



Distance Sensor DS30

Setting new standards in background suppression

The Distance Sensor DS30 – High performance

The Distance Sensor comprises modern technology in a minimum of space – and is unbeatable value for money. The specification for the DS30 lies exactly between the distance sensor DS60/DS40 and the standard sensors for close-range distance measurement. Its capacity as a low-cost high performer sets new standards.

The specific product characteristics of the DS30

The DS30 distance sensor operates by time-of-flight measuring. It is as compact as a photoelectric switch. However it has an extremely high performance with a scanning range of two metres. The DS30 distance sensor is the perfect solution for accurate distance measurement, maintaining set distances and scanning for object-presence.

The high resolution and reproducibility make the DS30 highly accurate and reliable, even with diffuse reflections. Its high functional reserves ensure perfect function even under dirty conditions. But what makes the DS30 distance sensor a truly outstanding product in its class is its precise background suppression. Nothing can interfere with distance measurement by a DS30.

Applications: The DS30 distance sensor is in a league of its own

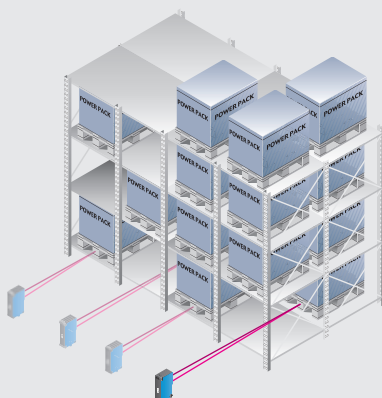
DS30: Scanning for object presence

The DS30 can detect even very dirty objects with high precision. The switch output is activated when the distance measured is less than the distance taught.

Task:

Scan for presence of Europallets in high-bay stores.

Once the distance to the wall of the empty bay has been taught, the DS30 can detect even very dirty pallets. The DS30 switches and signals that the bay is occupied.



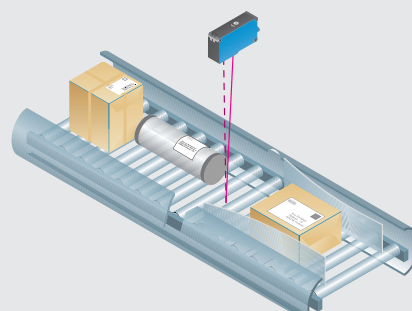
DS30: Detecting objects

The DS30 is insensitive to all colours and surfaces. Since it can also detect objects at an angle, it is the perfect solution for scanning parcels, packages and objects with shiny surfaces.

Task:

Detection of parcels for triggering bar code scanners.

Its virtual insensitivity to surface type makes the DS30 ideal for detecting packages and parcels of all shapes. When the DS30 detects an object within its 2-metre range, it gives a signal (e.g.) to a bar code scanner which then reads the code.





The DS30 distance sensor simplifies projection

Are you scanning for black-and-white characteristics?

Then you've found them. The DS30 has a range of 2 metres, regardless of whether the object is black or white.

Do you require adaptive reduction of switching frequency for dark objects at long distance?

You've got it! The switch frequency is always the same, whether black or white, close by or at 2 metres' distance.

Do you need a simple setting characteristic?

The DS30 is what you're looking for. Just install it, align it and teach it. It's as simple as that!

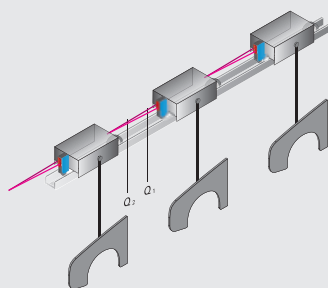
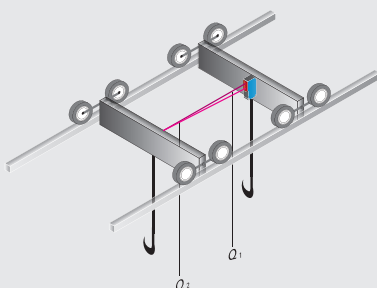
DS30: Maintaining distance

Through its scanning range of 2 metres and its compact design, the DS30 is perfect for distancing with cranes, suspension and floor-conveyors.

Task:

Distance control of conveyor sections

If the distance between conveyor segments is less than the set value, the DS30 switches and can (for example) trigger a braking operation. Even very dirty conveyor sections are reliably detected.



