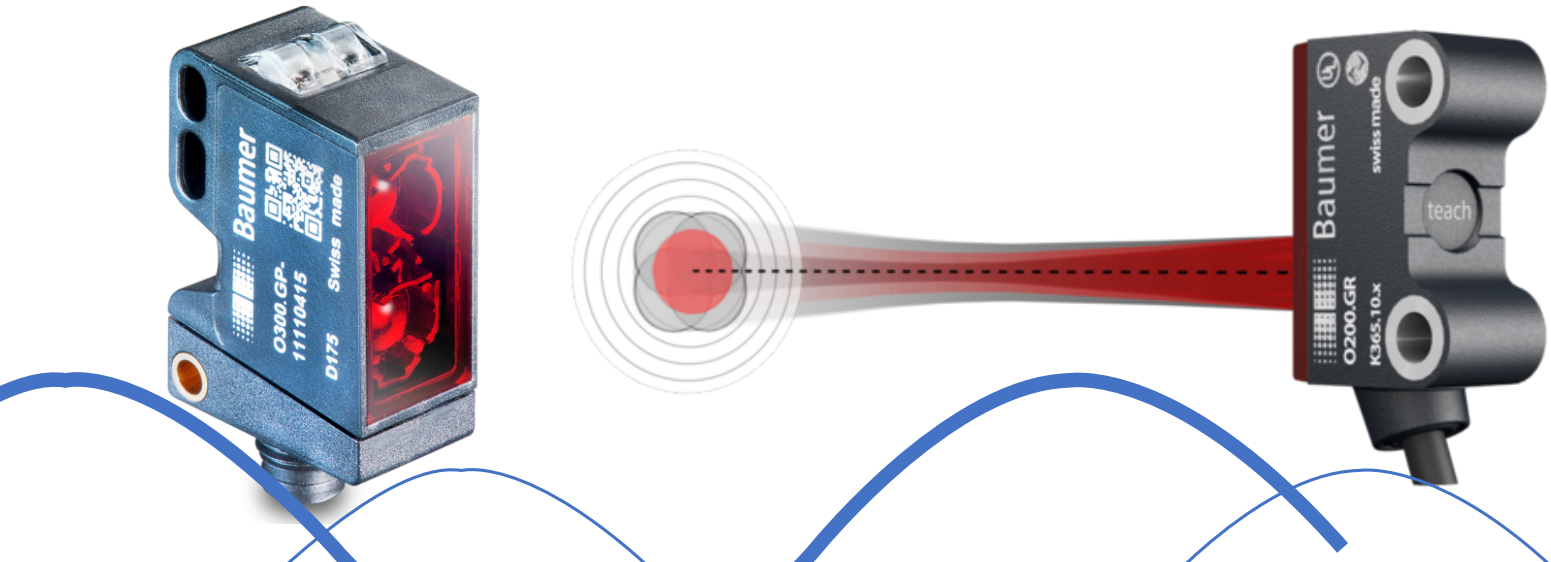
Baumer
Passion for Sensors

Photoelectric sensors



Baumer photoelectric sensors determine the position of object using an optical light signal. They are able to measure movement, presence or absence, speed, etc.

The following types of Baumer photoelectric optical sensors are available:

- Standard
- Laser
- Light barriers without reflector
- Transparency detection
- Subminiature
- Photoelectric with IO-Link
- Miniature sensors 0200
- Standard with extra power O300/O500
- Cylindrical M18
- Robust washdown

ELTRA trade

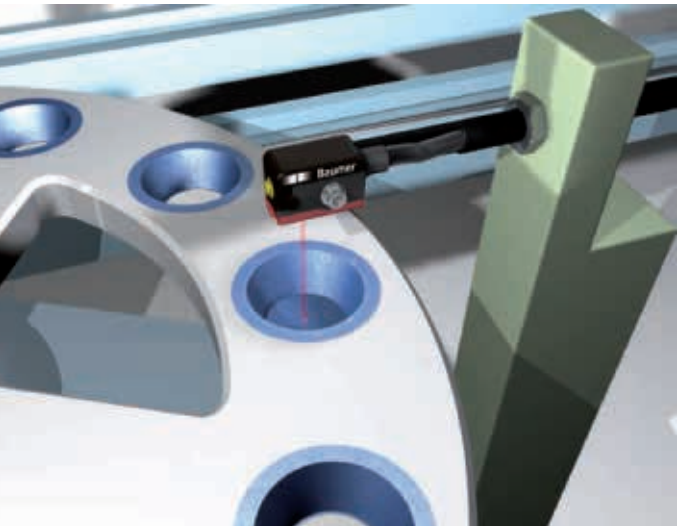
To find out stock ability and delivery time to your region, please contact our manager.

info@eltra-trade.com

Smart & Small –
High performance, extremely compact designs

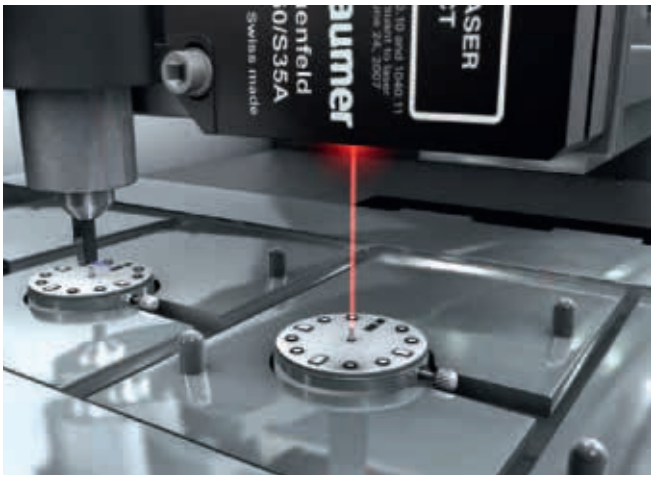
Optical miniature sensors

- Extensive miniature sensor portfolio for applications where space is at an absolute premium
- High performance in extremely cramped spaces from 4 mm with integral evaluation electronics with a range of up to 8 m
- All sensors, even the smallest, can be easily and accurately adjusted to the specific application requirements
- Sensors with beam diameters of up to 0.1 mm can detect the smallest objects or identify parts with the utmost precision regardless of color or objects in the background



Leading the global market

- FHDK 04: smallest sensor on the market with real background suppression
- FNxK 07: Smallest line of sensors with an adjustable switching distance
- OHDK 10: laser sensors with background suppression and adjustable sensing distance
- FxDM 08: Miniature sensors for profiled guideways



Distance measuring miniature sensors

- Extremely small laser triangulation distance sensor with integral electronics
- Teachable measuring range of up to 550 mm
- Point laser for extremely small objects or line laser for coarse surfaces
- Highspeed measurements thanks to high measurement rates of 1 kHz

Fiber optic sensors and fiber optics

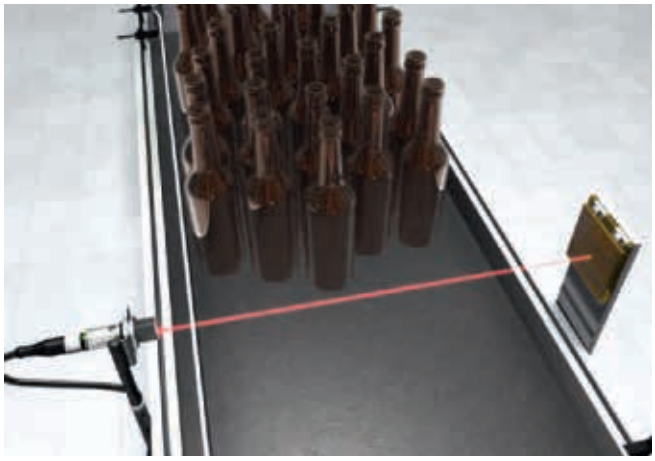
- Detect extremely small objects in narrow and highly inaccessible spaces
- Very small, lightweight sensors for robotics
- Broad range of plastic or glass fiber optics in cubical or cylindrical designs
- Fiber optic sensors in a range of designs and sizes for greater flexibility, wherever they are mounted

Precise control of fast processes and detection of very small objects

Laser light barriers and light sensors

O300 miniature laser sensors with added value

- Precision triggering due to very low jitter of <22 us
- Safe laser class 1
- Reliable detection of irregular or small objects due to line or point beam geometry
- High repeat accuracy
- IO-Link – Industrie 4.0 and IIoT ready



Cylindrical M18 laser sensors

- Rugged M18 metal housing
- Range of up to 55 m

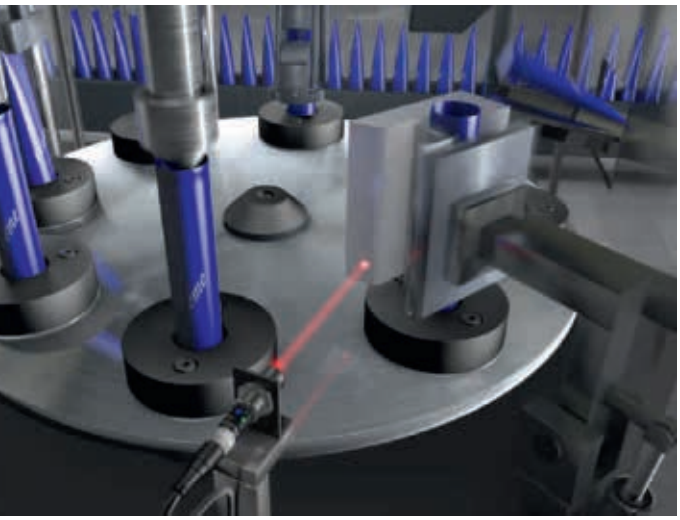
- Extremely high system performance due to very short response times of < 0.1 ms provides rapid, high-precision processing. 0.1 mm laser beam detects extremely small components and differences in position
- Increased product and process quality due to precise detection of small objects from a safe distance and irrespective of their exact position, e.g. on the conveyor belt
- Complete design freedom due to availability in every configuration

Laser differential sensors

- Detect extremely small objects < 0.2 mm
- Tolerance analysis
- Comparison of object sizes and positions
- Stage and edge detection
- High insensitivity to color

Light barriers without reflectors

SmartReflect®



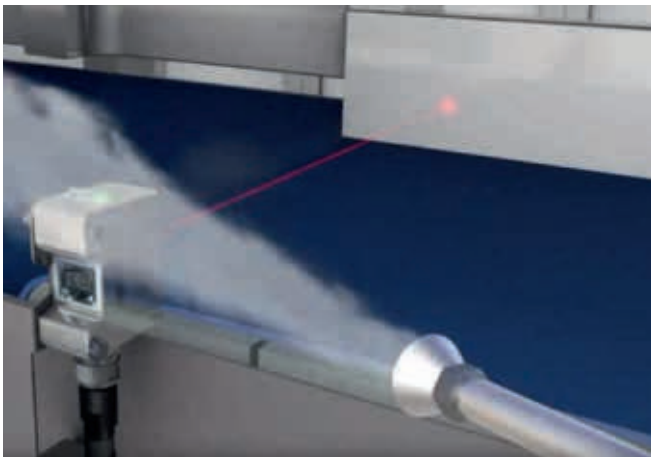
Cylindrical M18 sensors

- Rugged M18 metal housing
- Baumer PinPoint LED
- Easy, uncomplicated setup with qTeach
- Range of up to 300 mm

- Extremely high plant availability and process security: Highly reliable object detection thanks to the barrier principle and removal of the reflector as a potential source of errors
- Reduced operating costs: Quick installation as no reflector to fit No need to replace reflectors due to wear
- Increased productivity due to range of up to 1.9 m or 1 m for transparent objects, and short response times of <0.25 ms Quick format change, easy sensor replacement and access to additional information via IO-Link

Transparent detection without reflectors

- Reliable detection of bowls, PET bottles and foils
- Short response time of < 0.25 ms
- IO link – Industrie 4.0 and IIoT ready
- Range of up to 1000 mm



Stainless steel sensors for demanding environments

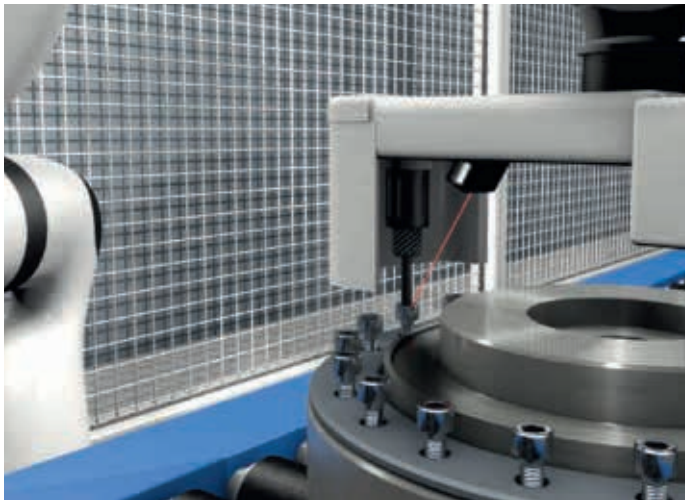
- Robust stainless steel housing
- EHEDG-certified, FDA-compliant, Ecolab-tested
- IP 69K and Ecolab-tested
- Long-term seal thanks to proTect+
- Range of up to 1000 mm

Measure distance, spacing and position even on challenging surfaces

Optical distance sensors

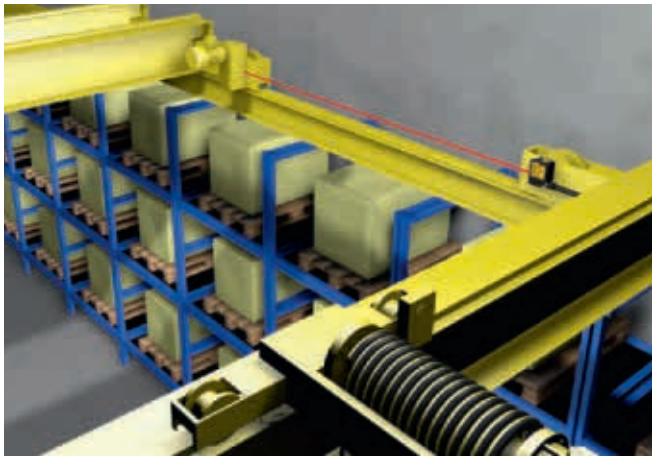
Miniature sensors

- Extremely small housing with integral microcontroller
- Teachable measuring range of up to 550 mm
- Point laser for extremely small objects or line laser for coarse surfaces
- Safety due to laser class 1 sensors



High Performance

- Rugged M18 metal housing
- Baumer PinPoint LED
- Easy, uncomplicated setup with qTeach
- Range of up to 300 mm



Long ranges

- Robust stainless steel housing
- EHEDG-certified, FDA-compliant, Ecolab-tested
- IP 69K and Ecolab-tested
- Long-term seal thanks to proTect+
- Range of up to 1000 mm

- Reliable and efficient processes thanks to a range of beam shapes, accurate measurement to the sub-micrometer scale and long ranges
- Durable, robust solutions thanks to rugged housings made of stainless steel, metal and plastic for different applications
- Simple operation and integration Fast, economical initial start-up thanks to Plug & Play
- Factory-calibrated sensors with measuring values displayed in millimeters

One function – one sensor

Smart profile sensors – *PosCon*®

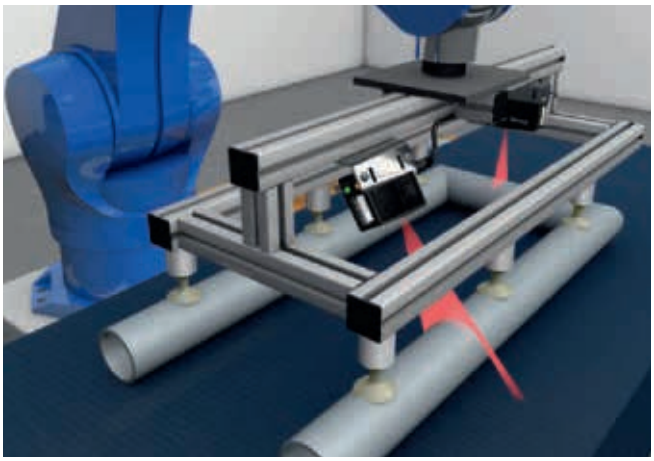
- Compact measuring devices with pre-configured functions for efficient object measurement
- Smart measurement of object heights, edge positions and diameters
- Quick installation with no reflectors
- Easy initial start-up with no external software (plug & measure)
- High accuracy and ambient light immunity

Easy width measurement – *PosCon* OXE7

- Measurement of object edges, widths and gaps irrespective of out-of-roundness
- Resolution up to 20 µm and measurement rates up to 550
- Reliable measurement even with out-of-round objects
- Adaptable sensor mounting up to ± 30°

Clever height measurement – *PosCon* OXH7

- Calibrated height measurement, even in rapid processes without precise positioning of the target objects
- High measuring accuracy up to 2 µm even with varying ambient light conditions
- Simple solution for critical check-&-sort applications



Measuring round objects – *PosCon* OXC7

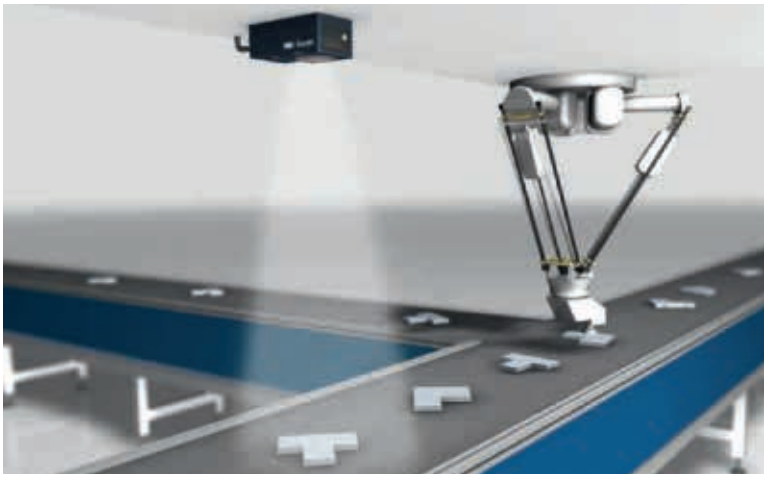
- Smart measurement of circle centers, diameters, top and external positions
- Reliable measurement for accurate positioning tasks and as reference points for inspection tasks
- Simple, adaptable mounting up to ± 30° with no reflectors

Keeping an eye on your quality

Vision sensors for automation technology – *VeriSens*®

Highlights:

- Simultaneous, image-based quality control of multiple features with a single sensor
- Easy configuration in a few minutes
- Versatile connection options including industrial Ethernet, digital I/Os
- Configurable web interface with *MultiViewer* function
- High process security due to contour-based image processing
- Image-based reading and evaluation



XC series: Maximum functionality and versatility

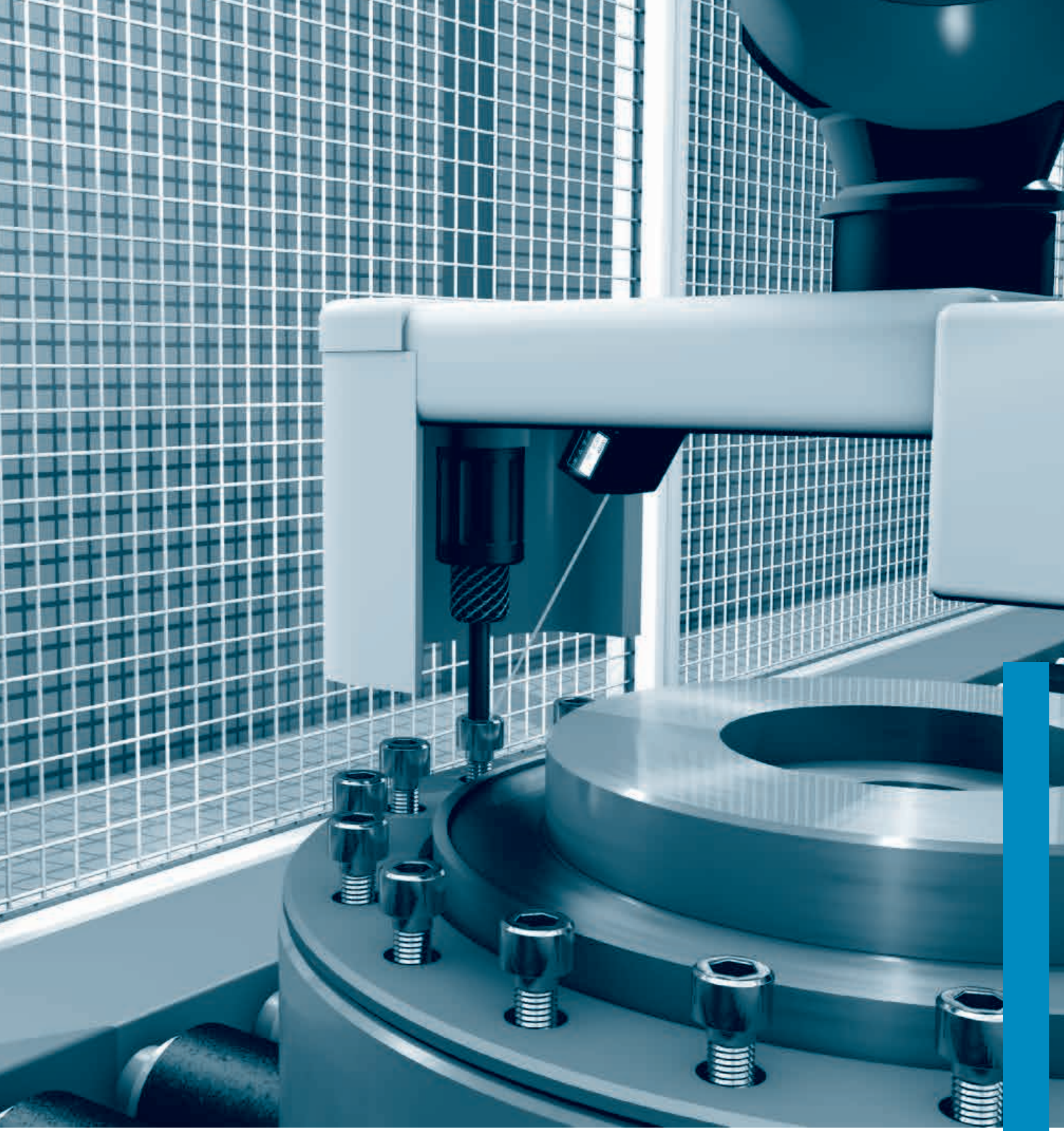
- Check all features (up to 22) with one device, including reading code and text
- Automatic part alignment with FEXLoc®
- C-mount connection for interchangeable lens, lens protection due to modular Tube System (IP 67)
- Fully-integrated VeriFlash® flash controller

XF series: Extended functionality for complex inspection tasks

- Check all available features (up to 22) with one device, including reading code and text
- Automatic part alignment with FEXLoc®
- Integral lighting and lens
- Variants with IP 69K stainless steel housing in washdown design

ID series: Code reader and text reader

- Image-based checking of 1D/2D codes and plain text (OCR/OCV)
- Simple setup (no font training)
- Integral illumination and lens
- Check static and variable information



laser distance sensors

product family	OADM 12	OADM 12	OADM 12	OADM 13	OADM 13
					
width / diameter	12,4 mm	12,4 mm	12,4 mm	13,4 mm	13,4 mm
measuring distance Sd	16 ... 26 mm 16 ... 120 mm	16 ... 26 mm 16 ... 120 mm	16 ... 26 mm 30 ... 50 mm 16 ... 120 mm	50 ... 350 mm 50 ... 550 mm	50 ... 350 mm 50 ... 550 mm
resolution	0,002 ... 0,005 mm 0,002 ... 0,12 mm	0,002 ... 0,005 mm 0,002 ... 0,12 mm	0,004 ... 0,008 mm 0,01 ... 0,026 mm 0,012 ... 0,12 mm	0,01 ... 0,4 mm 0,01 ... 1,15 mm	0,01 ... 0,4 mm 0,01 ... 1,15 mm
linearity error	± 0,006 ... ± 0,015 mm ± 0,015 ... ± 0,35 mm	± 0,013 ... ± 0,025 mm ± 0,015 ... ± 0,35 mm	± 0,013 ... ± 0,025 mm ± 0,032 ... ± 0,078 mm ± 0,026 ... ± 0,35 mm	± 0,05 ... ± 1,2 mm ± 0,08 ... ± 3,5 mm	± 0,05 ... ± 1,2 mm ± 0,08 ... ± 3,5 mm
response time / release time	< 0,9 ms	2 ... 3 ms	< 1,8 ms < 3 ms	< 0,9 ms < 2 ms	< 0,9 ms < 2 ms
light source	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
adjustment	Teach-in: button / external	Teach-in: button / external	RS 485	Teach-in: button / external	Teach-in: button / external
output circuit	analog	analog	RS 485	analog	analog
output signal	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA 0 ... 10 VDC		4 ... 20 mA	0 ... 10 VDC
connection types	connector	connector	connector	connector	connector
housing material	metal	metal	metal	metal	metal
page	**624**	**626**	**628**	**630**	**632**

OADM 13	OADM 13	OADM 13	OADM 13	OADM 20	OADM 20
					
13,4 mm	13,4 mm	13,4 mm	13,4 mm	20,6 mm	20,6 mm
50 ... 350 mm 50 ... 550 mm	50 ... 350 mm 50 ... 550 mm	50 ... 60 mm 60 ... 100 mm 100 ... 200 mm	50 ... 60 mm 60 ... 100 mm 100 ... 200 mm	30 ... 70 mm 30 ... 130 mm	50 ... 300 mm 100 ... 600 mm
0,05 ... 0,4 mm 0,09 ... 1,15 mm	0,05 ... 0,4 mm 0,09 ... 1,15 mm	< 0,015 mm 0,015 ... 0,038 mm 0,039 ... 0,15 mm	< 0,015 mm 0,015 ... 0,038 mm 0,039 ... 0,15 mm	0,004 ... 0,02 mm 0,005 ... 0,06 mm	0,01 ... 0,33 mm 0,015 ... 0,67 mm
± 0,18 ... ± 1,2 mm ± 0,3 ... ± 3,5 mm	± 0,18 ... ± 1,2 mm ± 0,3 ... ± 3,5 mm	< 0,045 mm ± 0,047 ... ± 0,118 mm ± 0,123 ... ± 0,457 mm	< 0,045 mm ± 0,047 ... ± 0,118 mm ± 0,123 ... ± 0,457 mm	± 0,012 ... ± 0,06 mm ± 0,015 ... ± 0,2 mm	± 0,03 ... ± 1 mm ± 0,05 ... ± 2 mm
< 0,9 ms < 2 ms	< 0,9 ms < 2 ms	< 2 ms	< 2 ms	< 0,9 ms	< 0,9 ms
pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
RS 232	RS 485	Teach-in: button / external	Teach-in: button / external	Teach-in: button / external	Teach-in: button / external
RS 232	RS 485	analog	analog	analog	analog
		4 ... 20 mA	0 ... 10 VDC	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA 0 ... 10 VDC
connector	connector	connector	connector	connector	connector
metal	metal	metal	metal	metal	metal
634	**636**	**638**	**642**	**646**	**648**

laser distance sensors

product family	OADM 20	OADM 20	OADM 20	OADR 20	OADM 21
					
width / diameter	20,6 mm	20,6 mm	20,6 mm	20,3 mm	20,4 mm
measuring distance Sd	30 ... 70 mm 30 ... 130 mm 50 ... 300 mm	100 ... 600 mm 200 ... 1000 mm	50 ... 300 mm 100 ... 600 mm 200 ... 1000 mm	30 ... 130 mm 50 ... 300 mm 100 ... 600 mm	100 ... 600 mm 200 ... 1000 mm
resolution	0,004 ... 0,02 mm 0,005 ... 0,06 mm 0,01 ... 0,33 mm	0,015 ... 0,67 mm 0,12 ... 2,5 mm	0,01 ... 0,4 mm 0,015 ... 0,8 mm 0,12 ... 3 mm	0,005 ... 0,06 mm 0,01 ... 0,33 mm 0,015 ... 0,67 mm	0,01 ... 0,25 mm 0,02 ... 0,4 mm
linearity error	± 0,012 ... ± 0,06 mm ± 0,015 ... ± 0,2 mm ± 0,03 ... ± 1 mm	± 0,05 ... ± 2 mm ± 0,48 ... ± 10 mm	± 0,2 ... ± 1,5 mm ± 0,5 ... ± 3,4 mm ± 0,36 ... ± 9 mm	± 0,015 ... ± 0,2 mm ± 0,03 ... ± 1 mm ± 0,05 ... ± 2 mm	± 0,07 ... ± 1 mm ± 0,11 ... ± 1,65 mm
response time / release time	< 0,9 ms	< 0,9 ms	< 2 ms < 2,5 ms < 3,5 ms	< 0,9 ms	< 4 ms
light source	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
adjustment	Teach-in: button / external	Teach-in: button / external	Teach-in: button / external	external	Teach-in: button / external
output circuit	analog	analog		analog	analog
output signal	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC
connection types	connector	connector	cable	connector	connector
housing material	metal	metal	metal	metal	metal
page	**650**	**654**	**656**	**658**	**662**

OM70-L	OM70-L	OM70-L	OM70-P	OM70-P	OM70-P
					
26 mm	26 mm	26 mm	26 mm	26 mm	26 mm
30 ... 70 mm 40 ... 140 mm 50 ... 250 mm	100 ... 600 mm 100 ... 1000 mm 150 ... 1500 mm	100 ... 600 mm 100 ... 1000 mm 150 ... 1500 mm	30 ... 70 mm 40 ... 140 mm 50 ... 250 mm	100 ... 600 mm 100 ... 1000 mm 150 ... 1500 mm	100 ... 600 mm 100 ... 1000 mm 150 ... 1500 mm
0,7 ... 1 µm 1) 2) 3) 1,2 ... 2,5 µm 1) 2) 3) 1,4 ... 6,3 µm 1) 2) 3)	3 ... 24 µm 1) 2) 3) 3 ... 63 µm 1) 2) 3) 13 ... 125 µm 1) 2) 3)	3 ... 24 µm 1) 2) 3) 3 ... 63 µm 1) 2) 3) 13 ... 125 µm 1) 2) 3)	0,7 ... 1 µm 1) 2) 3) 1,2 ... 2,5 µm 1) 2) 3) 1,4 ... 6,3 µm 1) 2) 3)	3 ... 24 µm 1) 2) 3) 3 ... 63 µm 1) 2) 3) 13 ... 125 µm 1) 2) 3)	3 ... 24 µm 1) 2) 3) 3 ... 63 µm 1) 2) 3) 13 ... 125 µm 1) 2) 3)
± 0,06 % Mr 1) 2) ± 0,07 % Mr 1) 2) ± 0,09 % Mr 1) 2)	± 0,12 % Mr 1) 2) ± 0,19 % Mr 1) 2) ± 0,32 % Mr 1) 2)	± 0,12 % Mr 1) 2) ± 0,19 % Mr 1) 2) ± 0,32 % Mr 1) 2)	± 0,06 % Mr 1) 2) ± 0,07 % Mr 1) 2) ± 0,09 % Mr 1) 2)	± 0,12 % Mr 1) 2) ± 0,19 % Mr 1) 2) ± 0,32 % Mr 1) 2)	± 0,12 % Mr 1) 2) ± 0,19 % Mr 1) 2) ± 0,32 % Mr 1) 2)
0,8 ms 2)	0,8 ms 2)	0,8 ms 2)	0,8 ms 2)	0,8 ms 2)	0,8 ms 2)
pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
Touch Display, RS485	Touch Display, RS485	Touch Display, RS485	Touch Display, RS485	Touch Display, RS485	Touch Display, RS485
analog and RS 485	analog and RS 485	analog and RS 485	analog and RS 485	analog and RS 485	analog and RS 485
4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC
connector	connector	connector	connector	connector	connector
metal	metal	metal	metal	metal	metal
664	**666**	**668**	**670**	**672**	**674**

laser distance sensors

product family	OM70-X	OM70-X	OM70-X	OADM 250	OADM 260
					
width / diameter	26 mm	26 mm	26 mm	25,4 mm	25,4 mm
measuring distance Sd	100 ... 150 mm	100 ... 500 mm	100 ... 150 mm	200 ... 4000 mm	200 ... 13000 mm
resolution	2 ... 4 µm 1) 2) 4) 5)	4 ... 25 µm 1) 2) 4) 5)	2 ... 4 µm 1) 2) 4) 5)	1,3 mm	5 mm
linearity error	± 30 ... ± 90 µm 1) 2) 4)	± 100 µm 1) 2) 4) 6)	± 30 ... ± 90 µm 1) 2) 4)		
response time / release time	3,5 ms 2) 3)	1,3 ms 2) 3)	3,5 ms 2) 3)		
light source	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
adjustment	Touch Display, RS485	Touch Display, RS485	Webserver, Ethernet TCP/IP	Teach-in: button / external	Teach-in: button / external
output circuit	analog and RS 485	analog and RS 485		analog	analog
output signal	4 ... 20 mA / 0 ... 10 VDC	4 ... 20 mA / 0 ... 10 VDC		4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA
connection types	connector	connector	connector	connector	connector
housing material	metal	metal	metal	metal	metal
page	**676**	**678**	**680**	**682**	**684**

photoelectric sensors with analog output

product family	O300.DI	O300.DL	O300.DP	O500.DI	O500.DP
					
width / diameter	12,9 mm	12,9 mm	12,9 mm	18 mm	18 mm
measuring distance Sd	30 ... 300 mm	30 ... 250 mm	30 ... 300 mm	60 ... 550 mm	60 ... 400 mm
resolution	0,5 ... 5 mm	0,5 ... 10 mm	0,5 ... 5 mm	0,5 ... 5 mm	0,5 ... 3 mm
linearity error	± 1,5 ... ± 15 mm	± 1,5 ... ± 12,5 mm	± 1,5 ... ± 15 mm	± 3 ... ± 27,5 mm	± 3 ... ± 20 mm
response time / release time	< 0,49 ms	< 0,25 ms	< 0,49 ms	< 0,49 ms	< 0,49 ms
light source	pulsed infrared diode	pulsed red laser diode	pulsed PinPoint LED	pulsed infrared diode	pulsed PinPoint LED
adjustment	Teach-in and IO-Link	Teach-in and IO-Link	Teach-in and IO-Link	Teach-in and IO-Link	Teach-in and IO-Link
output circuit	push-pull	push-pull	push-pull	push-pull	push-pull
output signal					
connection types	cable connector	cable connector	cable connector	cable connector	cable connector
housing material	plastic	plastic	plastic	plastic	plastic
page	**686**	**688**	**690**	**692**	**694**

product family	OADK 25
	
width / diameter	23,4 mm
measuring distance Sd	100 ... 1000 mm
resolution	0,3 ... 4 mm
linearity error	± 1,1 ... ± 15 mm
response time / release time	< 12,8 ms
light source	pulsed red laser diode
adjustment	Teach-in
output circuit	analog
output signal	0 ... 10 VDC 4 ... 20 mA
connection types	cable connector
housing material	plastic
page	**708**

FADK 14	FADK 14	FADR 14	FADR 14	FADH 14	FADH 14
					
14,8 mm	14,8 mm	19,6 mm	19,6 mm	19,6 mm	19,6 mm
50 ... 400 mm	50 ... 400 mm	50 ... 400 mm	50 ... 400 mm	50 ... 400 mm	50 ... 400 mm
0,1 ... 1 mm	0,1 ... 1 mm	0,1 ... 1 mm	0,1 ... 1 mm	0,1 ... 1 mm	0,1 ... 1 mm
± 1,5 ... ± 4 mm	± 1,5 ... ± 4 mm	± 1,5 ... ± 4 mm	± 1,5 ... ± 4 mm	± 1,5 ... ± 4 mm	± 1,5 ... ± 4 mm
< 3 ms	< 3 ms	< 3 ms	< 3 ms	< 3 ms	< 3 ms
pulsed point source LED	pulsed point source LED	pulsed point source LED	pulsed point source LED	pulsed point source LED	pulsed point source LED
IO-Link	IO-Link	IO-Link	IO-Link	IO-Link	IO-Link
analog	analog	analog	analog	analog	analog
4 ... 20 mA	0 ... 10 VDC	4 ... 20 mA	0 ... 10 VDC	4 ... 20 mA	0 ... 10 VDC
cable connector	cable connector	connector	connector	cable flylead connector	cable flylead connector
plastic	plastic	metal	metal	metal	metal
696	**698**	**700**	**702**	**704**	**706**

General information

Optical distance sensors by Baumer measure accurately to the micrometer and deliver reliable results even on demanding surfaces. The extremely compact sensors with fully integrated electronics are ready to use quickly and with little effort.

