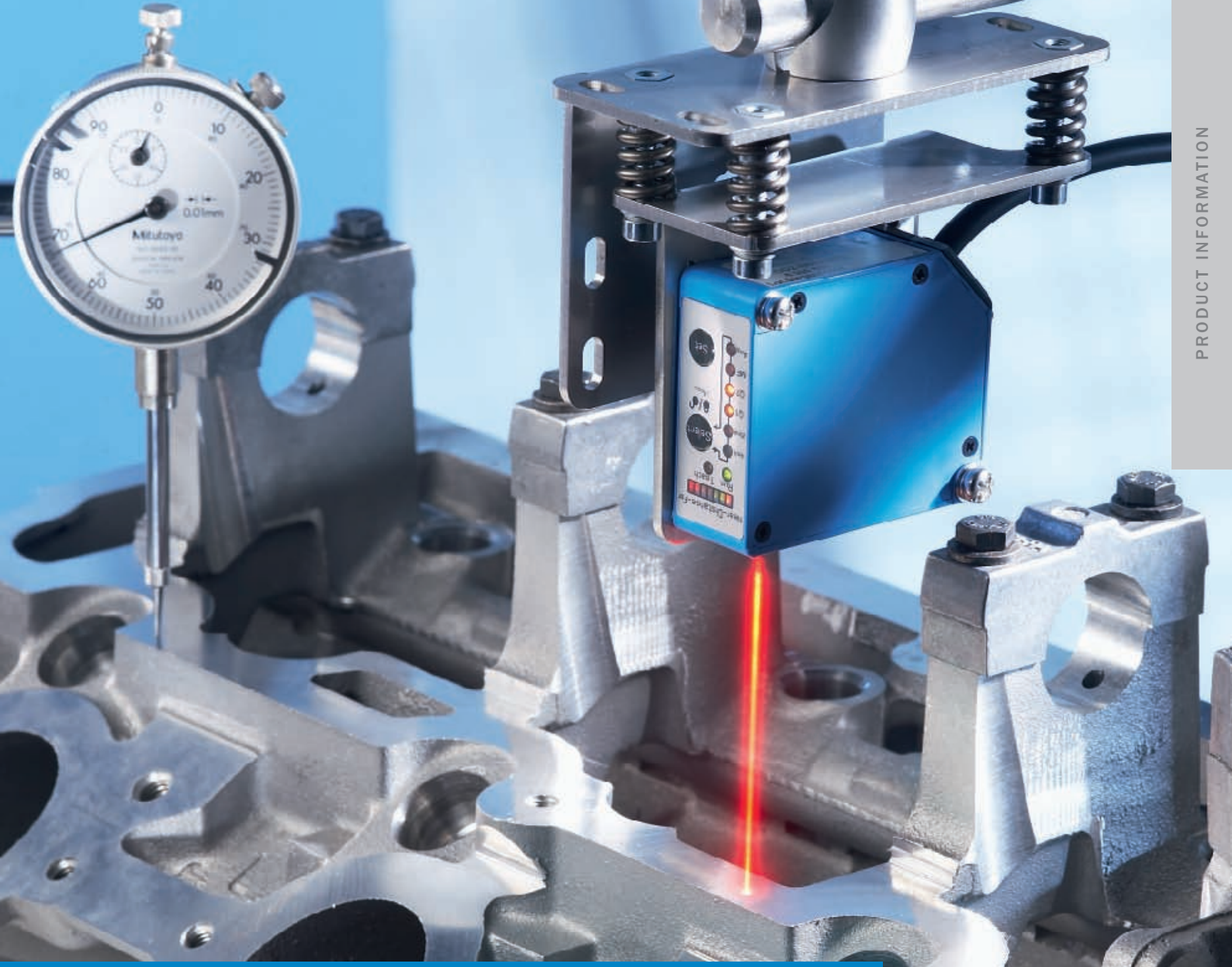
PRODUCT INFORMATION



OD Value:
Easy, Accurate Measurement

Distance sensors – advanced measurement technology

SICK
Sensor Intelligence.

