Photoelectric Sensors

Photoelectric sensors for object detection

Photoelectric sensors check presence, size, color, distance and thickness.
They are excellent specialists with completely different focuses:

- Part recognition and counting
- Stack height monitoring
- Detection through glass
- Small parts detection
- Brand recognition
- Fill level detection and much more.

The wide Balluff spectrum offers every light type, whether red light, infrared or laser technology. In different ranges. With and without background suppression.
Various designs – also in mini version – ensure a wide variety of possible applications. Our photoelectric sensors are optimized for robotics, automation, installation and handling.



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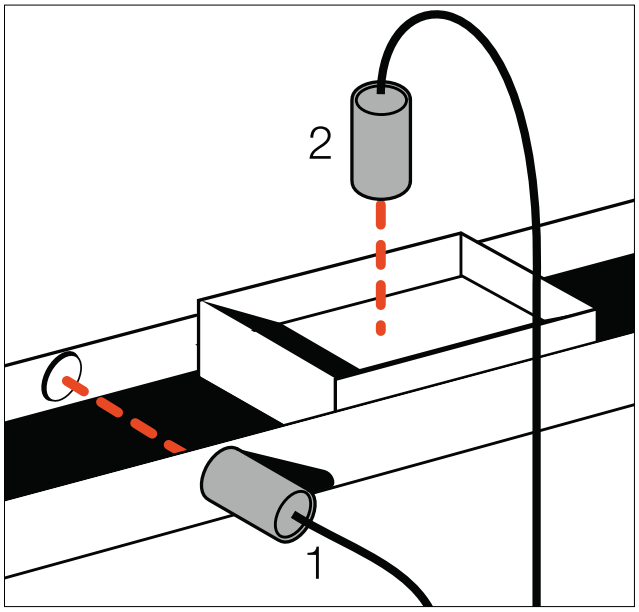
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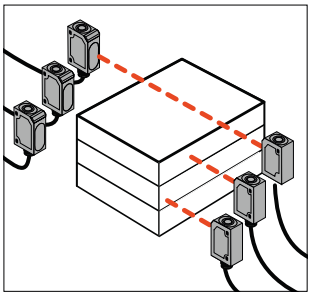


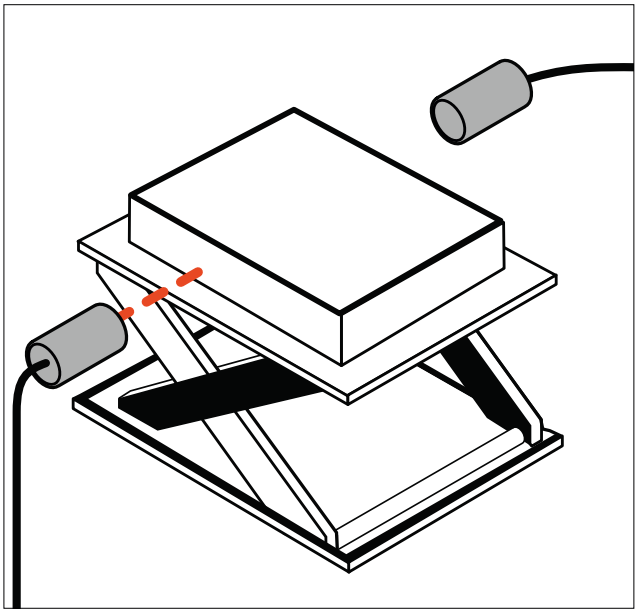
Basic information and definitions can be found on **page 934.**



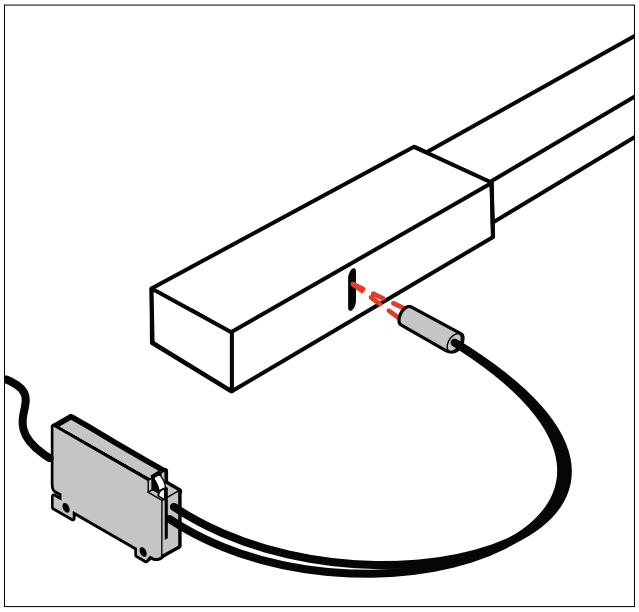
Querying the size and content of containers
The retroreflective sensor (1) indicates the presence of the box. The pulse duration can be used to count or measure box lengths.
The diffuse sensor (2) with background suppression checks the contents of the box. Its range is adjustable.

Checking stack height
Through-beam light sensors that consist of a emitter and receiver can be installed one on top of the other. Each through-beam sensor then scans a specific stack height. The accuracy of the scan is within a few millimeters, if apertures are used.

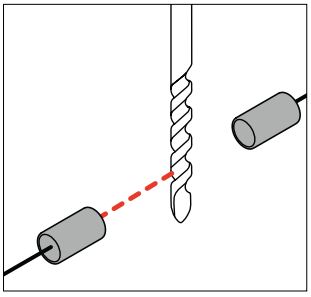




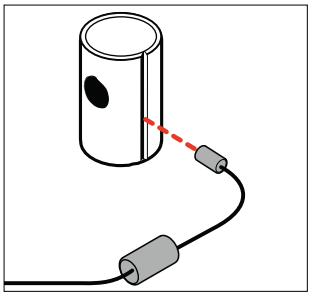
Tracking a hoist
The through-beams are assigned so that the uppermost metal plate interrupts the light beam. The beam path is open when the metal plate is removed for processing. The through-beams provide a switching signal, and the hoist is automatically reset to the height of a metal plate.



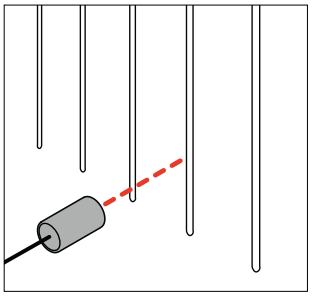
Scanning a read mark
In order to recognize a reading mark, a base unit and plastic fiber optics are used. This way a mark – such as a bright line – can be scanned on a dark background, as occur on belts, hoses or containers.



Checking drill breakage
Using a through-beam light sensor with double-slotted apertures, a drill breakage check can be carried out from 2 m away. Drills larger than approx. 2 mm diameter can be checked this way. If even smaller drills (down to 1 mm Ø) have to be checked, then a laser through-beam sensor can be used.

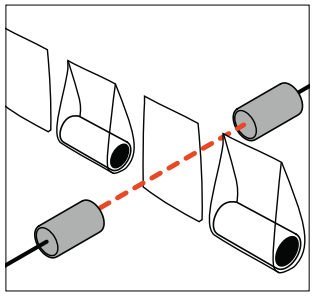


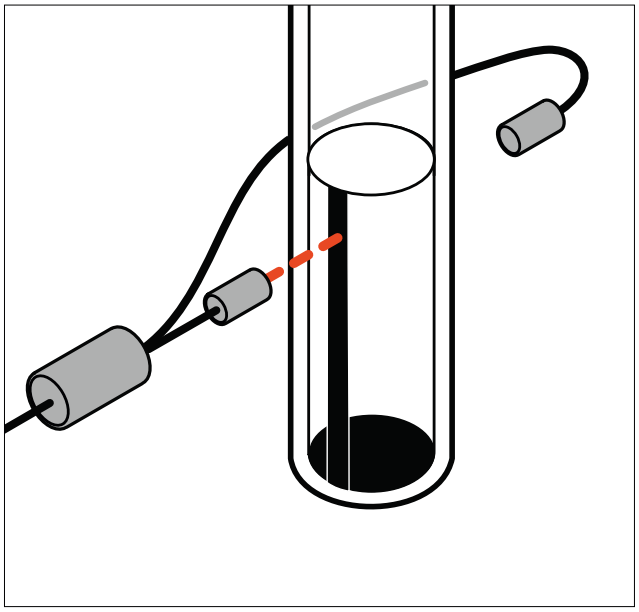
Detecting a groove
To sense a groove on a bearing pillow, a diffuse sensor is adjusted using a fiber optic cable so that the bearing pillow is reliably detected. The groove interrupts the beam (no reflection), and the switch changes its output condition.



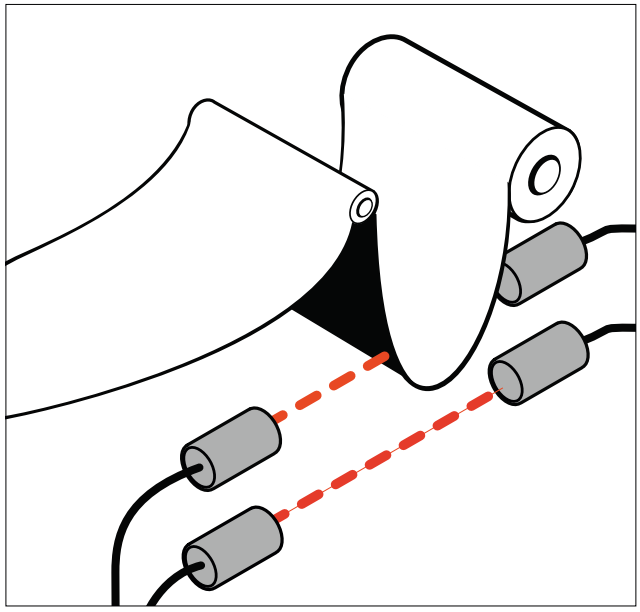
Detecting small parts
With an optical adapter such as the BOS 18-PK-1, small parts can be measured and the background simultaneously suppressed. In this way, with a sensing distance of up to 13 mm, for example, fibers with a diameter of 0.05 mm can be queried, where the color plays a subordinate role. Diffuse sensors with background suppression enable larger ranges.

Querying packaging contents
A through-beam sensor is used in order to query the content of a package (e.g., bandages). To do so, the emitter and receiver are arranged so that the light beam goes through the packaging. If the packaging is empty, the light is sufficient to light up the receiver. If it is filled, the packaging contents interrupt the emitter's light beam, and the sensor switches.



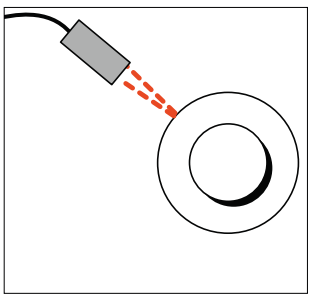


Querying fill level in transparent containers
During the fill level query in a transparent container (cylinder), a diffuse sensor with fiber optics is used as a through-beam sensor. If no liquid is at the sensor height, the light beam is not broken, so that it hits the receiver. If enough fluid is available, the light beam is deflected away from the receiver. The switch changes its output condition.

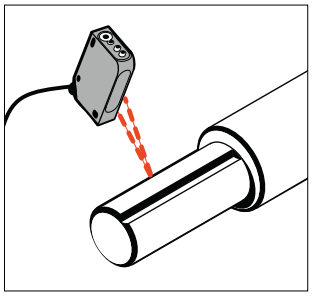


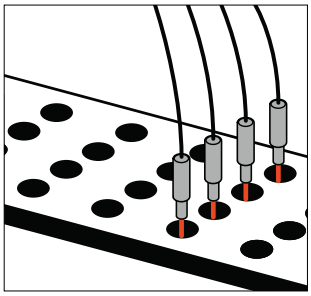
Checking sag
Two through-beam sensors can be used to control the positioning of a roller conveyor. In addition, the through-beams are arranged above each other so that at optimum slack, the lower light beam is clear and the upper beam interrupted. If both light beams are clear, more roll tension is needed. If both are interrupted, there is too much material (slack) present.

Recognizing different diameters
In order to be able to recognize different shaft diameters, a diffuse sensor with background suppression (HGA) is used in such a manner that it switches with large diameters. Small diameters, on the other hand, are suppressed as "background" so that the sensor does not switch.

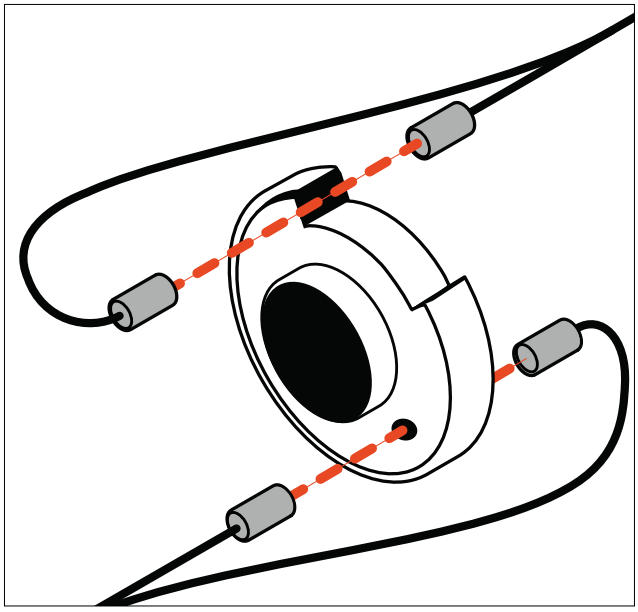


Positioning parts
In order to correctly position pivoted parts, its groove can be scanned. A laser sensor with background suppression is calibrated so that it recognizes the surface of the pivoted part. If the light beam strikes the slot, the light is reflected back to the sensor at a different angle. The switch recognizes this as a background signal and ignores it, i. e. changes its switching state.

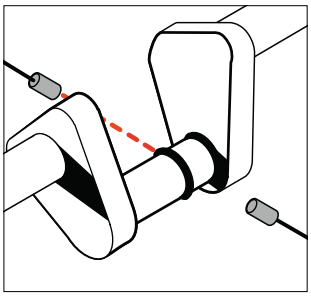




Checking the level: Granular material in small packages
Multiple sensors simultaneously check the content of a whole series of small packages on a conveyor belt.
In addition, the user can shorten the plastic fiber optics to the desired length. Its standard length is 2 m.

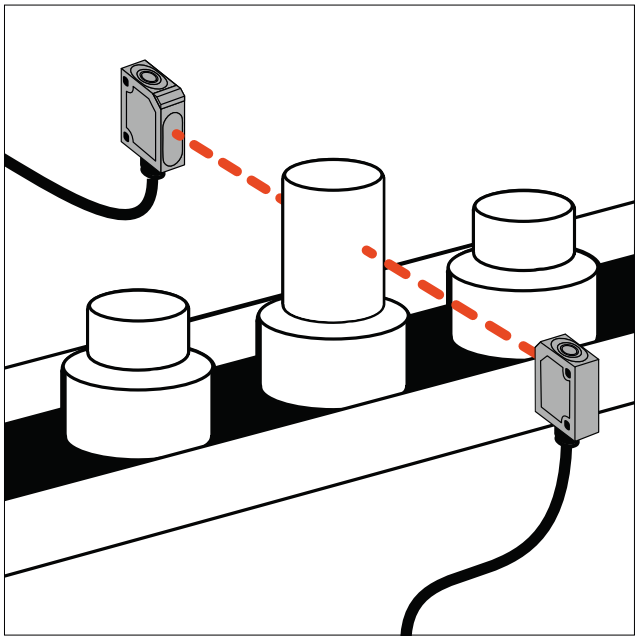


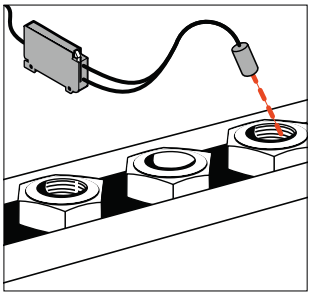
Checking the quality of workpieces
Multiple sensors with fiber optic attachments simultaneously check different features of a workpiece.
Only if all drill holes, screws, dimensional accuracies, surface qualities etc. are present may the workpiece be processed further. Later failures and downtime are thus avoided.



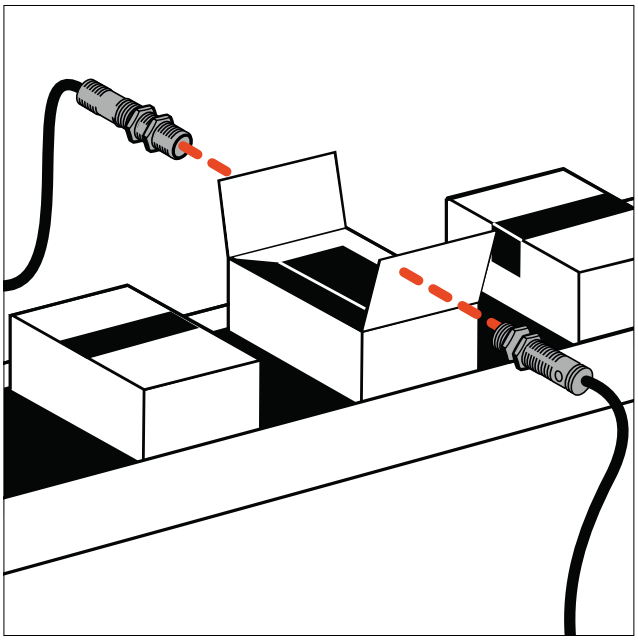
Detecting the bead of a camshaft
To detect whether a bead is present, a diffuse sensor with fiber optics is used. This fiber optic is arranged on a level parallel to the camshaft. If a bead is present on the camshaft, the light beam is interrupted. With no bead, the beam path is free.

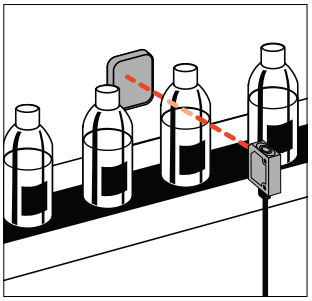
Sorting parts
In order to be able to sort parts of various heights, a through-beam sensor is used. To do so, a teach-in process is used so that taller parts interrupt the light beam and can be sorted out. The quick and secure teach-in enables quick adaptation to changed conditions.





Checking threads
Prior to assembling nuts, a check needs to be made to determine whether a thread is present or not. If the thread is present, they will reflect the light back to the fiber optics and the sensor will operate.
If the thread is missing, there will be a total reflection on the blank wall of the drill hole, and as a result, no light will be reflected to the fiber optics. The sensor does not switch.

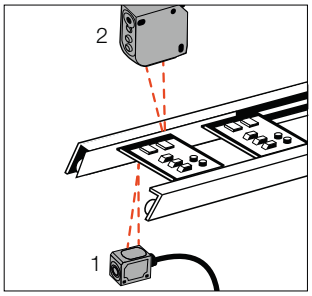


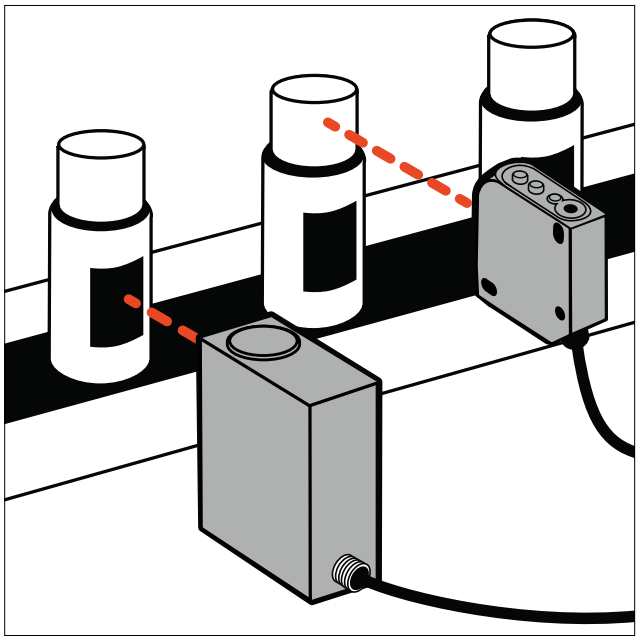


Counting transparent bottles
Transparent objects absorb only a little light. In order to measure them accurately, retroreflective light sensors with small hysteresis are best suited. Through their teach-in-buttons, the sensors can additionally be set very easily, and their configuration can be changed even when the process is running. Unnecessary downtimes are thus prevented easily.

Checking packaging
In order to check whether a packaging is correctly closed, a through-beam sensor is configured so that the light beam runs just above the packaging. If it is not correctly closed, the obstructing lid interrupts the light beam, and the through-beam sensor signals it.

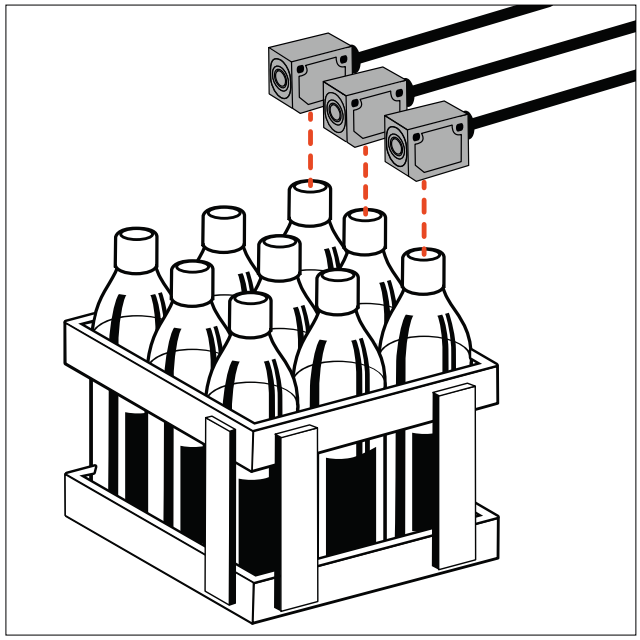
Positioning and checking equipment
To bring the circuit board to a particular inspection position, a focused diffuse sensor (1) is used. The board crosses the light beam of the sensor exactly in its focus. This enables maximum precision.
Through the small spot of light of the laser diffuse sensor (2) and its background suppression, it can be checked whether even small components are present on the board.