Typical applications

Reliable and efficient processes

- Laser point, laser line or multi-spot beam shapes for reliable measurement in the sub-micrometer range for demanding surfaces
- Measurements with high repeat accuracy even in the sub-micrometer range
- Precise positioning of objects with a linearity error of ±0.06%
- Smart signal processing in the sensor
- Fast measurements thanks to short measuring cycles

Long-lasting, robust solutions

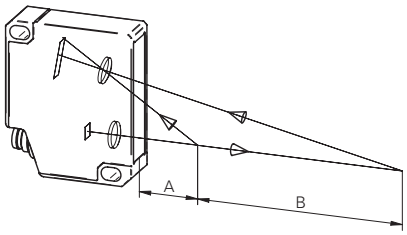
- Robust housings made of stainless steel, metal and plastic for different applications
- High ambient light immunity
- Sensors resistant to vibration and sensors in IP 69K washdown design
- Low temperature drift during fluctuations in ambient temperatures

Simple operation and integration

- Fast, economical initial start-up thanks to Plug & Play
- Fast and simple adjustment of the measuring range using the teach-in button
- Innovative touch display with a simple operating concept
- Factory-calibrated sensors with measuring values displayed in millimeters

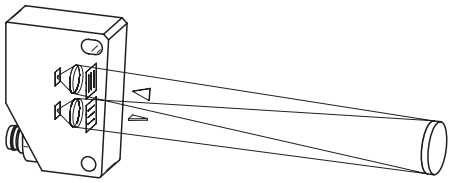
Technology and operation
Triangulation

The light beam arrives at the object as a small spot. The sensor's receiver (photodiode array) detects the position of this spot. Depending on the distance, the angle of incidence changes and thus so does the position of the light spot on the receiver. The photodiode array is read by an integral microcontroller. The controller accurately calculates the angle from the light distribution on the photodiode array and then calculates the distance to the object from this. This distance is either transmitted to the serial port or converted into an output current proportional to the distance. The microcontroller guarantees a high degree of linearity and measuring accuracy. The combination of a photodiode array and a microcontroller allows interference from reflections to be suppressed, thus providing reliable data from critical surfaces. The sensor adapts to different colors by adjusting its internal sensitivity, making it almost independent of the color of the object. A digital output is activated if there is no object within the measuring range or if insufficient light is received to detect the object correctly, e.g. if the sensor is dirty. The possible resolution and the accuracy change with the distance. The same distance Δd which causes a significant change in the angle 1 close to the sensor produces a much smaller change in the angle 2 at a greater distance (see drawing). This non-linear behavior is corrected by the microcontroller, so that the output signal retains a linear relationship with the distance.



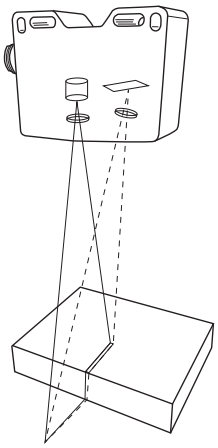
Time of flight (propagation time measurement)

The propagation time measurement is a process for indirect distance measurement by measuring the amount of time that a signal requires to cover the measuring distance. In practice this means that an emitter sends a signal package which is reflected by the object and by the receiver. In the sensor, the propagation time and/or phase shift is evaluated and converted into a distance. Using this propagation time technology, objects can be detected exactly and reliably at great distances.



Light section method

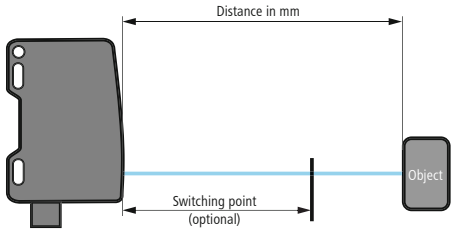
The innovative Baumer multi-spot measuring principle is based on the light section method. On the basis of the triangulation principle, the laser beam, which is up to 62 mm wide, is projected onto a receiver matrix, and up to 600 items of distance information are determined. The intelligent evaluation of this distance information takes place directly in the sensor, which then calculates the resulting distance. Thanks to its resolution of up to 2 µm at a measuring frequency of 500 Hz, the sensor provides exceptionally stable and precise measurement results.



Measurement functions

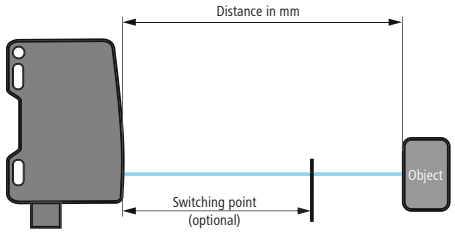
Distance measurements

In the case of distance measurement, the sensor is ready to use immediately and gives the distance from the sensor to the object. The measured value can, for example, be used for the precise positioning of objects or for controlling a system. A digital output can also be parameterized as an option.



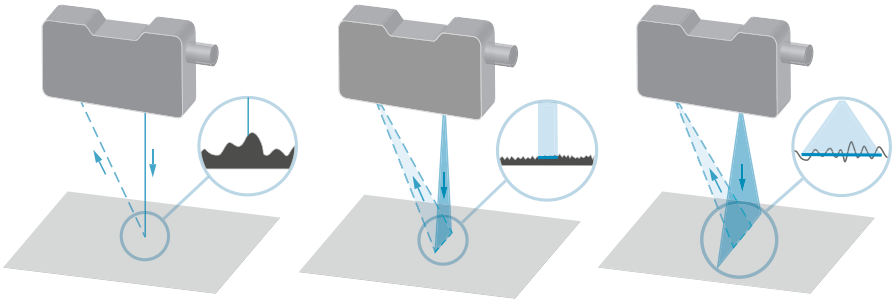
Tolerance measurements

If, for example, the dimensional accuracy of objects is to be checked, a direct tolerance measurement can be made by teaching-in a reference, thus allowing the deviation from the nominal dimension to be determined directly. Here too, a digital output can be parameterized according-



Beam shapes

Besides different dimensions and ranges, the beam shape plays a particularly important role. Thanks to continuous further development, Baumer can now offer three different beam forms in its portfolio with the new «multi-spot» measuring principle:



Laser point

Accurate measurement of small objects thanks to focused laser spot < 0.4 mm

Laser line

Stable measurements on rough surfaces and textured color surfaces thanks to a fine laser line < 10 mm

Multi-spot

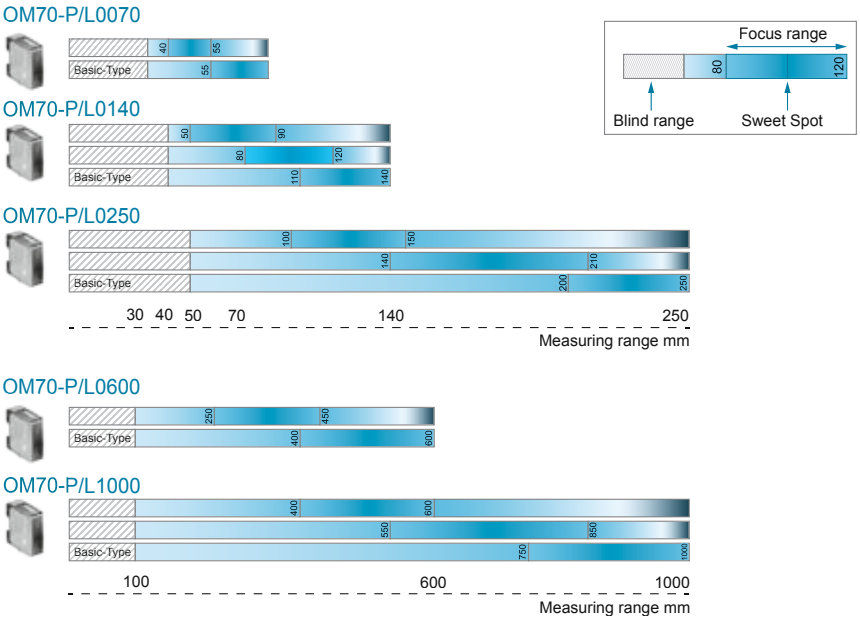
Stable measurements on inhomogeneously shiny and very rough surfaces from over 600 measurements with an extra-wide laser line < 72 mm

Optimal focus ranges for OM70 sensors

Reliable and reproducible measurements

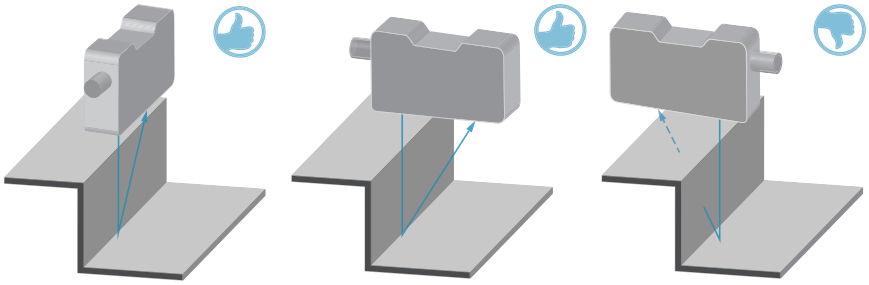
In practice, object surfaces are rarely ideal for optical distance measurement. This often leads to unreliable, unstable measurements. Being the only laser distance sensors on the market, the OM70 sensors therefore offer different focus ranges for the measuring ranges 70, 140, 250, 600 and 1000 mm. This ensures maximum reliability exactly where it is needed in the application.

You are not sure where you want to set the focus range or need the whole measuring range? Then we recommend the basic-type.

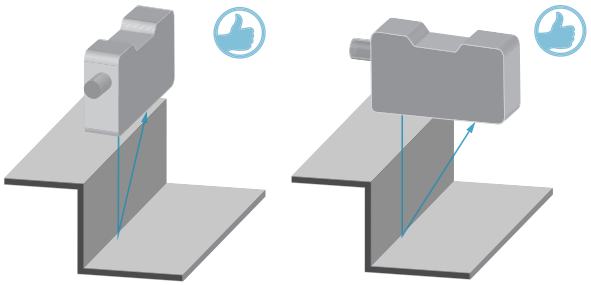


Mounting and adjustment

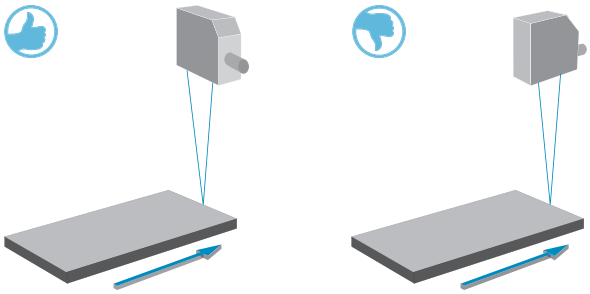
In all distance-measuring sensors, care must be taken to ensure that the laser spot can be directly picked up by the optical system of the receiver and that there are no obstacles in front of the receiver.



With shiny or reflective, surfaces, the reflection may not strike the receiver directly. This can be avoided by tilting the sensor slightly. For optimum measurement results, the sensor must be installed perpendicular to the movement of the object.



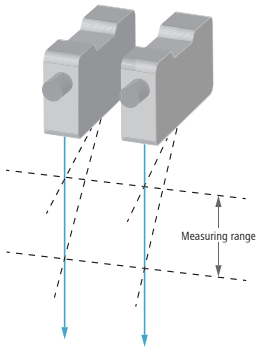
A simple rule applies for triangulation sensors that the distance between the sensor and the object should be kept as small as possible in each application. The shorter the range, the better (more than proportional) the resolution and accuracy.



Note on electromagnetic compatibility: Earth the sensor and use a shielded connecting cable.

Mounting and adjustment

In many applications, several sensors have to be mounted close together. Baumer distance sensors can be arranged side by side without interfering with one another. If mutual interference caused by the installation cannot be avoided, then the sensors can be operated asynchronously using the synchronized input.



Parameterization

Baumer's optical distance sensors have not only analog but also digital interfaces, through which the sensors are parameterized and directly integrated into the existing production environment.

Teach-Button / *qTeach*®

Depending on the application, optical distance sensors which only have one analog output can be restricted in their range and thus re-taught or taught in. This may result in greater accuracy, and thus increased process safety can also be achieved. This is done either using a teach-in button or by means of the contactless *qTeach*® function.

Parameterization by means of the display

An innovative touch display offers the option of setting functions and parameters directly on the display. Depending on the arrangement, this ensures a quick and easy start-up.

- Type of measurement
- Light / dark object
- Filter values
- Analog / digital output

RS 485

The RS 485 serial interface as a bidirectional bus system allows up to 31 sensors to be connected or parameterized. RS 485 also provides fast data transfer of up to 3 Mbit/s, even over longer distances; measured rates of up to 2.5 kHz can be supported in the application.

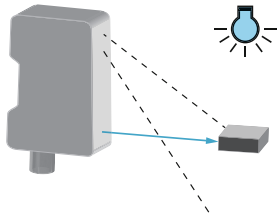
IO-Link

IO-Link allows simple and cost-effective parameterization of optical distance sensors by the PLC. The connection is established by means of a conventional 3-pole M12 cable. Thanks to the standardized interface, IO-Link offers an efficient way to integrate the distance sensors quickly by means of a master at field bus level.

Special features

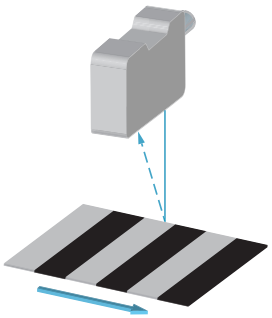
High ambient light immunity

Powerful algorithms integrated in the sensor make laser distance sensors very insensitive to external light sources. This guarantees reliable, robust operation.



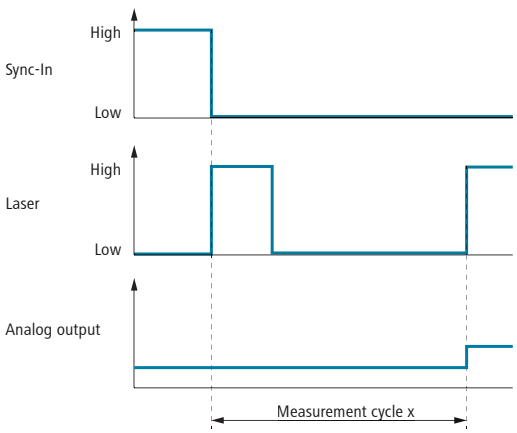
Automatic exposure control

Optical distance sensors by Baumer automatically adapt to different object colors and brightness levels by varying their transmission intensity and optimizing their exposure time. This they are not affected by the reflectivity of an object. It is also possible to measure objects with a reflectivity of up to 2%.



Sync-in / triggering

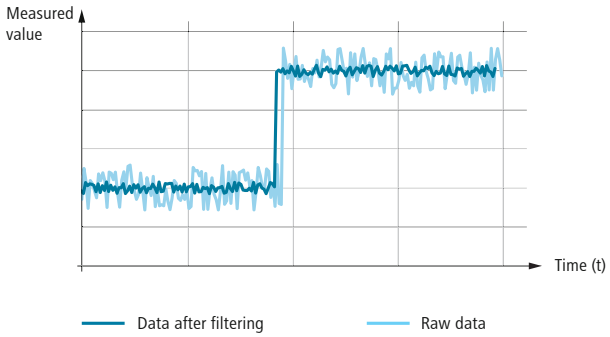
The measurements of several sensors can be synchronized through the sync-in input. For thickness measurements, two sensors can be triggered simultaneously in synchronous mode through the sync input. In asynchronous mode, on the other hand, several sensors that interfere with each other in an application can deliberately be operated one after the other.



Special features

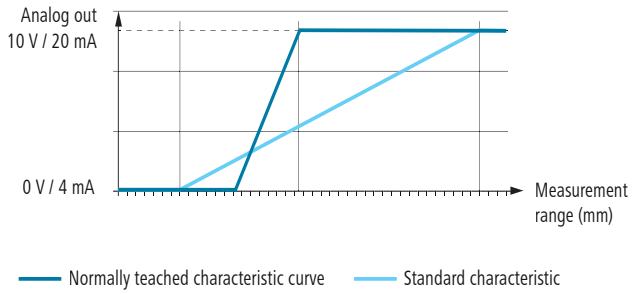
Programmable filter functions

The noise of the output signal can be reduced by activating filtering, thus increasing the resolution. The filter is used to suppress measurement errors. The output changes only after a defined number of measured values. The measuring frequency is not affected by this filter, but the response time is. The filter function can be parameterized through the selection of predefined precision modes.



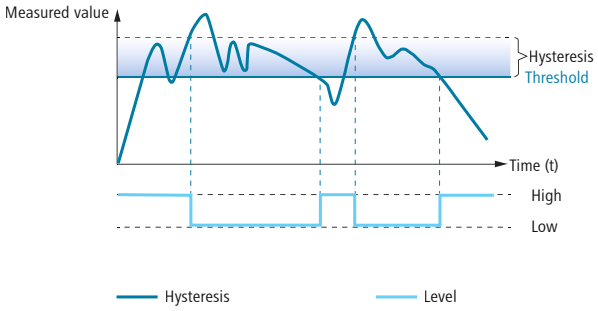
Programmable measuring ranges

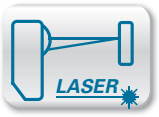
The measuring range can be adjusted by the user within the maximum measuring range with the teach-in button, the teach-in line or through the display. The analog output has its full stroke within this taught-in area and thus higher measuring accuracy. The factory setting is the maximum measuring range.



Configurable switched output

A switched output should switch as soon as a defined measured value exceeds or falls below the set level. For a reliable switching signal, the hysteresis (difference between the switching point and the return switching point) can be parameterized in millimeters in absolute terms. The safe operation of your system is guaranteed, regardless of the position of the object in the field of view.



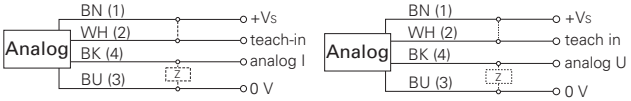


Sd = 16 ... 120 mm

- smallest distance measuring sensor
- teachable measuring range Sr > 1 mm
- resolution up to 2 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
beam type	point
interference suppression	< 30 ms
measuring distance Sd = 16 ... 26 mm	
Teach-in range min.	> 1 mm
resolution	0,002 ... 0,005 mm
linearity error	± 0,006 ... ± 0,015 mm
beam diameter	0,5 ... 0,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 16 ... 120 mm	
Teach-in range min.	> 2 mm
resolution	0,002 ... 0,12 mm
linearity error	± 0,015 ... ± 0,35 mm
beam diameter	0,9 ... 0,5 mm
temperature drift	< 0,06 % Sde/K
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	12,4 mm
height / length	37 mm
depth	34,5 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagrams



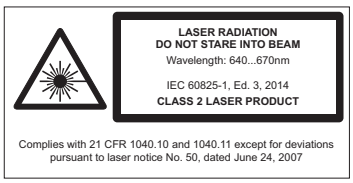
connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10150328	Sensofix series 12
10113873	Mounting bracket series 12 (L design)
for details: see accessories section	

remarks

For objects with a reflectivity < 4 %, the response time / release time is increased automatically up to max. 1,5 ms.
Missed measurement up to 30 cycles (30 ms) will be suppressed. During this time the analog output stays on hold.

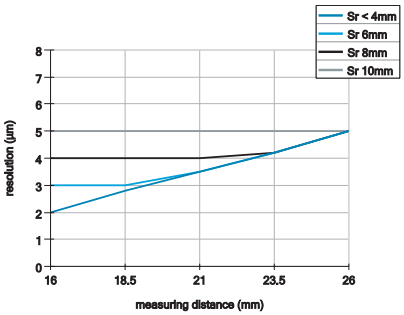
laser warning



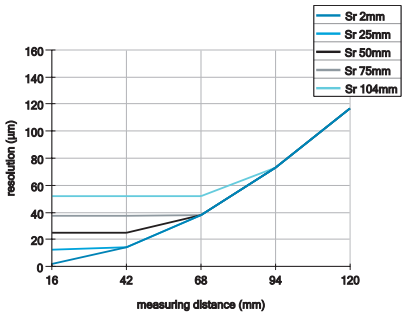
order reference	measuring distance Sd	output signal	load resistance	ambient light immunity
OADM 12I6430/S35A	16 ... 26 mm	4 ... 20 mA	< (+Vs - 6 V) / 0,02 A	< 100 kLux
OADM 12I6460/S35A	16 ... 120 mm	4 ... 20 mA	< (+Vs - 6 V) / 0,02 A	< 30 kLux
OADM 12U6430/S35A	16 ... 26 mm	0 ... 10 VDC	> 100 kOhm	< 100 kLux
OADM 12U6460/S35A	16 ... 120 mm	0 ... 10 VDC	> 100 kOhm	< 30 kLux

resolution

Sd = 16 ... 26 mm

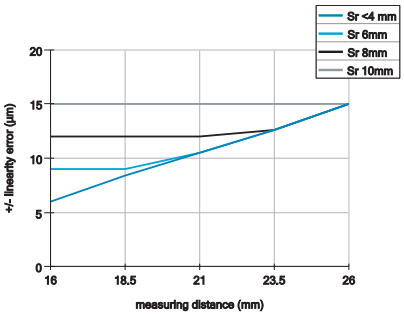


Sd = 16 ... 120 mm

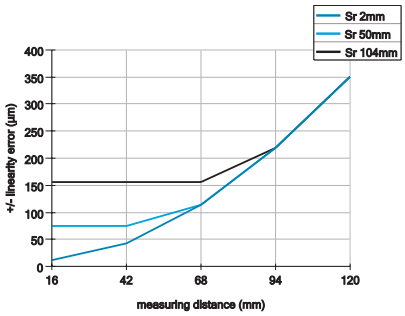


linearity errors

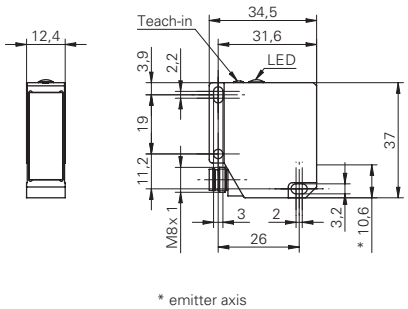
Sd = 16 ... 26 mm



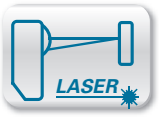
Sd = 16 ... 120 mm



dimension drawing



* emitter axis

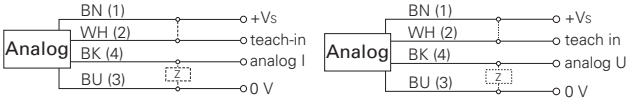


Sd = 16 ... 120 mm

- smallest distance measuring sensor
- teachable measuring range Sr > 1 mm
- resolution up to 2 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	1
beam type	point
interference suppression	< 30 ms
measuring distance Sd = 16 ... 26 mm	
Teach-in range min.	> 1 mm
resolution	0,002 ... 0,005 mm
linearity error	± 0,013 ... ± 0,025 mm
beam diameter	0,5 ... 0,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 16 ... 120 mm	
Teach-in range min.	> 2 mm
resolution	0,002 ... 0,12 mm
linearity error	± 0,015 ... ± 0,35 mm
beam diameter	0,9 ... 0,5 mm
temperature drift	< 0,06 % Sde/K
electrical data	
response time / release time	2 ... 3 ms
voltage supply range +Vs	12 ... 28 VDC
output circuit	analog
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	12,4 mm
height / length	37 mm
depth	34,5 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
ambient light immunity	< 50 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagrams



connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10150328	Sensofix series 12
10113873	Mounting bracket series 12 (L design)
for details: see accessories section	

laser warning

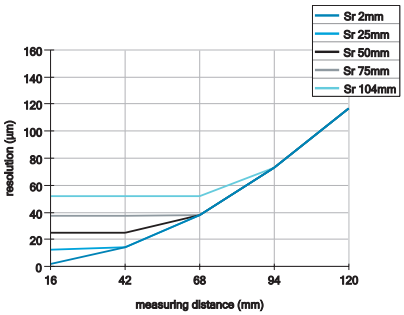
CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

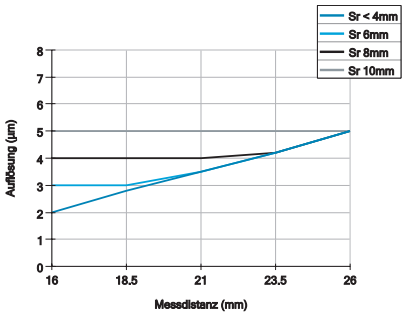
order reference	measuring distance Sd	output signal	current consumption max. (no load)	load resistance
OADM 12I7430/S35A	16 ... 26 mm	4 ... 20 mA	100 mA	< (+Vs - 6 V) / 0,02 A
OADM 12I7460/S35A	16 ... 120 mm	4 ... 20 mA	100 mA	< (+Vs - 6 V) / 0,02 A
OADM 12U7430/S35A	16 ... 26 mm	0 ... 10 VDC	80 mA	> 100 kOhm
OADM 12U7460/S35A	16 ... 120 mm	0 ... 10 VDC	80 mA	> 100 kOhm

resolution

Sd = 16 ... 120 mm

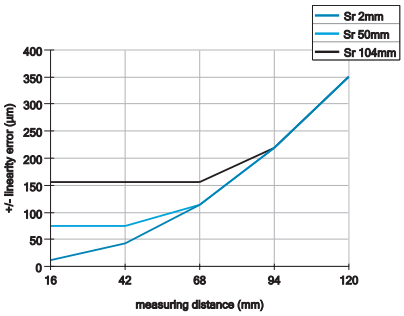


Sd = 16 ... 26 mm

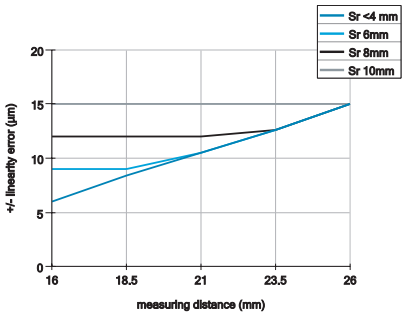


linearity errors

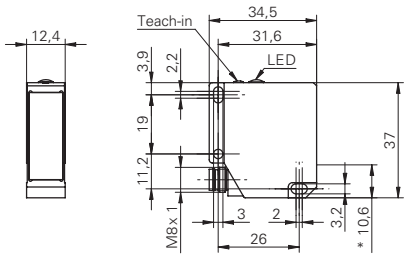
Sd = 16 ... 120 mm



Sd = 16 ... 26 mm



dimension drawing



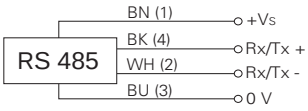
* emitter axis

Sd = 16 ... 120 mm

- smallest distance measuring sensor
- serial interface RS 485
- resolution up to 4 µm

general data	
adjustment	RS 485
power on indication	LED green
light source	pulsed red laser diode
wave length	650 nm
laser class	1
beam type	point
interference suppression	< 30 ms
alarm indicator	LED red
measuring distance Sd = 16 ... 26 mm	
resolution	0,004 ... 0,008 mm
linearity error	± 0,013 ... ± 0,025 mm
beam diameter	0,5 ... 0,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 30 ... 50 mm	
resolution	0,01 ... 0,026 mm
linearity error	± 0,032 ... ± 0,078 mm
beam diameter	0,7 ... 0,4 mm
temperature drift	< 0,06 % Sde/K
measuring distance Sd = 16 ... 120 mm	
resolution	0,012 ... 0,12 mm
linearity error	± 0,026 ... ± 0,35 mm
beam diameter	0,9 ... 0,5 mm
temperature drift	< 0,06 % Sde/K
electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	80 mA
output circuit	RS 485
baud rate	38400, adjustable
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	12,4 mm
height / length	37 mm
depth	34,5 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
ambient light immunity	< 50 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10150328	Sensofix series 12
10113873	Mounting bracket series 12 (L design)
for details: see accessories section	

laser warning

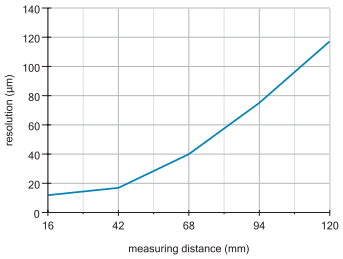
CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

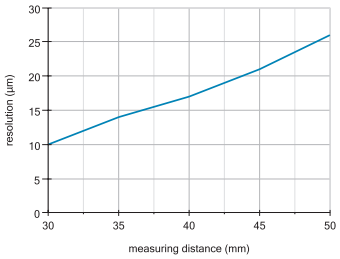
order reference	measuring distance Sd	response time / release time
OADM 12S7430/S35A	16 ... 26 mm	< 1,8 ms
OADM 12S7440/S35A	30 ... 50 mm	< 1,8 ms
OADM 12S7460/S35A	16 ... 120 mm	< 3 ms

resolution

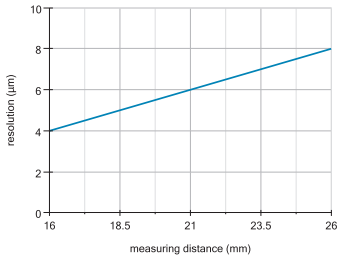
Sd = 16 ... 120 mm



Sd = 30 ... 50 mm

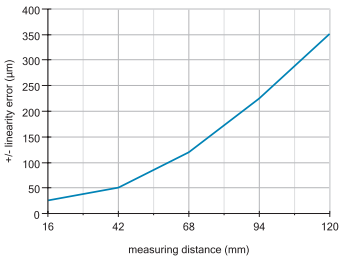


Sd = 16 ... 28 mm

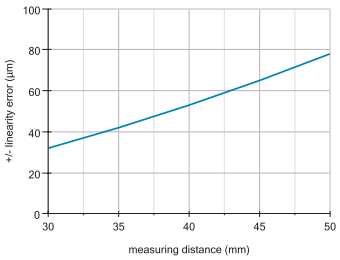


linearity errors

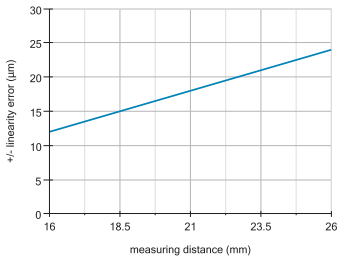
Sd = 16 ... 120 mm



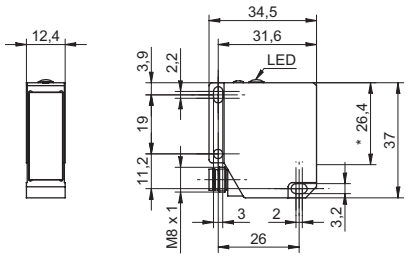
Sd = 30 ... 50 mm



Sd = 16 ... 28 mm



dimension drawing



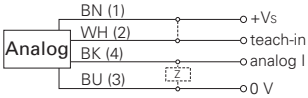
* emitter axis

Sd = 50 ... 550 mm

- compact housing, current output
- teachable measuring range Sr > 5 mm
- resolution up to 10 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
interference suppression	< 30 ms
measuring distance Sd = 50 ... 350 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,4 mm
linearity error	± 0,05 ... ± 1,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 50 ... 550 mm	
Teach-in range min.	> 10 mm
resolution	0,01 ... 1,15 mm
linearity error	± 0,08 ... ± 3,5 mm
temperature drift	< 0,07 % Sde/K
electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA
load resistance	< (+Vs - 6 V) / 0,02 A
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



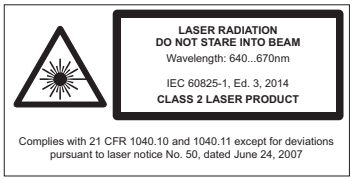
connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

remarks

For objects with a reflectivity < 6 %, the response time / release time is increased automatically up to max. 3 ms (OADM 13x6x75/S35A) resp. 5 ms (OADM 13x7x80/S35A).
Missed measurement up to 30 cycles (30 ms) will be suppressed. During this time the analog output stays on hold.

