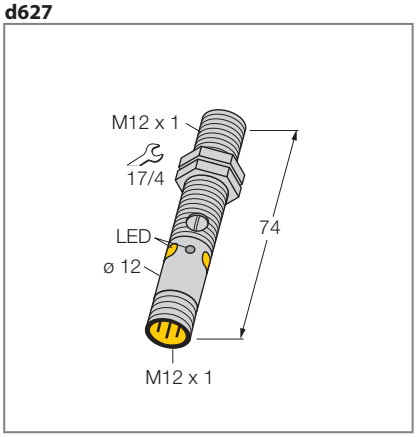
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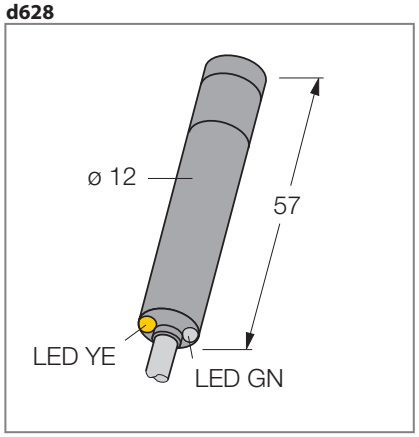
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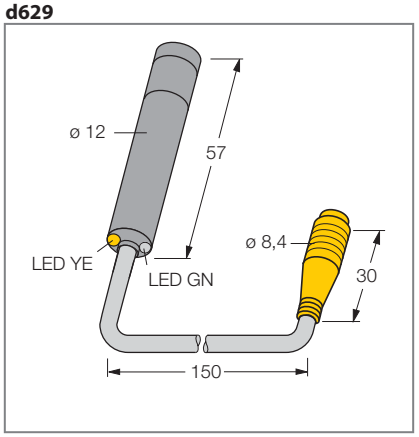
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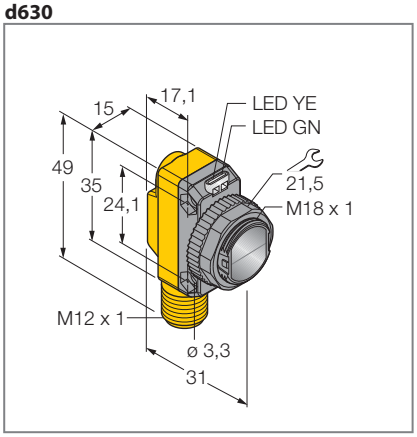
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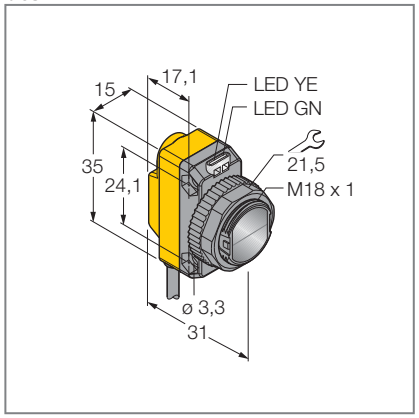


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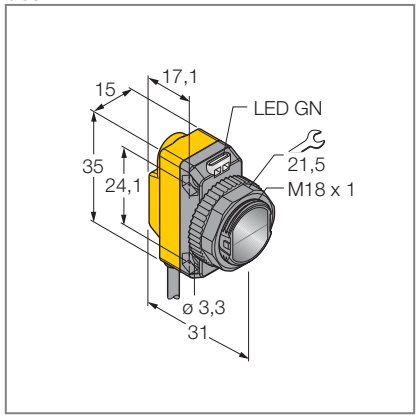


Dimension drawings

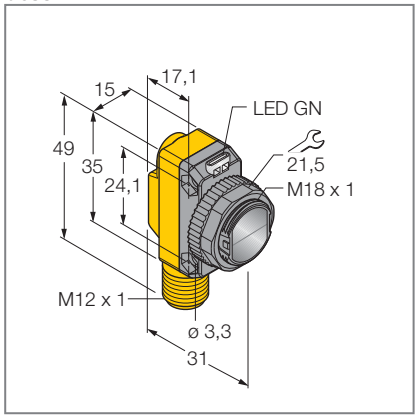
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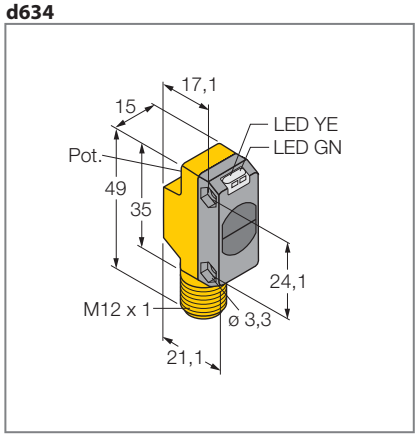
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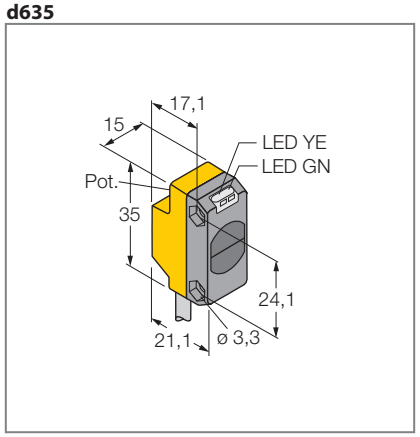
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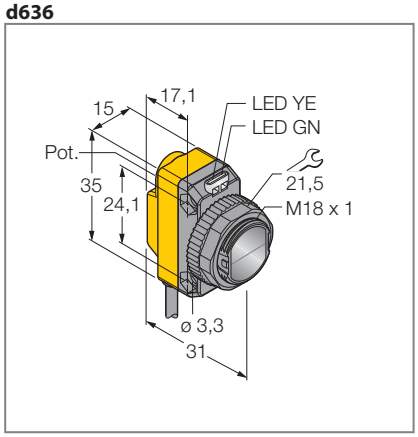
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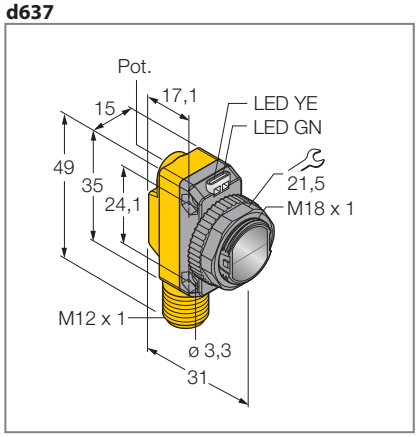
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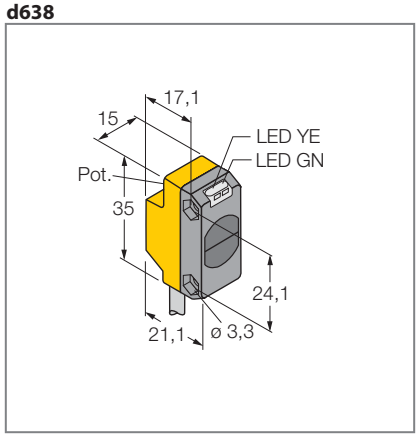
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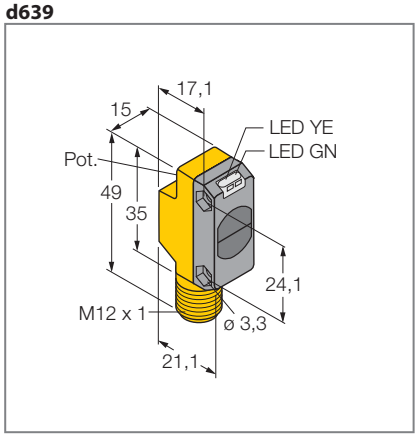
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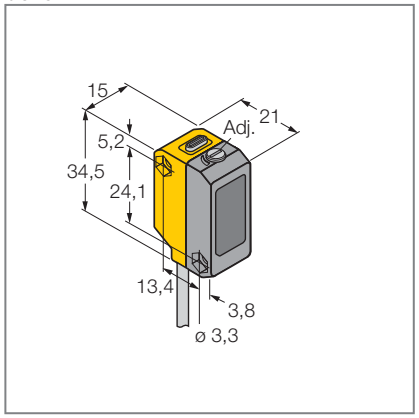


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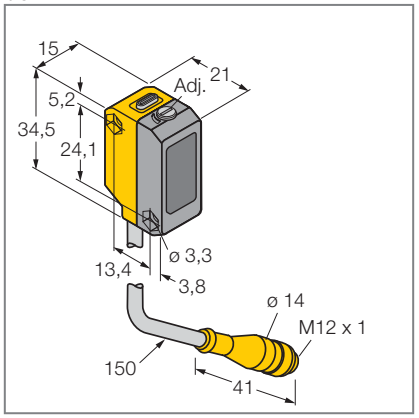


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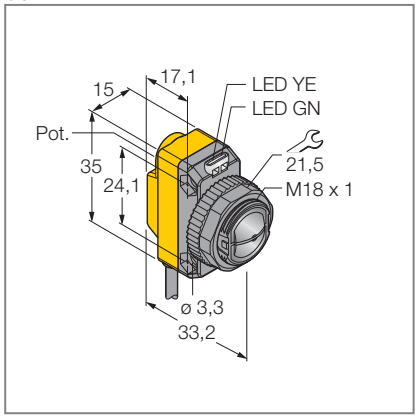
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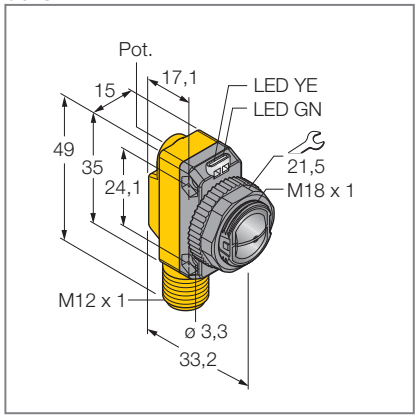
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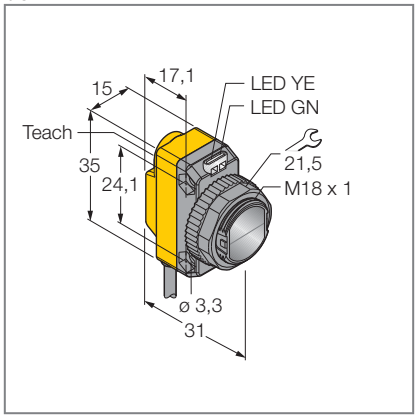
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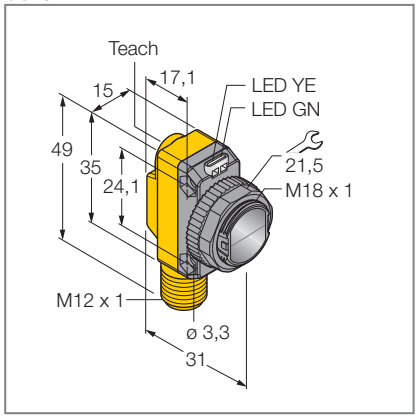
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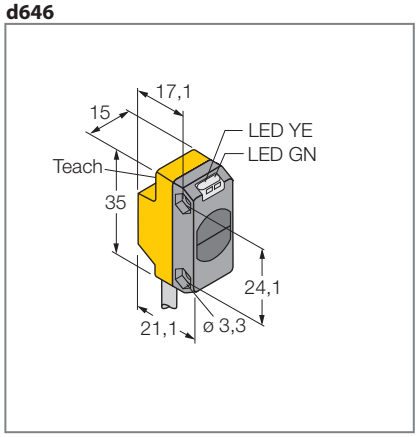
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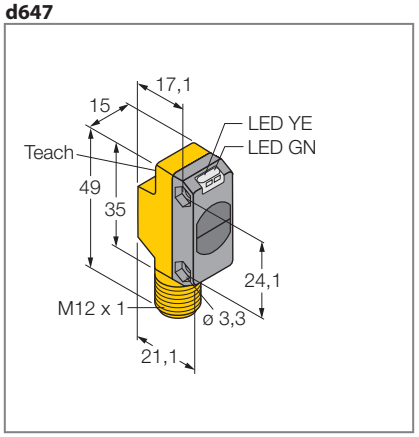
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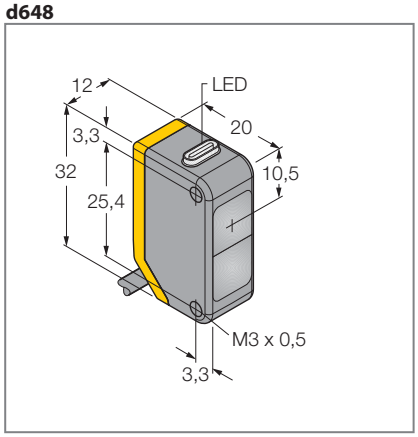
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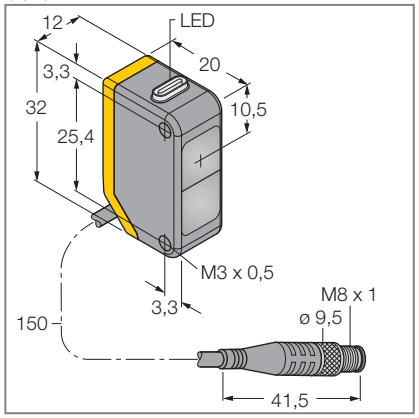


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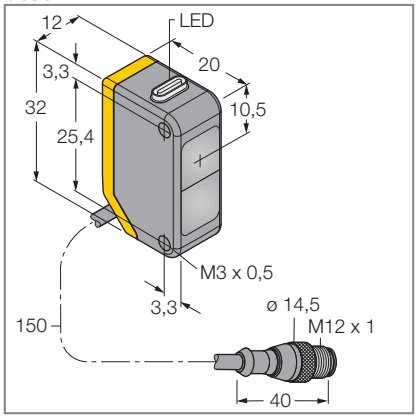


Dimension drawings

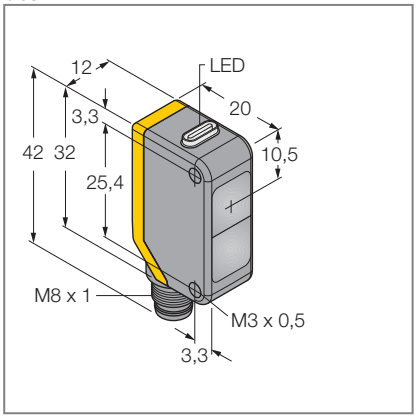
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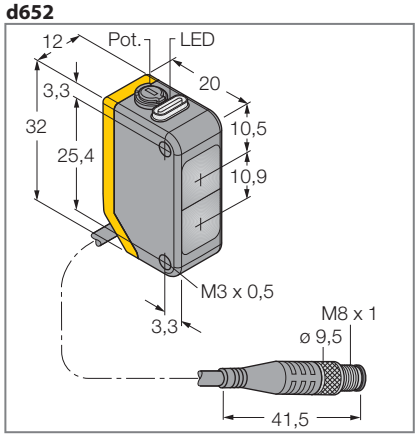
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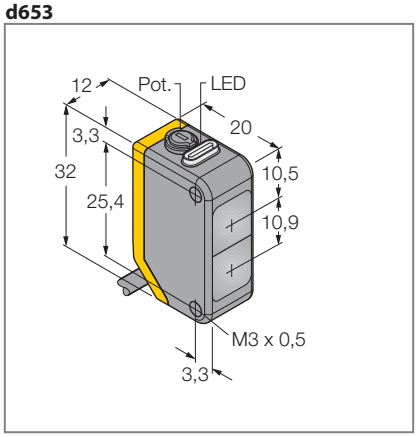
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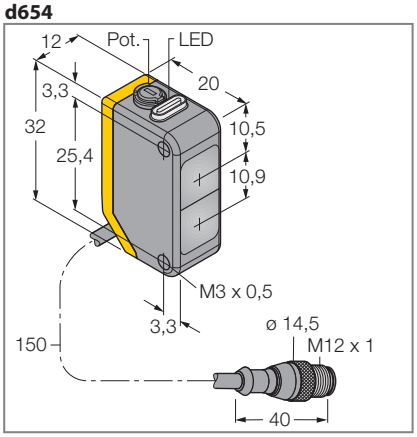
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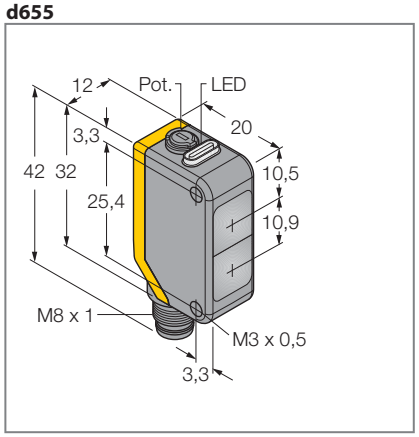
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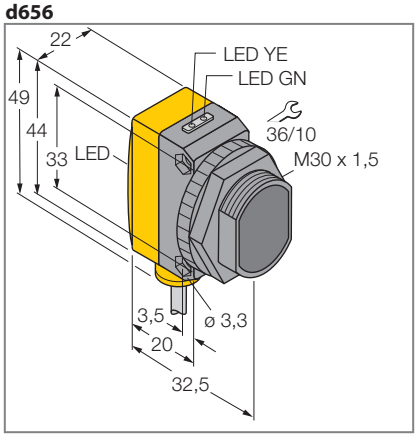
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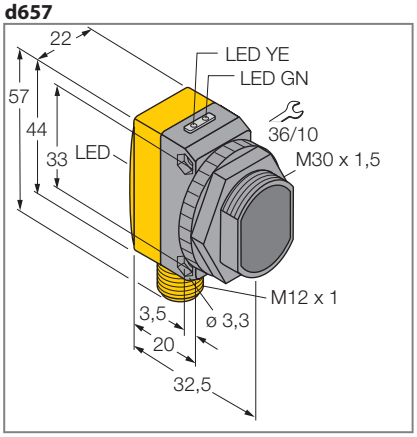
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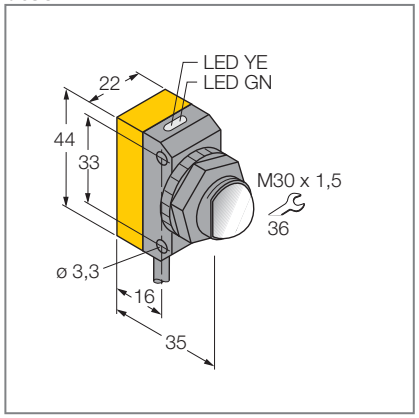


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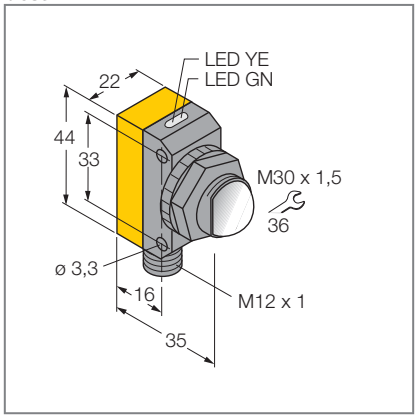


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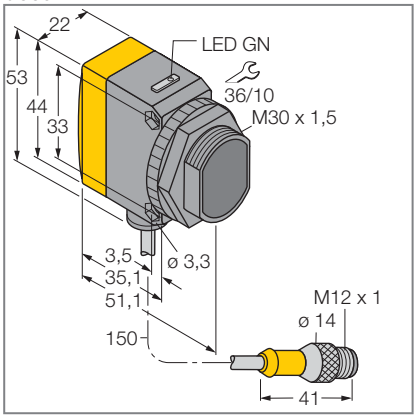
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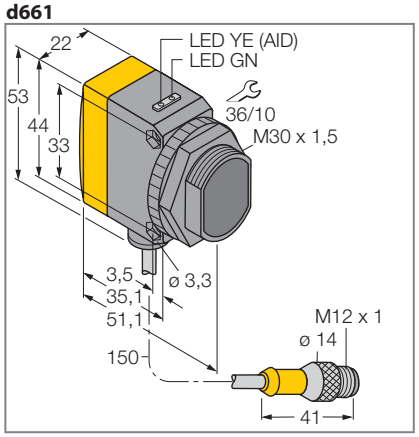
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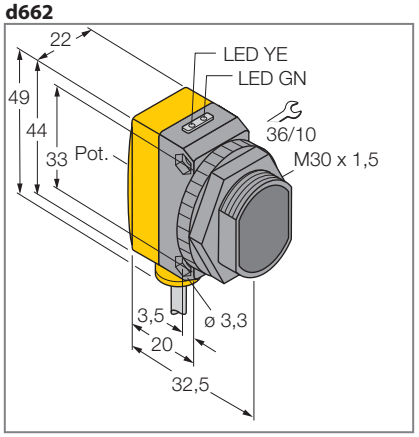
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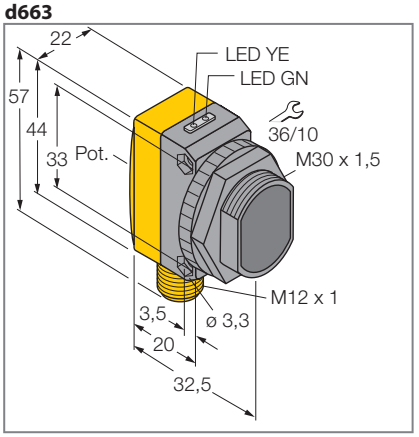
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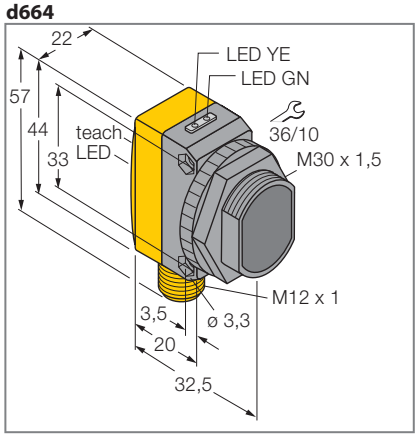
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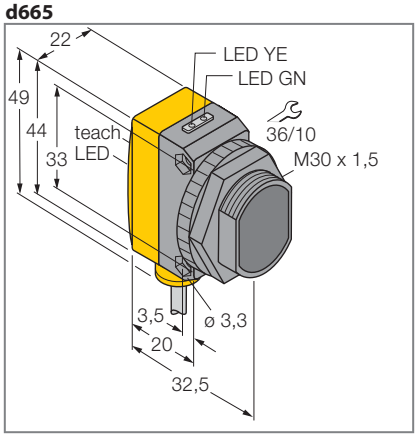
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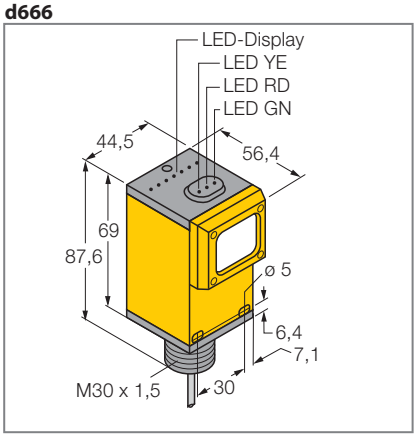
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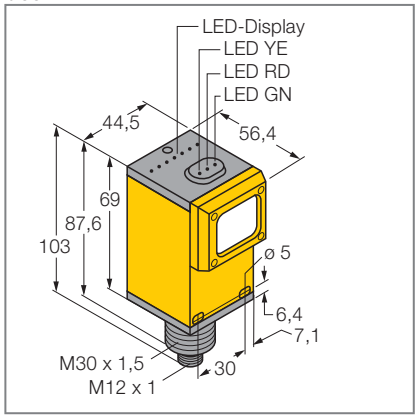


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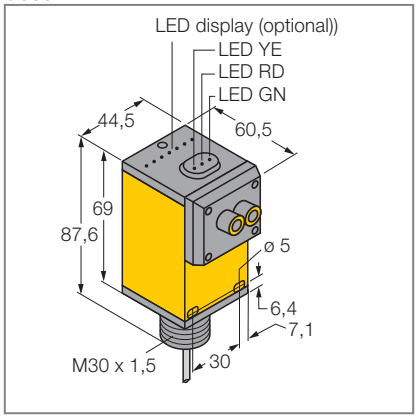


Dimension drawings

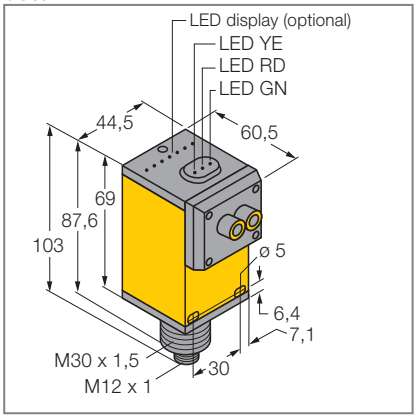
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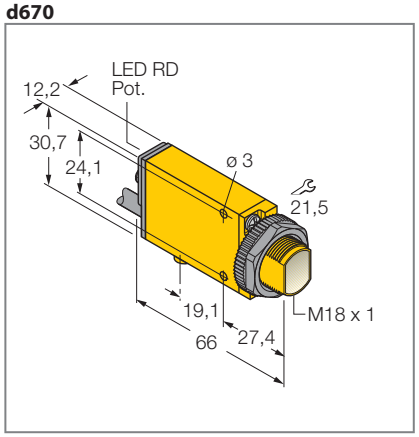
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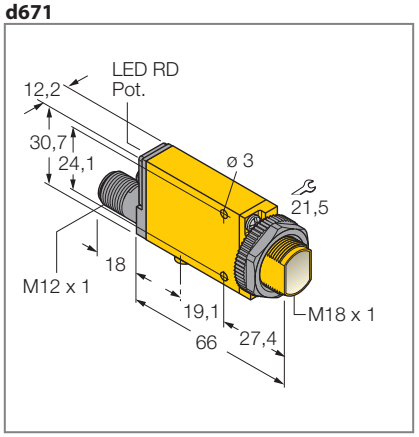
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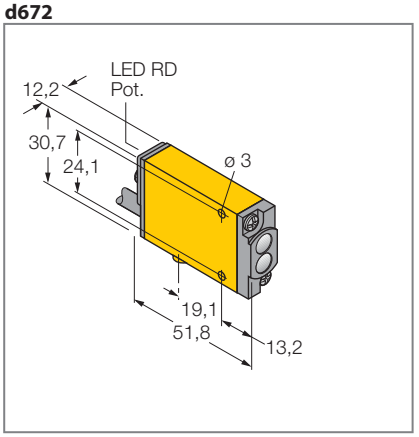
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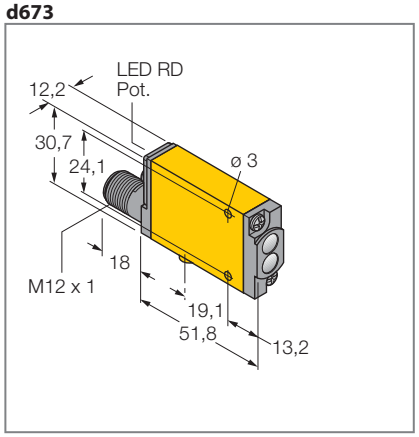
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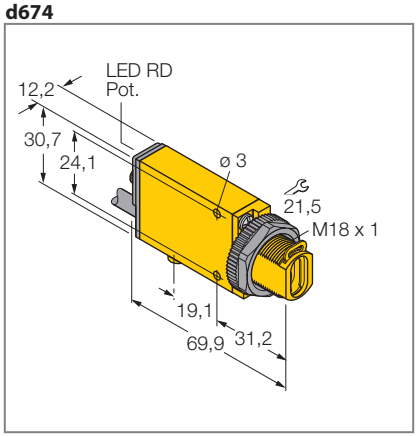
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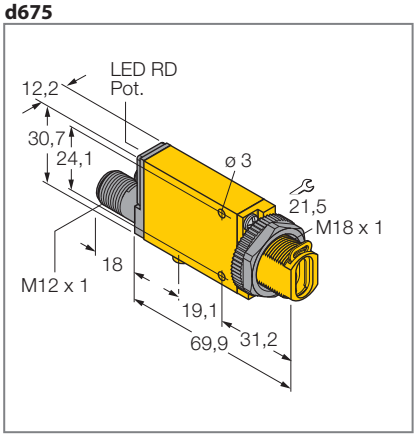
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d674

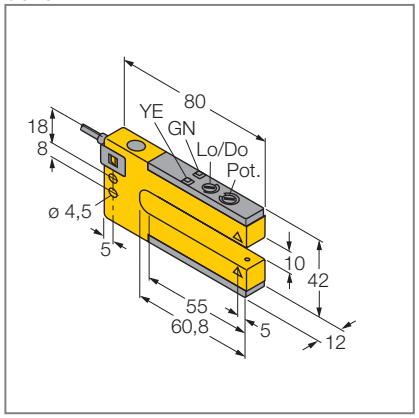


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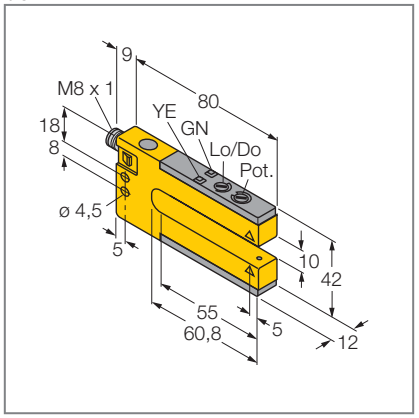


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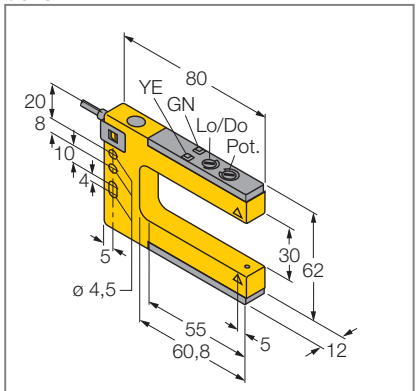
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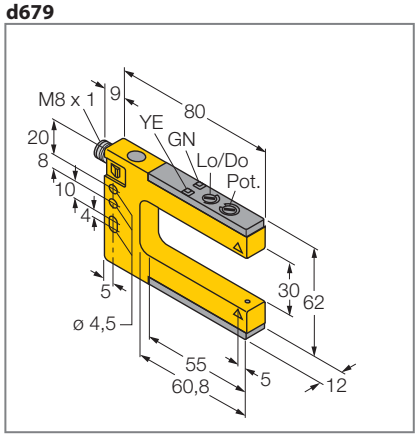
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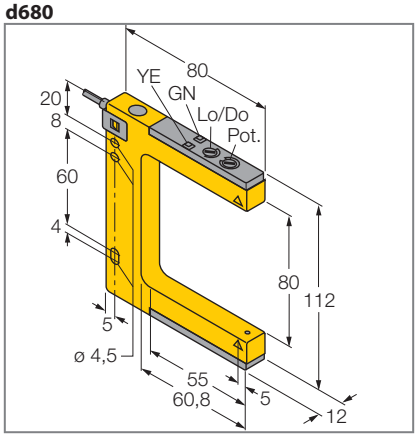
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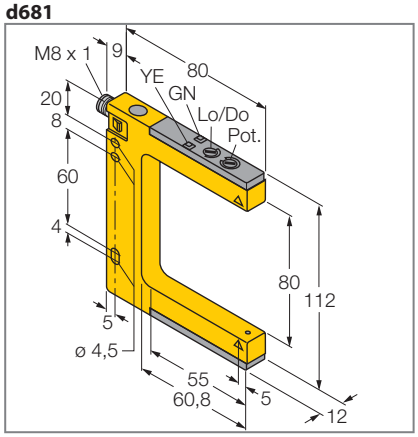
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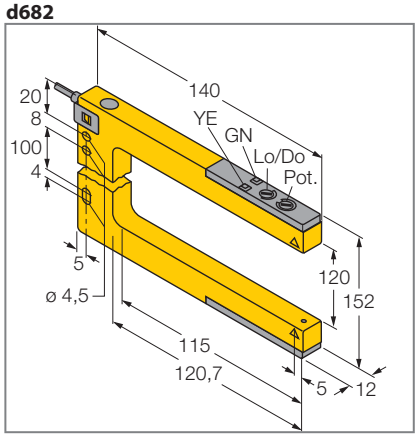
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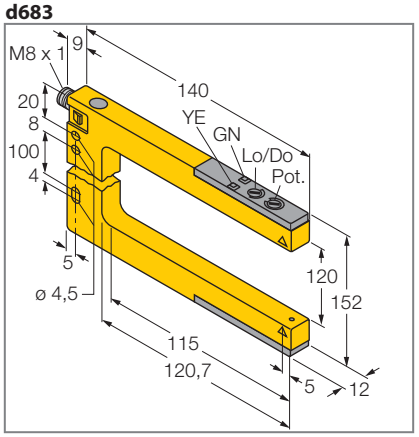
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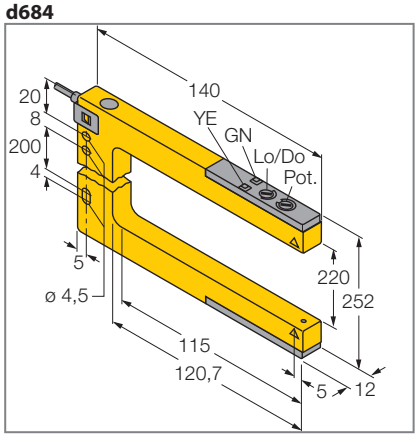
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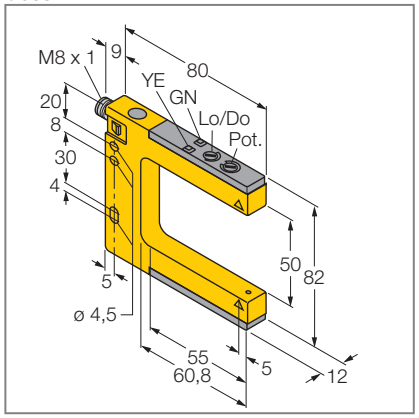