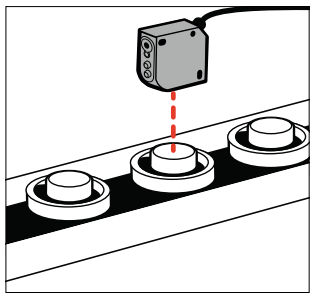




Final inspection of labels and caps
For the final inspection of dish detergent bottles, a check must be made to determine whether the label and cap are attached. A contrast sensor is used for the label inspection. This distinguishes between the relative reflectivity of the label and the bottle.
The cap is detected using a diffuse sensor with background suppression. The advantage of background suppression is that the screw closure can be faded out if the cap is missing.

Checking completeness
In order to be able to check an assembly process in detail, diffuse sensors with background suppression (HGA) are used. These sense small objects with high precision and are not misled by different colors. If details need to be measured even more accurately, we recommend laser sensors with background suppression.





Inspecting closing caps
Depending on installation circumstances and the required switching distance, a wide variety of diffuse sensors with background suppression can be employed. In this way, you can choose excellent specialists from the tightest installation conditions, the maximum resolution or high ranges.
Contact us

	mini.s 	mini.s 	Global 		Global 	
Type	**BOS 08M**	**BOS 08M**	**BOS 12M**	**BOS 12M laser**	**BOS 18M**	**BOS 18M red light**
Housing material	Metal	Stainless steel	Metal	Metal	Metal	Metal
Range/sensing distance						
Through-beam sensor emitter/receiver	0...1.1 m	0...1.5 m	0...5 m	0...3 m, 0...30 m	0...20 m, 0...25 m	0...20 m
Retroreflective sensor						
Retroreflective light sensor with polarizing filter	25...550 mm		0...1.5 m		4 m, 6 m	7 m
Retroreflective sensor for glass detection						
Diffuse sensor	0...55 mm		0...100 mm, 0...200 mm, 0...400 mm		1...400 mm, 1...600 mm	1...300 mm, 1...600 mm
Diffuse sensor with background suppression			0...24 mm, 10...60 mm			30...150 mm, 30...300 mm
Diffuse sensor with foreground suppression						
Technical data						
Supply voltage	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Output function	PNP NO/NC	PNP NO	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC
Connection	Connectors/ cables	Cable	Connectors/ cables	Connectors/ cables	Plug connec- tor	Plug connec- tor
Ambient temperature	–10...+60 °C	–10...+60 °C	–5...+55 °C, –15...+55 °C, –20...+60 °C	–10...+50 °C	–5...+55 °C	–5...+55 °C
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
Light	Red light	Infrared light	Infrared light/ red light	Laser	Infrared light/ red light	Red light
Special features						
Page	38	40	44	51	56	62

								
	BOS 18M red light Teach-in	**BOS 18M red light angle head**	**BOS 18M infrared**	**BOS 18M Laser**	**BOS 18M laser with angle head**	**BOS 18E**	**BOS 18KF**	**BOS 18KF laser**
	Metal	Metal	Metal	Metal	Metal	Stainless steel	Plastic	Plastic
	0...20 m	0...16 m	0...50 m	0...50 m, 0...60 m	0...50 m	16 m	0...20 m	0...60 m
			10 m			4 m	0.1...4.5 m	
	5 m	2 m	7 m	0.1...16 m	0.1...9 m	2 m	0.1...5 m	0.1...16 m
							0.1...1.7 m	
	1...500 mm	0...400 mm	1...800 mm	0...350 mm	0...250 mm	0...100 mm, 0...200 mm, 0...400 mm	0...100 mm, 0...400 mm, 0...700 mm	0...350 mm
		10...120 mm, 40...120 mm		30...150 mm		0...40 mm	50...100 mm, 100 mm	
							40...100 mm	
	10...30 V DC	10...30 V DC, 10...36 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC
	Plug connector	Plug connector	Plug connector	Connectors/ cables	Connectors/ cables	Plug connector	Connectors/ cables	Connectors/ cables
	–5...+55 °C	–15...+55 °C, –25...+55 °C	–5...+55 °C	–5...+55 °C, –10...+55 °C, –15...+55 °C	–5...+55 °C	–5...+75 °C, –20...+75 °C	–25...+55 °C	–10...+50 °C
	IP 67	IP 67	IP 67	IP 65/IP 67	IP 67	IP 69K/IP 68	IP 67	IP 67
	Red light	Red light	Infrared light	Laser	Laser	Infrared light/ red light	Infrared light/ red light	Laser
	with DSC							
	70	72	76	82	86	96	104	112

						
Type	**BOS 18KW with angle head**	**BOS 18KW laser with angle head**	**BOS 30M**	**BOS Q08M**	**BOS Q08M Laser**	**BOS 2K**
Housing material	Plastic	Plastic	Metal	Metal	Metal	Plastic
Range/sensing distance						
Through-beam sensor emitter/receiver	0...15 m	0...50 m		0...2.2 m	0...3 m	0...1.2 m
Retroreflective light sensor with polarizing filter	0.1...3 m	0.1...9 m		25...550 mm		45...800 m
Retroreflective sensor for glass detection	0.1...1.7 m					
Retroreflective light sensor with autocollimation						
Diffuse sensor	0...80 mm, 0...400 mm	0...250 mm	0...2 m	0...55 mm		1...55 mm
Diffuse sensor with background suppression	50...100 mm			5...50 mm		1...15 mm, 1...30 mm
Diffuse sensor with foreground and background suppression						
Technical data						
Supply voltage	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Output function	PNP NO/NC	PNP NO/NC	PNP/NPN	PNP NO/NC	PNP NO/NC	PNP NO/NC
Connection	Connectors/ cables	Connectors/ cables	Plug connector	Connectors/ cables	Connectors/ cables	Connectors/ cables
Ambient temperature	–25...+55 °C	–10...+50 °C	–20...+60 °C	–10...+60 °C	0...+50 °C	–20...+50 °C
Degree of protection	IP 67	IP 67	IP 65	IP 67	IP 67	IP 67
Light	Infrared light/ red light	Laser	Infrared light	Red light	Laser	Red light
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Global









	BOS 5K	BOS 6K	BOS 6K Laser	BOS 21M	BOS 21M Laser	BOS 23K	BOS 23K Laser	
	Plastic	Plastic	Plastic	Metal	Metal	Plastic	Plastic	
	0...10 m	0...6.5 m		0...20 m	0...60 m	0...20 m	0...25 m	
	0.1...4 m		0.05...3 m	0.1...8 m	0.1...20 m	0.3...12 m	0.3...12 m	
		0...500 mm, 50...700 mm		0...2 m				
		0...500 mm	0...4 m	0...4 m				
	1...900 mm, 50...200 mm	20...300 mm		0.01...1 m, 0.05...2 m	0...600 mm	0...2 m	0...1.2 m	
		25...100 mm	20...60 mm, 30...110 mm	70...200 mm	50...100 mm	70...800 mm	120...600 mm, 150...800 mm	
				70...200 mm				
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC, 12...30 V DC	
	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	
	Connectors/ cables	Connectors/ cables	Connectors/ cables	Plug connector	Plug connector	Plug connector	Plug connector	
	–25...+55 °C	–20...+60 °C	–20...+60 °C	–10...+50 °C, –25...+55 °C	–10...+50 °C	–20...+60 °C	–20...+60 °C	
	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67, IP 69K	IP 67, IP 69K	
	Infrared light/ red light	Red light	Laser/red light	Infrared light/ red light	Laser	Red light	Laser	
	160	170	176	184	190	198	200	

Photoelectric Sensors
Performance Spectrum
Product Overview
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors



Type	BOS 26K	BOS 26K Laser	BOS 50K	BOS 63M Laser	BOS 64K
Housing material	Plastic	Plastic	Plastic	Metal	PBT
Range/sensing distance					
Through-beam sensor emitter/receiver			0...60 m		0...50 m
Retroreflective light sensor with polarizing filter			0.1...18 m		0.1...10 m
Retroreflective light sensor with autocollimation	0...5.5 m	0...6 m, 0...7 m, 0...20 m			
Diffuse sensor			1...2000 mm 1...3500 mm		0.05...2 m
Diffuse sensor with background suppression	30...300 mm, 150...600 mm	30...150 mm, 40...60 mm, 50...300 mm	200...2000 mm	0.2...6 m	0.2...2 mm
Technical data					
Supply voltage	10...30 V DC	10...30 V DC	10...30 V DC	15...30 V DC	24...60 V DC
Output function	PNP NO/NC	PNP NO/NC	PNP NO/NC	2× PNP	Relay
Connection	Plug connector	Plug connector	Plug connector	Plug connector	Screw terminal
Ambient temperature	–20...+60 °C	–15...+45 °C, –20...+45 °C	–5...+55 °C, –10...+60 °C,	–10...+60 °C	–25...+55 °C
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67	IP 67	IP 67
Light	Infrared light/ red light	Laser	Red light	Laser	Infrared, Red light
Special features			partially with IO-Link		
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Photoelectric Sensors
Performance Spectrum
Product Overview
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

						
Type	**BFB 75K**	**BOS 73K**	**BOS 6K**	**BOS 18KF**	**BOS**	**BFO**
Housing material	Plastic	Plastic	Plastic	Plastic	Metal	Plastic
Range/sensing distance						
Optical fiber base units	Depending on fiber used	Depending on fiber used	Depending on fiber used	Depending on fiber used	Depending on fiber used	
Distance sensor						
Diffuse sensor with background suppression						
Contrast sensor						
Technical data						
Supply voltage	10...30 V DC	11...26 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
Output function	PNP/NPN NO/NC	PNP NO/NC	PNP/NPN NO/NC	PNP/NPN NO/NC	PNP NO/NC	
Connection	Connectors/ cables	Connectors/ cables	Connectors/ cables	Connectors/ cables	Plug connector	
Ambient temperature	–20...+60 °C	–25...+55 °C	–20...+60 °C	–25...+55 °C	–20...+60 °C	–40...+105 °C
Degree of protection as per IEC 60529	IP 64	IP 54	IP 67	IP 67	IP 67	
Light	Red light	Red light	Red light	Red light	Infrared light	for red light
Special features	with display, analog output	with display				
Page	315	319	321	323	324	328








BFO 18 glass fiber optics	**BOD 6K**	**BOD 21M laser**	**BOD 26K laser**	**BOD 63M laser**	**BOD 66M**	**BOD 66M laser**	**BKT 6K laser**
Metal, Silicon, polyurethane	Plastic	Metal	Plastic	Metal	Metal	Metal	Plastic
	20...80 mm	25...45 mm, 20...200 mm, 20...500 mm	45...85 mm, 30...100 mm, 80...300 mm	200...2000 mm, 200...6000 mm	100...600 mm	150...800 mm 150...2000 mm	
	20...80 mm		30...100 mm, 80...300 mm	200...2000 mm, 200...6000 mm	100...600 mm	150...800 mm 150...2000 mm	
							40...150 mm
	15...30 V DC	18...30 V DC	18...28 V DC, 18...30 V DC	15...30 V DC	18...30 V DC	18...30 V DC	10...30 V DC
	analog PNP NO/NC	analog PNP NO/NC	analog PNP NO/NC	analog PNP NO	analog PNP NO	analog PNP NO	PNP/NPN NO/NC
	Connectors/ cables	Plug connector	Connectors/ cables	Plug connector	Plug connector	Plug connector	Connectors/ cables
–20...+85 °C, –0...+170 °C	–20...+60 °C	–10...+50 °C	0...+45 °C, –10...+60 °C	–10...+60 °C	–20...+50 °C	–20...+50 °C	–20...+60 °C
	IP 67	IP 67	IP 67	IP 67	IP 65	IP 65	IP 67
for infrared light	Red light	Laser	Laser	Laser	Red light	Laser	Laser
Custom lengths pos-sible	Teach-in						Focused light beam
346	355	356	358	367	371	373	297

						
Type	**BKT 18KF**	**BKT 21M**	**BKT 67M**	**BLT 18KF**	**BLT 21M**	**BFS 26K**
Housing material	Plastic	Metal	Metal	Plastic	Metal	Plastic
Range/sensing distance						
Contrast sensor	10 mm±2 mm	19 mm±2 mm	9 mm ±3 mm (18 mm) ±4 mm			
Luminescence sensor				8...20 mm	0...40 mm	
Color sensor						12...32 mm, 15...30 mm, 18...22 mm,
Fork sensor						
Technical data						
Supply voltage	10...30 V DC	10...30 V DC,	10...30 V DC	10...30 V DC	10...30 V DC	12...28 V DC
Output function	PNP NO/NC	PNP/NPN NO/NC	PNP/NPN/ Analog NO/NC	PNP NO/NC	PNP NO/NC	3 × PNP NO
Connection	Connectors/ cables	Plug connector	Plug connector	Connectors/ cables	Plug connector	Plug connector
Ambient temperature	–25...+55 °C	–25...+55 °C	–10...+55 °C	–25...+55 °C	–10...+55 °C	–10...+55 °C
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
Light	White light	White light	Red, green and blue light	UV	UV	White light
Special features			Interchange-able optics			various Light spot sizes
Page	299	301	303	309	311	293









	BFS 33M true color sensor	**BGL red light**	**BGL pin point**	**BGL infrared**	**BGL laser**	**BGL 21**	**BGL_C analog**	
	Metal	Metal	Metal	Metal	Metal	Metal	Metal	
						2 mm	30 mm, 50 mm	
	up to 400 mm							
		5, 10, 20, 30, 50, 80, 120, 180, 220 mm	5, 10, 20, 30, 50, 80, 120, 180, 220 mm	5, 10, 20, 30, 50, 80, 120, 180, 220 mm	30, 50, 80, 120 mm			
	24 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	18...30 V DC	
	3 × push-pull RS 232	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP/NPN NO/NC	PNP/analog NO/NC	
	Cable	Plug connector	Plug connector	Plug connector	Plug connector	Plug connector	Plug connector	
	+10...+55 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–20...+60 °C	–5...+55 °C	
	IP 54	IP 67	IP 67	IP 67	IP 67	IP 65	IP 65	
	White light	Red light	Red light, pin point	Infrared	Laser	Infrared/ red, green light	Red light	
	True color Sensor			Fluid detection	Transparent Detection	for label sens-ing	IO-Link, DSC	
	291	240	244	248	252	259	276	

							
Type	**BWL red light**	**BWL pin point**	**BWL infrared**	**BWL laser**	**BWL automotive**	**BOW**	
Housing material	Metal	Metal	Metal	Metal	Metal	Metal	
Range/sensing distance							
Fork sensor							
Angled light sensor	40, 54, 68, 90, 110 mm	40, 54, 68, 90, 110 mm	40, 54, 68, 90, 110 mm	40, 54, 68, 90, 110 mm	22×22 mm, 43×43 mm, 42×62 mm		
Optical window sensor						40×80 mm, 80×80 mm, 120×80 mm	
Light grids							
Technical data							
Supply voltage	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
Output function	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO/NC	PNP NO	PNP NO	
Connection	Plug connector	Plug connector	Plug connector	Plug connector	Plug connector	Plug connector	
Ambient temperature	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+55 °C	
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67	IP 67	IP 67	IP 65	
Light	Red light	Red light, Pin point	Infrared light	Laser	Infrared light	Infrared light	
Special features	stackable	stackable	stackable	stackable		Dynamic measuring procedures	
Page	262	264	266	268	270	282	



BLG

	Metal							
	0.15...2.1 m							
	24 V DC,							
	PNP/analog NO							
	Plug connector							
	0...+55 °C							
	IP 65							
	Infrared light							
	various measurement field heights							
	287							

Photoelectric Sensors

Photoelectric sensors for object detection

Our broad portfolio of standard sensors provides the ideal solution for every application, whether using through-beam, retroreflective or diffuse light sensors. You can freely choose your light type. This stems from the fact that, regardless of type, the sensors operate with easily visible red light, invisible infrared light or incredibly precise laser light.
All of the sensors are robust and reliable – even under harsh ambient conditions or in complex applications.



Contents

Cylinder Designs
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BOS 18KW 120
BOS 30M 134

Block Designs
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BOS 5K 158
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BOS 26K 208
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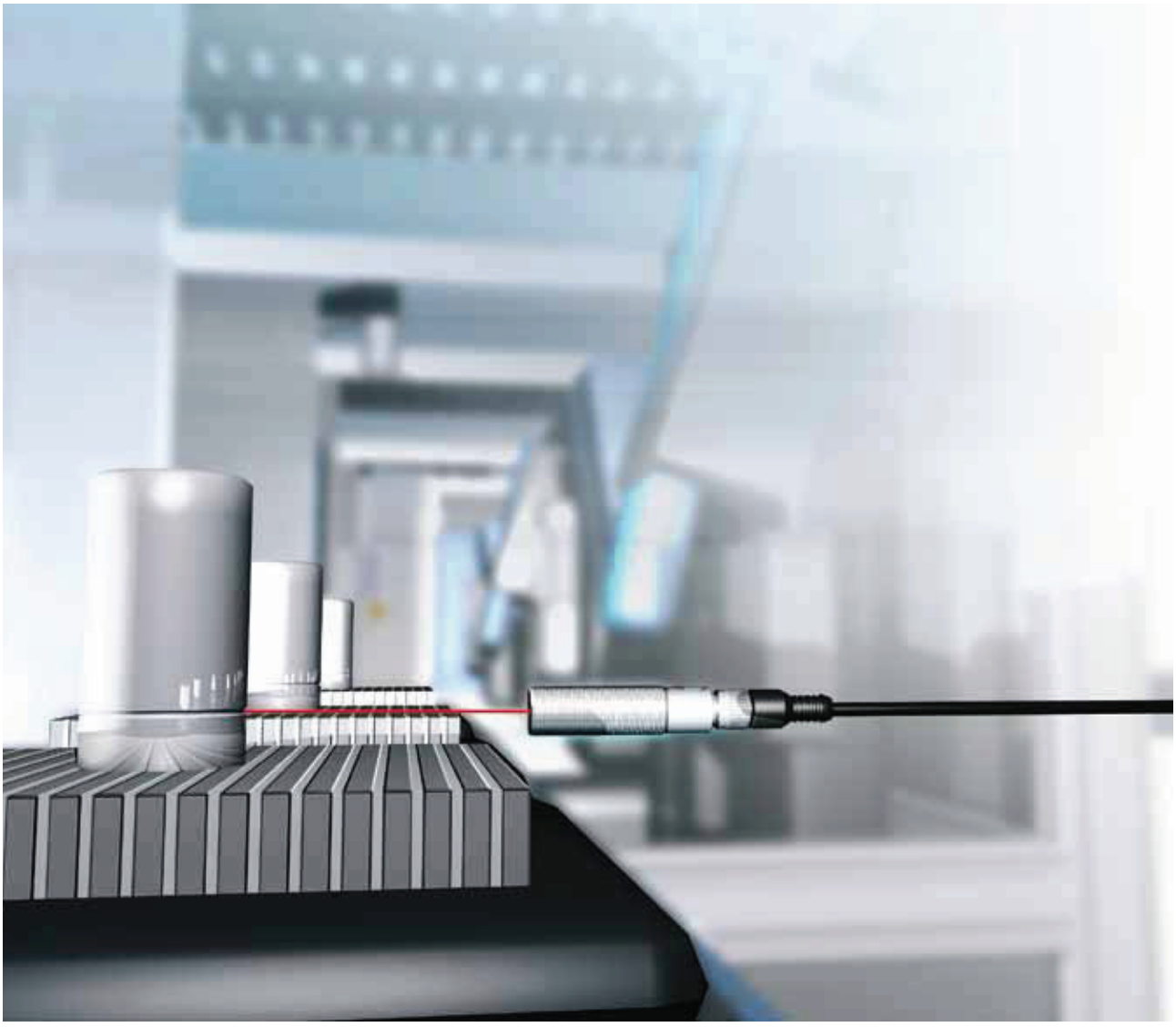
Fork Sensors BGL
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Laser 252
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Angle Sensors BWL
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Infrared 266
Laser 268
Automotive 270



Basic information and definitions can be found on **page 934.**

Small size – big performance
The Opto-mini.s **BOS 08M** sensors stand out with their ease of handling and fixed sensing distances and ranges. They are small, robust, flexible and affordable.
This is how the small photoelectric sensors open up possibilities in highly dynamic applications such as robot arms. This is precisely where components that have very low weight and small dimensions while retaining high switching precision are in demand.