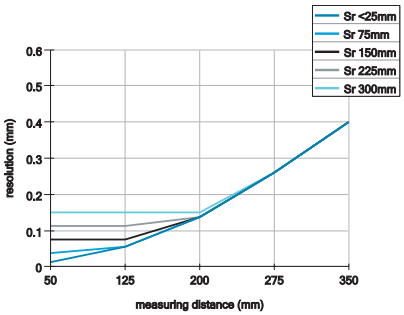
laser warning



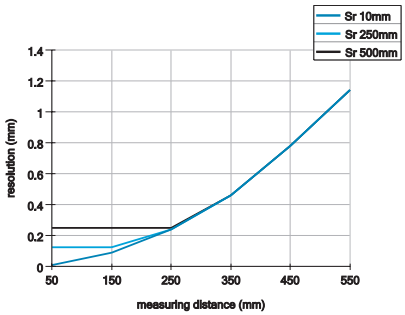
order reference	measuring distance Sd	response time / release time	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 13I6475/S35A	50 ... 350 mm	< 0,9 ms	point	-	-	1 mm	< 20 kLux
OADM 13I6575/S35A	50 ... 350 mm	< 0,9 ms	line	2 mm	4 ... 9 mm	-	< 30 kLux
OADM 13I7480/S35A	50 ... 550 mm	< 2 ms	point	-	-	1 mm	< 40 kLux
OADM 13I7580/S35A	50 ... 550 mm	< 2 ms	line	2 ... 1 mm	4 ... 11 mm	-	< 40 kLux

resolution

Sd = 50 ... 350 mm

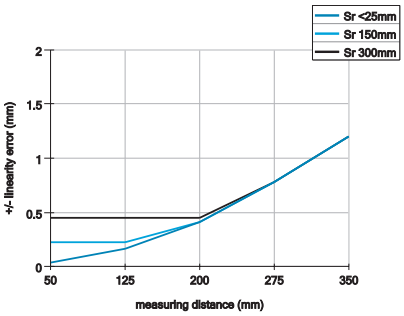


Sd = 50 ... 550 mm

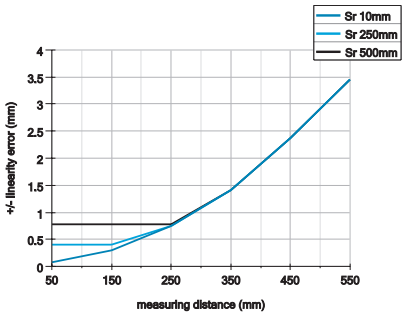


linearity errors

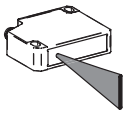
Sd = 50 ... 350 mm



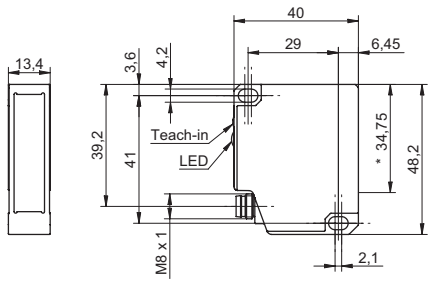
Sd = 50 ... 550 mm



beam alignment (line)



dimension drawing



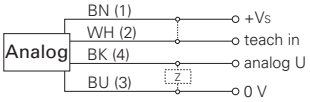
* emitter axis

Sd = 50 ... 550 mm

- compact housing, voltage output
- teachable measuring range Sr > 5 mm
- resolution up to 10 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
interference suppression	< 30 ms
measuring distance Sd = 50 ... 350 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,4 mm
linearity error	± 0,05 ... ± 1,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 50 ... 550 mm	
Teach-in range min.	> 10 mm
resolution	0,01 ... 1,15 mm
linearity error	± 0,08 ... ± 3,5 mm
temperature drift	< 0,07 % Sde/K
electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	0 ... 10 VDC
load resistance	> 100 kOhm
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



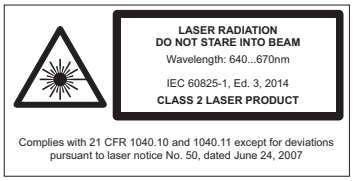
connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

remarks

For objects with a reflectivity < 6 %, the response time / release time is increased automatically up to max. 3 ms (OADM 13x6x75/S35A) resp. 5 ms (OADM 13x7x80/S35A).
Missed measurement up to 30 cycles (30 ms) will be suppressed. During this time the analog output stays on hold.

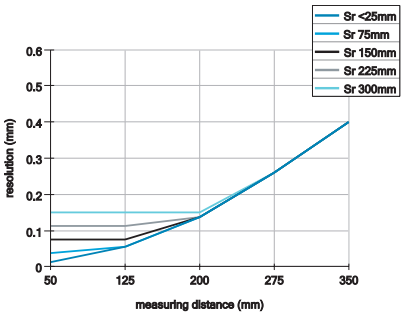
laser warning



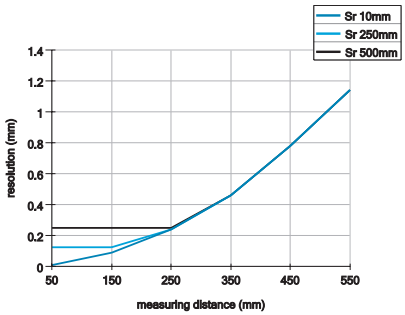
order reference	measuring distance Sd	response time / release time	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 13U6475/S35A	50 ... 350 mm	< 0,9 ms	point	-	-	1 mm	< 20 kLux
OADM 13U6575/S35A	50 ... 350 mm	< 0,9 ms	line	2 mm	4 ... 9 mm	-	< 30 kLux
OADM 13U7480/S35A	50 ... 550 mm	< 2 ms	point	-	-	1 mm	< 40 kLux
OADM 13U7580/S35A	50 ... 550 mm	< 2 ms	line	2 ... 1 mm	4 ... 11 mm	-	< 40 kLux

resolution

Sd = 50 ... 350 mm

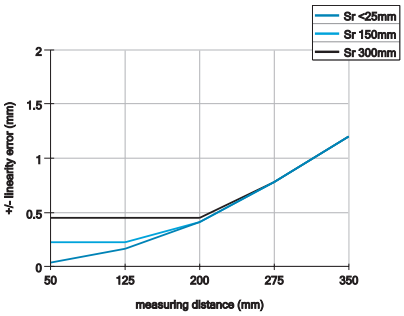


Sd = 50 ... 550 mm

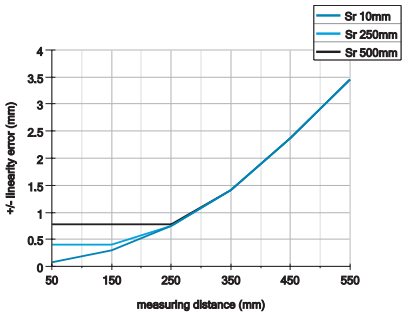


linearity errors

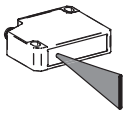
Sd = 50 ... 350 mm



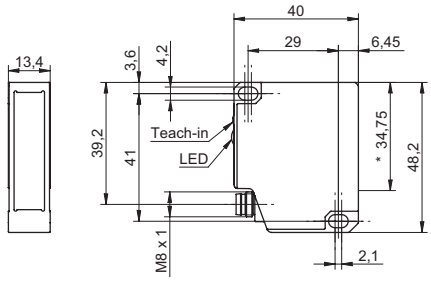
Sd = 50 ... 550 mm



beam alignment (line)



dimension drawing



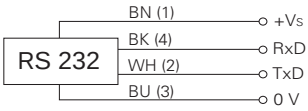
* emitter axis

Sd = 50 ... 550 mm

- serial interface RS 232
- resolution up to 50 µm
- also with laser line for rough surfaces

general data	
adjustment	RS 232
power on indication	LED green
light source	pulsed red laser diode
wave length	650 nm
laser class	2
alarm indicator	LED red
measuring distance Sd = 50 ... 350 mm	
resolution	0,05 ... 0,4 mm
linearity error	± 0,18 ... ± 1,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 50 ... 550 mm	
resolution	0,09 ... 1,15 mm
linearity error	± 0,3 ... ± 3,5 mm
temperature drift	< 0,07 % Sde/K
electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	80 mA
output circuit	RS 232
baud rate	38400, adjustable
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

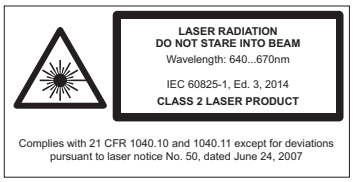
connection diagram



connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

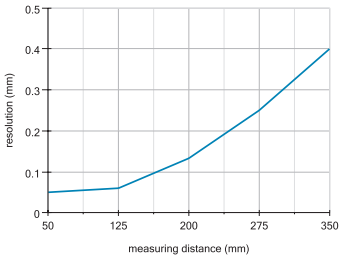
laser warning



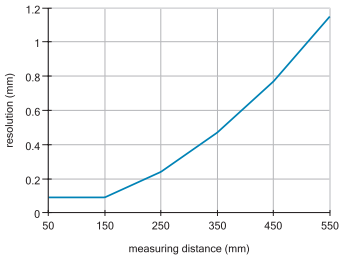
order reference	measuring distance Sd	response time / release time	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 13T6475/S35A	50 ... 350 mm	< 0,9 ms	point	-	-	1 mm	< 20 kLux
OADM 13T6575/S35A	50 ... 350 mm	< 0,9 ms	line	2 mm	4 ... 9 mm	-	< 30 kLux
OADM 13T7480/S35A	50 ... 550 mm	< 2 ms	point	-	-	1 mm	< 100 kLux
OADM 13T7580/S35A	50 ... 550 mm	< 2 ms	line	2 mm	4 ... 13 mm	-	< 100 kLux

resolution

Sd = 50 ... 350 mm

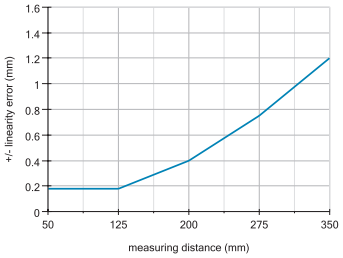


Sd = 50 ... 550 mm

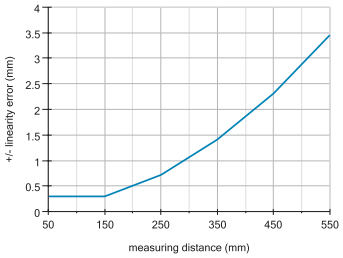


linearity errors

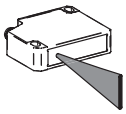
Sd = 50 ... 350 mm



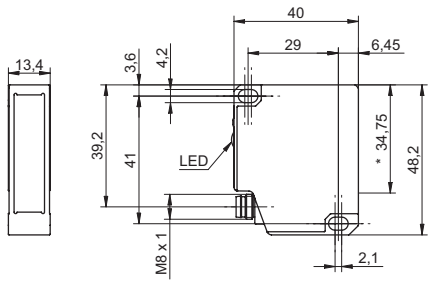
Sd = 50 ... 550 mm



beam alignment (line)



dimension drawing



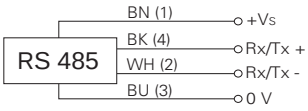
* emitter axis

Sd = 50 ... 550 mm

- serial interface RS 485
- resolution up to 50 µm
- also with laser line for rough surfaces

general data	
adjustment	RS 485
power on indication	LED green
light source	pulsed red laser diode
wave length	650 nm
laser class	2
alarm indicator	LED red
measuring distance Sd = 50 ... 350 mm	
resolution	0,05 ... 0,4 mm
linearity error	± 0,18 ... ± 1,2 mm
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 50 ... 550 mm	
resolution	0,09 ... 1,15 mm
linearity error	± 0,3 ... ± 3,5 mm
temperature drift	< 0,07 % Sde/K
electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	80 mA
output circuit	RS 485
baud rate	38400, adjustable
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

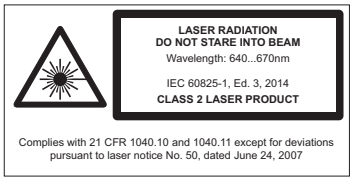
connection diagram



connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

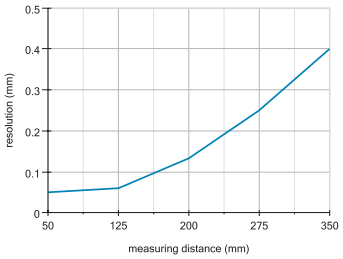
laser warning



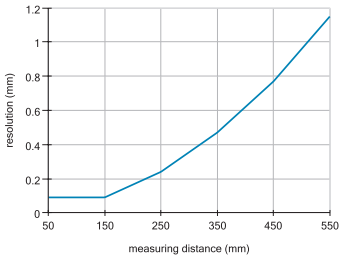
order reference	measuring distance Sd	response time / release time	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 13S6475/S35A	50 ... 350 mm	< 0,9 ms	point	-	-	1 mm	< 20 kLux
OADM 13S6575/S35A	50 ... 350 mm	< 0,9 ms	line	2 mm	4 ... 9 mm	-	< 30 kLux
OADM 13S7480/S35A	50 ... 550 mm	< 2 ms	point	-	-	1 mm	< 100 kLux
OADM 13S7580/S35A	50 ... 550 mm	< 2 ms	line	2 mm	4 ... 13 mm	-	< 100 kLux

resolution

Sd = 50 ... 350 mm

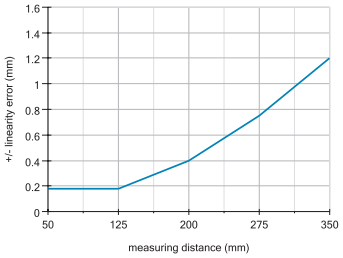


Sd = 50 ... 550 mm

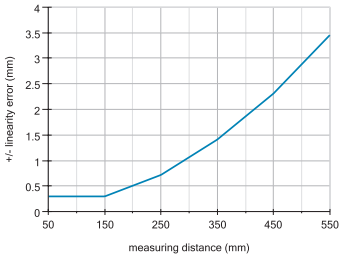


linearity errors

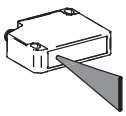
Sd = 50 ... 350 mm



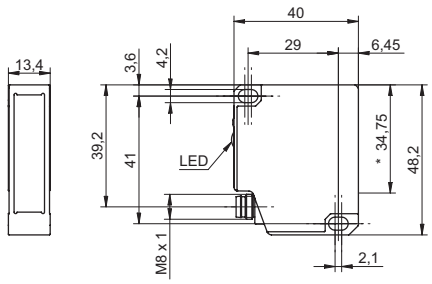
Sd = 50 ... 550 mm



beam alignment (line)



dimension drawing



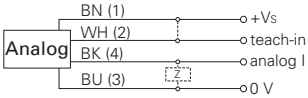
* emitter axis

Sd = 50 ... 200 mm

- compact housing, current output
- high sensitivity
- fine laser line

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	1
beam type	line
interference suppression	< 30 ms
temperature drift	< 0,07 % Sde/K
measuring distance Sd = 50 ... 60 mm	
Teach-in range min.	> 1 mm
resolution	< 0,015 mm
linearity error	< 0,045 mm
object reflectivity	> 0,5 %
measuring distance Sd = 60 ... 100 mm	
Teach-in range min.	> 4 mm
resolution	0,015 ... 0,038 mm
linearity error	± 0,047 ... ± 0,118 mm
object reflectivity	> 0,8 %
measuring distance Sd = 100 ... 200 mm	
Teach-in range min.	> 5 mm
resolution	0,039 ... 0,15 mm
linearity error	± 0,123 ... ± 0,457 mm
object reflectivity	> 2 %
electrical data	
response time / release time	< 2 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA
load resistance	< (+Vs - 6 V) / 0,02 A
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
ambient light immunity	< 100 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

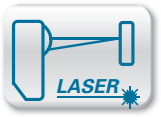
remarks

Missed measurement up to 15 cycles (30 ms) will be suppressed.
During this time the analog output stays on hold.

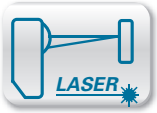
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

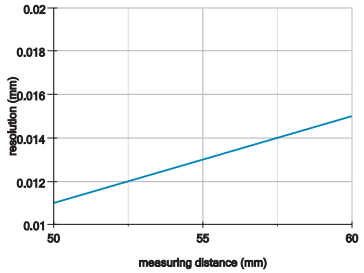


order reference	measuring distance Sd
OADM 13I7730/S35A	50 ... 60 mm
OADM 13I7745/S35A	60 ... 100 mm
OADM 13I7760/S35A	100 ... 200 mm

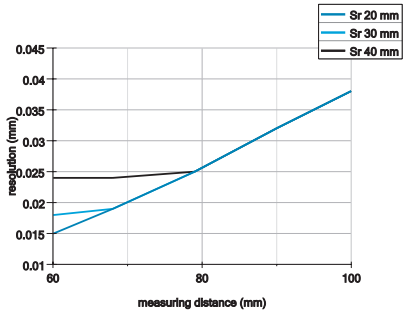


resolution

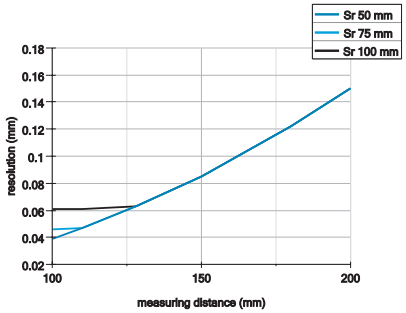
Sd = 50 ... 60 mm



Sd = 60 ... 100 mm

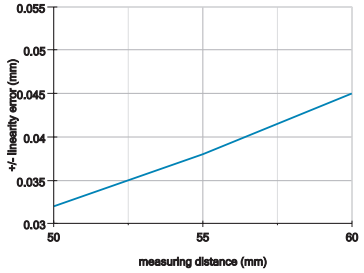


Sd = 100 ... 200 mm

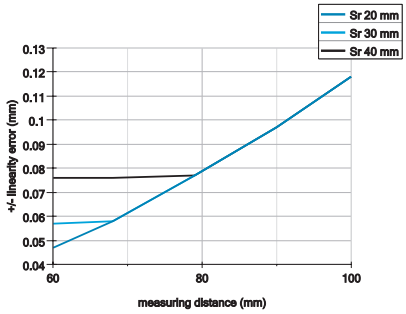


linearity errors

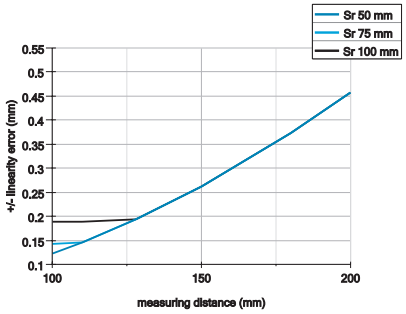
Sd = 50 ... 60 mm



Sd = 60 ... 100 mm

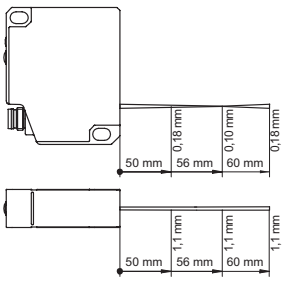


Sd = 100 ... 200 mm

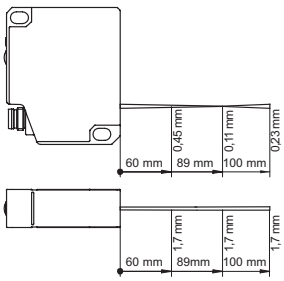


beam alignment (line)

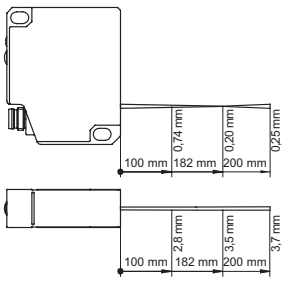
Sd = 50 ... 60 mm



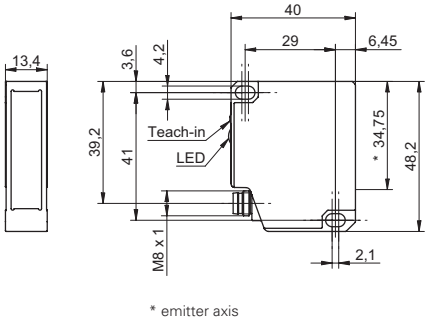
Sd = 60 ... 100 mm



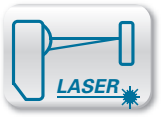
Sd = 100 ... 200 mm

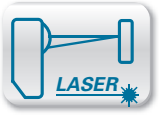


dimension drawing



* emitter axis


LASER



Sd = 50 ... 200 mm

- compact housing, voltage output
- high sensitivity
- fine laser line

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	1
beam type	line
interference suppression	< 30 ms
temperature drift	< 0,07 % Sde/K
measuring distance Sd = 50 ... 60 mm	
Teach-in range min.	> 1 mm
resolution	< 0,015 mm
linearity error	< 0,045 mm
object reflectivity	> 0,5 %
measuring distance Sd = 60 ... 100 mm	
Teach-in range min.	> 4 mm
resolution	0,015 ... 0,038 mm
linearity error	± 0,047 ... ± 0,118 mm
object reflectivity	> 0,8 %
measuring distance Sd = 100 ... 200 mm	
Teach-in range min.	> 5 mm
resolution	0,039 ... 0,15 mm
linearity error	± 0,123 ... ± 0,457 mm
object reflectivity	> 2 %
electrical data	
response time / release time	< 2 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	0 ... 10 VDC
load resistance	> 100 kOhm
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	13,4 mm
height / length	48,2 mm
depth	40 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M8 4 pin
ambient conditions	
ambient light immunity	< 100 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram

connectors and mating connectors	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10161829	Sensofix series 13
10161695	Mounting bracket for sensors series 13 (L design)
for details: see accessories section	

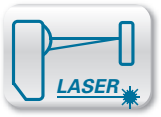
remarks

Missed measurement up to 15 cycles (30 ms) will be suppressed.
During this time the analog output stays on hold.

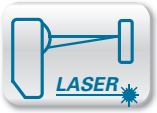
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

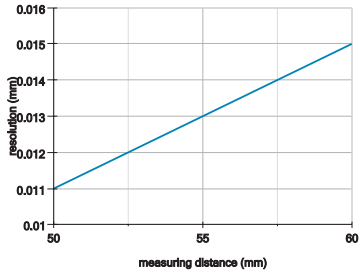


order reference	measuring distance Sd
OADM 13U7730/S35A	50 ... 60 mm
OADM 13U7745/S35A	60 ... 100 mm
OADM 13U7760/S35A	100 ... 200 mm

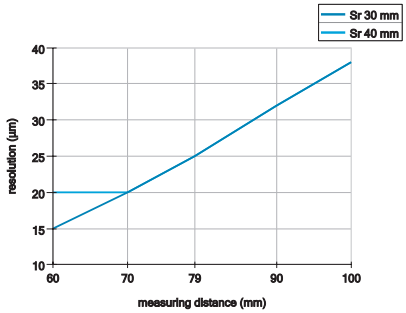


resolution

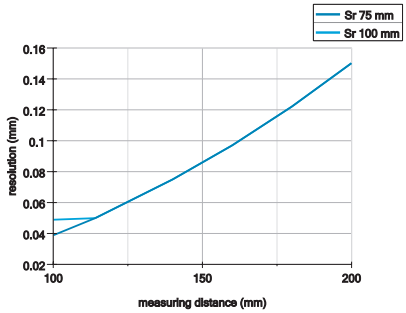
Sd = 50 ... 60 mm



Sd = 60 ... 100 mm

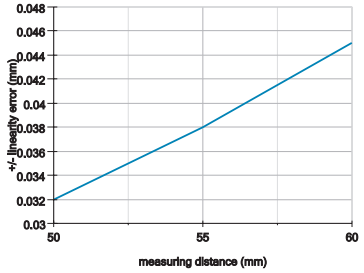


Sd = 100 ... 200 mm

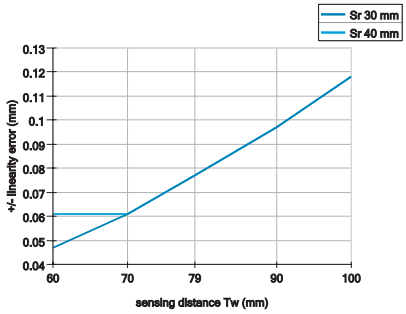


linearity errors

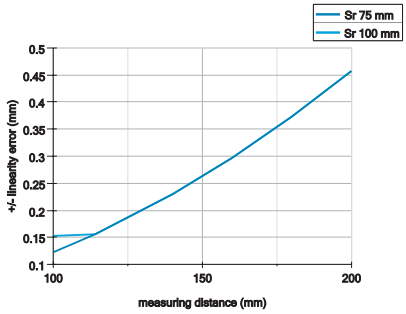
Sd = 50 ... 60 mm



Sd = 60 ... 100 mm

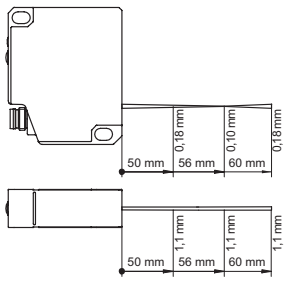


Sd = 100 ... 200 mm

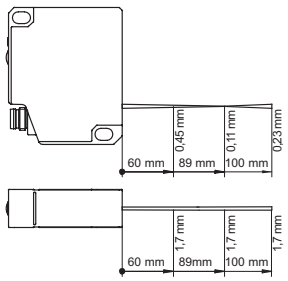


beam alignment (line)

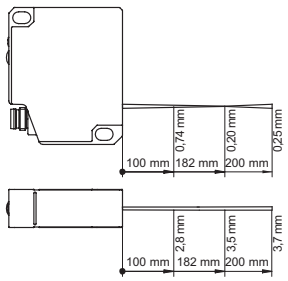
Sd = 50 ... 60 mm



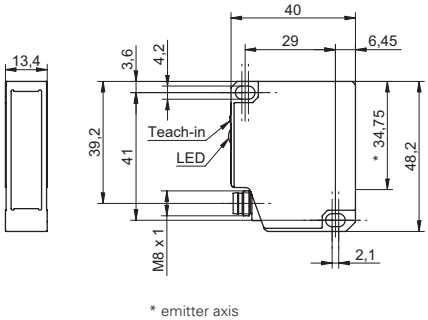
Sd = 60 ... 100 mm



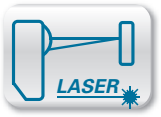
Sd = 100 ... 200 mm



dimension drawing



* emitter axis

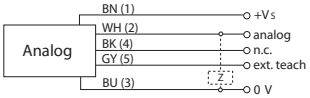

LASER

Sd = 30 ... 130 mm

- response time < 0,9 ms
- teachable measuring range Sr >2 mm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
beam type	point
measuring distance Sd = 30 ... 70 mm	
Teach-in range min.	> 2 mm
resolution	0,004 ... 0,02 mm
linearity error	± 0,012 ... ± 0,06 mm
beam diameter	1 ... 0,2 mm
measuring distance Sd = 30 ... 130 mm	
Teach-in range min.	> 3 mm
resolution	0,005 ... 0,06 mm
linearity error	± 0,015 ... ± 0,2 mm
beam diameter	2 ... 1 mm
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,6 mm
height / length	65 mm
depth	50 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M12 5 pin, rotatable
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



connectors and mating connectors

ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded

additional cable connectors and field wireable connectors: see accessories

Accessories

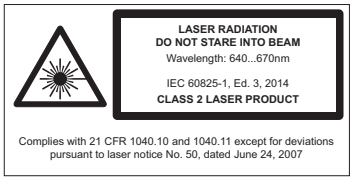
11010227	Mounting bracket OxDM 20
10156878	Protector cap OxDM 20

for details: see accessories section

remarks

Missed measurements up to 30 cycles will be suppressed. During this time the analog output stays on hold.

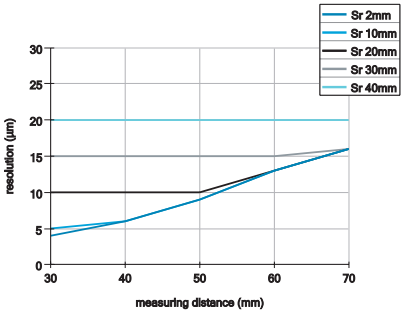
laser warning



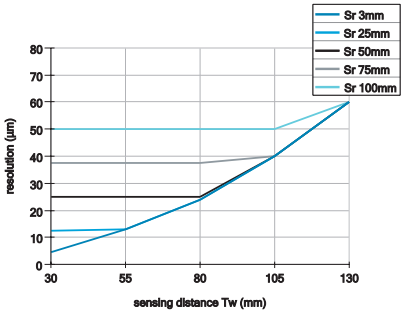
order reference	measuring distance Sd	output signal	load resistance (analog U)	load resistance (analog I)
OADM 20I2441/S14C	30 ... 70 mm	4 ... 20 mA	-	< (+Vs - 6 V) / 0,02 A
OADM 20I2460/S14C	30 ... 130 mm	4 ... 20 mA	-	< (+Vs - 6 V) / 0,02 A
OADM 20U2441/S14C	30 ... 70 mm	0 ... 10 VDC	> 100 kOhm	-
OADM 20U2460/S14C	30 ... 130 mm	0 ... 10 VDC	> 100 kOhm	-

resolution

Sd = 30 ... 70 mm

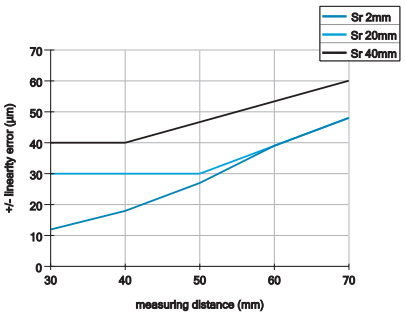


Sd = 30 ... 130 mm

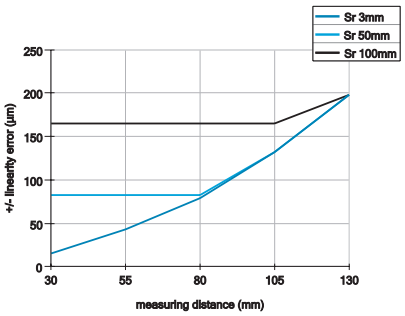


linearity errors

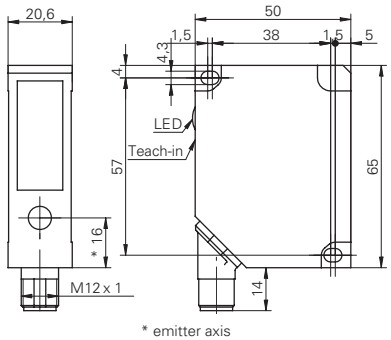
Sd = 30 ... 70 mm



Sd = 30 ... 130 mm



dimension drawing

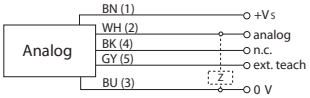


Sd = 50 ... 600 mm

- response time < 0,9 ms
- teachable measuring range Sr > 5 mm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
beam type	point
beam diameter	2 mm
measuring distance Sd = 50 ... 300 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,33 mm
linearity error	± 0,03 ... ± 1 mm
measuring distance Sd = 100 ... 600 mm	
Teach-in range min.	> 10 mm
resolution	0,015 ... 0,67 mm
linearity error	± 0,05 ... ± 2 mm
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,6 mm
height / length	65 mm
depth	50 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M12 5 pin, rotatable
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



connectors and mating connectors

ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded

additional cable connectors and field wireable connectors: see accessories

Accessories

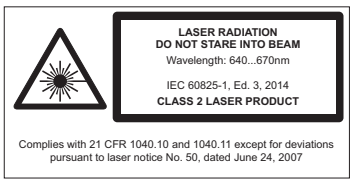
11010227	Mounting bracket OxDM 20
10156878	Protector cap OxDM 20

for details: see accessories section

remarks

For objects with a reflectivity < 7% (OADM 20x2480/S14C), the response / release time is increased automatically up to max. 2,8 ms. Missed measurements up to 30 cycles will be suppressed. During this time the analog output stays on hold.