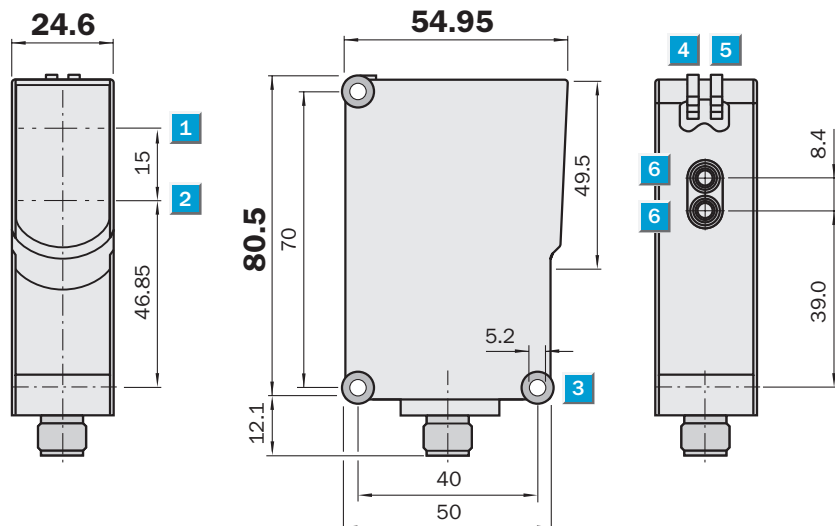
DS30: Other possible uses

The precise background suppression even makes it possible to use the DS30 in surroundings where there are other reflectors, reflective safety clothing, shiny metal objects etc. Typical fields of application are in the rubber, paper and steel industries.

	Scanning distance 200 ... 3,000 mm
Distance Sensor	

- 2,000 mm on black and white
- 3,000 mm on grey and white
- Background suppression up to 150 m (incl. highly reflective objects)
- Most reliable detection: from black to extremely bright targets

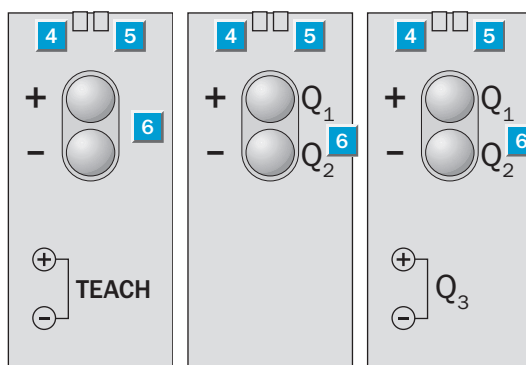
Dimensional drawing



Adjustments possible

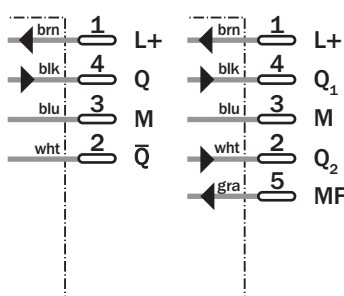
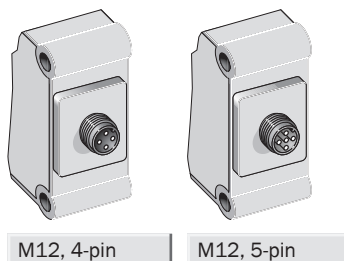
DS30-P1241	DS30-P1253	DS30-P1255
DS30-N1241	DS30-P2253	DS30-P2255

- 1 Optical axis, sender
- 2 Optical axis, receiver
- 3 Through hole $\varnothing$ 5.2 mm
- 4 Indicator LED 1
- 5 Indicator LED 2
- 6 Setting for scanning distance: teach buttons