Type	Sensing distance/ Range	Material Housing		Light type		Out-put	Switching type		Switch-ing fre-quency	U_S	Connec-tion		Page
■ Ordering code □ Part number		Nickel-plated CuZn	Stainless steel	Red light	Infrared	PNP transistor	Light switching	Dark switching		10...30 V DC	M8 plug, 3-pin	Cable	
Diffuse sensor													
BOS0006 BOS 08M-PS-RD11-S49	0...55 mm	■		■		■	■		400 Hz	■	■		38
BOS0004 BOS 08M-PO-RD11-S49	0...55 mm	■		■		■		■	400 Hz	■	■		38
BOS0005 BOS 08M-PS-RD11-02	0...55 mm	■		■		■	■		400 Hz	■		■	38
BOS0003 BOS 08M-PO-RD11-02	0...55 mm	■		■		■		■	400 Hz	■		■	38
Retroreflective sensor with polarizing filter													
BOS00RC BOS 08M-PS-PR11-S49	25...550 mm	■		■		■		■	400 Hz	■	■		38
BOS00R9 BOS 08M-PO-PR11-S49	25...550 mm	■		■		■	■		400 Hz	■	■		38
BOS00RA BOS 08M-PS-PR11-02	25...550 mm	■		■		■		■	400 Hz	■		■	39
BOS00R8 BOS 08M-PO-PR11-02	25...550 mm	■		■		■	■		400 Hz	■		■	39
Through-beam sensor Receiver													
BOS00W9 BOS 08M-PS-RE11-S49	0...1.1 m	■		■		■		■	400 Hz	■	■		39
BOS0153 BOS 08M-PO-RE11-S49	0...1.1 m	■		■		■	■		400 Hz	■	■		39
BOS018F BOS 08M-PS-RE11-02	0...1.1 m	■		■		■		■	400 Hz	■		■	39
BOS018E BOS 08M-PO-RE11-02	0...1.1 m	■		■		■	■		400 Hz	■		■	39
BOS01F7 BOS 08E-PS-IE11-02	0...1.5 m		■		■	■		■	400 Hz	■		■	40
Through-beam sensor Emitter													
BOS0151 BOS 08M-X-RS11-S49	0...1.1 m	■		■						■	■		39
BOS018H BOS 08M-X-RS11-02	0...1.1 m	■		■						■		■	39
BOS01F6 BOS 08E-X-IS11-02	0...1.5 m		■		■					■		■	40

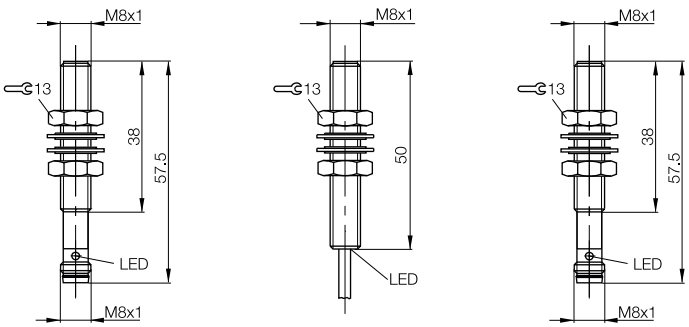
NPN on request



Type			Diffuse sensor	Diffuse sensor	Retroreflective sensor
Detection range			0...55 mm	0...55 mm	25...550 mm
PNP NO		**Ordering code**	**BOS0006**	**BOS0005**	
		Part number	BOS 08M-PS-RD11-S49	BOS 08M-PS-RD11-02	
PNP NC		**Ordering code**	**BOS0004**	**BOS0003**	
		Part number	BOS 08M-PO-RD11-S49	BOS 08M-PO-RD11-02	
PNP NO	Polarizing filter	**Ordering code**			**BOS00RC**
		Part number			BOS 08M-PS-PR11-S49
PNP NC	Polarizing filter	**Ordering code**			**BOS00R9**
		Part number			BOS 08M-PO-PR11-S49
PNP NO	Receiver	**Ordering code**			
		Part number			
PNP NC	Receiver	**Ordering code**			
		Part number			
	Emitter	**Ordering code**			
		Part number			
Supply voltage U_S			10…30 V DC	10…30 V DC	10…30 V DC
Output current			100 mA	100 mA	100 mA
No-load supply current I_0 max.			20 mA	20 mA	20 mA
Switching type			Light or dark switching	Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	Yes/Yes
Settings			Fixed	Fixed	Fixed
Emitter, light type			LED, red light	LED, red light	LED, red light
Wavelength			640 Nm	640 Nm	640 Nm
Received light indicator			Yellow LED	Yellow LED	Yellow LED
Response time			1.25 ms	1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67	IP 67
Ambient temperature T_a			–10...+60 °C	–10...+60 °C	–10...+60 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Material		Housing	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
		Optical surface	PMMA	PMMA	PMMA
Connection			M8 connector, 3-pin	2 m PUR cable 3×0.14 mm²	M8 connector, 3-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-9

For wiring diagrams see page 41.

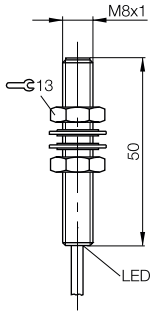


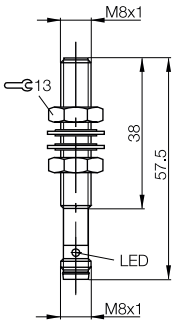


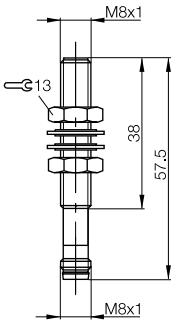


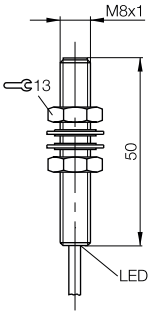


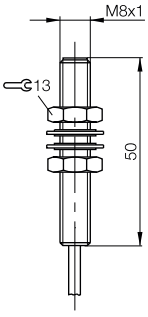
	Retroreflective sensor	Through-beam sensor	Through-beam sensor	Through-beam sensor	Through-beam sensor
	25...550 mm	**0...1.1 m**	**0...1.1 m**	**0...1.1 m**	**0...1.1 m**
	BOS00RA				
	BOS 08M-PS-PR11-02				
	BOS00R8				
	BOS 08M-PO-PR11-02				
		BOS00W9		**BOS018F**	
		BOS 08M-PS-RE11-S49		BOS 08M-PS-RE11-02	
		BOS0153		**BOS018E**	
		BOS 08M-PO-RE11-S49		BOS 08M-PO-RE11-02	
			BOS0151		**BOS018H**
			BOS 08M-X-RS11-S49		BOS 08M-X-RS11-02
	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC
	100 mA	100 mA		100 mA	
	20 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA
	Light or dark switching	Light or dark switching		Light or dark switching	
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed	Fixed
	LED, red light		LED, red light		LED, red light
	640 Nm		640 Nm		640 Nm
	Yellow LED	Yellow LED		Yellow LED	
	1.25 ms	1.25 ms		1.25 ms	
	400 Hz	400 Hz		400 Hz	
	IP 67	IP 67	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
	PMMA	PMMA	PMMA	PMMA	PMMA
	2 m PUR cable, 3×0.14 mm²	M8 connector, 3-pin	M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 2×0.14 mm²





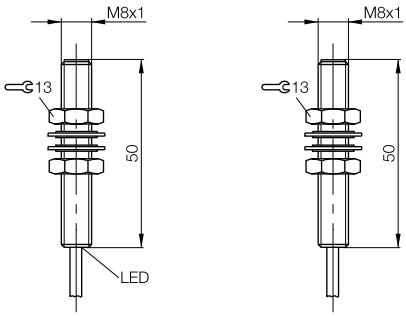






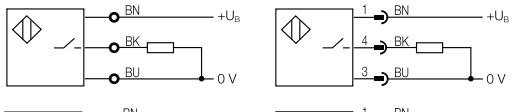


Type			**Through-beam sensor**	**Through-beam sensor**	
Detection range			**0...1.5 m**	**0...1.5 m**	
PNP NO	Receiver	**Ordering code**	**BOS01F7**		
		Part number	BOS 08E-PS-IE11-02		
	Emitter	**Ordering code**		**BOS01F6**	
		Part number		BOS 08E-X-IS11-02	
Supply voltage U_S			10...30 V DC	10...30 V DC	
Output current			100 mA		
No-load supply current I_0 max.			≤ 8 mA	≤ 15 mA	
Switching type			Dark switching		
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	
Settings			Fixed	Fixed	
Emitter, light type				LED, infrared light	
Wavelength				940 Nm	
Received light indicator			Yellow LED		
Response time			1.25 ms		
Switching frequency f			400 Hz		
Degree of protection as per IEC 60529			IP 67	IP 67	
Ambient temperature Ta			–10...60°C	–10...60°C	
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2	
Material		Housing	Stainless steel 1.4404	Stainless steel 1.4404	
		Optical surface	PMMA	PMMA	
Connection			2 m PUR cable, 3×0.14 m²	2 m PUR cable, 2×0.14 m²	

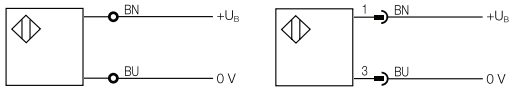


Wiring diagrams

Diffuse, retroreflective,
through-beam sensor receivers



Through-beam sensor emitters



Display elements

Yellow LED: Received light indicator

The LED can show 3 different statuses:

- LED off: No object detected
- LED lights up and stays on: Object detected
- LED flashes: Contamination indicator/signal not stable

Recommended accessories

(please order separately)

Description	Ordering code
Reflector	**BAM00WL**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors

(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Simplification with potential

Brilliant solutions impress with their simplicity, as does our **BOS 12M** series. That is because these sensors in a fully potted metal housing with IP 67 degree of protection have been optimized for typical applications. This simplification creates potential.

All the sensors are enclosed in the same housing as a typical inductive proximity switch (M12×1) for this reason. This means photoelectric sensors and inductive proximity switches are mechanically and electrically compatible.

Their installation also draws attention with its simplicity. This is because BOS 12M sensors are fastened in place simply by drilling holes. This provides the following benefits:

- Simplifies the design of machines and systems.
- Adapts sensor principles more quickly.
- Allows accessories to be used in multiple ways, thereby reducing stock levels as well.

For long ranges or for detecting small parts, laser through-beam light sensors are available in two different designs.

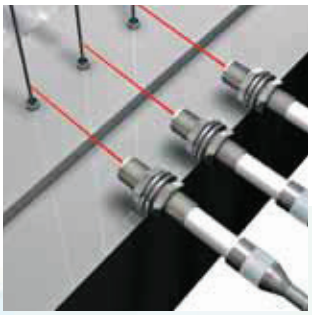
Features

- Supply voltage 10...30 V DC, protected from polarity reversal
- Function indicator for the output
- IP 67 degree of protection
- Standard (M12×1) metal housing
- Red and infrared light versions
- Fixed and adjustable sensitivity
- PNP or NPN, light or dark switching
- Cable and connector versions (M12 connector)

Applications

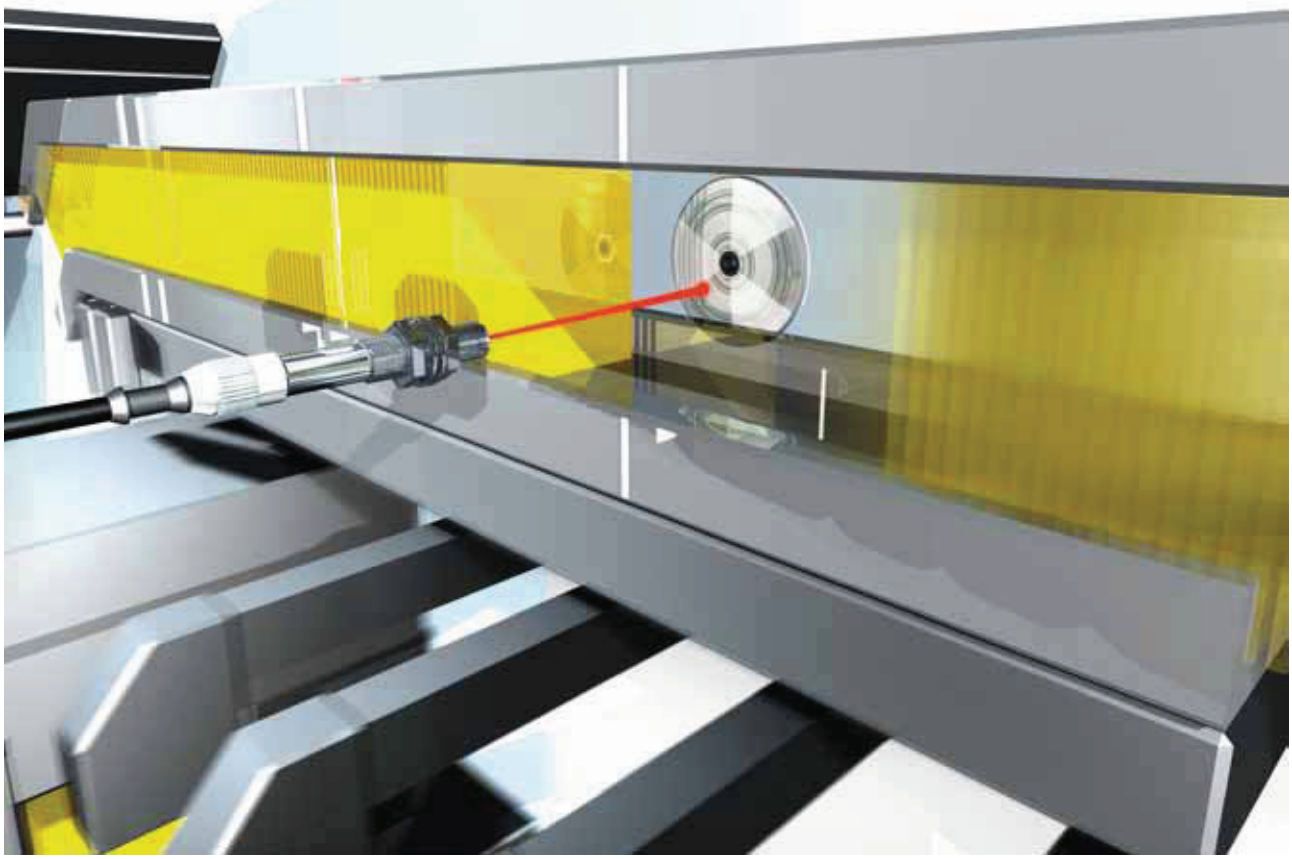
- General automation tasks
- Assembly and handling technology
- Machine tool building
- Packaging industry
- Robots
- Machine tool building











Type ■ Ordering code Part number		Sensing distance/ Range	Light type			Out-put	Switching type		Switching frequency	U_S	Connec-tion		Special features		Page
			Red light	Infrared	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable, 3 m	Adjustable	Teach-in	
Diffuse sensor with background suppression															
BOS007R	BOS 12M-PS-1N1I-S4-C	0...24 mm	■			■	■		1 kHz	■	■				44
BOS007T	BOS 12M-PU-1HA-S4-C	10...60 mm	■			■	■	■	1 kHz	■	■		■	■	44
Diffuse sensor															
BOS0012	BOS 12M-PS-1YA-S4-C	1...100 mm	■			■	■		200 Hz	■	■				44
BOS000P	BOS 12M-PO-1YA-S4-C	1...100 mm	■			■		■	200 Hz	■	■				44
BOS0010	BOS 12M-PS-1YA-BO-C-03	1...100 mm	■			■	■		200 Hz	■		■			45
BOS000N	BOS 12M-PO-1YA-BO-C-03	1...100 mm	■			■		■	200 Hz	■		■			45
BOS0043	BOS 12M-PS-1YB-S4-C	1...200 mm	■			■	■		200 Hz	■	■				45
BOS000T	BOS 12M-PO-1YB-S4-C	1...200 mm	■			■		■	200 Hz	■	■				45
BOS0013	BOS 12M-PS-1YB-BO-C-03	1...200 mm	■			■	■		200 Hz	■		■			45
BOS000R	BOS 12M-PO-1YB-BO-C-03	1...200 mm	■			■		■	200 Hz	■		■			45
BOS000W	BOS 12M-PS-1PB-S4-C	1...200 mm		■		■	■		200 Hz	■	■		■		45
BOS000U	BOS 12M-PS-1PB-BO-C-03	1...200 mm		■		■	■		200 Hz	■		■	■		45
BOS0045	BOS 12M-PS-1PD-S4-C	1...400 mm		■		■	■		200 Hz	■	■		■		46
BOS0044	BOS 12M-PO-1PD-S4-C	1...400 mm		■		■		■	200 Hz	■	■		■		46
BOS000Y	BOS 12M-PS-1PD-BO-C-03	1...400 mm		■		■	■		200 Hz	■		■	■		46
BOS000L	BOS 12M-PO-1PD-BO-C-03	1...400 mm		■		■		■	200 Hz	■		■	■		46
Retroreflective sensor with polarizing filter															
BOS00RE	BOS 12M-PS-1QA-S4-C	0...1.5 m	■			■		■	200 Hz	■	■		■		46
BOS00RJ	BOS 12M-PO-1QA-S4-C	0...1.5 m	■			■	■		200 Hz	■	■		■		46
BOS00RK	BOS 12M-PS-1QA-BO-C-03	0...1.5 m	■			■		■	200 Hz	■		■	■		47
BOS00RH	BOS 12M-PO-1QA-BO-C-03	0...1.5 m	■			■	■		200 Hz	■		■	■		47
Through-beam sensor Receiver															
BOS00UE	BLE 12M-PA-1PD-S4-C	0...5 m	■			■	■	■	500 Hz	■	■		■		47
BOS00UC	BLE 12M-PA-1PD-BO-C-03	0...5 m	■			■	■	■	500 Hz	■		■	■		47
Through-beam sensor Emitter															
BOS00W2	BLS 12M-XX-1RD-S4-L	0...5 m	■							■	■				47
BOS00UW	BLS 12M-XX-1RD-BO-L-03	0...5 m	■							■		■			47
Laser through-beam sensor Receiver ⚠															
BOS00WF	BOS 12M-PA-LE10-S4				■	■	■	■	1 kHz	■	■		■		51
BOS00WE	BOS 12M-PA-LE10-03				■	■	■	■	1 kHz	■		■	■		51
Laser through-beam sensor Emitter ⚠															
BOS00WH	BOS 12M-X-LS11-S4	0...3 m			■					■	■				51
BOS00WL	BOS 12M-XT-LS11-S4	0...3 m			■					■	■				51
BOS00WK	BOS 12M-XT-LS11-03	0...3 m			■					■		■			51
BOS00WJ	BOS 12M-X-LS12-S4	0...30 m			■					■	■				51
BOS00WN	BOS 12M-XT-LS12-S4	0...30 m			■					■	■				51
BOS00WM	BOS 12M-XT-LS12-03	0...30 m			■					■		■			51

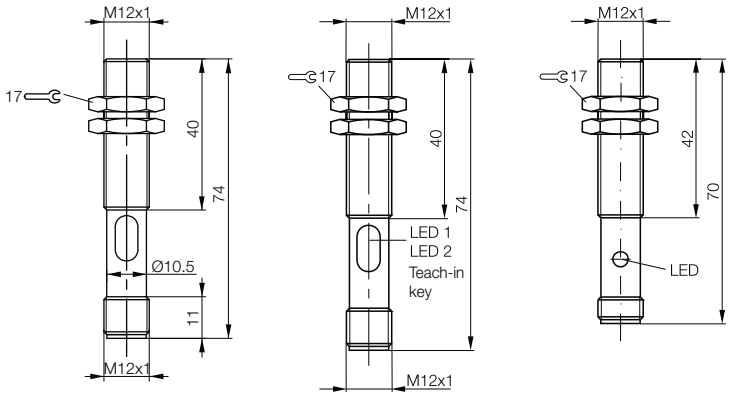
NPN on request



Type			Diffuse sensor with background suppression	Diffuse sensor with background suppression	**Diffuse sensor**
Detection range			**0...24 mm**	**10...60 mm**	**1...100 mm**
PNP NO	Background suppression	**Ordering code**	**BOS007R**		
		Part number	BOS 12M-PS-1N1I-S4-C		
PNP NO/NC	Background suppression, Teach-in	**Ordering code**		**BOS007T**	
		Part number		BOS 12M-PU-1HA-S4-C	
PNP NO		**Ordering code**			**BOS0012**
		Part number			BOS 12M-PS-1YA-S4-C
PNP NC		**Ordering code**			**BOS000P**
		Part number			BOS 12M-PO-1YA-S4-C
Supply voltage U_S			10…30 V DC	10…30 V DC	10…30 V DC
Output current			100 mA	100 mA	≤ 200 mA
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA	≤ 20 mA
Switching type			Light switching	Light/dark switching (selectable)	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	Yes/Yes
Settings			Fixed	Teach-in	Fixed
Emitter, light type			LED, red light	LED, red light	LED, red light
Wavelength			660 Nm	660 Nm	660 Nm
Light spot diameter			5×5 mm	5×5 mm at 50 mm	
Distance hysteresis			≤ 5%	≤ 5%	
Gray value shift (90%/18%)			≤ 5%	≤ 6%	
Output function indicator			Yellow LED	Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED	
Response time			0.5 ms	0.5 ms	2.5 ms
Switching frequency f			1 kHz	1 kHz	200 Hz
Degree of protection as per IEC 60529			IP 67	IP 67	IP 67
Ambient temperature T_a			–20...+60 °C	–20...+60 °C	–15...+55 °C
Permissible ambient light			5 klx	5 klx	5 klx
Material		Housing	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
		Optical surface	PMMA	PMMA	PMMA
Connection			M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

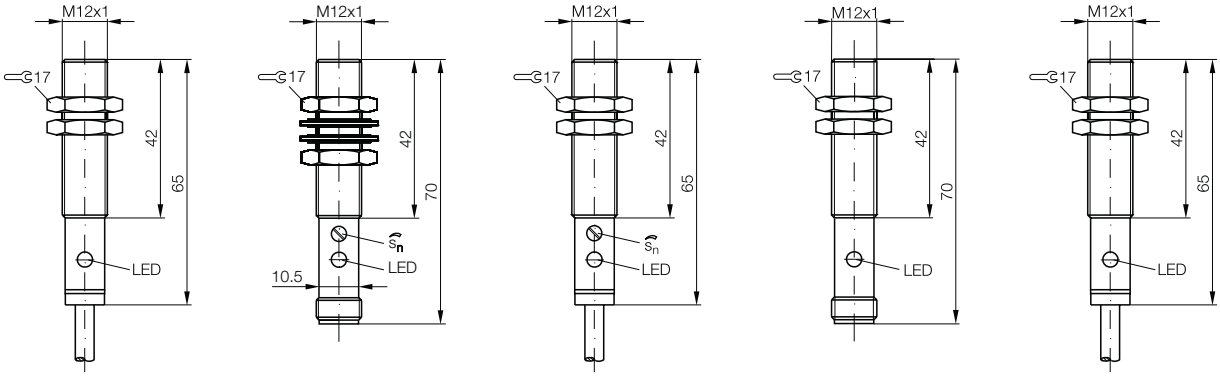
Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 49.