New Displacement Sensors from SICK: easy, accurate and economical

For many years, distance measurement has been a major activity of SICK. With the introduction of the new OD Value, SICK expands its product range once again. The new series offers maximum accuracy, reliability AND ease of operation for short measuring ranges. Accordingly, the OD Value is used wherever high accuracy is paramount, e. g. in quality control or fine positioning.

The many benefits offered by OD Value in the daily automation environment add up to a powerful and compelling, economical solution.

V

VERSATILE

The new OD Value has many models, offering the perfect solution for every application:
- Five different measuring ranges
- Current, voltage, switching or serial interface
- Connector and cable versions

A

ACCURATE

The OD Value sets new benchmarks, both in quality testing and process control.
- High resolution of up to 2 µm
- High accuracy
- Fast measurement frequency of 2 kHz

L

LEADING

OD Value offers maximum reliability, providing highly accurate measurement of many different materials and surfaces.
- Receiver array utilizing leading CMOS technology
- Measurement algorithm to compensate for differing surface effects
- Laser technology for measuring the smallest objects

U

USER-FRIENDLY

OD Value features easiest setup in its class, even for demanding applications.
- Intuitive operating concept, for teach-in directly on the unit
- Multifunction input for external operation
- Distance bar indicator for easiest alignment

E

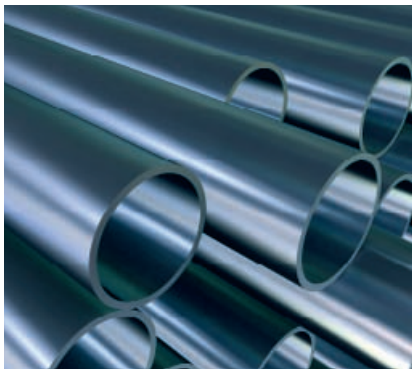
ECONOMICAL

OD Value offers outstanding value for money and maximum efficiency for your application.
- High quality throughout, leading to satisfied customers
- Short downtimes and setup times
- High throughput rates

The OD Value‘s quality edge: detecting the smallest differences with pinpoint accuracy

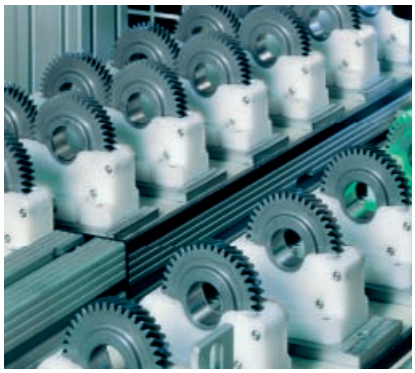
Any production environment can directly benefit from the capabilities of OD Value. Due to its many measuring ranges, combined with highly stable operation on changing surfaces, OD Value is suitable for testing, controlling, positioning and classifying in almost any machinery and production system.

The sensor captures the most minute differences in length, width, thickness, diameter, shape, position or eccentricity directly in the machine, without contact, with high accuracy and in-process.



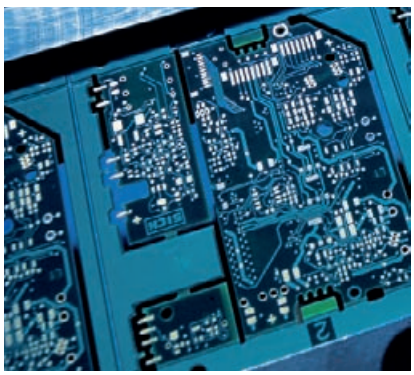
METAL & STEEL PROCESSING

In steel processing, OD Value offers an economical and reliable solution for measuring metal parts. The sensor is ideal for double-sheet detection before presses or for positioning tasks in metal processing, e.g. prior to cutting, welding, punching or bending processes.



AUTOMOTIVE

OD Value offers compelling performance, controlling processes in semi- and fully automatic vehicle or component assembly and checking quality-critical components, e.g. for µm quality control of brake shoes, classification of brake disks or sorting ball joints.