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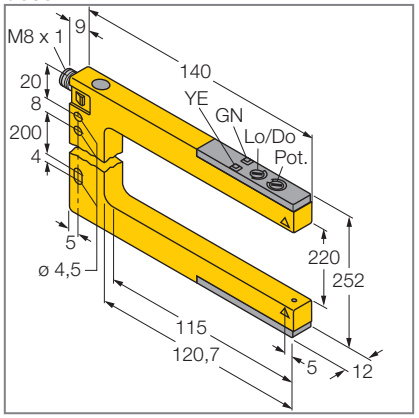


Dimension drawings

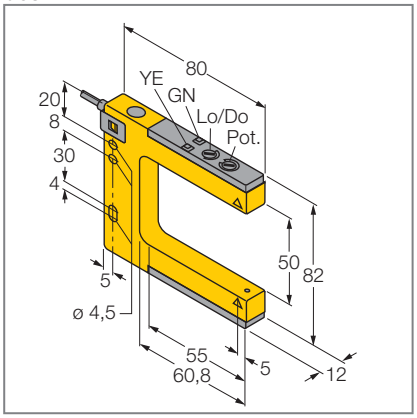
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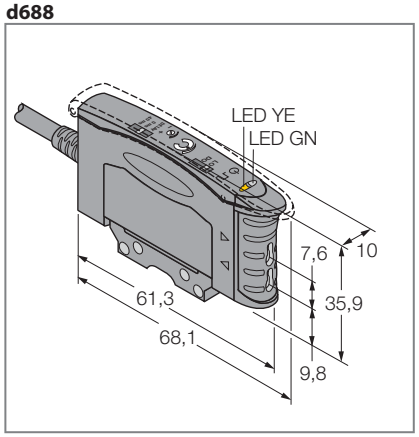
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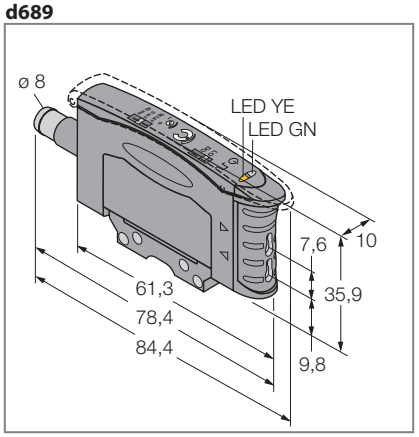
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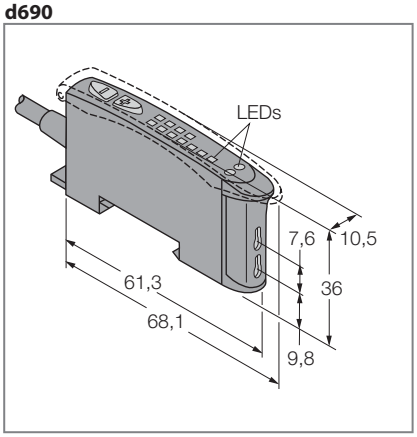
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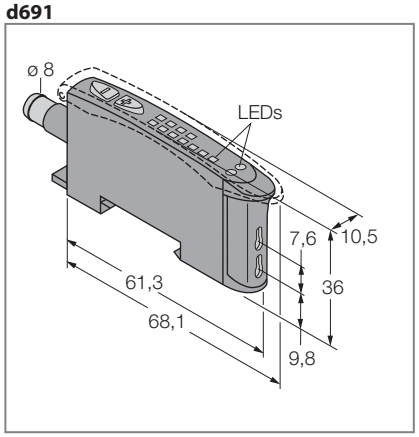
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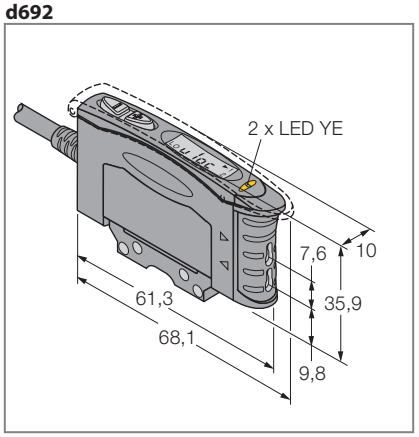
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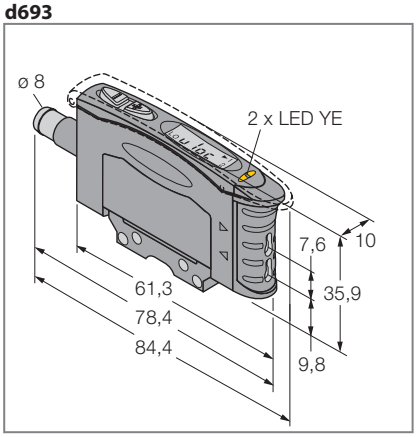
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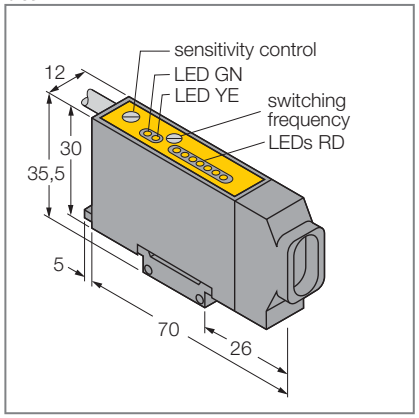


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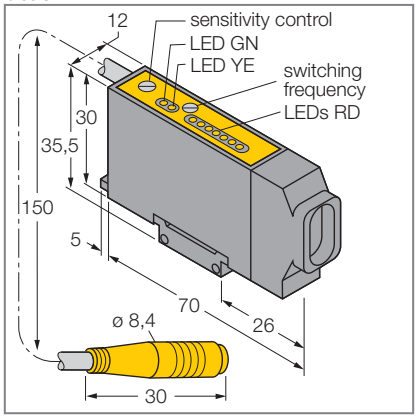


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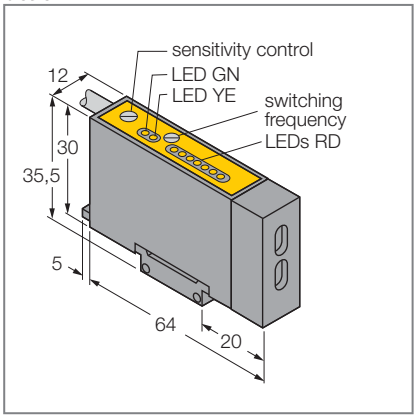
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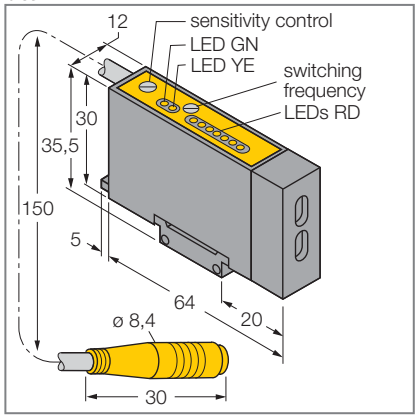
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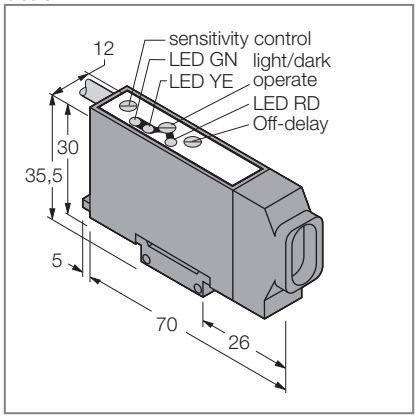
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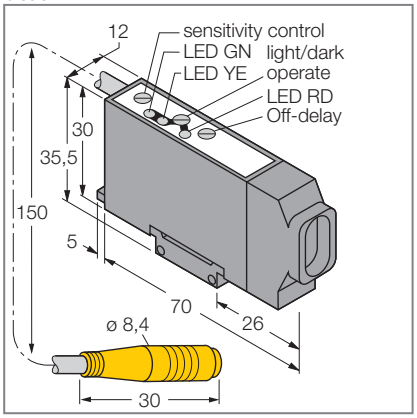
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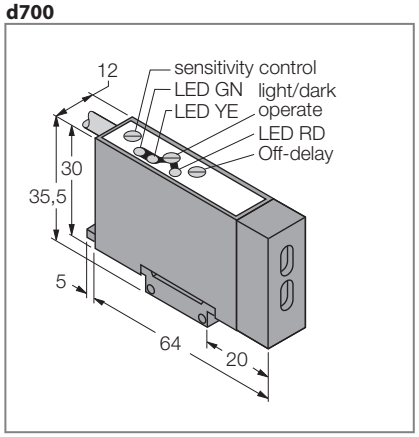
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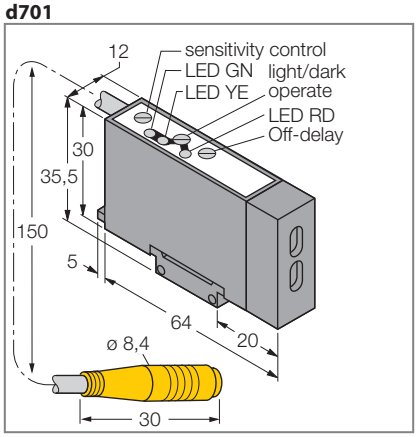
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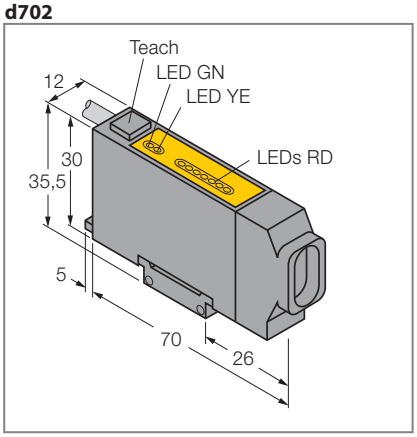
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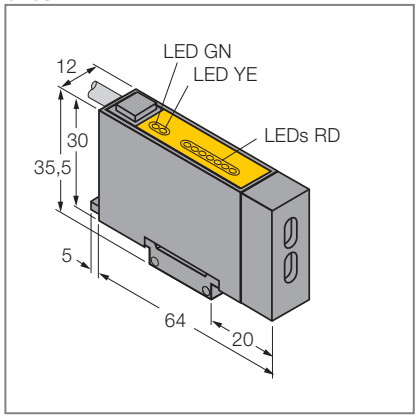


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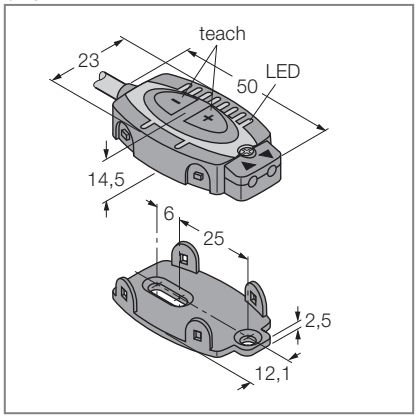


Dimension drawings

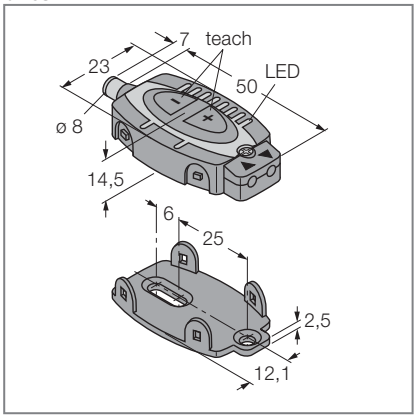
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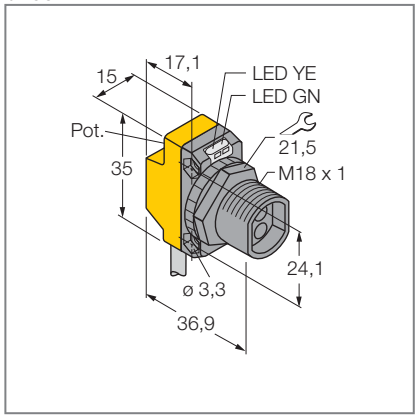
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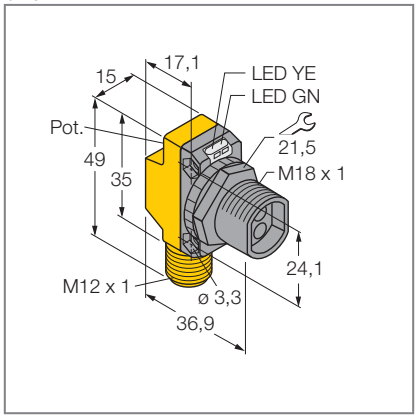
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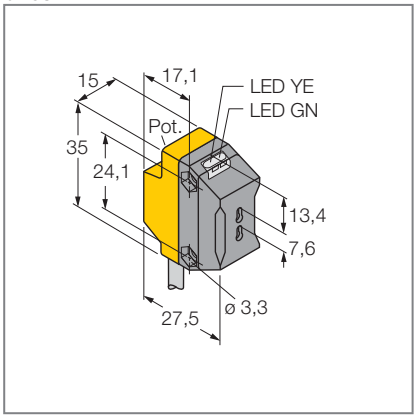
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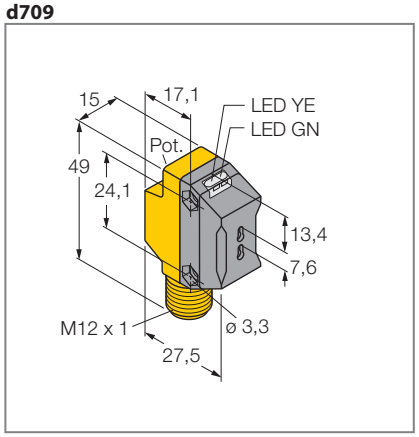
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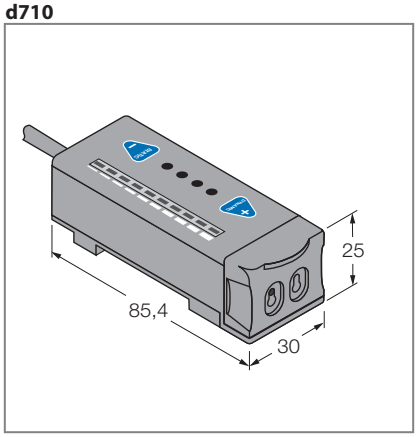
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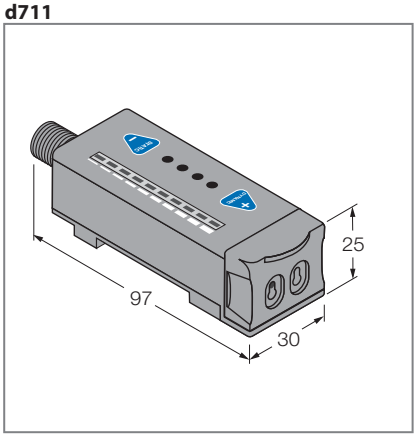
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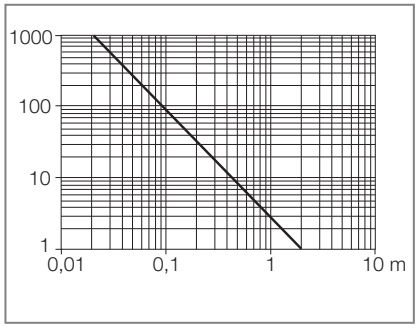


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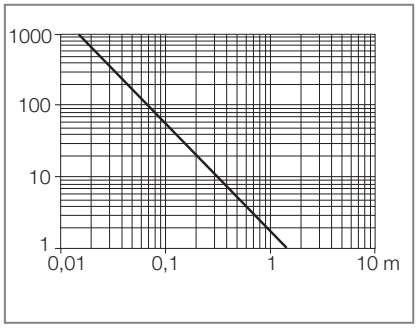


Excess gain curves

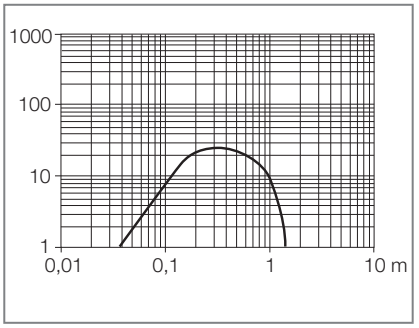
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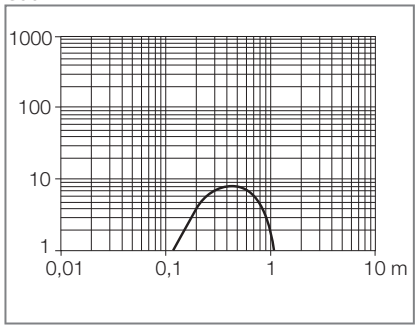
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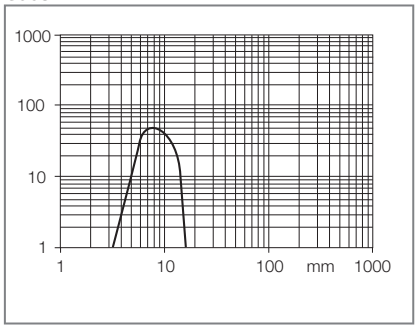
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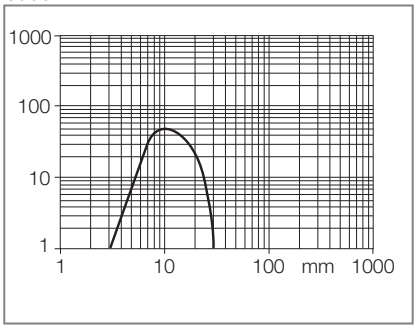
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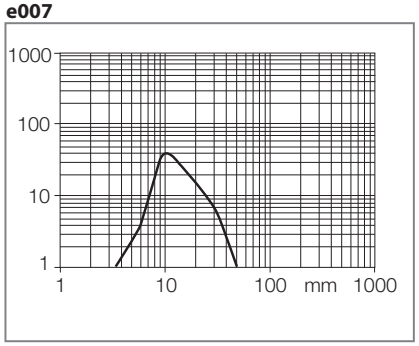
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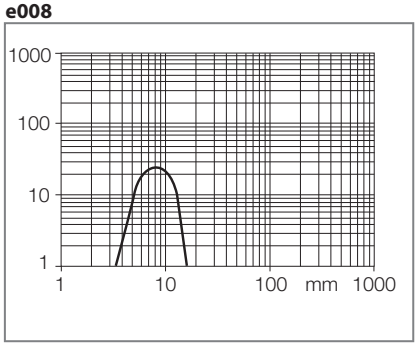
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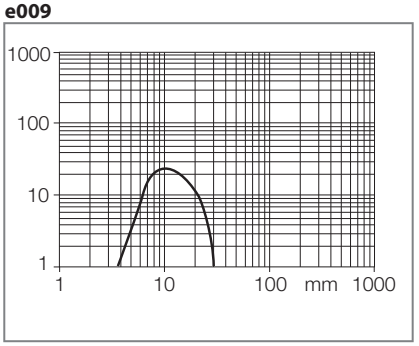
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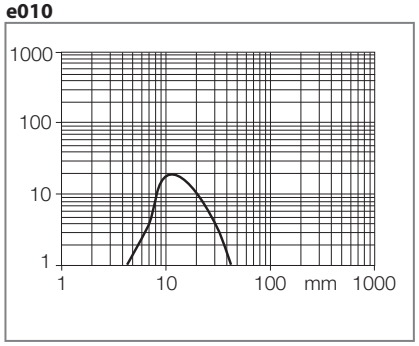
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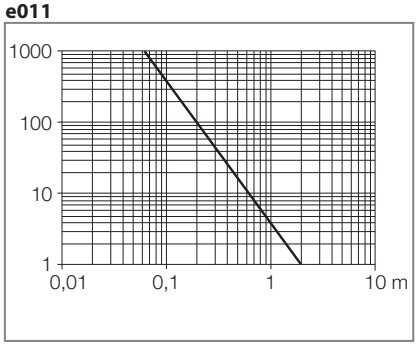
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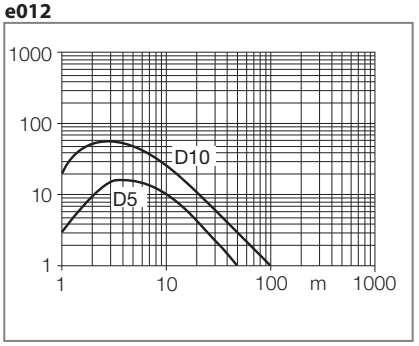
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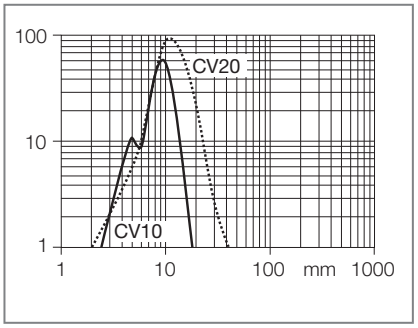


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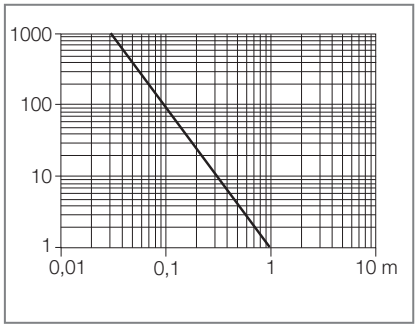


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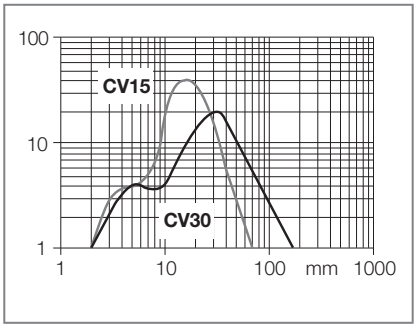
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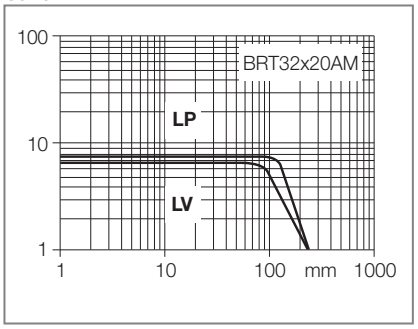
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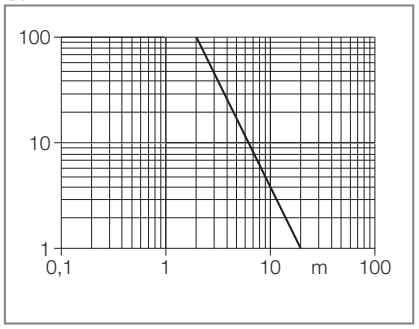
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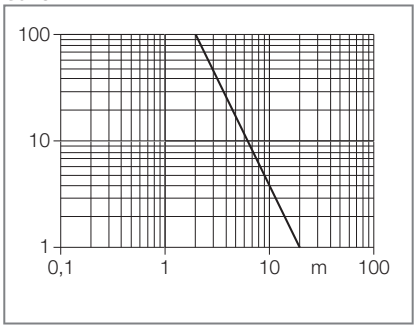
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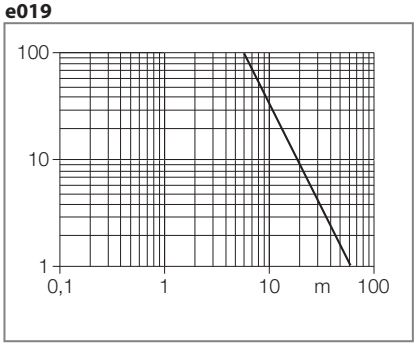
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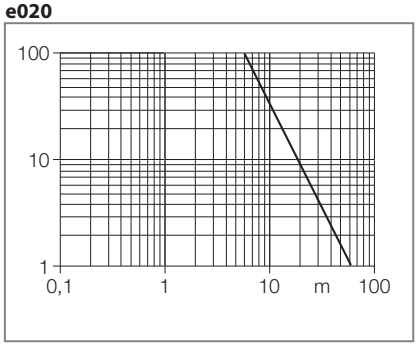
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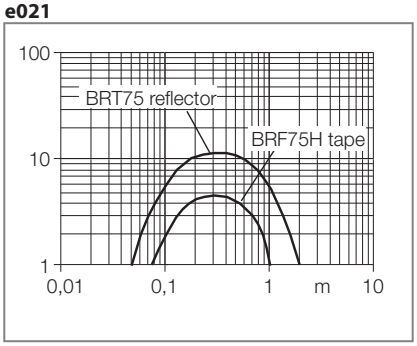
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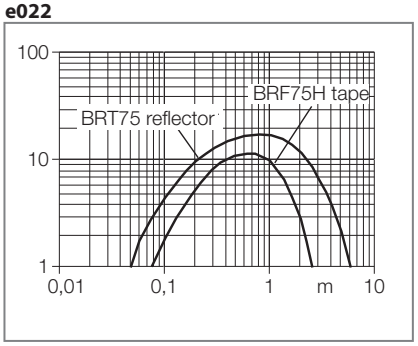
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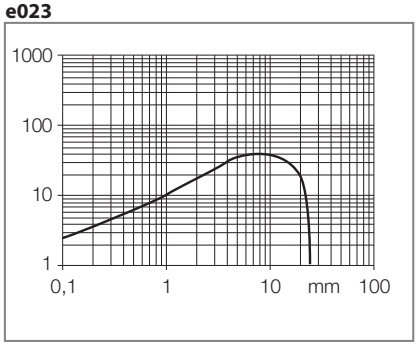
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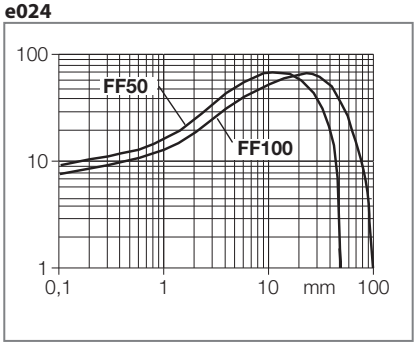
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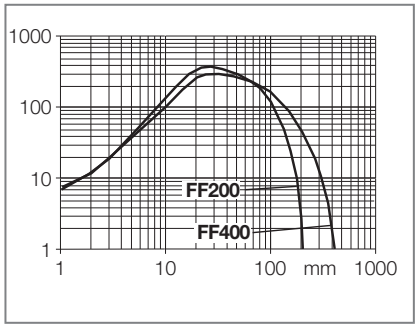


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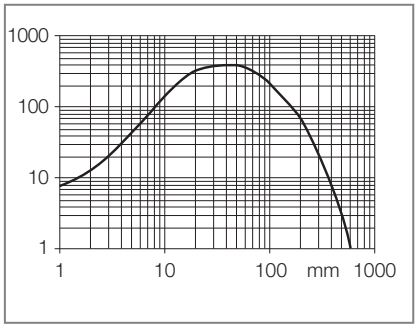


Excess gain curves

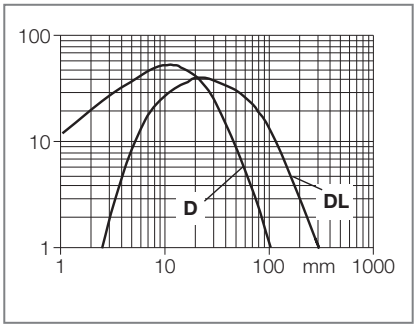
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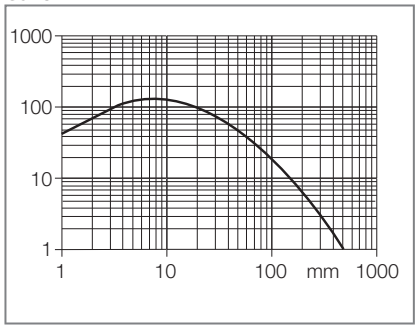
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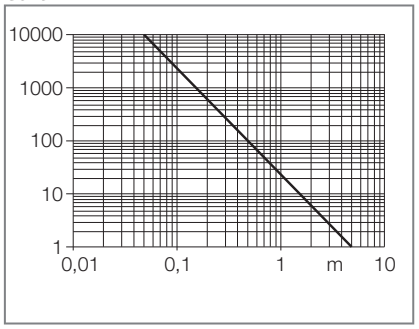
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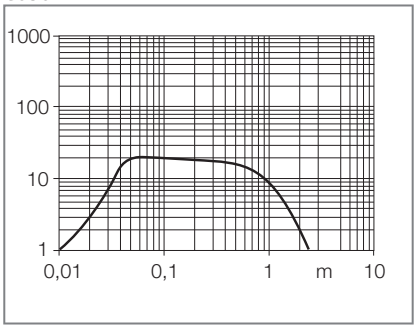
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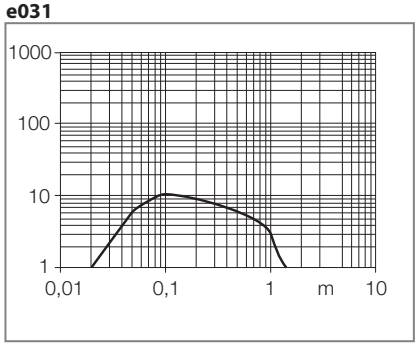
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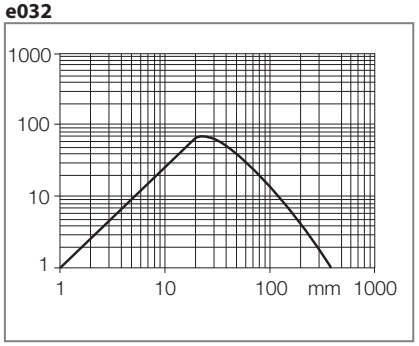
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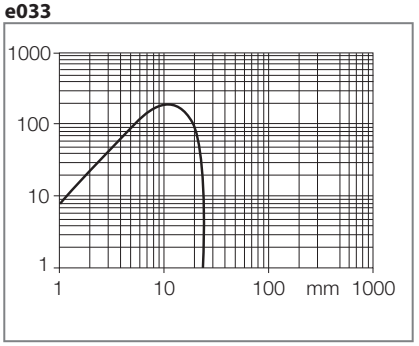
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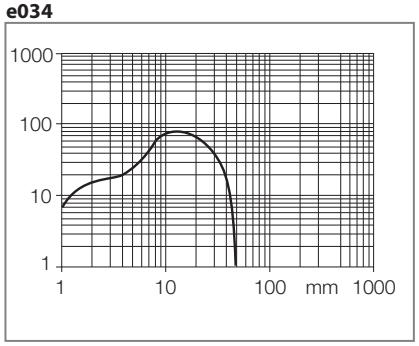
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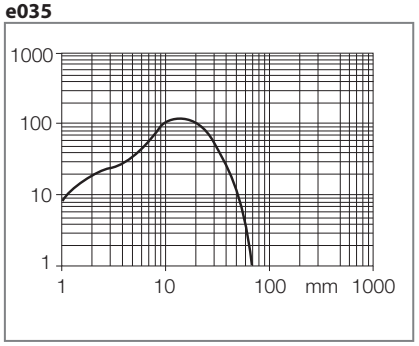
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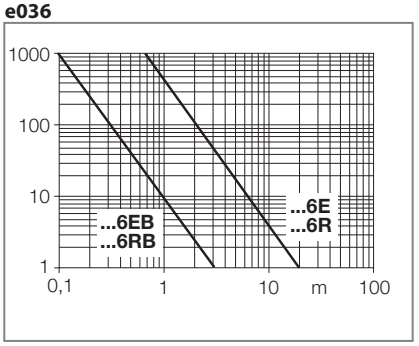
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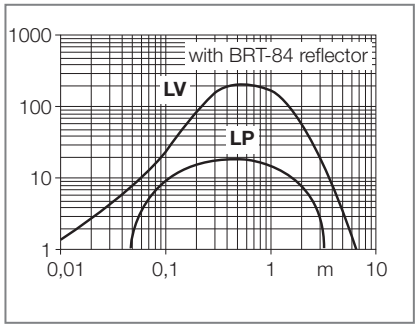
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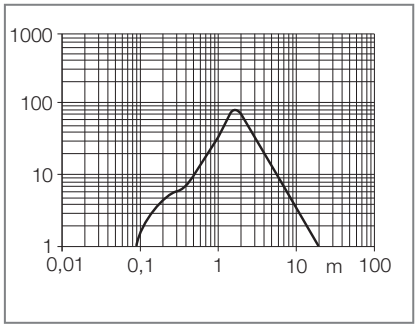
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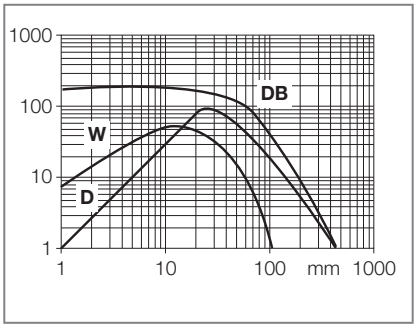
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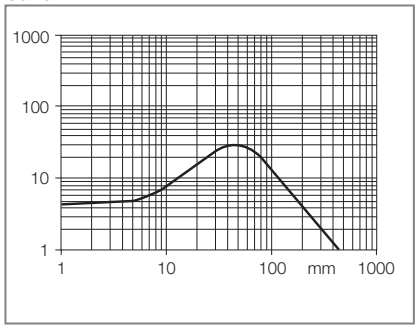
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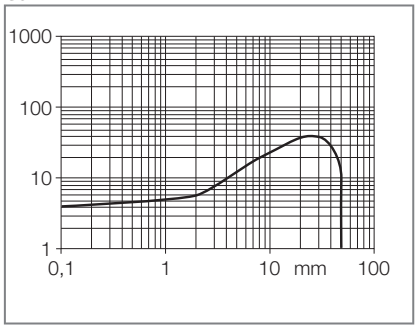
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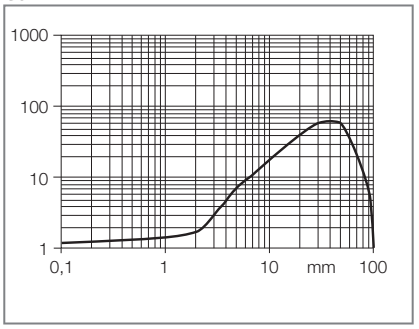
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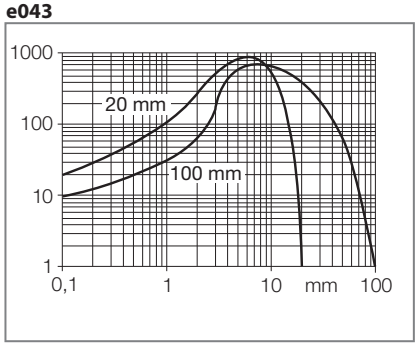
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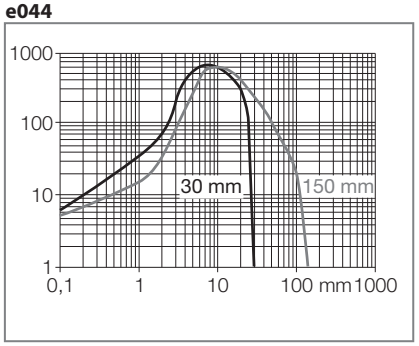
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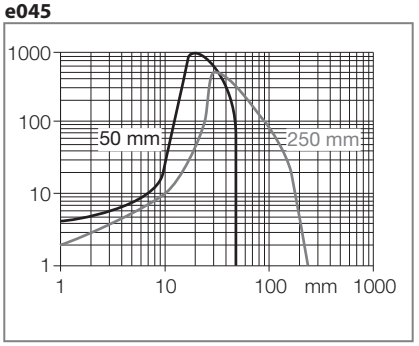
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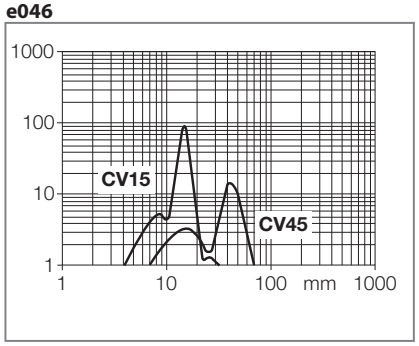
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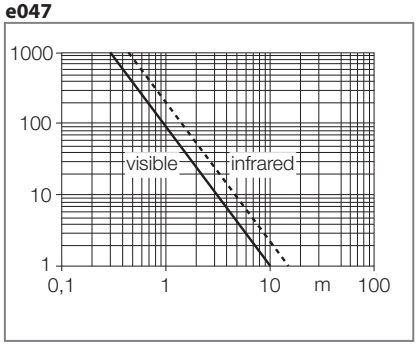
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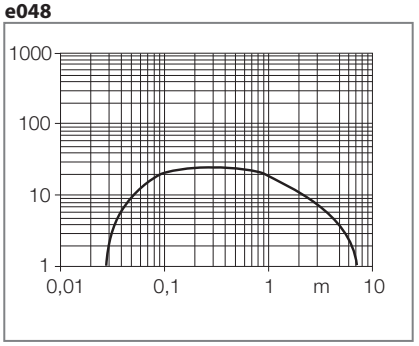
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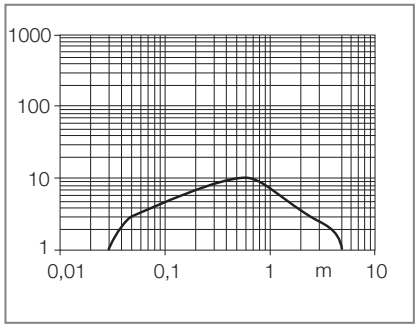