Connection type

DS30-P1241	DS30-P1253	DS30-P2253
DS30-N1241	DS30-P1255	DS30-P2255



Accessories
Mounting
Connectors and cables
Weather protection



Technical data		DS30-	P1241	N1241	P1253	P1255	P2253	P2255				
Connection type	Plug M12, 4-pin											
	Plug M12, 5-pin											
Scanning distance, adjustable	200 mm ... 2,000 mm ¹⁾											
	200 mm ... 3,000 mm ²⁾											
Light source ³⁾	Laser diode, infrared light – 850 nm											
Teach resolution	10 mm											
Light spot diameter at 2 m	Ø 20 mm											
Supply voltage V_S ⁴⁾	DC 10 ... 30 V											
Current consumption ⁵⁾	< 1,7 W											
Residual ripple ⁶⁾	≤ 5 V _{SS}											
Switching output												
	Q/ $\bar{Q}$: PNP	HIGH = U _V - (< 2 V)/LOW = 0 V										
	Q/ $\bar{Q}$: NPN	HIGH = U _V /LOW = < 2 V										
	Q ₁ /Q ₂ : PNP	HIGH = U _V - (< 2 V)/LOW = 0 V										
	Q ₁ /Q ₂ /Q ₃ : PNP ⁷⁾	HIGH = U _V - (< 2 V)/LOW = 0 V										
Output current I_A ⁸⁾	100 mA											
Switching frequency	50/s											
	25/s											
	15/s											
Switching threshold Q	Adjustable via Teach button											
MF Funktion	External Teach											
Laser class	1 (EN 60 825-1)											
VDE protection class ⁹⁾	☐											
Enclosure rating	IP 65 (EN 60 529)											
Ambient temperature ¹⁰⁾	Operation -40 ... +55 °C											
	Storage -40 ... +75 °C											
Weight	120 g											

¹⁾ Remission 6 % ... 90 %
²⁾ Remission 18 % ... 90 %
³⁾ Average service life 100 000 h,
at T_A = +25 °C, Laser category 1
(EN 60825-1: Nov. 2001;
IEC 60825-1:AM2:2001)

⁴⁾ Limit values, reverse polarity protected
⁵⁾ Without load, 24 V and
ambient temperature 25 °C
⁶⁾ Must be within V_S tolerances
⁷⁾ Switching outputs binary coded
⁸⁾ Outputs Q short-circuit protected

⁹⁾ Reference voltages 50 V DC
¹⁰⁾ Do not distort cable below 0 °C,
between -40 °C ... -25 °C warm up
time max. 5 min.

Order information	
Type	Order no.
DS30-P1241	1040034
DS30-N1241	1042181
DS30-P1253	1043374
DS30-P1255	1044255
DS30-P2253	1044253
DS30-P2255	1044254

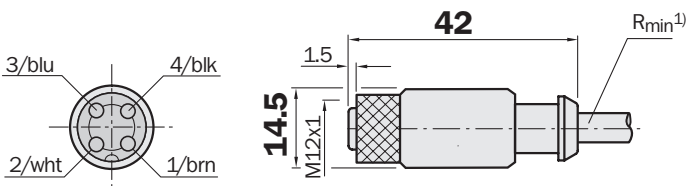
Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, enclosure rating IP 67

Female connectors M12, 4-pin, straight

Cable diameter 5/6 mm, 4 x 0.25 mm², sheath PVC

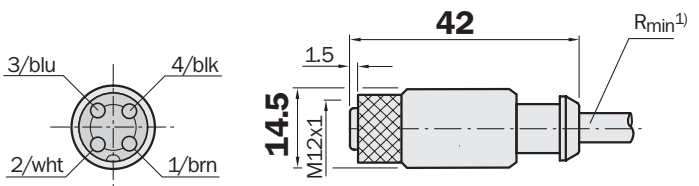
Type	Order no.	Contacts	Cable length
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m
DOL-1204-G10M	6010543	4	10 m
DOL-1204-G15M	6010753	4	15 m



Female connector M12, 4-pin, straight

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

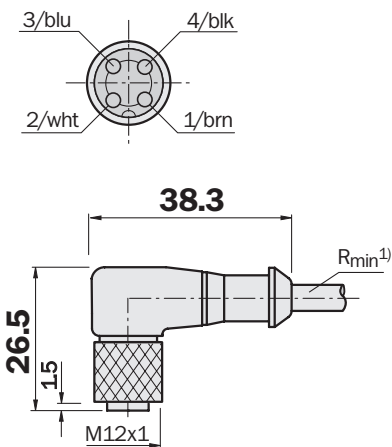
Type	Order no.	Cable length
DOL-1204-G05MC	6025901	5 m



Female connectors M12, 4-pin, angled

Cable diameter 5/6 mm, 4 x 0.25 mm², sheath PVC

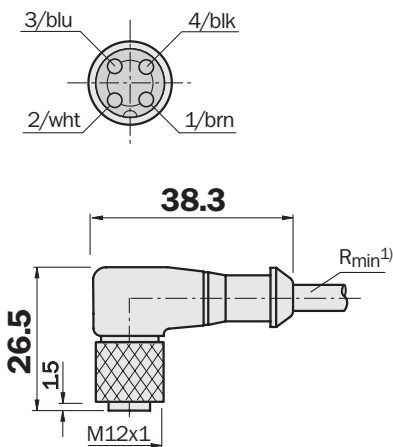
Type	Order no.	Contacts	Cable length
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m
DOL-1204-W10M	6010541	4	10 m