ELECTRONICS

Extreme precision and frequently tight installation conditions in machines and systems characterize the sensing requirements in the electronics industry. Having proved itself in picking, positioning and moulding of E-components and E-cards even at high cycle rates, OD Value provides the ideal solution.

PACKAGING

Daily production in the packaging industry presents a highly dynamic environment. Here, OD Value really comes into its own with features such as high speed and material surface independence. For example, the vacuum of bottling jars is checked quickly, accurately and safely by measuring the bulge.

TIMBER, STONES, ETC.

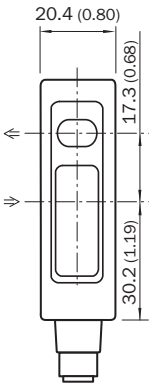
Profile, thickness or width measurements of boards – despite the most difficult conditions, OD Value offers the timber industry a reliable basis for optimizing cuts and saving costs. In the construction industry, too, this sensor performs a final inspection of bricks and tiles ... quickly, accurately and reliably.

- Laser technology enables precise measurement of small objects
- Easiest sensor setup thanks to an intuitive operating concept
- CMOS technology offers maximum reliability and highly accurate measurement
- Multitude of variants for a perfect choice for every application

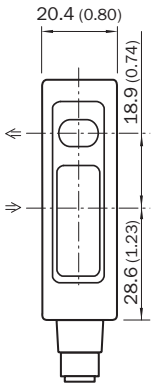
CE III CDRH

Dimensional drawing

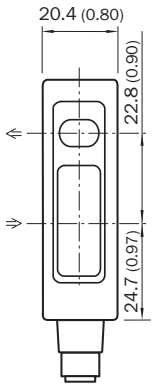
OD2- 30W04



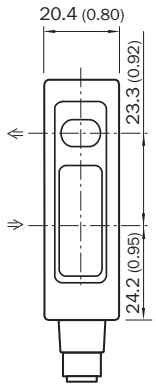
OD2- 50W10



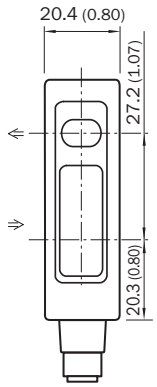
OD2- 85W20



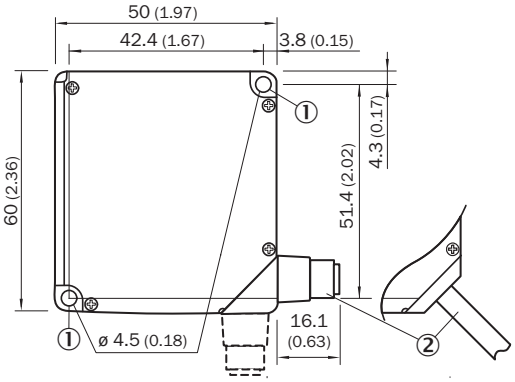
OD2- 120W60



OD2- 250W150



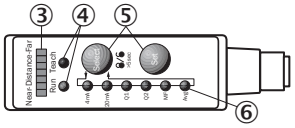
OD2- 0



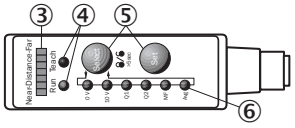
OD2- 2

All dimensions in mm (inch)

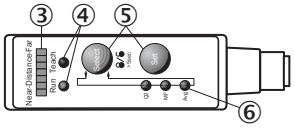
OD2- I



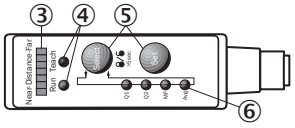
OD2- U



OD2- A



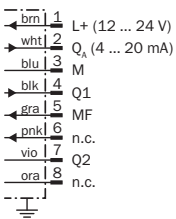
OD2- C



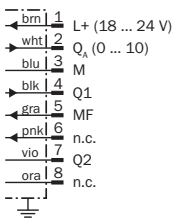
① Mounting hole, ø 4,5 mm
② 2 m cable or M12 plug; 90° rotatable
③ Distance indicator
④ Mode indicator (Run/Teach)
⑤ Operating keys
⑥ Status indicator in- and outputs (Run-mode)