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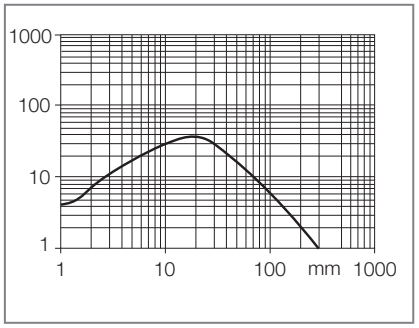


Excess gain curves

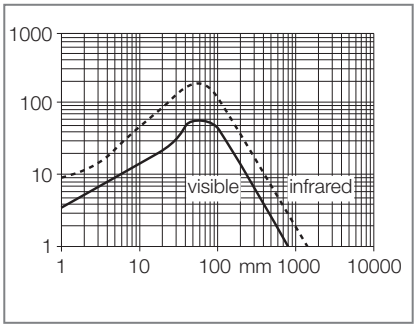
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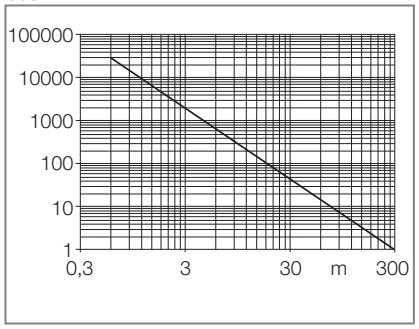
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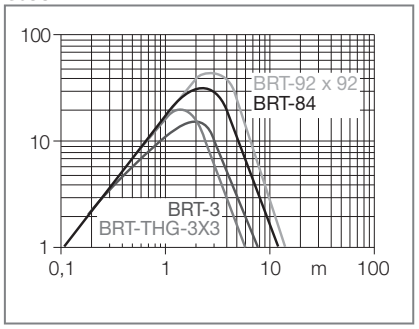
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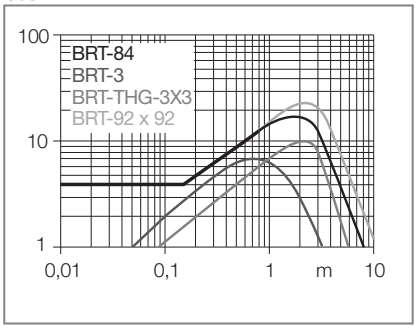
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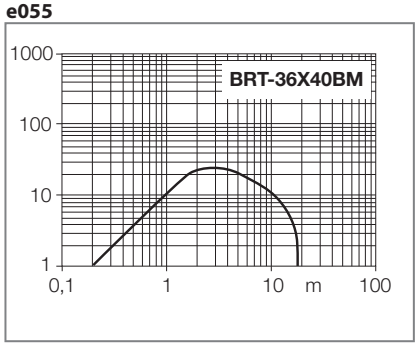
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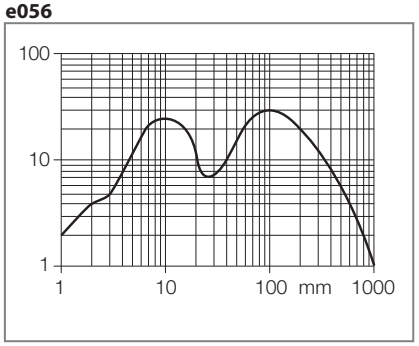
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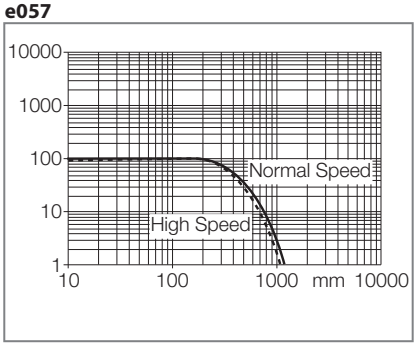
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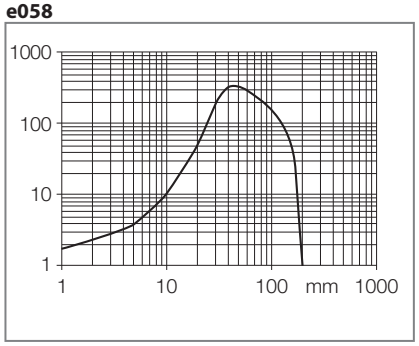
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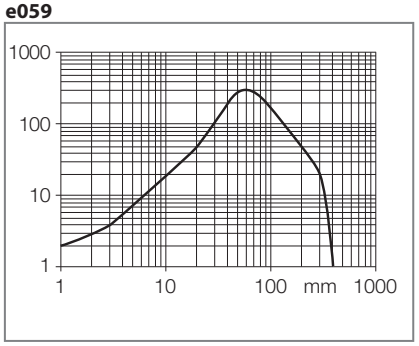
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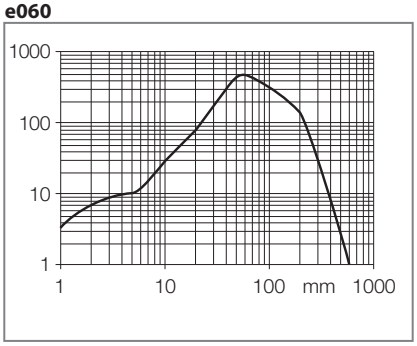
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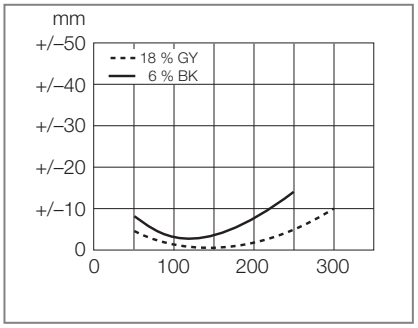
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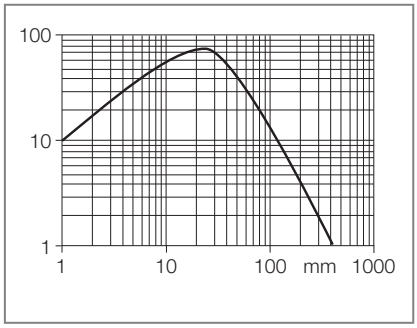
Hans Turck GmbH & Co. KG ▪ Tel. +49 (208) 49 52-0 ▪ Fax +49 (208) 49 52-264

Excess gain curves

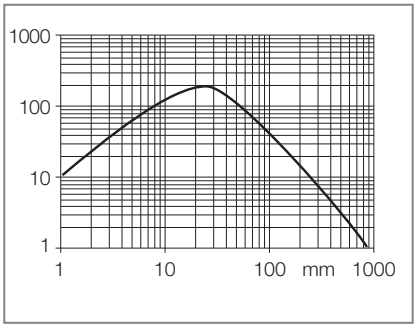
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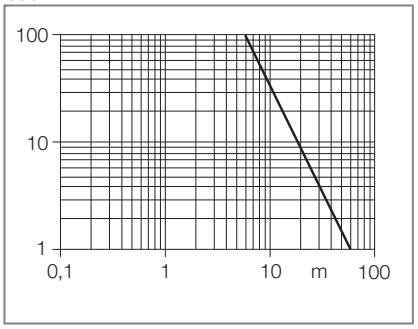
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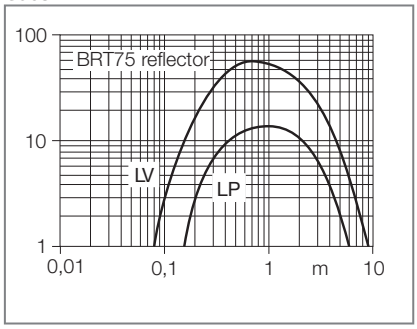
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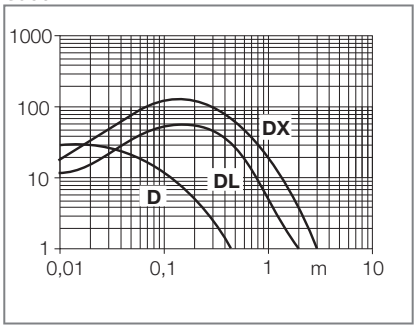
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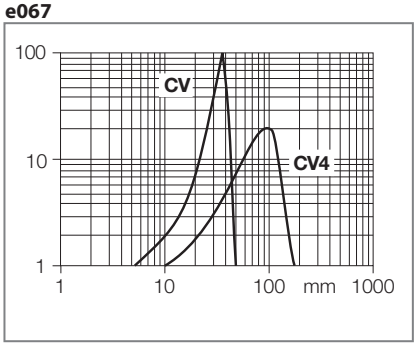
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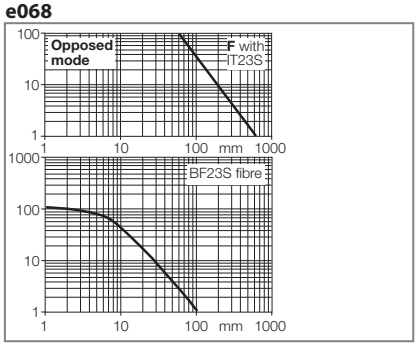
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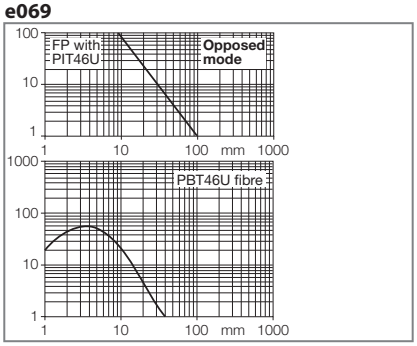
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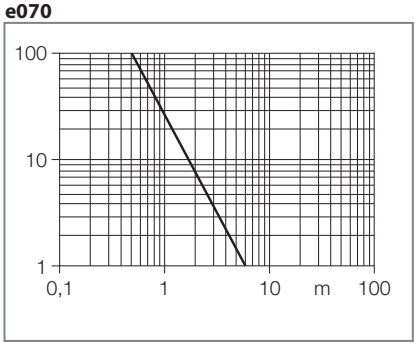
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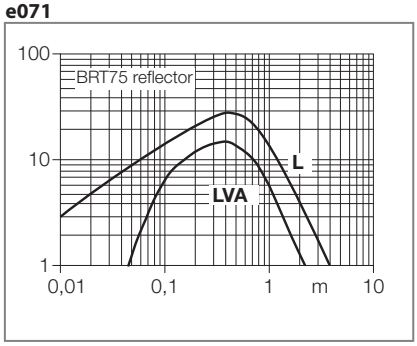
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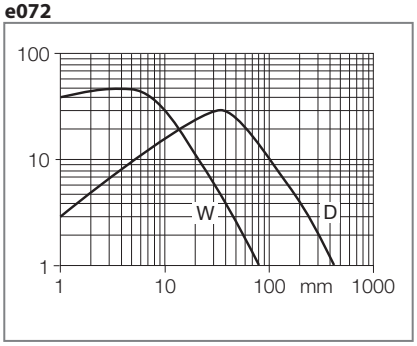
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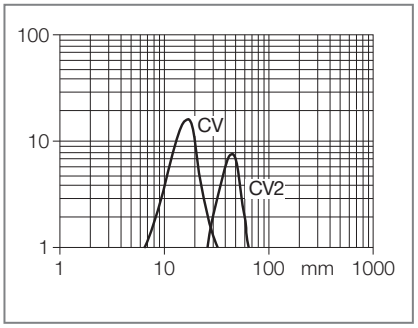


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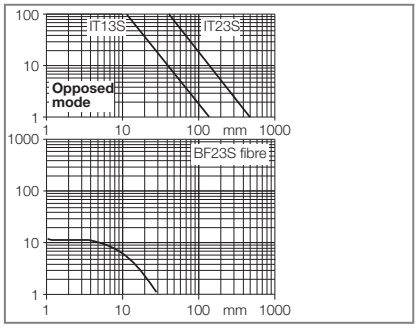


Excess gain curves

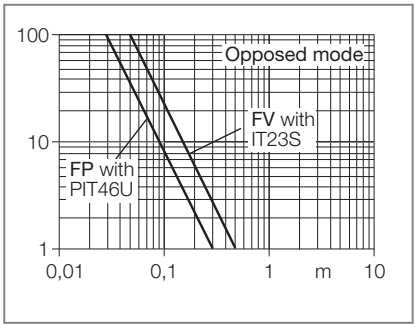
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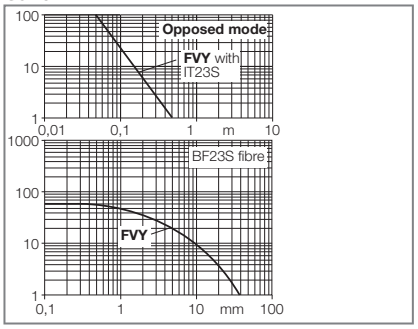
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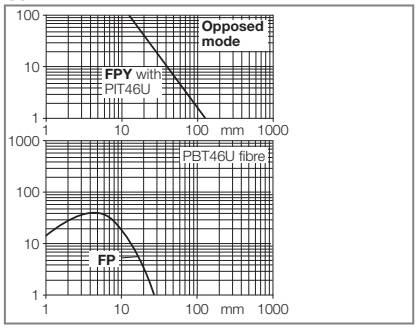
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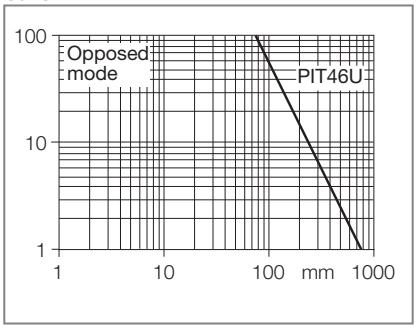
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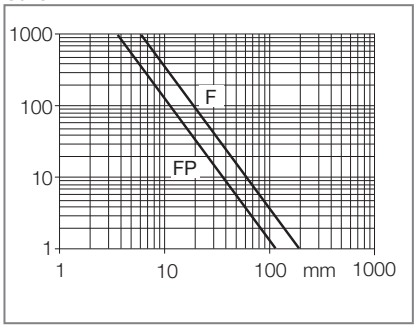
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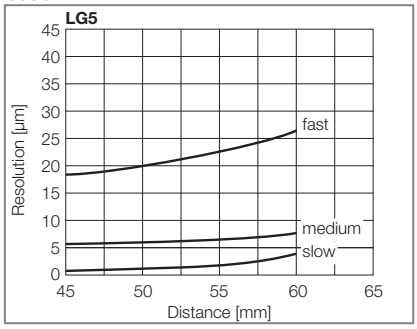
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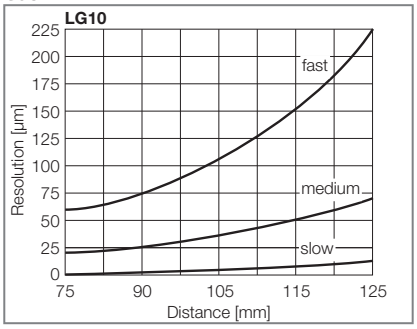
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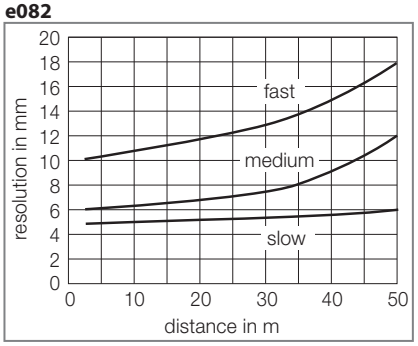
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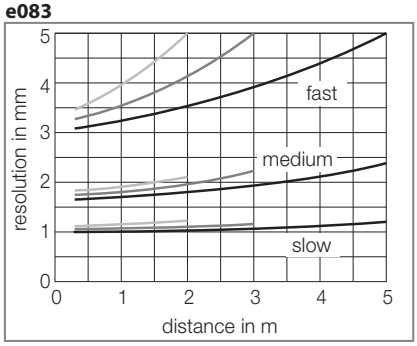
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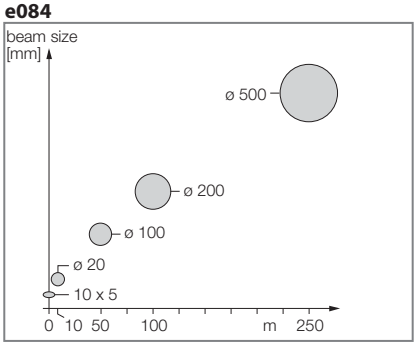
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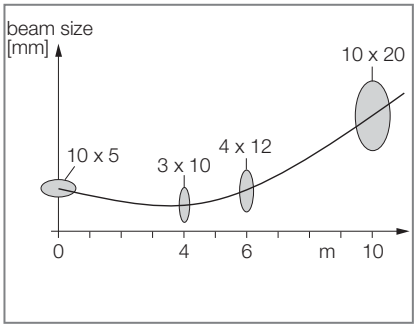


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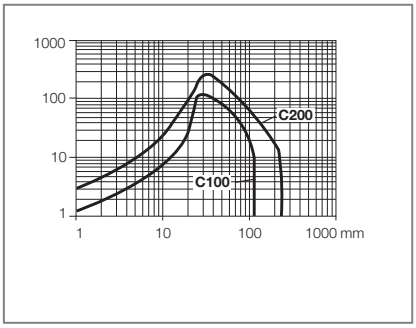


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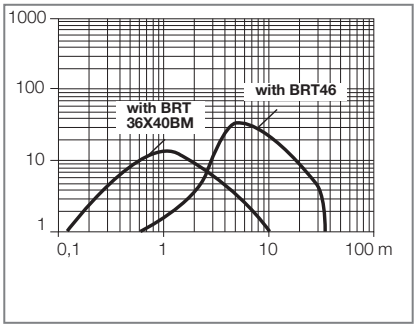
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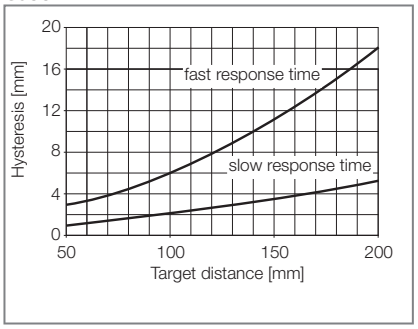
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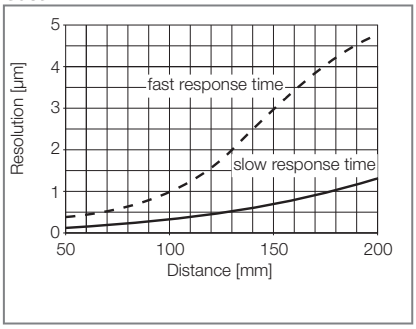
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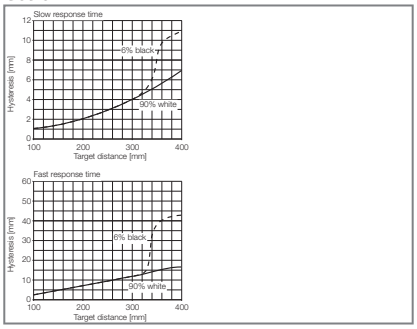
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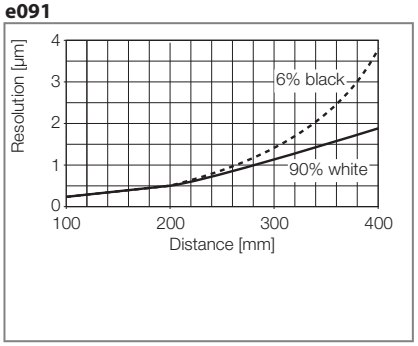
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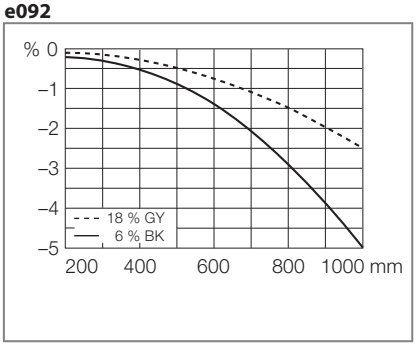
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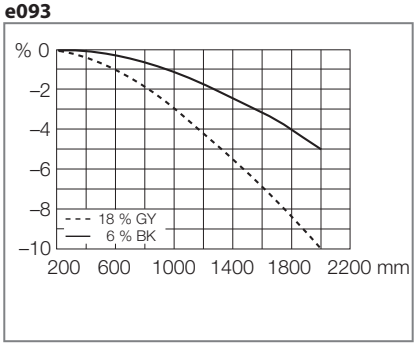
e091



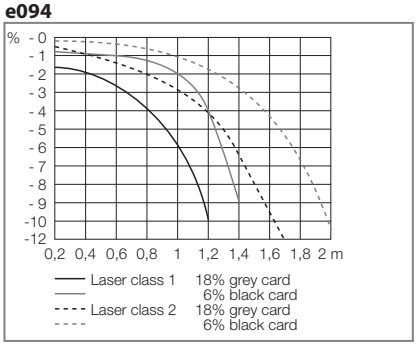
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e093



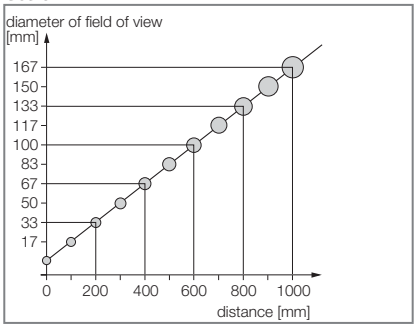
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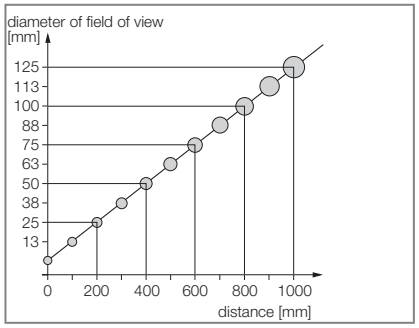
LED	BN	WH	BK	BU
RD ———	+			–
RD - - -	+		+	–
YE ———		+		–
YE - - -	+	+		–
GN ———			+	–
GN - - -		+	+	–
RD-GN-YE	+	+	+	–

e096

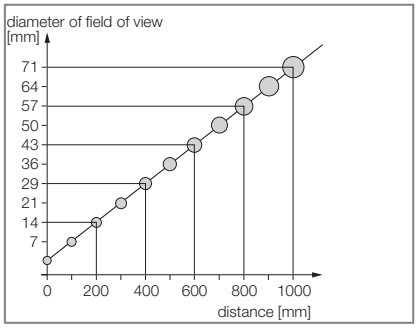


Excess gain curves

e097



e098



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ain curves

Index of types

Type	Ident no.	Page
ASB-1	6965101	760, 763
ASB-2	6965102	760, 763
ASB-3	6965103	761, 763
ASB-4	6965104	761, 763
ASB-5	6965105	761, 763
ASB-6	6965106	761, 764
ASB-7	6965107	761, 764
ASB-8	6965108	761, 764
ASB-9	6965109	761, 764
B1N360V-Q20L60-2UP6X3-H1151	1534051	689
B1N360V-Q20L60-LI2-H1151	1534045	688
B1N360V-Q20L60-LU3-H1151	1534044	688
B2N10H-Q20L60-2LI2-H1151	1534012	687
B2N10H-Q20L60-2LU3-H1151	1534006	687
B2N10H-Q20L60-2LU5-H1151	1534009	688
B2N10H-Q42-CNX2-2H1150	1534061	689
B2N45H-Q20L60-2LI2-H1151	1534013	687
B2N45H-Q20L60-2LU3-H1151	1534007	687
B2N45H-Q20L60-2LU5-H1151	1534010	688
B2N45H-Q42-CNX2-2H1150	1534062	689
B2N60H-Q20L60-2LI2-H1151	1534014	687
B2N60H-Q20L60-2LU3-H1151	1534008	687
B2N60H-Q20L60-2LU5-H1151	1534011	688
B2N60H-Q42-CNX2-2H1150	1534063	689
B2N85H-Q20L60-2LI2-H1151	1534032	687
B2N85H-Q20L60-2LU3-H1151	1534027	687
B2N85H-Q20L60-2LU5-H1151	1534042	688
BA1.53SMTA	3020879	795
BA23S	3017210	795
BC10-M30K-AZ3X	2503031	264
BC10-M30K-AZ3X-B3131	2503034	264
BC10-M30K-RZ3X	2503025	264
BC10-M30K-RZ3X-B3131	2503023	264
BC10-M30K-VN4X	2503024	252
BC10-M30K-VN4X-H1141	2503033	252
BC10-M30K-VP4X	2503022	252

Type	Ident no.	Page
BC10-M30K-VP4X-H1141	2503035	252
BC10-P30SR-FZ3X2	23104	266
BC10-PT30-VN4X2	2507020	277
BC10-PT30-VP4X2	2507010	277
BC10-PT30-Y0X	2020000	277
BC10-Q14-AN4X2	2530010	246
BC10-Q14-AN4X2-V1131	2530011	246
BC10-Q14-AP4X2	2530001	246
BC10-Q14-AP4X2-V1131	2530002	246
BC10-Q14-RP4X2	2530014	246
BC10-QF5,5-AN6X2	2620121	247
BC10-QF5,5-AP6X2	2620117	247
BC10-QF5,5-AP6X2/S250	2620115	247
BC10-S30-AZ3X	2310700	265
BC10-S30-AZ3X-B3131	2310710	265
BC10-S30-RZ3X	2310800	265
BC10-S30-RZ3X-B3131	2310810	265
BC10-S30-VN4X	2506000	256
BC10-S30-VN4X-H1141	2506010	256
BC10-S30-VP4X	2506110	256
BC10-S30-VP4X-H1141	2506100	256
BC10-S30-Y1X	20100	269
BC15-K34-AN4X-H1141	2502125	257
BC15-K34-AP4X-H1141	2502126	257
BC15-K34-AZ3X	2310008	265
BC15-K34-RZ3X	2310110	265
BC15-K34SR-FZ3X2	2310009	266
BC15-K34-VN4X	2502127	257
BC15-K34-VP4X	2502124	257
BC20-CP40-FZ3X2	23105	266
BC20-CP40-VN4X2	25161	248
BC20-CP40-VP4X2	25160	248
BC20-CP40-VP4X2-H1141	2516102	248
BC20-K40SR-VN4X2	25101	258
BC20-K40SR-VN4X2-H1141	2510104	258
BC20-K40SR-VP4X2	25100	258

Type	Ident no.	Page
BC20-Q20-AN4X2	2530110	246
BC20-Q20-AN4X2-H1141	2530111	246
BC20-Q20-AP4X2	2530100	246
BC20-Q20-AP4X2-H1141	2530101	246
BC20-Q20-RP4X2	2530106	246
BC20-Q20-RP4X2-H1143	2530107	246
BC20-Q20-RP4X2-V1131	2501007	246
BC3-M12-AN6X	2601100	251
BC3-M12-AP6X	2601000	251
BC3-M12-RP6X	2601103	251
BC3-S12-AN6X	2601300	255
BC3-S12-AP6X	2601200	255
BC3-S12-AP6X/S100	2601201	261
BC3-S12-RP6X	2601202	255
BC5-M18-AN4X	2504002	252
BC5-M18-AN4X-H1141/S250	2504025	251
BC5-M18-AP4X	2504001	252
BC5-M18-AP4X-H1141/S250	2504024	251
BC5-M18-AZ3X	2305000	263
BC5-M18-AZ3X-B3331/S250	2305001	263
BC5-M18-RP4X	2504026	252
BC5-M18-RP4X-H1141/S250	2504023	251
BC5-M18-RZ3X	2305100	263
BC5-M18-RZ3X-B3331/S250	2305101	263
BC5-Q08-AN6X2/S250	26201	245
BC5-Q08-AN6X2-V1131/S250	26211	245
BC5-Q08-AP6X2/S250	26200	245
BC5-Q08-AP6X2-V1131/S250	26210	245
BC5-Q08-RP6X2/S250	2530108	245
BC5-Q08-RP6X2-V1131/S250	2620152	245
BC5-QF5,5-AP6X2/S250	2620116	247
BC5-QF5,5-Y1X/S250	2030000	269
BC5-S185-AN4X/S100	2503551	261
BC5-S185-AP4X	25035	277
BC5-S185-AP4X/S100	2503502	261
BC5-S18-AN4X	25031	256

Type	Ident no.	Page
BC5-S18-AN4X-H1141/S250	2503108	255
BC5-S18-AP4X	25030	256
BC5-S18-AP4X-H1141/S250	2503602	255
BC5-S18-AZ3X	2305500	264
BC5-S18-RP4X	2503020	256
BC5-S18-RP4X-0,15-RS4	1542573	256
BC5-S18-RP4X-H1141/S250	2601209	255
BC5-S18-RZ3X	2305400	264
BC5-S18-Y1X	20060	269
BC5-S18-Y1X/S100	2006021	261, 269
BC8-Q10-AN6X2/S250	2621203	245
BC8-Q10-AN6X2-V1131/S250	2621202	245
BC8-Q10-AP6X2/S250	2621200	245
BC8-Q10-AP6X2-V1131/S250	2621201	245
BC8-Q10-RP6X2/S250	2621205	245
BC8-Q10-RP6X2-V1131/S250	2621204	245
BCC10-S30-AP4X	2503037	275
BCC10-S30-AP4X-H1141	2503038	275
BCC10-S30-RP4X	1542561	275
BCC10-S30-RP4X-H1143	1542562	275
BCC10-S30-VP4X-H1141	2503043	275
BCF10-Q20L60-AP4X	2504028	273
BCF10-Q20L60-AP4X-H1141	2504027	273
BCF10-S30-AZ3X	2506015	265
BCF10-S30-AZ3X-B3131	2506012	265
BCF10-S30-RZ3X	2506013	265
BCF10-S30-RZ3X-B3131	2506014	265
BCF10-S30-VN4X	2506011	272
BCF10-S30-VN4X-H1141	2506016	272
BCF10-S30-VP4X	2506111	272
BCF10-S30-VP4X-H1141	2506117	272
BCF15-K34-AZ3X	2502136	265, 272
BCF15-K34-RZ3X	2502135	265, 272
BCF5-S18-AN4X	2503012	271
BCF5-S18-AN4X-H1141/S250	2503016	271
BCF5-S18-AP4X	2503011	271