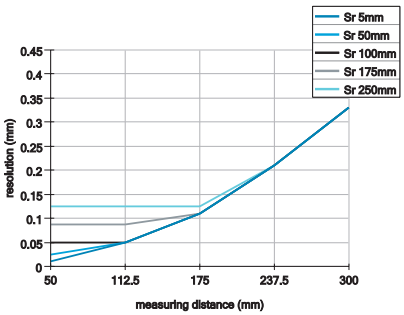
laser warning



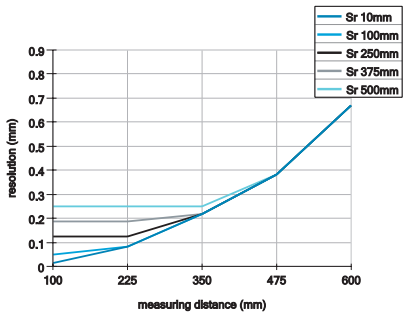
order reference	measuring distance Sd	output signal	load resistance (analog U)	load resistance (analog I)
OADM 20I2472/S14C	50 ... 300 mm	4 ... 20 mA	-	< (+Vs - 6 V) / 0,02 A
OADM 20I2480/S14C	100 ... 600 mm	4 ... 20 mA	-	< (+Vs - 6 V) / 0,02 A
OADM 20U2472/S14C	50 ... 300 mm	0 ... 10 VDC	> 100 kOhm	-
OADM 20U2480/S14C	100 ... 600 mm	0 ... 10 VDC	> 100 kOhm	-

resolution

Sd = 50 ... 300 mm

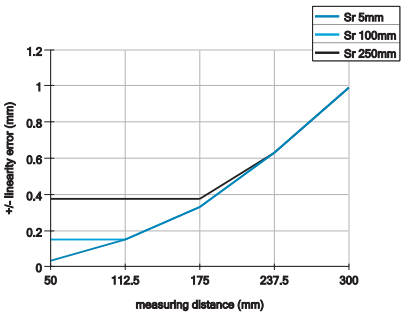


Sd = 100 ... 600 mm

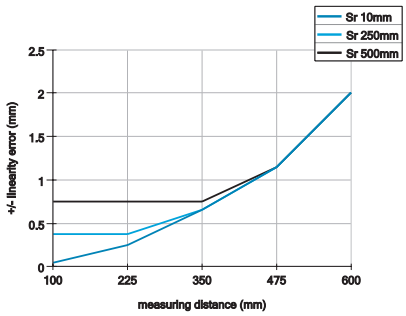


linearity errors

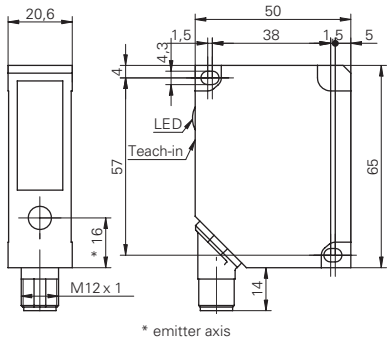
Sd = 50 ... 300 mm



Sd = 100 ... 600 mm



dimension drawing

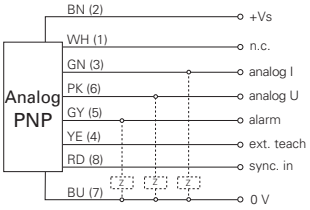


Sd = 30 ... 300 mm

- response time < 0,9 ms
- teachable measuring range Sr > 2 mm
- resolution up to 4 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
measuring distance Sd = 30 ... 70 mm	
Teach-in range min.	> 2 mm
resolution	0,004 ... 0,02 mm
linearity error	± 0,012 ... ± 0,06 mm
temperature drift	< 0,015 % Sde/K
measuring distance Sd = 30 ... 130 mm	
Teach-in range min.	> 3 mm
resolution	0,005 ... 0,06 mm
linearity error	± 0,015 ... ± 0,2 mm
temperature drift	< 0,03 % Sde/K
measuring distance Sd = 50 ... 300 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,33 mm
linearity error	± 0,03 ... ± 1 mm
temperature drift	< 0,03 % Sde/K
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA / 0 ... 10 VDC
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	PNP
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,6 mm
height / length	65 mm
depth	50 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M12 8 pin, rotatable
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



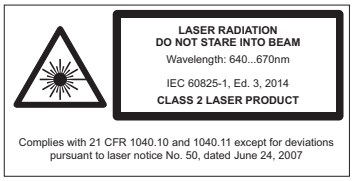
connectors and mating connectors

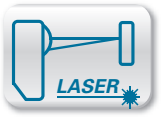
ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

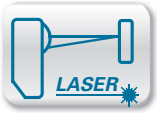
11010227	Mounting bracket OxDM 20
10156878	Protector cap OxDM 20
for details: see accessories section	

laser warning



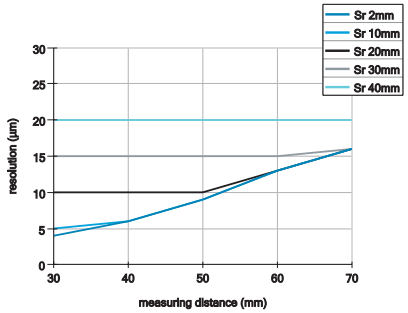


order reference	measuring distance Sd	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 20I6441/S14F	30 ... 70 mm	point	-	-	1 ... 0,2 mm	< 50 kLux
OADM 20I6460/S14F	30 ... 130 mm	point	-	-	2 ... 1 mm	< 40 kLux
OADM 20I6472/S14F	50 ... 300 mm	point	-	-	2 mm	< 8 kLux
OADM 20I6541/S14F	30 ... 70 mm	line	1 ... 0,2 mm	2 mm	-	< 50 kLux
OADM 20I6560/S14F	30 ... 130 mm	line	2 ... 1 mm	3 ... 5 mm	-	< 40 kLux
OADM 20I6572/S14F	50 ... 300 mm	line	2,5 mm	4 ... 12 mm	-	< 8 kLux

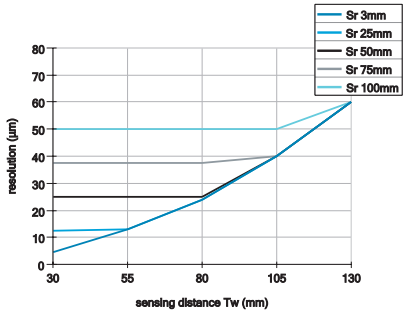


resolution

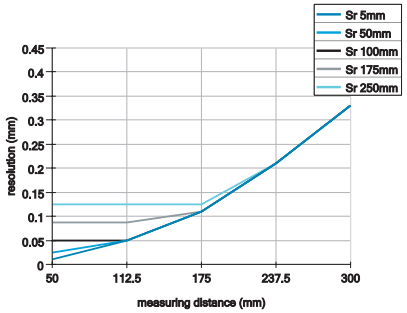
Sd = 30 ... 70 mm



Sd = 30 ... 130 mm

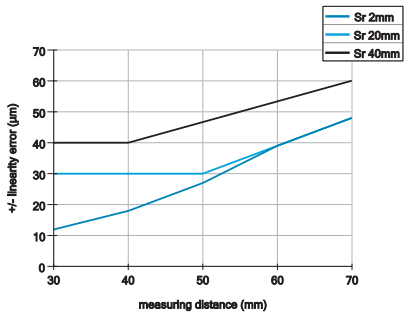


Sd = 50 ... 300 mm

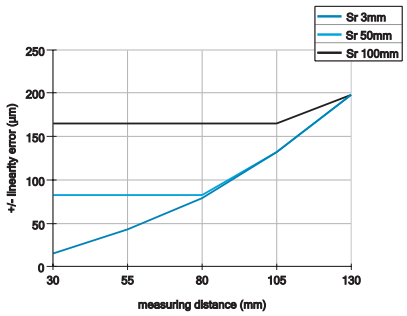


linearity errors

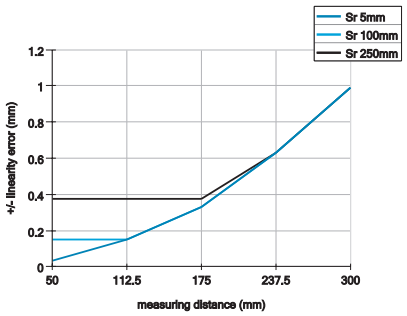
Sd = 30 ... 70 mm



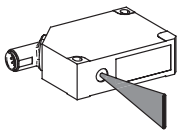
Sd = 30 ... 130 mm



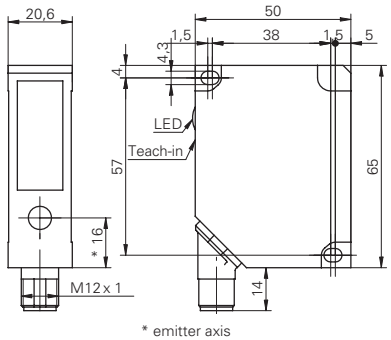
Sd = 50 ... 300 mm

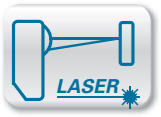


beam alignment (line)



dimension drawing



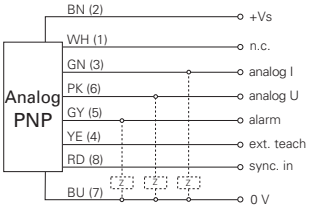

LASER

Sd = 100 ... 1000 mm

- response time < 0,9 ms
- teachable measuring range Sr > 10 mm
- resolution up to 15 µm

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
measuring distance Sd = 100 ... 600 mm	
Teach-in range min.	> 10 mm
resolution	0,015 ... 0,67 mm
linearity error	± 0,05 ... ± 2 mm
temperature drift	< 0,03 % Sde/K
measuring distance Sd = 200 ... 1000 mm	
Teach-in range min.	> 20 mm
resolution	0,12 ... 2,5 mm
linearity error	± 0,48 ... ± 10 mm
temperature drift	< 0,06 % Sde/K
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA / 0 ... 10 VDC
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	PNP
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,6 mm
height / length	65 mm
depth	50 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	connector M12 8 pin, rotatable
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

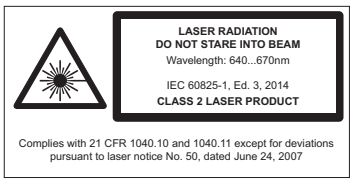
Accessories

11010227	Mounting bracket OxDM 20
10156878	Protector cap OxDM 20
for details: see accessories section	

remarks

For objects with a reflectivity < 7 % (OADM 20I6x80/S14F) or < 15 % (OADM 20I6x81/S14F) the response time/release time is increased automatically up to 2,8 ms.

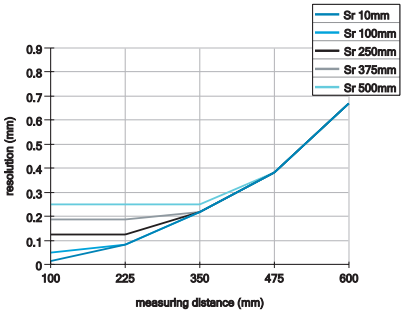
laser warning



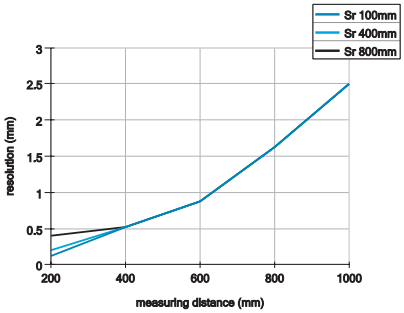
order reference	measuring distance Sd	beam type	beam width	beam height	beam diameter	ambient light immunity
OADM 20I6480/S14F	100 ... 600 mm	point	-	-	2 mm	< 10 kLux
OADM 20I6481/S14F	200 ... 1000 mm	point	-	-	2 mm	< 5 kLux
OADM 20I6580/S14F	100 ... 600 mm	line	2,5 mm	5,5 ... 21 mm	-	< 10 kLux
OADM 20I6581/S14F	200 ... 1000 mm	line	2,5 mm	8,5 ... 35 mm	-	< 5 kLux

resolution

Sd = 100 ... 600 mm

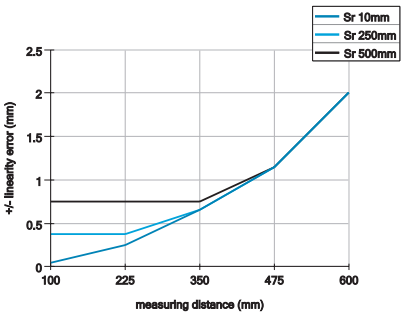


Sd = 200 ... 1000 mm

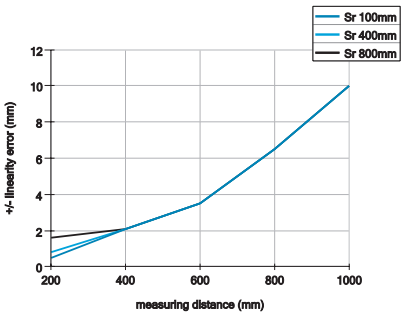


linearity errors

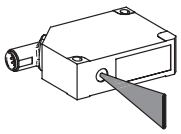
Sd = 100 ... 600 mm



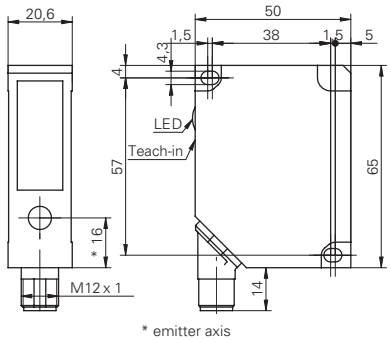
Sd = 200 ... 1000 mm



beam alignment (line)



dimension drawing



Sd = 50 ... 1000 mm

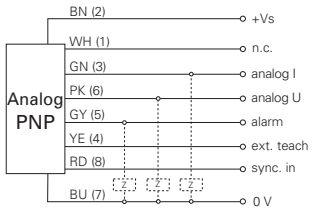
- for demanding applications
- very high ambient light immunity
- extremely vibration resistant

general data	
adjustment	Teach-in: button / external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
beam type	line
temperature drift	< 0,04 % Sde/K
measuring distance Sd = 50 ... 300 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,4 mm
linearity error	± 0,2 ... ± 1,5 mm
beam width	2 mm
beam height	6 ... 11 mm
measuring distance Sd = 100 ... 600 mm	
Teach-in range min.	> 10 mm
resolution	0,015 ... 0,8 mm
linearity error	± 0,5 ... ± 3,4 mm
beam width	2 mm
beam height	7 ... 17 mm
measuring distance Sd = 200 ... 1000 mm	
Teach-in range min.	> 20 mm
resolution	0,12 ... 3 mm
linearity error	± 0,36 ... ± 9 mm
beam width	3 ... 1 mm
beam height	8 ... 25 mm

electrical data	
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output signal	4 ... 20 mA / 0 ... 10 VDC
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	PNP
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,6 mm
height / length	65 mm
depth	50 mm
type	rectangular
housing material	die-cast zinc
front (optics)	glass
connection types	cable 8 pin, 2 m
ambient conditions	
operating temperature	-20 ... +60 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 30 g at f = 10 - 2000 Hz, cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-29:2009 75 g / 6 ms, 4000 jolts per axis and direction

order reference	measuring distance Sd	response time / release time	short circuit protection	ambient light immunity
OADM 20I6591	50 ... 300 mm	< 2 ms	yes	< 100 kLux
OADM 20I6592	100 ... 600 mm	< 2,5 ms	yes	< 100 kLux
OADM 20I6593	200 ... 1000 mm	< 3,5 ms	-	< 60 kLux

connection diagram



Accessories

11010227	Mounting bracket OxDM 20
10156878	Protector cap OxDM 20

for details: see accessories section

remarks

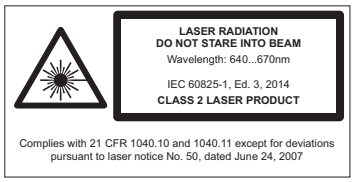
Fault suppression
If the laser beam is interrupted or if measurement faults occur, the analog outputs and the alarm output remain at their most recent valid value for a max. of 300 ms. Every valid value is immediately passed on to the outputs. If no valid value appears within 300 ms, the analog outputs switch to 4 mA / 0 V and the alarm output goes to HIGH.

Vibration stability:
- IEC 60068-2-6 (30 g, 10-2000 Hz, per axis)

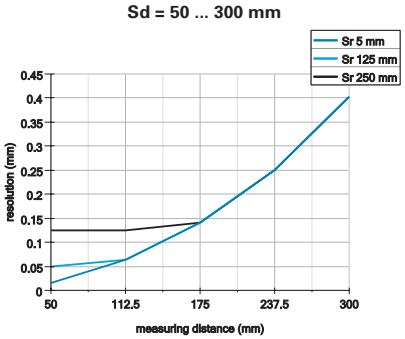
Random stability:
- IEC 60068-2-64 (0,4 g2/Hz, 20-1000 Hz, per axis)

Bump stability:
- IEC 60068-2-29 (75 g, 6 ms, 4000 pulses per axis and direction)

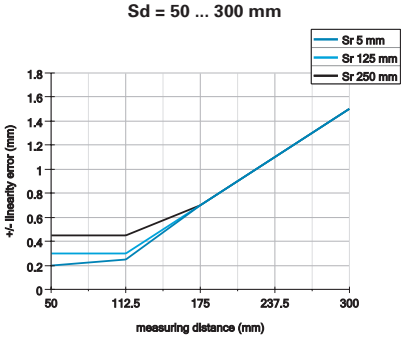
laser warning



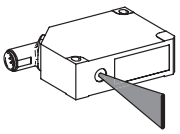
resolution



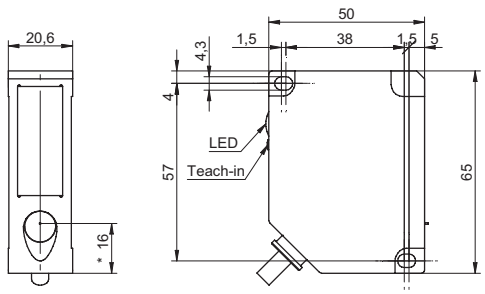
linearity errors



beam alignment (line)



dimension drawing



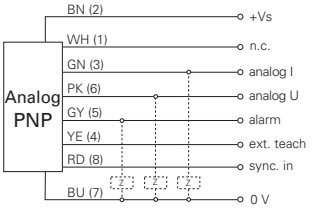
* emitter axis

Sd = 30 ... 600 mm

- washdown design
- Ecolab approved
- front screen PMMA

general data	
special type	Washdown design
adjustment	external
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
temperature drift	< 0,03 % Sde/K
approvals/certificates	Ecolab
measuring distance Sd = 30 ... 130 mm	
Teach-in range min.	> 3 mm
resolution	0,005 ... 0,06 mm
linearity error	± 0,015 ... ± 0,2 mm
measuring distance Sd = 50 ... 300 mm	
Teach-in range min.	> 5 mm
resolution	0,01 ... 0,33 mm
linearity error	± 0,03 ... ± 1 mm
measuring distance Sd = 100 ... 600 mm	
Teach-in range min.	> 10 mm
resolution	0,015 ... 0,67 mm
linearity error	± 0,05 ... ± 2 mm
electrical data	
response time / release time	< 0,9 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA / 0 ... 10 VDC
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	PNP
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,3 mm
height / length	65 mm
depth	51 mm
type	rectangular
housing material	stainless steel 1.4404 (V4A)
front (optics)	PMMA
connection types	connector M12 8 pin
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 69K & proTect+

connection diagram



connectors and mating connectors

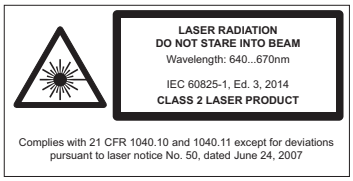
ESG 34FF0500G	Connector M12, 8 pin, straight, 5 m, Niro, shielded

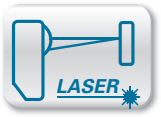
additional cable connectors and field wireable connectors: see accessories

remarks

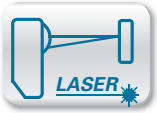
For objects with a reflectivity < 7 % (OADR 20I6x85/S14F) the response time/release time is increased automatically up to 2.8 ms.

laser warning



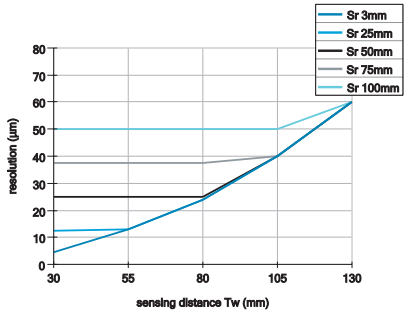


order reference	measuring distance Sd	beam type	beam width	beam height	beam diameter	ambient light immunity
OADR 20I6465/S14F	30 ... 130 mm	point	-	-	2 ... 1 mm	< 40 kLux
OADR 20I6475/S14F	50 ... 300 mm	point	-	-	2 mm	< 8 kLux
OADR 20I6485/S14F	100 ... 600 mm	point	-	-	2 mm	< 10 kLux
OADR 20I6565/S14F	30 ... 130 mm	line	2 ... 1 mm	3 ... 5 mm	-	< 40 kLux
OADR 20I6575/S14F	50 ... 300 mm	line	2,5 mm	4 ... 12 mm	-	< 8 kLux
OADR 20I6585/S14F	100 ... 600 mm	line	2,5 mm	5,5 ... 21 mm	-	< 10 kLux

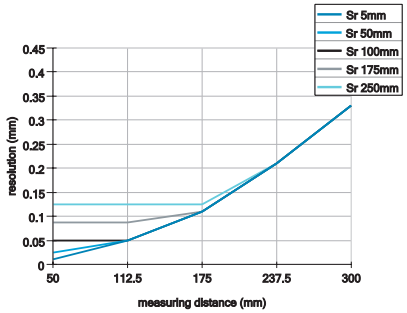


resolution

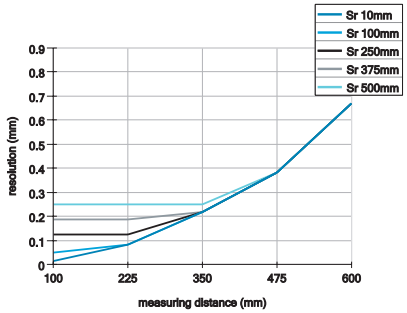
Sd = 30 ... 130 mm



Sd = 50 ... 300 mm

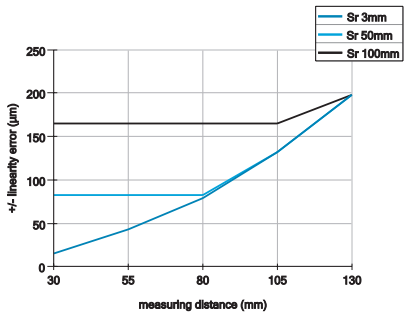


Sd = 100 ... 600 mm

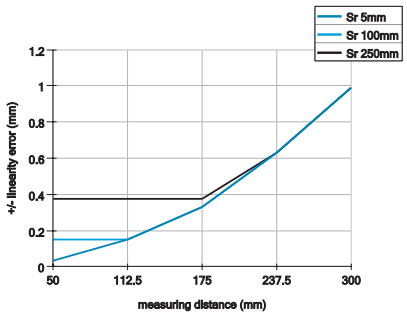


linearity errors

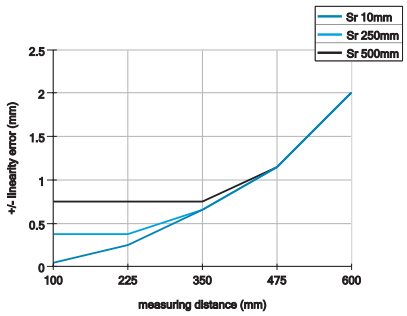
Sd = 30 ... 130 mm



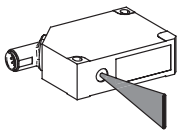
Sd = 50 ... 300 mm



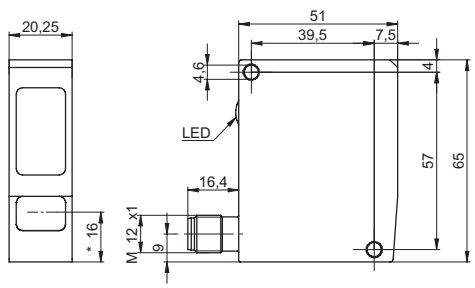
Sd = 100 ... 600 mm



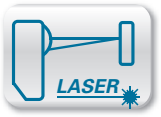
beam alignment (line)

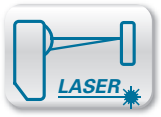


dimension drawing



* emitter axis


LASER

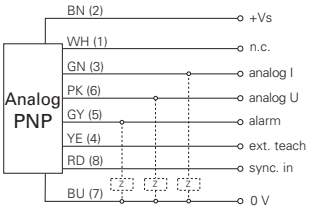


Sd = 100 ... 1000 mm

- teachable measuring range Sr > 10 mm
- resolution up to 10 µm
- synchronization input

general data	
adjustment	Teach-in: button / external
Teach-in range min.	> 10 mm
power on indication	LED green
soiled lens indicator	LED red
light source	pulsed red laser diode
wave length	650 nm
laser class	2
measuring distance Sd = 100 ... 600 mm	
resolution	0,01 ... 0,25 mm
linearity error	± 0,07 ... ± 1 mm
temperature drift	< 0,012 % Sde/K
measuring distance Sd = 200 ... 1000 mm	
resolution	0,02 ... 0,4 mm
linearity error	± 0,11 ... ± 1,65 mm
temperature drift	< 0,02 % Sde/K
electrical data	
response time / release time	< 4 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max. (no load)	100 mA
output circuit	analog
output signal	4 ... 20 mA / 0 ... 10 VDC
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	PNP
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	20,4 mm
height / length	135 mm
depth	45 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin, rotatable
ambient conditions	
ambient light immunity	< 10 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagram

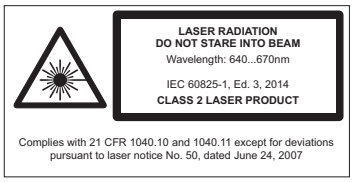


connectors and mating connectors

ESG 34FH0200G Connector M12, 8 pin, straight, 2 m, shielded

additional cable connectors and field wireable connectors: see accessories

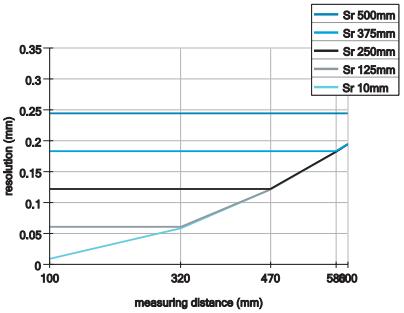
laser warning



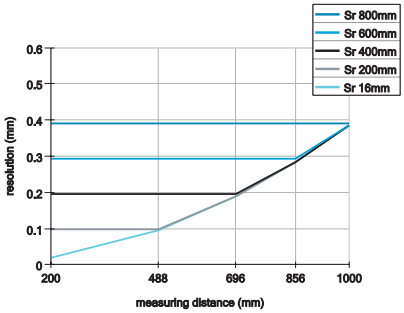
order reference	measuring distance Sd	beam type	beam width	beam height	beam diameter
OADM 21I6480/S14F	100 ... 600 mm	point	-	-	2 mm
OADM 21I6481/S14F	200 ... 1000 mm	point	-	-	2 mm
OADM 21I6580/S14F	100 ... 600 mm	line	2 mm	4 ... 13 mm	-
OADM 21I6581/S14F	200 ... 1000 mm	line	2,5 mm	6 ... 20 mm	-

resolution

Sd = 100 ... 600 mm

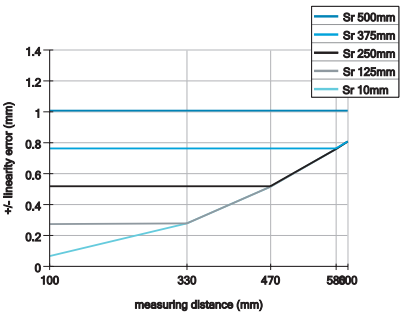


Sd = 200 ... 1000 mm

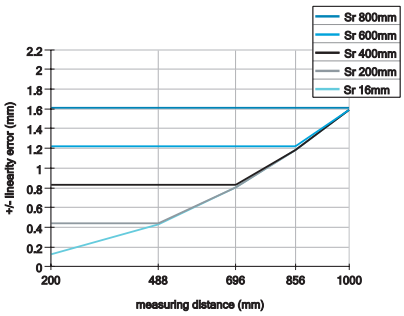


linearity errors

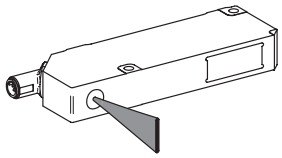
Sd = 100 ... 600 mm



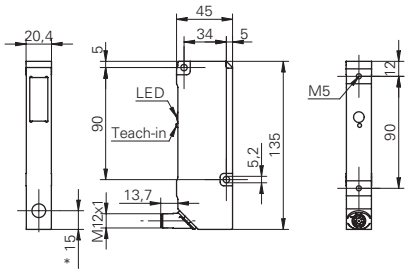
Sd = 200 ... 1000 mm



beam alignment (line)



dimension drawing



* emitter axis

Sd = 30 ... 250 mm

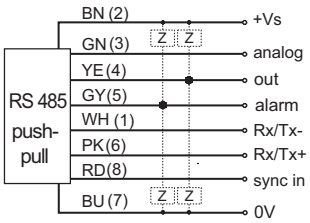
- Distance or tolerance function
- Very high resolution up to 0,7 µm
- Output in mm

general data	
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	1
beam type	line
hysteresis digital output	adjustable
measuring distance Sd = 30 ... 70 mm	
measuring range Mr	40 mm
resolution	0,7 ... 1 µm 1) 2) 3)
repeat accuracy	0,1 ... 0,3 µm 1) 2) 3)
linearity error	± 0,06 % Mr 1) 2)
temperature drift	0,01 % Sde/K 1) 2)
measuring distance Sd = 40 ... 140 mm	
measuring range Mr	100 mm
resolution	1,2 ... 2,5 µm 1) 2) 3)
repeat accuracy	0,3 ... 0,7 µm 1) 2) 3)
linearity error	± 0,07 % Mr 1) 2)
temperature drift	0,015 % Sde/K 1) 2)
measuring distance Sd = 50 ... 250 mm	
measuring range Mr	200 mm
resolution	1,4 ... 6,3 µm 1) 2) 3)
repeat accuracy	0,3 ... 2 µm 1) 2) 3)
linearity error	± 0,09 % Mr 1) 2)
temperature drift	0,025 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	type	ambient light immunity	focal range	sweet spot	version
OM70-11200058	30 ... 70 mm	distance measuring	< 28 kLux	40 ... 55 mm	48 mm	OM70 laser line
OM70-11112017	30 ... 70 mm	distance measuring	< 28 kLux	55 ... 70 mm	65 mm	OM70 laser line basic
OM70-11200062	40 ... 140 mm	distance measuring	< 35 kLux	50 ... 90 mm	70 mm	OM70 laser line
OM70-11200064	40 ... 140 mm	distance measuring	< 35 kLux	80 ... 120 mm	100 mm	OM70 laser line
OM70-11112019	40 ... 140 mm	distance measuring	< 35 kLux	110 ... 140 mm	130 mm	OM70 laser line basic
OM70-11200066	50 ... 250 mm	distance measuring	< 170 kLux	100 ... 150 mm	130 mm	OM70 laser line
OM70-11200068	50 ... 250 mm	distance measuring	< 170 kLux	140 ... 210 mm	180 mm	OM70 laser line
OM70-11112061	50 ... 250 mm	distance measuring	< 170 kLux	200 ... 250 mm	240 mm	OM70 laser line basic
OM70T-11175113	30 ... 70 mm	tolerance measuring	< 28 kLux	55 ... 70 mm	65 mm	OM70 laser line basic
OM70T-11175110	40 ... 140 mm	tolerance measuring	< 35 kLux	110 ... 140 mm	130 mm	OM70 laser line basic
OM70T-11175097	50 ... 250 mm	tolerance measuring	< 170 kLux	200 ... 250 mm	240 mm	OM70 laser line basic

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

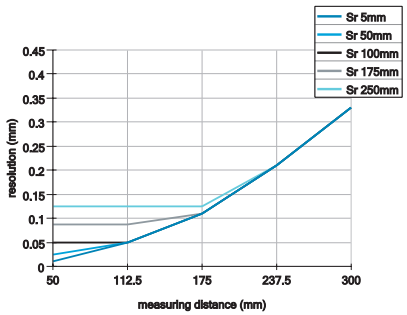
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

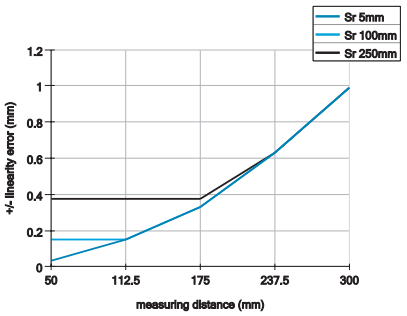
resolution

Sd = 50 ... 300 mm

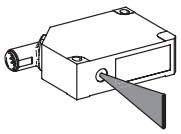


linearity error

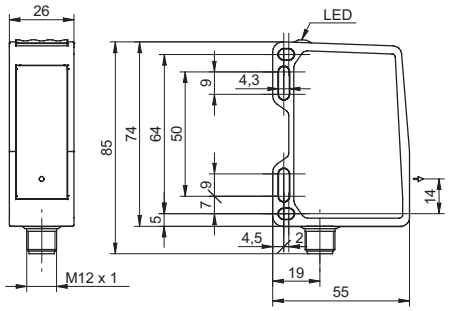
Sd = 50 ... 300 mm



beam alignment (line)



dimension drawing



Sd = 100 ... 1500 mm

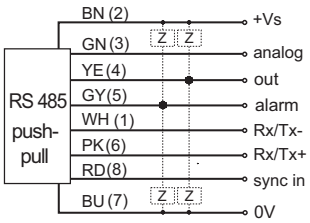
- Distance or tolerance function
- Very high resolution up to 0,7 µm
- Output in mm

general data	
type	distance measuring
version	OM70 laser line basic
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	1
beam type	line
hysteresis digital output	adjustable
measuring distance Sd = 100 ... 600 mm	
measuring range Mr	500 mm
focal range	400 ... 600 mm
sweet spot	500 mm
resolution	3 ... 24 µm 1) 2) 3)
repeat accuracy	1 ... 9 µm 1) 2) 3)
linearity error	± 0,12 % Mr 1) 2)
temperature drift	0,04 % Sde/K 1) 2)
measuring distance Sd = 100 ... 1000 mm	
measuring range Mr	900 mm
focal range	750 ... 1000 mm
sweet spot	1000 mm
resolution	3 ... 63 µm 1) 2) 3)
repeat accuracy	1 ... 32 µm 1) 2) 3)
linearity error	± 0,19 % Mr 1) 2)
temperature drift	0,065 % Sde/K 1) 2)
measuring distance Sd = 150 ... 1500 mm	
measuring range Mr	1350 mm
focal range	1000 ... 1500 mm
sweet spot	1500 mm
resolution	13 ... 125 µm 1) 2) 3)
repeat accuracy	3 ... 63 µm 1) 2) 3)
linearity error	± 0,32 % Mr 1) 2)
temperature drift	0,100 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	ambient light immunity
OM70-11112065	100 ... 600 mm	< 170 kLux
OM70-11195788	100 ... 1000 mm	< 100 kLux
OM70-11112012	150 ... 1500 mm	< 35 kLux

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

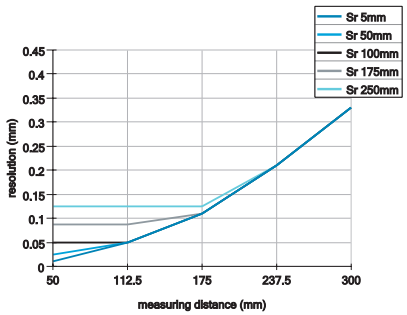
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