Connection types

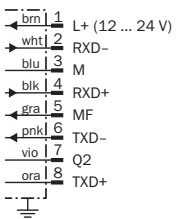
OD2- I



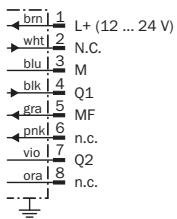
OD2- U



OD2- A



OD2- C



General technical data	
Min. response time	1 ms (2 ms for OD2-250...) [1]
Light source	Red laser diode class 2 (II) [2]
Supply voltage V_S	12 ... 24 V DC [3]
Power consumption [4]	≤2.88 W
Enclosure rating	IP 67
VDE protection class	III
Ambient temperature	Operation –10 °C ... +40 °C Storage –20 °C ... +60 °C
Sensitivity to ambient light	Artificial light ≥ 3,000 lx Sun ≥ 10,000 lx
Vibration resistance	10 ... 55 Hz
Shock resistance	50 G
Weight, typ. [5]	70 g
Material	PBT & PMMA
Inputs	Multifunctional input: laser off, trigger, external teach-in [6]
Indicator	Distance bargraph
Additional features	Averaging; teach-in of all settings; teach-in of all outputs; autom. sensitivity adjustment

1) Autom. sensitivity adjustment ≤ 4 ms (6 ms)
2) Wavelength 650 nm, max. output 1 mW
3) –5, +10 %; 18 ... 24 V when using analog voltage output
4) Excl. load; incl. analog current output
5) Excl. cable
6) Response time ≤ 3 ms

Pre-selection list by measuring range

	Measuring range 6 ... 90 %	Resolution [1] 6 ... 90 %	Repeatability [2] 6 ... 90 %	Accuracy [3][4][5] 6 ... 90 %	Measuring frequency	Light spot diameter
OD2- 30W04	26 ... 34 mm	2 µm	6 µm	± 20 µm	2 kHz	0.1 x 0.1 mm at 30 mm
OD2- 50W10	40 ... 60 mm	5 µm	15 µm	± 50 µm	2 kHz	0.5 x 1.0 mm at 50 mm
OD2- 85W20	65 ... 105 mm	10 µm	30 µm	± 100 µm	2 kHz	0.8 x 1.3 mm at 85 mm
OD2- 120W60	60 ... 180 mm	30 µm	90 µm	± 300 µm	2 kHz	1.0 x 1.5 mm at 120 mm
OD2- 250W150	100 ... 400 mm	75 µm	225 µm	± 1.2 mm	1.33 kHz	1.8 x 3.5 mm at 250 mm

1) At a selected response time medium (10 or 15 ms)
2) At a selected response time medium and constant conditions
3) Equivalent to ± 0.25 % MS (± 0.4 % MS for OD2-250)
MS = Measuring span: OD2-30... = 8 mm, OD2-50... = 20 mm, OD2-85... = 40 mm, OD2-120... =120 mm, OD2-250... = 300 mm
4) Linearity for 90 % remission is equivalent to 0.1 % MS (0.25 % MS for OD2-250)
5) For best accurancy and resolution consider warm up time ≤ 5 min