Index of types

Type	Ident no.	Page
BCF5-S18-AP4X/S90	2503014	271
BCF5-S18-AP4X-H1141/S250	2503010	271
BCF5-S18-RN4X	2503008	271
BCF5-S18-RP4X/S90	2503006	271
BF23P	3017233	795
BF23S	3017237	795
BI0,8-Q5SE-AP6X	1619341	79
BI1,5-EG08-AN6X	4602340	109
BI1,5-EG08-AN6X-H1341	4602360	110
BI1,5-EG08-AN6X-V1131	4602350	111
BI1,5-EG08-AP6X	4602240	109
BI1,5-EG08-AP6X-H1341	4602260	110
BI1,5-EG08-AP6X-V1131	4602220	111
BI1,5-EG08K-AN6X	4669140	109
BI1,5-EG08K-AN6X-H1341	4669150	110
BI1,5-EG08K-AN6X-V1131	4672540	111
BI1,5-EG08K-AP6X	4669040	109
BI1,5-EG08K-AP6X-H1341	4669050	110
BI1,5-EG08K-AP6X-V1131	4672440	111
BI1,5-EG08K-Y1	1003600	108
BI1,5-EG08K-Y1-H1341	1003620	108
BI1,5-EG08-LU	1533003	177
BI1,5-EG08-LU-H1341	1533004	177
BI1,5-EG08WD-AN6X-H1341	4602211	110, 219
BI1,5-EG08WD-AP6X-H1341	4602210	110, 219
BI1,5-EG08-Y1-H1341	1003502	108
BI1,5-EH04-0,3-M12-SIU-H1141	1533001	181
BI1,5-EH6,5-AN6X-V1131	4612120	149
BI1,5-EH6,5-AP6X-V1131	4612020	149
BI1,5-EH6,5K-AN6X	4610640	150
BI1,5-EH6,5K-AN6X-V1131	4610840	149
BI1,5-EH6,5K-AP6X	4610540	150
BI1,5-EH6,5K-AP6X-V1131	4610740	149
BI1,5-EH6,5K-Y1	1004600	148
BI1,5-EH6,5-LU	1533002	181
BI1,5-GS880-Y1	1004401	108

Type	Ident no.	Page
BI1,5-HS865-AN6X	4604301	150
BI1,5-HS865-AP6X	4604201	150
BI1,5-HS865-Y1	1004201	148
BI1,5U-EG08-AN6X	4600510	109
BI1,5U-EG08-AN6X-H1341	4600550	110
BI1,5U-EG08-AN6X-V1131	4600530	111
BI1,5U-EG08-AP6X	4600500	109
BI1,5U-EG08-AP6X-H1341	4600540	110
BI1,5U-EG08-AP6X-V1131	4600520	111
BI1,5U-EGT08-AN6X-H1341	4600558	110
BI1,5U-EGT08-AP6X-H1341	4600555	110
BI1,5U-EGT08-AP6X-V1131	4600556	111
BI10-EG30SK-Y1X	4012070	134
BI10-EG30-Y1X/S100 7M	4012005	203
BI10-EM30-AP6/S907	4614513	210
BI10-EM30D-VP6X/S120	4617035	209
BI10-EM30WDTC-Y1X	4012071	134, 192, 204
BI10-EM30-Y1X-H1141	4020205	133
BI10-G30K-AN6X	46716	137
BI10-G30K-AP6X	46706	137
BI10-G30SK-AN6X	46481	138
BI10-G30SK-AP6X	46480	138
BI10-G30SK-Y1X	40220	134
BI10-G30-Y1X	40200	133
BI10-M30-AD4X	44170	135
BI10-M30-AD4X-H1141	44175	134
BI10-M30-AN6X	46171	137
BI10-M30-AN6X-H1141	46176	136
BI10-M30-AP6X	46170	137
BI10-M30-AP6X/S120	4617010	208
BI10-M30-AP6X-H1141	46175	136
BI10-M30-AZ3X	43164	142
BI10-M30-AZ3X/S120	4316410	209
BI10-M30E-LIU-H1141	1537003	180
BI10-M30-LIU	15355	180
BI10-M30-Y1X-H1141	40202	133

Type	Ident no.	Page
BI10NF-EM30HE-AN6X2-H1141	1615005	230
BI10NF-EM30HE-AP6X2-H1141	1615002	230
BI10-P30SK-AP6X	46595	138
BI10-P30SK-Y1X	40410	134
BI10-P30SR-AN6X	16203	138
BI10-P30SR-AP6X	16116	138
BI10-P30SR-FZ3X2	13420	142
BI10-P30SR-VN4X2	15752	140
BI10-P30SR-VP4X2	15652	140
BI10-P30-Y1/S100	10233	203
BI10-P30-Y1X	40400	133
BI10-P30-Y1X/S97	1023322	192
BI10-Q14-LIU	1534602	173
BI10-Q14-LIU-V1141	1534603	173
BI10-Q14-Y1X	1608730	88
BI10-QN26-AD4X/S90	4470222	92
Bi10-QN26-AD4X-0,15-RS4.23/S90	4470224	92
BI10-QN26-AD4X-0,15XOR-RS4.23/S100-S1589	4470228	92
BI10R-Q14-AN6X2-H1141	1407120	158
BI10R-Q14-AP6X2-H1141	1407100	158
BI10R-W30-DAN6X-H1141	14039	159
BI10R-W30-DAP6X-H1141	14038	159
BI10-S30-AD4X	44590	135
BI10-S30-AZ3X	43554	142
BI10-S30-AZ3X/S100	13719	206
BI10U-CA25-AP6X2-H1141	1625631	91
BI10U-CA25-AP6X2-V1131	1625632	91
BI10U-EG30SK-AN6X	1636420	138
BI10U-EG30SK-AP6X	1636400	138
BI10U-EG30SK-VN4X	1582701	140
BI10U-EG30SK-VP4X	1582601	140
BI10U-EM30-AN6X	1636320	137
BI10U-EM30-AN6X-H1141	1636350	136
BI10U-EM30-AP6X	1636300	137
BI10U-EM30-AP6X-H1141	1636340	136

Type	Ident no.	Page
BI10U-G30-ADZ30X2-B1131	4281612	141
BI10U-G30-ADZ30X2-B3131	4281613	141
BI10U-M30-AD4X	4405073	39, 135
BI10U-M30-AD4X-H1144	4405072	38, 134
BI10U-M30-ADZ30X2	4282610	142
BI10U-M30-AN6X	1636120	137
BI10U-M30-AN6X-H1141	1636150	136
BI10U-M30-AP6X	1636100	137
BI10U-M30-AP6X-H1141	1636140	136
BI10U-MT30-AD4X-0,3-RS4.23/XOR	4405050	46
BI10U-MT30-AD4X-H1144	4405074	45, 134
BI10U-MT30-AN6X-H1141	1636250	136
BI10U-MT30-AP6X-H1141	1636240	136
BI10U-P30SK-AN6X	1636720	138
BI10U-P30SK-AP6X	1636700	138
BI10U-Q14-AN6X2	1608710	88
BI10U-Q14-AN6X2-V1131	1608510	88
BI10U-Q14-AP6X2	1608700	88
BI10U-Q14-AP6X2-V1131	1608500	88
BI10U-S30-AN6X	1636520	137
BI10U-S30-AN6X-H1141	1636620	136
BI10U-S30-AP6X	1636500	137
BI10U-S30-AP6X-H1141	1636600	136
BI12-G30K-AD4X	4417010	135
BI15-CK40-AD4X-H1141	44650	94
BI15-CK40-AN6X2-H1141	16251	95
BI15-CK40-AP6X2-H1141	16250	95
BI15-CK40-LIU-H1141	1537800	175
BI15-CK40-Y1X-H1141	4065000	93
BI15-CP40-AD4X	44660	97
BI15-CP40-AN6X2	16223	98
BI15-CP40-AP6X2	16023	98
BI15-CP40-FZ3X2	13400	99
BI15-CP40-FZ3X2/S100	13440	195
BI15-CP40-FZ3X2/S97	1341015	185
BI15-CP40-LIU	15356	176

Index of types

Index of types

Type	Ident no.	Page
BI15-CP40-VN4X2	15790	99
BI15-CP40-VP4X2	15690	99
BI15-CP40-VP4X2/S100	15045	194
BI15-CP40-VP4X2/S97	15058	184
BI15-CP40-Y1X	10110	97
BI15-CP40-Y1X/S100	10396	194
BI15-CP40-Y1X/S97	10397	184
BI15-M30-AN6X	4618620	137
BI15-M30-AN6X 7M	4618621	137
BI15-M30-AN6X-H1141	4618600	136
BI15-M30-AP6X	4618530	137
BI15-M30-AP6X 7M	4618532	137
BI15-M30-AP6X-H1141	46185	136
BI15-M30E-LIU-H1141	1535563	180
BI15-M30-LI-EXI	1535554	180
BI15-M30-LIU	1535543	180
BI15-M30-LUAP6X	4618510	181
BI15-M30-VN4X 7M	4590714	140
BI15-M30-VN6X	4590717	140
BI15-M30-VN6X-H1141	4590719	139
BI15-M30-VP4X 7M	4590715	140
BI15-M30-VP6X	4590716	140
BI15-M30-VP6X-H1141	4590718	139
BI15-Q20-2LU-H1141/S950	1534611	174
BI15-Q20-LIU	1534600	174
BI15-Q20-LIU-H1141	1534601	174
BI15-Q20-Y1X	1080020	90
BI15-Q20-Y1X-H1141	1080025	90
BI15R-Q14-AN6X2-H1141	1407220	158
BI15R-Q14-AP6X2-H1141	1407200	158
BI15R-W30-DAN6X-H1141	14041	159
BI15R-W30-DAP6X-H1141	14040	159
BI15U-CK40-AD4X-H1144	4280032	23, 94
BI15U-CK40-ADZ30X2-B1131	4280010	96
BI15U-CK40-ADZ30X2-B3131	4280030	96
BI15U-CK40-AN6X2-H1141	1625610	95

Type	Ident no.	Page
BI15U-CK40-AP6X2-H1141	1625600	95
BI15U-CK40-VN4X2-H1141	1568811	96
BI15U-CK40-VP4X2-H1141	1568801	96
BI15U-CP40-AN6X2	1623510	98
BI15U-CP40-AP6X2	1623500	98
BI15U-CP40-FDZ30X2	4280600	99
BI15U-CP40-VP4X2	1540500	99
BI15U-CP40-VP4X2-H1141	1540502	99
BI15U-EM30-AN6X-H1141	1636737	39
BI15U-EM30-AP6X	1636741	40
BI15U-EM30-AP6X-H1141	1636733	39
BI15U-EM30WD-AN6X	1634843	52, 137, 193, 205, 223
BI15U-EM30WD-AN6X-H1141	1634834	52, 136, 193, 204, 223
BI15U-EM30WD-AN6X-H1141/3GD	1634856	136
BI15U-EM30WD-AP6X	1634819	52, 137, 193, 205, 223
BI15U-EM30WD-AP6X-H1141	1634820	52, 136, 193, 204, 223
BI15U-EM30WD-AP6X-H1141/3GD	1634855	136
BI15U-EM30WDTC-AP6X	1634764	53, 138, 194, 205
BI15U-EM30WD-VP44X-H1141	1634899	223
BI15U-M30-AN6X	1636735	40, 137
BI15U-M30-AN6X-H1141	1636736	39, 136
BI15U-M30-AP6X	1636731	40, 137
BI15U-M30-AP6X-H1141	1636732	39, 136
BI15U-M30E-AP6X-H1141	1636742	39
Bi15U-M30-RP6X-H1141	1636739	39, 136
BI15U-M30-VN44X	1634888	41, 140
BI15U-M30-VN44X-H1141	1634889	40, 139
BI15U-M30-VP44X	1634884	41, 140
BI15U-M30-VP44X-H1141	1634885	40, 139
BI15U-MT30-AN6X-H1141	1636738	46, 136
BI15U-MT30-AP6X-H1141	1636734	46, 136
BI15U-Q20-AN6X2	1608810	90

Type	Ident no.	Page
BI15U-Q20-AN6X2-H1141	1608610	90
BI15U-Q20-AP6X2	1608800	90
BI15U-Q20-AP6X2-H1141	1608600	90
BI1-EG05-AN6X	4609840	107
BI1-EG05-AN6X-V1331	4608740	107
BI1-EG05-AP6X	4609740	107
BI1-EG05-AP6X-V1331	4608640	107
BI1-EG05-RP6X	4609750	107
BI1-EG05-RP6X-V1331	4609752	107
BI1-EG05-Y1	1003240	107
BI1-EH03-AN7X	1619323	147
BI1-EH03-AP7X	1619322	147
BI1-EH04-AN6X	4609640	148
BI1-EH04-AN6X-V1331	4608540	148
BI1-EH04-AP6X	4609540	148
BI1-EH04-AP6X-V1331	4608440	148
BI1-EH04-RP6X	4608442	148
BI1-EH04-RP6X-V1331	4608441	148
BI1-EH04-Y1	1003040	147
BI1-HS540-AN6X	4604101	148
BI1-HS540-AP6X	4604001	148
BI1-HS540-RP6X	4604050	148
BI1-HS540-Y1	1004001	147
BI1-Q6,5-AP6/S34	4613401	81
BI1-Q6,5-Y1	4004000	80
BI2,5FE-EM12FE-AP6X-H1141	1615011	229
BI20-CP40-Y1X	1011123	97
BI20-G47-AN4X	15745	143
BI20-G47-AP4X	15645	143
BI20-G47-AZ3X	13088	144
BI20-G47-Y1X	10202	143
BI20R-Q14-AN6X2-H1141	1407320	158
BI20R-Q14-AP6X2-H1141	1407300	158
BI20R-Q14-LU	1535546	174
BI20R-Q14-LU-H1141	1535548	158, 174
BI20R-W30-DAN6X-H1141	14043	159

Type	Ident no.	Page
BI20R-W30-DAP6X-H1141	14042	159
BI20U-CA40-AN6X2-H1141	1627300	93
BI20U-CA40-AP6X2-H1141	1627200	93
BI20U-CK40-AN6X2-H1141	1627231	23, 95
BI20U-CK40-AP6X2-H1141	1627233	23, 95
BI20U-CK40-VN4X2-H1141	1568814	96
BI20U-CK40-VP4X2-H1141	1627216	96
BI20U-CP40-AN6X2	1627230	25, 98
BI20U-CP40-AP6X2	1627232	25, 98
BI20U-CP40-VN4X2	1627237	99
BI20U-CP40-VP4X2	1627240	99
BI20U-QV40-AP6X2-H1141	1627245	24, 100
BI25-G47SR-FZ3X2	13427	144
BI25-G47SR-VN4X2	15748	144
BI25-G47SR-VP4X2	15648	144
BI2-EG08-AG41X	4562000	108
BI2-EG08-AG41X-H1341	4562001	108
BI2-EG08-AN6X	4602140	109
BI2-EG08-AN6X/S100	4602108	197
BI2-EG08-AN6X-H1341	4602160	110
BI2-EG08-AN6X-V1131	4602150	111
BI2-EG08-AP6X	4602040	109
BI2-EG08-AP6X/S100	4602047	197
BI2-EG08-AP6X-H1341	4602060	110
BI2-EG08-AP6X-V1131	4602050	111
BI2-EG08-AZ14X	4100001	112
BI2-EG08K-AN6X	4669500	109
BI2-EG08K-AN6X-H1341	4669560	110
BI2-EG08K-AN6X-V1131	4669550	111
BI2-EG08K-AP6X	4669400	109
BI2-EG08K-AP6X-H1341	4669460	110
BI2-EG08K-AP6X-V1131	4669450	111
BI2-EG08-VP6X-H1341	4602522	110
BI2-EG12SK-Y1X	4012050	114
BI2-EG12-Y1X/S100 7M	4012003	197
BI2-EH6,5-AN6X	4612300	150

Index of types

Type	Ident no.	Page
BI2-EH6,5-AN6X-V1131	4612320	149
BI2-EH6,5-AP6X	4612200	150
BI2-EH6,5-AP6X-V1131	4612220	149
BI2-EH6,5K-AN6X	4610100	150
BI2-EH6,5K-AN6X-V1131	4610120	149
BI2-EH6,5K-AP6X	4610000	150
BI2-EH6,5K-AP6X-V1131	4610020	149
BI2-EH6,5K-RP6X	4610001	150
BI2-EH6,5K-RP6X-V1131	4610021	149
BI2-EM12D-AP6/S120	4614512	206
BI2-EM12WD-AP6/S929	4614515	183
BI2-EM12WDTC-Y1X	4012051	114, 187, 198
BI2-EM12-Y1X-H1141	4010201	112
BI2-G12K-AN6X	46712	118
BI2-G12K-AP6X	46702	118
BI2-G12K-AP6X-H1141	4670260	117
BI2-G12SK-AN6X	46361	119
BI2-G12SK-AP6X	46360	119
BI2-G12SK-Y1X	40110	114
BI2-G12-Y1X	40100	113
BI2-K11-AP6X	46609	151
BI2-K11SK-AP6X	46615	151
BI2-K11-Y1	10070	151
BI2-M12-AD4X	44050	115
BI2-M12-AD4X-H1141	44065	114
BI2-M12-AN6X	46051	118
BI2-M12-AN6X-H1141	46066	117
BI2-M12-AP6X	46050	118
BI2-M12-AP6X-H1141	46065	116
BI2-M12-AZ31X	13030	122
BI2-M12E-AN6X-H1141	4606602	116
BI2-M12E-AP6X-H1141	4606505	116
BI2-M12-LIU	1535534	178
BI2-M12-LIU-H1141	1535533	178
BI2-M12-Y1X-H1141	40102	112
BI2-P12SK-AN6X	46536	119

Type	Ident no.	Page
BI2-P12SK-AP6X	46535	119
BI2-P12SK-Y1X	40310	114
BI2-P12-Y1/S100	10302	197
BI2-P12-Y1X	40300	113
BI2-P12-Y1X/S97	4030021	187
BI2-Q10S-AN6X	1619310	85
BI2-Q10S-AP6X	1609360	85
BI2-Q10S-AP6X-0,2-PSG3M	1609303	85
BI2-Q10S-AZ31X	1309100	86
BI2-Q10S-VN6X	1609341	85
BI2-Q10S-VP6X	1609340	85
BI2-Q10S-Y1X	4012130	84
BI2-Q12-AZ31X	13100	87
BI2-Q5,5-AN6X	1613100	79
BI2-Q5,5-AP6X	1613000	79
BI2-S12-AD4X	44530	115
BI2-S12-AZ31X	13020	122
BI2-S12-AZ31X/S100	1302001	200
BI2U-EG08-AN6X	4602035	31, 109
BI2U-EG08-AN6X-H1341	4602037	30, 110
BI2U-EG08-AN6X-V1131	4602036	30, 111
BI2U-EG08-AP6X	4602032	31, 109
BI2U-EG08-AP6X-H1341	4602034	30, 110
BI2U-EG08-AP6X-V1131	4602033	30, 111
BI2U-EG08-RP6X-H1341	4602080	30, 110
BI2U-EG08-RP6X-V1131	4602091	30, 111
BI2U-EGT08-AP6X-H1341	4602071	43, 110
BI2U-EGT08-AP6X-V1131	4602070	111
BI2U-EH6,5-AN6X	4281170	29, 150
BI2U-EH6,5-AN6X-V1131	4281180	29, 149
BI2U-EH6,5-AP6X	4281150	29, 150
BI2U-EH6,5-AP6X-V1131	4281160	29, 149
BI2U-EH6,5-RP6X	4281151	150
BI2U-EH6,5-RP6X-V1131	1637151	149
BI2U-M12E-AD4X	4405062	32, 115
BI2U-M12E-AD4X-H1144	4405060	31, 114

Type	Ident no.	Page
BI2U-MT12E-AD4X-0,3-RS4.23/XOR	4405048	43
BI2U-MT12E-AD4X-H1144	4405061	114
BI30R-Q20-AN6X2-H1141	1407520	159
BI30R-Q20-AP6X2-H1141	1407500	159
BI30R-W30-DAN6X-H1141	1404501	159
BI30R-W30-DAP6X-H1141	14045	159
BI30U-CK40-AN6X2-H1141	1625820	23, 95
BI30U-CK40-AP6X2-H1141	1625829	23, 95
BI30U-CP40-AN6X2	1625102	25, 98
BI30U-CP40-AP6X2	1625830	25, 98
BI3-G12K-AD4X	4405030	115
BI3-M12-AD4X	4405035	115
BI3NF-EM12HE-AN6X2-H1141	1615003	229
BI3NF-EM12HE-AP6X2-H1141	1615001	229
BI3-Q06-AN6X2	1620150	80
BI3-Q06-AP6X2	1620100	80
BI3U-EG12SK-AN6X	1634420	119
BI3U-EG12SK-AP6X	1634400	119
BI3U-EG12SK-VN4X	1580701	121
BI3U-EG12SK-VP4X	1580601	121
BI3U-EM12-AN6X	1634320	118
BI3U-EM12-AN6X-H1141	1634350	116
BI3U-EM12-AP6X	1634300	118
BI3U-EM12-AP6X-H1141	1634340	116
BI3U-M12-AN6X	1634120	118
BI3U-M12-AN6X-H1141	1634150	116
BI3U-M12-AP6X	1634100	118
BI3U-M12-AP6X-H1141	1634140	116
BI3U-M12EE-AP6X-H1141	1634149	116
BI3U-M12E-VN4X-H1141	1580354	120
BI3U-M12E-VP4X-H1141	1580252	120
BI3U-MT12-AN6X-H1141	1634250	116
BI3U-MT12-AP6X-H1141	1634240	116
BI3U-P12SK-AN6X	1634720	119
BI3U-P12SK-AP6X	1634700	119
BI3U-S12-AN6X	1634520	118

Type	Ident no.	Page
BI3U-S12-AN6X-H1141	1634620	116
BI3U-S12-AP6X	1634500	118
BI3U-S12-AP6X-H1141	1634600	116
BI40-CP80-FZ3X2	13404	103
BI40-CP80-VN4X2	15797	102
BI40-CP80-VP4X2	15697	102
BI40-CP80-VP4X2-H1141	1569702	102
BI4-G12K-AN6X	4670251	118
BI4-G12K-AP6X	4670250	118
BI4-M12-AN6X	4607130	118
BI4-M12-AN6X 7M	4607131	118
BI4-M12-AN6X-H1141	46071	116
BI4-M12-AP6X	4607006	118
BI4-M12-AP6X 7M	4607012	118
BI4-M12-AP6X-H1141	46070	116
BI4-M12E-AP6X-H1141	4608030	116
BI4-M12-LIU	1535532	178
BI4-M12-LIU-H1141	1535531	178
BI4-M12-VN6X	1643300	121
BI4-M12-VN6X 7M	1643301	121
BI4-M12-VN6X-H1141	1643200	120
BI4-M12-VP6X	1633300	121
BI4-M12-VP6X 7M	1633301	121
BI4-M12-VP6X-H1141	1633200	120
BI4U-EM12EWD-VP44X-H1141	1634905	220
BI4U-EM12WD-AN6X	1634842	49, 118, 188, 199, 220
BI4U-EM12WD-AN6X-H1141	1634841	49, 116, 188, 198, 220
BI4U-EM12WD-AP6X	1634811	49, 118, 188, 199, 220
BI4U-EM12WD-AP6X-H1141	1634812	49, 116, 188, 198, 220
BI4U-EM12WD-AP6X-H1141/3D	1634851	116
BI4U-EM12WDTC-AP6X	1634760	50, 119, 189, 199
BI4U-M12-AN6X	1634823	33, 118

Index of types

Type	Ident no.	Page
BI4U-M12-AN6X-H1141	1634824	33, 116
BI4U-M12-AN6X-V1131	1635430	32, 116
BI4U-M12-AP6X	1634803	33, 118
BI4U-M12-AP6X-H1141	1634804	33, 116
BI4U-M12-AP6X-V1131	1634780	32, 116
BI4U-M12E-VN44X	1634872	34, 121
BI4U-M12E-VN44X-H1141	1634873	34, 120
BI4U-M12E-VP44X	1634868	34, 121
BI4U-M12E-VP44X-H1141	1634869	34, 120
BI4U-M12-RP6X	1634866	33
Bi4U-M12-RP6X-H1141	1634846	33, 116
BI4U-M12-VP44X-H1141 L100	1634917	34, 120
BI4U-M12-VP44X-H1141 L80	1634918	34, 120
BI4U-MT12-AN6X-H1141	1634829	44, 116
BI4U-MT12-AP6X-H1141	1634809	44, 116
BI50-Q80-Y1X	1008701	100
BI50R-Q80-2LU-H1141/S950	1534609	176
BI50R-Q80-AP6X2-H1141	1407530	160
BI50U-Q80-AN6X2-H1141	1608944	26, 101
BI50U-Q80-AP6X2-H1141	1608940	26, 101
BI50U-Q80-VN4X2-H1141	1562001	26, 101
BI50U-Q80-VP4X2-H1141	1562000	26, 101
BI50U-Q80-VP4X2-H1141/3GD	1562004	101
BI5-EG18SK-Y1X	4012060	124
BI5-EG18-Y1X/S100 7M	4012007	200
BI5-EM18-AP6/S907	4617425	210
BI5-EM18D-VP6X/S120	4614900	207
BI5-EM18WD-AP6X/S929	4614902	183
BI5-EM18WDTC-Y1X	4012061	124, 190, 201
BI5-EM18-Y1X-H1141	4015202	123
BI5FE-M18FE-AP6X-H1141	1615009	230
BI5-G18K-AN6X	46714	128
BI5-G18K-AP6X	46704	128
BI5-G18KK-AP6-H1141	4670410	126
BI5-G18SK-AN6X	46421	128
BI5-G18SK-AP6X	46420	128

Type	Ident no.	Page
BI5-G18SK-Y1X	40160	124
BI5-G18-Y1X	40150	123
BI5-M18-AD4X	44110	125
BI5-M18-AD4X-H1141	44145	125
BI5-M18-AN6X	46111	128
BI5-M18-AN6X-H1141	46146	126
BI5-M18-AP6X	46110	128
BI5-M18-AP6X/S120	4611030	207
BI5-M18-AP6X-H1141	46145	126
BI5-M18-AZ3X	43104	132
BI5-M18-AZ3X/S120	4310410	208
BI5-M18E-LIU-H1141	1536205	178
BI5-M18-LIU	1536000	178
BI5-M18-Y1X-H1141	40152	123
BI5NF-EM18HE-AN6X2-H1141	1615004	230
BI5NF-EM18HE-AP6X2-H1141	1615000	230
BI5-P18-AN6/S139-S90	1660351	216
BI5-P18-AP6/S139-S90	1660350	216
BI5-P18-AZ3/S139-S90	13843	132, 216
BI5-P18SK-AN6X	46566	128
BI5-P18SK-AP6X	46565	128
BI5-P18SK-Y1X	40360	124
BI5-P18-Y1/S100	10245	200
BI5-P18-Y1X	40350	123
BI5-P18-Y1X/S97	4035001	189
BI5-Q08-VN6X2	16002	83
BI5-Q08-VP6X2	16001	83
BI5-Q08-Y1X	4054000	82
BI5-S18-AD4X	44560	125
BI5-S18-AZ3X	43504	132
BI5-S18-AZ3X/S100	13734	203
BI5U-EG18SK-AN6X	1635420	128
BI5U-EG18SK-AP6X	1635400	128
BI5U-EG18SK-VN4X	1581701	131
BI5U-EG18SK-VP4X	1581601	131
BI5U-EM18-AN6X	1635320	127

Type	Ident no.	Page
BI5U-EM18-AN6X-H1141	1635350	126
BI5U-EM18-AP6X	1635300	127
BI5U-EM18-AP6X-H1141	1635340	126
BI5U-G18-ADZ30X2-B1331	4281212	131
BI5U-G18-ADZ30X2-B3331	4281213	132
BI5U-M18-ADZ30X2	4282210	132
BI5U-M18-AN6X	1635120	127
BI5U-M18-AN6X-H1141	1635150	126
BI5U-M18-AP6X	1635100	127
BI5U-M18-AP6X-H1141	1635140	126
BI5U-M18M-AD4X	4405067	35
BI5U-M18M-AD4X-H1144	4405066	35, 125
BI5U-MT18-AN6X-H1141	1635250	126
BI5U-MT18-AP6X-H1141	1635240	126
BI5U-MT18E-AP6X-H1141	1635248	126
BI5U-MT18M-AD4X-0,3-RS4.23/XOR	4405049	44
BI5U-MT18M-AD4X-H1144	4405068	44, 125
BI5U-P18SK-AN6X	1635720	128
BI5U-P18SK-AP6X	1635700	128
BI5U-Q08-AN6X2	1608911	82
BI5U-Q08-AN6X2-V1131	1608910	82
BI5U-Q08-AP6X2	1608901	82
BI5U-Q08-AP6X2-0,5XOR-RS4	1608925	82
BI5U-Q08-AP6X2-1XOR-RS4	1608921	82
BI5U-Q08-AP6X2-V1131	1608900	82
BI5U-Q08-AP6X2-V2131	1608905	82
BI5U-Q12-AN6X2	1635523	21, 86
BI5U-Q12-AN6X2-H1141	1635527	21, 86
BI5U-Q12-AN6X2-V1131	1635525	21, 86
BI5U-Q12-AP6X2	1635522	21, 86
BI5U-Q12-AP6X2-H1141	1635526	21, 86
BI5U-Q12-AP6X2-V1131	1635524	21, 86
BI5U-Q12-AP6X2-V1131/F2	1635528	21
BI5U-Q12-VN6X2 7M	1635531	87
BI5U-Q12-VP6X2	1635533	21
BI5U-Q12-VP6X2 7M	1635529	87
BI5U-Q12-VP6X2/F2	1635535	21
BI5U-Q12-VP6X2-H1141	1635534	21
BI5U-S18-AN6X	1635520	127
BI5U-S18-AN6X-H1141	1635620	126
BI5U-S18-AP6X	1635500	127
BI5U-S18-AP6X-H1141	1635600	126
BI65R-Q80-AP6X2-H1141	1407531	160
BI6R-Q14-AN6X2-H1141	1407020	158
BI6R-Q14-AP6X2-H1141	1407000	158
BI6R-W30-DAN6X-H1141	14037	159
BI6R-W30-DAP6X-H1141	14036	159
BI7-G18K-AD4X	4414540	125
BI7-M18-AD4X	4414535	125
BI7-M18-AD4X-H1141	4414541	125
BI7-Q08-LIU	1534605	173
BI7-Q08-VN6X2	1600920	83
BI7-Q08-VN6X2-V1141	1600922	83
BI7-Q08-VP6X2	1600900	83
BI7-Q08-VP6X2-V1141	1600902	83
BI8-M18-AN6X	4615130	127
BI8-M18-AN6X 7M	4615131	127
BI8-M18-AN6X-H1141	4615100	126
BI8-M18-AP6X	4615030	127
BI8-M18-AP6X 7M	4615031	127
BI8-M18-AP6X-H1141	46150	126
BI8-M18E-LIU-H1141	1535561	178
BI8-M18K-AP6X-H1141	4615050	126
BI8-M18-LI-EXI	1535528	179
BI8-M18-LIU	1535538	178
BI8-M18-LUAP6X	4615010	179
BI8-M18-VN4X 7M	4590705	130
BI8-M18-VN6X	4605155	130
BI8-M18-VN6X-H1141	4605157	129
BI8-M18-VP4X 7M	4590706	130
BI8-M18-VP6X	4605154	130
BI8-M18-VP6X-H1141	4605156	129

Index of types

Type	Ident no.	Page
BI8U-EM18-AN6X-H1141	1644738	36
BI8U-EM18-AP6X-H1141	1644734	36
BI8U-EM18E-AP6X-H1141	1634865	36
BI8U-EM18MWD-VN44X-H1141	1635127	221
BI8U-EM18MWD-VP44X-H1141	1634897	221
BI8U-EM18WD-AN6X	1634840	51, 127, 191, 202, 221
BI8U-EM18WD-AN6X-H1141	1634839	50, 126, 190, 201, 221
BI8U-EM18WD-AN6X-H1141/3GD	1634854	126
BI8U-EM18WD-AP6X	1634815	51, 127, 191, 202, 221
BI8U-EM18WD-AP6X-H1141	1634816	50, 126, 190, 201, 221
BI8U-EM18WD-AP6X-H1141/3GD	1634853	126
BI8U-EM18WDTC-AP6X	1634762	51, 128, 191, 202
BI8U-M18-AN6X	1644736	37, 127
BI8U-M18-AN6X-H1141	1644737	36, 126
BI8U-M18-AP6X	1644733	37, 127
BI8U-M18-AP6X-H1141	1644731	36, 126
BI8U-M18E-AN6X-H1141	1644751	36, 126
BI8U-M18E-AP6X	1644732	37
BI8U-M18E-AP6X-H1141	1644735	36, 126
BI8U-M18E-VP44X	1634915	38
BI8U-M18M-VN44X	1634880	38, 130
BI8U-M18M-VN44X-H1141	1634881	37, 129
BI8U-M18M-VP44X	1634876	38, 130
BI8U-M18M-VP44X-H1141	1634877	37, 129
BI8U-M18-RP6X	1644761	37
BI8U-M18-RP6X-H1141	1644750	36, 126
BI8U-MT18-AN6X-H1141	1644739	45, 126
BI8U-MT18-AP6X-H1141	1644730	45, 126
BI8U-MT18E-AP6X-H1141	1644752	126
BI8U-Q08-AN6X2	1662007	20, 82
BI8U-Q08-AN6X2-V1131	1662008	20, 82
BI8U-Q08-AP6X2	1662006	20, 82
BI8U-Q08-AP6X2-V1131	1662005	20, 82
BI8U-Q08-RP6X2	1662012	20
BI8U-Q10-AN6X2	1662003	84
BI8U-Q10-AN6X2-V1131	1662004	84
BI8U-Q10-AP6X2	1662001	84
BI8U-Q10-AP6X2-V1131	1662002	84
BID2-G180-AP6/S212	1688003	222
BID2-G180-AP6/S220	16880	222
BID2-G180-AP6-H1141/S212	16885	222
BID2-G180-AP6-H1141/S220	1688501	222
BIM-EG08-AN6X	4621300	226
BIM-EG08-AN6X-H1341	4621301	226
BIM-EG08-AP6X	4621310	226
BIM-EG08-AP6X-H1341	4621311	226
BIM-EG08-AP6X-V1131	4621314	226
BIM-EG08-Y1X	1074000	225
BIM-EG08-Y1X-H1341	1074001	225
BIM-EM12E-AP4X	1579918	227
BIM-EM12E-AP4X-H1141	1579915	227
BIM-EM12E-Y1X	1070036	226
BIM-IKT-AN6X	46201	296
BIM-IKT-AN6X-H1141	46211	296
BIM-IKT-AN6X-V1131	46221	296
BIM-IKT-AP6X	46200	296
BIM-IKT-AP6X-H1141	46210	296
BIM-IKT-AP6X-V1131	46220	296
BIM-IKT-Y1X	10560	296
BIM-IKT-Y1X-H1141	10562	296
BIM-M12E-AN4X	1579912	227
BIM-M12E-AN4X-H1141	1579914	227
BIM-M12E-Y1X-H1141	1074003	226
BIM-NST-AN6X	4685700	295
BIM-NST-AN6X-H1141	4685500	295
BIM-NST-AN6X-H1141/S34	4685501	295
BIM-NST-AN6X-V1131	4685900	295
BIM-NST-AP6X	4685600	295