	Diffuse sensor **1...100 mm**	**Diffuse sensor** **1...200 mm**	**Diffuse sensor** **1...200 mm**	**Diffuse sensor** **1...200 mm**	**Diffuse sensor** **1...200 mm**
	BOS0010	**BOS000W**	**BOS000U**	**BOS0043**	**BOS0013**
	BOS 12M-PS-1YA-B0-C-03	BOS 12M-PS-1PB-S4-C	BOS 12M-PS-1PB-B0-C-03	BOS 12M-PS-1YB-S4-C	BOS 12M-PS-1YB-B0-C-03
	BOS000N			**BOS000T**	**BOS000R**
	BOS 12M-PO-1YA-B0-C-03			BOS 12M-PO-1YB-S4-C	BOS 12M-PO-1YB-B0-C-03
	10…30 V DC	10...30 V DC	10...30 V DC	10…30 V DC	10…30 V DC
	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light or dark switching	Light switching	Light switching	Light or dark switching	Light or dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Potentiometer, 270°	Potentiometer, 270°	Fixed	Fixed
	LED, red light	LED, infrared light	LED, infrared light	LED, red light	LED, red light
	660 Nm	880 Nm	880 Nm	660 Nm	660 Nm
	Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	2.5 ms	2.5 ms	2.5 ms	2.5 ms	2.5 ms
	200 Hz	200 Hz	200 Hz	200 Hz	200 Hz
	IP 67	IP 67	IP 67	IP 67	IP 67
	–15...+55 °C	–5...+55 °C	–5...+55 °C	–15...+55 °C	–15...+55 °C
	5 klx	5 klx	5 klx	5 klx	5 klx
	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
	PMMA	PMMA	PMMA	PMMA	PMMA
	3 m PVC cable, 3×0.34 mm²	M12 connector, 4-pin	3 m PVC cable, 3×0.34 mm²	M12 connector, 4-pin	3 m PVC cable, 3×0.34 mm²

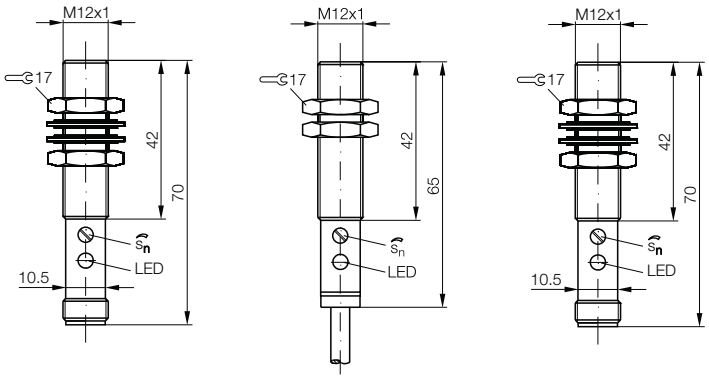


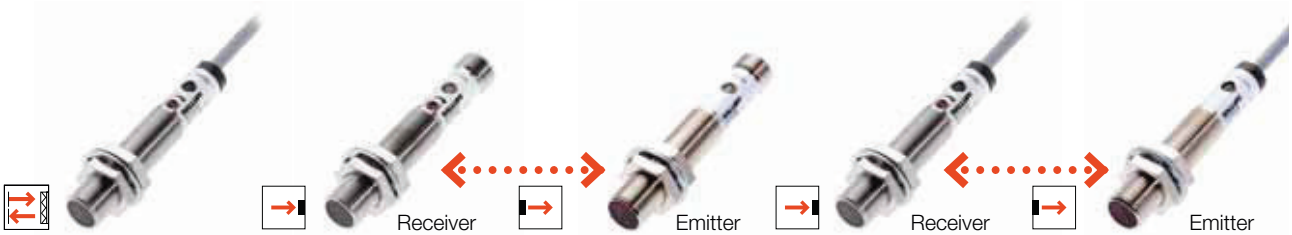


Type			Diffuse sensor	Diffuse sensor	Retroreflective sensor
Detection range			1...400 mm	1...400 mm	0...1.5 m
PNP NO		Ordering code	BOS0045	BOS000Y	
		Part number	BOS 12M-PS-1PD-S4-C	BOS 12M-PS-1PD-B0-C-03	
PNP NC		Ordering code	BOS0044	BOS000L	
		Part number	BOS 12M-PO-1PD-S4-C	BOS 12M-PO-1PD-B0-C-03	
PNP NO	Polarizing filter	Ordering code			BOS00RE
		Part number			BOS 12M-PS-1QA-S4-C
PNP NC	Polarizing filter	Ordering code			BOS00RJ
		Part number			BOS 12M-PO-1QA-S4-C
PNP complementary	Receiver	Ordering code			
		Part number			
	Emitter	Ordering code			
		Part number			
Supply voltage U_S			10…30 V DC	10…30 V DC	10…30 V DC
Output current			≤ 200 mA	≤ 200 mA	≤ 200 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA	≤ 20 mA
Switching type			Light or dark switching	Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			LED, infrared light	LED, infrared light	LED, red light
Wavelength			880 Nm	880 Nm	660 Nm
Power-on indicator					
Output function indicator			Yellow LED	Yellow LED	Yellow LED
Response time			2.5 ms	2.5 ms	2.5 ms
Switching frequency f			200 Hz	200 Hz	200 Hz
Degree of protection as per IEC 60529			IP 67	IP 67	IP 67
Ambient temperature T_a			–15...+55 °C	–15...+55 °C	–15...+55 °C
Permissible ambient light			5 klx	5 klx	5 klx
Material		Housing	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
		Optical surface	PMMA	PMMA	PMMA
Connection			M12 connector, 4-pin	3 m PVC cable, 3×0.34 mm²	M12 connector, 4-pin

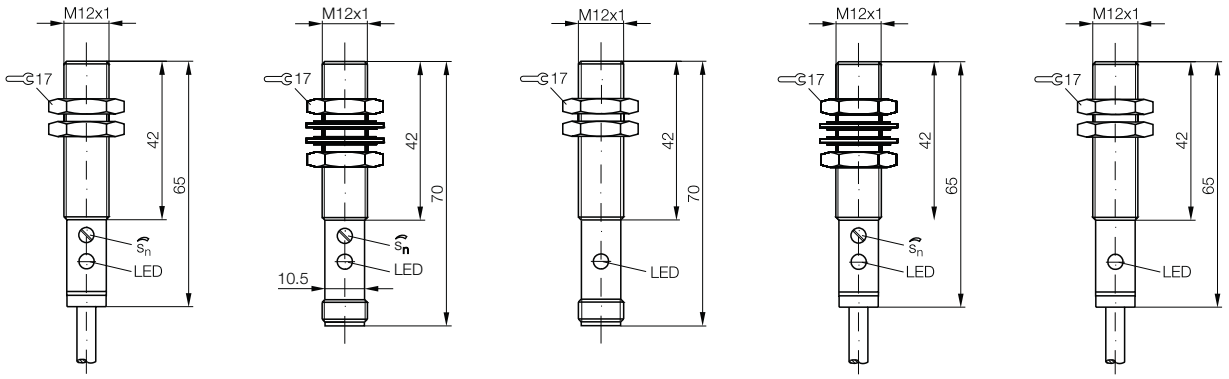
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 49.

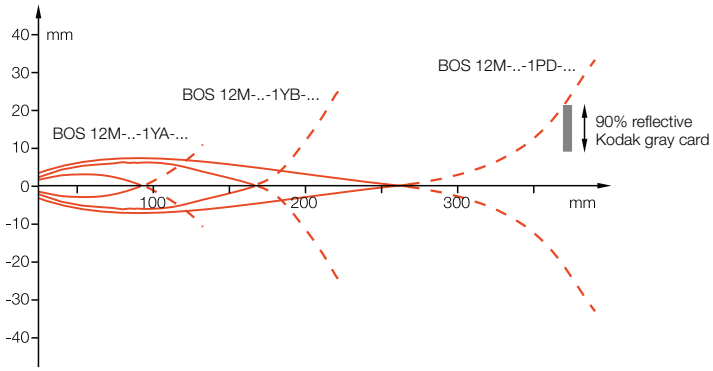




	Retroreflective sensor	**Through-beam sensor**	**Through-beam sensor**	**Through-beam sensor**	**Through-beam sensor**
	0...1.5 m	**0...5 m**	**0...5 m**	**0...5 m**	**0...5 m**
	BOS00RK				
	BOS 12M-PS-1QA-B0-C-03				
	BOS00RH				
	BOS 12M-PO-1QA-B0-C-03				
		BOS00UE		**BOS00UC**	
		BLE 12M-PA-1PD-S4-C		BLE 12M-PA-1PD-B0-C-03	
			BOS00W2		**BOS00UW**
			BLS 12M-XX-1RD-S4-L		BLS 12M-XX-1RD-B0-L-03
	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC
	≤ 200 mA	≤ 200 mA		≤ 200 mA	
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light or dark switching	Light and dark switching		Light and dark switching	
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°		Potentiometer, 270°	
	LED, red light	LED, red light	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm	660 Nm	660 Nm
			Green LED		Green LED
	Yellow LED	Yellow LED		Yellow LED	
	2.5 ms	1 ms		1 ms	
	200 Hz	500 Hz		500 Hz	
	IP 67	IP 67	IP 67	IP 67	IP 67
	–15...+55 °C	–15...+55 °C	–15...+55 °C	–15...+55 °C	–15...+55 °C
	5 klx	5 klx	5 klx	5 klx	5 klx
	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
	PMMA	PMMA	PMMA	PMMA	PMMA
	3 m PVC cable	M12 connector,	M12 connector,	3 m PVC cable,	3 m PVC cable,
	3×0.34 mm²	4-pin	4-pin	3×0.34 mm²	3×0.34 mm²

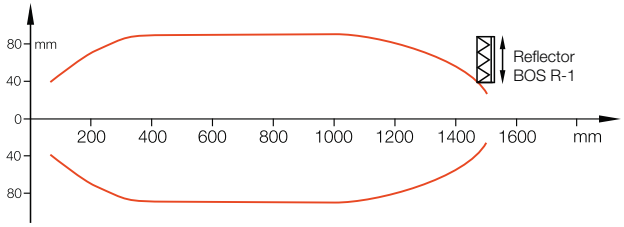


Diffuse sensor BOS 12M-..-1YA/1YB/1PD-...



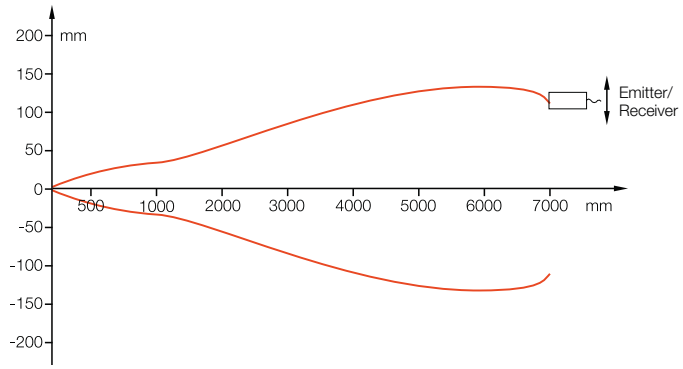
Sensing distance measured with side approach of Kodak gray card.

Retroreflective sensor BOS 12M-..-1QA-...



Range measured with side approach with reflector.

Through-beam sensor BLE/BLS 12M-...



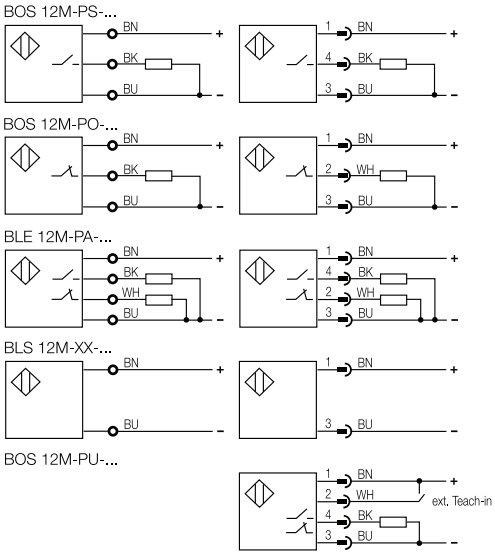
The maximum possible offset between the emitter and receiver is measured for the through-beam sensor.

Orientation aid

The additional function indicator on the receiver of the through-beam sensor enables fast and simple alignment between the emitter and receiver.
First attach the receiver and then the emitter. As soon as the emitter is located within the active range of the receiver, the function indicator on the front of the sensor goes out. This indicates an optical connection between the emitter and receiver. It is also easily visible when the sensor is flush mounted.



Wiring diagrams



Recommended accessories
(please order separately)

Description	Ordering code
① Reflector	**BAM00WL**
② Reflector	**BAM00UK**
③ Diagonal mirror	**BAM00R0**
④ Air shield	**BAM00PY**
⑤ Slit aperture	**BAM00PW**
⑥ Mounting cuff	**BAM01KM**
⑦ Cover nut	**BAM01Y6**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

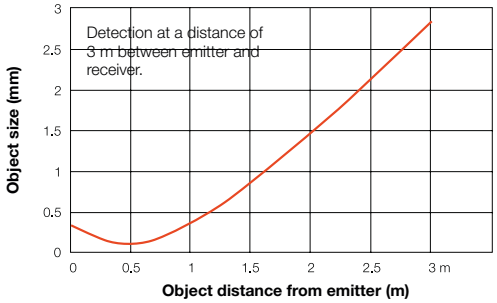
The basis of the 12 laser through-beam sensor BOS is its two different emitters. Emitter version **LS11** is for small parts detection and offers a resolution of 50 µm at the focal point of 500 mm.
The **LS12** version is not focused and is used for long ranges up to 30 m. The receivers can be PNP or NPN, and any emitter can be combined with any receiver.
All sensors are Laser Class 1 and are available with a connector or cable.

Laser Class 1

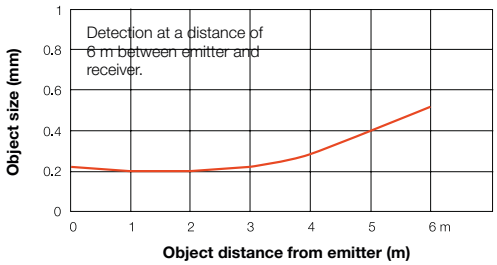
Type		
Detection range		
	Emitter	**Ordering code**
	50 µm high resolution	Part number
	Emitter	**Ordering code**
	Long range 30 m	Part number
PNP	NO/NC	**Ordering code**
	Receiver	Part number
Supply voltage U_S		
Output current		
No-load supply current I_0 max.		
Switching type		
Polarity reversal/short-circuit protected		
Settings		
Help function		
Emitter, light type		
Wavelength		
Laser class		
Output function indicator		
Response time		
Switching frequency f		
Degree of protection as per IEC 60529		
Ambient temperature T_a		
Permissible ambient light per		
Material	Housing	
	Optical surface	
Connection		

Small parts detection

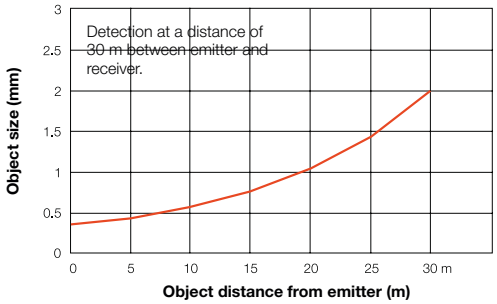
BOS 12M-XT-**LS11**-..



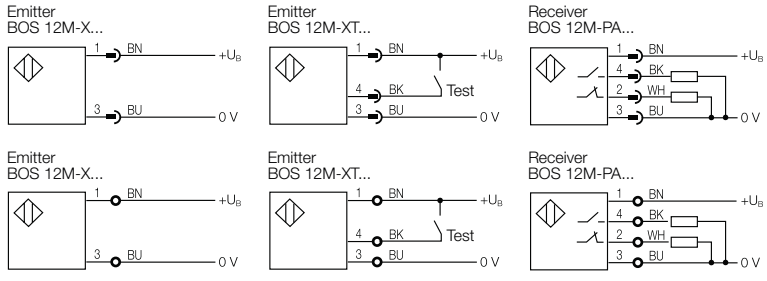
BOS 12M-XT-**LS12**-..



BOS 12M-XT-**LS12**-..

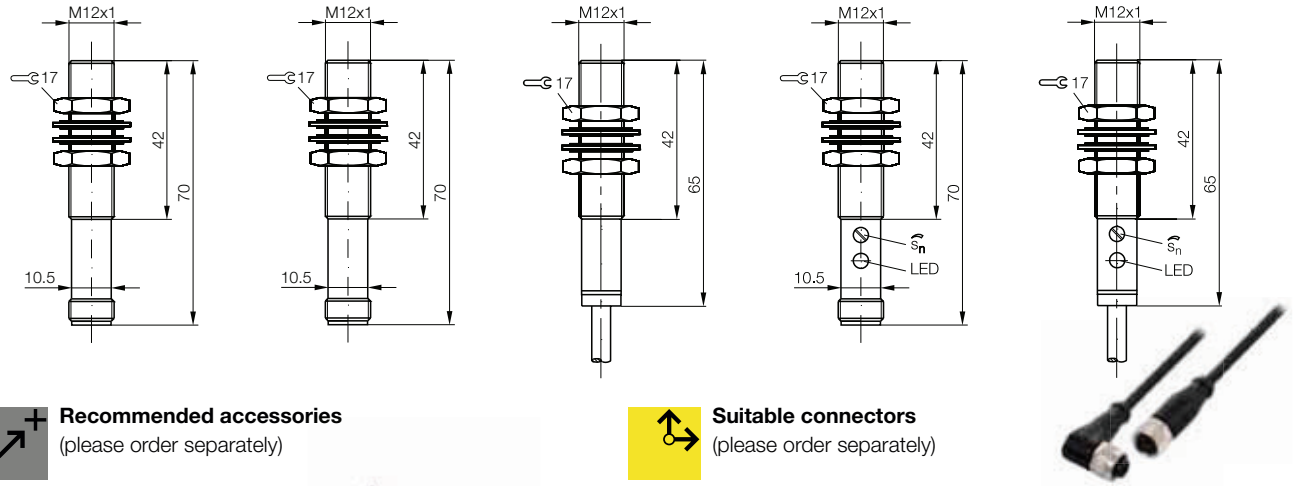


Wiring diagrams





Laser through-beam light sensor 0...3 m/0...30 m	**Laser through-beam light sensor 0...3 m/0...30 m**	**Laser through-beam light sensor 0...3 m/0...30 m**	**Laser through-beam light sensor**	**Laser through-beam light sensor**
BOS00WH	**BOS00WL**	**BOS00WK**		
BOS12M-X-LS11-S4	BOS 12M-XT-LS11-S4	BOS 12M-XT-LS11-03		
BOS00WJ	**BOS00WN**	**BOS00WM**		
BOS12M-X-LS12-S4	BOS 12M-XT-LS12-S4	BOS 12M-XT-LS12-03		
			BOS00WF	**BOS00WE**
			BOS 12M-PA-LE10-S4	BOS 12M-PA-LE10-03
10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC
			≤ 200 mA	≤ 200 mA
≤ 10 mA	≤ 10 mA	≤ 10 mA	≤ 15 mA	≤ 15 mA
			Light/dark switching (complementary)	Light/dark switching (complementary)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
			Potentiometer, 270°	Potentiometer, 270°
	Test input	Test input		
Laser, red light	Laser, red light	Laser, red light		
655 Nm	655 Nm	655 Nm		
1	1	1		
			Yellow LED	Yellow LED
			0.5 ms	0.5 ms
			1 kHz	1 kHz
IP 67	IP 67	IP 67	IP 67	IP 67
–10...+50 °C	–10...+50 °C	–10...+50 °C	–10...+50 °C	–10...+50 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Glass	Glass	Glass	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	3 m PVC cable, 3×0.34 mm²	M12 connector, 4-pin	3 m PVC cable, 4×0.34 mm²



Recommended accessories
(please order separately)

Description	Ordering code
Mounting cuff	**BAM00R2**



More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

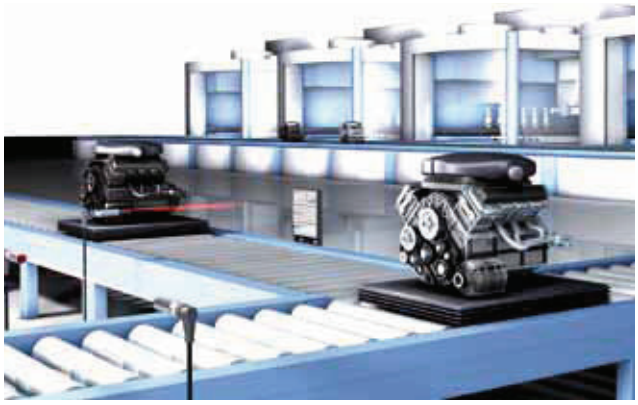
BOS 18M GlobalProx – sound and cost-effective



We often come across systems in which a sensor adjustment is not required, not possible or is undesirable. Our BOS-18M diffuse sensors and light barriers from the Global family are the correct choice for these applications. All of these sensors have a fixed setting. This shortens the time required for system commissioning and protects against tampering. Equipped with a sound basic range of functions, these sensors also have the best possible price/performance ratio.

- Sound performance and reliable object detection
- Ideal for standard applications, e.g. in automation
- Cost-effective alternative for all types of light
- Plug and play: All of these sensors have a fixed setting
- Universal fastening thanks to wide range of assembly accessories

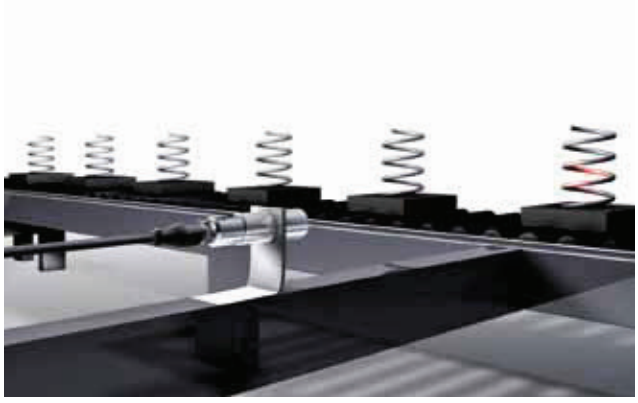
Red light sensors M18 – for the highest precision



Precise switching behavior – excellent repeat accuracy
Cutting-edge LED technology and the latest Fresnel lenses are combined in this unit to form an innovative and powerful photoelectric sensor. In practice this means: Improved repeat accuracy and precise switching behavior even at large distances.

- Long range
- Rugged M18 metal housing
- State-of-the-art LED technology with sharply contoured light spot

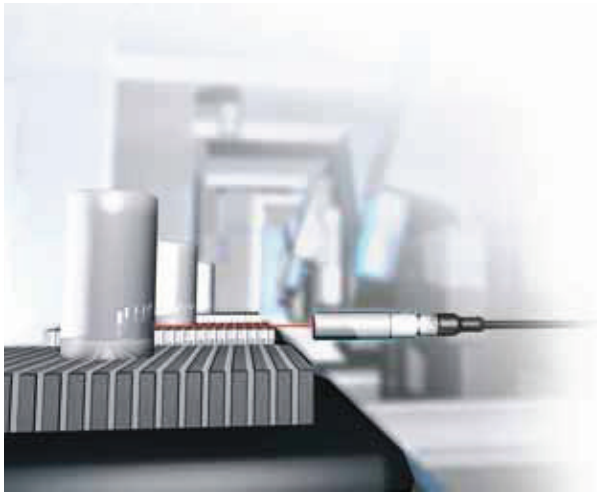
BOS 18M background suppression – expertise with all kinds of light



Balluff M18 laser diffuse sensors with background suppression are a genuine highlight. They are available with different light types, allowing you to simply select according to your requirements. The perfectly focused light beam is able to detect the smallest of parts, grooves or holes with maximum precision and reliability. The large light spot of the red light variant with 300 mm is ideal for detecting objects with notches, holes or openings, because breakthroughs and free areas are simply bridged.
The 150 mm red light version is ideal for distinguishing between foreground and background with high precision at extremely short distances.