Female connector M12, 4-pin, angled

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

Type	Order no.	Cable length
DOL-1204-W05MC	6025904	5 m



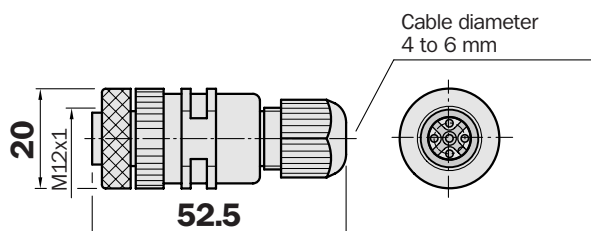
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, enclosure rating IP 67

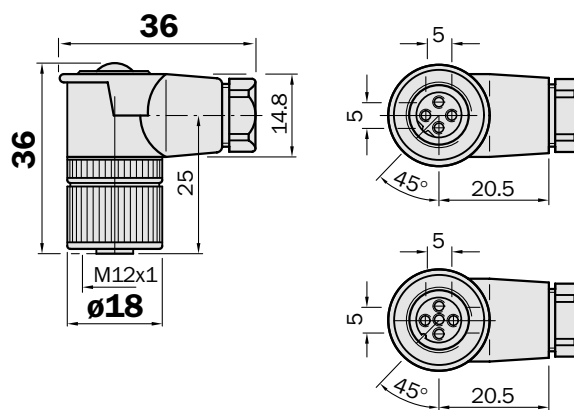
Female connector M12, 4-pin, straight

Type	Order no.	Contacts
DOS-1204-G	6007302	4



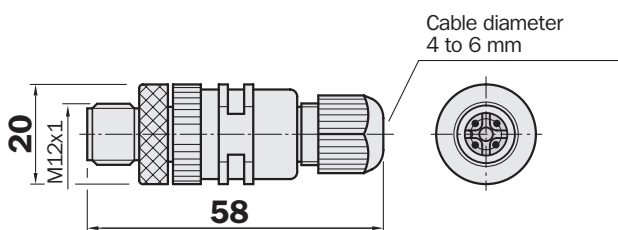
Female connector M12, 4-pin, angled

Type	Order no.	Contacts
DOS-1204-W	6007303	4



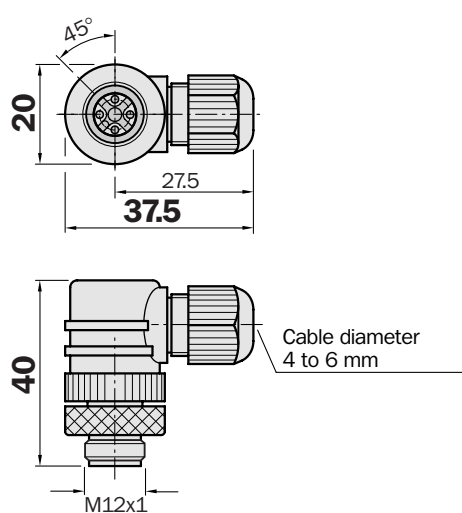
Male connector M12, 4-pin, straight

Type	Order no.
STE-1204-G	6009932



Male connector M12, 4-pin, angled

Type	Order no.
STE-1204-W	6022084



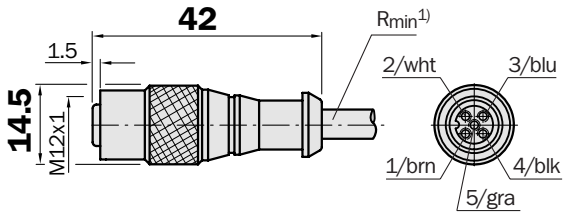
Dimensional drawings and order information

SENSICK screw-in system M12, 5-pin, enclosure rating IP 67

Female connectors M12, 5-pin, straight

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

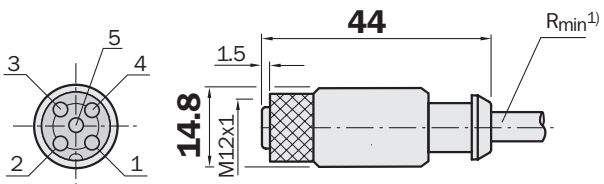
Type	Order no.	Contacts	Cable length
DOL-1205-G02M	6008899	5	2 m
DOL-1205-G05M	6009868	5	5 m
DOL-1205-G10M	6010544	5	10 m