Type	Ident no.	Page
BIM-NST-AP6X-H1141	4685400	295
BIM-NST-AP6X-H1141/S34	4685401	295
BIM-NST-AP6X-V1131	4685800	295
BIM-NST-Y1X	1058400	295
BIM-NST-Y1X-H1141	1058600	295
BIM-UNR-AN6X	4685837	291
BIM-UNR-AN6X 7M	4685841	291
BIM-UNR-AN6X-0,3-PSG3M	4586839	291
BIM-UNR-AN6X-0,3-PSG3S	4685838	291
BIM-UNR-AN6X-0,3-RS4	4586840	291
BIM-UNR-AP6X	4685830	291
BIM-UNR-AP6X 7M	4685834	291
BIM-UNR-AP6X-0,3-PSG3M	4685832	291
BIM-UNR-AP6X-0,3-PSG3S	4685831	291
BIM-UNR-AP6X-0,3-RS4	4685833	291
BIM-UNT-0,3-UNT-2AN6X3-H1141	4685760	289
BIM-UNT-0,3-UNT-2AP6X3-H1141	4685730	289
BIM-UNT-0,3-UNT-2AP6X3-V1141	4685754	289
BIM-UNT-AG41X/S1139/S1160	4685766	287
BIM-UNT-AG41X/S1139/S1160 7M	4685767	287
BIM-UNT-AG41X-0,3-RS4.23/S1139/S1160	4685768	288
BIM-UNT-AN6X	4685702	287
BIM-UNT-AN6X-0,3-PSG3M	4685706	288
BIM-UNT-AN6X-0,3-PSG3S	4685705	288
BIM-UNT-AN6X2-H1141	4685759	289
BIM-UNT-AN6X2-V1131	4685753	289
BIM-UNT-AP6X	4685720	287
BIM-UNT-AP6X 7M	4685721	287
BIM-UNT-AP6X/3GD	4685736	287
BIM-UNT-AP6X/S100/S1165	4685755	287
BIM-UNT-AP6X/S1139	4685729	287
BIM-UNT-AP6X/S1160	4685761	287
BIM-UNT-AP6X-0,3-PSG3M	4685723	288
BIM-UNT-AP6X-0,3-PSG3M/S1139	4685744	288
BIM-UNT-AP6X-0,3-PSG3S	4685722	288
BIM-UNT-AP6X-0,3-PSG3S/S1139	4685743	288

Type	Ident no.	Page
BIM-UNT-AP6X-0,3-RS4	4685725	288
BIM-UNT-AP6X-0,3-RS4/S1139	4685731	288
BIM-UNT-AP6X-0,3-RS4/S1160	4685733	288
BIM-UNT-AP6X2-H1141	4685726	289
BIM-UNT-AP6X2-V1131	4685727	289
BIM-UNT-AY1X/S1139	4685763	287
BIM-UNT-AY1X/S1139 7M	4685764	287
BIM-UNT-AY1X-0,3-RS4.21/S1139	4685765	288
BMT16.6S-HT	3064397	796
BP13P	3017254	795
BR23S	3017261	795
BRF50H (1M)	3721000	792
BRF75H (1M)	3412400	792
BRT-100X18A	3044998	790
BRT-100X50	3045000	790
BRT-100X55A	3045001	790
BRT-25	37419	791
BRT-250	3073713	790
BRT-25R	3049809	792
BRT-2A	3015970	792
BRT-40	37420	791
BRT-40X18A	3044991	789
BRT-40X23	3044993	790
BRT-40X23B	3044992	789
BRT-41AHT	3045007	792
BRT-42A	3045005	791
BRT-42D	3045006	791
BRT-46	3040071	789
BRT-48X32	3044994	790
BRT-48X32A	3044995	789
BRT-48X32B	3044999	789
BRT-4HT	3018528	790
BRT-50R	3049814	792
BRT-50X60H	6900486	791
BRT-53X19A	3044996	789
BRT-60X40C	3044997	789

Index of types

Type	Ident no.	Page
BRT-75	37421	791
BRT-77X77C	3049816	789
BRT-84	3058979	791
BS 11	69462	745
BS 12	69470	743
BS 18	69471	744
BS 20	69464	746
BS 40	69466	746
BS 540	69475	745
BS 865	69476	745
BS34.1	6946010	746
BSN 18	69472	744
BSS-08	6901322	743
BSS-12	6901321	744
BSS-18	6901320	744
BSS-30	6901319	745
BSS-CP40	6901318	746
BST-08B	6947210	743
BST-08N	6947211	743
BST-12B	6947212	743
BST-12N	6947213	743
BST-18B	6947214	744
BST-18N	6947215	744
BST-30B	6947216	744
BST-30N	6947217	745
BT13SM8	3022452	795
BT23PM6	3904100	796
BT23SM8	3017277	795
BTS-DSC26-EB1	6900222	756
BTS-DSC26-EB2	6900223	756
BTS-DSC26-EB3	6900224	756
BTS-DSU35-EB1	6900225	755
BTS-DSU35-EBE1	6900226	755
BTS-DSU35-EBE3	6901070	755
BTS-DSU35-EU2	6900455	755
BTS-DSU35-Z01	6900229	755

Type	Ident no.	Page
BTS-DSU35-Z02	6900230	755
BTS-DSU35-Z03	6900231	755
BTS-DSU35-Z04	6900286	755
BTS-DSU35-Z05	6900287	756
BTS-DSU35-Z06	6900402	756
BTS-DSU35-Z07	6900403	756
CF-M-3-G1/4-A4	9910407	784
CF-M-3-G1/8-A4	9910405	783
CF-M-3-N1/4-A4	9910408	784
CF-M-3-N1/8-A4	9910406	783
CF-M-6-G1/4-A4	9910483	784
CF-M-6-N1/4-A4	9910484	784
CF-P-3-G1/4-A4	9910411	784
CF-P-3-G1/8-A4	9910409	784
CF-P-3-N1/4-A4	9910412	784
CF-P-3-N1/8-A4	9910410	784
CF-P-6-G1/4-A4	9910485	785
CF-P-6-N1/4-A4	9910486	785
D10AFP	3072808	381
D10AFPG	3072810	381
D10AFPGQ	3072811	381
D10AFPGY	3073124	381
D10AFPGYQ	3073125	381
D10AFPQ	3072809	381
D10AFPY	3073121	381
D10AFPYQ	3073122	381
D10BFP	3072613	382
D10BFPG	3072616	382
D10BFPGQ	3072617	382
D10BFPQ	3072614	382
D10DPFP	3062382	382
D10DPFPQ	3062383	382
D10IPFP	3062388	382
D10IPFPQ	3062389	382
D10UPFP	3063995	382
D10UPFPQ	3063996	382

Type	Ident no.	Page
D12DAB6FP	3038382	387
D12DAB6FPQ	3039543	387
D12DAB6FV	3039545	386
D12DAB6FVQ	3039546	386
D12EP6FP	3041965	387
D12EP6FV	3041968	387
D12SP6FP	3032821	386
D12SP6FPH	3034972	386
D12SP6FPHQ	3034974	386
D12SP6FPQ	3033713	386
D12SP6FPY	3035348	386
D12SP6FPY1	3035502	386
D12SP6FPY1Q	3035504	386
D12SP6FPYQ	3035349	386
D12SP6FV	3033711	385
D12SP6FVH	3036053	385
D12SP6FVQ	3033715	385
D12SP6FVY	3035401	385
D12SP6FVY1	3035506	385
D12SP6FVY1Q	3035508	385
D12SP6FVYQ	3035403	385
DM-Q12	6900367	759, 770
DMR15-6-3	6900216	759, 770
DMR20-10-4	6900214	759, 770
DMR31-15-5	6900215	759, 770
EA5E1050Q	3075429	451
EA5E1200Q	3075430	451
EA5E1500Q	3075431	451
EA5E150Q	3075423	451
EA5E1800Q	3075432	451
EA5E2100Q	3075433	451
EA5E2400Q	3075434	451
EA5E300Q	3075424	451
EA5E450Q	3075425	451
EA5E600Q	3075426	451
EA5E750Q	3075427	451

Type	Ident no.	Page
EA5E900Q	3075428	451
EA5R1050PIXMODQ	3077533	452
EA5R1050PUXMODQ	3077544	452
EA5R1200PIXMODQ	3077534	452
EA5R1200PUXMODQ	3077545	452
EA5R1500PIXMODQ	3077535	452
EA5R1500PUXOMDQ	3077546	452
EA5R150PIXMODQ	3077527	452
EA5R150PUXMODQ	3077437	452
EA5R1800PIXMODQ	3077536	452
EA5R1800PUXMODQ	3077547	452
EA5R2100PIXMODQ	3078939	452
EA5R2100PUXMODQ	3078941	452
EA5R2400PIXMODQ	3078872	452
EA5R2400PUXMODQ	3078942	452
EA5R300PIXMODQ	3077528	452
EA5R300PUXMODQ	3077538	452
EA5R450PIXMODQ	3077529	452
EA5R450PUXMODQ	3077540	452
EA5R600PIXMODQ	3077530	452
EA5R600PUXMODQ	3077541	452
EA5R750PIXMODQ	3077531	452
EA5R750PUXMODQ	3077542	452
EA5R900PIXMODQ	3077532	452
EA5R900PUXMODQ	3077543	452
EM30-AP6X2-H1141/S1102	1602411	212
FCI-34D10A4P-AP8X-H1141	6870627	605
FCI-34D10A4P-ARX-H1140	6870628	605
FCI-34D10A4P-LIX-H1141	6870624	605
FCI-D03A4-NAEX-H1141/M12	6870632	621
FCI-D03A4-NA-H1141/M12	6870635	609
FCI-D04A4P-LIX-H1141	6870641	606
FCI-D06CTP-AP8X-H1141	6870661	606
FCI-D06CTP-ARX-H1140	6870625	606
FCI-D06CTP-LIX-H1141	6870662	606
FCI-D09A4-NAEX-H1141/M16	6870634	621

Index of types

Type	Ident no.	Page
FCI-D09A4-NA-H1141/M16	6870631	609
FCI-D10A4P-AP8X-H1141/A	6870646	615
FCI-D10A4P-ARX-H1140	6870644	606
FCI-D10A4P-LIX-H1141/A	6870639	615
FCI-D15A4P-AP8X-H1141	6870669	607
FCI-D20A4P-AP8X-H1141	6870672	607
FCI-TCD04A4P-AP8X-H1141	6870656	605
FCI-TCD04A4P-ARX-H1140	6870626	605
FCI-TCD04A4P-LIX-H1141	6870655	605
FCMI-10D08DYA4P-LIUP8X-H1141	6870603	655
FCMI-15D12DYA4P-LIUP8X-H1141	6870601	655
FCMI-3/4D12DYA4P-LIUP8X-H1141	6870817	655
FCS-50A4-AP8X-H1141/D014	6872025	593
FCS-50A4-NA/D014	6872009	602
FCS-68A4-AP8X-H1141/D003	6872003	593
FCS-68A4-NA/D011	6872006	602
FCS-DN25A4-NA/D100	6872017	601
FCS-G1/2A4-AN8X-H1141	6870034	591
FCS-G1/2A4-AP8X-H1141	6870004	591
FCS-G1/2A4-NAEX0	6870467	625
FCS-G1/2A4-NAEX0-H1141	6870468	625
FCS-G1/2A4-NAEX-H1141	6870322	617
FCS-G1/2A4-NA-H1141	6870303	599
FCS-G1/2A4P-AP8X/D092 1.5M	6870093	596
FCS-G1/2A4P-AP8X-H1141	6870092	595
FCS-G1/2A4P-VRX/24VDC	6870096	596
FCS-G1/2DY-AP8X	6870005	592
FCS-G1/2DY-AP8X-H1141	6870003	592
FCS-G1/4A4-AP8X-H1141	6870101	591
FCS-G1/4A4-ARX-H1140	6870102	591
FCS-G1/4A4-NAEX	6870315	617
FCS-G1/4A4-NAEX0	6870465	625
FCS-G1/4A4-NAEX-H1141	6870341	617
FCS-G1/4A4-NA-H1141	6870304	599
FCS-G1/4A4P-AP8X-H1141	6870082	595
FCS-G1/4T-NA	6870310	599

Type	Ident no.	Page
FCS-G3/4A4-NAEX0	6870473	626
FCS-G3/4A4-NA-H1141	6870306	600
FCS-GL1/2A2-NA/A/D100	6870380	613
FCS-GL1/2A2-NA-H1141/A	6870404	613
FCS-GL1/2A2P-AP8X-H1141/A	6870457	611
FCS-GL1/2A2P-LIX-H1141/A	6870455	611
FCS-GL1/2A4-AP8X-H1141	6870204	592
FCS-GL1/2A4-NAEX/A	6870440	623
FCS-GL1/2A4-NAEX0/A	6870349	629
FCS-GL1/2A4-NAEX0-H1141/A	6870348	629
FCS-GL1/2A4-NAEX-H1141	6870432	618
FCS-GL1/2A4-NAEX-H1141/A	6870439	623
FCS-GL1/2A4-NA-H1141	6870403	600
FCS-GL1/2A4P-AP8X-H1141	6870242	596
FCS-GL1/2A4P-VRX/230VAC	6870098	596
FCS-GL1/2T-NA	6870422	600
FCS-HA2P-LIX-H1141/AL115	6870720	611
FCS-HA2P-VRX/230VAC/AL115	6870724	611
FCS-N1/2A4-AP8X-H1141	6871004	593
FCS-N1/2A4-NA	6871309	601
FCS-N1/2A4-NAEX-H1141	6871322	618
FCS-N1/2A4P-AP8X-H1141	6871032	597
FCS-N3/4A4-NA-H1141	6871304	601
FCVI-10R09DYA4P-LIUP8X-H1141	6870159	657
FI22FP	3056287	389
FI22FPQ	3056289	389
FTCI-10D10A4P-2UP8X-H1141	6870041	651
FTCI-10D10A4P-LIUP8X-H1141	6870042	651
FTCI-15D15A4P-2UP8X-H1141	6870043	651
FTCI-15D15A4P-LIUP8X-H1141	6870044	651
FTCI-18D15A4P-2UP8X-H1141	6870045	652
FTCI-18D15A4P-LIUP8X-H1141	6870046	652
FTCI-G1/2A4-D18/L068	6870150	787
FTCI-G1/4A4-D10/L050	6870151	787
FTCI-MP01AL	6870040	787
IA1.53SMTA	3021056	796

Type	Ident no.	Page
IA23S	3017299	796
IAT23SM8	3022892	797
IF23S	3017317	796
IMT.756.6S-HT	3064398	797
IR2.53S	3017332	796
IR23S	3017336	796
IT13SM8	3022705	797
IT23SM8	3017357	796
MOUNTING RAIL JS 025/037	69429	747
K30LGRXPQ	3078800	435
K30LGRYPQ	3078925	436
K50APFF100GRCQP	3076230	428
K50APFF100GREQ	3076080	428
K50APFF100GREQP	3075376	428
K50APFF100GXDQ	3075979	428
K50APFF100GXDQP	3074907	428
K50APLPGREQP	3075439	427
K50APLPGXDQP	3076010	427
K50APPBGREQP	3075531	428
K50APPBGXDQP	3076012	428
K50LGRA1YP	3078807	438
K50LGRA1YPQ	3078515	438
K50LGRA1YPQP	3078808	438
K50LGRA2YP	3078809	438
K50LGRA2YPQ	3078516	438
K50LGRA2YPQP	3078810	438
K50LGRAL1YPQ	3079478	439
K50LGRBPQ	3078986	436
K50LGRY2PQ	3075669	437
K50LGRYBWP	3077386	437
K50LGRYBWPQ8	3076959	437
K50LGRYP	3076118	436
K50LGRYPQ	3075671	436
K50LGXRPQP	3079108	435
K50LGXXP	3077956	435
K50LWXXP	3078013	435

Type	Ident no.	Page
K50RPFF100GREQP	3076007	428
K50RPFF100GXDQP	3076008	428
K50RPLPGRCQ	3076281	427
K50RPLPGREQP	3075377	427
K50RPLPGXDQP	3076009	427
K80LGRA1YP	3078811	438
K80LGRA1YPQ	3078517	438
K80LGRA1YPQP	3078812	438
K80LGRA2YP	3078813	438
K80LGRA2YPQ	3078096	438
K80LGRA2YPQP	3078814	438
K80LGRAL1YP	3079483	439
K80LGRAL1YPQ	3079484	439
K80LGRB2PQ	3077089	437
K80LGRY2PQ	3076847	437
K80LGRYBWPQ8	3077524	437
K80LGRYPQ	3077592	436
KLDT-UNT2	6913351	760, 762
KLDT-UNT3	6913352	760, 762
KLDT-UNT4	6913353	760, 763
KLDT-UNT5	6913354	760, 763
KLDT-UNT6	6913355	760, 763
KLF 1 FIXING CLAMP	6970401	765
KLF 2 FIXING CLAMP	6970402	765
KLI 1 FIXING CLAMP	69710	765
KLI 3 FIXING CLAMP	69712	765
KLI 5 FIXING CLAMP	6971802	765
KLI 5Z FIXING CLAMP	6971803	765
KLI 6 FIXING CLAMP	6971805	766
KLI 6Z FIXING CLAMP	6971806	765
KLI 7 FIXING CLAMP	6971810	766
KLN 1 FIXING CLAMP	6970501	764
KLN 3 FIXING CLAMP	6970504	764
KLN-SMC FIXING CLAMP	6970503	765
KLRC-UNT1	6970626	759
KLRC-UNT2	6970627	759

Index of types

Type	Ident no.	Page
KLRC-UNT3	6970628	760
KLZ1-INT	6970410	761
KLZ2-INT	6970411	762
KLZ3-INT	6970412	762
KLZ5-INT	6970413	762
L10M8	3036147	797
L16FALM8	3036149	797
L16FM8	3036148	797
L16FSSM8	3036150	798
L2	3026343	804
L2RA	3026344	804
L4C6	3041517	804
L9M8	3036146	797
LG10A65PI	3054095	408
LG10A65PIQ	3054096	408
LG10A65PU	3057580	408
LG10A65PUQ	3057581	408
LG5A65PI	3054089	407
LG5A65PIQ	3054090	407
LG5A65PU	3057565	407
LG5A65PUQ	3057566	407
LG5B65PI	3055966	407
LG5B65PIQ	3055969	407
LG5B65PU	3057568	407
LG5B65PUQ	3057569	407
LI1000P0-Q25LM0-ESG25X3-H1181	1590016	666
LI1000P0-Q25LM0-LIU5X3-H1151	1590008	665
LI100P0-Q25LM0-ESG25X3-H1181	1590009	666
LI100P0-Q25LM0-LIU5X3-H1151	1590001	665
LI200P0-Q25LM0-ESG25X3-H1181	1590010	666
LI200P0-Q25LM0-LIU5X3-H1151	1590002	665
LI300P0-Q25LM0-ESG25X3-H1181	1590011	666
LI300P0-Q25LM0-LIU5X3-H1151	1590003	665
LI400P0-Q25LM0-ESG25X3-H1181	1590012	666
LI400P0-Q25LM0-LIU5X3-H1151	1590004	665
LI500P0-Q25LM0-ESG25X3-H1181	1590013	666

Type	Ident no.	Page
LI500P0-Q25LM0-LIU5X3-H1151	1590005	665
LI600P0-Q25LM0-ESG25X3-H1181	1590014	666
LI600P0-Q25LM0-LIU5X3-H1151	1590006	665
LI800P0-Q25LM0-ESG25X3-H1181	1590015	666
LI800P0-Q25LM0-LIU5X3-H1151	1590007	665
LT3BD	3065517	411
LT3BDLV	3067380	411
LT3BDLVQ	3067381	411
LT3BDQ	3065516	411
LT3PI	3065514	411
LT3PILV	3067279	411
LT3PILVQ	3067280	411
LT3PIQ	3065513	411
LT3PU	3065508	411
LT3PULV	3067273	411
LT3PULVQ	3067274	411
LT3PUQ	3065507	411
LT7PIDQ	3073439	412
LT7PLVQ	3073440	412
LX12E	3002682	447
LX12EQ	3002685	447
LX12ESR	3002683	447
LX12ESRQ	3002686	447
LX12R	3002688	448
LX12RQ	3002691	448
LX12RSR	3002689	448
LX12RSRQ	3002692	448
LX3E	3002658	447
LX3EQ	3002661	447
LX3ESR	3002659	447
LX3ESRQ	3002662	447
LX3R	3002664	448
LX3RQ	3002667	448
LX3RSR	3002665	448
LX3RSRQ	3002668	448
LX6E	3002670	447

Type	Ident no.	Page
LX6EQ	3002673	447
LX6ESR	3002671	447
LX6ESRQ	3002674	447
LX6R	3002676	448
LX6RQ	3002679	448
LX6RSR	3002677	448
LX6RSRQ	3002680	448
M126E1LD	3052959	344
M126E1LDQ	3053810	344
M126E2LD	3051279	344
M126E2LDQ	3053801	344
M12E	3077202	341
M12EQ8	3077203	341
M12PD	3077178	343
M12PDQ8	3077179	343
M12PFF25	3077190	343
M12PFF25Q8	3077191	343
M12PFF50	3077194	343
M12PFF50Q8	3077195	343
M12PFF75	3078228	343
M12PFF75Q8	3078229	343
M12PLP	3077182	342
M12PLPQ8	3077183	342
M12PLV	3077186	342
M12PLVQ8	3077187	342
M12PR	3077198	341
M12PRQ8	3077199	341
M186E	3048346	323
M186EQ	3048347	323
M18GRY2PQ	3074051	437
M18GRYPQ	3074039	436
M18RGXPQ	3074043	435
M18SP6D	3048662	338
M18SP6DL	3048666	338
M18SP6DLQ	3048667	338
M18SP6DQ	3048663	338

Type	Ident no.	Page
M18SP6FF100	3048674	335
M18SP6FF100Q	3048675	335
M18SP6FF25	3058429	335
M18SP6FF25Q	3058433	335
M18SP6FF50	3048670	335
M18SP6FF50Q	3048671	335
M18SP6L	3048654	330
M18SP6LP	3048658	331
M18SP6LPQ	3048659	331
M18SP6LQ	3048655	330
M18SP6R	3048350	326
M18SP6RQ	3048651	326
M18TB14	3073651	571
M18TB14Q	3073652	571
M18TB6E	3073648	571
M18TB6EQ	3073649	571
M18TB8	3073645	571
M18TB8Q	3073646	571
M18TUP14	3074921	571
M18TUP14Q	3074923	571
M18TUP6E	3074918	571
M18TUP6EQ	3074920	571
M18TUP8	3074915	571
M18TUP8Q	3074916	571
M1-Q25L	6901045	769, 770
M25UEQ	3079745	711
M25URBQ	3079746	711
M2-Q25L	6901046	769, 770
M4-Q25L	6901048	769, 771
MB1-Q25	6901026	771
MB2.1-Q25	6901027	771
MB2.2-Q25	6901028	771
MBS40	69477	745
MBS65	69478	745
MC96-12EX0-R/24VDC	9078511	635
MC96-12EX-R/24VDC	9078510	635

Index of types

Type	Ident no.	Page
MC96-22-R/24VDC	9078501	632
MF-CK40-1S	6900481	749
MF-CK40-2S	6900482	749
MF-CK40-3S	6900483	749
MH-Q14 MOUNITNG SLEEVE	6950011	748
MH-Q20 MOUNITNG SLEEVE	6950010	748
MI9E	3040141	374
MI9EQ	3040143	374
MIAD9CV	3037713	377
MIAD9CV2	3037712	377
MIAD9CV2Q	3035235	377
MIAD9CVQ	3035234	377
MIAD9D	3037714	376
MIAD9DQ	3034625	376
MIAD9F	3037715	377
MIAD9FQ	3034626	377
MIAD9LV	3037717	375
MIAD9LVAG	3037716	376
MIAD9LVAGQ	3037294	376
MIAD9LVQ	3034474	375
MIAD9R	3040144	375
MIAD9RQ	3040146	375
MIAD9W	3037718	376
MIAD9WQ	3035233	376
MK96-11-R/24VDC	7525000	631
MK96-LI01	7525004	631
MK96-VN01	7525003	631
MK96-VP01	7525002	631
MN-C1	6901038	771
MN-M4-Q25	6901025	769, 771
MS96-11EX0-R/115VAC	5231402	635
MS96-11EX0-R/230VAC	5231400	635
MS96-11EX0-R/24VDC	5231407	635
MS96-11EX-R/115VAC	5231202	635
MS96-11EX-R/230VAC	5231200	635
MS96-11EX-R/24VDC	5231207	635

Type	Ident no.	Page
MS96-12R/115VAC	5231002	631
MS96-12R/230VAC	5231000	631
MS96-12R/24VDC	5231007	631
MW 47 MOUNTING BRACKET	69452	737
MW-08	6945008	737
MW-12	6945003	737
MW-18	6945004	737
MW-30	6945005	737
MW-Q08/Q10	6945007	737
MW-Q14/Q20	6945006	737
NC20-KT34-VN4X2	2550100	258
NC20-KT34-VP4X2	2550300	258
NC50-CP80-FZ3X2	2310600	267
NC50-CP80-VN4X2	2580102	248
NC50-CP80-VP4X2	2580202	248
NC50-CP80-VP4X2-H1141	2580400	248
NI100-Q160-AP44X/S120	1440012	206
NI100U-K90SR-VN4X2	1515503	27, 104
NI100U-K90SR-VN4X2-H1141	1515510	27, 104
NI100U-K90SR-VP4X2	1625834	27, 104
NI100U-K90SR-VP4X2-H1141	1625844	27, 104
NI10-EG18SK-Y1X	4012150	124
NI10-EG18-Y1X/S100 7M	4012006	200
NI10-EM18WDTC-Y1X	4012151	124, 190, 201
NI10-EM18-Y1X-H1141	1006261	123
NI10-G18K-AN6X	46715	128
NI10-G18K-AP6X	46705	128
NI10-G18SK-AN6X	46423	129
NI10-G18SK-AP6X	46422	129
NI10-G18SK-Y1X	40161	124
NI10-G18-Y1X	40151	123
NI10-K20-AN6X	46641	152
NI10-K20-AP6X	46640	152
NI10-K20-AZ3X	43585	152
NI10-K20SK-AN6X	46648	152
NI10-K20SK-AP6X	46646	152

Type	Ident no.	Page
NI10-K20SK-AZ3X	43591	152
NI10-M18E-LIU-H1141	1535562	178
NI10-M18-LIU	1535540	178
NI10-M18-Y1X-H1141	40153	123
NI10-P18SK-AN6X	46568	129
NI10-P18SK-AP6X	46567	129
NI10-P18SK-Y1X	40361	124
NI10-P18-Y1/S100	10317	200
NI10-P18-Y1X	40351	123
NI10-P18-Y1X/S97	4035121	189
NI10-Q25-AN6X	4652330	91
NI10-Q25-AP6X	4652225	91
NI10U-EM12EWD-VP44X-H1141	1634896	220
NI10U-EM12WD-AN6X	1634838	49, 118, 188, 199, 220
NI10U-EM12WD-AN6X-H1141	1634837	49, 117, 188, 198, 220
NI10U-EM12WD-AP6X	1634813	49, 118, 188, 199, 220
NI10U-EM12WD-AP6X-H1141	1634814	49, 117, 188, 198, 220
NI10U-EM12WD-AP6X-H1141/3D	1634857	117
NI10U-EM12WDTC-AP6X	1634761	50, 119, 189, 199
NI10U-M12-AN6X	1634825	33, 118
NI10U-M12-AN6X-H1141	1634826	33, 117
NI10U-M12-AN6X-V1131	1634795	32, 116
NI10U-M12-AP6X	1634805	33, 118
NI10U-M12-AP6X-H1141	1634806	33, 117
NI10U-M12-AP6X-V1131	1634790	32, 116
NI10U-M12E-AP6X-H1141	1634901	117
NI10U-M12E-VN44X	1634874	34, 121
NI10U-M12E-VN44X-H1141	1634875	34, 120
NI10U-M12E-VP44X	1634870	34, 121
NI10U-M12E-VP44X-H1141	1634871	34, 120
NI10U-M12-RP6X	1634921	33
NI10U-M12-RP6X-H1141	1634848	33, 117

Type	Ident no.	Page
NI10U-M18M-AD4X	4405070	35, 125
NI10U-M18M-AD4X-H1144	4405069	35, 125
NI10U-MT12-AN6X-H1141	1634830	44, 117
NI10U-MT12-AP6X-H1141	1634810	44, 117
NI10U-MT18M-AD4X-H1144	4405071	44, 125
NI12U-EG18SK-AN6X	1645420	129
NI12U-EG18SK-AP6X	1645400	129
NI12U-EG18SK-VN4X	1581901	131
NI12U-EG18SK-VP4X	1581801	131
NI12U-EM18-AN6X	1645320	128
NI12U-EM18-AN6X-H1141	1645350	127
NI12U-EM18-AP6X	1645300	128
NI12U-EM18-AP6X-H1141	1645340	127
NI12U-G18-ADZ30X2-B1331	4281412	131
NI12U-G18-ADZ30X2-B3331	4281413	132
NI12U-M18-ADZ30X2	4282410	132
NI12U-M18-AN6X	1645120	128
NI12U-M18-AN6X-H1141	1645150	127
NI12U-M18-AP6X	1645100	128
NI12U-M18-AP6X-H1141	1645140	127
NI12U-M18E-AP6X-H1141	1645143	127
NI12U-MT18-AN6X-H1141	1645250	127
NI12U-MT18-AP6X-H1141	1645240	127
NI12U-P18SK-AN6X	1645720	129
NI12U-P18SK-AP6X	1645700	129
NI12U-S18-AN6X	1645520	128
NI12U-S18-AN6X-H1141	1645620	127
NI12U-S18-AP6X	1645500	128
NI12U-S18-AP6X-H1141	1645600	127
NI14-G18-Y1X	4015401	123
NI14-M18-AN6X-H1141	4611410	127
NI14-M18-AP6X-H1141	4611400	127
NI14-M18-VN4X 7M	4590609	130
NI14-M18-VN6X-H1141	4690630	129
NI14-M18-VP4X 7M	4590610	130
NI14-M18-VP6X-H1141	4590620	129

Index of types

Type	Ident no.	Page
NI15-EG30SK-Y1X	4012160	134
NI15-EG30-Y1X/S100 7M	4012004	203
NI15-EM30-AP6/S907	4617412	210
NI15-EM30D-VP6X/S120	4617410	209
NI15-EM30WDTC-Y1X	4012161	134, 192, 204
NI15-EM30-Y1X-H1141	1006260	133
NI15-G30SK-AN6X	46483	138
NI15-G30SK-AP6X	46482	138
NI15-G30SK-Y1X	40221	134
NI15-G30-Y1X	40201	133
NI15-M30-AD4X	44172	135
NI15-M30-AD4X-H1141	44177	134
NI15-M30-AP6X/S120	4617210	208
NI15-M30-AZ3X	43165	142
NI15-M30-AZ3X/S120	4316506	209
NI15-M30-LIU-H1141	1535541	180
NI15-M30-Y1X-H1141	40203	133
NI15-P30SK-AN6X	46598	138
NI15-P30SK-AP6X	46597	138
NI15-P30SK-Y1X	40411	134
NI15-P30SR-AN6X	16204	138
NI15-P30SR-AP6X	16117	138
NI15-P30SR-FZ3X2	13421	142
NI15-P30SR-VN4X2	15753	140
NI15-P30SR-VP4X2	15653	140
NI15-P30-Y1/S100	10227	203
NI15-P30-Y1X	40401	133
NI15-P30-Y1X/S97	1022704	192
NI15-S30-AD4X	44592	135
NI15-S30-AZ3X	43555	142
NI15-S30-AZ3X/S100	13758	206
NI15U-CA25-AP6X2-H1141	1625641	91
NI15U-CA25-AP6X2-V1131	1625642	91
NI15U-EM18-AN6X-H1141	1635336	36
NI15U-EM18-AP6X-H1141	1635332	36
NI15U-EM18E-AP6X-H1141	1635372	36

Type	Ident no.	Page
NI15U-EM18MWD-VP44X-H1141	1634898	221
NI15U-EM18WD-AN6X	1634836	51, 128, 191, 202, 221
NI15U-EM18WD-AN6X-H1141	1634835	50, 127, 190, 201, 221
NI15U-EM18WD-AN6X-H1141/3D	1634860	127
NI15U-EM18WD-AP6X	1634817	51, 128, 191, 202, 221
NI15U-EM18WD-AP6X-H1141	1634818	50, 127, 190, 201, 221
NI15U-EM18WD-AP6X-H1141/3D	1634859	126
NI15U-EM18WDTC-AP6X	1634763	51, 128, 191, 202
NI15U-M18-AN6X	1635334	37, 128
NI15U-M18-AN6X-H1141	1635335	36, 126
NI15U-M18-AP6X	1635330	37, 128
NI15U-M18-AP6X-H1141	1635331	36, 126
NI15U-M18E-AN6X-H1141	1635353	36
NI15U-M18E-AP6X-H1141	1635352	36
NI15U-M18M-VN44X	1634882	38, 130
NI15U-M18M-VN44X-H1141	1634883	37, 129
NI15U-M18M-VP44X	1634878	38, 130
NI15U-M18M-VP44X-H1141	1634879	37, 129
NI15U-M18-RP6X-H1141	1635450	36, 126
NI15U-M30-AD4X	4405076	39, 135
NI15U-M30-AD4X-H1144	4405075	38, 134
NI15U-MT18-AN6X-H1141	1635337	45, 126
NI15U-MT18-AP6X-H1141	1635333	45, 126
NI15U-MT30-AD4X-H1144	4405077	45, 134
NI20-CK40-AD4X-H1141	44652	94
NI20-CK40-AN6X2-H1141	16253	95
NI20-CK40-AP6X2-H1141	16252	95
NI20-CK40-Y1X-H1141	4065200	93
NI20-CP40-AD4X	44661	97
NI20-CP40-AN6X2	16224	98
NI20-CP40-AP6X2	16024	98
NI20-CP40-FZ3X2	13401	99