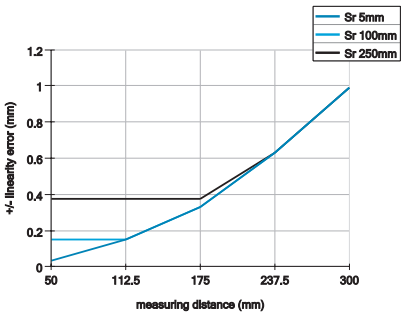
resolution

Sd = 50 ... 300 mm

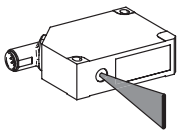


linearity error

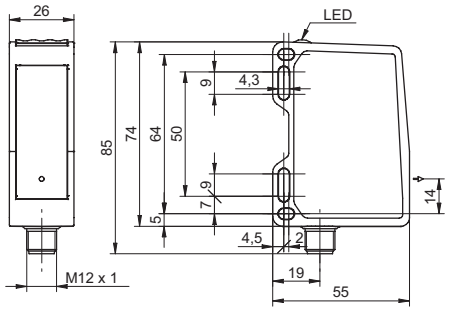
Sd = 50 ... 300 mm



beam alignment (line)



dimension drawing



Sd = 100 ... 1500 mm

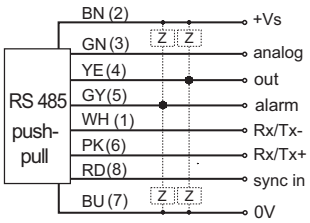
- Distance function
- Very high resolution up to 8 µm
- Output in mm

general data	
type	distance measuring
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	2
beam type	line
hysteresis digital output	adjustable
measuring distance Sd = 100 ... 600 mm	
measuring range Mr	500 mm
resolution	3 ... 24 µm 1) 2) 3)
repeat accuracy	1 ... 9 µm 1) 2) 3)
linearity error	± 0,12 % Mr 1) 2)
temperature drift	0,04 % Sde/K 1) 2)
measuring distance Sd = 100 ... 1000 mm	
measuring range Mr	900 mm
resolution	3 ... 63 µm 1) 2) 3)
repeat accuracy	1 ... 32 µm 1) 2) 3)
linearity error	± 0,19 % Mr 1) 2)
temperature drift	0,065 % Sde/K 1) 2)
measuring distance Sd = 150 ... 1500 mm	
measuring range Mr	1350 mm
resolution	13 ... 125 µm 1) 2) 3)
repeat accuracy	3 ... 63 µm 1) 2) 3)
linearity error	± 0,32 % Mr 1) 2)
temperature drift	0,100 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	ambient light immunity	focal range	sweet spot	version
OM70-11200090	100 ... 600 mm	< 170 kLux	250 ... 450 mm	350 mm	OM70 laser line
OM70-11112067	100 ... 600 mm	< 170 kLux	400 ... 600 mm	500 mm	OM70 laser line basic
OM70-11199109	100 ... 1000 mm	< 100 kLux	400 ... 600 mm	500 mm	OM70 laser line
OM70-11200095	100 ... 1000 mm	< 100 kLux	550 ... 850 mm	700 mm	OM70 laser line
OM70-11199100	100 ... 1000 mm	< 100 kLux	750 ... 1000 mm	1000 mm	OM70 laser line basic
OM70-11112015	150 ... 1500 mm	< 35 kLux	1000 ... 1500 mm	1500 mm	OM70 laser line basic

connection diagram



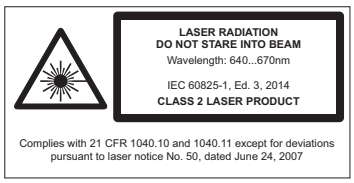
connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

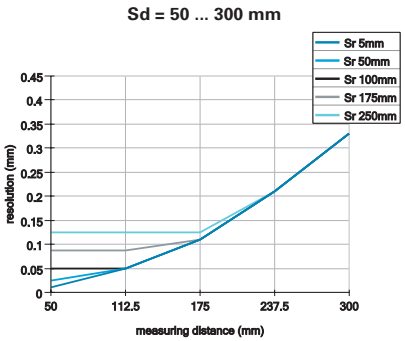
Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

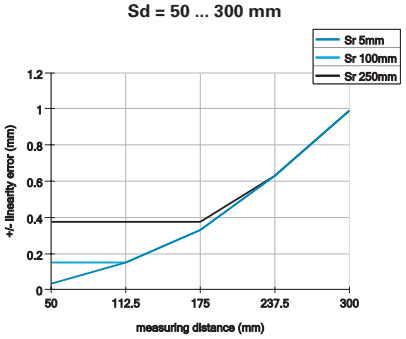
laser warning



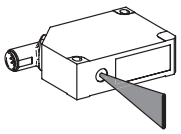
resolution



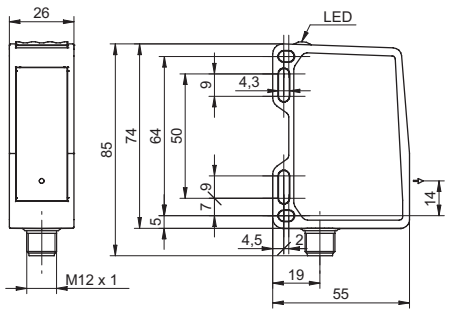
linearity error



beam alignment (line)



dimension drawing



Sd = 30 ... 250 mm

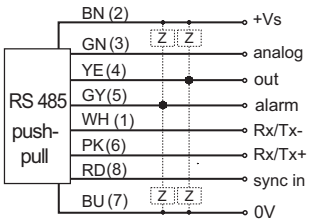
- Distance or tolerance function
- Very high resolution up to 1,2 µm
- Output in mm

general data	
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	1
beam type	point
hysteresis digital output	adjustable
measuring distance Sd = 30 ... 70 mm	
measuring range Mr	40 mm
resolution	0,7 ... 1 µm 1) 2) 3)
repeat accuracy	0,1 ... 0,3 µm 1) 2) 3)
linearity error	± 0,06 % Mr 1) 2)
temperature drift	0,01 % Sde/K 1) 2)
measuring distance Sd = 40 ... 140 mm	
measuring range Mr	100 mm
resolution	1,2 ... 2,5 µm 1) 2) 3)
repeat accuracy	0,3 ... 0,7 µm 1) 2) 3)
linearity error	± 0,07 % Mr 1) 2)
temperature drift	0,015 % Sde/K 1) 2)
measuring distance Sd = 50 ... 250 mm	
measuring range Mr	200 mm
resolution	1,4 ... 6,3 µm 1) 2) 3)
repeat accuracy	0,3 ... 2 µm 1) 2) 3)
linearity error	± 0,09 % Mr 1) 2)
temperature drift	0,025 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	type	ambient light immunity	focal range	sweet spot	version
OM70-11200060	30 ... 70 mm	distance measuring	< 28 kLux	40 ... 55 mm	48 mm	OM70 laser point
OM70-11195785	30 ... 70 mm	distance measuring	< 28 kLux	55 ... 70 mm	65 mm	OM70 laser point basic
OM70-11200061	40 ... 140 mm	distance measuring	< 38 kLux	50 ... 90 mm	70 mm	OM70 laser point
OM70-11200063	40 ... 140 mm	distance measuring	< 38 kLux	80 ... 120 mm	100 mm	OM70 laser point
OM70-11112018	40 ... 140 mm	distance measuring	< 38 kLux	110 ... 140 mm	130 mm	OM70 laser point basic
OM70-11200065	50 ... 250 mm	distance measuring	< 175 kLux	100 ... 150 mm	130 mm	OM70 laser point
OM70-11200067	50 ... 250 mm	distance measuring	< 175 kLux	140 ... 210 mm	180 mm	OM70 laser point
OM70-11112060	50 ... 250 mm	distance measuring	< 175 kLux	200 ... 250 mm	240 mm	OM70 laser point basic
OM70T-11195786	30 ... 70 mm	tolerance measuring	< 28 kLux	55 ... 70 mm	65 mm	OM70 laser point basic
OM70T-11175099	40 ... 140 mm	tolerance measuring	< 38 kLux	110 ... 140 mm	130 mm	OM70 laser point basic
OM70T-11175094	50 ... 250 mm	tolerance measuring	< 175 kLux	200 ... 250 mm	240 mm	OM70 laser point basic

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

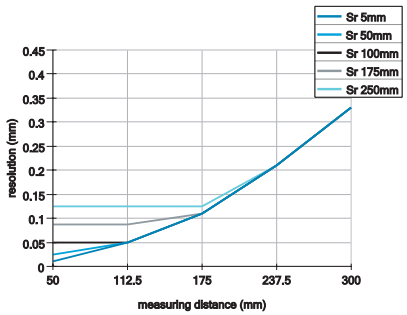
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

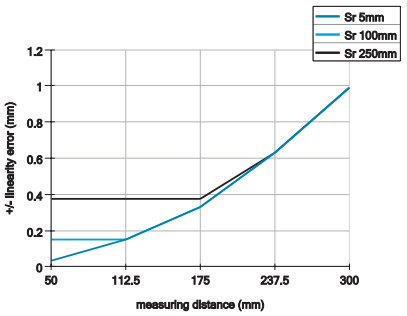
resolution

Sd = 50 ... 300 mm

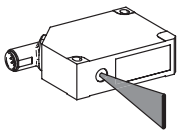


linearity error

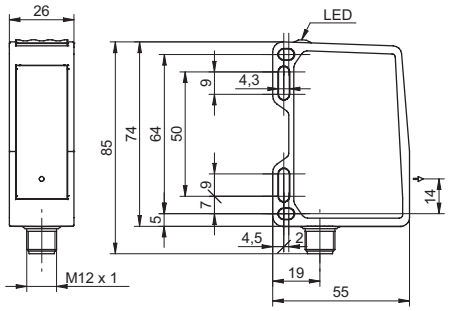
Sd = 50 ... 300 mm



beam alignment (line)



dimension drawing



Sd = 100 ... 1500 mm

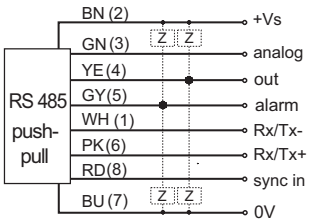
- Distance or tolerance function
- Very high resolution up to 1,2 µm
- Output in mm

general data	
type	distance measuring
version	OM70 laser point basic
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	1
beam type	point
hysteresis digital output	adjustable
measuring distance Sd = 100 ... 600 mm	
measuring range Mr	500 mm
focal range	400 ... 600 mm
sweet spot	500 mm
resolution	3 ... 24 µm 1) 2) 3)
repeat accuracy	1 ... 9 µm 1) 2) 3)
linearity error	± 0,12 % Mr 1) 2)
temperature drift	0,04 % Sde/K 1) 2)
measuring distance Sd = 100 ... 1000 mm	
measuring range Mr	900 mm
focal range	750 ... 1000 mm
sweet spot	1000 mm
resolution	3 ... 63 µm 1) 2) 3)
repeat accuracy	1 ... 32 µm 1) 2) 3)
linearity error	± 0,19 % Mr 1) 2)
temperature drift	0,065 % Sde/K 1) 2)
measuring distance Sd = 150 ... 1500 mm	
measuring range Mr	1350 mm
focal range	1000 ... 1500 mm
sweet spot	1500 mm
resolution	13 ... 125 µm 1) 2) 3)
repeat accuracy	3 ... 63 µm 1) 2) 3)
linearity error	± 0,32 % Mr 1) 2)
temperature drift	0,100 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	ambient light immunity
OM70-11112064	100 ... 600 mm	< 300 kLux
OM70-11195787	100 ... 1000 mm	< 100 kLux
OM70-11111994	150 ... 1500 mm	< 35 kLux

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

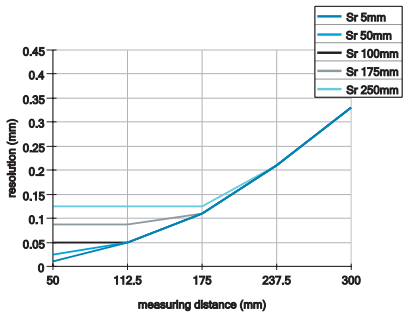
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

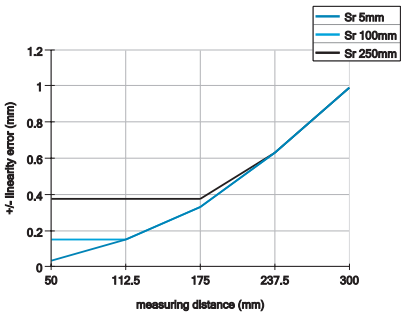
resolution

Sd = 50 ... 300 mm

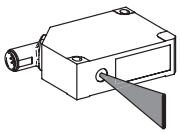


linearity error

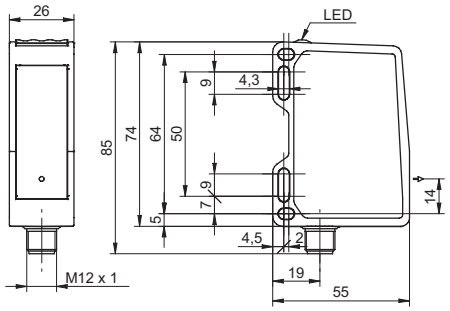
Sd = 50 ... 300 mm



beam alignment (line)



dimension drawing



Sd = 100 ... 1500 mm

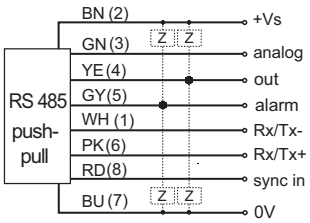
- Distance function
- Very high resolution up to 13 µm
- Output in mm

general data	
type	distance measuring
adjustment	Touch Display, RS485
power on indication	LED green
output indicator	LED yellow / LED red
light source	pulsed red laser diode
wave length	660 nm
laser class	2
beam type	point
hysteresis digital output	adjustable
measuring distance Sd = 100 ... 600 mm	
measuring range Mr	500 mm
resolution	3 ... 24 µm 1) 2) 3)
repeat accuracy	1 ... 9 µm 1) 2) 3)
linearity error	± 0,12 % Mr 1) 2)
temperature drift	0,04 % Sde/K 1) 2)
measuring distance Sd = 100 ... 1000 mm	
measuring range Mr	900 mm
resolution	3 ... 63 µm 1) 2) 3)
repeat accuracy	1 ... 32 µm 1) 2) 3)
linearity error	± 0,19 % Mr 1) 2)
temperature drift	0,065 % Sde/K 1) 2)
measuring distance Sd = 150 ... 1500 mm	
measuring range Mr	1350 mm
resolution	13 ... 125 µm 1) 2) 3)
repeat accuracy	3 ... 63 µm 1) 2) 3)
linearity error	± 0,32 % Mr 1) 2)
temperature drift	0,100 % Sde/K 1) 2)

electrical data	
response time / release time	0,8 ms 2)
measuring frequency	2500 Hz 2)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	75 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
weight	130 g
ambient conditions	
operating temperature	-10 ... +50 °C
protection class	IP 67
vibration (sinusoidal)	IEC 60068-2-6:2008 ± 0.75 mm p-p at f = 10 - 58 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference	measuring distance Sd	ambient light immunity	focal range	sweet spot	version
OM70-11200069	100 ... 600 mm	< 300 kLux	250 ... 450 mm	350 mm	OM70 laser point
OM70-11112066	100 ... 600 mm	< 300 kLux	400 ... 600 mm	500 mm	OM70 laser point basic
OM70-11199108	100 ... 1000 mm	< 100 kLux	400 ... 600 mm	500 mm	OM70 laser point
OM70-11200091	100 ... 1000 mm	< 100 kLux	550 ... 850 mm	700 mm	OM70 laser point
OM70-11199089	100 ... 1000 mm	< 100 kLux	750 ... 1000 mm	1000 mm	OM70 laser point basic
OM70-11112013	150 ... 1500 mm	< 35 kLux	1000 ... 1500 mm	1500 mm	OM70 laser point basic

connection diagram



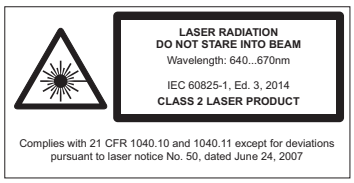
connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

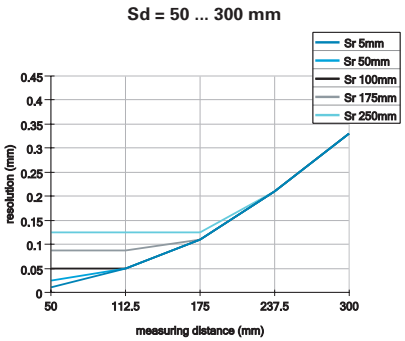
Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

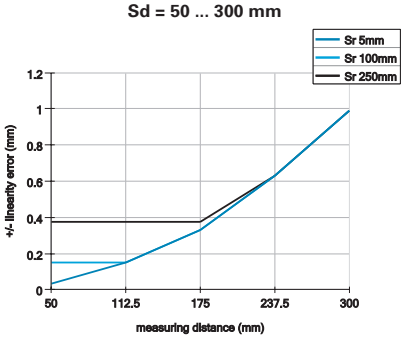
laser warning



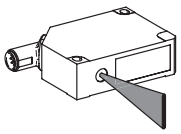
resolution



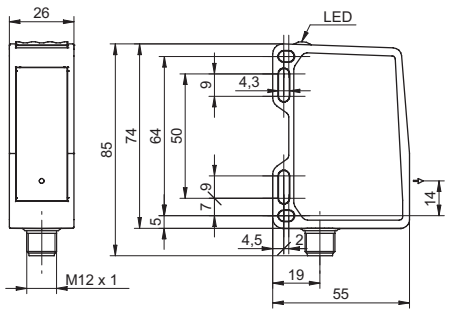
linearity error



beam alignment (line)



dimension drawing



Sd = 100 ... 150 mm

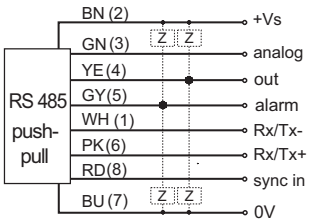
- Stable measurement values even on coarse and shiny surfaces
- Very high resolution up to 2 µm
- Output in mm

general data	
version	OM70 multi-spot
measuring distance Sd	100 ... 150 mm
measuring range (width)	48 ... 72 mm
adjustment	Touch Display, RS485
power on indication	LED green
resolution	2 ... 4 µm 1) 2) 4) 5)
linearity error	± 30 ... ± 90 µm 1) 2) 4)
light source	pulsed red laser diode
wave length	656 nm
laser class	1
beam type	multi-spot
temperature drift	± 0,04 % Sde/K 1) 2) 4)

electrical data	
response time / release time	3,5 ms 2) 3)
measuring frequency	570 Hz 2) 3)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	120 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
ambient conditions	
ambient light immunity	< 35 kLux
operating temperature	-10 ... +50 °C
protection class	IP 67
storage temperature	-25 ... +75 °C
vibration (sinusoidal)	IEC 60068-2-6:2008 1.5 mm p-p at f = 10 - 57 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference
OM70-11155463

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

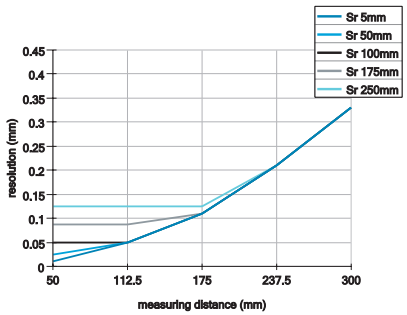
laser warning

CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

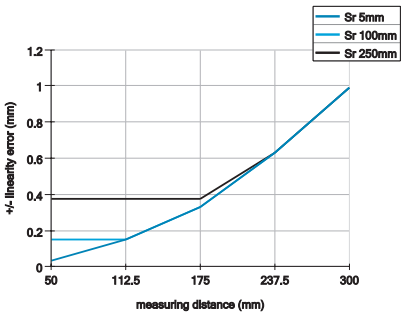
resolution

Sd = 50 ... 300 mm

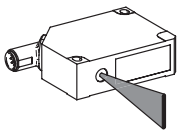


linearity error

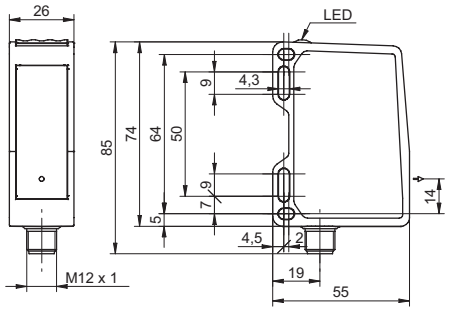
Sd = 50 ... 300 mm



beam alignment (line)



dimension drawing



Sd = 100 ... 500 mm

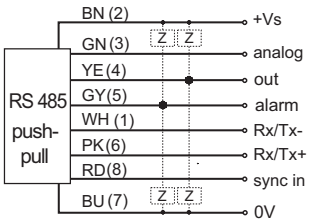
- Stable measurement values even on coarse and shiny surfaces
- Very high resolution up to 4 µm
- Output in mm

general data	
version	OM70 multi-spot
measuring distance Sd	100 ... 500 mm
measuring range (width)	13 ... 66 mm
adjustment	Touch Display, RS485
power on indication	LED green
resolution	4 ... 25 µm 1) 2) 4) 5)
repeat accuracy	4 ... 20 µm 1) 2) 4) 5)
linearity error	± 100 µm 1) 2) 4) 6)
light source	pulsed red laser diode
wave length	660 nm
laser class	2
beam type	multi-spot
temperature drift	± 0,04 % Sde/K 1) 2) 4)

electrical data	
response time / release time	1,3 ms 2) 3)
measuring frequency	1540 Hz 2) 3)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	120 mA
output circuit	analog and RS 485
baud rate	115200, adjustable
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin
ambient conditions	
ambient light immunity	< 35 kLux
operating temperature	-10 ... +50 °C
protection class	IP 67
storage temperature	-25 ... +75 °C
vibration (sinusoidal)	IEC 60068-2-6:2008 1.5 mm p-p at f = 10 - 57 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 50 g / 11 ms resp. 100 g / 6 ms, 10 jolts per axis and direction 100 g / 2 ms, 5000 jolts per axis and direction

order reference
OM70-11112069

connection diagram



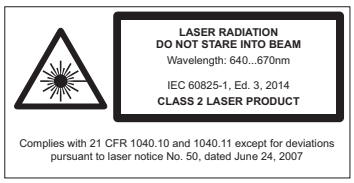
connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

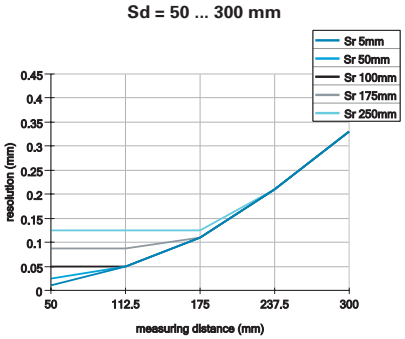
Accessories

11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

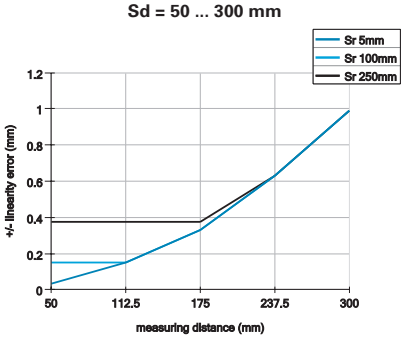
laser warning



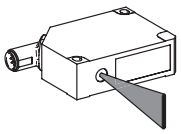
resolution



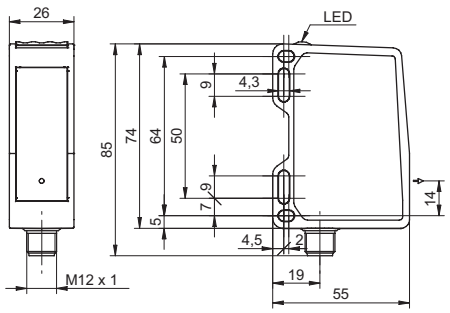
linearity error



beam alignment (line)



dimension drawing



Sd = 100 ... 1500 mm

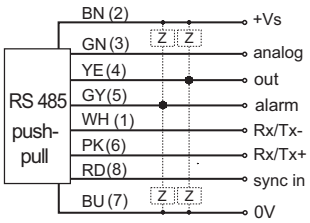
- Stable measurement values even on coarse and shiny surfaces
- Very high resolution up to 2 µm
- Output in mm

general data	
type	distance measuring
version	OM70 multi-spot
measuring distance Sd	100 ... 150 mm
measuring range (width)	48 ... 72 mm
adjustment	Webserver, Ethernet TCP/IP
power on indication	LED green
output indicator	LED yellow / LED red
ethernet link indication	LED blue
resolution	2 ... 4 µm 1) 2) 4) 5)
linearity error	± 30 ... ± 90 µm 1) 2) 4)
light source	pulsed red laser diode
wave length	656 nm
laser class	1
beam type	multi-spot
temperature drift	± 0,04 % Sde/K 1) 2) 4)

electrical data	
response time / release time	3,5 ms 2) 3)
measuring frequency	570 Hz 2) 3)
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	150 mA
output current	< 100 mA
switching output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
interface	Ethernet TCP/IP
protocol	Modbus TCP, OPC UA
webserver	yes
mechanical data	
width / diameter	26 mm
height / length	74 mm
depth	55 mm
type	rectangular, front view
housing material	aluminum
front (optics)	glass
connection types	connector M12 8 pin & M12 4 pin
weight	135 g
ambient conditions	
ambient light immunity	< 35 kLux
operating temperature	-10 ... +50 °C
protection class	IP 67
storage temperature	-20 ... +60
vibration (sinusoidal)	IEC 60068-2-6:2008 1.5 mm p-p at f = 10 - 57 Hz, 10 cycles per axis 10 g at f = 58 - 2000 Hz, 10 cycles per axis
shock (semi-sinusoidal)	IEC 60068-2-27:2009 30 g / 11 ms, 6 jolts per axis and direction

order reference
OM70-11185168

connection diagram



connectors and mating connectors

ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded
KSG 34A/KSG45AP0200G/E	Ethernet cable; connector M12, straight to RJ45 mating connector, 4-pin, 2 m, shielded
KSG 34A/KSG45AP0500G/E	Ethernet cable; connector M12, straight to RJ45 mating connector, 4-pin, 5 m, shielded
KSG 34A/KSG45AP1000G/E	Ethernet cable; connector M12, straight to RJ45 mating connector, 4-pin, 10 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

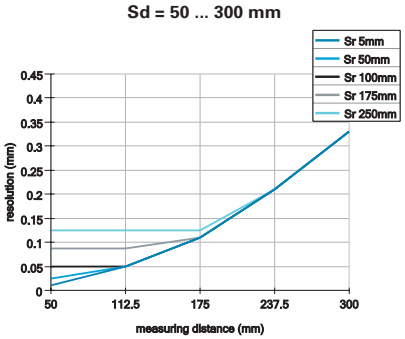
11120705	Mounting bracket X7 90° for PosCon and OM70, incl. accessories
for details: see accessories section	

laser warning

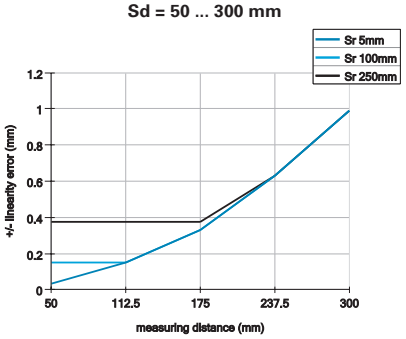
CLASS 1 LASER PRODUCT

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11
except for deviations pursuant to laser
notice No. 50, dated June 24, 2007

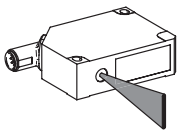
resolution



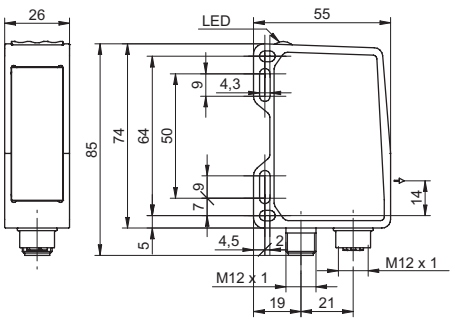
linearity error



beam alignment (line)



dimension drawing

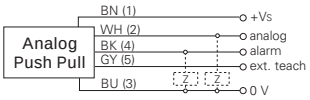


Sd = 0,2 ... 4 m

- measuring independent of colors up to 4 m
- extremely compact housing
- teachable measuring range

general data	
measuring distance Sd	200 ... 4000 mm
measuring distance Sd (white 90%)	200 ... 4000 mm
measuring distance Sd (grey 18%)	200 ... 4000 mm
measuring distance Sd (black 6%)	200 ... 4000 mm
adjustment	Teach-in: button / external
Teach-in range min.	> 100 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	1,3 mm
repeatability	± 5 mm (with 40 kLux ambient light)
linearity	± 15 mm
light source	pulsed red laser diode
wave length	660 nm
laser class	2
beam type	point
beam diameter	5 ... 20 mm
electrical data	
measuring rate	10 ms
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	250 mA (typ. 110 mA @ 24V)
output circuit	analog
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	25,4 mm
height / length	66 mm
depth	51 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M12 5 pin, rotatable
ambient conditions	
ambient light immunity	< 40 kLux
operating temperature	-25 ... +50 °C
protection class	IP 67
typ. temp. coefficient	0,2 mm /°C

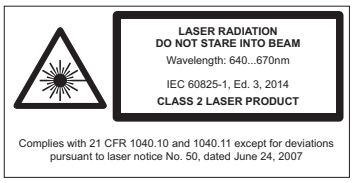
connection diagram



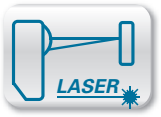
connectors and mating connectors

ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

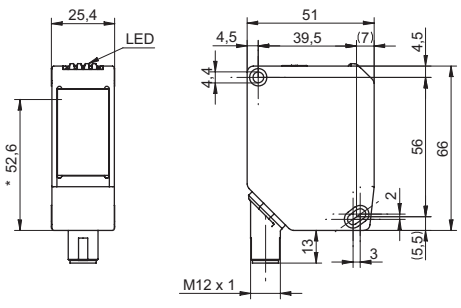
laser warning



order reference	output signal	load resistance (analog U)	load resistance (analog I)
OADM 250I1101/S14C	4 ... 20 mA	-	< (+Vs - 6 V) / 0,02 A
OADM 250U1101/S14C	0 ... 10 VDC	> 10 kOhm	-



dimension drawing



* emitter axis

Sd = 0,2 ... 13 m

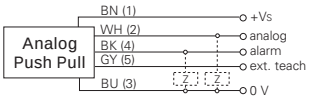
- measuring up to 13 m
- extremely compact housing
- teachable measuring range

general data	
measuring distance Sd	200 ... 13000 mm
measuring distance Sd (white 90%)	200 ... 13000 mm
measuring distance Sd (grey 18%)	200 ... 9000 mm
measuring distance Sd (black 6%)	200 ... 4000 mm
adjustment	Teach-in: button / external
Teach-in range min.	> 100 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	5 mm
repeatability	± 15 mm (with 40 kLux ambient light)
linearity	± 15 mm
light source	pulsed red laser diode
wave length	660 nm
laser class	2
beam type	point
beam diameter	5 ... 50 mm
electrical data	
measuring rate	10 ms
voltage supply range +Vs	15 ... 28 VDC
current consumption max. (no load)	250 mA (typ. 110 mA @ 24V)
output circuit	analog
output signal	4 ... 20 mA
load resistance (analog I)	< (+Vs - 6 V) / 0,02 A
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	25,4 mm
height / length	66 mm
depth	51 mm
type	rectangular
housing material	aluminum
front (optics)	glass
connection types	connector M12 5 pin, rotatable
ambient conditions	
ambient light immunity	< 40 kLux
operating temperature	-25 ... +50 °C
protection class	IP 67
typ. temp. coefficient	0,4 mm /°C

order reference

OADM 260I1101/S14C

connection diagram

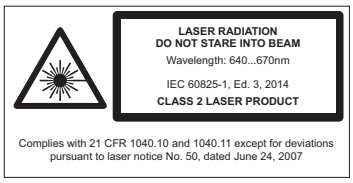


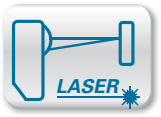
connectors and mating connectors

ESG 34CH0200G Connector M12, 5 pin, straight, 2 m, shielded

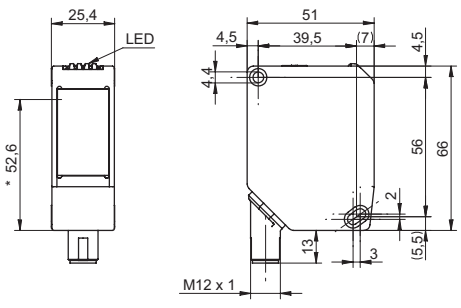
additional cable connectors and field wireable connectors: see accessories

laser warning





dimension drawing



* emitter axis

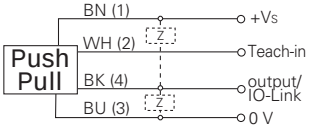
Sd = 30 ... 300 mm

- One inch class
- infrared LED
- distance value via IO-Link

general data	
type	distance measuring
version	IO-Link measuring
measuring distance Sd	30 ... 300 mm
adjustment	Teach-in and IO-Link
power on indication	LED green
light indicator	LED yellow
resolution	0,5 ... 5 mm
linearity error	± 1,5 ... ± 15 mm
light source	pulsed infrared diode
wave length	860 nm
beam type	point
suppression of reciprocal influence	yes
alignment optical axis	< 2°
temperature drift	< 0,2 % Sde/K
electrical data	
response time / release time	< 0,49 ms
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	45 mA
voltage drop Vd	< 3 VDC
output circuit	push-pull
baud rate	38,4 kBaud (COM 2)
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
interface	IO-Link V1.1
cycle time	≥ 2,7 ms
process data length	3 Byte
process data structure	Bit 0 = BDC1 Bit 2 = quality Bit 3 = alarm Bit 8-23 = 16 Bit measurement
mechanical data	
width / diameter	12,9 mm
height / length	32,3 mm
depth	23 mm
type	rectangular
housing material	plastic (ASA, PMMA)
front (optics)	PMMA
ambient conditions	
operating temperature	-25 ... +60 °C
protection class	IP 67

order reference	connection types
O300.DI-11199080	cable 4 pin, 2 m
O300.DI-11199081	connector M8 4 pin

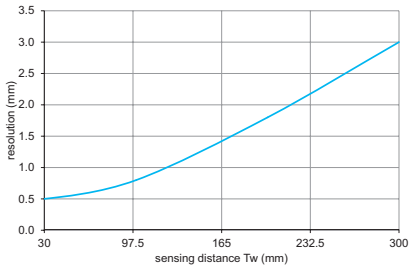
connection diagram



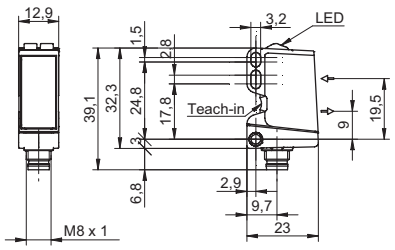
connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