- Exact, almost color-independent object detection
- The correct light type for every application – laser or red light
- Precise setting with 10-turn potentiometer
- Robust M18 metal housing with same design for all types
- Universal fastening and alignment thanks to wide range of assembly accessories

BOS 18M Teach-in



For users who prefer the teach-in procedure for sensor setting, Balluff now offers its successful red light series BOS 18M, with long ranges, precise switching behavior and very high levels of repeat accuracy. The top sensor in its class is quickly set at the push of a button.
Further advantage: The BOS 18M Teach-in reports "difficulties" immediately. by means of our patented "Dynamic Sensor Control" diagnostic system, which is available as an option. The DSC allows you to react immediately to contamination or malfunctions.
Even users without DSC can make use of the contamination detection as the sensors are also optionally available with a separate alarm output.

- Continuous sensor monitoring of contamination and malfunctions
- Switchable output
- Simple teach-in procedure
- Standardized BOS-18M design for fast sensor change

BOS 18M infrared – invisible power



The successful BOS-18M series now also includes invisible infrared light. This light type displays its benefits precisely in dirty production environments: Objects are reliably detected regardless of dust and dirt. With its range of over 100 meters, the high-power version of the through-beam sensor impresses particularly in this area. The standardized design of all BOS 18Ms permits a simple change between the different types of light – without assembly change.

- Reliable object detection even in a contaminated environment
- Invisible light – does not irritate personnel
- Simple and fast setting with potentiometer
- Through-beam sensor with test input for function check
- Wide range of assembly accessories

BOS 18M Laser



The **BOS 18M(R) Laser** series is characterized by long ranges and absolute precision in small parts detection.
These sensors are Laser Class 1 and are available with axial or radial light exit. Newly added is a diffuse version with background suppression (Laser Class 2) and a sensing distance of 150 mm.

- Long ranges (50 m)
- High switching frequency (1.5 kHz)
- Straight- and right-angle versions
- Drill break monitoring
- Precise parts positioning
- Fast counting of objects
- High precision

The **BOS 18MR** product family has a built-in angled mirror made of scratch-resistant glass which is attached to the housing. Since the optical head does not protrude over the side, installation from the front is no problem.

- Standard M18×1 housing made of metal (nickel plated brass)
- All sensors use visible red light
- IP 67 degree of protection
- Supply voltage 10...30 V DC, polarity reversal protected
- Output short circuit protected
- Roller conveyors
- Conveying lines
- Packaging industry

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Type		Sensing distance/ Range	Light exit		Light type			Output		Switching type		Switching frequency	U_S	Connection		Special features					Page
■ Ordering code □ Part number			Straight	Angled	Red light	Infrared	Laser	PNP transistor	PNP transistor with DSC	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable	Polarizing filter	Teach-in	Error output	Fixed	Laser Class 1	
Diffuse sensor with background suppression																					
BOS0081	BOS 18MR-PA-1HA-S4-C	40...120 mm		■	■			■		■	■	600 Hz	■	■							72
BOS010J	BOS 18MR-PS-1HA-E5-C-S4	10...120 mm		■	■			■		■		500 Hz	■	■							72
BOS01J4	BOS 18M-PA-RH23-S4	30...150 mm	■		■			■		■	■	500 Hz	■	■							62
BOS01J2	BOS 18M-PSV-RH23-S4	30...150 mm	■		■			■		■		500 Hz	■	■				■			62
BOS002H	BOS 18M-PS-LH22-S4	30...150 mm	■				■	■		■		500 Hz	■	■							82
BOS002K	BOS 18M-PSV-LH22-S4	30...150 mm	■				■	■		■		500 Hz	■	■				■			82
BOS001Z	BOS 18M-POV-LH22-S4	30...150 mm	■				■	■			■	500 Hz	■	■				■			82
BOS01C5	BOS 18M-PA-LH23-S4	30...150 mm	■				■	■		■	■	500 Hz	■	■						■	83
BOS01C4	BOS 18M-PSV-LH23-S4	30...150 mm	■				■	■		■		500 Hz	■	■				■		■	83
BOS014W	BOS 18M-PA-RH22-S4	30...300 mm	■		■			■		■	■	500 Hz	■	■							63
BOS019P	BOS 18M-PS-RH22-S4	30...300 mm	■		■			■		■		500 Hz	■	■							63
BOS019N	BOS 18M-PSV-RH22-S4	30...300 mm	■		■			■		■		500 Hz	■	■				■			63
BOS019R	BOS 18M-POV-RH22-S4	30...300 mm	■		■			■			■	500 Hz	■	■				■			63
Diffuse sensor																					
BOS0141	BOS 18MR-PA-LD10-02	250 mm		■			■	■		■	■	1.5 kHz	■		■					■	86
BOS0142	BOS 18MR-PA-LD10-S4	250 mm		■			■	■		■	■	1.5 kHz	■	■						■	86
BOS01CA	BOS 18M-PA-RD21-S4	300 mm	■		■			■		■	■	400 Hz	■	■							64
BOS01E7	BOS 18M-PS-RD21-S4	300 mm	■		■			■			■	400 Hz	■	■							64
BOS01E8	BOS 18M-PO-RD21-S4	300 mm	■		■			■		■		400 Hz	■	■							65
BOS013F	BOS 18M-PA-LD10-02	350 mm	■				■	■		■	■	1.5 kHz	■		■					■	83
BOS013H	BOS 18M-PA-LD10-S4	350 mm	■				■	■		■	■	1.5 kHz	■	■						■	83
BOS010K	BOS 18MR-PS-10D-E5-C-S4	400 mm		■	■			■			■	1 kHz	■	■							73
BOS01FA	BOS 18M-PS-RD23-S4	400 mm	■		■			■			■	400 Hz	■	■							56
BOS01FC	BOS 18M-PO-RD23-S4	400 mm	■		■			■		■		400 Hz	■	■							56
BOS01HL	BOS 18M-PS-ID23-S4	600 mm	■			■		■			■	400 Hz	■	■							56
BOS01J8	BOS 18M-PUV-RD30-S4	500 mm	■		■			■		■	■	1 kHz	■	■			■	■			70
BOS01CU	BOS 18M-PUD-RD30-S4	500 mm	■		■			■	■	■	■	200 Hz	■	■			■				70
BOS01CF	BOS 18M-PA-RD20-S4	600 mm	■		■			■		■	■	400 Hz	■	■							65
BOS01C1	BOS 18M-PS-RD20-S4	600 mm	■		■			■			■	400 Hz	■	■							65
BOS01E3	BOS 18M-PO-RD20-S4	600 mm	■		■			■		■		400 Hz	■	■							65
BOS01J1	BOS 18M-PS-ID24-S4	400 mm	■			■				■		200 Hz	■	■							76
BOS01EY	BOS 18M-PA-ID20-S4	800 mm	■			■		■		■	■	400 Hz	■	■							76
Retroreflective sensor																					
BOS010L	BOS 18MR-PS-1QB-E5-C-S4	2 m		■	■			■			■	1 kHz	■	■		■					73
BOS01F8	BOS 18M-PS-PR23-S4	4 m	■		■			■			■	400 Hz	■	■		■			■		57
BOS01F9	BOS 18M-PO-PR23-S4	4 m	■		■			■		■		400 Hz	■	■		■			■		57
BOS01J9	BOS 18M-PUV-PR30-S4	5 m	■		■			■		■	■	1 kHz	■	■		■	■	■			71
BOS01CT	BOS 18M-PUD-PR30-S4	5 m	■		■			■	■	■	■	200 Hz	■	■		■	■				71
BOS01HK	BOS 18M-PS-IR23-S4	6 m	■			■		■			■	400 Hz	■	■		■			■		57
BOS01CE	BOS 18M-PA-PR20-S4	7 m	■		■			■		■	■	400 Hz	■	■							66
BOS01FJ	BOS 18M-PA-PR20-S4S	7 m	■		■			■		■	■	400 Hz	■	■							66
BOS01C3	BOS 18M-PS-PR20-S4	7 m	■		■			■			■	400 Hz	■	■							67
BOS01CZ	BOS 18M-PO-PR20-S4	7 m	■		■			■		■		400 Hz	■	■							67
BOS01EM	BOS 18M-PO-PR20-S4S	7 m	■		■			■		■		400 Hz	■	■							67
BOS01HR	BOS 18M-PA-IR21-S4	7 m	■			■		■		■	■	400 Hz	■	■		■					77
BOS0145	BOS 18MR-PA-LR10-02	9 m		■			■	■		■	■	1.5 kHz	■		■	■					87
BOS0146	BOS 18MR-PA-LR10-S4	9 m		■			■	■		■	■	1.5 kHz	■	■		■					87

NPN on request

Type		Sensing distance/ Range	Light exit		Light type			Output		Switching type		Switching frequency	U_S	Connection		Special features				Page
■ Ordering code □ Part number			Straight	Angled	Red light	Infrared	Laser	PNP transistor	PNP transistor with DSC	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable	Polarizing filter	Teach-in	Error output	Fixed	
Retroreflective sensor																				
BOS01F0	BOS 18M-PA-IR20-S4	10 m	■			■		■		■	■	400 Hz	■	■						77
BOS01F1	BOS 18M-PS-IR20-S4	10 m	■			■		■			■	400 Hz	■	■						77
BOS013M	BOS 18M-PA-LR10-S4	16 m	■				■	■		■	■	1.5 kHz	■	■		■				84
BOS013L	BOS 18M-PA-LR10-02	16 m	■				■	■		■	■	1.5 kHz	■		■	■				84
Through-beam sensor Receiver																				
BOS010E	BLE 18MR-PA-1PP-E5-C-S4	0...16 m		■	■			■		■	■	1 kHz	■	■						73
BOS01CC	BOS 18M-PA-RE20-S4	0...20 m	■		■			■		■	■	400 Hz	■	■						68
BOS01FK	BOS 18M-PA-RE20-S4S	0...20 m	■		■			■		■	■	400 Hz	■	■						68
BOS01EE	BOS 18M-PO-RE20-S4	0...20 m	■		■			■		■		400 Hz	■	■						69
BOS01EF	BOS 18M-PO-RE20-S4S	0...20 m	■		■			■		■		400 Hz	■	■						69
BOS01C2	BOS 18M-PS-RE20-S4	0...20 m	■		■			■			■	400 Hz	■	■						69
BOS01FF	BOS 18M-PO-RE23-S4	0...20 m	■		■			■		■		400 Hz	■	■					■	58
BOS01FE	BOS 18M-PS-RE23-S4	0...20 m	■		■			■			■	400 Hz	■	■					■	58
BOS01J7	BOS 18M-PUV-RE30-S4	0...20 m	■		■			■		■	■	1 kHz	■	■			■	■		71
BOS01CW	BOS 18M-PUD-RE30-S4	0...20 m	■		■			■	■	■	■	200 Hz	■	■			■			71
BOS01HP	BOS 18M-PS-IE23-S4	0...50 m	■			■		■			■	400 Hz	■	■					■	59
BOS0074	BLE 18M-BA-1LT-S4-C	0...50 m	■				■	■		■	■	6 kHz	■	■						92
BOS0075	BLE 18M-BO-1LT-S4-C	0...50 m	■				■	■		■		6 kHz	■	■						92
BOS0076	BLE 18MR-BA-1LT-S4-C	0...50 m		■			■	■		■	■	6 kHz	■	■						92
BOS0143	BOS 18MR-PA-LE10-02	0...50 m		■			■	■		■	■	1.5 kHz	■		■					88
BOS0144	BOS 18MR-PA-LE10-S4	0...50 m		■			■	■		■	■	1.5 kHz	■	■						89
BOS013K	BOS 18M-PA-LE10-S4	0...60 m	■				■	■		■	■	1.5 kHz	■	■						85
BOS013J	BOS 18M-PA-LE10-02	0...60 m	■				■	■		■	■	1.5 kHz	■		■					85
BOS01F3	BOS 18M-PA-IE20-S4	0...100 m	■			■		■		■	■	400 Hz	■	■						79
Through-beam sensor Emitter																				
BOS010F	BLS 18MR-XX-1P-E5-L-S4	0...16 m		■	■								■	■						73
BOS01C0	BOS 18M-X-RS20-S4	0...20 m	■		■								■	■						69
BOS01EP	BOS 18M-XT-RS20-S4	0...20 m	■		■								■	■						69
BOS01FH	BOS 18M-X-RS23-S4	0...20 m	■		■								■	■						58
BOS01CY	BOS 18M-X-RS30-S4	0...20 m	■		■								■	■						71
BOS01HM	BOS 18M-X-IS23-S4	0...50 m	■			■							■	■						59
BOS01F5	BOS 18M -X-IS20-S4	0...50 m	■			■							■	■						78
BOS01HN	BOS 18M-XT-IS20-S4	0...50 m	■			■							■	■						78
BOS00AW	BLS 18M-XX-1LT-S4-C	0...50 m	■				■						■	■						93
BOS00AU	BLS 18MR-XX-1LT-S4-C	0...50 m		■			■						■	■						93
BOS0147	BOS 18MR-XT-LS10-02	0...50 m		■			■						■		■					88
BOS0148	BOS 18MR-XT-LS10-S4	0...50 m		■			■						■	■						89
BOS013R	BOS 18M-XT-LS10-S4	0...60 m	■				■						■	■						85
BOS013P	BOS 18M-XT-LS10-02	0...60 m	■				■						■		■					85
BOS01HT	BOS 18M-X-IS24-S4	0...100 m	■				■						■	■						78
BOS01HU	BOS 18M-XT-IS24-S4	0...100 m	■				■						■	■						78

NPN on request

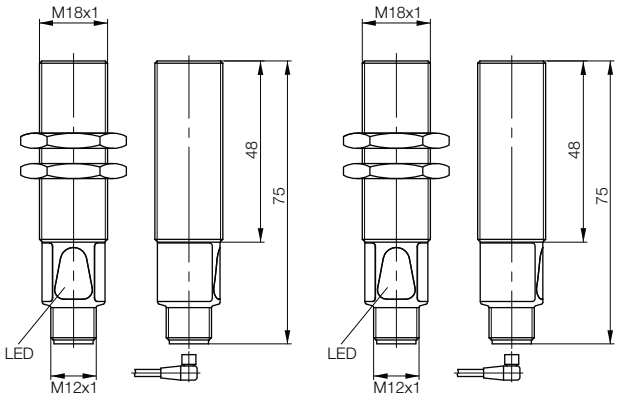




Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**1...400 mm**	**1...600 mm**
PNP NO		**Ordering code**	**BOS01FA**	**BOS01HL**
		Part number	BOS 18M-PS-RD23-S4	BOS 18M-PS-ID23-S4
PNP NC		**Ordering code**	**BOS01FC**	
		Part number	BOS 18M-PO-RD23-S4	
PNP NO	Polarizing filter	**Ordering code**		
		Part number		
PNP NC	Polarizing filter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 50 mA	≤ 30 mA
Switching type			Light or dark switching	Light switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			LED, red light	LED, infrared
Wavelength			620...670 nm	850 Nm
Received light indicator			Yellow LED	Yellow LED
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			10 klx	5 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

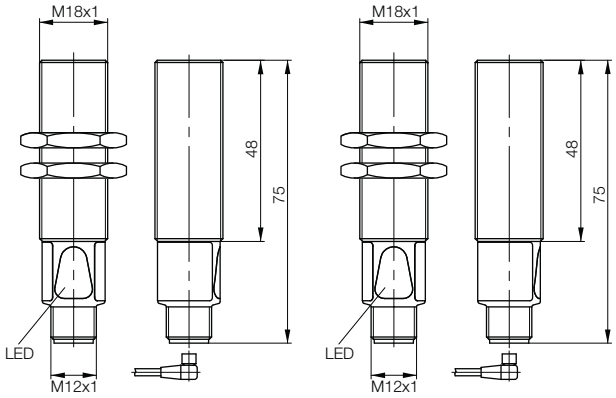
For wiring diagrams see page 61.







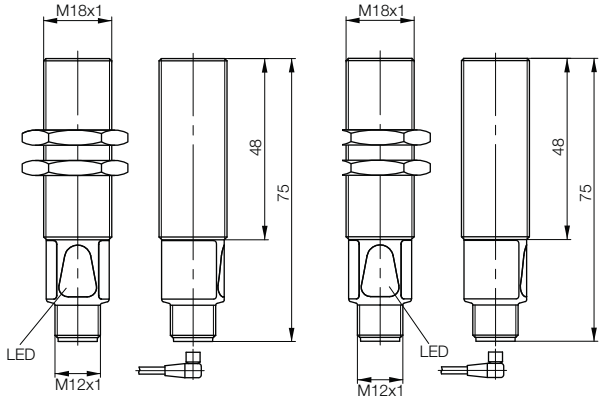
Retroreflective sensor 4 m	**Retroreflective sensor 6 m**			
	BOS01HK			
	BOS 18M-PS-IR23-S4			
BOS01F8				
BOS 18M-PS-PR23-S4				
BOS01F9				
BOS 18M-PO-PR23-S4				
10...30 V DC	10...30 V DC			
100 mA	100 mA			
≤ 50 mA	≤ 30 mA			
Light or dark switching	Dark switching			
Yes/Yes	Yes/Yes			
Fixed	Fixed			
LED, red light	LED, infrared			
620...670 nm	850 Nm			
Yellow LED	Yellow LED			
1.25 ms	1.25 ms			
400 Hz	400 Hz			
IP 67	IP 67			
–5...+55 °C	–5...+55 °C			
10 klx	5 klx			
Nickel-plated brass	Nickel-plated brass			
Glass	Glass			
M12 connector, 4-pin	M12 connector, 4-pin			





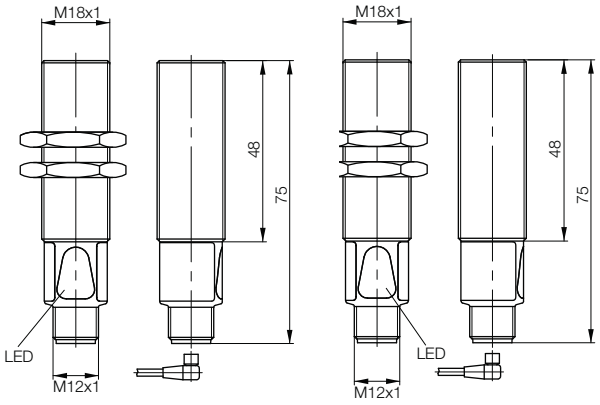
Type			**Through-beam sensor**	**Through-beam sensor**
Detection range			**0...20 m**	**0...20 m**
PNP NO	Receiver	**Ordering code**	**BOS01FE**	
		Part number	BOS 18M-PS-RE23-S4	
PNP NC	Receiver	**Ordering code**	**BOS01FF**	
		Part number	BOS 18M-PO-RE23-S4	
	Emitter	**Ordering code**		**BOS01FH**
		Part number		BOS 18M-X-RS23-S4
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	
No-load supply current I_0 max.			≤ 35 mA	≤ 50 mA
Switching type			Light or dark switching	
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			LED, red light	LED, red light
Wavelength			620...670 nm	620...670 nm
Received light indicator			Yellow LED	
Power-on indicator				Green LED
Response time			1.25 ms	
Switching frequency f			400 Hz	
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			10 klx	10 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams see page 61.