Technical data specific to type incl. ordering information

OD2-		30W04			26 ... 34 mm	2 µm	6 µm	± 20 µm	2 kHz	0.1 x 0.1 mm at 30 mm

Type	Order no.	In- and outputs	Outputs/interfaces	Connection type	Comment
OD2-P30W04I0	**6036580**	**PNP [1]**	**4 ... 20 mA [3]/2 x Q [5]**	**M12, 8-pin [6]**	**Preferred type**
OD2-P30W04I2	6036576	PNP [1]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-P30W04C0	6036582	PNP [1]	2 x Q [5]	M12, 8-pin [6]	
OD2-P30W04C2	6036578	PNP [1]	2 x Q [5]	Cable, 2 m	
OD2-P30W04U0	6036581	PNP [1]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-P30W04U2	6036577	PNP [1]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-P30W04A0	6036583	PNP [1]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-P30W04A2	6036579	PNP [1]	RS-422/1 x Q [5]	Cable, 2 m	
OD2-N30W04I0	6036572	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	M12, 8-pin [6]	
OD2-N30W04I2	6036568	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-N30W04C0	6036574	NPN [2]	2 x Q [5]	M12, 8-pin [6]	
OD2-N30W04C2	6036570	NPN [2]	2 x Q [5]	Cable, 2 m	
OD2-N30W04U0	6036573	NPN [2]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-N30W04U2	6036569	NPN [2]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-N30W04A0	6036575	NPN [2]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-N30W04A2	6036571	NPN [2]	RS-422/1 x Q [5]	Cable, 2 m	

OD2-		50W10			40 ... 60 mm	5 µm	15 µm	± 50 µm	2 kHz	0.5 x 1.0 mm at 50 mm

Type	Order no.	In- and outputs	Outputs/interfaces	Connection type	Comment
OD2-P50W10I0	**6036597**	**PNP [1]**	**4 ... 20 mA [3]/2 x Q [5]**	**M12, 8-pin [6]**	**Preferred type**
OD2-P50W10I2	6036592	PNP [1]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-P50W10C0	6036599	PNP [1]	2 x Q [5]	M12, 8-pin [6]	
OD2-P50W10C2	6036595	PNP [1]	2 x Q [5]	Cable, 2 m	
OD2-P50W10U0	6036598	PNP [1]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-P50W10U2	6036593	PNP [1]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-P50W10A0	6036600	PNP [1]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-P50W10A2	6036596	PNP [1]	RS-422/1 x Q [5]	Cable, 2 m	
OD2-N50W10I0	6036588	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	M12, 8-pin [6]	
OD2-N50W10I2	6036584	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-N50W10C0	6036590	NPN [2]	2 x Q [5]	M12, 8-pin [6]	
OD2-N50W10C2	6036586	NPN [2]	2 x Q [5]	Cable, 2 m	
OD2-N50W10U0	6036589	NPN [2]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-N50W10U2	6036585	NPN [2]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-N50W10A0	6036591	NPN [2]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-N50W10A2	6036587	NPN [2]	RS-422/1 x Q [5]	Cable, 2 m	

[1] High = V_S, Low ≤ 2.8 V
[2] High ≤ 2.8 V, Low = V_S
[3] Output impendance max. 300 Ω
[4] Output impendance min. 10 kΩ
[5] Max. 100 mA/30 V DC
[6] 2 m cable: 6020663
5 m cable: 6020664

Technical data specific to type incl. ordering information

OD2-		85W20			65 ... 105 mm	10 µm	30 µm	± 100 µm	2 kHz	0.8 x 1.3 mm at 85 mm

Type	Order no.	In- and outputs	Outputs/interfaces	Connection type	Comment
OD2-P85W20I0	**6036613**	**PNP [1]**	**4 ... 20 mA [3]/2 x Q [5]**	**M12, 8-pin [6]**	**Preferred type**
OD2-P85W20I2	6036609	PNP [1]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-P85W20C0	6036615	PNP [1]	2 x Q [5]	M12, 8-pin [6]	
OD2-P85W20C2	6036611	PNP [1]	2 x Q [5]	Cable, 2 m	
OD2-P85W20U0	6036614	PNP [1]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-P85W20U2	6036610	PNP [1]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-P85W20A0	6036616	PNP [1]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-P85W20A2	6036612	PNP [1]	RS-422/1 x Q [5]	Cable, 2 m	
OD2-N85W20I0	6036605	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	M12, 8-pin [6]	
OD2-N85W20I2	6036601	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-N85W20C0	6036607	NPN [2]	2 x Q [5]	M12, 8-pin [6]	
OD2-N85W20C2	6036603	NPN [2]	2 x Q [5]	Cable, 2 m	
OD2-N85W20U0	6036606	NPN [2]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-N85W20U2	6036602	NPN [2]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-N85W20A0	6036608	NPN [2]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-N85W20A2	6036604	NPN [2]	RS-422/1 x Q [5]	Cable, 2 m	