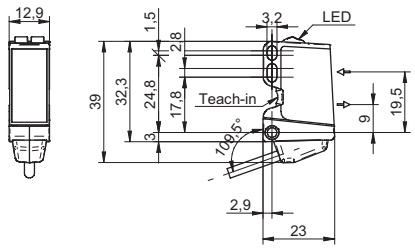
Accessories	
11104963	Sensofix O300
11102423	Mounting bracket O300 (L design)
11124807	Mounting bracket O300 - Retrofit for sensors series 20
for details: see accessories section	

resolution



dimension drawings





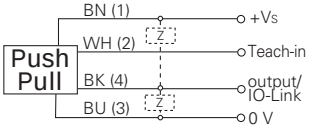
Sd = 30 ... 250 mm

- One inch class
- laser diode
- distance value via IO-Link

general data	
type	distance measuring
version	IO-Link measuring
measuring distance Sd	30 ... 250 mm
focal distance	400 mm
adjustment	Teach-in and IO-Link
power on indication	LED green
light indicator	LED yellow
resolution	0,5 ... 10 mm
linearity error	± 1,5 ... ± 12,5 mm
light source	pulsed red laser diode
wave length	656 nm
laser class	1
beam type	point
suppression of reciprocal influence	yes
alignment optical axis	< 2°
temperature drift	< 0,2 % Sde/K
electrical data	
response time / release time	< 0,25 ms
voltage supply range +Vs	11 ... 30 VDC
current consumption max. (no load)	30 mA
voltage drop Vd	< 2,5 VDC
output circuit	push-pull
baud rate	230,4 kBaud (COM 3)
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
interface	IO-Link V1.1
cycle time	≥ 0,6 ms
process data length	3 Byte
process data structure	Bit 0 = BDC1 Bit 2 = quality Bit 3 = alarm Bit 8-23 = 16 Bit measurement
mechanical data	
width / diameter	12,9 mm
height / length	32,3 mm
depth	23 mm
type	rectangular
housing material	plastic (ASA, PMMA)
front (optics)	PMMA
ambient conditions	
operating temperature	-10 ... +60 °C
protection class	IP 67

order reference	connection types
O300.DL-11199078	cable 4 pin, 2 m
O300.DL-11199079	connector M8 4 pin

connection diagram



connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

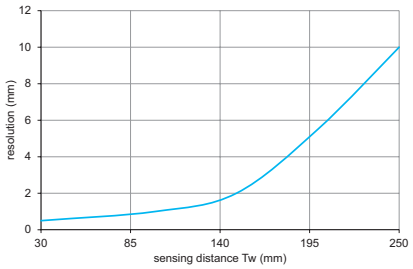
Accessories	
11104963	Sensofix O300
11102423	Mounting bracket O300 (L design)
11124807	Mounting bracket O300 - Retrofit for sensors series 20
for details: see accessories section	

laser warning

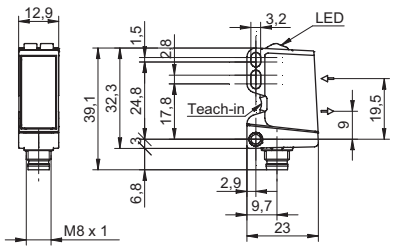
CLASS 1 LASER PRODUCT

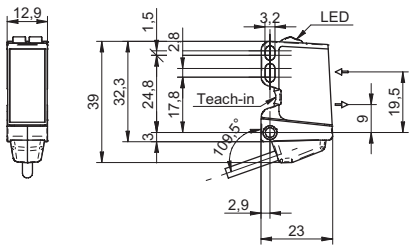
IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007

resolution



dimension drawings





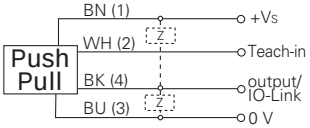
Sd = 30 ... 300 mm

- One inch class
- PinPoint LED
- distance value via IO-Link

general data	
type	distance measuring
version	IO-Link measuring
measuring distance Sd	30 ... 300 mm
adjustment	Teach-in and IO-Link
power on indication	LED green
light indicator	LED yellow
resolution	0,5 ... 5 mm
linearity error	± 1,5 ... ± 15 mm
light source	pulsed PinPoint LED
wave length	630 nm
beam type	point
suppression of reciprocal influence	yes
alignment optical axis	< 2°
temperature drift	< 0,2 % Sde/K
electrical data	
response time / release time	< 0,49 ms
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	45 mA
voltage drop Vd	< 3 VDC
output circuit	push-pull
baud rate	38,4 kBaud (COM 2)
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
interface	IO-Link V1.1
cycle time	≥ 2,7 ms
process data length	3 Byte
process data structure	Bit 0 = BDC1 Bit 2 = quality Bit 3 = alarm Bit 8-23 = 16 Bit measurement
mechanical data	
width / diameter	12,9 mm
height / length	32,3 mm
depth	23 mm
type	rectangular
housing material	plastic (ASA, PMMA)
front (optics)	PMMA
ambient conditions	
operating temperature	-25 ... +60 °C
protection class	IP 67

order reference	connection types
O300.DP-11199076	cable 4 pin, 2 m
O300.DP-11199077	connector M8 4 pin

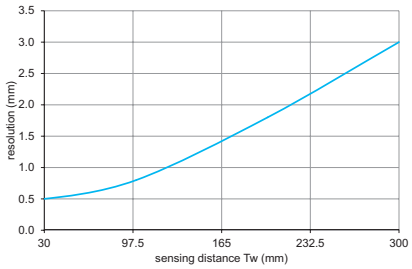
connection diagram



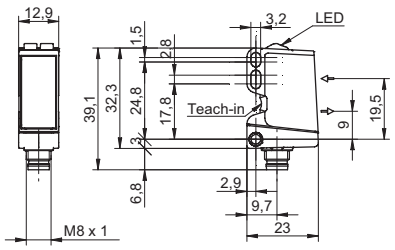
connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

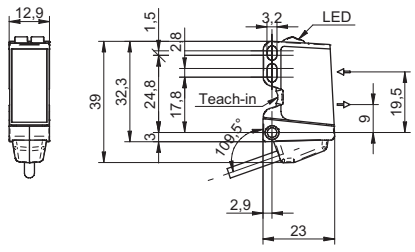
Accessories	
11104963	Sensofix O300
11102423	Mounting bracket O300 (L design)
11124807	Mounting bracket O300 - Retrofit for sensors series 20
for details: see accessories section	

resolution



dimension drawings





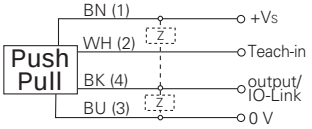
Sd = 60 ... 550 mm

- infrared LED
- distance value via IO-Link
- resolution up to 0,5 mm

general data	
type	distance measuring
version	IO-Link measuring
measuring distance Sd	60 ... 550 mm
adjustment	Teach-in and IO-Link
power on indication	LED green
light indicator	LED yellow
resolution	0,5 ... 5 mm
linearity error	± 3 ... ± 27,5 mm
light source	pulsed infrared diode
wave length	860 nm
beam type	point
suppression of reciprocal influence	yes
alignment optical axis	< 1°
temperature drift	< 0,2 % Sde/K
electrical data	
response time / release time	< 0,49 ms
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	40 mA
voltage drop Vd	< 3 VDC
output circuit	push-pull
baud rate	38,4 kBaud (COM 2)
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
interface	IO-Link V1.1
cycle time	≥ 2,7 ms
process data length	3 Byte
process data structure	Bit 0 = BDC1 Bit 2 = quality Bit 3 = alarm Bit 8-23 = 16 Bit measurement
mechanical data	
width / diameter	18 mm
height / length	45 mm
depth	32 mm
type	rectangular
housing material	plastic (ASA, PMMA)
front (optics)	PMMA
ambient conditions	
operating temperature	-25 ... +60 °C
protection class	IP 67

order reference	connection types
O500.DI-11199084	cable 4 pin, 2 m
O500.DI-11199085	connector M12 4 pin

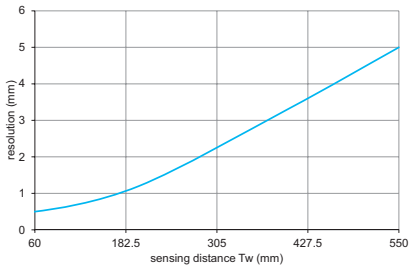
connection diagram



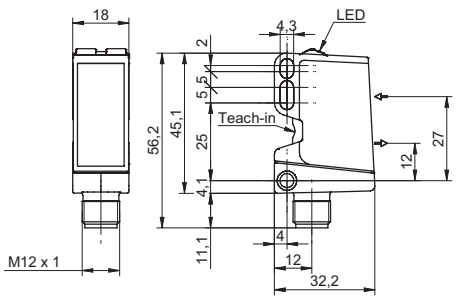
connectors and mating connectors	
ESG 34AH0200	Connector M12, 4 pin, straight, 2 m
ESW 33AH0200	Connector M12, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

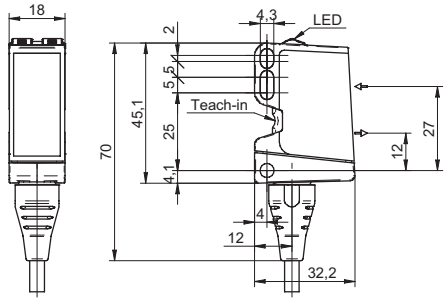
Accessories	
11099942	Sensofix O500/U500
11092246	Mounting bracket O500/U500 (L design)
11111164	Mounting bracket O500/U500 - Retrofit for sensors series 30
for details: see accessories section	

resolution



dimension drawings





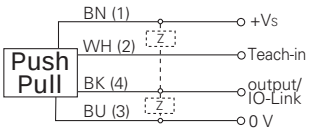
Sd = 60 ... 400 mm

- PinPoint LED
- distance value via IO-Link
- resolution up to 0,5 mm

general data	
type	distance measuring
version	IO-Link measuring
measuring distance Sd	60 ... 400 mm
adjustment	Teach-in and IO-Link
power on indication	LED green
light indicator	LED yellow
resolution	0,5 ... 3 mm
linearity error	± 3 ... ± 20 mm
light source	pulsed PinPoint LED
wave length	630 nm
beam type	point
suppression of reciprocal influence	yes
alignment optical axis	< 1°
temperature drift	< 0,2 % Sde/K
electrical data	
response time / release time	< 0,49 ms
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	40 mA
voltage drop Vd	< 3 VDC
output circuit	push-pull
baud rate	38,4 kBaud (COM 2)
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
interface	IO-Link V1.1
cycle time	≥ 2,7 ms
process data length	3 Byte
process data structure	Bit 0 = BDC1 Bit 2 = quality Bit 3 = alarm Bit 8-23 = 16 Bit measurement
mechanical data	
width / diameter	18 mm
height / length	45 mm
depth	32 mm
type	rectangular
housing material	plastic (ASA, PMMA)
front (optics)	PMMA
ambient conditions	
operating temperature	-25 ... +60 °C
protection class	IP 67

order reference	connection types
O500.DP-11199082	cable 4 pin, 2 m
O500.DP-11199083	connector M12 4 pin

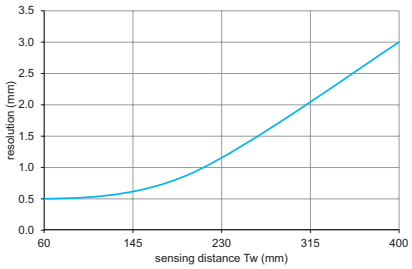
connection diagram



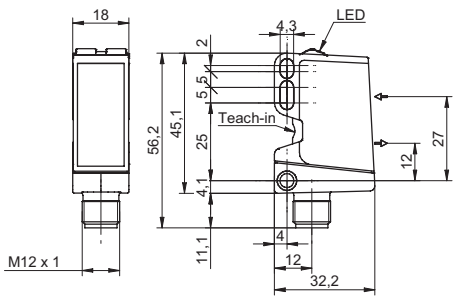
connectors and mating connectors	
ESG 34AH0200	Connector M12, 4 pin, straight, 2 m
ESW 33AH0200	Connector M12, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

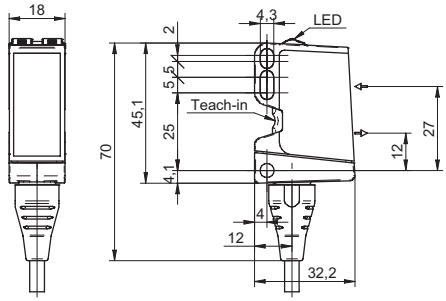
Accessories	
11099942	Sensofix O500/U500
11092246	Mounting bracket O500/U500 (L design)
11111164	Mounting bracket O500/U500 - Retrofit for sensors series 30
for details: see accessories section	

resolution



dimension drawings





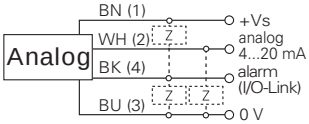
Sd = 50 ... 400 mm

- compact design
- measuring distance Sd 50 ... 400 mm
- resolution up to 0,1 mm

general data	
measuring distance Sd	50 ... 400 mm
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	12 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	4 ... 20 mA
load resistance (analog I)	< (+Vs - 10 V) / 0,02 A
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	14,8 mm
height / length	43 mm
depth	31 mm
type	rectangular
housing material	plastic (ASA, MABS)
front (optics)	PMMA
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

order reference	connection types
FADK 14I4470/IO	cable 4 pin, 2 m
FADK 14I4470/S14/IO	connector M12 4 pin
FADK 14I4470/S35A/IO	connector M8 4 pin

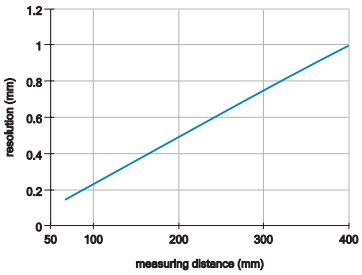
connection diagram



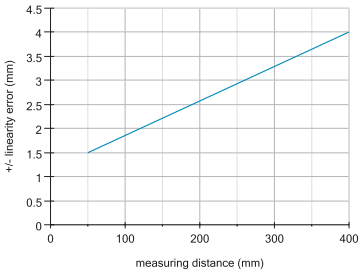
connectors and mating connectors	
ESW 33AH0200G	Connector M12, 4 pin, angular, 2 m, shielded
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10134964	Mounting bracket series 14 (L design)
10149011	Sensofix series 14
for details: see accessories section	

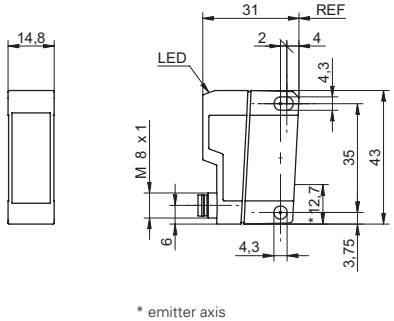
resolution



linearity error



dimension drawing



* emitter axis

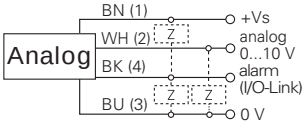
Sd = 50 ... 400 mm

- compact design
- measuring distance Sd 50 ... 400 mm
- resolution up to 0,1 mm

general data	
measuring distance Sd	50 ... 400 mm
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	14 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	0 ... 10 VDC
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	14,8 mm
height / length	43 mm
depth	31 mm
type	rectangular
housing material	plastic (ASA, MABS)
front (optics)	PMMA
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 67

order reference	connection types
FADK 14U4470/IO	cable 4 pin, 2 m
FADK 14U4470/S14/IO	connector M12 4 pin
FADK 14U4470/S35A/IO	connector M8 4 pin

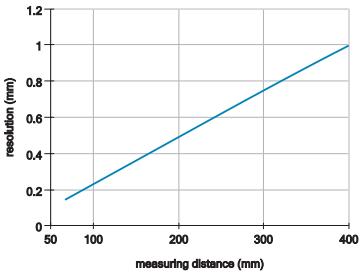
connection diagram



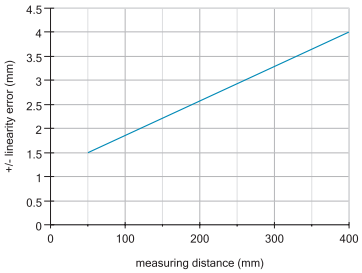
connectors and mating connectors	
ESW 33AH0200G	Connector M12, 4 pin, angular, 2 m, shielded
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10134964	Mounting bracket series 14 (L design)
10149011	Sensofix series 14
for details: see accessories section	

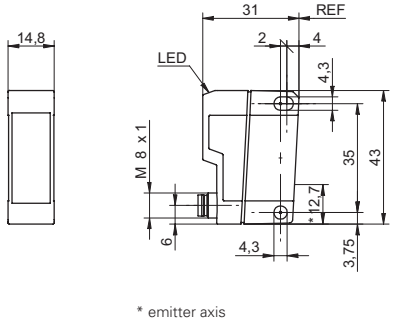
resolution



linearity error



dimension drawing



* emitter axis

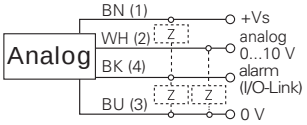
Sd = 50 ... 400 mm

- washdown design
- compact design
- measuring distance Sd 50 ... 400 mm

general data	
measuring distance Sd	50 ... 400 mm
special type	Washdown design
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
approvals/certificates	Ecolab
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	12 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	4 ... 20 mA
load resistance (analog I)	< (+Vs - 10 V) / 0,02 A
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	19,6 mm
height / length	51 mm
depth	34,3 mm
type	rectangular
housing material	stainless steel 1.4404 (V4A); LSR
front (optics)	PMMA
connection types	connector M12
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 68/69K & proTect+

order reference
FADR 14I4470/S14/IO

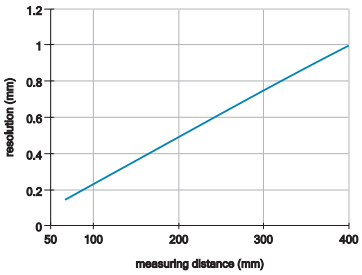
connection diagram



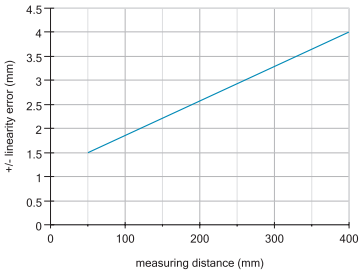
connectors and mating connectors	
ESG 34AY0200	Connector M12, 4 pin, straight, 2 m, V4A-PP
ESW 33AY0200	Connector M12, 4 pin, angular, 2 m, V4A-PP
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10134964	Mounting bracket series 14 (L design)
10149011	Sensofix series 14
for details: see accessories section	

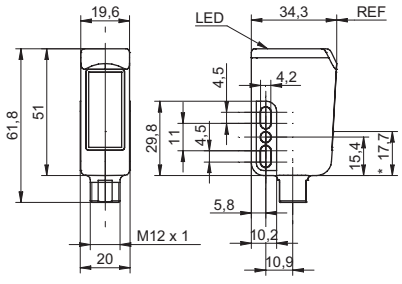
resolution



linearity error



dimension drawing



* emitter axis

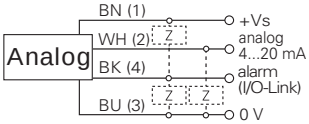
Sd = 50 ... 400 mm

- washdown design
- compact design
- measuring distance Sd 50 ... 400 mm

general data	
measuring distance Sd	50 ... 400 mm
special type	Washdown design
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
approvals/certificates	Ecolab
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	14 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	0 ... 10 VDC
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	19,6 mm
height / length	51 mm
depth	34,3 mm
type	rectangular
housing material	stainless steel 1.4404 (V4A); LSR
front (optics)	PMMA
connection types	connector M12
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 68/69K & proTect+

order reference
FADR 14U4470/S14/IO

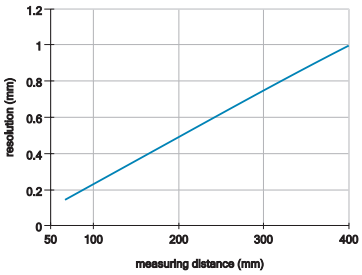
connection diagram



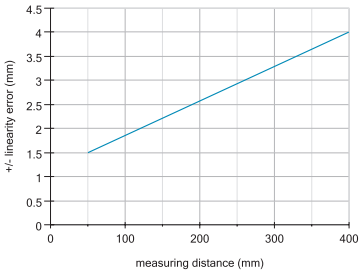
connectors and mating connectors	
ESG 34AY0200	Connector M12, 4 pin, straight, 2 m, V4A-PP
ESW 33AY0200	Connector M12, 4 pin, angular, 2 m, V4A-PP
additional cable connectors and field wireable connectors: see accessories	

Accessories	
10134964	Mounting bracket series 14 (L design)
10149011	Sensofix series 14
for details: see accessories section	

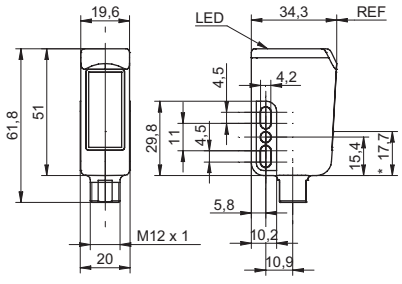
resolution



linearity error



dimension drawing



* emitter axis

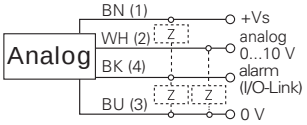
Sd = 50 ... 400 mm

- hygienic design
- compact design
- measuring distance Sd 50 ... 400 mm

general data	
measuring distance Sd	50 ... 400 mm
special type	hygienic design
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
approvals/certificates	Ecolab EHEDG
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	12 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	4 ... 20 mA
load resistance (analog I)	< (+Vs - 10 V) / 0,02 A
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	19,6 mm
height / length	52,2 mm
depth	34,3 mm
type	rectangular
housing material	stainless steel 1.4404 (V4A)
front (optics)	PMMA
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 68/69K & proTect+

order reference	connection types
FADH 14I4470/IO	cable 4 pin, 2 m
FADH 14I4470/KS34A/IO	flylead connector M12, L=300 mm

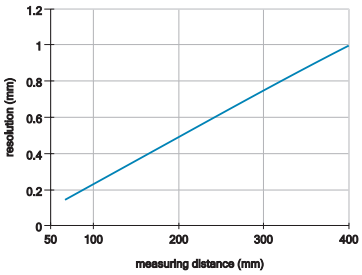
connection diagram



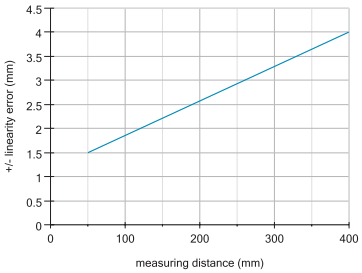
connectors and mating connectors	
ESG 34AY0200	Connector M12, 4 pin, straight, 2 m, V4A-PP
ESW 33AY0200	Connector M12, 4 pin, angular, 2 m, V4A-PP
additional cable connectors and field wireable connectors: see accessories	

Accessories	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm
for details: see accessories section	

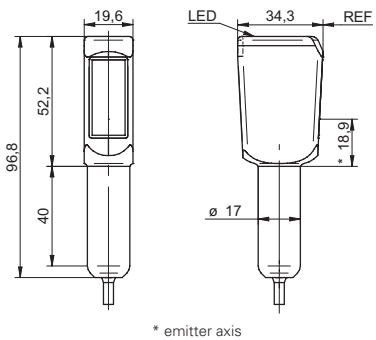
resolution



linearity error



dimension drawing



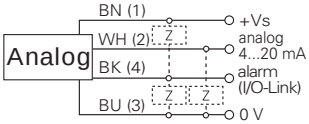
Sd = 50 ... 400 mm

- hygienic design
- compact design
- measuring distance Sd 50 ... 400 mm

general data	
measuring distance Sd	50 ... 400 mm
special type	hygienic design
adjustment	IO-Link
Teach-in range min.	> 20 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,1 ... 1 mm
linearity error	± 1,5 ... ± 4 mm
light source	pulsed point source LED
wave length	660 nm
beam type	point
beam diameter	8 mm
temperature drift	< 0,1 % Sde/K
approvals/certificates	Ecolab EHEDG
electrical data	
response time / release time	< 3 ms
voltage supply range +Vs	14 ... 26 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output signal	0 ... 10 VDC
load resistance (analog U)	> 100 kOhm
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	19,6 mm
height / length	52,2 mm
depth	34,3 mm
type	rectangular
housing material	stainless steel 1.4404 (V4A)
front (optics)	PMMA
ambient conditions	
operating temperature	0 ... +50 °C
protection class	IP 68/69K & proTect+

order reference	connection types
FADH 14U4470/IO	cable 4 pin, 2 m
FADH 14U4470/KS34A/IO	flylead connector M12, L=300 mm

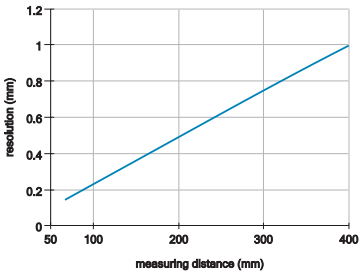
connection diagram



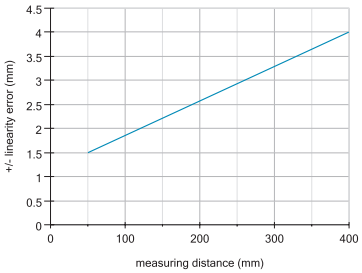
connectors and mating connectors	
ESG 34AY0200	Connector M12, 4 pin, straight, 2 m, V4A-PP
ESW 33AY0200	Connector M12, 4 pin, angular, 2 m, V4A-PP
additional cable connectors and field wireable connectors: see accessories	

Accessories	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm
for details: see accessories section	

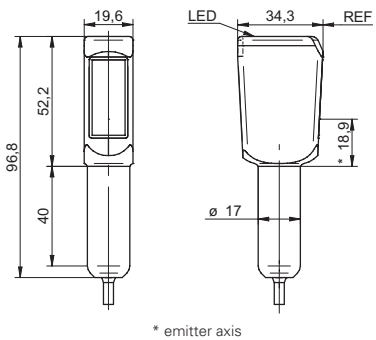
resolution



linearity error



dimension drawing



Sd = 100 ... 1000 mm

- qTeach
- alarm output

general data	
measuring distance Sd	100 ... 1000 mm
adjustment	Teach-in
Teach-in range min.	> 50 mm
power on indication	LED green
soiled lens indicator	LED red
resolution	0,3 ... 4 mm
linearity error	± 1,1 ... ± 15 mm
light source	pulsed red laser diode
wave length	656 nm
laser class	1
beam type	point
beam diameter	3,7 ... 13 mm
interference suppression	< 32 ms
electrical data	
response time / release time	< 12,8 ms
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	80 mA
output circuit	analog
output current	< 100 mA
alarm output	push-pull
short circuit protection	yes
reverse polarity protection	yes, Vs to GND
mechanical data	
width / diameter	23,4 mm
height / length	63 mm
depth	45 mm
type	rectangular
housing material	plastic (SAN LURAN 378P)
front (optics)	PMMA
ambient conditions	
ambient light immunity	< 20 kLux
operating temperature	0 ... +50 °C
protection class	IP 67

connection diagrams

connectors and mating connectors

ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded
additional cable connectors and field wireable connectors: see accessories	

Accessories

11077517	Mounting bracket for sensors series 25 (L design)
for details: see accessories section	

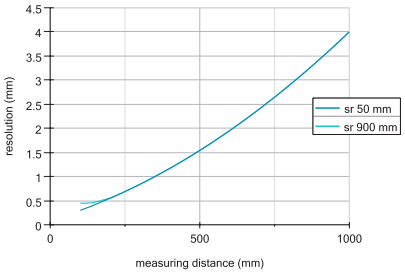
laser warning

IEC 60825-1/2014
Complies with 21 CFR 1040.10 and 1040.11
except for deviations pursuant to laser
notice No. 50, dated June 24, 2007

order reference	output signal	connection types	load resistance (analog U)	load resistance (analog I)
OADK 25I7480	4 ... 20 mA	cable, 2 m	-	< (+Vs - 6 V) / 0,02 A
OADK 25I7480/S14C	4 ... 20 mA	connector M12 5 pin	-	< (+Vs - 6 V) / 0,02 A
OADK 25U7480	0 ... 10 VDC	cable, 2 m	> 100 kOhm	-
OADK 25U7480/S14C	0 ... 10 VDC	connector M12 5 pin	> 100 kOhm	-

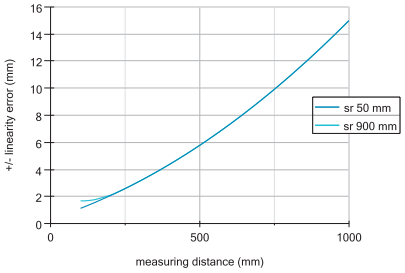
resolution

Sd = 100 ... 1000 mm

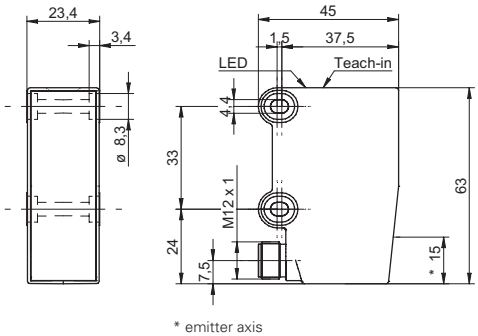


linearity error

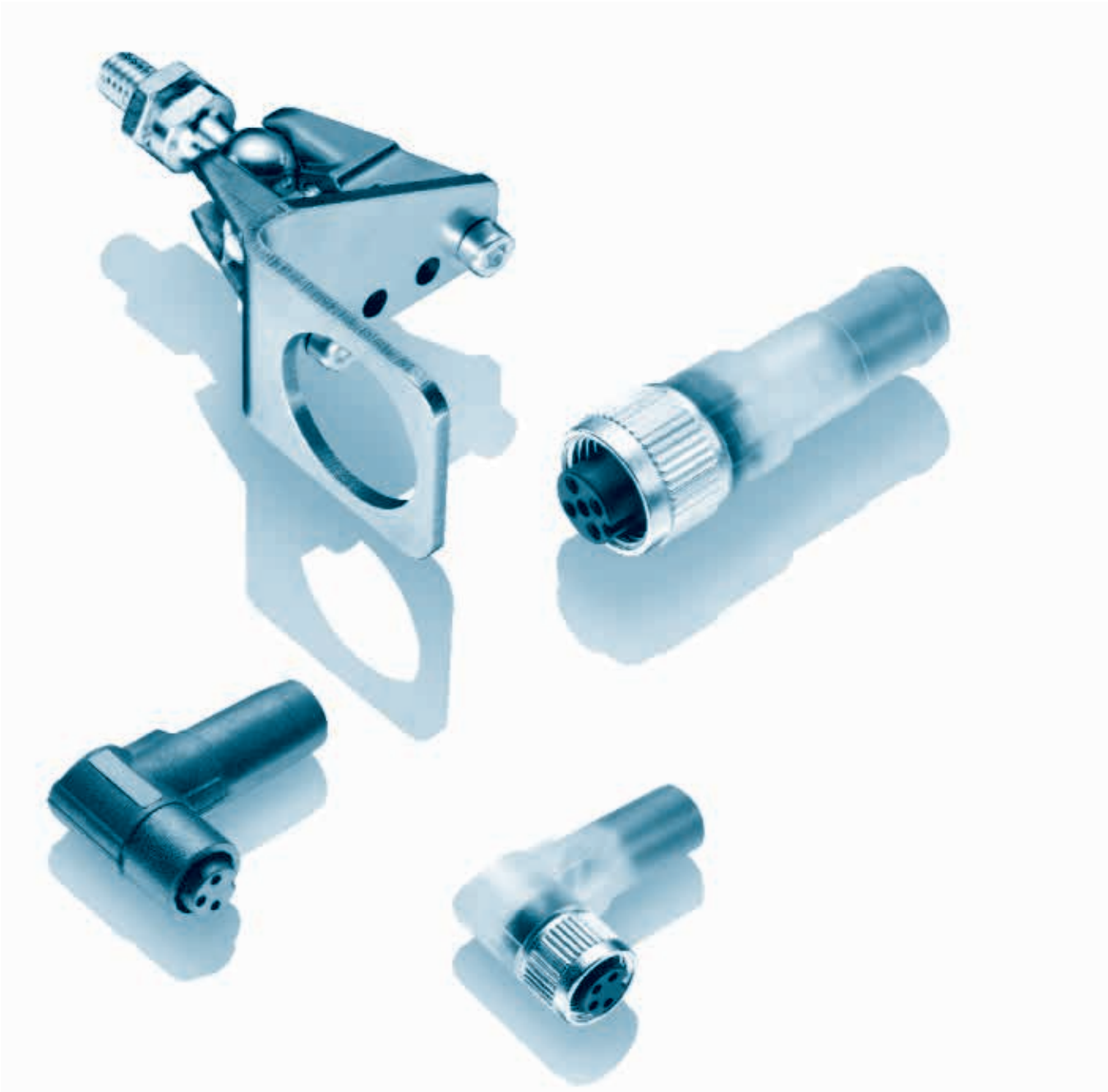
Sd = 100 ... 1000 mm



dimension drawing

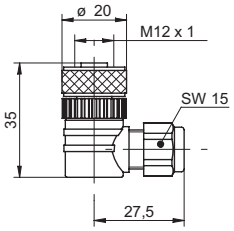


* emitter axis



Accessories

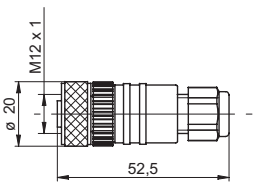
ES 14 - Cable socket M12 angular, not pre-assembled



order reference	
ES 14A PG7	Connector M12, 4 pin, angular
ES 14C PG7	Connector M12, 5 pin, angular

- Connector female unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

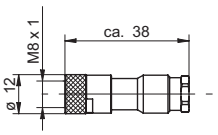
ES 18 - Cable socket M12 straight, not pre-assembled



order reference	
ES 18A PG7	Connector M12, 4 pin, straight
ES 18C PG7	Connector M12, 5 pin, straight

- Connector female unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

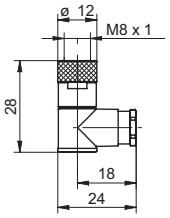
ES 21 - Cable socket M8 straight, not pre-assembled



order reference	
ES 21	Connector M8, 3 pin, straight
ES 21A	Connector M8, 4 pin, straight

- Connector female unshielded
- Connector only, no cable supplied
- 3 and 4 pin version

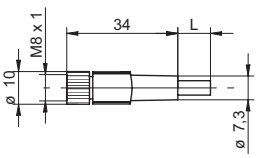
ES 22 - Cable socket M8 angular, not pre-assembled



order reference	
ES 22	Connector M8, 3 pin, angular
ES 22A	Connector M8, 4 pin, angular

- Connector female unshielded
- Connector only, no cable supplied
- 3 and 4 pin versions

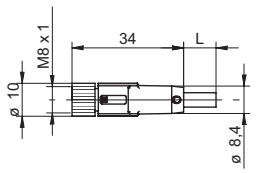
ESG 32 - Connector M8 straight



order reference	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESG 32AH0500	Connector M8, 4 pin, straight, 5 m
ESG 32AH1000	Connector M8, 4 pin, straight, 10 m
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESG 32SH0500	Connector M8, 3 pin, straight, 5 m
ESG 32SH1000	Connector M8, 3 pin, straight, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836
- Meet EN 60079-25 requirements for intrinsically safe ATEX applications