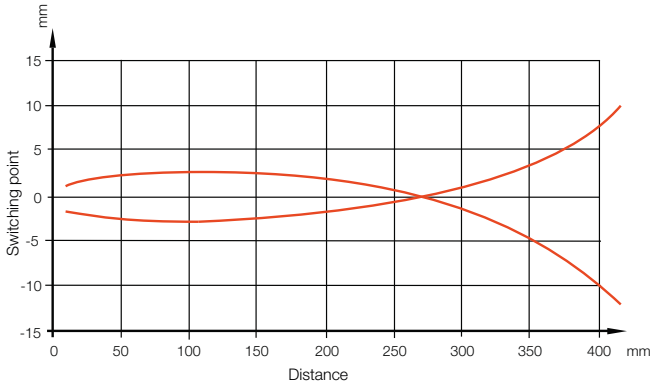




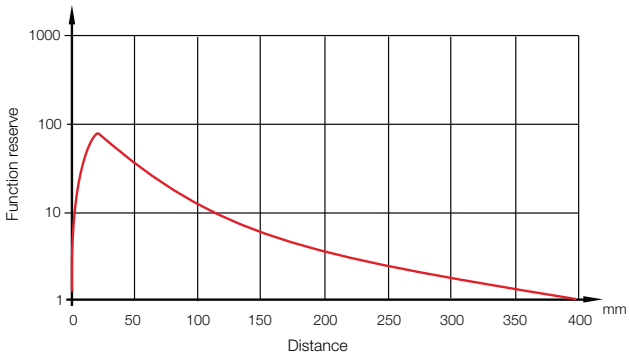
Through-beam sensor	**Through-beam sensor**			
0...50 m	**0...50 m**			
BOS01HP				
BOS 18M-PS-IE23-S4				
	BOS01HM			
	BOS 18M-X-IS23-S4			
10...30 V DC	10...30 V DC			
100 mA				
≤ 30 mA	≤ 20 mA			
Dark switching				
Yes/Yes	Yes/Yes			
Fixed	Fixed			
LED, infrared	LED, infrared			
850 Nm	850 Nm			
Yellow LED				
	Green LED			
1.25 ms				
400 Hz				
IP 67	IP 67			
–5...+55 °C	–5...+55 °C			
5 klx	5 klx			
Nickel-plated brass	Nickel-plated brass			
Glass	Glass			
M12 connector, 4-pin	M12 connector, 4-pin			



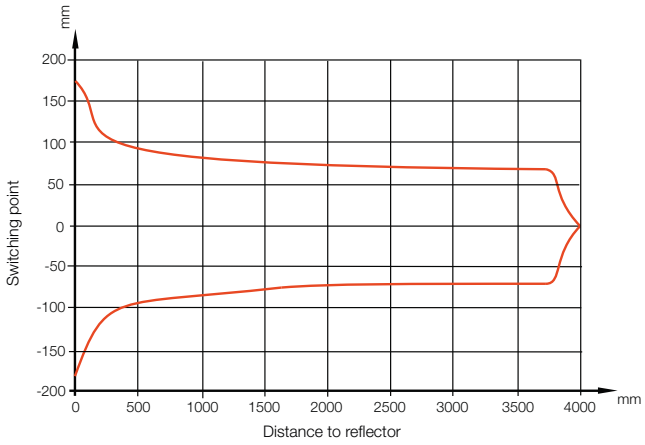
Diffuse sensor BOS 18M...RD23
response curve



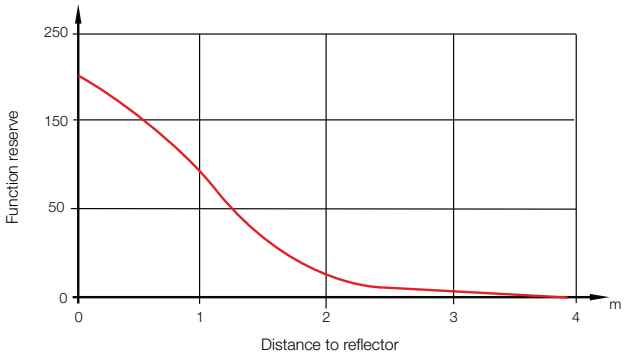
Diffuse sensor BOS 18M...RD23
function reserve



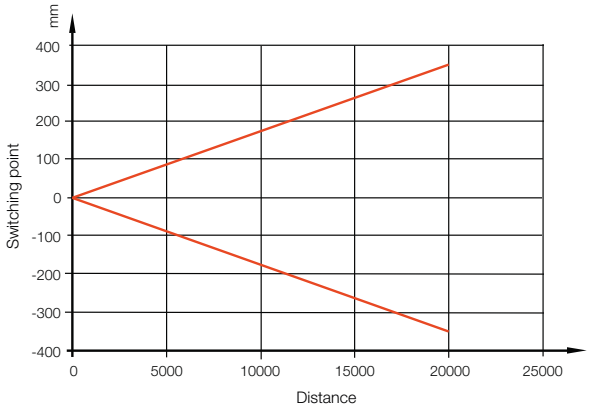
Retroreflective sensor BOS 18M...PR23
response curve



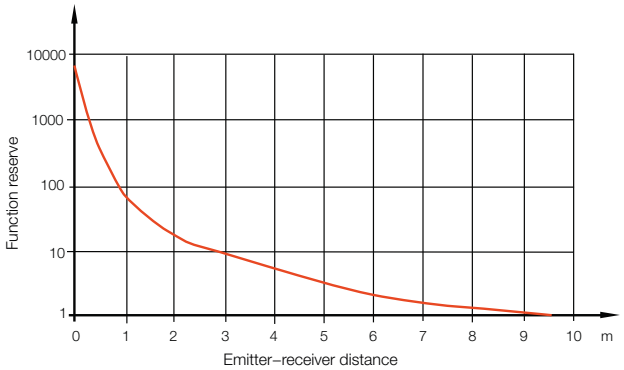
Retroreflective sensor BOS 18M...PR23
Function reserve



Through-beam sensor BOS 18M...RE/RS23
response curve

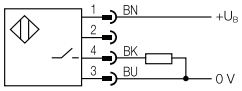


Through-beam sensor BOS 18M...RE/RS23
Function reserve

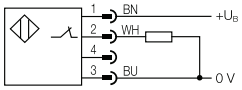


Wiring diagrams

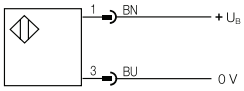
BOS 18M-PS...



BOS 18M-PO...



BOS 18M-X...



Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

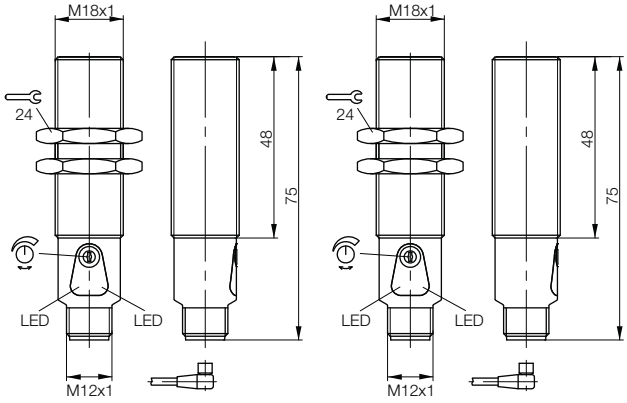




Type			Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range			**30...150 mm**	**30...150 mm**
PNP NC/NO		**Ordering code**	**BOS01J4**	
		Part number	BOS 18M-PA-RH23-S4	
PNP NO		**Ordering code**		
		Part number		
PNP NC		**Ordering code**		
	Error output	Part number		
PNP NO		**Ordering code**		**BOS01J2**
	Error output	Part number		BOS 18M-PSV-RH23-S4
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 40 mA	≤ 40 mA
Switching type			Light and dark switching	Light switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			10-turn potentiometer	10-turn potentiometer
Emitter, light type			LED, red light	LED, red light
Wavelength			620...670 nm	620...670 nm
Response time			1ms	1ms
Switching frequency f			500 Hz	500 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			10 klx	10 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

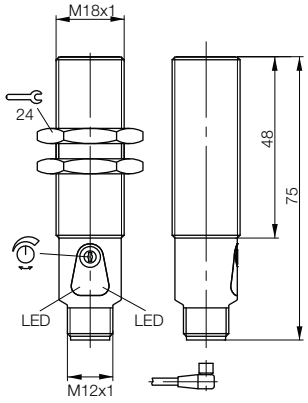
For wiring diagrams see page 75.

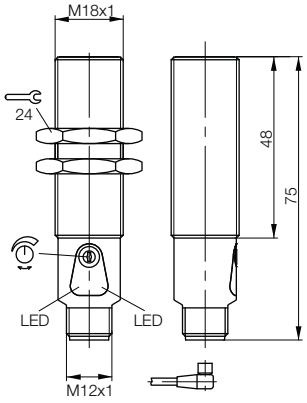


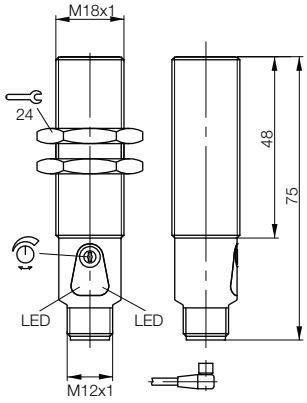


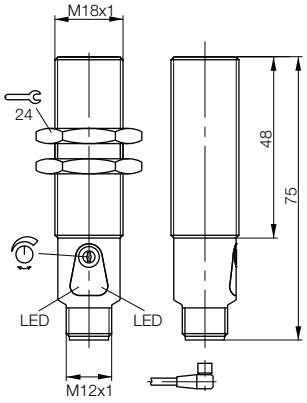



	Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor with background suppression
	30...300 mm	**30...300 mm**	**30...300 mm**	**30...300 mm**
	BOS014W			
	BOS 18M-PA-RH22-S4			
		BOS019P		
		BOS 18M-PS-RH22-S4		
				BOS019R
				BOS 18M-POV-RH22-S4
			BOS019N	
			BOS 18M-PSV-RH22-S4	
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	100 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA	≤ 50 mA
	Light and dark switching	Light and dark switching	Light switching	Dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	10-turn potentiometer	10-turn potentiometer	10-turn potentiometer	10-turn potentiometer
	LED, red light	LED, red light	LED, red light	LED, red light
	620...670 nm	620...670 nm	620...670 nm	620...670 nm
	1ms	1ms	1ms	1ms
	500 Hz	500 Hz	500 Hz	500 Hz
	IP 67	IP 67	IP 67	IP 67
	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
	10 klx	10 klx	10 klx	10 klx
	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
	Glass	Glass	Glass	Glass
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin









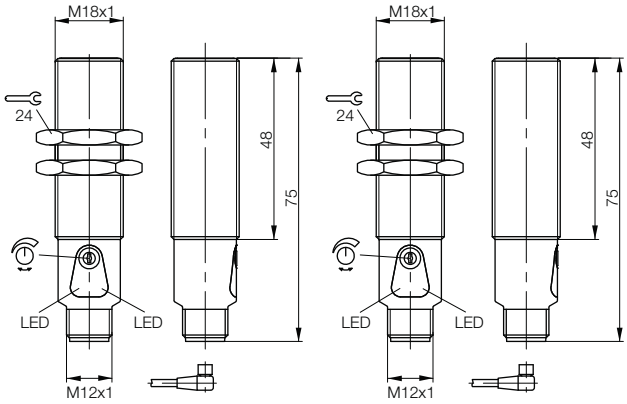




Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**1...300 mm**	**1...300 mm**
PNP	NC/NO	**Ordering code**	**BOS01CA**	
		Part number	BOS 18M-PA-RD21-S4	
PNP	NO	**Ordering code**		**BOS01E7**
		Part number		BOS 18M-PS-RD21-S4
PNP	NC	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 50 mA	≤ 50 mA
Switching type			Light and dark switching	Light switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			LED, red light	LED, red light
Wavelength			620...670 nm	620...670 nm
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			10 klx	10 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

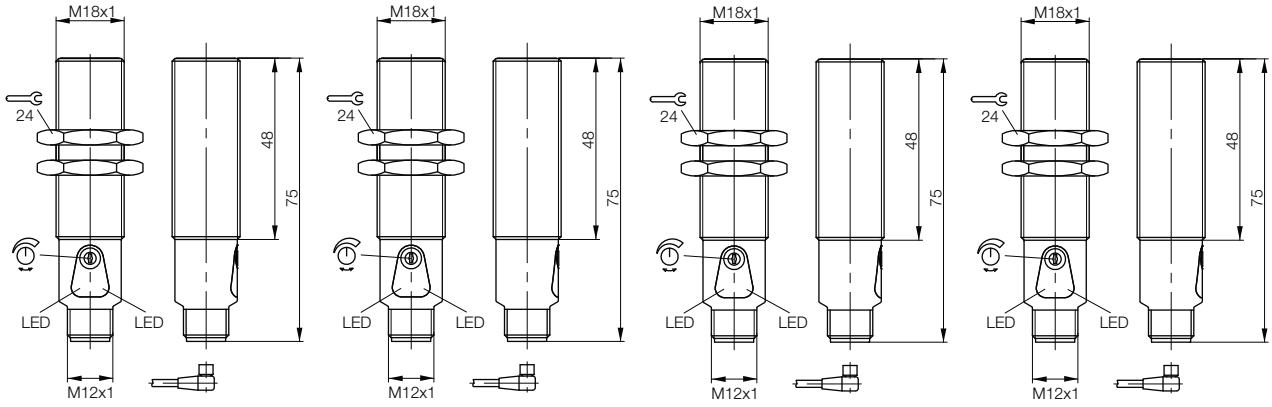
For wiring diagrams see page 75.








	Diffuse sensor	**Diffuse sensor**	**Diffuse sensor**	**Diffuse sensor**
	1...300 mm	**1...600 mm**	**1...600 mm**	**1...600 mm**
		BOS01CF		
		BOS 18M-PA-RD20-S4		
			BOS01C1	
			BOS 18M-PS-RD20-S4	
	BOS01E8			**BOS01E3**
	BOS 18M-PO-RD21-S4			BOS 18M-PO-RD20-S4
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	100 mA
	≤ 50 mA	≤ 50 mA	≤ 50 mA	≤ 50 mA
	Dark switching	Light and dark switching	Light switching	Dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light	LED, red light	LED, red light
	620...670 nm	620...670 nm	620...670 nm	620...670 nm
	1.25 ms	1.25 ms	1.25 ms	1.25 ms
	400 Hz	400 Hz	400 Hz	400 Hz
	IP 67	IP 67	IP 67	IP 67
	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
	10 klx	10 klx	10 klx	10 klx
	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
	Glass	Glass	Glass	Glass
	M12 connector,	M12 connector,	M12 connector,	M12 connector,
	4-pin	4-pin	4-pin	4-pin



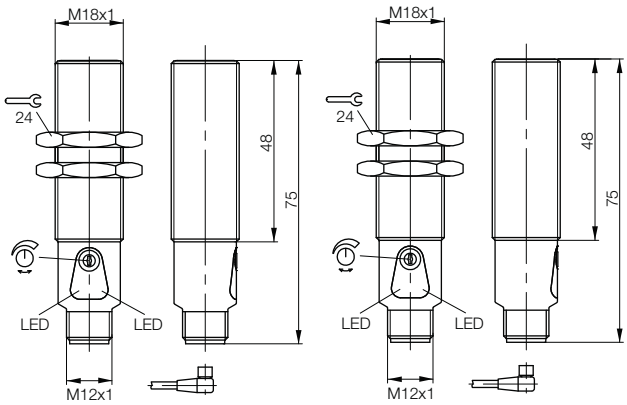




Type			**Retroreflective sensor**	**Retroreflective sensor**
Detection range			**7 m**	**7 m**
PNP	NC/NO	**Ordering code**	**BOS01CE**	
		Part number	BOS 18M-PA-PR20-S4	
PNP	NC/NO	**Ordering code**		**BOS01FJ**
	Output special assignment	Part number		BOS 18M-PA-PR20-S4S
PNP	NO	**Ordering code**		
		Part number		
PNP	NC	**Ordering code**		
		Part number		
PNP	NC	**Ordering code**		
	Output special assignment	Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 50 mA	≤ 50 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			LED, red light	LED, red light
Wavelength			620...670 nm	620...670 nm
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			10 klx	10 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference reflector: BOS R-1

For wiring diagrams see page 75.

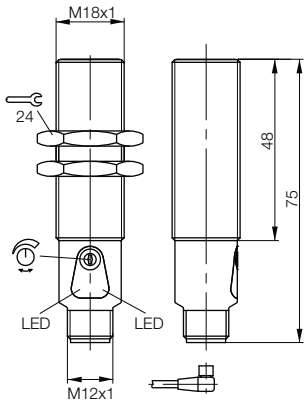


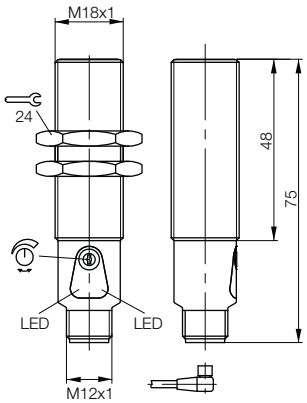


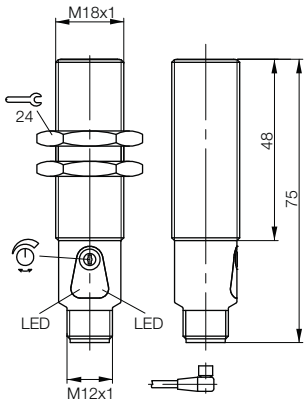




Retroreflective sensor	**Retroreflective sensor**	**Retroreflective sensor**
7 m	**7 m**	**7 m**
BOS01C3		
BOS 18M-PS-PR20-S4		
	BOS01CZ	
	BOS 18M-PO-PR20-S4	
		BOS01EM
		BOS 18M-PO-PR20-S4S
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 50 mA	≤ 50 mA	≤ 50 mA
Dark switching	Light switching	Light switching
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, red light	LED, red light	LED, red light
620...670 nm	620...670 nm	620...670 nm
1.25 ms	1.25 ms	1.25 ms
400 Hz	400 Hz	400 Hz
IP 67	IP 67	IP 67
–5...+55 °C	–5...+55 °C	–5...+55 °C
10 klx	10 klx	10 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Glass	Glass	Glass
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin





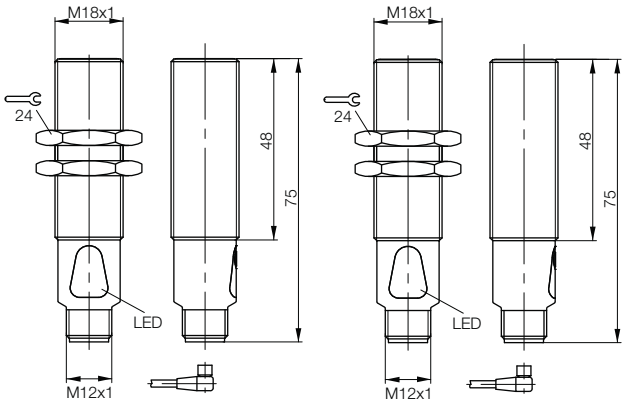






Type					**Through-beam sensor**	**Through-beam sensor**
Detection range					**0...20 m**	**0...20 m**
PNP	NC/NO	Receiver		**Ordering code**	**BOS01CC**	**BOS01FK**
				Part number	BOS 18M-PA-RE20-S4	BOS 18M-PA-RE20-S4S
PNP	NO	Receiver		**Ordering code**		
				Part number		
PNP	NC	Receiver		**Ordering code**		
				Part number		
		Emitter		**Ordering code**		
				Part number		
		Emitter	Test input	**Ordering code**		
				Part number		
Supply voltage U_S					10...30 V DC	10...30 V DC
Output current					100 mA	100 mA
No-load supply current I_0 max.					≤ 35 mA	≤ 35 mA
Switching type					Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected					Yes/Yes	Yes/Yes
Settings						
Emitter, light type					LED, red light	LED, red light
Wavelength					620...670 nm	620...670 nm
Response time					1.25 ms	1.25 ms
Switching frequency f					400 Hz	400 Hz
Degree of protection as per IEC 60529					IP 67	IP 67
Ambient temperature T_a					–5...+55 °C	–5...+55 °C
Permissible ambient light					10 klx	10 klx
Material				Housing	Nickel-plated brass	Nickel-plated brass
				Optical surface	Glass	Glass
Connection					M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams see page 75.



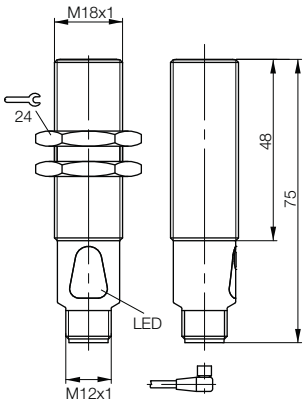


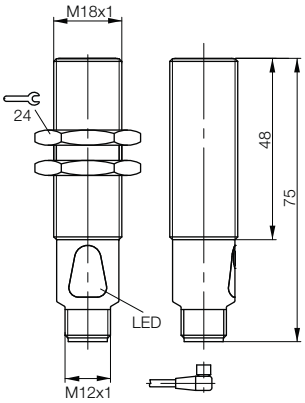


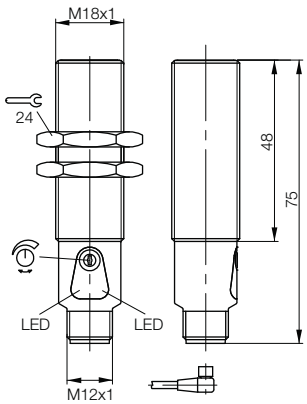


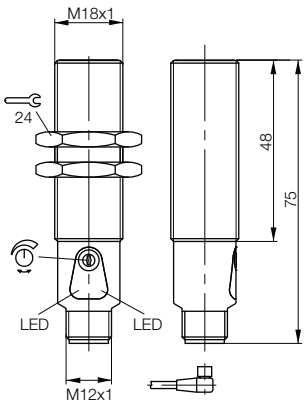


	Through-beam sensor 0...20 m	**Through-beam sensor 0...20 m**	**Through-beam sensor 0...20 m**	**Through-beam sensor 0...20 m**
	BOS01C2			
	BOS 18M-PS-RE20-S4			
	BOS01EE	**BOS01EF**		
	BOS 18M-PO-RE20-S4	BOS 18M-PO-RE20-S4S		
			BOS01C0	
			BOS 18M-X-RS20-S4	
				BOS01EP
				BOS 18M-XT-RS20-S4
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA		
	≤ 35 mA	≤ 35 mA	≤ 50 mA	≤ 50 mA
	Light or dark switching	Light switching		
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
			Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light	LED, red light	LED, red light
	620...670 nm	620...670 nm	620...670 nm	620...670 nm
	1.25 ms	1.25 ms		
	400 Hz	400 Hz		
	IP 67	IP 67	IP 67	IP 67
	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
	10 klx	10 klx	10 klx	10 klx
	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
	Glass	Glass	Glass	Glass
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin









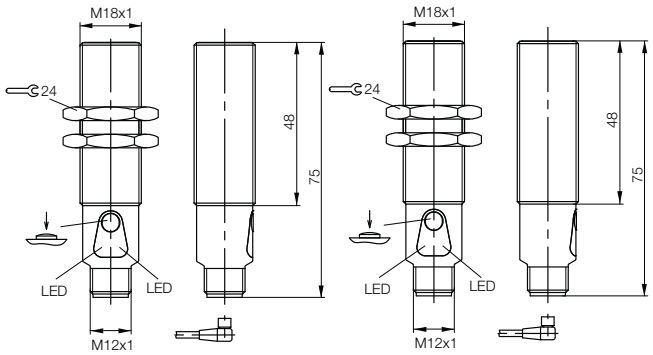
M18 Metal
Red Light Teach-in



Type				**Diffuse sensor**	**Diffuse sensor**
Detection range				**1...500 mm**	**1...500 mm**
PNP	NC/NO	Error output	**Ordering code**	**BOS01J8**	
			Part number	BOS 18M-PUV-RD30-S4	
PNP	NC/NO	Dynamic Sensor Control	**Ordering code**		**BOS01CU**
			Part number		BOS 18M-PUD-RD30-S4
PNP	NC/NO	Polarizing filter,	**Ordering code**		
		Error output	Part number		
PNP	NC/NO	Polarizing filter,	**Ordering code**		
		Dynamic Sensor Control	Part number		
	Emitter		**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 40 mA	≤ 40 mA
Switching type				Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Teach-in	Teach-in
Emitter, light type				LED, red light	LED, red light
Wavelength				626 Nm	626 Nm
Response time				2.5 ms	2.5 ms
Switching frequency f				1 kHz	200 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–5...+55 °C	–5...+55 °C
Permissible ambient light				10 klx	10 klx
Material			Housing	Nickel-plated brass	Nickel-plated brass
			Optical surface	Glass	Glass
Connection				M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 75.