Female connector M12, 5-pin, straight

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

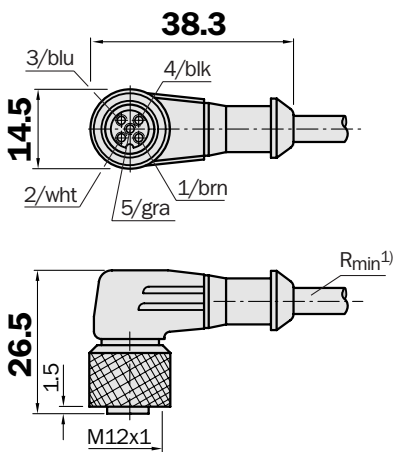
Type	Order no.	Contacts	Cable length
DOL-1205-G02MC	6025906	5	2 m
DOL-1205-G05MC	6025907	5	5 m
DOL-1205-G10MC	6025908	5	10 m



Female connectors M12, 5-pin, angled

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

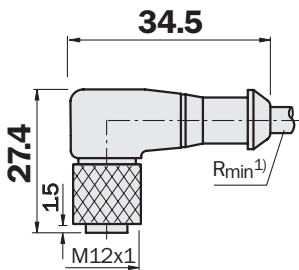
Type	Order no.	Contacts	Cable length
DOL-1205-W02M	6008900	5	2 m
DOL-1205-W05M	6009869	5	5 m
DOL-1205-W10M	6010542	5	10 m



Female connector M12, 5-pin, angled

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

Type	Order no.	Contacts	Cable length
DOL-1205-W02MC	6025909	5	2 m
DOL-1205-W05MC	6025910	5	5 m
DOL-1205-W10MC	6025911	5	10 m



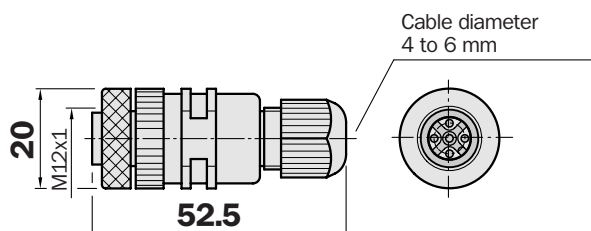
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK screw-in system M12, 5-pin, enclosure rating IP 67

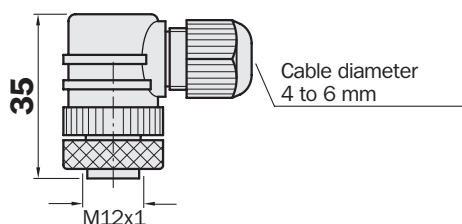
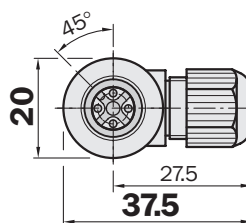
Female connector M12, 5-pin, straight

Type	Order no.	Contacts
DOS-1205-G	6009719	5



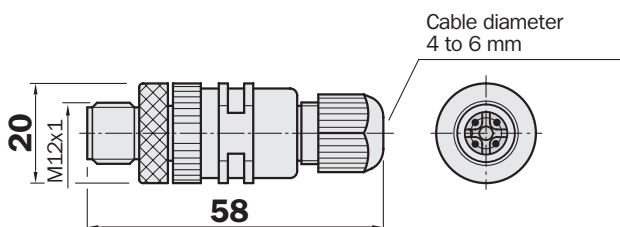
Female connector M12, 5-pin, angled

Type	Order no.	Contacts
DOS-1205-W	6009720	5



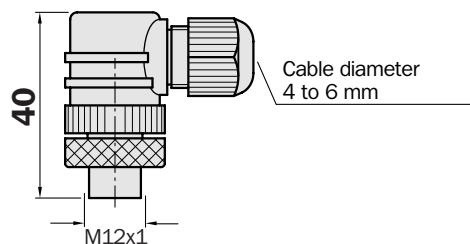
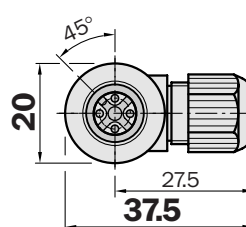
Male connector M12, 5-pin, straight