Types

Type	Ident no.	Page
NI20-CP40-FZ3X2/S100	13441	195
NI20-CP40-FZ3X2/S97	1340123	185
NI20-CP40-VN4X2	15791	99
NI20-CP40-VP4X2	15691	99
NI20-CP40-VP4X2/S100	15046	194
NI20-CP40-VP4X2/S97	1569101	184
NI20-CP40-Y1X	10111	97
NI20-CP40-Y1X/S100	1011121	194
NI20-CP40-Y1X/S97	10432	184
NI20-G30K-AD4X	4417220	135
NI20-K34SR-VP4X2	1565601	153
NI20-K34-VP4X	1565602	153
NI20-K40SR-FZ3X2	13424	154
NI20-K40SR-VN4X2	15756	153
NI20-K40SR-VP4X2	15656	153
NI20-M30-AD4X	4466135	135
NI20-M30-AD4X-H1141	4466141	134
NI20-M30-AN6X-H1141	4670515	136
NI20-M30-AP6X-H1141	4670510	136
NI20-M30-VN6X 7M	4590613	140
NI20-M30-VN6X-H1141	4590614	139
NI20-M30-VP6X 7M	4590611	140
NI20-M30-VP6X-H1141	4590612	139
NI20NF-CP40-FZ3X2	13284	99
NI20NF-CP40-VN4X2	15784	229
NI20NF-CP40-VP4X2	15684	229
NI20-Q14-AN6X2	4690220	88
NI20-Q14-AN6X2-V1131	4690221	88
NI20-Q14-AP6X2	4690205	88
NI20-Q14-AP6X2-V1131	4690210	88
NI20R-S32SR-VP44X	1440001	160
NI20U-EG30SK-AN6X	1646420	138
NI20U-EG30SK-AP6X	1646400	138
NI20U-EG30SK-VN4X	1582901	140
NI20U-EG30SK-VP4X	1582801	140
NI20U-EM30-AN6X	1646320	137

Type	Ident no.	Page
NI20U-EM30-AN6X-H1141	1646350	136
NI20U-EM30-AP6X	1646300	137
NI20U-EM30-AP6X-H1141	1646340	136
NI20U-G30-ADZ30X2-B1131	4281812	141
NI20U-G30-ADZ30X2-B3131	4281813	141
NI20U-M30-ADZ30X2	4282810	142
NI20U-M30-AN6X	1646120	137
NI20U-M30-AN6X-H1141	1646150	136
NI20U-M30-AP6X	1646100	137
NI20U-M30-AP6X-H1141	1646140	136
NI20U-MT30-AN6X-H1141	1646250	136
NI20U-MT30-AP6X-H1141	1646240	136
NI20U-P30SK-AN6X	1646720	138
NI20U-P30SK-AP6X	1646700	138
NI20U-S30-AN6X	1646520	137
NI20U-S30-AN6X-H1141	1646620	136
NI20U-S30-AP6X	1646500	137
NI20U-S30-AP6X-H1141	1646600	136
NI20U-TS12-AN6X2-V1131	1625822	157
NI20U-TS12-AP6X2-V1131	1646640	157
NI22U-Q40-AP6X2-H1141	4690229	92
NI25-CK40-LIU-H1141	1537802	175
NI25-CP40-LIU	1535544	176
NI25-CQ40/S1102 5M	1602410	211
NI25-G47-AN4X	15746	143
NI25-G47-AP4X	15646	143
NI25-G47-AZ3X	13089	144
NI25-Q20-AN6X2	1602800	90
NI25-Q20-AN6X2-H1141	1602802	90
NI25-Q20-AP6X2	1602700	90
NI25-Q20-AP6X2-H1141	1602702	90
NI25U-CK40-AN6X2-H1141	1625710	95
NI25U-CK40-AP6X2-H1141	1625700	95
NI25U-CK40-VP4X2-H1141	1568803	96
NI2-Q6,5-AP6/S34	1650023	81
NI2-Q6,5-Y1	4004100	80

Index of types

Type	Ident no.	Page
NI2-Q9,5-AP6/S34	1650077	83
NI3,5-Q5,5-AN6X	4613610	79
NI3,5-Q5,5-AP6X	4613601	79
NI30-K40SR-FZ3X2	13425	154
NI30-K40SR-VN4X2	15758	153
NI30-K40SR-VP4X2	15658	153
NI30-Q130-ADZ30X2	42095	105
NI30-Q130-ADZ30X2-B1131	42100	105
NI30-Q130-VN4X2	15178	105
NI30-Q130-VP4X2	15179	105
NI30U-EM30-AN6X-H1141	1644636	39
NI30U-EM30-AP6X-H1141	1646632	39
NI30U-EM30WD-AN6X	1634833	52, 193, 205, 223
NI30U-EM30WD-AN6X-H1141	1634832	52, 136, 193, 204, 223
NI30U-EM30WD-AN6X-H1141/3D	1634862	136
NI30U-EM30WD-AP6X	1634821	52, 193, 205, 223
NI30U-EM30WD-AP6X-H1141	1634822	52, 136, 193, 204, 223
NI30U-EM30WD-AP6X-H1141/3D	1634861	136
NI30U-EM30WDTC-AP6X	1634765	53, 138, 194, 205
NI30U-EM30WD-VP44X-H1141	1634904	223
NI30U-M30-AN6X	1644634	40, 137
NI30U-M30-AN6X-H1141	1644635	39, 136
NI30U-M30-AP6X	1646630	40, 137
NI30U-M30-AP6X-H1141	1646631	39, 136
NI30U-M30E-AP6X-H1141	1644756	39
NI30U-M30-RP6X	1646634	40
NI30U-M30-RP6X-H1141	1646636	39, 136
NI30U-M30-VN44X	1634890	41, 140
NI30U-M30-VN44X-H1141	1634891	40, 139
NI30U-M30-VP44X	1634886	41, 140
NI30U-M30-VP44X-H1141	1634887	40, 139
NI30U-MT30-AN6X-H1141	1644637	46, 136
NI30U-MT30-AP6X-H1141	1646633	46, 136

Type	Ident no.	Page
NI35-CK40-AP6X2-H1141	1626400	95
NI35-CP40-FZ3X2	13403	99
NI35-CP40-VN4X2	15794	99
NI35-CP40-VP4X2	15694	99
NI35-CP40-VP4X2/S938-F/S1194 30M	1569432	215
NI35U-CK40-AD4X-H1144	4280232	23, 94
NI35U-CK40-ADZ30X2-B1131	4280410	96
NI35U-CK40-ADZ30X2-B3131	4280430	96
NI35U-CK40-AN6X2-H1141	1625810	95
NI35U-CK40-AP6X2-H1141	1625800	95
NI35U-QV40-AP6X2-H1141	1625866	24
NI3-EG08-AN6X	4602840	109
NI3-EG08-AN6X-H1341	4602860	111
NI3-EG08-AN6X-V1131	4602850	112
NI3-EG08-AP6X	4602740	109
NI3-EG08-AP6X-H1341	4602760	111
NI3-EG08-AP6X-V1131	4602750	112
NI3-EG08K-AN6X	4669700	109
NI3-EG08K-AN6X-H1341	4669760	111
NI3-EG08K-AN6X-V1131	4669750	112
NI3-EG08K-AP6X	4669600	109
NI3-EG08K-AP6X-H1341	4669660	111
NI3-EG08K-AP6X-V1131	4669650	112
NI3-EG08K-Y1	1003700	108
NI3-EG08K-Y1-H1341	1003720	108
NI3-EH6,5-AN6X	4612500	150
NI3-EH6,5-AN6X-V1131	4612520	149
NI3-EH6,5-AP6X	4612400	150
NI3-EH6,5-AP6X-V1131	4612420	149
NI3-EH6,5K-AN6X	4610300	150
NI3-EH6,5K-AN6X-V1131	4610320	149
NI3-EH6,5K-AP6X	4610200	150
NI3-EH6,5K-AP6X-V1131	4610220	149
NI3-EH6,5K-Y1	1004700	148
NI40-CP80-FZ3X2	13405	103
NI40-CP80-FZ3X2/S100	13443	196

Types

Type	Ident no.	Page
NI40-CP80-FZ3X2/S97	1340510	186
NI40-CP80-VN4X2	15795	102
NI40-CP80-VP4X2	15695	102
NI40-CP80-VP4X2/S100	15095	196
NI40-CP80-VP4X2/S97	1569522	186
NI40-CP80-Y1	10085	102
NI40-CP80-Y1/S100	10404	195
NI40-CP80-Y1/S97	1040010	185
NI40-CQ80/S1102 5M	1602404	211
NI40-G47SR-FZ3X2	13428	144
NI40-G47SR-VN4X2	15750	144
NI40-G47SR-VP4X2	15650	144
NI40R-S32SR-VP44X	1440005	160
NI40U-CK40-AP6X2-H1141	1623641	95
NI40U-CP40-AN6X2	1623610	98
NI40U-CP40-AP6X2	1623600	98
NI40U-CP40-FDZ30X2	4280800	99
NI40U-CP40-VN4X2	1540610	99
NI40U-CP40-VP4X2	1540600	99
NI40U-CP40-VP4X2-H1141	1540602	99
NI4-DSC26-2AP6X2	1650096	169
NI4-DSC26-2AP6X2-H1141	1650087	169
NI4-DSC26-2Y1X2	1051000	169
NI4-DSC26-2Y1X2-H1140	1051001	169
NI4-DSU35-2ADZ30X2	4290000	171
NI4-DSU35-2AP4X2	1569900	170
NI4-DSU35-2AP4X2-H1141	1569901	170
NI4-DSU35-2ASIX4-H1140	1902000	171
NI4-DSU35-2DNETX5-H1150	1569908	171
NI4-DSU35-2Y1X2	1051002	170
NI4-DSU35-2Y1X2-H1140	1051003	170
NI4-DSU35TC-2AD4X2	4430130	170
NI4-DSU35TC-2ADZ30X2	4290002	171
NI4-DSU35TC-2AP4X2	1569902	170
NI4-DSU35TC-2AP4X2/3GD	1569911	170
NI4-DSU35TC-2Y1X2	1051004	170

Type	Ident no.	Page
NI4-DSU35TC-2Y1X2/S933	1051011	170
NI4-DSU35TC-2Y1X2/S97	1051017	170
NI4-EG08-AG41X	4561000	108
NI4-EM12D-AP6/S120	1633110	206
NI4-EM12WD-AP6/S929	1633111	183
NI4-M12-AD4X	44052	115
NI4-M12-AD4X-H1141	44067	114
NI4-M12-AN6X-H1141	46068	117
NI4-M12-AP6X-H1141	46067	117
NI4-M12-AZ31X	13032	122
NI4-Q12-AZ31X	13102	87
NI4-S12-AD4X	44532	115
NI4-S12-AZ31X	13022	122
NI4-S12-AZ31X/S100	1302201	200
NI4U-EG08-AN6X	4600610	109
NI4U-EG08-AN6X-H1341	4600650	111
NI4U-EG08-AN6X-V1131	4600630	112
NI4U-EG08-AP6X	4600600	109
NI4U-EG08-AP6X-H1341	4600640	111
NI4U-EG08-AP6X-V1131	4600620	111
NI4U-Q8SE-AN6X	4635809	19, 81
NI4U-Q8SE-AN6X-V1131	4635810	19, 81
NI4U-Q8SE-AP6X	4635807	19, 81
NI4U-Q8SE-AP6X-0,3-PSG3M	4635833	19
NI4U-Q8SE-AP6X-V1131	4635808	19, 81
NI4U-Q8SE-RP6X	4635821	19
NI4U-Q8SE-RP6X-0,3-PSG3M	4635823	19
NI4U-Q8SE-RP6X-V1131	4635820	19
NI50-CP80-FZ3X2	13406	103
NI50-CP80-VN4X2	15796	102
NI50-CP80-VP4X2	15696	102
NI50-K90SR-Y1	10074	103
NI50-Q80-LIU-H1141	1535545	176
NI50U-CK40-AN6X2-H1141	1625823	23, 95
NI50U-CK40-AP6X2-H1141	1625837	23, 95
NI50U-CK40-VN4X2-H1141	1625806	24, 96

Index of types

Type	Ident no.	Page
NI50U-CK40-VP4X2-H1141	1538302	24, 96
NI50U-CP40-AN6X2	1625846	25, 98
NI50U-CP40-AP6X2	1625831	25, 98
NI50U-CP40-AP6X2-H1141	1625835	98
NI50U-CP40-VN4X2	1625847	25, 99
NI50U-CP40-VP4X2	1538303	25, 99
NI50U-QV40-AP6X2-H1141	1625853	24, 100
NI5-EG12SK-Y1X	4012140	114
NI5-EG12-Y1X/S100 7M	4012008	197
NI5-EM12WDTC-Y1X	4012141	114, 187, 198
NI5-EM12-Y1X-H1141	4010301	112
NI5-G12K-AN6X	46713	118
NI5-G12K-AP6X	46703	118
NI5-G12SK-AN6X	46363	119
NI5-G12SK-AP6X	46362	119
NI5-G12SK-Y1X	40111	114
NI5-G12-Y1X	40101	113
NI5-K11-AP6X	46611	151
NI5-K11SK-AP6X	46617	151
NI5-K11-Y1	10071	151
NI5-M12-LIU	1535536	178
NI5-M12-LIU-H1141	1535535	178
NI5-M12-Y1X-H1141	40103	112
NI5-P12SK-AN6X	46538	119
NI5-P12SK-AP6X	46537	119
NI5-P12SK-Y1X	40311	114
NI5-P12-Y1/S100	10242	197
NI5-P12-Y1X	40301	113
NI5-P12-Y1X/S97	1009402	187
NI5-Q18-AN6X	4614607	89
NI5-Q18-AP6X	4614606	89
NI5U-M12E-AD4X	4405064	32, 115
NI5U-M12E-AD4X-H1144	4405063	31, 114
NI5U-MT12E-AD4X-H1144	4405065	114
NI5U-Q10S-AN6X	1609365	20, 85
NI5U-Q10S-AN6X-0,3-PSG3M	1609367	20, 85

Type	Ident no.	Page
NI5U-Q10S-AP6X	1609364	20, 85
NI5U-Q10S-AP6X-0,3-PSG3M	1609366	20, 85
NI60-K90SR-FZ3X2	13429	104
NI60-K90SR-VN4X2	15740	104
NI60-K90SR-VP4X2	15640	104
NI60-Q80-Y1X	1008700	100
NI65R-S32SR-VP44X	1440008	160
NI6U-EG08-AN6X	4635803	31, 109
NI6U-EG08-AN6X-H1341	4635805	30, 111
NI6U-EG08-AN6X-V1131	4635804	30, 111
NI6U-EG08-AP6X	4635800	31, 109
NI6U-EG08-AP6X-H1341	4635802	30, 111
NI6U-EG08-AP6X-V1131	4635801	30, 111
NI6U-EG08-RP6X-H1341	4635830	30, 111
NI6U-EG08-RP6X-V1131	4635831	30, 111
NI6U-EGT08-AP6X-H1341	4635811	43
NI6U-EH6,5-AN6X	4631520	29, 150
NI6U-EH6,5-AN6X-V1131	4631530	29, 149
NI6U-EH6,5-AP6X	4631500	29, 150
NI6U-EH6,5-AP6X-V1131	4631510	29, 149
NI6U-EH6,5-RP6X-V1131	4635832	149
NI75U-CP80-FDZ30X2	4280900	103
NI75U-CP80-VN4X2	1540810	102
NI75U-CP80-VP4X2	1540800	102
NI75U-CP80-VP4X2-H1141	1540802	102
NI75U-Q80-AN6X2-H1141	1625856	26
NI75U-Q80-AP6X2-H1141	1625855	26, 101
NI75U-Q80-VN4X2-H1141	1625858	26
NI75U-Q80-VP4X2-H1141	1625857	26, 101
NI7-EM18D-VP6X/S120	4632100	207
NI7-EM18WD-AP6X/S929	4632001	183
NI8-EM18-AP6/S907	4611231	210
NI8-G12K-AD4X	4411230	115
NI8-M12-AD4X	4411235	115
NI8-M12-AD4X-H1141	4411241	114
NI8-M12-AN6X-H1141	4611315	117

Type	Ident no.	Page
NI8-M12-AP6X-H1141	4611310	117
NI8-M12-VN6X 7M	4611326	121
NI8-M12-VN6X-H1141	4611323	120
NI8-M12-VP6X 7M	4611327	121
NI8-M12-VP6X-H1141	4611324	120
NI8-M18-AD4X	44112	125
NI8-M18-AD4X-H1141	44147	125
NI8-M18-AP6X/S120	4611230	207
NI8-M18-AZ3X	43105	132
NI8-M18-AZ3X/S120	4310530	208
NI8-P18-AN6/S139-S90	1650083	216
NI8-P18-AP6/S139-S90	1650082	216
NI8-P18-AZ3/S139-S90	1350002	132, 216
NI8-P18-Y1/S139	1072501	215
NI8-S18-AD4X	44562	125
NI8-S18-AZ3X	43505	132
NI8-S18-AZ3X/S100	13718	203
NI8U-EG12SK-AN6X	1644420	119
NI8U-EG12SK-AP6X	1644400	119
NI8U-EG12SK-VN4X	1580902	121
NI8U-EG12SK-VP4X	1580901	121
NI8U-EM12-AN6X	1644320	118
NI8U-EM12-AN6X-H1141	1644350	117
NI8U-EM12-AP6X	1644300	118
NI8U-EM12-AP6X-H1141	1644340	117
NI8U-M12-AN6X	1644120	118
NI8U-M12-AN6X-H1141	1644150	117
NI8U-M12-AP6X	1644100	118
NI8U-M12-AP6X-H1141	1644140	117
NI8U-M12EE-AP6X-H1141	1644147	117
NI8U-M12E-VN4X-H1141	1580552	120
NI8U-M12E-VP4X-H1141	1580454	120
NI8U-MT12-AN6X-H1141	1644250	117
NI8U-MT12-AP6X-H1141	1644240	117
NI8U-P12SK-AN6X	1644720	119
NI8U-P12SK-AP6X	1644700	119

Type	Ident no.	Page
NI8U-S12-AN6X	1644520	118
NI8U-S12-AN6X-H1141	1644620	117
NI8U-S12-AP6X	1644500	118
NI8U-S12-AP6X-H1141	1644600	117
P1-Li-Q25L	6901041	769
P2-Li-Q25L	6901042	769
P3-Li-Q25L	6901044	769
P4-Li-Q25L	6901043	769
PBCT26U	3045091	801
PBCT46U	3035214	801
PBP16U	3039992	801
PBPS46UMT	3048005	802
PBR1X326U	3039987	801
PBT26U	3026080	802
PBT43TMB5	3070768	801
PBT46U	3025967	802
PBT46UHF	3051784	801
PBT46UHT1	3042799	801
PBT66U	3039982	801
PCS-G1/4A4	6835015	773
PD45VP6C100	3046288	415
PD45VP6C100Q	3046289	415
PD45VP6C200	3048323	415
PD45VP6C200Q	3048324	415
PD45VP6LLP	3058620	415
PD45VP6LLPQ	3058622	415
PD49VP6C200Q	3066997	415
PD49VP6LLPQ	3067001	415
PIA26U	3025905	803
PIAT46U	3028236	802
PIF46U	3026036	804
PIL46U	3034080	803
PIR1X166U	3039152	803
PIRS1X166UMPMAL	3048066	803
PIT26U	3026079	803
PIT43TMB5	3070766	803

Index of types

Type	Ident no.	Page
PIT46U	3026034	804
PIT46UHF	3051783	802
PIT46UHT1	3042804	802
PIT66U	3039899	802
PK010R-N12-2UP8X-V1141	6833001	525
PK010R-N14-2UP8X-V1141	6833003	525
PK010R-P13-2UP8X-V1141	6833005	527
PK010R-P14-2UP8X-V1141	6833007	527
PK01VR-N12-2UP8X-V1141	6833000	525
PK01VR-N14-2UP8X-V1141	6833002	525
PK01VR-P13-2UP8X-V1141	6833004	527
PK01VR-P14-2UP8X-V1141	6833006	527
PK-N-MZ-001	6835025	773
PK-N-MZ-002	6835026	773
PK-P-MZ-001	6835027	774
PK-P-MZ-002	6835028	774
PN-M12	6905309	750
PN-M18	6905310	750
PN-M30	6905308	751
PS001A-501-2UPN8X-H1141	6832636	487
PS001A-501-LI2UPN8X-H1141	6832810	488
PS001A-501-LUUPN8X-H1141	6832733	489
PS001A-502-2UPN8X-H1141	6832653	490
PS001A-502-LI2UPN8X-H1141	6832822	491
PS001A-502-LUUPN8X-H1141	6832745	492
PS001A-503-2UPN8X-H1141	6832670	493
PS001A-503-LI2UPN8X-H1141	6832834	494
PS001A-503-LUUPN8X-H1141	6832757	495
PS001A-504-2UPN8X-H1141	6832687	496
PS001A-504-LI2UPN8X-H1141	6832846	497
PS001A-504-LUUPN8X-H1141	6832769	498
PS001A-505-2UPN8X-H1141	6832704	499
PS001A-505-LI2UPN8X-H1141	6832862	500
PS001A-505-LUUPN8X-H1141	6832786	501
PS001A-508-2UPN8X-H1141	6832721	502
PS001A-508-LI2UPN8X-H1141	6832874	503
PS001A-508-LUUPN8X-H1141	6832798	504
PS001A-510-2UPN8X-H1141	6832891	505
PS001A-510-LI2UPN8X-H1141	6832925	506
PS001A-510-LUUPN8X-H1141	6832908	507
PS001A-511-2UPN8X-H1141	6832942	508
PS001A-511-LI2UPN8X-H1141	6832976	509
PS001A-511-LUUPN8X-H1141	6832959	510
PS001R-301-2UPN8X-H1141	6833313	467
PS001R-301-LI2UPN8X-H1141	6833301	468
PS001R-301-LUUPN8X-H1141	6833325	469
PS001R-302-2UPN8X-H1141	6833349	470
PS001R-302-LI2UPN8X-H1141	6833337	471
PS001R-302-LUUPN8X-H1141	6833361	472
PS001R-303-2UPN8X-H1141	6833415	473
PS001R-303-LI2UPN8X-H1141	6833403	474
PS001R-303-LUUPN8X-H1141	6833427	475
PS001R-304-2UPN8X-H1141	6833451	476
PS001R-304-LI2UPN8X-H1141	6833439	477
PS001R-304-LUUPN8X-H1141	6833463	478
PS001R-310-2UPN8X-H11141	6833517	479
PS001R-310-LI2UPN8X-H11141	6833505	480
PS001R-310-LUUPN8X-H11141	6833529	481
PS001R-311-2UPN8X-H11141	6833553	482
PS001R-311-LI2UPN8X-H11141	6833541	483
PS001R-311-LUUPN8X-H11141	6833565	484
PS001R-501-2UPN8X-H1141	6832625	487
PS001R-501-LI2UPN8X-H1141	6832221	488
PS001R-501-LUUPN8X-H1141	6832231	489
PS001R-502-2UPN8X-H1141	6832642	490
PS001R-502-LI2UPN8X-H1141	6832261	491
PS001R-502-LUUPN8X-H1141	6832271	492
PS001R-503-2UPN8X-H1141	6832659	493
PS001R-503-LI2UPN8X-H1141	6832281	494
PS001R-503-LUUPN8X-H1141	6832291	495
PS001R-504-2UPN8X-H1141	6832676	496
PS001R-504-LI2UPN8X-H1141	6832301	497

Type	Ident no.	Page
PS001R-504-LUUPN8X-H1141	6832311	498
PS001R-505-2UPN8X-H1141	6832693	499
PS001R-505-LI2UPN8X-H1141	6832852	500
PS001R-505-LUUPN8X-H1141	6832775	501
PS001R-508-2UPN8X-H1141	6832710	502
PS001R-508-LI2UPN8X-H1141	6832341	503
PS001R-508-LUUPN8X-H1141	6832351	504
PS001R-510-2UPN8X-H1141	6832880	505
PS001R-510-LI2UPN8X-H1141	6832914	506
PS001R-510-LUUPN8X-H1141	6832897	507
PS001R-511-2UPN8X-H1141	6832931	508
PS001R-511-LI2UPN8X-H1141	6832965	509
PS001R-511-LUUPN8X-H1141	6832948	510
PS001R-606-2UPN8X-H1141	6833055	513
PS001R-606-LI2UPN8X-H1141	6832381	514
PS001R-606-LUUPN8X-H1141	6832391	515
PS001V-301-2UPN8X-H1141	6833314	467
PS001V-301-LI2UPN8X-H1141	6833302	468
PS001V-301-LUUPN8X-H1141	6833326	469
PS001V-302-2UPN8X-H1141	6833350	470
PS001V-302-LI2UPN8X-H1141	6833338	471
PS001V-302-LUUPN8X-H1141	6833362	472
PS001V-303-2UPN8X-H1141	6833416	473
PS001V-303-LI2UPN8X-H1141	6833404	474
PS001V-303-LUUPN8X-H1141	6833428	475
PS001V-304-2UPN8X-H1141	6833452	476
PS001V-304-LI2UPN8X-H1141	6833440	477
PS001V-304-LUUPN8X-H1141	6833464	478
PS001V-310-2UPN8X-H11141	6833518	479
PS001V-310-LI2UPN8X-H11141	6833506	480
PS001V-310-LUUPN8X-H11141	6833530	481
PS001V-311-2UPN8X-H11141	6833554	482
PS001V-311-LI2UPN8X-H11141	6833542	483
PS001V-311-LUUPN8X-H11141	6833566	484
PS001V-501-2UPN8X-H1141	6832626	487
PS001V-501-LI2UPN8X-H1141	6832803	488

Type	Ident no.	Page
PS001V-501-LUUPN8X-H1141	6832726	489
PS001V-502-2UPN8X-H1141	6832643	490
PS001V-502-LI2UPN8X-H1141	6832815	491
PS001V-502-LUUPN8X-H1141	6832738	492
PS001V-503-2UPN8X-H1141	6832660	493
PS001V-503-LI2UPN8X-H1141	6832827	494
PS001V-503-LUUPN8X-H1141	6832750	495
PS001V-504-2UPN8X-H1141	6832677	496
PS001V-504-LI2UPN8X-H1141	6832839	497
PS001V-504-LUUPN8X-H1141	6832762	498
PS001V-505-2UPN8X-H1141	6832694	499
PS001V-505-LI2UPN8X-H1141	6832853	500
PS001V-505-LUUPN8X-H1141	6832776	501
PS001V-508-2UPN8X-H1141	6832711	502
PS001V-508-LI2UPN8X-H1141	6832867	503
PS001V-508-LUUPN8X-H1141	6832791	504
PS001V-510-2UPN8X-H1141	6832881	505
PS001V-510-LI2UPN8X-H1141	6832915	506
PS001V-510-LUUPN8X-H1141	6832898	507
PS001V-511-2UPN8X-H1141	6832932	508
PS001V-511-LI2UPN8X-H1141	6832966	509
PS001V-511-LUUPN8X-H1141	6832949	510
PS001V-606-2UPN8X-H1141	6833056	513
PS001V-606-LI2UPN8X-H1141	6833040	514
PS001V-606-LUUPN8X-H1141	6833027	515
PS003A-501-2UPN8X-H1141	6832637	487
PS003A-501-LI2UPN8X-H1141	6832811	488
PS003A-501-LUUPN8X-H1141	6832734	489
PS003A-502-2UPN8X-H1141	6832654	490
PS003A-502-LI2UPN8X-H1141	6832823	491
PS003A-502-LUUPN8X-H1141	6832746	492
PS003A-503-2UPN8X-H1141	6832671	493
PS003A-503-LI2UPN8X-H1141	6832835	494
PS003A-503-LUUPN8X-H1141	6832758	495
PS003A-504-2UPN8X-H1141	6832688	496
PS003A-504-LI2UPN8X-H1141	6832847	497

Index of types

Type	Ident no.	Page
PS003A-504-LUUPN8X-H1141	6832770	498
PS003A-505-2UPN8X-H1141	6832705	499
PS003A-505-LI2UPN8X-H1141	6832863	500
PS003A-505-LUUPN8X-H1141	6832787	501
PS003A-508-2UPN8X-H1141	6832722	502
PS003A-508-LI2UPN8X-H1141	6832875	503
PS003A-508-LUUPN8X-H1141	6832799	504
PS003A-510-2UPN8X-H1141	6832892	505
PS003A-510-LI2UPN8X-H1141	6832926	506
PS003A-510-LUUPN8X-H1141	6832909	507
PS003A-511-2UPN8X-H1141	6832943	508
PS003A-511-LI2UPN8X-H1141	6832977	509
PS003A-511-LUUPN8X-H1141	6832960	510
PS003V-301-2UPN8X-H1141	6833315	467
PS003V-301-LI2UPN8X-H1141	6833303	468
PS003V-301-LUUPN8X-H1141	6833327	469
PS003V-302-2UPN8X-H1141	6833351	470
PS003V-302-LI2UPN8X-H1141	6833339	471
PS003V-302-LUUPN8X-H1141	6833363	472
PS003V-303-2UPN8X-H1141	6833417	473
PS003V-303-LI2UPN8X-H1141	6833405	474
PS003V-303-LUUPN8X-H1141	6833429	475
PS003V-304-2UPN8X-H1141	6833453	476
PS003V-304-LI2UPN8X-H1141	6833441	477
PS003V-304-LUUPN8X-H1141	6833465	478
PS003V-310-2UPN8X-H11141	6833519	479
PS003V-310-LI2UPN8X-H11141	6833507	480
PS003V-310-LUUPN8X-H11141	6833531	481
PS003V-311-2UPN8X-H11141	6833555	482
PS003V-311-LI2UPN8X-H11141	6833543	483
PS003V-311-LUUPN8X-H11141	6833567	484
PS003V-501-2UPN8X-H1141	6832627	487
PS003V-501-LI2UPN8X-H1141	6832804	488
PS003V-501-LUUPN8X-H1141	6832727	489
PS003V-502-2UPN8X-H1141	6832644	490
PS003V-502-LI2UPN8X-H1141	6832816	491
PS003V-502-LUUPN8X-H1141	6832739	492
PS003V-503-2UPN8X-H1141	6832661	493
PS003V-503-LI2UPN8X-H1141	6832828	494
PS003V-503-LUUPN8X-H1141	6832751	495
PS003V-504-2UPN8X-H1141	6832678	496
PS003V-504-LI2UPN8X-H1141	6832840	497
PS003V-504-LUUPN8X-H1141	6832763	498
PS003V-505-2UPN8X-H1141	6832695	499
PS003V-505-LI2UPN8X-H1141	6832854	500
PS003V-505-LUUPN8X-H1141	6832777	501
PS003V-508-2UPN8X-H1141	6832712	502
PS003V-508-LI2UPN8X-H1141	6832868	503
PS003V-508-LUUPN8X-H1141	6832792	504
PS003V-510-2UPN8X-H1141	6832882	505
PS003V-510-LI2UPN8X-H1141	6832916	506
PS003V-510-LUUPN8X-H1141	6832899	507
PS003V-511-2UPN8X-H1141	6832933	508
PS003V-511-LI2UPN8X-H1141	6832967	509
PS003V-511-LUUPN8X-H1141	6832950	510
PS003V-606-2UPN8X-H1141	6833057	513
PS003V-606-LI2UPN8X-H1141	6833041	514
PS003V-606-LUUPN8X-H1141	6833028	515
PS010A-501-2UPN8X-H1141	6832638	487
PS010A-501-LI2UPN8X-H1141	6832812	488
PS010A-501-LUUPN8X-H1141	6832735	489
PS010A-502-2UPN8X-H1141	6832655	490
PS010A-502-LI2UPN8X-H1141	6832824	491
PS010A-502-LUUPN8X-H1141	6832747	492
PS010A-503-2UPN8X-H1141	6832672	493
PS010A-503-LI2UPN8X-H1141	6832836	494
PS010A-503-LUUPN8X-H1141	6832759	495
PS010A-504-2UPN8X-H1141	6832689	496
PS010A-504-LI2UPN8X-H1141	6832848	497
PS010A-504-LUUPN8X-H1141	6832771	498
PS010A-505-2UPN8X-H1141	6832706	499
PS010A-505-LI2UPN8X-H1141	6832864	500