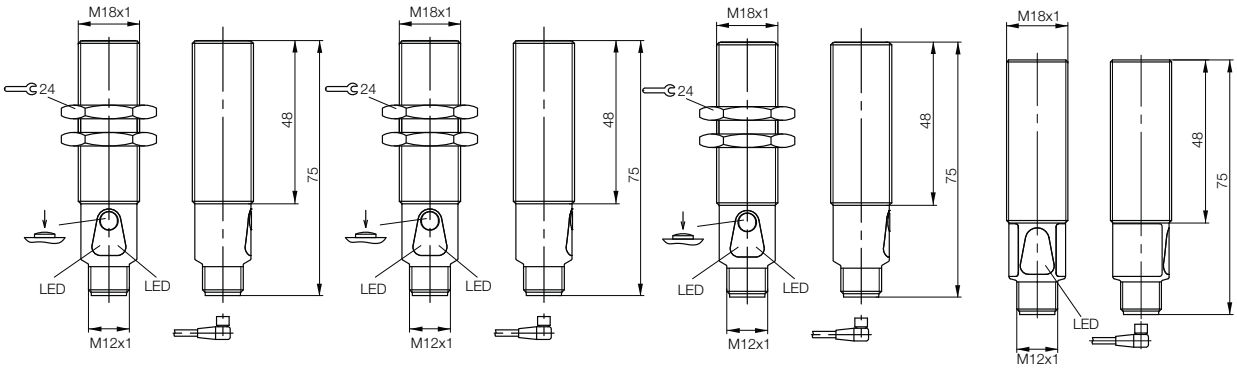








	Retroreflective sensor	**Retroreflective sensor**	**Through-beam sensor**	**Through-beam sensor**
	5 m	**5 m**	**0...20 m**	**0...20 m**
			BOS01J7	
			BOS 18M-PUV-RE30-S4	
			BOS01CW	
			BOS 18M-PUD-RE30-S4	
	BOS01J9			
	BOS 18M-PUV-PR30-S4			
		BOS01CT		
		BOS 18M-PUD-PR30-S4		
				BOS01CY
				BOS 18M-X-RS30-S4
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	
	≤ 40 mA	≤ 40 mA	≤ 25 mA	≤ 25 mA
	Light and dark switching	Light and dark switching	Light and dark switching	
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in	Teach-in	Teach-in	
	LED, red light	LED, red light	LED, red light	LED, red light
	626 Nm	626 Nm	626 Nm	
	2.5 ms	2.5 ms	2.5 ms	
	1 kHz	200 Hz	1 kHz / 200 Hz	
	IP 67	IP 67	IP 67	IP 67
	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
	10 klx	10 klx	10 klx	
	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
	Glass	Glass	Glass	Glass
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



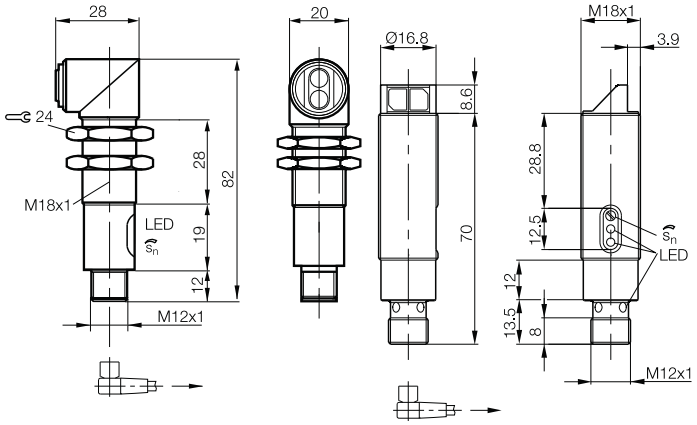
M18 Metal with Angle Head



Type				Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range				**40...120 mm**	**10...120 mm**
PNP	NC/NO		**Ordering code**	**BOS0081**	
			Part number	BOS 18MR-PA-1HA-S4-C	
PNP	NO		**Ordering code**		**BOS010J**
			Part number		BOS 18MR-PS-1HA-E5-C-S4
PNP	NC/NO	Receiver	**Ordering code**		
			Part number		
		Emitter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...36 V DC
Output current				200 mA	200 mA
No-load supply current I_0 max.				≤ 30 mA	≤ 20 mA
Switching type				Light and dark switching	Light switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				18-turn potentiometer	Potentiometer, 270°
Emitter, light type				LED, red light	LED, red light
Wavelength				660 Nm	660 Nm
Response time				0.8 ms	≤ 1 ms
Switching frequency f				600 Hz	500 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–15...+55 °C	–25...+55 °C
Permissible ambient light				2 klx	10 klx
Material			Housing	Nickel-plated brass	Nickel-plated brass
			Optical surface	Glass	Glass
Connection				M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 75.



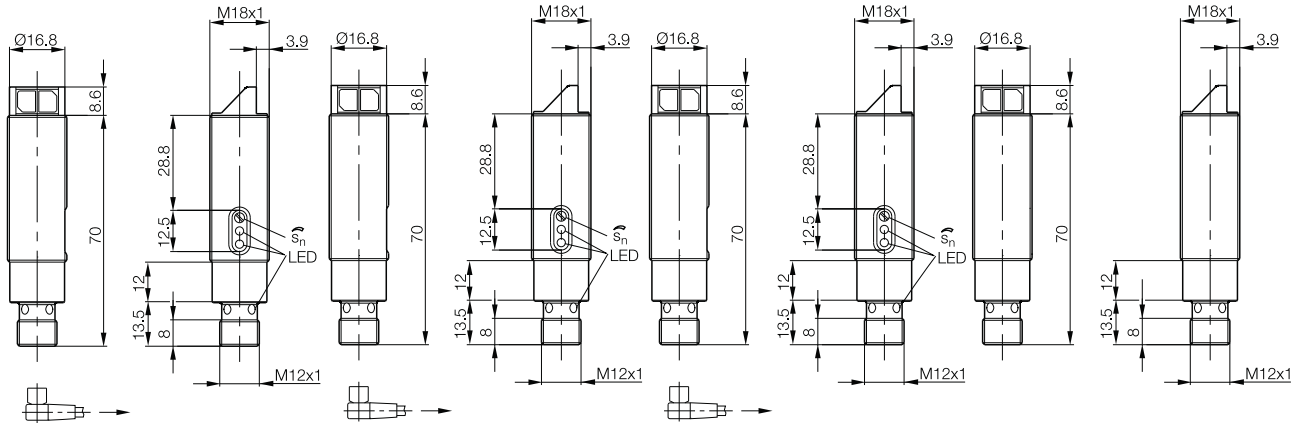




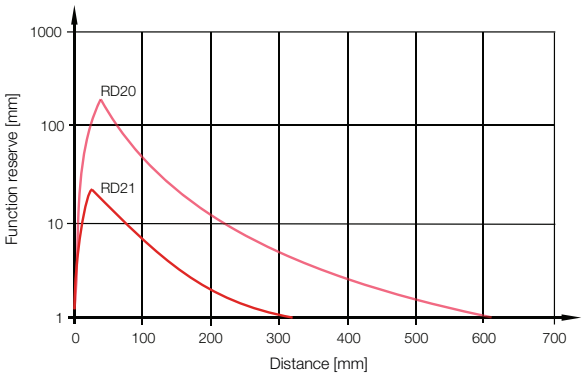




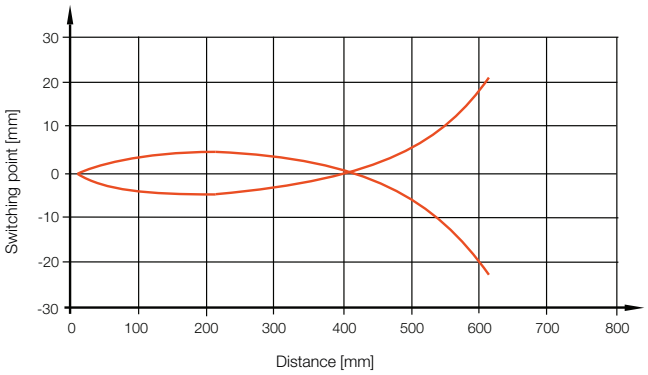
	Diffuse sensor	Retroreflective sensor	Through-beam sensor	Through-beam sensor
	0...400 mm	**2 m**	**0...16 m**	**0...16 m**
	BOS010K	**BOS010L**		
	BOS 18MR-PS-1OD-E5-C-S4	BOS 18MR-PS-1QB-E5-C-S4		
			BOS010E	
			BLE 18MR-PA-1PP-E5-C-S4	
				BOS010F
				BLS 18MR-XX-1P-E5-L-S4
	10...36 V DC	10...36 V DC	10...36 V DC	10...36 V DC
	200 mA	200 mA	200 mA	
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light switching	Dark switching	Dark switching	
	Yes/Yes	Yes/Yes	Yes/Yes	
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°	
	LED, red light	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm	660 Nm
	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms	
	1 kHz	1 kHz	1 kHz	
	IP 67	IP 67	IP 67	IP 67
	–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
	10 klx	10 klx	10 klx	10 klx
	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
	Glass	Glass	Glass	Glass
	M12 connector,	M12 connector,	M12 connector,	M12 connector,
	4-pin	4-pin	4-pin	4-pin



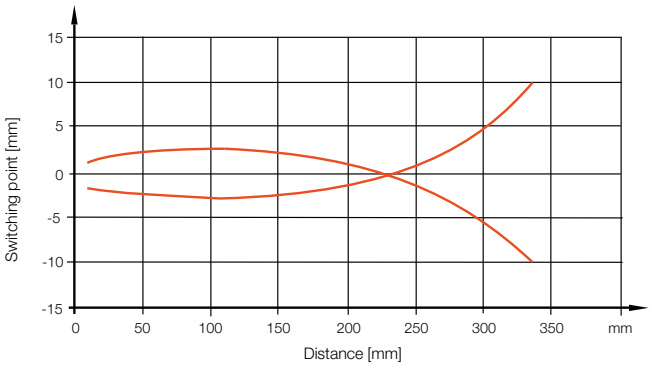
Diffuse sensor BOS 18M...RD
function reserve



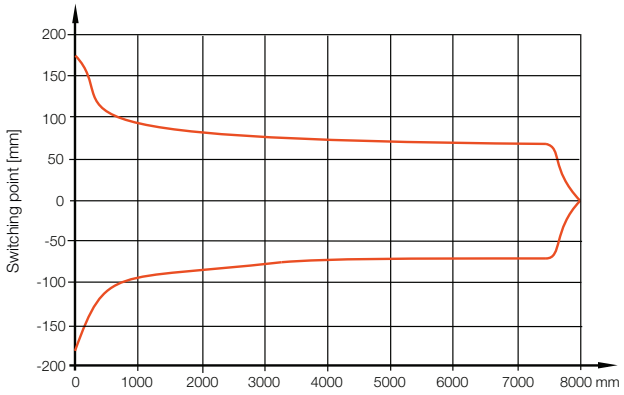
Diffuse sensor BOS 18M...RD20
Response curve



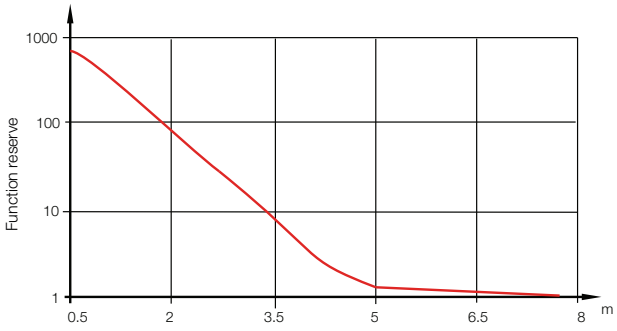
Diffuse sensor BOS 18M...RD21..
Reponse curve



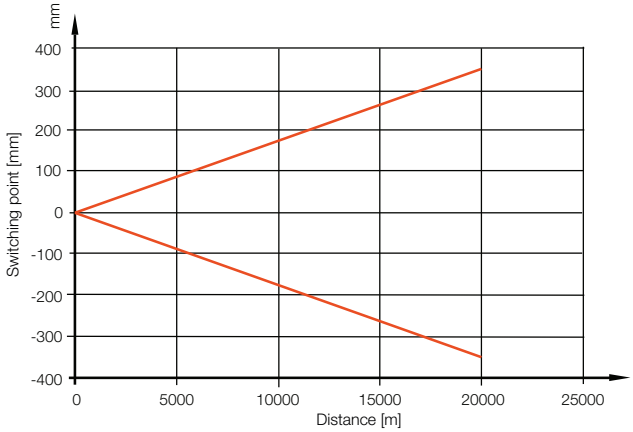
Retroreflective sensor BOS 18M...PR20...
Response curve



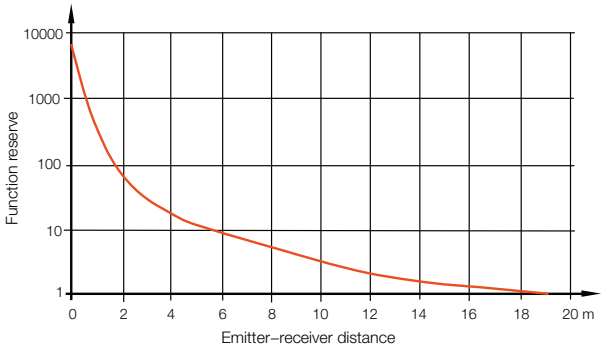
Retroreflective sensor BOS 18M...PR20...
Function reserve



Through-beam sensor BOS 18M...RE/RS20
Response curve



Through-beam sensor BOS 18M...RE/RS20
Function reserve



Diffuse sensor BOS 18M light spot sizes

...RD20...

Distance	Light spot Ø
30 mm	9 mm
100 mm	11×11 mm
300 mm	24×24 mm
600 mm	48×48 mm

...RD21...

Distance	Light spot Ø
30 mm	9 mm
100 mm	11×11 mm
300 mm	24×24 mm

...PR20...

Distance	Light spot Ø
3 cm	13 mm
10 cm	14 mm
30 cm	20×20 mm
1 m	45x45mm
2 m	80x80 mm
3 m	120x120 mm

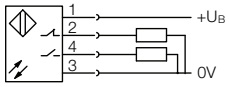
...RS20...

Distance	Light spot Ø
3 cm	14 mm
10 cm	17 mm
30 cm	25 mm
60 cm	32x32 mm
1 m	45x45 mm
2 m	80x80 mm
3 m	118x118 mm

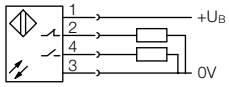
Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Wiring diagrams
Red light

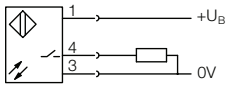
BOS 18M-PA-...S4



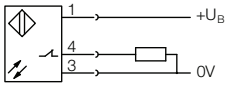
BOS 18M-PA-...S4S



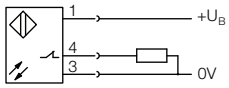
BOS 18M-PS-...S4



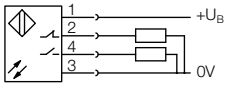
BOS 18M-PO-...S4



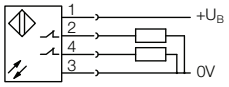
BOS 18M-PO-...S4S



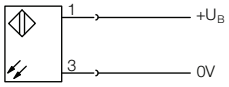
BOS 18M-PSV



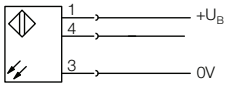
BOS 18M-POV



BOS 18M-X

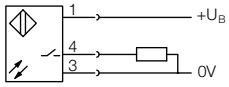


BOS 18M-XT

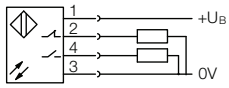


Wiring diagrams
Angled

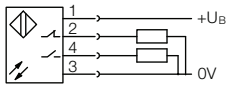
BOS 18MR-PS-...



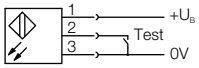
BOS 18MR-PA-...



BLE 18MR-PA-...S4S

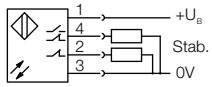


BLS 18MR-XX

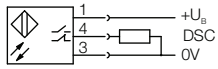


Wiring diagrams
Teach-in

BOS 18M-PUV



BOS 18M-PUD





Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

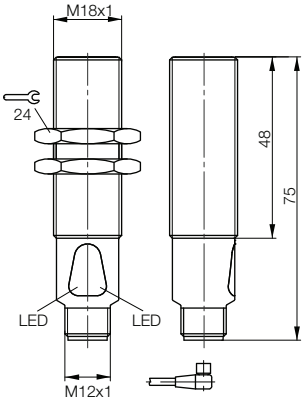


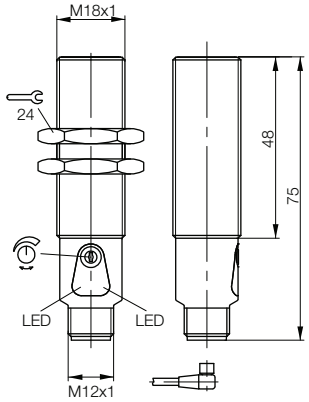


Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**2...40 mm (glass)**	**1...800 mm**
PNP NC/NO		**Ordering code**		**BOS01EY**
		Part number		BOS 18M-PA-ID20-S4
PNP NO		**Ordering code**		
		Part number		
PNP NO	Glass detection	**Ordering code**	**BOS01J1**	
		Part number	BOS 18M-PS-ID24-S4	
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current				100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 30 mA
Switching type			Light switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°
Emitter, light type			Infrared	LED, infrared
Wavelength			850 Nm	850 Nm
Response time			2.5 ms	1.25 ms
Switching frequency f			200 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light			3 klx	5 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 81.



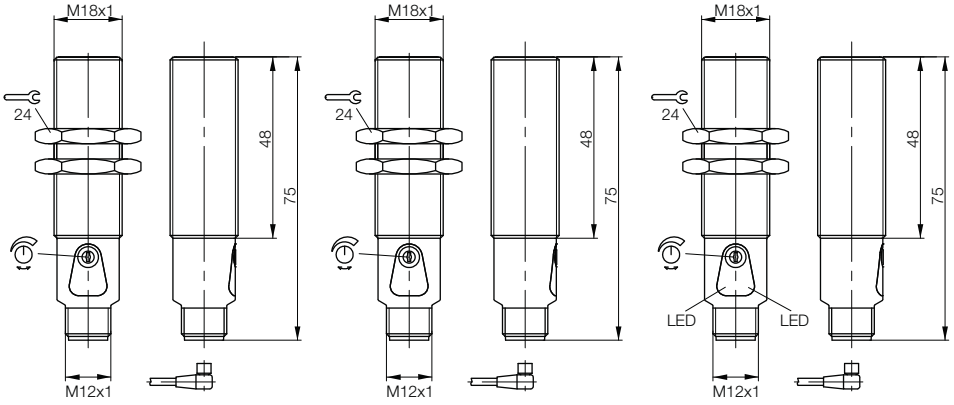








Retroreflective sensor	**Retroreflective sensor**	**Retroreflective sensor**
7 m Polarizing filter	**10 m**	**10 m**
BOS01HR	**BOS01F0**	
BOS 18M-PA-IR21-S4	BOS 18M-PA-IR20-S4	
		BOS01F1
		BOS 18M-PS-IR20-S4
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA
Light and dark switching	Light and dark switching	Dark switching
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, infrared	LED, infrared	LED, infrared
850 Nm	850 Nm	850 Nm
1.25 ms	1.25 ms	1.25 ms
400 Hz	400 Hz	400 Hz
IP 67	IP 67	IP 67
–5...+55 °C	–5...+55 °C	–5...+55 °C
5 klx	5 klx	5 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Glass	Glass	Glass
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



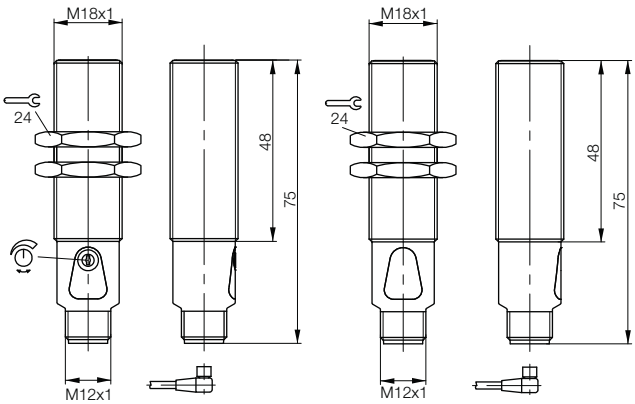

Emitter


Emitter

Type				**Through-beam sensor**	**Through-beam sensor**
Detection range				**0...50 m**	**0...100 m high power**
PNP	NC/NO		**Ordering code**		
			Part number		
PNP	NO		**Ordering code**		
			Part number		
PNP	NC/NO	Receiver	**Ordering code**		
			Part number		
		Emitter	**Ordering code**	**BOS01F5**	**BOS01HT**
			Part number	BOS 18M -X-IS20-S4	BOS 18M-X-IS24-S4
		Emitter Test input	**Ordering code**	**BOS01HN**	**BOS01HU**
			Part number	BOS 18M-XT-IS20-S4	BOS 18M-XT-IS24-S4
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current					
No-load supply current I_0 max.				≤ 30 mA	≤ 30 mA
Switching type					
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	
Emitter, light type				LED, infrared	LED, infrared
Wavelength				850 Nm	850 Nm
Response time					
Switching frequency f					400 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–5...+55 °C	–5...+55 °C
Permissible ambient light				5 klx	5 klx
Material			Housing	Nickel-plated brass	Nickel-plated brass
			Optical surface	Glass	Glass
Connection				M12 connector, 4-pin	M12 connector, 4-pin

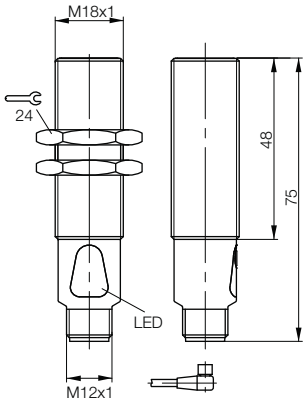
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 81.