OD2-		120W60			60 ... 180 mm	30 µm	90 µm	± 300 µm	2 kHz	1.0 x 1.5 mm at 120 mm

Type	Order no.	In- and outputs	Outputs/interfaces	Connection type	Comment
OD2-P120W60I0	**6036629**	**PNP [1]**	**4 ... 20 mA [3]/2 x Q [5]**	**M12, 8-pin [6]**	**Preferred type**
OD2-P120W60I2	6036625	PNP [1]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-P120W60C0	6036631	PNP [1]	2 x Q [5]	M12, 8-pin [6]	
OD2-P120W60C2	6036627	PNP [1]	2 x Q [5]	Cable, 2 m	
OD2-P120W60U0	6036630	PNP [1]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-P120W60U2	6036626	PNP [1]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-P120W60A0	6036632	PNP [1]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-P120W60A2	6036628	PNP [1]	RS-422/1 x Q [5]	Cable, 2 m	
OD2-N120W60I0	6036621	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	M12, 8-pin [6]	
OD2-N120W60I2	6036617	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-N120W60C0	6036623	NPN [2]	2 x Q [5]	M12, 8-pin [6]	
OD2-N120W60C2	6036619	NPN [2]	2 x Q [5]	Cable, 2 m	
OD2-N120W60U0	6036622	NPN [2]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-N120W60U2	6036618	NPN [2]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-N120W60A0	6036624	NPN [2]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-N120W60A2	6036620	NPN [2]	RS-422/1 x Q [5]	Cable, 2 m	

[1] High = V_S, Low ≤ 2.8 V
[2] High ≤ 2.8 V, Low = V_S
[3] Output impendance max. 300 Ω
[4] Output impendance min. 10 kΩ
[5] Max. 100 mA/30 V DC
[6] 2 m cable: 6020663
5 m cable: 6020664

Technical data specific to type incl. ordering information

OD2-		250W150			100 ... 400 mm	75 µm	225 µm	± 1.2 mm	1.33 kHz	1.8 x 3.5 mm at 250 mm

Type	Order no.	In- and outputs	Outputs/interfaces	Connection type	Comment
OD2-P250W150I0	**6036645**	**PNP [1]**	**4 ... 20 mA [3]/2 x Q [5]**	**M12, 8-pin [6]**	**Preferred type**
OD2-P250W150I2	6036641	PNP [1]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-P250W150C0	6036647	PNP [1]	2 x Q [5]	M12, 8-pin [6]	
OD2-P250W150C2	6036643	PNP [1]	2 x Q [5]	Cable, 2 m	
OD2-P250W150U0	6036646	PNP [1]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-P250W150U2	6036642	PNP [1]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-P250W150A0	6036648	PNP [1]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-P250W150A2	6036644	PNP [1]	RS-422/1 x Q [5]	Cable, 2 m	
OD2-N250W150I0	6036637	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	M12, 8-pin [6]	
OD2-N250W150I2	6036633	NPN [2]	4 ... 20 mA [3]/2 x Q [5]	Cable, 2 m	
OD2-N250W150C0	6036639	NPN [2]	2 x Q [5]	M12, 8-pin [6]	
OD2-N250W150C2	6036635	NPN [2]	2 x Q [5]	Cable, 2 m	
OD2-N250W150U0	6036638	NPN [2]	0 ... 10 V [4]/2 x Q [5]	M12, 8-pin [6]	
OD2-N250W150U2	6036634	NPN [2]	0 ... 10 V [4]/2 x Q [5]	Cable, 2 m	
OD2-N250W150A0	6036640	NPN [2]	RS-422/1 x Q [5]	M12, 8-pin [6]	
OD2-N250W150A2	6036636	NPN [2]	RS-422/1 x Q [5]	Cable, 2 m	