Type	Order no.
STE-1205-G	6022083



Male connector M12, 5-pin, angled

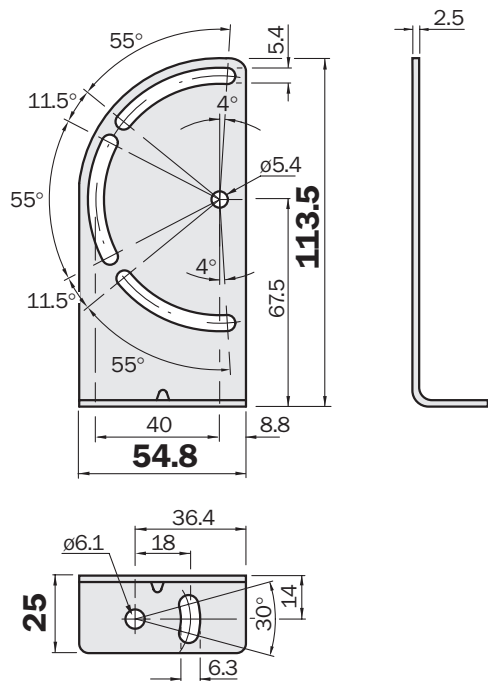
Type	Order no.
STE-1205-W	6022082



Dimensional drawings and order information

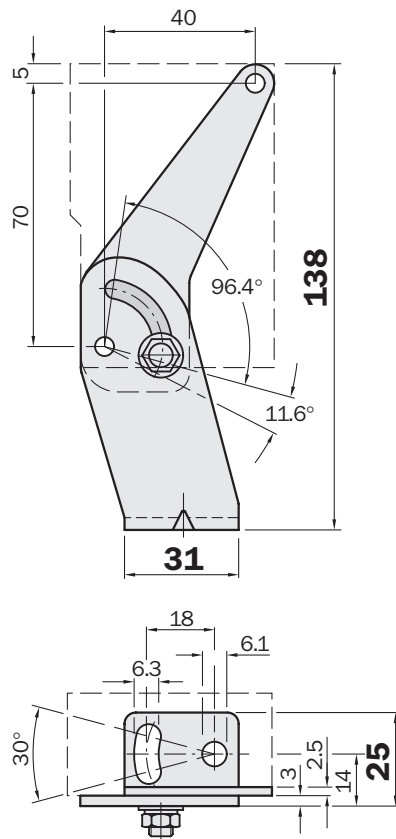
Mounting bracket for DS30

Type	Order no.
BEF-WN-W23	2019085



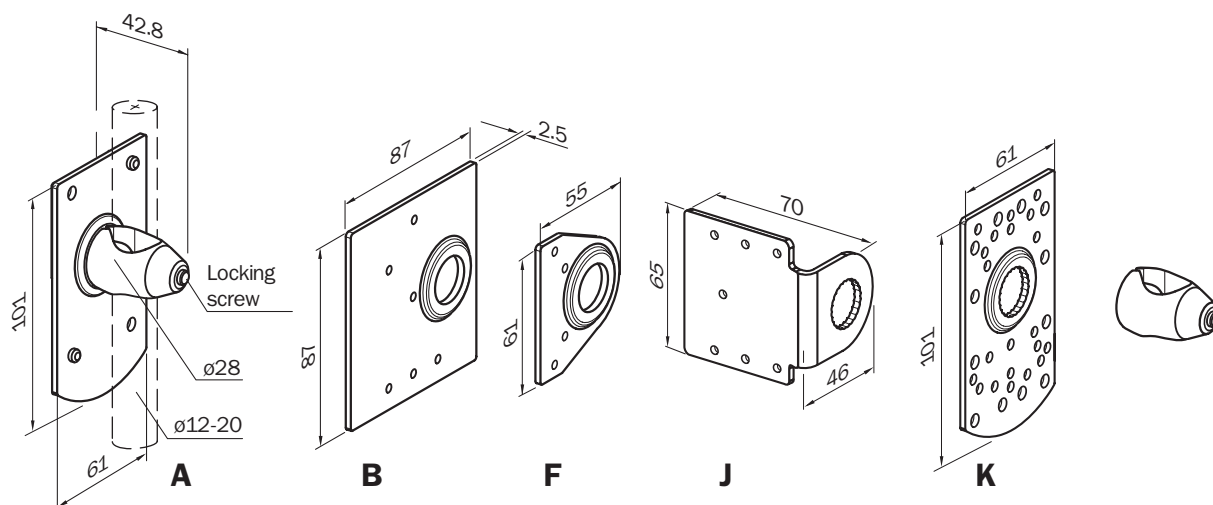
Mounting bracket for DS30

Type	Order no.
BEF-WN-W27	2009122



Dimensional drawings and order information

Universal bar clamps for sensors and reflectors



Mounting plates	Type	Order no.	for device/reflector type
A	BEF-KHS-A01	2022458 ¹⁾²⁾	DS30
B	BEF-KHS-B01	2022459 ¹⁾²⁾	P250, P250F, PL30A, PL40A, PL50A, PL80A, C110
F	BEF-KHS-F01	2022463 ¹⁾²⁾	PL20A, PL20F, P250, P250F
J	BEF-KHS-J01	2022719 ¹⁾²⁾	PL20A, PL20F, PL40A, PL50A, P250, P250F, C110