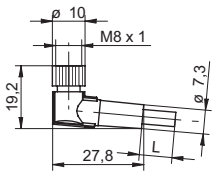
ESG 32G - Connector M8 straight, shielded



order reference	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESG 32AH0500G	Connector M8, 4 pin, straight, 5 m, shielded
ESG 32AH1000G	Connector M8, 4 pin, straight, 10 m, shielded
ESG 32SH0500G	Connector M8, 3 pin, straight, 5 m, shielded
ESG 32SH1000G/T	Connector M8, 3 pin, straight, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

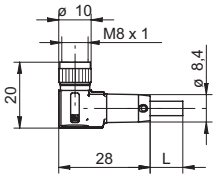
ESW 31 - Connector M8 angular



order reference	
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
ESW 31AH0500	Connector M8, 4 pin, angular, 5 m
ESW 31AH1000	Connector M8, 4 pin, angular, 10 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESW 31SH0500	Connector M8, 3 pin, angular, 5 m
ESW 31SH1000	Connector M8, 3 pin, angular, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836
- Meet EN 60079-25 requirements for intrinsically safe ATEX applications

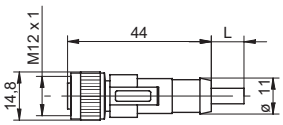
ESW 31G - Connector M8 angular, shielded



order reference	
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
ESW 31AH0500G	Connector M8, 4 pin, angular, 5 m, shielded
ESW 31AH1000G	Connector M8, 4 pin, angular, 10 m, shielded
ESW 31SH0200G	Connector M8, 3 pin, angular, 2 m, shielded
ESW 31SH0500G	Connector M8, 3 pin, angular, 5 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

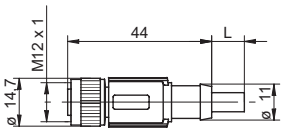
ESG 34 - Connector M12 straight



order reference	
ESG 34AH0200	Connector M12, 4 pin, straight, 2 m
ESG 34AH0500	Connector M12, 4 pin, straight, 5 m
ESG 34AH1000	Connector M12, 4 pin, straight, 10 m
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESG 34CH0500	Connector M12, 5 pin, straight, 5 m
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESG 34SH0500	Connector M12, 3 pin, straight, 5 m
ESG 34SH1000	Connector M12, 3 pin, straight, 10 m

- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

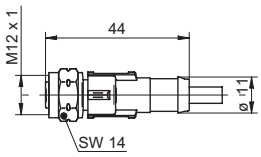
ESG 34G - Connector M12 straight, shielded



- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

order reference	
ESG 34AH0200G	Connector M12, 4 pin, straight, 2 m, shielded
ESG 34AH0500G	Connector M12, 4 pin, straight, 5 m, shielded
ESG 34AH1000G	Connector M12, 4 pin, straight, 10 m, shielded
ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded
ESG 34CH0500G	Connector M12, 5 pin, straight, 5 m, shielded
ESG 34CH1000G	Connector M12, 5 pin, straight, 10 m, shielded
ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESG 34FH0500G	Connector M12, 8 pin, straight, 5 m, shielded
ESG 34FH1000G	Connector M12, 8 pin, straight, 10 m, shielded

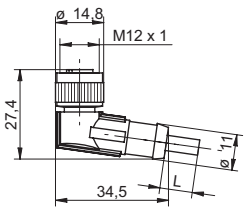
ESG 34F - Connector M12 straight, PVC/V4A



- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

order reference	
ESG 34AF0500	Connector M12, 4 pin, straight, 5 m, V4A-PVC
ESG 34AF1000	Connector M12, 4 pin, straight, 10 m, V4A-PVC

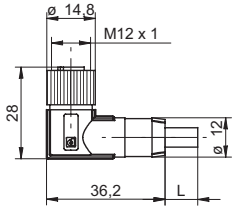
ESW 33 - Connector M12 angular



- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

order reference	
ESW 33AH0200	Connector M12, 4 pin, angular, 2 m
ESW 33AH0500	Connector M12, 4 pin, angular, 5 m
ESW 33AH1000	Connector M12, 4 pin, angular, 10 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
ESW 33SH0500	Connector M12, 3 pin, angular, 5 m
ESW 33SH1000	Connector M12, 3 pin, angular, 10 m

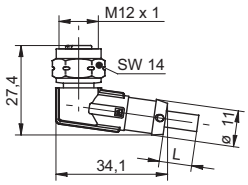
ESW 33G - Connector M12 angular, shielded



order reference	
ESW 33AH0200G	Connector M12, 4 pin, angular, 2 m, shielded
ESW 33AH0500G	Connector M12, 4 pin, angular, 5 m, shielded
ESW 33AH1000G	Connector M12, 4 pin, angular, 10 m, shielded
ESW 33CH0500G	Connector M12, 5 pin, angular, 5 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

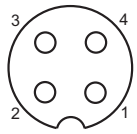
ESW 33F - Connector M12 angular, PVC/V4A



order reference	
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
ESW 33AF0500	Connector M12, 4 pin, angular, 5 m, V4A-PVC
ESW 33AF1000	Connector M12, 4 pin, angular, 10 m, V4A-PVC
ESW 33AF2500	Connector M12, 4 pin, angular, 25 m, V4A-PVC

- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

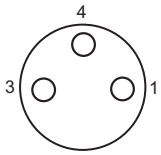
3 pin



1 = BN
2 = n.c.
3 = BU
4 = BK

ESG 34
ESW 33

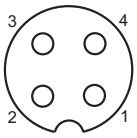
3 pin



1 = BN
3 = BU
4 = BK

ES 21
ES 22
ESG 32
ESG 32G
ESW 31
ESW 31G

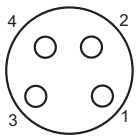
4 pin



1 = BN (+Vs)
2 = WH (output)
3 = BU (0V)
4 = BK (output)

ES 14
ES 18
ESG 34
ESG 34F
ESG 34G
ESW 33
ESW 33F
ESW 33G

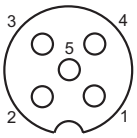
4 pin



1 = BN
2 = WH
3 = BU
4 = BK

ES 21A
ES 22A
ESG 32
ESG 32G
ESW 31
ESW 31G

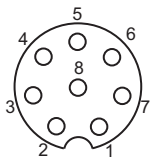
5 pin



1 = BN
2 = WH
3 = BU
4 = BK
5 = GY

ES 14C
ES 18C
ESG 34
ESG 34G
ESW 33
ESW 33G

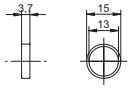
8 pin



1 = WH
2 = BN
3 = GN
4 = YE
5 = GY
6 = PK
7 = BU
8 = RD

ESG 34G
ESW 33G

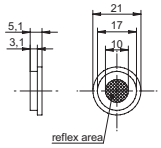
FTAR 013



- Fastening method self-adhesive
- Micro structure
- For Retro-reflective sensors

order reference	
FTAR 013A000	Reflector round Ø 15 mm

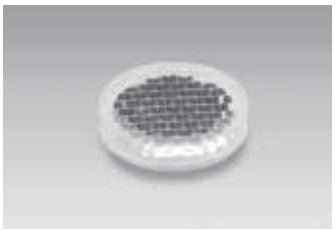
FTAR 014

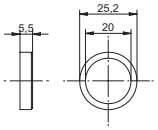


- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
FTAR 014A000	Reflector round Ø 21 mm

FTAR 020

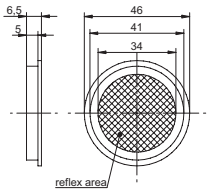




- Fastening method self-adhesive
- Micro structure
- For Retro-reflective sensors

order reference	
FTAR 020A000	Reflector round Ø 25,2 mm

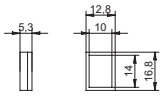
FTAR 038



- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
FTAR 038A000	Reflector round Ø 46 mm

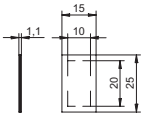
FTDR 010A



- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
FTDR010A014	Reflector rectangular 16,8 x 12,8 mm

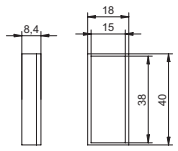
FTDR 010D



- Fastening method self-adhesive
- For laser light sensors

order reference	
FTDR 010D020	Reflector rectangular 15 x 25 mm

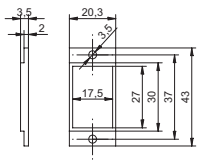
FTDR 015



- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
FTDR 015A038	Reflector rectangular 40 x 18 mm

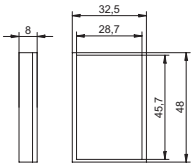
FTDR 017



- Fastening method screw mounting
- Micro structure
- For Retro-reflective sensors

order reference	
FTDR 017A027	Reflector rectangular 43 x 20,3 mm

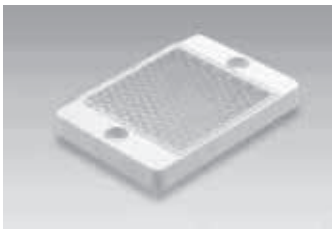
FTDR 029

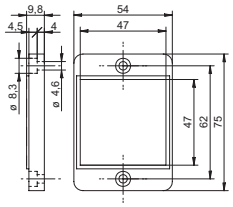


- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
FTDR 029A046	Reflector rectangular 48 x 32,5 mm

FTDR 047

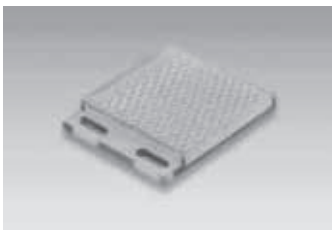


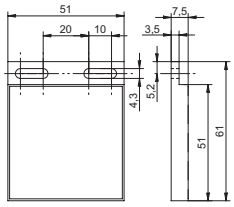


- Fastening method screw mounting
- For Retro-reflective sensors

order reference	
FTDR 047A048	Reflector rectangular 75 x 54 mm

FTDR 051

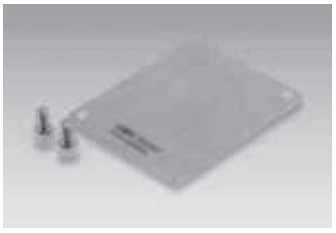


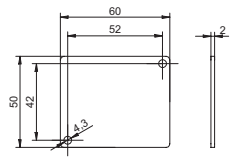


- Detergent resistant reflector
- Ecolab approved
- For Retro-reflective sensors

order reference	
FTDR 051E051	Ecolab approved reflector

FTDR 050

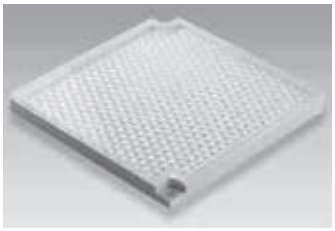


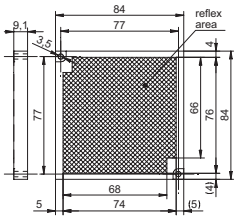


- Stainless steel reflector for SmartReflect in washdown design
- Material: Stainless steel V4A

order reference	
FTDR 050R060	Stainless steel reflector for SmartReflect in washdown design

FTDR 084

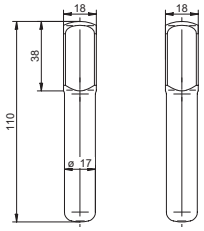




- Fastening method screw mounting
- For Retro-reflective sensors

order reference	
FTDR 084A084	Reflector rectangular 84 x 84 mm

FTDR 017W



- Stainless steel reflector for SmartReflect in hygiene design
- EHEDG-certified

Accessorie: "mounitng for sensors in hygienic design Ø17", order reference HI17-1H

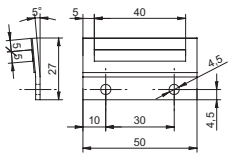
order reference	
FTDR 017W035	Stainless steel reflector for SmartReflect in hygiene design

FTDF 020F

- Fastening method self-adhesive
- For laser light sensors

order reference	
FTDF 020F020	Reflective tape rectangular 20 x 20 mm

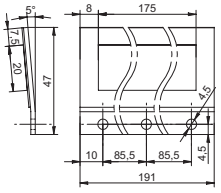
FTDR 005



- Fastening method screw mounting
- For pocket-size edge sensor *PosCon*

order reference	
FTDR 005I040	Reflector rectangular 50 x 27 mm

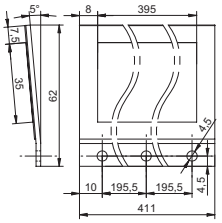
FTDR 020



- Fastening method screw mounting
- For pocket-size edge sensor *PosCon*

order reference	
FTDR 020I175	Reflector rectangular 191 x 47 mm

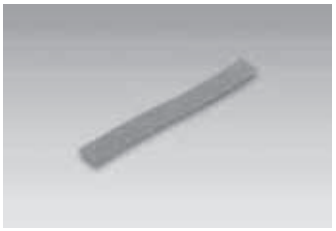
FTDR 035

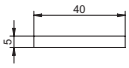


- Fastening method screw mounting
- For pocket-size edge sensor *PosCon*

order reference	
FTDR 035I395	Reflector rectangular 411 x 62 mm

FTDF 005

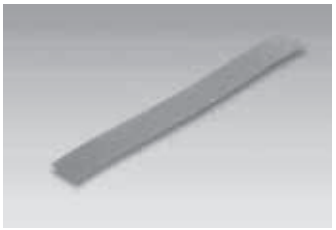


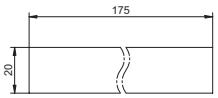


- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
FTDF 005I040	Reflective tape rectangular 5 x 40 mm

FTDF 020

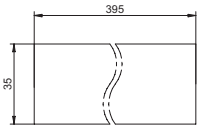




- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
FTDF 020I175	Reflective tape rectangular 20 x 175 mm

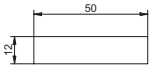
FTDF 035I



- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
FTDF 035I395	Reflective tape rectangular 35 x 395 mm

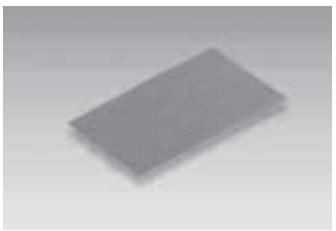
FTDF 012

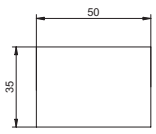


- Fastening method self-adhesive
- For pocket-size edge sensor *ParCon*

order reference	
FTDF 012M050	Reflective tape rectangular 12 x 50 mm

FTDF 035

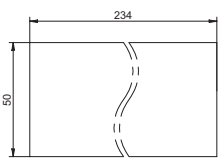




- Fastening method self-adhesive
- For pocket-size edge sensor *ParCon*

order reference	
FTDF 035M050	Reflective tape rectangular 35 x 50 mm

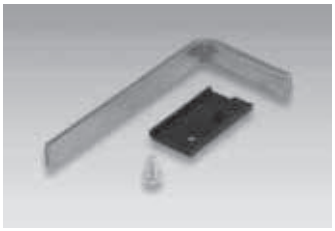
FTDF 050

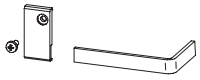


- Fastening method self-adhesive
- For pocket-size edge sensor *ParCon*

order reference	
FTDF 050M234	Reflective tape rectangular 50 x 234 mm

FTDR 008/01

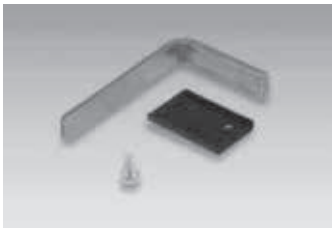




- Bracket with reflective tape
- For pocket-size edge sensor *ParCon*

order reference	
FTDR 008M030/01	Reflector bracket high

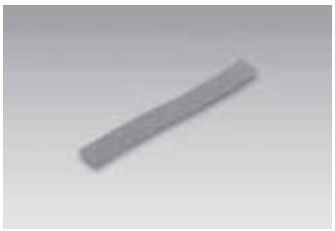
FTDR 008/21

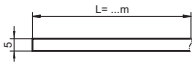


- Bracket with reflective tape
- For pocket-size edge sensor *ParCon*

order reference	
FTDR 008M030/21	Reflector bracket lateral

Z-FTDF 005

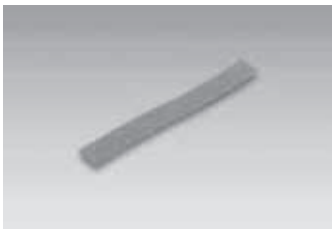


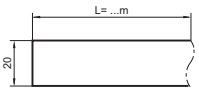


- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
Z-FTDF 005I0100	Reflective tape rectangular 5 x 100 mm
Z-FTDF 005I0500	Reflective tape rectangular 5 x 500 mm
Z-FTDF 005I1000	Reflective tape rectangular 5 x 1000 mm
Z-FTDF 005I1600	Reflective tape rectangular 5 x 1600 mm

Z-FTDF 020

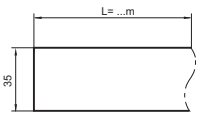




- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
Z-FTDF 020I0100	Reflective tape rectangular 20 x 100 mm
Z-FTDF 020I0180	Reflective tape rectangular 20 x 180 mm
Z-FTDF 020I0500	Reflective tape rectangular 20 x 500 mm
Z-FTDF 020I1000	Reflective tape rectangular 20 x 1000 mm
Z-FTDF 020I1600	Reflective tape rectangular 20 x 1600 mm

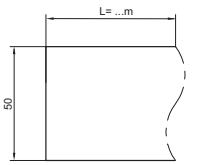
Z-FTDF 035



- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
Z-FTDF 035I0100	Reflective tape rectangular 35 x 100 mm
Z-FTDF 035I0500	Reflective tape rectangular 35 x 500 mm
Z-FTDF 035I1000	Reflective tape rectangular 35 x 1000 mm
Z-FTDF 035I1600	Reflective tape rectangular 35 x 1600 mm

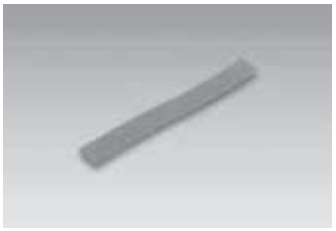
Z-FTDF 050

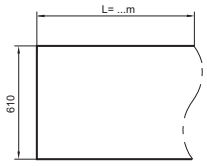


- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
Z-FTDF 050I0100	Reflective tape rectangular 50 x 100 mm
Z-FTDF 050I0500	Reflective tape rectangular 50 x 500 mm
Z-FTDF 050I1000	Reflective tape rectangular 50 x 1000 mm
Z-FTDF 050I1600	Reflective tape rectangular 50 x 1600 mm

Z-FTDF 610

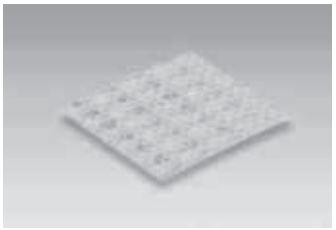


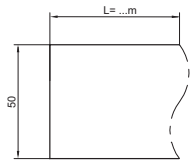


- Fastening method self-adhesive
- For pocket-size edge sensor *PosCon*

order reference	
Z-FTDF 610I0100	Reflective tape rectangular 610 x 100 mm
Z-FTDF 610I0500	Reflective tape rectangular 610 x 500 mm
Z-FTDF 610I1000	Reflective tape rectangular 610 x 1000 mm
Z-FTDF 610I1600	Reflective tape rectangular 610 x 1600 mm

Z-FTDF 050K

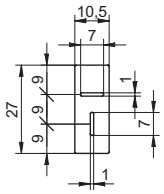




- Fastening method self-adhesive
- For Retro-reflective sensors

order reference	
Z-FTDF 050K0100	Reflective type rectangular 50 x 100 mm
Z-FTDF 050K0500	Reflective type rectangular 50 x 500 mm
Z-FTDF 050K1000	Reflective type rectangular 50 x 1000 mm
Z-FTDF 050K9999	Reflective type rectangular 50 x 10000 mm

Slot aperture stickers series 14

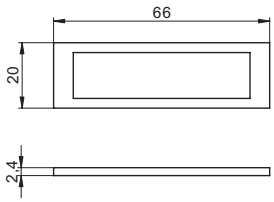


- Material: Polyester foil
- Contents: 2 pieces
- self-adhesive

For use with FSDK 14 / FEDK 14

order reference	
10144075	Slot aperture stickers series 14

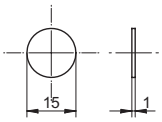
Protector cap for OxDM 20



- Material: PMMA
- Self-adhesive

order reference	
10156878	Protector cap OxDM 20

Glass cover for sensors series 18

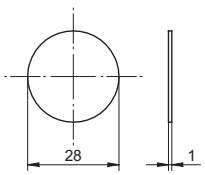


- Material: glass

For use with cap nut series 18

order reference	
10103068	Glass cover series 18

Glass cover for sensors series 30

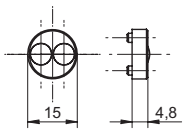


- Material: glass

For use with cap nut series 30

order reference	
10103226	Glass cover series 30

Doubling lens for sensors serie 18

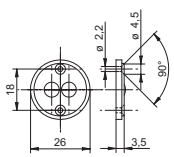


- Material: PBTP / glass
- For double the sensing distance FZAM 18

For use with FZAM 18

order reference	
10107250	Doubling lens series 18 FZAM 18

Doubling lens for sensors serie 30

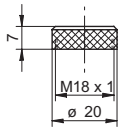


- Material: PC / glass
- For double the sensing distance FZAM 30

For use with FZAM 30

order reference	
10107408	Doubling lens series 30 FZAM 30

Cap nut for photoelectric sensors series 18

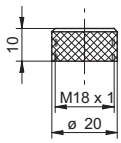


- Material: Nickel-plated brass

For use with FZAM 18 (with glass cover)

order reference	
10103067	Cap nut glass cover for sensors series 18

Cap nut for photoelectric sensors series 18

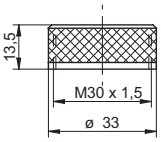


- Material: Nickel-plated brass

For use with FZAM 18 (with doubling lens)

order reference	
10115913	Cap nut glass cover and doubling lens for sensors series 18

Cap nut for photoelectric sensors series 30

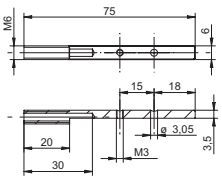


- Material: Nickel-plated brass

For use with FZAM 30 (with glass cover)

order reference	
10102801	Cap nut glass cover for sensors series 30

Mounting brad FHDK 04

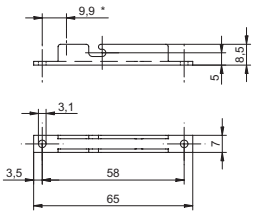


- Material: Nickel-plated steel

For use with FHDK 04

order reference	
10163196	Mounting brad FHDK 04

Bracket for profiles sensor series 04

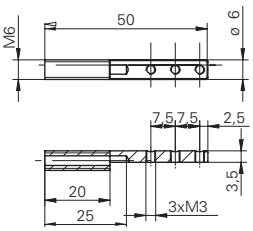


- Material: Aluminum

For use with FHDK 04

order reference	
10163299	Bracket for profiles FHDK 04

Minofix-Mounting kit for MINOS

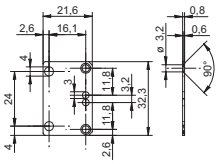


- Material: brass nickel-plated

For use with FxxK 07 (MINOS)

order reference	
10150844	Minofix mounting 07

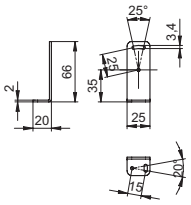
Mounting panel for sensors series 10



For use with UxDK 10, FxDK 10, OxDK 10

order reference	
10162083	Mounting panel for sensors series 10

Mounting bracket for sensors O300 (L design)

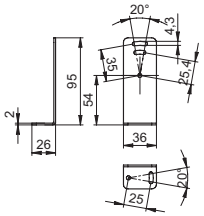


- Material: Steel

For use with O300

order reference	
11102423	Mounting bracket O300 (L design)

Mounting bracket for sensors O500/U500 (L design)

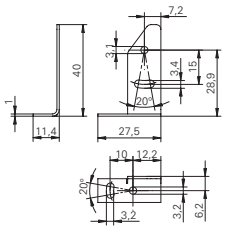


- Material: Steel

For use with O500

order reference	
11092246	Mounting bracket O500/U500 (L design)

Mounting bracket for sensors series 10

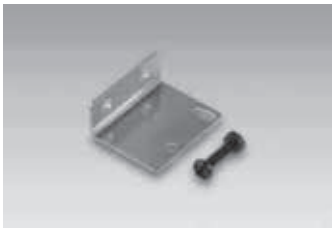


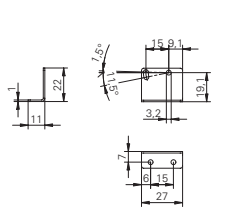
- Material: Steel

For use with UxDK 10, FxDK 10, OxDK 10

order reference	
10118798	Mounting bracket series 10

Mounting bracket for sensors series 10 (L design)



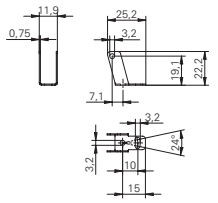


- Material: Steel

For use with UxDK 10, FxDK 10, OxDK 10

order reference	
10133792	Mounting bracket series 10 (L design)

Mounting bracket for sensors series 10 (U design)

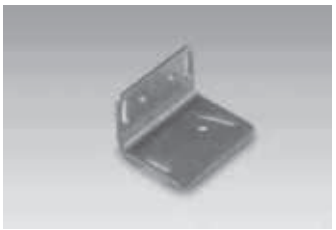


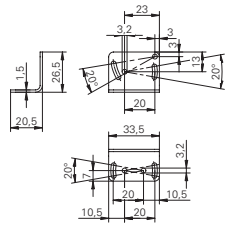
- Material: Steel

For use with UxDK 10, FxDK 10, OxDK 10 (only cabel versions)

order reference	
10114501	Mounting bracket series 10 (U design)

Mounting bracket for sensors series 12



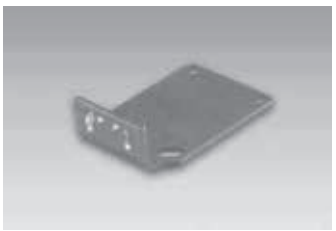


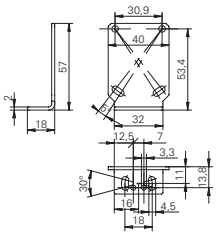
- Material: Steel

For use with FxDM 12, OxDM 12

order reference	
10113873	Mounting bracket series 12 (L design)

Mounting bracket for sensors series 13



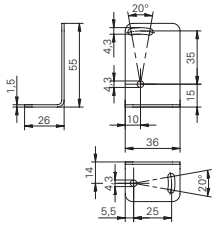


- Material: Steel

For use with OxDM 13

order reference	
10161695	Mounting bracket for sensors series 13 (L design)

Mounting bracket for sensors series 14

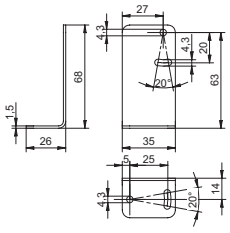


- Material: Steel

For use with FxDK 14, OxDK 14

order reference	
10134964	Mounting bracket series 14 (L design)

Mounting bracket for washdown sensors series 14

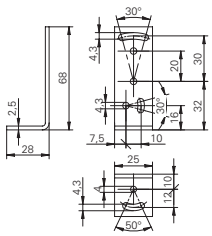


- Material: Stainless Steel

For use with FxDR 14

order reference	
11046278	Mounting bracket series 14 washdown

Mounting bracket for sensors series 15

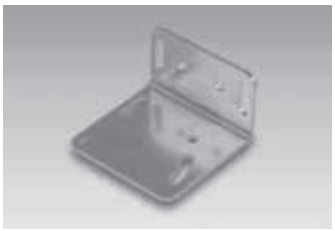


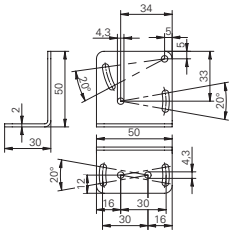
- Material: Steel

For use with FxDM 15

order reference	
10103415	Mounting bracket series 15 (L design)

Mounting bracket for sensors series 16



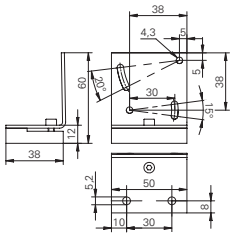


- Material: Steel

For use with FxDM 16, OxDM 16

order reference	
10113917	Mounting bracket series 16 (L design)

Mounting bracket for fine adjustment series 16

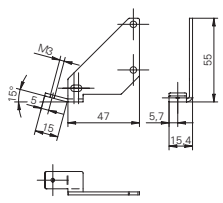


- Material: Steel

Simplifies the alignment of the laser sensors series OSDM 16 / OEDM 16

order reference	
10119373	Mounting bracket for fine adjustment series 16

Lens cleaning air nozzle bracket

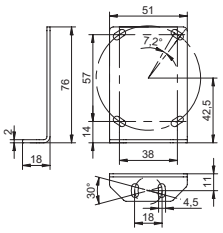


- Material: Steel

For use with FxDM 16, OxDM 16

order reference	
10116407	Lens cleaning air nozzle bracket

Mounting bracket for sensor OxDM 20

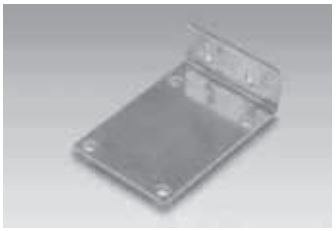


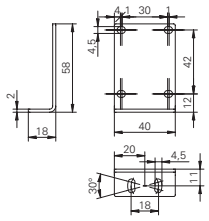
- Material: Steel

For use with OADM 20, OADM 250

order reference	
11010227	Mounting bracket OxDM 20

Mounting bracket for Logipal/PosCon



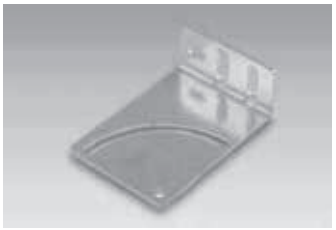


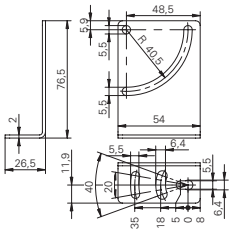
- Material: Steel

For use with ZADM 023, FKDM 22

order reference	
10126220	Mounting bracket series 22 L design

Mounting bracket for sensors series 26



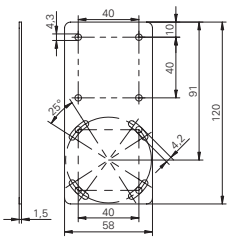


- Material: Steel

For use with FxDK 26

order reference	
10112477	Mounting bracket series 26 (L design)

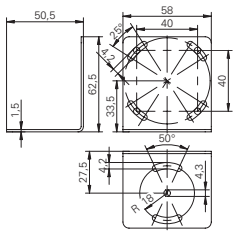
Mounting bracket for Verisens



- Material: Steel

order reference	
10159905	Mounting bracket for Verisens

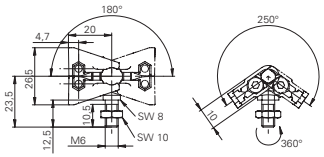
Mounting bracket for Verisens (L design)



- Material: Steel

order reference	
10159906	Mounting bracket for Verisens (L design)

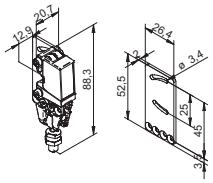
Sensofix-Base module



- Clamps made of stainless steel
- Ball pivots made of galvanized steel

order reference	
10149010	Sensofix-Base module

Sensofix-Mounting kit for sensors O300

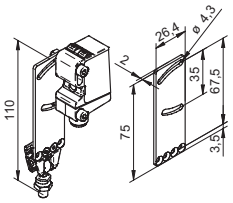


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with photoelectric sensors O300

order reference	
11104963	Sensofix O300

Sensofix-Mounting kit for sensors O500/U500

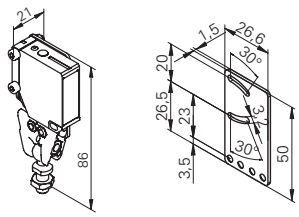


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with photoelectric sensors O500

order reference	
11099942	Sensofix O500/U500

Sensofix-Mounting kit for sensors series 12

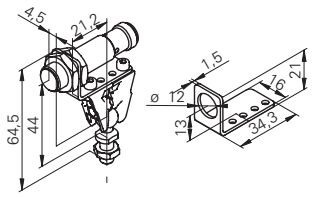


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with FxDM 12, OxDM 12

order reference	
10150328	Sensofix series 12

Sensofix-Mounting kit for sensors series 12 round

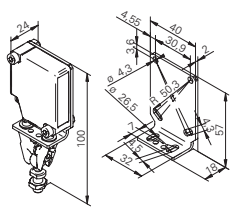


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M12 housing

order reference	
10151720	Sensofix series 12 round

Sensofix-Mounting kit for sensors series 13

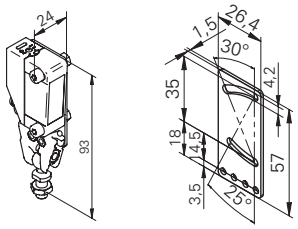


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with OADM 13

order reference	
10161829	Sensofix series 13

Sensofix-Mounting kit for sensors series 14

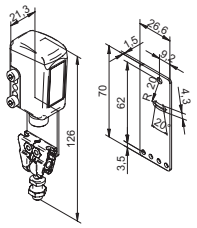


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with FxDK 14, OxDK 14

order reference	
10149011	Sensofix series 14

Sensofix-Mounting kit for washdown sensors series 14

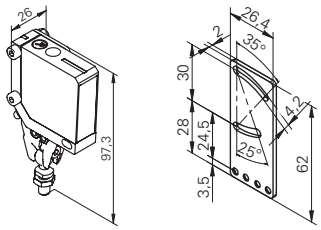


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with FxDR 14

order reference	
11046279	Sensofix series 14 washdown

Sensofix-Mounting kit for sensors series 16

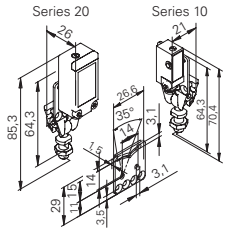


- Mounting panel made of stainless steel
- Clamps made of stainless steel
- Ball pivots made of galvanized steel