Type	Ident no.	Page
PS010A-505-LUUPN8X-H1141	6832788	501
PS010A-508-2UPN8X-H1141	6832723	502
PS010A-508-LI2UPN8X-H1141	6832876	503
PS010A-508-LUUPN8X-H1141	6832800	504
PS010A-510-2UPN8X-H1141	6832893	505
PS010A-510-LI2UPN8X-H1141	6832927	506
PS010A-510-LUUPN8X-H1141	6832910	507
PS010A-511-2UPN8X-H1141	6832944	508
PS010A-511-LI2UPN8X-H1141	6832978	509
PS010A-511-LUUPN8X-H1141	6832961	510
PS010V-301-2UPN8X-H1141	6833316	467
PS010V-301-LI2UPN8X-H1141	6833304	468
PS010V-301-LUUPN8X-H1141	6833328	469
PS010V-302-2UPN8X-H1141	6833352	470
PS010V-302-LI2UPN8X-H1141	6833340	471
PS010V-302-LUUPN8X-H1141	6833364	472
PS010V-303-2UPN8X-H1141	6833418	473
PS010V-303-LI2UPN8X-H1141	6833406	474
PS010V-303-LUUPN8X-H1141	6833430	475
PS010V-304-2UPN8X-H1141	6833454	476
PS010V-304-LI2UPN8X-H1141	6833442	477
PS010V-304-LUUPN8X-H1141	6833466	478
PS010V-310-2UPN8X-H11141	6833520	479
PS010V-310-LI2UPN8X-H11141	6833508	480
PS010V-310-LUUPN8X-H11141	6833532	481
PS010V-311-2UPN8X-H11141	6833556	482
PS010V-311-LI2UPN8X-H11141	6833544	483
PS010V-311-LUUPN8X-H11141	6833568	484
PS010V-501-2UPN8X-H1141	6832628	487
PS010V-501-LI2UPN8X-H1141	6832805	488
PS010V-501-LUUPN8X-H1141	6832728	489
PS010V-502-2UPN8X-H1141	6832645	490
PS010V-502-LI2UPN8X-H1141	6832817	491
PS010V-502-LUUPN8X-H1141	6832740	492
PS010V-503-2UPN8X-H1141	6832662	493
PS010V-503-LI2UPN8X-H1141	6832829	494

Type	Ident no.	Page
PS010V-503-LUUPN8X-H1141	6832752	495
PS010V-504-2UPN8X-H1141	6832679	496
PS010V-504-LI2UPN8X-H1141	6832841	497
PS010V-504-LUUPN8X-H1141	6832764	498
PS010V-505-2UPN8X-H1141	6832696	499
PS010V-505-LUUPN8X-H1141	6832778	501
PS010V-508-2UPN8X-H1141	6832713	502
PS010V-508-LI2UPN8X-H1141	6832869	503
PS010V-508-LUUPN8X-H1141	6832793	504
PS010V-510-2UPN8X-H1141	6832883	505
PS010V-510-LI2UPN8X-H1141	6832917	506
PS010V-510-LUUPN8X-H1141	6832900	507
PS010V-511-2UPN8X-H1141	6832934	508
PS010V-511-LI2UPN8X-H1141	6832968	509
PS010V-511-LUUPN8X-H1141	6832951	510
PS010V-606-2UPN8X-H1141	6833058	513
PS010V-606-LI2UPN8X-H1141	6833042	514
PS010V-606-LUUPN8X-H1141	6833029	515
PS010V-609-2UPN8X-H1141	6833020	516
PS010V-609-LI2UPN8X-H1141	6833047	517
PS010V-609-LUUPN8X-H1141	6833033	518
PS016A-501-2UPN8X-H1141	6832639	487
PS016A-501-LI2UPN8X-H1141	6832813	488
PS016A-501-LUUPN8X-H1141	6832736	489
PS016A-502-2UPN8X-H1141	6832656	490
PS016A-502-LI2UPN8X-H1141	6832825	491
PS016A-502-LUUPN8X-H1141	6832748	492
PS016A-503-2UPN8X-H1141	6832673	493
PS016A-503-LI2UPN8X-H1141	6832837	494
PS016A-503-LUUPN8X-H1141	6832760	495
PS016A-504-2UPN8X-H1141	6832690	496
PS016A-504-LI2UPN8X-H1141	6832849	497
PS016A-504-LUUPN8X-H1141	6832772	498
PS016A-505-2UPN8X-H1141	6832707	499
PS016A-505-LI2UPN8X-H1141	6832865	500
PS016A-505-LUUPN8X-H1141	6832789	501

Index of types

Type	Ident no.	Page
PS016A-508-2UPN8X-H1141	6832724	502
PS016A-508-LI2UPN8X-H1141	6832877	503
PS016A-508-LUUPN8X-H1141	6832801	504
PS016A-510-2UPN8X-H1141	6832894	505
PS016A-510-LI2UPN8X-H1141	6832928	506
PS016A-510-LUUPN8X-H1141	6832911	507
PS016A-511-2UPN8X-H1141	6832945	508
PS016A-511-LI2UPN8X-H1141	6832979	509
PS016A-511-LUUPN8X-H1141	6832962	510
PS016V-301-2UPN8X-H1141	6833317	467
PS016V-301-LI2UPN8X-H1141	6833305	468
PS016V-301-LUUPN8X-H1141	6833329	469
PS016V-302-2UPN8X-H1141	6833353	470
PS016V-302-LI2UPN8X-H1141	6833341	471
PS016V-302-LUUPN8X-H1141	6833365	472
PS016V-303-2UPN8X-H1141	6833419	473
PS016V-303-LI2UPN8X-H1141	6833407	474
PS016V-303-LUUPN8X-H1141	6833431	475
PS016V-304-2UPN8X-H1141	6833455	476
PS016V-304-LI2UPN8X-H1141	6833443	477
PS016V-304-LUUPN8X-H1141	6833467	478
PS016V-310-2UPN8X-H11141	6833521	479
PS016V-310-LI2UPN8X-H11141	6833509	480
PS016V-310-LUUPN8X-H11141	6833533	481
PS016V-311-2UPN8X-H11141	6833557	482
PS016V-311-LI2UPN8X-H11141	6833545	483
PS016V-311-LUUPN8X-H11141	6833569	484
PS016V-501-2UPN8X-H1141	6832629	487
PS016V-501-LI2UPN8X-H1141	6832806	488
PS016V-501-LUUPN8X-H1141	6832729	489
PS016V-502-2UPN8X-H1141	6832646	490
PS016V-502-LI2UPN8X-H1141	6832818	491
PS016V-502-LUUPN8X-H1141	6832741	492
PS016V-503-2UPN8X-H1141	6832663	493
PS016V-503-LI2UPN8X-H1141	6832830	494
PS016V-503-LUUPN8X-H1141	6832753	495
PS016V-504-2UPN8X-H1141	6832680	496
PS016V-504-LI2UPN8X-H1141	6832842	497
PS016V-504-LUUPN8X-H1141	6832765	498
PS016V-505-2UPN8X-H1141	6832697	499
PS016V-505-LI2UPN8X-H1141	6832855	500
PS016V-505-LUUPN8X-H1141	6832779	501
PS016V-508-2UPN8X-H1141	6832714	502
PS016V-508-LI2UPN8X-H1141	6832870	503
PS016V-508-LUUPN8X-H1141	6832794	504
PS016V-510-2UPN8X-H1141	6832884	505
PS016V-510-LI2UPN8X-H1141	6832918	506
PS016V-510-LUUPN8X-H1141	6832901	507
PS016V-511-2UPN8X-H1141	6832935	508
PS016V-511-LI2UPN8X-H1141	6832969	509
PS016V-511-LUUPN8X-H1141	6832952	510
PS016V-606-2UPN8X-H1141	6833059	513
PS016V-606-LI2UPN8X-H1141	6833043	514
PS016V-606-LUUPN8X-H1141	6833030	515
PS016V-609-2UPN8X-H1141	6833021	516
PS016V-609-LI2UPN8X-H1141	6833048	517
PS016V-609-LUUPN8X-H1141	6833034	518
PS01VR-301-2UPN8X-H1141	6833312	467
PS01VR-301-LI2UPN8X-H1141	6833300	468
PS01VR-301-LUUPN8X-H1141	6833324	469
PS01VR-302-2UPN8X-H1141	6833348	470
PS01VR-302-LI2UPN8X-H1141	6833336	471
PS01VR-302-LUUPN8X-H1141	6833360	472
PS01VR-303-2UPN8X-H1141	6833414	473
PS01VR-303-LI2UPN8X-H1141	6833402	474
PS01VR-303-LUUPN8X-H1141	6833426	475
PS01VR-304-2UPN8X-H1141	6833450	476
PS01VR-304-LI2UPN8X-H1141	6833438	477
PS01VR-304-LUUPN8X-H1141	6833462	478
PS01VR-310-2UPN8X-H11141	6833516	479
PS01VR-310-LI2UPN8X-H11141	6833504	480
PS01VR-310-LUUPN8X-H11141	6833528	481

Type	Ident no.	Page
PS01VR-311-2UPN8X-H11141	6833552	482
PS01VR-311-LI2UPN8X-H11141	6833540	483
PS01VR-311-LUUPN8X-H11141	6833564	484
PS01VR-501-2UPN8X-H1141	6832624	487
PS01VR-501-LI2UPN8X-H1141	6832220	488
PS01VR-501-LUUPN8X-H1141	6832230	489
PS01VR-502-2UPN8X-H1141	6832641	490
PS01VR-502-LI2UPN8X-H1141	6832260	491
PS01VR-502-LUUPN8X-H1141	6832270	492
PS01VR-503-2UPN8X-H1141	6832658	493
PS01VR-503-LI2UPN8X-H1141	6832280	494
PS01VR-503-LUUPN8X-H1141	6832290	495
PS01VR-504-2UPN8X-H1141	6832675	496
PS01VR-504-LI2UPN8X-H1141	6832300	497
PS01VR-504-LUUPN8X-H1141	6832310	498
PS01VR-505-2UPN8X-H1141	6832692	499
PS01VR-505-LI2UPN8X-H1141	6832851	500
PS01VR-505-LUUPN8X-H1141	6832774	501
PS01VR-508-2UPN8X-H1141	6832709	502
PS01VR-508-LI2UPN8X-H1141	6832340	503
PS01VR-508-LUUPN8X-H1141	6832350	504
PS01VR-510-2UPN8X-H1141	6832879	505
PS01VR-510-LI2UPN8X-H1141	6832913	506
PS01VR-510-LUUPN8X-H1141	6832896	507
PS01VR-511-2UPN8X-H1141	6832930	508
PS01VR-511-LI2UPN8X-H1141	6832964	509
PS01VR-511-LUUPN8X-H1141	6832947	510
PS01VR-606-2UPN8X-H1141	6833054	513
PS01VR-606-LI2UPN8X-H1141	6832380	514
PS01VR-606-LUUPN8X-H1141	6832390	515
PS025A-501-2UPN8X-H1141	6832640	487
PS025A-501-LI2UPN8X-H1141	6832814	488
PS025A-501-LUUPN8X-H1141	6832737	489
PS025A-502-2UPN8X-H1141	6832657	490
PS025A-502-LI2UPN8X-H1141	6832826	491
PS025A-502-LUUPN8X-H1141	6832749	492
PS025A-503-2UPN8X-H1141	6832674	493
PS025A-503-LI2UPN8X-H1141	6832838	494
PS025A-503-LUUPN8X-H1141	6832761	495
PS025A-504-2UPN8X-H1141	6832691	496
PS025A-504-LI2UPN8X-H1141	6832850	497
PS025A-504-LUUPN8X-H1141	6832773	498
PS025A-505-2UPN8X-H1141	6832708	499
PS025A-505-LI2UPN8X-H1141	6832866	500
PS025A-505-LUUPN8X-H1141	6832790	501
PS025A-508-2UPN8X-H1141	6832725	502
PS025A-508-LI2UPN8X-H1141	6832878	503
PS025A-508-LUUPN8X-H1141	6832802	504
PS025A-510-2UPN8X-H1141	6832895	505
PS025A-510-LI2UPN8X-H1141	6832929	506
PS025A-510-LUUPN8X-H1141	6832912	507
PS025A-511-2UPN8X-H1141	6832946	508
PS025A-511-LI2UPN8X-H1141	6832980	509
PS025A-511-LUUPN8X-H1141	6832963	510
PS025V-301-2UPN8X-H1141	6833318	467
PS025V-301-LI2UPN8X-H1141	6833306	468
PS025V-301-LUUPN8X-H1141	6833330	469
PS025V-302-2UPN8X-H1141	6833354	470
PS025V-302-LI2UPN8X-H1141	6833342	471
PS025V-302-LUUPN8X-H1141	6833366	472
PS025V-303-2UPN8X-H1141	6833420	473
PS025V-303-LI2UPN8X-H1141	6833408	474
PS025V-303-LUUPN8X-H1141	6833432	475
PS025V-304-2UPN8X-H1141	6833456	476
PS025V-304-LI2UPN8X-H1141	6833444	477
PS025V-304-LUUPN8X-H1141	6833468	478
PS025V-310-2UPN8X-H11141	6833522	479
PS025V-310-LI2UPN8X-H11141	6833510	480
PS025V-310-LUUPN8X-H11141	6833534	481
PS025V-311-2UPN8X-H11141	6833558	482
PS025V-311-LI2UPN8X-H11141	6833546	483
PS025V-311-LUUPN8X-H11141	6833600	484

Index of types

Type	Ident no.	Page
PS025V-501-2UPN8X-H1141	6832630	487
PS025V-501-LI2UPN8X-H1141	6832807	488
PS025V-501-LUUPN8X-H1141	6832730	489
PS025V-502-2UPN8X-H1141	6832647	490
PS025V-502-LI2UPN8X-H1141	6832819	491
PS025V-502-LUUPN8X-H1141	6832742	492
PS025V-503-2UPN8X-H1141	6832664	493
PS025V-503-LI2UPN8X-H1141	6832831	494
PS025V-503-LUUPN8X-H1141	6832754	495
PS025V-504-2UPN8X-H1141	6832681	496
PS025V-504-LI2UPN8X-H1141	6832843	497
PS025V-504-LUUPN8X-H1141	6832766	498
PS025V-505-2UPN8X-H1141	6832698	499
PS025V-505-LI2UPN8X-H1141	6832856	500
PS025V-505-LUUPN8X-H1141	6832780	501
PS025V-508-2UPN8X-H1141	6832715	502
PS025V-508-LI2UPN8X-H1141	6832871	503
PS025V-508-LUUPN8X-H1141	6832795	504
PS025V-510-2UPN8X-H1141	6832885	505
PS025V-510-LI2UPN8X-H1141	6832919	506
PS025V-510-LUUPN8X-H1141	6832902	507
PS025V-511-2UPN8X-H1141	6832936	508
PS025V-511-LI2UPN8X-H1141	6832970	509
PS025V-511-LUUPN8X-H1141	6832953	510
PS025V-606-2UPN8X-H1141	6833060	513
PS025V-606-LI2UPN8X-H1141	6833044	514
PS025V-606-LUUPN8X-H1141	6833031	515
PS025V-609-2UPN8X-H1141	6833022	516
PS025V-609-LI2UPN8X-H1141	6833049	517
PS025V-609-LUUPN8X-H1141	6833035	518
PS040V-301-2UPN8X-H1141	6833319	467
PS040V-301-LI2UPN8X-H1141	6833307	468
PS040V-301-LUUPN8X-H1141	6833331	469
PS040V-302-2UPN8X-H1141	6833355	470
PS040V-302-LI2UPN8X-H1141	6833343	471
PS040V-302-LUUPN8X-H1141	6833367	472

Type	Ident no.	Page
PS040V-303-2UPN8X-H1141	6833421	473
PS040V-303-LI2UPN8X-H1141	6833409	474
PS040V-303-LUUPN8X-H1141	6833433	475
PS040V-304-2UPN8X-H1141	6833457	476
PS040V-304-LI2UPN8X-H1141	6833445	477
PS040V-304-LUUPN8X-H1141	6833469	478
PS040V-310-2UPN8X-H11141	6833523	479
PS040V-310-LI2UPN8X-H11141	6833511	480
PS040V-310-LUUPN8X-H11141	6833535	481
PS040V-311-2UPN8X-H11141	6833559	482
PS040V-311-LI2UPN8X-H11141	6833547	483
PS040V-311-LUUPN8X-H11141	6833601	484
PS040V-501-2UPN8X-H1141	6832631	487
PS040V-501-LI2UPN8X-H1141	6832808	488
PS040V-501-LUUPN8X-H1141	6832731	489
PS040V-502-2UPN8X-H1141	6832648	490
PS040V-502-LI2UPN8X-H1141	6832820	491
PS040V-502-LUUPN8X-H1141	6832743	492
PS040V-503-2UPN8X-H1141	6832665	493
PS040V-503-LI2UPN8X-H1141	6832832	494
PS040V-503-LUUPN8X-H1141	6832755	495
PS040V-504-2UPN8X-H1141	6832682	496
PS040V-504-LI2UPN8X-H1141	6832844	497
PS040V-504-LUUPN8X-H1141	6832767	498
PS040V-505-2UPN8X-H1141	6832699	499
PS040V-505-LI2UPN8X-H1141	6832857	500
PS040V-505-LUUPN8X-H1141	6832781	501
PS040V-508-2UPN8X-H1141	6832716	502
PS040V-508-LI2UPN8X-H1141	6832872	503
PS040V-508-LUUPN8X-H1141	6832796	504
PS040V-510-2UPN8X-H1141	6832886	505
PS040V-510-LI2UPN8X-H1141	6832920	506
PS040V-510-LUUPN8X-H1141	6832903	507
PS040V-511-2UPN8X-H1141	6832937	508
PS040V-511-LI2UPN8X-H1141	6832971	509
PS040V-511-LUUPN8X-H1141	6832954	510

Type	Ident no.	Page
PS040V-606-2UPN8X-H1141	6833061	513
PS040V-606-LI2UPN8X-H1141	6833045	514
PS040V-606-LUUPN8X-H1141	6833032	515
PS040V-609-2UPN8X-H1141	6833023	516
PS040V-609-LI2UPN8X-H1141	6833050	517
PS040V-609-LUUPN8X-H1141	6833036	518
PS100R-301-2UPN8X-H1141	6833320	467
PS100R-301-LI2UPN8X-H1141	6833308	468
PS100R-301-LUUPN8X-H1141	6833332	469
PS100R-302-2UPN8X-H1141	6833356	470
PS100R-302-LI2UPN8X-H1141	6833344	471
PS100R-302-LUUPN8X-H1141	6833368	472
PS100R-303-2UPN8X-H1141	6833422	473
PS100R-303-LI2UPN8X-H1141	6833410	474
PS100R-303-LUUPN8X-H1141	6833434	475
PS100R-304-2UPN8X-H1141	6833458	476
PS100R-304-LI2UPN8X-H1141	6833446	477
PS100R-304-LUUPN8X-H1141	6833500	478
PS100R-310-2UPN8X-H11141	6833524	479
PS100R-310-LI2UPN8X-H11141	6833512	480
PS100R-310-LUUPN8X-H11141	6833536	481
PS100R-311-2UPN8X-H11141	6833560	482
PS100R-311-LI2UPN8X-H11141	6833548	483
PS100R-311-LUUPN8X-H11141	6833602	484
PS100R-501-2UPN8X-H1141	6832632	487
PS100R-501-LI2UPN8X-H1141	6832227	488
PS100R-501-LUUPN8X-H1141	6832237	489
PS100R-502-2UPN8X-H1141	6832649	490
PS100R-502-LI2UPN8X-H1141	6832267	491
PS100R-502-LUUPN8X-H1141	6832277	492
PS100R-503-2UPN8X-H1141	6832666	493
PS100R-503-LI2UPN8X-H1141	6832287	494
PS100R-503-LUUPN8X-H1141	6832297	495
PS100R-504-2UPN8X-H1141	6832683	496
PS100R-504-LI2UPN8X-H1141	6832307	497
PS100R-504-LUUPN8X-H1141	6832317	498

Type	Ident no.	Page
PS100R-505-2UPN8X-H1141	6832700	499
PS100R-505-LI2UPN8X-H1141	6832858	500
PS100R-505-LUUPN8X-H1141	6832782	501
PS100R-508-2UPN8X-H1141	6832717	502
PS100R-508-LI2UPN8X-H1141	6832347	503
PS100R-508-LUUPN8X-H1141	6832357	504
PS100R-510-2UPN8X-H1141	6832887	505
PS100R-510-LI2UPN8X-H1141	6832921	506
PS100R-510-LUUPN8X-H1141	6832904	507
PS100R-511-2UPN8X-H1141	6832938	508
PS100R-511-LI2UPN8X-H1141	6832972	509
PS100R-511-LUUPN8X-H1141	6832955	510
PS100R-606-2UPN8X-H1141	6833062	513
PS100R-606-LI2UPN8X-H1141	6832387	514
PS100R-606-LUUPN8X-H1141	6832397	515
PS100R-609-2UPN8X-H1141	6833024	516
PS100R-609-LI2UPN8X-H1141	6832446	517
PS100R-609-LUUPN8X-H1141	6833037	518
PS250R-301-2UPN8X-H1141	6833321	467
PS250R-301-LI2UPN8X-H1141	6833309	468
PS250R-301-LUUPN8X-H1141	6833333	469
PS250R-302-2UPN8X-H1141	6833357	470
PS250R-302-LI2UPN8X-H1141	6833345	471
PS250R-302-LUUPN8X-H1141	6833369	472
PS250R-303-2UPN8X-H1141	6833423	473
PS250R-303-LI2UPN8X-H1141	6833411	474
PS250R-303-LUUPN8X-H1141	6833435	475
PS250R-304-2UPN8X-H1141	6833459	476
PS250R-304-LI2UPN8X-H1141	6833447	477
PS250R-304-LUUPN8X-H1141	6833501	478
PS250R-310-2UPN8X-H11141	6833525	479
PS250R-310-LI2UPN8X-H11141	6833513	480
PS250R-310-LUUPN8X-H11141	6833537	481
PS250R-311-2UPN8X-H11141	6833561	482
PS250R-311-LI2UPN8X-H11141	6833549	483
PS250R-311-LUUPN8X-H11141	6833603	484

Index of types

Type	Ident no.	Page
PS250R-501-2UPN8X-H1141	6832633	487
PS250R-501-LI2UPN8X-H1141	6832228	488
PS250R-501-LUUPN8X-H1141	6832238	489
PS250R-502-2UPN8X-H1141	6832650	490
PS250R-502-LI2UPN8X-H1141	6832268	491
PS250R-502-LUUPN8X-H1141	6832278	492
PS250R-503-2UPN8X-H1141	6832667	493
PS250R-503-LI2UPN8X-H1141	6832288	494
PS250R-503-LUUPN8X-H1141	6832298	495
PS250R-504-2UPN8X-H1141	6832684	496
PS250R-504-LI2UPN8X-H1141	6832308	497
PS250R-504-LUUPN8X-H1141	6832318	498
PS250R-505-2UPN8X-H1141	6832701	499
PS250R-505-LI2UPN8X-H1141	6832859	500
PS250R-505-LUUPN8X-H1141	6832783	501
PS250R-508-2UPN8X-H1141	6832718	502
PS250R-508-LI2UPN8X-H1141	6832348	503
PS250R-508-LUUPN8X-H1141	6832358	504
PS250R-510-2UPN8X-H1141	6832888	505
PS250R-510-LI2UPN8X-H1141	6832922	506
PS250R-510-LUUPN8X-H1141	6832905	507
PS250R-511-2UPN8X-H1141	6832939	508
PS250R-511-LI2UPN8X-H1141	6832973	509
PS250R-511-LUUPN8X-H1141	6832956	510
PS250R-606-2UPN8X-H1141	6833063	513
PS250R-606-LI2UPN8X-H1141	6832388	514
PS250R-606-LUUPN8X-H1141	6832398	515
PS250R-609-2UPN8X-H1141	6833025	516
PS250R-609-LI2UPN8X-H1141	6833052	517
PS250R-609-LUUPN8X-H1141	6833038	518
PS400R-301-2UPN8X-H1141	6833322	467
PS400R-301-LI2UPN8X-H1141	6833310	468
PS400R-301-LUUPN8X-H1141	6833334	469
PS400R-302-2UPN8X-H1141	6833358	470
PS400R-302-LI2UPN8X-H1141	6833346	471
PS400R-302-LUUPN8X-H1141	6833400	472

Type	Ident no.	Page
PS400R-303-2UPN8X-H1141	6833424	473
PS400R-303-LI2UPN8X-H1141	6833412	474
PS400R-303-LUUPN8X-H1141	6833436	475
PS400R-304-2UPN8X-H1141	6833460	476
PS400R-304-LI2UPN8X-H1141	6833448	477
PS400R-304-LUUPN8X-H1141	6833502	478
PS400R-310-2UPN8X-H11141	6833526	479
PS400R-310-LI2UPN8X-H11141	6833514	480
PS400R-310-LUUPN8X-H11141	6833538	481
PS400R-311-2UPN8X-H11141	6833562	482
PS400R-311-LI2UPN8X-H11141	6833550	483
PS400R-311-LUUPN8X-H11141	6833604	484
PS400R-501-2UPN8X-H1141	6832634	487
PS400R-501-LI2UPN8X-H1141	6832229	488
PS400R-501-LUUPN8X-H1141	6832239	489
PS400R-502-2UPN8X-H1141	6832651	490
PS400R-502-LI2UPN8X-H1141	6832269	491
PS400R-502-LUUPN8X-H1141	6832279	492
PS400R-503-2UPN8X-H1141	6832668	493
PS400R-503-LI2UPN8X-H1141	6832289	494
PS400R-503-LUUPN8X-H1141	6832299	495
PS400R-504-2UPN8X-H1141	6832685	496
PS400R-504-LI2UPN8X-H1141	6832309	497
PS400R-504-LUUPN8X-H1141	6832319	498
PS400R-505-2UPN8X-H1141	6832702	499
PS400R-505-LI2UPN8X-H1141	6832860	500
PS400R-505-LUUPN8X-H1141	6832784	501
PS400R-508-2UPN8X-H1141	6832719	502
PS400R-508-LI2UPN8X-H1141	6832349	503
PS400R-508-LUUPN8X-H1141	6832359	504
PS400R-510-2UPN8X-H1141	6832889	505
PS400R-510-LI2UPN8X-H1141	6832923	506
PS400R-510-LUUPN8X-H1141	6832906	507
PS400R-511-2UPN8X-H1141	6832940	508
PS400R-511-LI2UPN8X-H1141	6832974	509
PS400R-511-LUUPN8X-H1141	6832957	510

Type	Ident no.	Page
PS400R-606-2UPN8X-H1141	6833064	513
PS400R-606-LI2UPN8X-H1141	6832389	514
PS400R-606-LUUPN8X-H1141	6832399	515
PS400R-609-2UPN8X-H1141	6833026	516
PS400R-609-LI2UPN8X-H1141	6833053	517
PS400R-609-LUUPN8X-H1141	6833039	518
PS600R-301-2UPN8X-H1141	6833323	467
PS600R-301-LI2UPN8X-H1141	6833311	468
PS600R-301-LUUPN8X-H1141	6833335	469
PS600R-302-2UPN8X-H1141	6833359	470
PS600R-302-LI2UPN8X-H1141	6833347	471
PS600R-302-LUUPN8X-H1141	6833401	472
PS600R-303-2UPN8X-H1141	6833425	473
PS600R-303-LI2UPN8X-H1141	6833413	474
PS600R-303-LUUPN8X-H1141	6833437	475
PS600R-304-2UPN8X-H1141	6833461	476
PS600R-304-LI2UPN8X-H1141	6833449	477
PS600R-304-LUUPN8X-H1141	6833503	478
PS600R-310-2UPN8X-H11141	6833527	479
PS600R-310-LI2UPN8X-H11141	6833515	480
PS600R-310-LUUPN8X-H11141	6833539	481
PS600R-311-2UPN8X-H11141	6833563	482
PS600R-311-LI2UPN8X-H11141	6833551	483
PS600R-311-LUUPN8X-H11141	6833605	484
PS600R-501-2UPN8X-H1141	6832635	487
PS600R-501-LI2UPN8X-H1141	6832809	488
PS600R-501-LUUPN8X-H1141	6832732	489
PS600R-502-2UPN8X-H1141	6832652	490
PS600R-502-LI2UPN8X-H1141	6832821	491
PS600R-502-LUUPN8X-H1141	6832744	492
PS600R-503-2UPN8X-H1141	6832669	493
PS600R-503-LI2UPN8X-H1141	6832833	494
PS600R-503-LUUPN8X-H1141	6832756	495
PS600R-504-2UPN8X-H1141	6832686	496
PS600R-504-LI2UPN8X-H1141	6832845	497
PS600R-504-LUUPN8X-H1141	6832768	498
PS600R-505-2UPN8X-H1141	6832703	499
PS600R-505-LI2UPN8X-H1141	6832861	500
PS600R-505-LUUPN8X-H1141	6832785	501
PS600R-508-2UPN8X-H1141	6832720	502
PS600R-508-LI2UPN8X-H1141	6832873	503
PS600R-508-LUUPN8X-H1141	6832797	504
PS600R-510-2UPN8X-H1141	6832890	505
PS600R-510-LI2UPN8X-H1141	6832924	506
PS600R-510-LUUPN8X-H1141	6832907	507
PS600R-511-2UPN8X-H1141	6832941	508
PS600R-511-LI2UPN8X-H1141	6832975	509
PS600R-511-LUUPN8X-H1141	6832958	510
PT001R-11-LI3-H1131	6831434	533
PT001R-11-LU2-H1131	6831483	534
PT001R-13-LU2-H1141	6831513	536
PT001R-14-LI3-H1131	6831401	537
PT001R-14-LU2-H1131	6831417	538
PT002R-11-LI3-H1131	6831435	533
PT002R-11-LU2-H1131	6831484	534
PT002R-13-LU2-H1131	6831514	536
PT002R-14-LI3-H1131	6831402	537
PT002R-14-LU2-H1131	6831418	538
PT003R-11-LI3-H1131	6831436	533
PT003R-11-LU2-H1131	6831485	534
PT003R-13-LU2-H1131	6831515	536
PT003R-14-LI3-H1131	6831403	537
PT003R-14-LU2-H1131	6831419	538
PT004R-11-LI3-H1131	6831437	533
PT004R-11-LU2-H1131	6831486	534
PT004R-13-LI3-H1131	6831498	535
PT004R-13-LU2-H1131	6831516	536
PT004R-14-LI3-H1131	6831404	537
PT004R-14-LU2-H1131	6831420	538
PT006R-11-LI3-H1131	6831438	533
PT006R-11-LU2-H1131	6831452	534
PT006R-13-LU2-H1131	6831517	536

Index of types

Type	Ident no.	Page
PT006R-14-LI3-H1131	6831405	537
PT006R-14-LU2-H1131	6831421	538
PT010R-11-LI3-H1131	6831432	533
PT010R-11-LU2-H1131	6831487	534
PT010R-13-LI3-H1131	6831502	535
PT010R-13-LU2-H1131	6831496	536
PT010R-14-LI3-H1131	6831406	537
PT010R-14-LU2-H1131	6831422	538
PT016R-11-LI3-H1131	6831439	533
PT016R-11-LU2-H1131	6831488	534
PT016R-13-LI3-H1131	6831503	535
PT016R-14-LI3-H1131	6831407	537
PT016R-14-LU2-H1131	6831423	538
PT01VR-11-LU2-H1131	6831454	534
PT01VR-13-LU2-H1131	6831512	536
PT01VR-14-LI3-H1131	6831400	537
PT01VR-14-LU2-H1131	6831416	538
PT025R-11-LI3-H1131	6831440	533
PT025R-11-LU2-H1131	6831489	534
PT025R-13-LI3-H1131	6831504	535
PT025R-14-LI3-H1131	6831408	537
PT025R-14-LU2-H1131	6831424	538
PT040R-11-LI3-H1131	6831441	533
PT040R-11-LU2-H1131	6831490	534
PT040R-13-LI3-H1131	6831505	535
PT040R-14-LI3-H1131	6831409	537
PT040R-14-LU2-H1131	6831425	538
PT060R-11-LI3-H1131	6831442	533
PT060R-11-LU2-H1131	6831491	534
PT060R-13-LI3-H1131	6831506	535
PT060R-13-LU2-H1131	6831522	536
PT060R-14-LI3-H1131	6831410	537
PT060R-14-LU2-H1131	6831426	538
PT100R-11-LI3-H1131	6831443	533
PT100R-11-LU2-H1131	6831492	534
PT100R-13-LI3-H1131	6831507	535
PT100R-13-LU2-H1131	6831523	536
PT100R-14-LI3-H1131	6831411	537
PT100R-14-LU2-H1131	6831427	538
PT160R-11-LI3-H1131	6831444	533
PT160R-11-LU2-H1131	6831453	534
PT160R-13-LI3-H1131	6831508	535
PT160R-13-LU2-H1131	6831524	536
PT160R-14-LI3-H1131	6831412	537
PT160R-14-LU2-H1131	6831428	538
PT250R-11-LI3-H1131	6831445	533
PT250R-11-LU2-H1131	6831451	534
PT250R-13-LI3-H1141	6831509	535
PT250R-13-LU2-H1131	6831525	536
PT250R-14-LI3-H1131	6831413	537
PT250R-14-LU2-H1131	6831429	538
PT400R-11-LI3-H1131	6831446	533
PT400R-11-LU2-H1131	6831493	534
PT400R-13-LI3-H1141	6831510	535
PT400R-13-LU2-H1131	6831526	536
PT400R-14-LI3-H1131	6831414	537
PT400R-14-LU2-H1131	6831430	538
PT600R-11-LI3-H1131	6831447	533
PT600R-11-LU2-H1131	6831494	534
PT600R-13-LI3-H1141	6831511	535
PT600R-13-LU2-H1131	6831527	536
PT600R-14-LI3-H1131	6831415	537
PT600R-14-LU2-H1131	6831431	538
PTS-Cover	6907410	773, 785
PVA100P6	3052901	431
PVA100P6Q	3052903	431
PVA225P6	3052905	431
PVA225P6Q	3052907	431
PVA300P6	3052909	431
PVA300P6Q	3052911	431
PVA375P6	3052913	431
PVA375P6Q	3052915	431