K	BEF-KHS-K01	2022718 ¹⁾	W11, W12-2, W12L-2, W14-2, W18-3, W23-2, W24-2, W27-3, W30, W32, W34, KT2, KT5, KT10, CS1/3, LUT3, DS60, PL20A, PL20F, PL30-A, PL40A, PL50A, PL80A, P250, P250F, C110, DS30
	BEF-KHS-KH1	2022726	Clamp without mounting plate

¹⁾ Order no. includes bar support and mounting material.

²⁾ Mounting plate does not contain threads; the sensor/reflector is mounted from the sensor/reflector side with self-cutting screws.

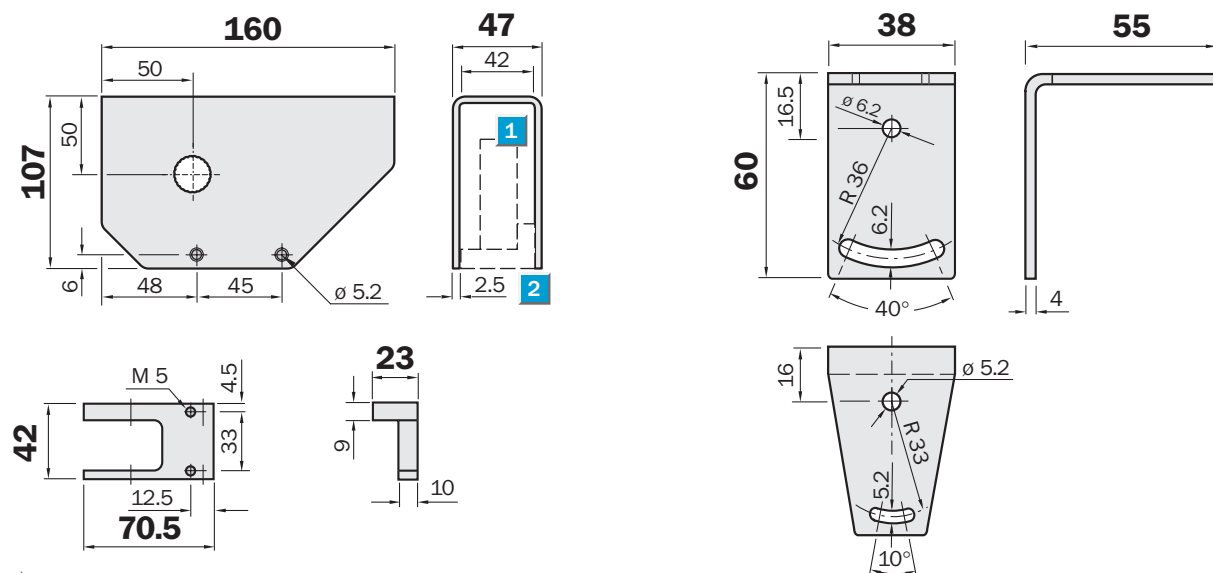
Special accessories

Weather protection hood for DS30 *)

Type	Order no.	
OBW-KHS-M01	2023240	1 Sensor
		2 Clamp with mounting material included with delivery

Mounting bracket for weather protection hood OBW-KHS-M01

Type	Order no.
BEF-WN-OBW	2023251



*) Also suitable as bar support with separate bar clamp BEF-KHS-KH1 (Order no. 2022726)

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