[1] High = V_S, Low ≤ 2.8 V
[2] High ≤ 2.8 V, Low = V_S
[3] Output impendance max. 300 Ω
[4] Output impendance min. 10 kΩ
[5] Max. 100 mA/30 V DC
[6] 2 m cable: 6020663
5 m cable: 6020664

Type code

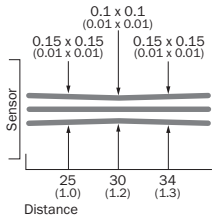
OD2-				
In and outputs				
PNP	P			High = V_S, Low ≤ 2.8 V
NPN	N			High = ≤ 2.8 V, Low = V_S
Measuring range				**Resolution[1] / Repeatability[2] / Accurancy[3][4][5] / Light spot diameter**
				6 ... 90 % / 6 ... 90 % / 6 ... 90 %
26 ... 34 mm		30W04		2 µm / 6 µm / ± 20 µm / 0.1 x 0.1 mm at 30 mm
40 ... 60 mm		50W10		5 µm / 15 µm / ± 50 µm / 0.5 x 1.0 mm at 50 mm
65 ... 105 mm		85W20		10 µm / 30 µm / ± 100 µm / 0.8 x 1.3 mm at 85 mm
60 ... 180 mm		120W60		30 µm / 90 µm / ± 300 µm / 1.0 x 1.5 mm at 120 mm
100 ... 400 mm		250W150		75 µm / 225 µm / ± 1.2 mm / 1.8 x 3.5 mm at 250 mm
Outputs/interfaces				
2 switching outputs[6] and analog 4 ... 20 mA[7]			I	Supply voltage V_S: 12 ... 24 V DC
2 switching outputs[6] and analog 0 ... 10 V[8]			U	Supply voltage V_S: 18 ... 24 V DC
2 switching outputs[6]			C	Supply voltage V_S: 12 ... 24 V DC
1 switching outputs[6] and RS-422			A	Supply voltage V_S: 12 ... 24 V DC
Connection type				
M12 plug, 8-pin[9]			0	
Cable, 2 m			2	

[1] At a selected response time medium (10 or 15 ms)
[2] At a selected response time medium and constant conditions
[3] Equivalent to ± 0.25 % MS (± 0.4 % MS for OD2-250)
MS = Messuring span: OD2-30... = 8 mm, OD2-50... = 20 mm, OD2-85... = 40 mm, OD2-120... = 120 mm, OD2-250... = 300 mm
[4] Linearity for 90 % remission is equivalent to 0.1 % MS (0.25 % MS for OD2-250)
[5] For best accurancy and resolution consider warm up time ≤ 5 min
[6] Max. 100 mA/30 V DC
[7] Output impedance max. 300 Ω
[8] Output impedance min. 10 kΩ
[9] 2 m cable: 6020663
5 m cable: 6020664

Models other than the preferred types may have al longer delivery time.

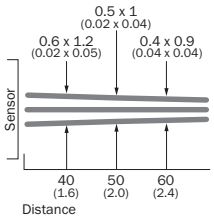
Characteristic diagram light spot diameter

OD2- 30W04



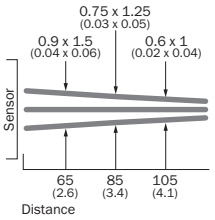
All dimensions in mm (inch)

OD2- 50W10



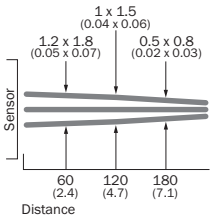
All dimensions in mm (inch)

OD2- 85W20



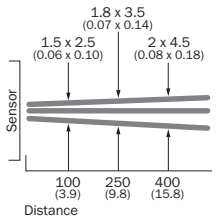
All dimensions in mm (inch)

OD2- 120W60 C



All dimensions in mm (inch)

OD2- 250W150



All dimensions in mm (inch)

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