Types

Type	Ident no.	Page
PVD100	3070988	432
PVD100Q	3070989	432
PVD225	3070990	432
PVD225Q	3070991	432
Q126E	3072140	311
Q126ECR	3076488	311
Q126EQ	3072141	311
Q12AB6FF15	3072104	314
Q12AB6FF15CR	3076477	315
Q12AB6FF15Q	3072105	314
Q12AB6FF30	3072110	314
Q12AB6FF30CR	3076482	315
Q12AB6FF30Q	3072111	314
Q12AB6FF50	3072116	314
Q12AB6FF50CR	3076484	315
Q12AB6FF50Q	3072117	314
Q12AB6LP	3072128	313
Q12AB6LPQ	3072129	313
Q12AB6LV	3072122	313
Q12AB6LVQ	3072123	313
Q12AB6R	3072134	312
Q12AB6RCR	3076486	312
Q12AB6RQ	3072135	312
Q12RB6FF15	3072107	314
Q12RB6FF15CR	3076481	315
Q12RB6FF15Q	3072108	314
Q12RB6FF30	3072113	314
Q12RB6FF30CR	3076483	315
Q12RB6FF30Q	3072114	314
Q12RB6FF50	3072119	314
Q12RB6FF50CR	3076485	315
Q12RB6FF50Q	3072120	314
Q12RB6LP	3072131	313
Q12RB6LPQ	3072132	313
Q12RB6LV	3072125	313
Q12RB6LVQ	3072126	313

Type	Ident no.	Page
Q12RB6R	3072137	312
Q12RB6RCR	3076487	312
Q12RB6RQ	3072138	312
Q20E	3077781	357
Q20EL	3078159	357
Q20ELQ	3078226	357
Q20ELQ5	3078206	357
Q20ELQ7	3078160	357
Q20EQ	3078225	357
Q20EQ5	3078205	357
Q20EQ7	3077782	357
Q20PD	3077757	360
Q20PDL	3077753	360
Q20PDLQ	3078207	360
Q20PDLQ5	3078187	360
Q20PDLQ7	3077754	360
Q20PDQ	3078211	360
Q20PDQ5	3078191	360
Q20PDQ7	3077758	360
Q20PDXL	3078151	360
Q20PDXLQ	3078209	360
Q20PDXLQ5	3078189	360
Q20PDXLQ7	3078152	360
Q20PLP	3077761	359
Q20PLPQ	3078213	359
Q20PLPQ5	3078193	359
Q20PLPQ7	3077762	359
Q20PLV	3077765	358
Q20PLVQ	3078215	358
Q20PLVQ5	3078195	358
Q20PLVQ7	3077766	358
Q20PR	3077777	358
Q20PRL	3078272	358
Q20PRLQ	3078282	358
Q20PRLQ5	3078280	358
Q20PRLQ7	3078273	358

Index of types

Type	Ident no.	Page
Q20PRQ	3078223	358
Q20PRQ5	3078203	358
Q20PRQ7	3077778	358
Q256E	3031926	324
Q256EQ	3031935	324
Q25SP6FF100	3031932	336
Q25SP6FF100Q	3031941	336
Q25SP6FF25	3058401	336
Q25SP6FF25Q	3058409	336
Q25SP6FF50	3031930	336
Q25SP6FF50Q	3031939	336
Q25SP6LP	3031925	333
Q25SP6LPQ	3031934	333
Q25SP6R	3031928	328
Q25SP6RQ	3031937	328
Q406E	3032375	326
Q406EQ	3033398	326
Q40SP6FF200	3032364	338
Q40SP6FF200Q	3033392	338
Q40SP6FF400	3032367	338
Q40SP6FF400Q	3033393	338
Q40SP6FF600	3032370	338
Q40SP6FF600Q	3034343	338
Q40SP6LP	3032361	334
Q40SP6LPQ	3033395	334
Q40SP6R	3032373	329
Q40SP6RQ	3033400	329
Q459E	3037625	371
Q459EQ	3037635	371
Q45AD9CV	3037623	373
Q45AD9CV4	3037624	373
Q45AD9CV4Q	3037634	373
Q45AD9CVQ	3037633	373
Q45AD9D	3037617	372
Q45AD9DL	3037618	372
Q45AD9DLQ	3037628	372

Type	Ident no.	Page
Q45AD9DQ	3037627	372
Q45AD9F	3037621	373
Q45AD9FP	3037622	374
Q45AD9FPQ	3037632	374
Q45AD9FQ	3037631	373
Q45AD9LP	3037619	372
Q45AD9LPQ	3037629	372
Q45AD9LV	3037620	372
Q45AD9LVQ	3037630	372
Q45AD9R	3037626	371
Q45AD9RQ	3037636	371
Q50AI	3067603	418
Q50AIQ	3067604	418
Q50AP	3067615	418
Q50APQ	3067616	418
Q50APY	3067618	418
Q50APYQ	3067619	418
Q50AU	3067606	418
Q50AUQ	3067607	418
Q50AVI	3063862	417
Q50AVIQ	3063863	417
Q50AVP	3063886	417
Q50AVPQ	3063887	417
Q50AVPY	3063889	417
Q50AVPYQ	3063890	417
Q50AVU	3063868	417
Q50AVUQ	3063869	417
Q50BI	3063865	419
Q50BIQ	3063866	419
Q50BP	3063892	419
Q50BPQ	3063893	419
Q50BPY	3063895	419
Q50BPYQ	3063896	419
Q50BU	3063871	419
Q50BUQ	3063872	419
Q50BVI	3065273	418

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Type	Ident no.	Page
Q50BVIQ	3065274	418
Q50BVP	3065285	418
Q50BVPQ	3065286	418
Q50BVPY	3065288	418
Q50BVPYQ	3065289	418
Q50BVU	3065276	418
Q50BVUQ	3065277	418
Q60BB6AF2000	3063000	422
Q60BB6AF2000Q	3063001	422
Q60BB6AFV1000	3070092	421
Q60BB6AFV1000Q	3070093	421
Q60BB6LAF1400	3071633	421
Q60BB6LAF1400Q	3071742	421
Q60BB6LAF2000	3071634	422
Q60BB6LAF2000Q	3071743	422
Q60VR3AF2000	3063004	422
Q60VR3AFV1000	3070094	421
Q60VR3LAF1400	3071635	421
Q60VR3LAF2000	3071636	422
QM-08	6945100	746
QM-12	6945101	746
QM-18	6945102	746
QM-30	6945103	747
QMT-12	6945106	746
QMT-18	6945104	747
QMT-30	6945105	747
QS186E	3061618	347
QS186EB	3061675	348
QS186EBQ8	3066448	348
QS186EQ8	3066447	347
QS186LE	3070252	347
QS186LE10	3070254	347
QS186LE10Q8	3070255	347
QS186LE11	3002756	347
QS186LE11Q8	3002757	347
QS186LE12	3002758	347

Type	Ident no.	Page
QS186LE12Q8	3002759	347
QS186LE14	3002788	347
QS186LE14Q8	3002789	347
QS186LEQ8	3070253	347
QS18EP6CV15	3068851	355
QS18EP6CV15Q8	3071993	355
QS18EP6CV45	3068744	355
QS18EP6CV45Q8	3071989	355
QS18EP6D	3069209	354
QS18EP6DB	3068746	354
QS18EP6DBQ8	3071991	354
QS18EP6DQ8	3071995	354
QS18EP6LP	3068742	354
QS18EP6LPQ8	3071987	354
QS18EP6W	3069217	354
QS18EP6WQ8	3071997	354
QS18UPA	3073155	723
QS18UPAE	3073165	723
QS18UPAEQ8	3073166	723
QS18UPAQ8	3073156	723
QS18VP6AF100	3065502	352
QS18VP6AF100Q5	3068326	352
QS18VP6CV15	3061642	353
QS18VP6CV15Q8	3066456	353
QS18VP6CV45	3061648	353
QS18VP6CV45Q8	3066458	353
QS18VP6D	3061654	351
QS18VP6DB	3061666	351
QS18VP6DBQ8	3066466	351
QS18VP6DQ8	3066460	351
QS18VP6F	3002796	391
QS18VP6FF100	3071641	352
QS18VP6FF100Q8	3071882	352
QS18VP6FF50	3071640	352
QS18VP6FF50Q8	3071755	352
QS18VP6FP	3066224	391

Index of types

Type	Ident no.	Page
QS18VP6FPQ8	3066468	391
QS18VP6FQ8	3071778	391
QS18VP6LAF	3073188	352
QS18VP6LAF250	3075739	352
QS18VP6LAF250Q5	3075742	352
QS18VP6LAFQ5	3073191	352
QS18VP6LD	3073040	353
QS18VP6LDQ8	3073045	353
QS18VP6LLP	3073241	350
QS18VP6LLPQ8	3073246	350
QS18VP6LP	3061630	350
QS18VP6LPQ8	3066452	350
QS18VP6LV	3061636	349
QS18VP6LVQ8	3066454	349
QS18VP6R	3061624	348
QS18VP6RB	3061672	349
QS18VP6RBQ8	3066462	349
QS18VP6RQ8	3066450	348
QS18VP6RQ8-02790	3002790	348
QS18VP6W	3061660	351
QS18VP6WQ8	3066464	351
QS30AF	3070289	366
QS30AFQ	3070381	366
QS30ARX	3071560	369
QS30ARXQ	3071562	369
QS30D	3072604	365
QS30DQ	3073095	365
QS30E	3073081	363
QS30EDV	3076090	365
QS30EDVQ	3076092	365
QS30ELVC	3010133	300
QS30ELVCQ	3081102	364
QS30EQ	3073082	363
QS30EX	3071559	368
QS30EXH20Q5	3079166	367
QS30EXQ	3071561	368

Type	Ident no.	Page
QS30FF200	3072546	366
QS30FF200Q	3073086	366
QS30FF400	3073088	366
QS30FF400Q	3073089	366
QS30FF600	3073091	366
QS30FF600Q	3073092	366
QS30LD	3070230	367
QS30LDL	3002785	367
QS30LDLQ	3002786	367
QS30LDQ	3070231	367
QS30LLP	3002993	365
QS30LLPC	3071377	365
QS30LLPCQ	3071378	365
QS30LLPQ	3002994	365
QS30LP	3072544	364
QS30LPQ	3073084	364
QS30LV	3072605	364
QS30LVQ	3073094	364
QS30R	3073078	363
QS30RQ	3073079	363
QS30RRH20Q5	3079172	368
QS30RRX	3071740	369
QS30RRXH20Q5	3079178	368
QS30RRXQ	3071741	369
QT50UDB	3002722	725
QT50UDBQ6	3002724	725
QT50ULB	3002726	725
QT50ULBQ6	3002728	725
R55FP	3058018	393
R55FPB	3058024	394
R55FPBQ	3058026	394
R55FPG	3058021	394
R55FPGQ	3058023	394
R55FPQ	3058020	394
R55FPW	3058027	394
R55FPWQ	3058029	394

Type	Ident no.	Page
R55FV	3058006	393
R55FVB	3058012	393
R55FVBQ	3058014	393
R55FVG	3058009	393
R55FVGQ	3058011	393
R55FVQ	3058008	393
R55FVW	3058015	393
R55FVWQ	3058017	393
R58ECRGB1	3074999	425
R58ECRGB1Q	3075040	425
R58ECRGB2	3075041	425
R58ECRGB2Q	3075044	425
RU100-CP40-AP6X2	16100	700
RU100-CP40-AP6X2-H1141	1610004	700
RU100-CP40-LIUX	15349	700
RU100-EM18-AP8X-H1141	1830222	704
RU100-EM30-AP8X-H1141	1830221	714
RU100-M18-AP8X-H1141	1810200	704
RU100-M18-LIX-H1141	1810205	705
RU100-M30-AP8X-H1141	18302	714
RU100-MT18-AP8X-H1141	1810201	704
RU100-MT18-LIX-H1141	1810209	705
RU100-Q30-AP8X-H1141	1820200	720
RU100-Q30-LUX-H1141	1820205	720
RU20-M18K-LFX-H1141	1830030	708
RU20-M18KS-LFX-H1141	1830032	708
RU30-EM18-AP8X-H1141	1810009	704
RU30-EM30-AP8X-H1141	1830021	714
RU30-EMT18-LIX-H1141	1810010	705
RU30-EMT30-AP8X-H1141	1830023	714
RU30-M18-AP8X-H1141	1810000	704
RU30-M18-LIX-H1141	1810005	705
RU30-M30-AP8X-H1141	18300	714
RU30-Q30-AP8X-H1141	1820000	720
RU30-Q30-LUX-H1141	1820005	720
RU70-M18K-LFX-H1141	1830031	708

Type	Ident no.	Page
RU70-M18KS-LFX-H1141	1830033	708
RUC130-M30-2AP8X-H1151	1840220	715
RUC130-M30-AP8X-H1141	1840200	714
RUC130-M30-LIAP8X-H1151	1840230	715
RUC130-M30-LIAP8X-H1151/3GD	1840231	716
RUC300-M3047-2AP8X-H1151	1840420	715
RUC300-M3047-AP8X-H1141	1840400	714
RUC300-M3047-LIAP8X-H1151	1840430	715
RUC300-M3047-LIAP8X-H1151/3GD	1840432	716
RUC30-M30-2AP8X-H1151	1840020	715
RUC30-M30-AP8X-H1141	1840000	714
RUC30-M30-LIAP8X-H1151	1840031	715
RUC600-M3065-2AP8X-H1151	1840620	715
RUC600-M3065-AP8X-H1141	1840600	714
RUC600-M3065-LIAP8X-H1151	1840630	715
RUN20-M18K-AP8X-H1141	1830034	708
RUN20-M18KS-AP8X-H1141	1830038	708
RUN70-M18K-AP8X-H1141	1830035	708
RUN70-M18KS-AP8X-H1141	1830039	708
RU-PDI	1890000	807
RUR20-M18K-AP8X-H1141	1830036	709
RUR20-M18KS-AP8X-H1141	1830040	709
RUR70-M18K-AP8X-H1141	1830037	709
RUR70-M18KS-AP8X-H1141	1830041	709
S186E	3029409	323
S186ELD	3031407	323
S186ELDQ	3036393	323
S186EQ	3029507	323
S18SP6D	3029410	339
S18SP6DL	3031175	339
S18SP6DLQ	3031176	339
S18SP6DQ	3029508	339
S18SP6FF100	3030326	335
S18SP6FF100Q	3030884	335
S18SP6FF25	3058415	335
S18SP6FF25Q	3050561	335

Index of types

Type	Ident no.	Page
S18SP6FF50	3030325	335
S18SP6FF50Q	3030883	335
S18SP6L	3029411	330
S18SP6LP	3032726	332
S18SP6LPQ	3033450	332
S18SP6LQ	3029509	330
S18SP6R	3029412	327
S18SP6RQ	3029510	327
S18UBA	3002711	727
S18UBAQ	3002712	727
S18UBAR	3002714	727
S18UBARQ	3002715	727
S18UIA	3002702	727
S18UIAQ	3002703	727
S18UIAR	3002708	727
S18UIARQ	3002709	727
S18UUA	3002699	727
S18UUAQ	3002700	727
S18UUAR	3002705	727
S18UUARQ	3002706	727
S306E	3032341	325
S306EQ	3033376	325
S30SP6FF200	3032330	337
S30SP6FF200Q	3033370	337
S30SP6FF400	3032333	337
S30SP6FF400Q	3033371	337
S30SP6FF600	3032336	337
S30SP6FF600Q	3034346	337
S30SP6LP	3032327	333
S30SP6LPQ	3033373	333
S30SP6R	3032339	328
S30SP6RQ	3033378	328
PROTECTIVE HOUSING SG40/2 (ULTEM)	69497	748
PROTECTIVE CAP SKN/M12	69662	750
PROTECTIVE CAP SKN/M18	69663	750
PROTECTIVE CAP SKN/M30	69664	750

Type	Ident no.	Page
SC-M12/3GD	6900390	751
SC-M8/3GD	6900515	751
SG-DSU35TC	6900437	756
SI15-K30-AN6X	1605003	165
SI15-K30-AP6X	1605001	165
SI15-K30-AZ3	13069	166
SI15-K30-RZ3	13169	166
SI15-K30-Y1X	1007601	165
SI2-K08-AN7	1719601	163
SI2-K08-AP7	1719501	163
SI2-K08-Y1	1007700	163
SI3,5-K10-AN7	1719000	165
SI3,5-K10-AP6X	1650001	165
SI3,5-K10-Y1	10090	164
SI3,5-K10-Y1X	40490	164
SI5-K09-Y1	10075	164
SLM10B6	3074965	379
SLM10P6Q	3074966	379
SLM120B6	3074985	379
SLM120P6Q	3074986	379
SLM220B6	3074989	379
SLM220P6Q	3074990	379
SLM30B6	3074969	379
SLM30P6Q	3074974	379
SLM50B6	3074977	379
SLM50P6Q	3074978	379
SLM80B6	3074981	379
SLM80P6Q	3074982	379
SMB1815SF	3053279	739
SMB18A MOUNTING AID	3470200	738
SMB18C	3032635	738, 744
SMB18FA	3074004	737
SMB18Q	3032721	738
SMB18SF	3052519	738
SMB3018SC	3053952	739
SMB30A	3032723	740

Type	Ident no.	Page
SMB30C MOUNTING AID	3470100	740, 745
SMB30Q	3032722	740
SMB30SC	3052521	740
SMB30SK MOUNTING AID	3052523	741
SMB312B	3025519	739
SMB312S	3025518	738
SMB46A	3052518	741
SMB46L	3048747	740
SMB46S	3048748	741
SMB46U	3048746	741
SMBAMS18P	3073134	739
SMBAMS18RA	3073136	739
SMBAMS30P	3073135	742
SMBAMS30RA	3073137	740
SMBAMSBRA	3073138	739
SMBAMSLT3IP	3073442	749
SMBAMSLT3P	3073132	743
SMBAMSQ60IP	3073441	749
SMBAMSQ60P	3073133	743
SMBDX80DIN	3077161	742
SMBLT31	3068505	741
SMBLT32	3069236	749
SMBLT7	3073711	741
SMBLX	3002915	742
SMBLXR	3002914	742
SMBPVA1	3056884	742
SMBQ12A	3074341	738
SMBQ12T	3073722	738
SMBQ50	3066226	741
SMBQ60	3067592	741
SMBQS12PD	3059606	738
SMBQS18A	3069721	739
SMBQS18AF	3067467	739
SMBQS18Y	3068865	748
SMBQS30L	3002809	740
SMBQS30LT	3002810	740
SMBQS30Y	3002811	748
SMBQS30YL	3072741	748
SOK-K50L-150SS	3078908	742
SOK-K50L-300SS	3078909	742
SPF1-AP6X	6900375	751
SPN1-AP6-ARN6X	6930231	751
SPT1-AP6X	6915091	752
T186E	3032468	324
T186EQ	3033420	324
T18GRYPQ	3074041	436
T18RGXPQ	3074022	435
T18SP6D	3034629	339
T18SP6DQ	3034631	339
T18SP6FF100	3032471	336
T18SP6FF100Q	3033415	336
T18SP6FF25	3056559	336
T18SP6FF25Q	3041618	336
T18SP6FF50	3032470	336
T18SP6FF50Q	3033414	336
T18SP6L	3034683	331
T18SP6LP	3032472	332
T18SP6LPQ	3033417	332
T18SP6LQ	3034740	331
T18SP6R	3032473	327
T18SP6RQ	3033422	327
T306E	3032483	325
T306EQ	3033442	325
T30GRYPQ	3074024	436
T30RGXPQ	3074046	435
T30SP6FF200	3032485	337
T30SP6FF200Q	3033436	337
T30SP6FF400	3032486	337
T30SP6FF400Q	3033437	337
T30SP6FF600	3032487	337
T30SP6FF600Q	3034349	337
T30SP6LP	3032488	334

Index of types

Type	Ident no.	Page
T30SP6LPQ	3033439	334
T30SP6R	3032489	329
T30SP6RQ	3033444	329
T30UDPA	3055544	729
T30UDPAQ	3055545	729
T30UDPB	3055550	729
T30UDPBQ	3055551	729
T30UIPA	3055974	730
T30UIPAQ	3055975	730
T30UIPB	3055980	730
T30UIPBQ	3055981	730
T30UUPA	3055986	730
T30UUPAQ	3055987	730
T30UUPB	3055992	730
T30UUPBQ	3055993	730
T30UXDA	3079993	729
T30UXDAQ8	3079995	729
T30UXDB	3079998	729
T30UXDBQ8	3080058	729
T30UXDC	3080458	729
T30UXDCQ8	3080460	729
T30UXIA	3080479	731
T30UXIAQ8	3080481	731
T30UXIB	3080484	731
T30UXIBQ8	3080486	731
T30UXIC	3080489	731
T30UXICQ8	3080491	731
T30UXUA	3080463	731
T30UXUAQ8	3080465	731
T30UXUB	3080468	731
T30UXUBQ8	3080471	731
T30UXUC	3080474	731
T30UXUCQ8	3080476	731
T86EV	3066671	315
T86EVQ	3066672	315
T8AP6D100	3068688	316
T8AP6D100Q	3068689	316
T8AP6D50	3066659	316
T8AP6D50Q	3066660	316
T8AP6R	3066667	316
T8AP6RQ	3066668	316
T8LGRXP	3076721	435
T8LGRXPQP	3076420	435
T8RP6D100	3068690	316
T8RP6D100Q	3068691	316
T8RP6D50	3066661	316
T8RP6D50Q	3066662	316
T8RP6R	3066669	316
T8RP6RQ	3066670	316
TB3-CP80	6967112	752
TB4	6967113	752, 770
TC-100-AP6-H1140	9910442	558
TC-103A-G1/8-AP6-H1140-L013	9910439	559
TC-103A-G1/8-AP6-H1140-L024	9910440	559
TGR3/8MPFMQ	3023268	804
TGRM8MM	3775000	798
THW-3-DN25K-A4-L050	9910455	777
THW-3-DN25K-A4-L100	9910456	777
THW-3-DN25K-A4-L150	9910457	777
THW-3-DN25K-A4-L250	9910458	777
THW-3-DN25K-L035	9910435	777
THW-3-G1/2-A4-L050	9910443	777
THW-3-G1/2-A4-L100	9910444	777
THW-3-G1/2-A4-L150	9910445	777
THW-3-G1/2-A4-L250	9910446	778
THW-3-G1/4-A4-L050	9910415	778
THW-3-G1/4-A4-L100	9910419	778
THW-3-G1/4-A4-L150	9910423	778
THW-3-G1/4-A4-L200	9910427	778
THW-3-G1/8-A4-L050	9910413	778
THW-3-G1/8-A4-L100	9910417	778
THW-3-G1/8-A4-L150	9910421	778

Types

Type	Ident no.	Page
THW-3-G1/8-A4-L200	9910425	779
THW-3-N1/2-A4-L050	9910447	779
THW-3-N1/2-A4-L100	9910448	779
THW-3-N1/2-A4-L150	9910449	779
THW-3-N1/2-A4-L250	9910450	779
THW-3-N1/4-A4-L050	9910416	779
THW-3-N1/4-A4-L100	9910420	779
THW-3-N1/4-A4-L150	9910424	779
THW-3-N1/4-A4-L200	9910428	780
THW-3-N1/8-A4-L050	9910414	780
THW-3-N1/8-A4-L100	9910418	780
THW-3-N1/8-A4-L150	9910422	780
THW-3-N1/8-A4-L200	9910426	780
THW-3-TRI3/4-A4-L035	9910433	780
THW-3-TRI3/4-A4-L050	9910451	780
THW-3-TRI3/4-A4-L100	9910434	780, 781
THW-3-TRI3/4-A4-L150	9910453	781
THW-3-TRI3/4-A4-L250	9910454	781
THW-3-UNI25-A4-L035	9910502	783
THW-3-UNI25-A4-L100	9910503	783
THW-6-DN25K-A4-L050	9910471	783
THW-6-DN25K-A4-L100	9910436	781
THW-6-DN25K-A4-L150	9910472	783
THW-6-DN25K-A4-L250	9910473	783
THW-6-G1/2-A4-L050	9910459	781
THW-6-G1/2-A4-L100	9910460	781
THW-6-G1/2-A4-L150	9910461	781
THW-6-G1/2-A4-L250	9910462	782
THW-6-N1/2-A4-L050	9910463	782
THW-6-N1/2-A4-L100	9910464	782
THW-6-N1/2-A4-L150	9910465	782
THW-6-N1/2-A4-L250	9910466	782
THW-6-TRI3/4-A4-L050	9910467	782
THW-6-TRI3/4-A4-L100	9910468	782
THW-6-TRI3/4-A4-L150	9910469	782
THW-6-TRI3/4-A4-L250	9910470	783

Type	Ident no.	Page
TL50BGYR	3083223	442
TL50BGYRA	3083224	445
TL50BGYRAQ	3083216	445
TL50BGYRAQP	3083233	445
TL50BGYRQ	3083215	442
TL50BGYRQP	3083232	442
TL50GR	3083219	441
TL50GRA	3083220	444
TL50GRAQ	3083213	444
TL50GRAQP	3083229	444
TL50GRQ	3083212	441
TL50GRQP	3083228	441
TL50GYR	3083221	442
TL50GYRA	3083222	444
TL50GYRAQ	3083214	444
TL50GYRAQP	3083231	444
TL50GYRQ	3081861	442
TL50GYRQP	3083230	442
TL50R	3083217	441
TL50RA	3083218	443
TL50RAQ	3083211	443
TL50RAQP	3083227	443
TL50RQ	3083210	441
TL50RQP	3083226	441
TL50WBGYR	3083225	443
TL50WBGYRQ	3082774	443
TL50WBGYRQP	3083234	443
TL50WQ	3010173	441
TL50WRQ	3010068	441
TL50YBRQ	3010062	442
TL50YQ	3010067	441
TP-103A-G1/8-H1141-L013	9910400	565
TP-103A-G1/8-H1141-L024	9910401	565
TP-203A-CF-H1141-L100	9910402	565
TP-203A-CF-H1141-L150	9910403	565
TP-203A-CF-H1141-L200	9910482	565

Index of types

Type	Ident no.	Page
TP-203A-CF-H1141-L250	9910404	565
TP-203A-CF-H1141-L300	9910474	565
TP-206A-CF-H1141-L100	9910475	566
TP-206A-CF-H1141-L150	9910476	566
TP-206A-CF-H1141-L200	9910477	566
TP-206A-CF-H1141-L300	9910478	566
TP-306A-CF-H1141-L1000	9910479	566
TP-306A-CF-H1141-L5000	9910481	566
TS-400-2UPN8X-H1141	6840017	549
TS-400-LI2UPN8X-H1141	6840007	549
TS-400-LUUPN8X-H1141	6840008	549
TS-500-2UPN8X-H1141	6840018	551
TS-500-LI2UPN8X-H1141	6840015	551
TS-500-LUUPN8X-H1141	6840016	551
TT-100-LI6-H1140	9910441	557
TT-103A-G1/8-LI6-H1140-L013	9910437	557
TT-103A-G1/8-LI6-H1140-L024	9910438	557
TT-206A-CF-LI6-H1140-L0100	9910489	558
TT-206A-CF-LI6-H1140-L0150	9910490	558
TX1-Q20L60	6967114	770
UNT-Justage	4685750	762, 764
UNT-Stopper	4685751	762, 764
UWG18-5.0	3077342	807
UWG18-6.4	3076952	807
VB2-SP2	6999083	807
VS1AP5CV10	3056494	317
VS1AP5CV20	3056498	317
VS1RP5CV10	3056495	317
VS1RP5CV20	3056499	317
VS25EV	3055401	317
VS2AP5CV15	3061745	318
VS2AP5CV15Q	3063075	318
VS2AP5CV30	3061749	318
VS2AP5CV30Q	3063079	318
VS2AP5R	3055404	318
VS2RP5CV15	3061747	318

Type	Ident no.	Page
VS2RP5CV15Q	3063077	318
VS2RP5CV30	3061751	318
VS2RP5CV30Q	3063081	318
VS2RP5R	3055405	318
VS3AP5XLP	3062623	319
VS3RP5XLPQ	3062626	319
VS3RP5XLV	3063717	319
VS4AP5R	3069425	320
VS4AP5RQ	3069430	320
VS4EV	3069422	320
VS4EVQ	3069427	320
VS4RP5R	3069426	320
VS4RP5RQ	3069431	320
WI40-M18-LIU5	1536603	180
WI70-M18-LIU5	1536600	180
WIM100-Q25L-LIU5X2-H1141	1536630	669
WIM125-Q25L-LIU5X2-H1141	1536631	669
WIM160-Q25L-LIU5X2-H1141	1536632	669
WIM200-Q25L-LIU5X2-H1141	1536633	669
WIM40-Q20L60-LIU5-H1141	1539280	175
WIM45-UNTL-0,3-BIM-UNT-LUAP6X 4-H1141	1536623	293
WIM45-UNTL-LIU5X2-0,3-PSG4M	1536620	293
WIM45-UNTL-LIU5X2-0,3-RS4	1536621	293
WIM70-Q20L100-LIU5-H1141	1539276	175

types

Hans Turck GmbH & Co. KG ▪ Phone +49 (2 08) 49 52-0 ▪ Fax +49 (208) 49 52-264

TURCK

Industrial Automation

TURCK WORLD-WIDE HEADQUARTERS

GERMANY
Hans Turck GmbH & Co. KG
Witzlebenstraße 7
45472 Mülheim an der Ruhr
P. O. Box 45466 Mülheim an der Ruhr
Tel. +49 (0) 208 4952-0
Fax +49 (0) 208 4952-264
E-Mail more@turck.com

AUSTRALIA
TURCK Australia Pty. Ltd.
unit 5, 6-7 Gilda Court Mulgrave
Victoria 3170
Tel. +61 395609066
Fax +61 395601620
E-Mail australia@turck.com

Austria
TURCK GmbH
Josef-Moser-Gasse 1
1170 Wien
Tel. +43 14 86 15 87 0
Fax +43 14 86 15 87 23
E-Mail austria@turck.com

BAHRAIN
TURCK Middle East S.P.C.
Flat# 23, bldg# 2748
Road# 3649, Block# 436
Seef Area
Manama - Kingdom of Bahrain
Tel. +973 13 638288
Fax +973 13 648288
E-Mail turckmiddleeast@turck.com

BELGIUM
Multiprox N. V.
P. B. 71
Lion d'Orweg 12
9300 Aalst
Tel. +32 53 76 65 66
Fax +32 53 78 39 77
E-Mail mail@multiprox.be

CZECH REPUBLIC
TURCK s.r.o.
Hradecká 1151
500 03 Hradec Králové 3
Tel. +420 495 518 766
Fax +420 495 518 767
E-Mail czechrepublic@turck.com

PR OF CHINA
TURCK (Tianjin) Sensor Co. Ltd.
18,4th Xinghuazhi Road
Xiqing Economic
Development Area
300381 Tianjin
Tel. +86 22 83988-188
83988-199
Fax +86 22 83988-111
E-Mail china@turck.com

FRANCE
TURCK BANNER S.A.S
3, Rue de Courtalin
Magny-Le-Hongre
77703 Marne-La-Vallee Cedex
Tel. +33 1 60 43-60 70
Fax +33 1 60 43-10 18
E-Mail info@turckbanner.fr

GREAT BRITAIN
TURCK BANNER LIMITED
Blenheim House
Hurricane Way
Wickford, Essex SS11 8YT
Tel. +44 1268 578888
Fax +44 1268 763648
E-Mail info@turckbanner.co.uk

HUNGARY
TURCK Hungary kft.
Könyves Kalman Krt.76
1087 Budapest
Tel. +36 14 77 07 40
Fax +36 14 77 07 41
E-Mail hungary@turck.com

INDIA
TURCK India Automation Pvt Ltd.
603/604, 6th Floor, A-wing
ICC Trade Towers
Senapati Bapat Road
Pune - 411016,
Maharashtra - India
Tel. +91 20 25630039
25630040
Fax +91 2 25630040
E-Mail india@turck.com

ITALY
TURCK BANNER S. R. L.
Via S. Domenico, 5
20010 Bareggio (MI)
Tel. +39 02 90 36 42 91
Fax +39 02 90 36 48 38
E-Mail info@turckbanner.it

JAPAN
TURCK Japan Corporation
#202 MBD Bldg. 2F, 3-3-23
Minami-Aoyama,
Minato-ku, 107-0062, Tokyo
Japan
Tel. +81 3 5772 2820
Fax +81 3 3408 2571
E-Mail japan@turck.com

KOREA
Turck Korea Co. Ltd.
Korea Republik (Süd)
Room No. 412, Gyeonggi
Technopark 1271-11,
Sa 1-Dong, Sangnok-Gu, Ansan
ROK426-901 Gyeonggi-Do
Tel. +82 31 500 4555
Fax +82 31 500 4558
E-Mail korea@turck.com

MEXICO
TURCK Mexico S. DE R.L. DE C.V.
Carr. Saltillo-Zacatecas km 4.5 s/n
Parque Industrial "La Angostura"
Saltillo, COAH. 25070
Tel. +52 844 411 6650/46
Fax +52 844 482 6926
E-Mail mexico@turck.com

THE NETHERLANDS
TURCK B. V.
Postbus 297
8000 AG Zwolle
Tel. +31 38 4 22 77 50
Fax +31 38 4 22 74 51
E-Mail netherlands@turck.com

POLAND
TURCK sp.z o.o
ul. Wrocławska 115
45-836 Opole
Tel. +48 77 443 4800
Fax +48 77 443 4801
E-Mail poland@turck.com

ROMANIA
TURCK Automation Romania SRL
Str. Siriului nr. 6-8, Sector 1
014354 Bucharest
Tel. +40 21 230 02 79
Fax +40 21 231 40 87
E-Mail romania@turck.com

RUSSIA
TURCK Rus O.O.O.
Altufyevskoe shosse, 1/7
127106 Moskau
Tel. +7 495 234 2661
Fax +7 495 234 2665
E-Mail russia@turck.com

SINGAPORE
TURCK Singapore Pte. Ltd.
25 International Business Park
#03-22/23 German Centre
609916 Singapore
Tel. +65 6562 8716
Fax +65 6562 8719
E-Mail singapore@turck.com

TURKEY
Turck Consulting Office
Inonu mah. Kayisdagi c.
Yesil Konak Evleri No:
178, A Blok D:4
34755 Kadikoy/Istanbul
Tel: +90 0 216 572 21 77
Fax: +90 0 216 57 221 23
E-Mail:turkey@turck.com

USA
TURCK Inc.
3000 Campus Drive
Minneapolis, MN 55441-2656
Tel. +1 763 553 9224
553 7300
Fax +1 763 553 0708
E-Mail usa@turck.com

... and more than 60 representatives and agencies world-wide.

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