For use with FxDM 16, OxDM 16

order reference	
10151721	Sensofix series 16

Sensofix-Mounting kit for sensors series 10/20

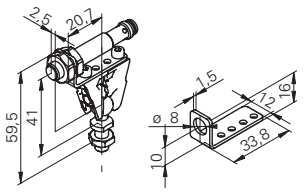


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with photoelectric and ultrasonic sensors series 10, series 20

order reference	
10150326	Sensofix series 10 / series 20

Sensofix-Mounting kit for sensors series 08 round

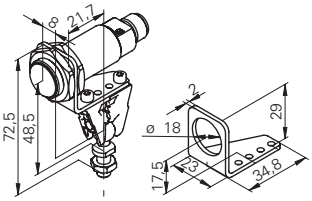


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M8 housing

order reference	
10151719	Sensofix series 08 round

Sensofix-Mounting kit for sensors series 18 round

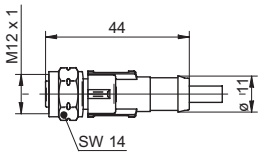


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M18 housing

order reference	
10151658	Sensofix series 18

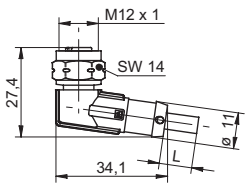
ESG 34F - Connector M12 straight, PVC/V4A



order reference	
ESG 34AF0500	Connector M12, 4 pin, straight, 5 m, V4A-PVC
ESG 34AF1000	Connector M12, 4 pin, straight, 10 m, V4A-PVC

- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

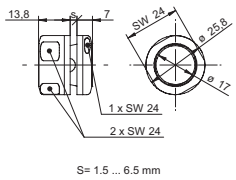
ESW 33F - Connector M12 angular, PVC/V4A



order reference	
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
ESW 33AF0500	Connector M12, 4 pin, angular, 5 m, V4A-PVC
ESW 33AF1000	Connector M12, 4 pin, angular, 10 m, V4A-PVC
ESW 33AF2500	Connector M12, 4 pin, angular, 25 m, V4A-PVC

- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

Mounting HI17-1H for sensors in hygienic design Ø 17 mm

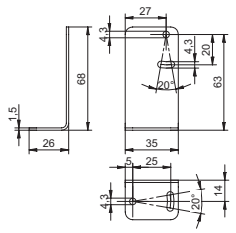


- Material: Stainless steel V4A
- EHEDG-certified

For use with inductive sensors 17 mm and photoelectric sensors in hygienic design

order reference	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm

Mounting bracket for washdown sensors series 14

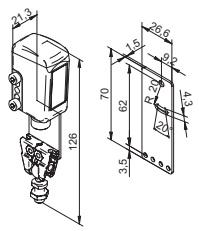


- Material: Stainless Steel

For use with FxDR 14

order reference	
11046278	Mounting bracket series 14 washdown

Sensofix-Mounting kit for washdown sensors series 14

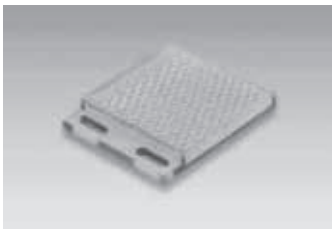


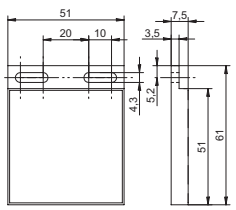
- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with FxDR 14

order reference	
11046279	Sensofix series 14 washdown

FTDR 051

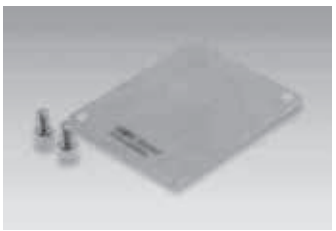


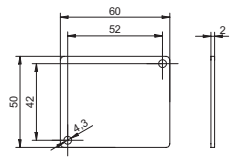


- Detergent resistant reflector
- Ecolab approved
- For Retro-reflective sensors

order reference	
FTDR 051E051	Ecolab approved reflector

FTDR 050

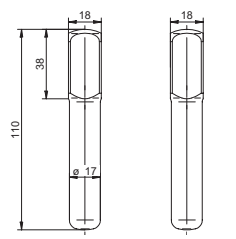




- Stainless steel reflector for SmartReflect in washdown design
- Material: Stainless steel V4A

order reference	
FTDR 050R060	Stainless steel reflector for SmartReflect in washdown design

FTDR 017W

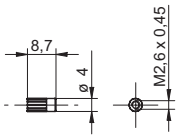


- Stainless steel reflector for SmartReflect in hygiene design
- EHEDG-certified

Accessorie: "mounitng for sensors in hygienic design Ø17", order reference HI17-1H

order reference	
FTDR 017W035	Stainless steel reflector for SmartReflect in hygiene design

Doubling lens M2,6

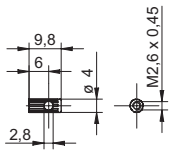


- Increases the actual range Sb by a factor of 6
- Contents: 2 pieces

For fiber optic: FSE 200C1Y00 / FSE 200C2Y00, FSA 200C1Y00, FSG 200C1Y00, FSE 200E1Y00

order reference	
10134541	Doubling lens increases the actual range (paires)

Doubling lens M2,6 (side view version)

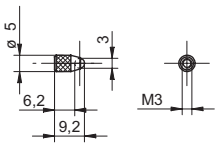


- Side view version
- Increases the actual range Sb by a factor of 6
- Contents: 2 pieces

For fiber optic: FSE 200C1Y00 / FSE 200C2Y00, FSA 200C1Y00, FSG 200C1Y00, FSE 200E1Y00

order reference	
10134540	Doubling lens increases the actual range (paires)

Doubling lens M3

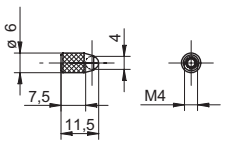


- Material: brass / glass
- Increases the actual range Sb by a factor of 6
- Contents: 2 pieces

For fiber optic: FSE 200C1004

order reference	
10119910	Doubling lens M3 increases the actual range (paires)

Doubling lens M4

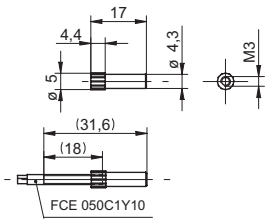


- Material: brass / glass
- Increases the actual range Sb by a factor of 6
- Contents: 2 pieces

For fiber optic: FSE 200C1004

order reference	
10119909	Doubling lens M4 increases the actual range (paires)

Focusing lens M3 ø 0,1 mm

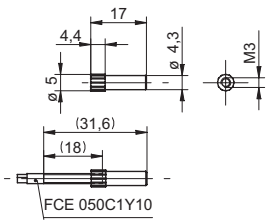


- Light spot Ø 0,1 mm at a distance of 4,6 mm

For fiber optic: FCE 050C1Y10 (empfohlen), FCE 200D1Y00, FCE 200D1Y01, FCE 200E1Y00

order reference	
10134544	Focusing lens M3 ø 0,1 mm

Focusing lens M3 ø 0,4 m

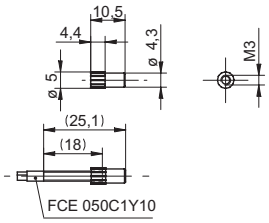


- Light spot Ø 0,4 mm at a distance of 7 mm

For fiber optic: FCE 050C1Y10 (empfohlen), FCE 200D1Y00, FCE 200D1Y01, FCE 200E1Y00

order reference	
10134543	Focusing lens M3 ø 0,4 m

Focusing lens M3 ø 2 mm

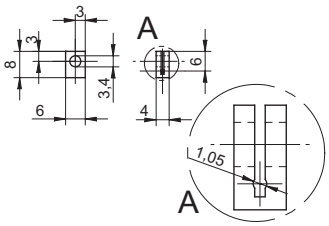


- Light spot Ø 2 mm at a distance of 19 mm

For fiber optic: FCE 050C1Y10 (empfohlen), FCE 200D1Y00, FCE 200D1Y01, FCE 200E1Y00

order reference	
10134542	Focusing lens M3 ø 2 mm

Mounting bracket 1,1 mm

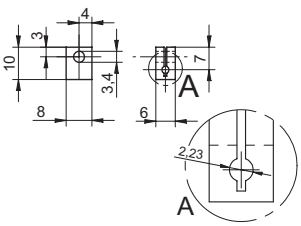


- Material: Aluminum

For fiber optic through beam type with 1,1 mm sheath diameters

order reference	
10119912	Mounting bracket Ø 1,1 mm

Mounting bracket 2,2 mm

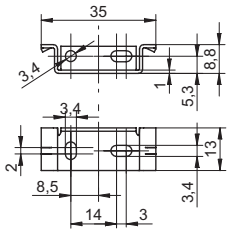


- Material: Aluminum

For fiber optic through beam type with 2,2 mm sheath diameters

order reference	
10119911	Mounting bracket Ø 2,2 mm

Mounting bracket for fiber optic sensors series 12

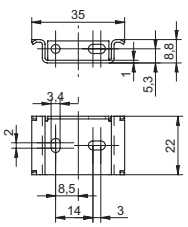


- Material: Steel
- Delivered with every plastic fiber optic sensor series 12

For use with FVDK 12

order reference	
10145702	Mounting bracket for fiber optic sensors series 12

Mounting bracket for fiber optic sensors series 22

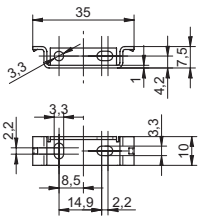


- Material: Steel
- Delivered with every plastic fiber optic sensor series 22

For use with FVDK 22

order reference	
10125534	Mounting bracket for fiber optic sensors series 22

Mounting bracket for fiber optic sensors series 60

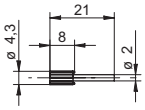


- Material: Steel
- Must be ordered separately for series 66 and series 67sensors

For use with FVDK 66, FVDK 67

order reference	
10159806	Mounting bracket for fiber optic sensors series 60, 66, 67, 80

Reduction tube



- Set of 2
- Delivered with every 1 mm diameter plastic fiber optic

order reference	
10140260	Reduction tube

Fiber optic cable extension

- Reduction in range due to fiber optic extension: 2 m = approx. 25%
- Reduction in range due to fiber optic extension: 5 m = approx. 60%

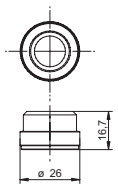
order reference	
10145523	Fiber optic cable extension 5 m hochflexibel
10156738	Fiber optic cable extension 2 m
10158142	Fiber optic cable extension 5 m

Cutting tool

- Delivered with every plastic fiber optic

order reference	
10114652	Cutting tool for plastic fiber optics

Adapter for glass fiber optic sensors 30

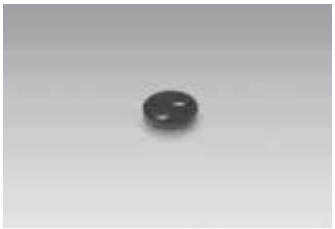


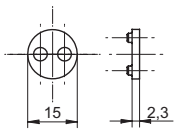
- Material: POM

For use with fiber optic amplifier FZAM 30

order reference	
10102757	Adapter series 30
10106042	Adapter series 30 (angeled fiber optics)

Adjusting plate for glass fiber optic sensors 18 (replace)

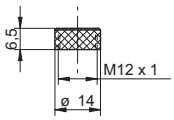




- Material: PETP
- For re-orders when lost
- Enclosed with every glass fiber optic of type A

order reference	
10101958	Adjusting plate series 18

Cap nut for glass fiber optic sensors 15 (replace)

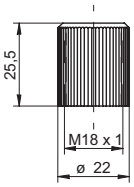


- Material: Nickel-plated brass
- For re-orders when lost
- Enclosed with every glass fiber optic of type B

For use with FVDM 15

order reference	
10103230	Cap nut (replace) for fiber optics series 15

Cap nut for glass fiber optic sensors 18 (replace)

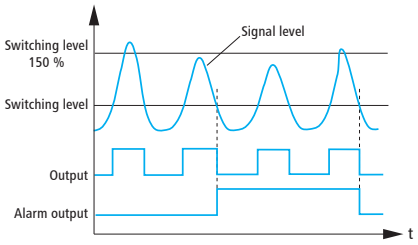


- Material: POM
- For re-orders when lost
- Enclosed with every glass fiber optic of type A

For use with FZAM 18

order reference	
10101480	Cap nut (replace) for fiber optics series 18

Glossary

Active zone	The zone in which an object can be detected in front of the sensor. With diffuse sensors, this is approximately equivalent to the zone within the maximum sensing distance where the emitted beam and the reception angle intersect. With retro-reflective sensors, this is the zone from the emitted beam exit plane to the reflector and from there back to the receiver entrance plane. With through beam sensors, this is the zone from the emitted beam exit plane to the receiver entrance plane.
Actual range Sb	Like the nominal range Sn, but including an excess gain of 50% excess gain, i.e. the maximum distance at which reliable operation of the sensor is possible
Adjustment aid	See «Output indicator»
Alarm output	Output function which indicates an inadequate signal level. The alarm output usually has a «dynamic» function which indicates whether the excess gain of 150% of the switching threshold was exceeded or not during the last light switching operation. It is also usually available as a «static» function: in this case, the alarm output indicates whether the current value of the signal is within the «critical range» between 100% and 150% of the switching threshold. 
Ambient light immunity	Maximum permissible light intensity of the ambient light measured with a non-pulsed light source to IEC60947-5-2 and directed together with the receiver at a white reference paper which clearly covers the received beam. The light intensity is measured on the reference paper. In almost all sensor ranges, direct exposure of the white object to sunlight has no effect on the measurement. However, direct exposure of the received beam to sunlight almost certainly causes measuring errors.
Analog output	In contrast to the binary output with two possible output states, the analog output allows one continuous value such as a voltage or current to be emitted, resulting in a higher resolution of the measured values (see «Resolution»). Usually available as a voltage output 0 … 10 V and current output 0 … 20 mA or 4 ... 20 mA. The analog value can also be transmitted via a digital interface like RS 485.
Background suppression	Diffuse sensors usually operate by the triangulation principle. Thanks to this accurate distance measurement, a background may be located close behind the adjusted switching point without interfering with the measurement. The background is «suppressed».
Beam alignment, squint	Due to the addition of the production tolerances of the optical and mechanical components which cannot be compensated by adjustment during manufacture, a squint between the emitter and receiver beams of up to several degrees can occur. From a light distance of more than approx. 40 cm, retro-reflective sensors must usually be aligned. (Exception: OAxx/OBxx range is factory-adjusted.)
Beam-interrupting	Sensor class in which the presence of an object is detected by interruption of the light beam between an emitter (and possibly a reflector) and an associated receiver.
Binary output	Output which can assume two states, i.e. a switching output

Black-white (gray-white) offset

For diffuse sensors with foreground and background suppression, there is a reduction in the sensing distance on gray or black reference paper in comparison with white reference paper (foreground suppression: increased sensing distance). This is also known as the black-white and gray-white offset. The sensing distance diagram shows the reduction in the sensing distance to gray or black as a function of the adjusted sensing distance.

Blind region

Because the emitter and receiver axes are usually offset to each other, it is possible at very close distances to the object that no light emitted by the emitted beam is within the detected angle of the receiver. In this situation, the sensor is dark-switched, or «blind».

CE conformity

Designates compliance of the products with European Union directives. The CE marking of the products is conditional on metrological proof of their electromagnetic compatibility (EMC) according to IEC 61000-4-x standards. Please also note the information on the safety concept.

Closing delay

Output function which extends the dark-switched state of a binary sensor by a specific time. This causes a delay in the switching of a light-switching output and the dark-switching output switches later.

Color sensor *LOGIPAL*

A color sensor determines the magnitude of deviation of the color components between a taught-in color and the color reflected by the object. The switching output indicates whether at least one color component is outside the specified tolerance bands.

Color-based

Sensor class which detects a specific composition of the reflected light spectrum, meaning colors or gray scales (=contrasts). The distance and received light intensity are secondary.

Complementary output

Depending on the wiring the output can be used as a light-switching or dark-switching output. Both output versions are available simultaneously.

Correction factor

The material and the surface texture of the object affect the switching distance of a diffuse sensor with intensity difference. To determine the corrected switching distance, the following values must therefore be applied to the relative receiving signal (KFs) and as an approximation to the distance (KFd).

Material	KFs	KFd
Kodak test card	100%	100%
Light, planed wood 80%	90%	
Rough wood	20%	45%
Drawn aluminum	25%	50%
Cardboard, matt black	7%	26%

Current consumption

Because photoelectric sensors usually operate with pulsed light, their operating current is not constant, but assumes a saw-tooth shape due to the internal smoothing of the current. An average value and a maximum value can be specified from this. Usually this is the maximum value.

Glossary

Degree of remission	The degree of remission designates the diffuse proportion of the reflected light, i.e. without the reflective proportion.
Diffuse sensor	Diffuse sensors detect the presence of an object by illuminating it with emitted light, which is then reflected by the object to the receiver in a diffused form (remitted).
Direction of approach	With triangulation sensors, the approach of an object edge in the direction from the emitter lens to the receiver lens or the reverse can lead to incorrect results. The directions of approach from the front or the side cause no errors.
Distance-based	Sensor class in which the distance to the object is primarily assessed as the measured value. The intensity of the received signal, colors or gray scales are secondary.
ECOLAB approved	The sensors are resistant to many common cleaning agents.
EHEDG (Hygienic Design)	Sensors and mounting accessories meet the design criteria for hygienic applications. These sensors can be used in close proximity to foodstuff and facilitate the certification of the machine.
EMC	All sensors undergo type testing with regard to their electromagnetic compatibility (EMC) according to the standards IEC61000-4-2, -3, -4.
Error correction	Photoelectric sensors usually operate by measuring pulsed light reflected by the object to the receiver. Because a measurement of this kind can be interfered with by various effects from the surroundings, e.g. rapid changes in the ambient light (switching fluorescent lighting on and off, welding sparks etc.), not all received light pulses appear in their correct magnitude, which could lead to switching errors. Fault correction evaluates the received pulses and only changes the switching state when a significant majority of pulses received within a time window indicate the need to change the switching state.
Excess gain	Because signal losses can occur in applications with optical sensors due to soiling of the optics and ageing of the light source, an excess gain must be allowed in the design of the application by presuming a shorter distance to the object than that indicated by the switching point. For reliable operation, an excess gain of at least 150% of the switching threshold is required. This distance correction can either be read off from the excess gain diagram or by exploiting the point at which the output indicator stops flashing. There are corresponding correction factors for diffuse sensors with intensity difference.
External teach-in input	See «Teach-in»
FDA compliant	Consistent use of food compliant materials only.
Fiber optic sensor	An intensity-based sensor in which the emitter and receiver optics are replaced by an optical fiber connection.

Glossary

Focusing	Particularly for sensors operating by the triangulation principle, it is ideal when the size of the light spot is as small as possible. However, according to the laws of optics, it is only possible to bundle the light rays at one point of the light path, the so-called point of focus. For this reason, light sources are focused at a specific distance. This distance is optimum for the detection of very small objects.
Infrared light	Light in a long-wave range which is invisible to the human eye. In comparison with red light LEDs, IR LEDs can supply a higher radiated power. Unsuitable for use with plastic optical fibers, but suitable for glass optical fibers.
Intensity-based	Sensor class in which the light intensity impinging on the receiver is processed as a measured value (which is only an indirect measure of the distance to the object). The distance, colors or gray scales (= contrast) are secondary.
Inverted output	Depending on the wiring the output can be used as a light-switching or dark-switching output. Both output variants exist at the same time.
IO-Link	This is a communication standard for point-to-point connections between a master (connecting module) and a slave (sensor/actor). Non-screened standard sensor cables can be used as the transmission medium. Process data (analog/binary) and service data (parameters/diagnostics) can be transmitted by serial communication. IO-Link compatible sensors can be connected to existing I/O modules (without using serial communication). The advantage of IO-Link is the reduction in project planning and installation costs by a uniform interface and convenient parameter adjustment and management.
Laser diode	Light source featuring an exit zone of the light that is very small and can therefore be focused by downstream optics to form a very small measuring point (light spot). Another feature is that the light intensity is regulated by a monitor function and therefore remains practically unchanged during the service life of the laser diode.
Laser protection class	Lasers are subdivided into different protection classes according to their danger to the human eye: 1: Harmless 1M: Harmless as long as not further bundled by optical measures 2: Laser radiation exists only in the visible spectral range (400 … 700 nm). Harmless for short periods of irradiation (max. 0.25s, as normally given by the natural protective reflex of the eyelid) 2M: Like 2 as long as not further bundled by optical measures
Light/dark operation	Light operation: the output switches when the receiver receives light. Dark operation: the output switches when the receiver receives no light.
Linearity deviation	Deviation from a proportional linear function (straight line). This is specified as an absolute value in mm or as a relative value as a percentage of the far limit of the measuring rage.

Glossary

Linking capability of outputs	**Parallel connection of the outputs (OR function)** Sensors with identical output stages (NPN or PNP) can be connected in parallel if they are connected to the same power supply unit. The number of sensors which can be connected in parallel depends on the respective load current and the currents flowing through the internal pull-up and pull-down resistors (typically 3 mA). The sum of all load currents plus the sum of all internal currents must not exceed the specified maximum switching current of a single sensor. **Series connection of sensors (AND function)** Relay outputs may be connected in series. For sensors with electronic outputs, it is not permissible to switch on the supply of one sensor via the output of a preceding sensor and implement an AND function in this way. Because a sensor represents a high capacitive load, this would activate the short circuit protection.
Measuring range	The sensor supplies a valid measurement result within this range. The measuring range and the limits of the measuring range are adjustable in some sensors.
Minimum pulse length	Output function which forces a minimum length, e.g. 4 ms, for the two output states of a binary sensor, so that even a slow controller can detect such a state without difficulty. In contrast to release/response delay, an output state longer than the minimum impulse length is not extended.
Mounting distance	Distance between sensors (in diffuse sensors between the emitted light spots on the object) to prevent optical interference. Sensors with measures to reduce optical interference are not affected by this, but if the number of 3 is exceeded, the specified mounting distance for the next sensor but one is applicable.
Mounting instructions (MAL)	Some sensors are supplied with mounting instructions (MAL) which contain detailed notes on the connection and operation of the sensor
Nominal range Sn	The guaranteed maximum switching distance of retro-reflective sensors under ideal conditions (at +25° C, not soiled, sensors adjusted to each other).
NPN output	Binary open collector switching output with NPN transistor switching to 0 V. Consequently the load current flows from the switching output through the load resistance to +Vs. A suppressor diode is integrated and also an internal load resistor of approx. 10 … 50 kOhm for measurement purposes.
Off delay	Output function which extends the light-switched state of a binary sensor by a specific time. As a result, the light-switched output drops out later and the dark-switched output is switched after a delay.
On delay	Output function which extends the dark-switched state of a binary sensor by a specific time. As a result the light-switching output switches after a delay and the dark-switching output will drop out later.
OneBox Design	*OneBox Design* stands for a new Baumer housing design. Baumer *NextGen* sensors feature the same dimensions, through holes and control elements for all sensor principles and technologies within the series.
One Inch Class	Compact sensor for one-inch mounting hole spacing is ideally suited for systems with extremely tight spaces..

Optical fiber

Cable made of glass or plastic fibers which conveys the light of a photoelectric sensor and enables the detection of an object at a constrained point due to its small size.

Optical interference

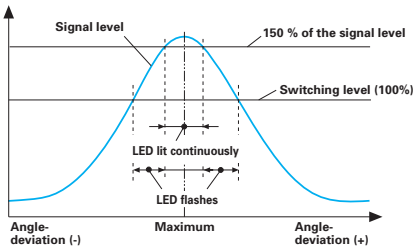
Without countermeasures, pulsed light sources which illuminate the same point on an object can overlap, which can cause switching errors. Sensors which are insensitive to optical interference use methods by which the pulses can evade each other and minimize situations in which switching errors are possible. These methods allow operation of up to 3 sensors in the same operating range, i.e. each sensor may «see» 2 interfering neighbors. The method becomes more reliable the better the neighboring sensors can be «seen», enabling the evasion algorithms to be suitably adjusted.

Output current

Maximum permissible current load at the outputs. Because the short-circuit protection secures all outputs together in sensors with several outputs and therefore monitors the sum of all output currents, it must be observed that the output current specification refers to this sum.

Output indicator

Visual display on the sensor, usually a yellow LED which indicates the status of the sensor receiver. LED off: receiving signal < switching threshold, LED flashing: receiving signal between 100 … 150% of the switching threshold, LED steady on: receiving signal >150% of the switching threshold.



Overvoltage protection

Protection against brief voltage surges in accordance with the standard IEC 61000-4

ParCon/PosCon **line sensor**

The line sensor is able to detect edges, widths and positions of objects without additional illumination. The measured value is issued with high accuracy as an analog value or via a serial interface.

PNP output

Binary open collector switching output with PNP transistor switching to +Vs. Consequently the load current flows from the switching output through the load resistance to 0 V. A suppressor diode is integrated and also an internal load resistor of approx. 10 … 50 kOhm for measurement purposes.

Point source LED

Form of LED in which, in contrast to conventional LEDs, the light exit is not diffuse and distributed around the entire chip, but exits from the front in a circular and therefore clearly defined shape. A very small light spot can be created in this way (ideal for diffuse sensors with background suppression), similar to a laser, but at the expense of the total light intensity.

Polarization filter

Polarization filters only allow light to pass which is polarized in a specific plane. Retro-reflective sensors with polarization filters have polarization planes at the emitter and receiver twisted towards one another by 90°, so they only detect light which is reflected by a retro-reflector and depolarized in this way. For this reason, the light beam itself is always reliably interrupted by reflective objects (which leave the polarization plane unchanged).

Glossary

proTect⊕	Unique impermeability concept – it guarantees that the sensors comply with protection class IP 68/IP 69K standards even after many temperature cycles and therefore have a long service life and high reliability.
Protection class (to IEC 60529)	**IP 65**: Protection against the penetration of dust and full protection against electrical contact. Protection against a water jet from any direction. **IP 67**: Protection against the penetration of dust and full protection against electrical contact. Protection against water when the housing is immersed in water under specific pressure and time conditions.
Pulsed light	The sensitivity of a photoelectric sensor to ambient light can substantially be reduced by using pulsed light. On the one hand, the emitter LEDs can emit a higher peak power in pulsed operation, on the other, this makes differential measurement possible during which the difference in the received light with the light source switched on or off can be evaluated and non-pulsed light can be effectively compensated.
Push-pull output	Compared to the open collector output variants PNP (= load virtually 0V) and NPN (= load virtually +Vs), the push-pull output enables random switching of the load within the limits of the supply voltage. However, compared to the above named open collector output variants, it is not admissible to connect outputs in parallel.
qTarget™	The Baumer design aligns the sensor's light beam to the fixing holes. This will not only compensate tolerances between individual components but ensures consistent alignment accuracy within the complete sensor series.
qTeach™	With *qTeach* we are introducing a new, convenient and wear-free teach procedure. Teaching of O500 sensors is just by a touch with any ferromagnetic tool. A blue LED light provides clear optical feedback. To prevent user errors, *qTeach* locks autonomously after 5 minutes.
Range sensor	Diffuse sensor with a switching output where two switching points can be set. This makes it possible to detect the presence of an object within a specified distance range.
Red light	Standard light color in the visible range, also suitable for use with plastic optical fibers. Advantage: due to its visibility, this improves the adjustment and monitoring of the application.
Reflection foil	See «(Retro-) reflector»
Relative receiving signal	The relative receiving signal is specified in diffuse sensors operating by the intensity difference principle. This signal represents the signal level received from a white object as a function of the distance. With the aid of this diagram, it is possible to determine the sensing distance for an object which is not white. The correction factor of the respective material is required for this purpose.
Release delay	Output function which extends the light-switched state of a binary sensor by a specific time. The light-switched output thereby opens later and the dark-switched output is switched after a delay.

Glossary

Release time	The minimum time required for an object to have left the scanning range to cause a change in the output state. This change in state is immediate, unless a signal processing time is also specified by which this change in state is further delayed. Compliance with this release time is conditional on the switching threshold falling by max. 50%. If it is necessary for the sensor to take measures to reduce interference with other sensors, this time may be extended by up to 50 µs.
Reproducibility (Repeat accuracy)	Max. deviation between two measurements under identical conditions (object position, soiling, temperature, duty cycle)
Residual ripple	Maximum proportion of alternating current which may be superimposed on the DC voltage supply with the momentary values remaining within the specified voltage supply range. Specified as a percentage of the mean value of +Vs.
Resolution	The smallest possible change in the measured value to cause a discernible change in the output signal.
Response time	The minimum time required for an object to be within the sensing distance to cause a change in the output state. This change in state is immediate, unless a signal processing time is also specified by which this change in state is further delayed. Compliance with this response time is conditional on an excess gain of at least 50% (the output indicator does not flash). If it is necessary for the sensor to take measures to reduce interference with other sensors, this time may be extended by up to 50 µs.
(Retro-) reflector	Reflector that casts light back in the direction of incidence and as a result, in contrast to a mirror, requires no exact alignment. They are available in the form of a triple reflector or reflective film.
Reverse polarity protection	Protection against reverse polarity is generally ensured between any connections of the sensor unless otherwise specified (e.g. only supply connections).
Safety concept	The safety concept defines the technical, instructional and legal measures which ensure the user (machine manufacturer, owner, user) a high degree of safety when handling our components. The safety concept also serves as the basis for the CE marking of our products and can be obtained in German, English or French.
Sensing range Tb	The sensing range Tb ranges between the adjusted sensing distance and the blind region. The blind region defines the range immediately in front of the sensor where an object cannot be reliably detected. The sensing distance is therefore the distance where an object (Kodak white) is reliably detected.
Sensing distance Tw	The sensing distance Tw is the maximum achievable distance of a diffuse sensor measured at +25° C on white paper (Kodak Card No. 1 527 795) size 200 x 200 mm. At a maximum sensing distance of under 400 mm, the reference paper size is 100 x 100 mm. The excess gain necessary for reliable operation under ideal conditions (50%) is already included. Sensors with adjusting aids indicate this point by a continuously lit reception indicator.
Sensitivity adjustment	Sensors operating with intensity difference or as retro-reflective sensors may have adjustable sensitivity. The sensitivity can then be adjusted to the application using a potentiometer or by teach-in.

Glossary

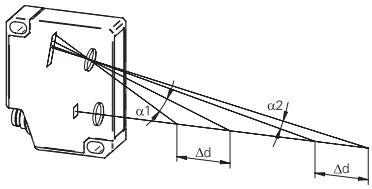
Sensor standard	The sensor standard IEC60947-5-2 forms the basis for all type tests on photoelectric sensors.
Shape-based	Sensor class which detects specific features of shape, e.g. edges, the height of newspaper copies, etc. The distance, received light intensity, colors or gray scales are secondary.
Short circuit protection	In optical sensors, short circuit protection is clocked (switches the output off for approx. 20 ms), self-resetting (attempts to switch the output again after the shut-off time has elapsed) and start-delayed (to handle capacitive loads of up to 50 nF occurring with longer cables).
Signal processing time	Delay between the detection of the future output state and its transmission to the output caused by signal processing. This has no effect on the maximum measurement frequency!
Smallest object	If the optical prerequisites for the detection of small objects are fulfilled, i.e. a sufficient signal difference exists, the following generally applies to the detection of moving objects with diffuse sensors: time in the scanning range > response time. For retro-reflective sensors: time in the scanning range > release time. The time in the scanning range te can be calculated by: te = distance in the scanning range/object speed
SmartReflect light barriers	Light barriers without reflectors. See section on SmartReflect light barriers.
Soiled lens indicator	See «Output indicator»
Start pulse suppression	Start pulse suppression suppresses undefined states during the starting phase by disabling all outputs during the first 20 ms after the voltage supply was switched on.
Switching hysteresis	Switching hysteresis is employed to prevent the normal fluctuations of the measured value close to the switching points of binary outputs from producing uncertain switching states (oscillating) at the output. A higher switching threshold to switch on the sensor is adjusted than to switch it off, resulting in a difference between the distances for switching on and off.
Teach-in	Electronic teaching of an operating parameter (e.g. sensitivity adjustment) by pressing a button or via an external teach-in input. The «static teach-in» function is available as a standard feature. During teach-in the on position and off position are taught in and the sensor calculates the optimum switching point from this. The on position is always used as a normally open function and the off position always as a normally closed function. There is also a «dynamic teach-in» function, during which the maximum and minimum values of the results measured over a desired time are analyzed and an optimum switching threshold for this situation is automatically adjusted afterwards.
Teach-input external	See «Teach-in».
Temperature drift	In photoelectric sensors, the emitter light sources (apart from laser diodes), receiver elements and amplifiers are subject to certain thermal effects. This dependency of the measured values on the temperature is specified by the designation «temperature drift».

Test input

Some sensors provide a means of switching off the emitter for a function test by activating an input. If the sensor was previously switched to light, the output of the sensor must consequentially change to the dark switching state

Triangulation principle

Measuring principle used in diffuse sensors with background suppression and in distance-measuring sensors. The emitter, the object and the receiver form a triangular arrangement. The receiver is designed to enable measurement of the angle between the beams from the emitter to the object and from the object to the receiver. This angle depends on the distance to the object, which is determined by the position at which the received beam strikes the receiver element.



UL test mark

The UL mark on a product indicates that samples of the complete product were tested by UL according to nationally acknowledged safety standards, that they are free from unacceptable, foreseeable risks such as fire, electric shocks and similar hazards and that the product was manufactured under UL supervision. Most products from Baumer electric are UL-listed. The file with the listed products can be viewed at HYPERLINK "http://www.ul.com/database.

Voltage supply range

The voltage supply must be within a specified voltage supply range at all times to ensure the correct function of the sensor.

order reference	page
Z-FTDF 020I0100	746
Z-FTDF 020I0180	746
Z-FTDF 020I0500	746
Z-FTDF 020I1000	746
Z-FTDF 020I1600	746
Z-FTDF 035I0100	746
Z-FTDF 035I0500	746

order reference	page
Z-FTDF 035I1000	746
Z-FTDF 035I1600	746
Z-FTDF 050I0100	746
Z-FTDF 050I0500	746
Z-FTDF 050I1000	746
Z-FTDF 050I1600	746
Z-FTDF 050K0100	747

order reference	page
Z-FTDF 050K0500	747
Z-FTDF 050K1000	747
Z-FTDF 050K9999	747
Z-FTDF 610I0100	747
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