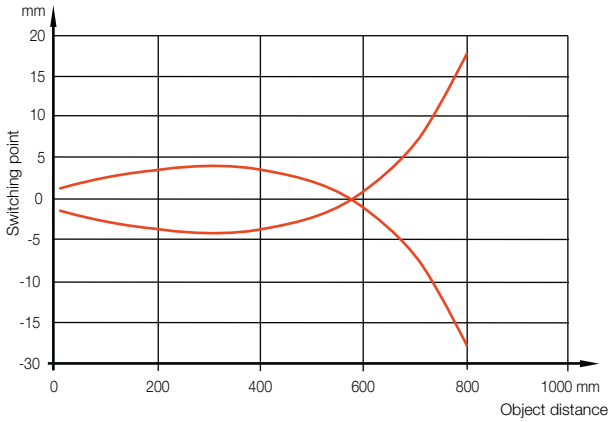




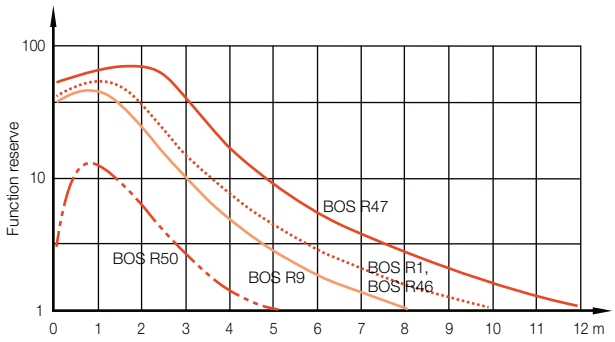
	Through-beam sensor **0...50 m/0...100 m**			
	BOS01F3			
	BOS 18M-PA-IE20-S4			
	10...30 V DC			
	100 mA			
	≤ 20 mA			
	Light and dark switching			
	Yes/Yes			
	LED, infrared			
	850 Nm			
	1.25 ms			
	400 Hz			
	IP 67			
	–5...+55 °C			
	5 klx			
	Nickel-plated brass			
	Glass			
	M12 connector, 4-pin			



Diffuse sensor BOS 18M...ID20-S4 response curve

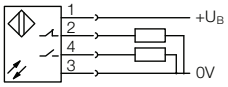


Retroreflective sensor BOS 18M...IR20/IR21-S4

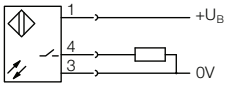


Wiring diagrams

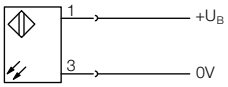
BOS 18M-PA-...



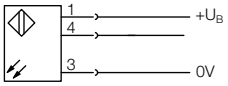
BOS 18M-PS-...



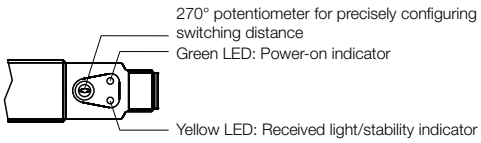
BOS 18M-X



BOS 18M-XT



Indicators and operating elements



Green LED power-on indicator
LED lights up: Supply voltage is present.
Yellow LED receiving light/stability indicator
LED lights up: Light at receiver.
LED flashes at function reserve < 1.5. Unreliable range.
Potentiometer
Used for precisely configuring the switching point

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

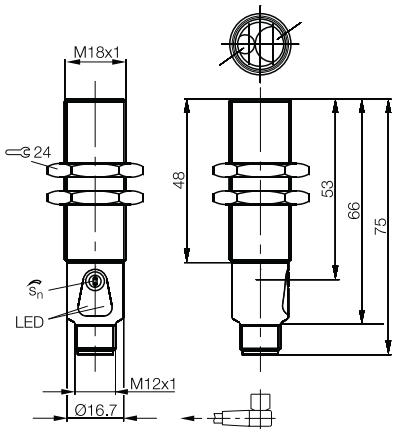




Type				Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range				**30...150 mm**	**30...150 mm**
PNP	NO		**Ordering code**	**BOS002H**	
			Part number	BOS 18M-PS-LH22-S4	
PNP	NO	Error output	**Ordering code**	**BOS002K**	
			Part number	BOS 18M-PSV-LH22-S4	
PNP	NC	Error output	**Ordering code**		**BOS001Z**
			Part number		BOS 18M-POV-LH22-S4
PNP	NC/NO		**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 30 mA	≤ 30 mA
Switching type				Light switching	Dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				10-turn potentiometer	10-turn potentiometer
Emitter, light type				Laser, red light	Laser, red light
Wavelength				670 Nm	670 Nm
Laser class				2	2
Response time				1 ms	1 ms
Switching frequency f				500 Hz	500 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–5...+55 °C	–5...+55 °C
Permissible ambient light				10 klx	10 klx
Material			Housing	Nickel-plated brass	Nickel-plated brass
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

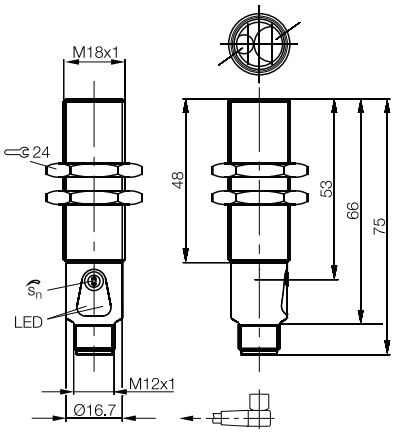
For wiring diagrams see page 91.

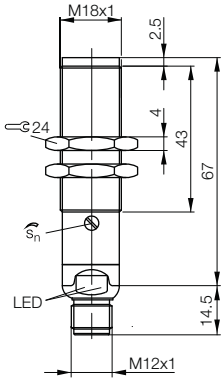


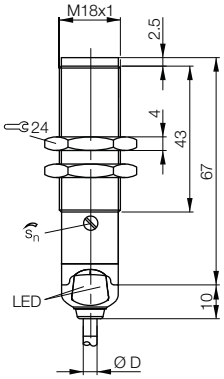





Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor	Diffuse sensor
30...150 mm	**30...150 mm**	**0...350 mm**	**0...350 mm**
	BOS01C4		
	BOS 18M-PSV-LH23-S4		
BOS01C5		**BOS013H**	**BOS013F**
BOS 18M-PA-LH23-S4		BOS 18M-PA-LD10-S4	BOS 18M-PA-LD10-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 35 mA	≤ 35 mA
Light and dark switching	Light switching	Light and dark switching	Light and dark switching
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
10-turn potentiometer	10-turn potentiometer	Potentiometer, 270°	Potentiometer, 270°
Laser, red light	Laser, red light	Laser, red light	Laser, red light
650 Nm	650 Nm	650 Nm	650 Nm
1	1	1	1
1 ms	1 ms	333 µs	333 µs
500 Hz	500 Hz	1.5 kHz	1.5 kHz
IP 67	IP 67	IP 67	IP 67
–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
10 klx	10 klx	5 klx	5 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm²





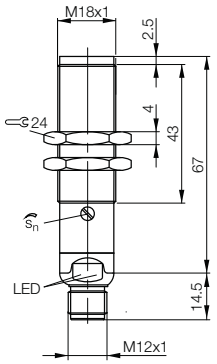


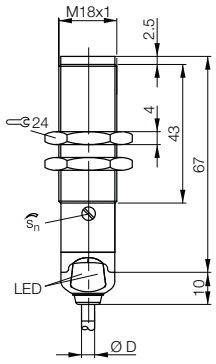


Type			**Retroreflective sensor with polarizing filter**	**Retroreflective sensor with polarizing filter**
Detection range			**0.1...16 m**	**0.1...16 m**
PNP	NC/NO	**Ordering code**	**BOS013M**	**BOS013L**
		Part number	BOS 18M-PA-LR10-S4	BOS 18M-PA-LR10-02
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 35 mA	≤ 35 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			1	1
Response time			333 µs	333 µs
Switching frequency f			1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+55 °C	–10...+55 °C
Permissible ambient light			5 klx	5 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm

Reference reflector: BOS R-1

For wiring diagrams see page 91.





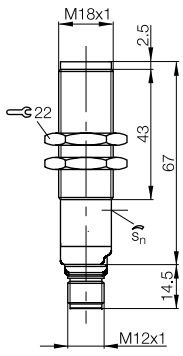

Receiver

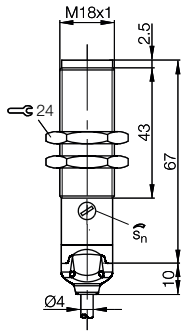

Receiver

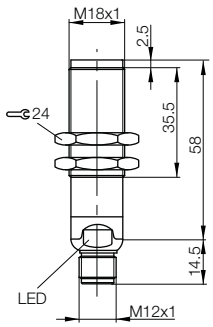

Emitter

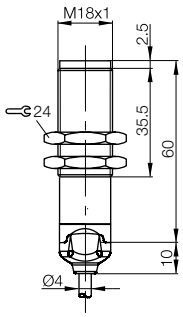

Emitter

Through-beam sensor	**Through-beam sensor**	**Through-beam sensor**	**Through-beam sensor**
0...60 m	**0...60 m**	**0...60 m**	**0...60 m**
BOS013K	**BOS013J**		
BOS 18M-PA-LE10-S4	BOS 18M-PA-LE10-02		
		BOS013R	**BOS013P**
		BOS 18M-XT-LS10-S4	BOS 18M-XT-LS10-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA		
≤ 35 mA	≤ 35 mA	≤ 30 mA	≤ 30 mA
Light and dark switching	Light and dark switching		
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°		
Laser, red light	Laser, red light	Laser, red light	Laser, red light
650 Nm	650 Nm	650 Nm	650 Nm
1	1	1	1
333 µs	333 µs		
1.5 kHz	1.5 kHz		
IP 67	IP 67	IP 67	IP 67
–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
5 klx	5 klx	5 klx	5 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
PMMA	PMMA	PMMA	PMMA
M12 connector,	2 m PVC cable,	M12 connector,	2 m PVC cable,
4-pin	4×0.14 mm	4-pin	4×0.14 mm









M18 Metal
Laser with Angle Head

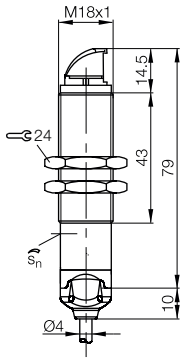


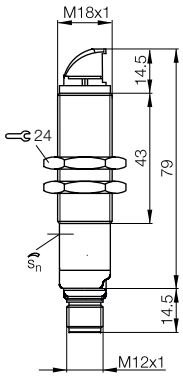


Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**0...250 mm**	**0...250 mm**
PNP	NO/NC	**Ordering code**	**BOS0141**	**BOS0142**
		Part number	BOS 18MR-PA-LD10-02	BOS 18MR-PA-LD10-S4
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 35 mA	≤ 35 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			1	1
Response time			333 µs	333 µs
Switching frequency f			1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+55 °C	–10...+55 °C
Permissible ambient light			5 klx	5 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	PMMA	PMMA
Connection			2 m PVC cable, 4×0.14 mm²	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 91.

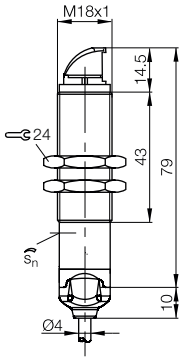


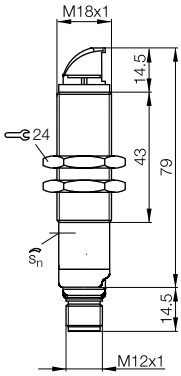






Retroreflective sensor with polarizing filter 0.1...9 m	**Retroreflective sensor with polarizing filter 0.1...9 m**			
BOS0145	**BOS0146**			
BOS 18MR-PA-LR10-02	BOS 18MR-PA-LR10-S4			
10...30 V DC	10...30 V DC			
100 mA	100 mA			
≤ 35 mA	≤ 35 mA			
Light and dark switching	Light and dark switching			
Yes/Yes	Yes/Yes			
Potentiometer, 270°	Potentiometer, 270°			
Laser, red light	Laser, red light			
650 Nm	650 Nm			
1	1			
333 µs	333 µs			
1.5 kHz	1.5 kHz			
IP 67	IP 67			
–10...+55 °C	–10...+55 °C			
5 klx	5 klx			
Nickel-plated brass	Nickel-plated brass			
PMMA	PMMA			
2 m PVC cable, 4×0.14 mm²	M12 connector, 4-pin			



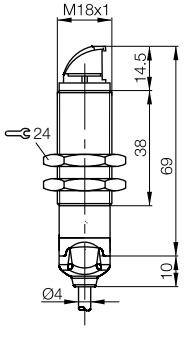


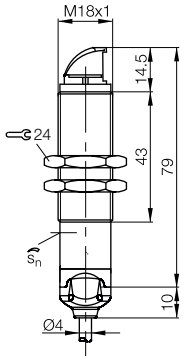
M18 Metal
Laser with Angle Head



Type			**Through-beam sensor**	**Through-beam sensor**
Detection range			**0...50 m**	**0...50 m**
PNP	NC/NO	**Ordering code**		**BOS0143**
	Receiver	Part number		BOS 18MR-PA-LE10-02
	Emitter	**Ordering code**	**BOS0147**	
		Part number	BOS 18MR-XT-LS10-02	
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current				100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 35 mA
Switching type				Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			1	1
Response time				333 µs
Switching frequency f				1.5 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+55 °C	–10...+55 °C
Permissible ambient light			5 klx	5 klx
Material		Housing	Nickel-plated brass	Nickel-plated brass
		Optical surface	PMMA	PMMA
Connection			2 m PVC cable, 4×0.14 mm²	2 m PVC cable, 4×0.14 mm²

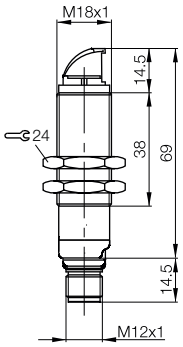
For wiring diagrams see page 91.

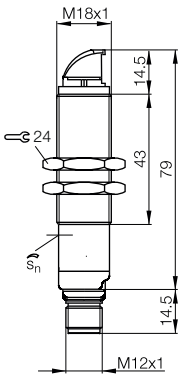




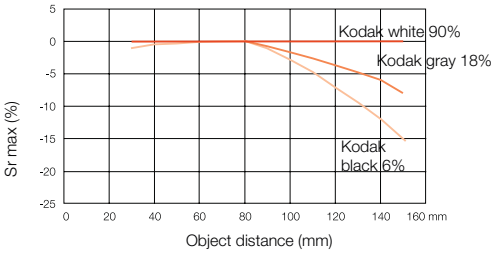


Through-beam sensor	**Through-beam sensor**			
0...50 m	**0...50 m**			
	BOS0144			
	BOS 18MR-PA-LE10-S4			
BOS0148				
BOS 18MR-XT-LS10-S4				
10...30 V DC	10...30 V DC			
	100 mA			
≤ 30 mA	≤ 35 mA			
	Light and dark switching			
Yes/Yes	Yes/Yes			
	Potentiometer, 270°			
Laser, red light	Laser, red light			
650 Nm	650 Nm			
1	1			
	333 µs			
	1.5 kHz			
IP 67	IP 67			
–10...+55 °C	–10...+55 °C			
5 klx	5 klx			
Nickel-plated brass	Nickel-plated brass			
PMMA	PMMA			
M12 connector,	M12 connector,			
4-pin	4-pin			

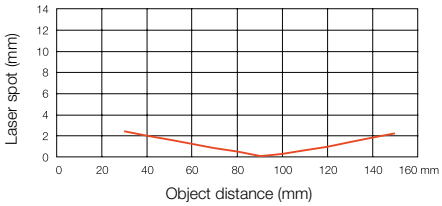




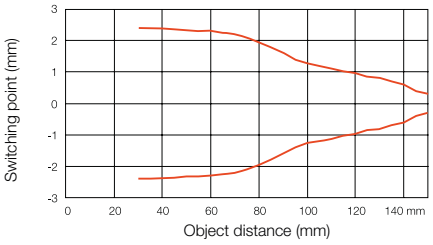
Diffuse sensor with background suppression BOS 18M-...LH
Gray value shift



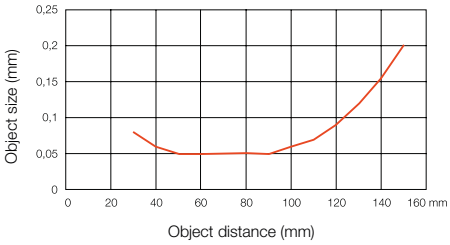
Diffuse sensor with background suppression BOS 18M-...LH
Light spot diameter at distance



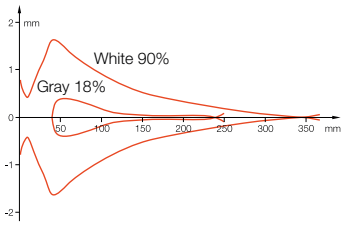
Diffuse sensor with background suppression BOS 18M-...LH
Turn-on point for lateral approach



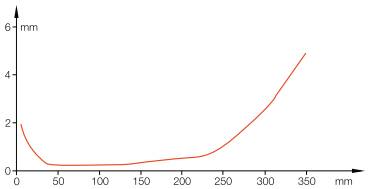
Diffuse sensor with background suppression BOS 18M-...LH
Smallest detectable part



Diffuse sensor BOS 18M-..-LD10-...

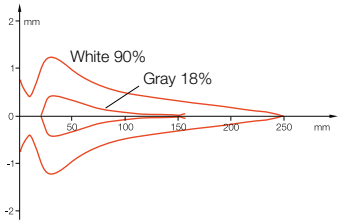


Detection range

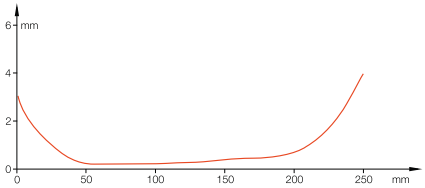


Resolution

Diffuse sensor BOS 18MR-..-LD10-...

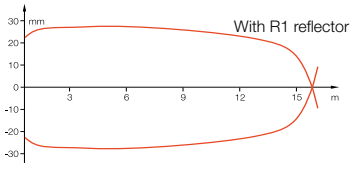


Detection range

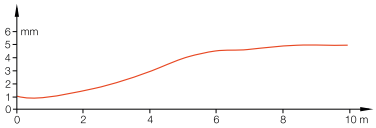


Resolution

Retroreflective sensor BOS 18M-..-LR10-...

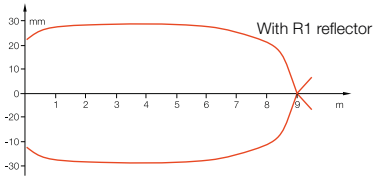


Detection range

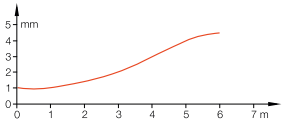


Resolution

Retroreflective sensor BOS 18MR-..-LR10-...

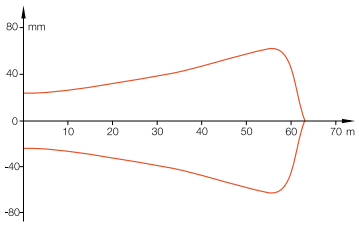


Detection range

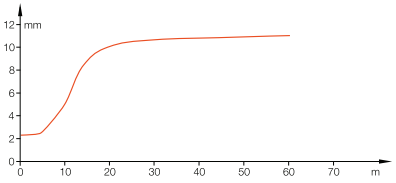


Resolution

Through-beam sensor BOS 18M-..-LE/LS10-...

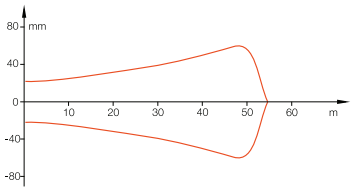


Detection range

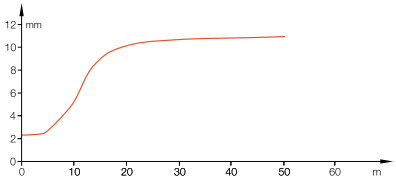


Resolution

Through-beam sensor BOS 18MR-..-LE/LS10-...



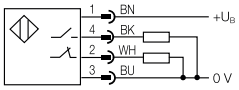
Detection range

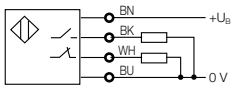


Resolution

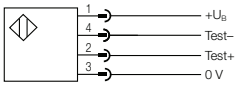
Wiring diagrams

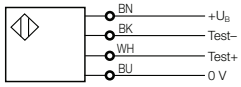
BOS 18...PA...



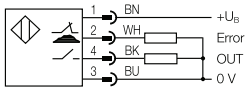


BOS 18...XT...

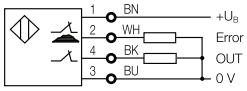




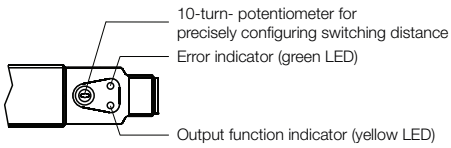
BOS 18M-PSV...



BOS 18M-POV...



Indicators and operating elements



Green LED
The green LED turns on when the sensor is working in an unreliable range. The green LED flashes when there is a short circuit on the output.

Yellow LED
Output function indicator: The yellow LED comes on when the output is active.

Error output
The error output is active when the sensor is working in an unreliable range.

Potentiometer
Used for precisely configuring the switching point and background suppression.

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



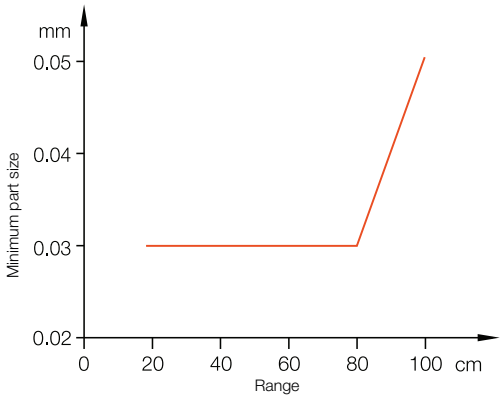
Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

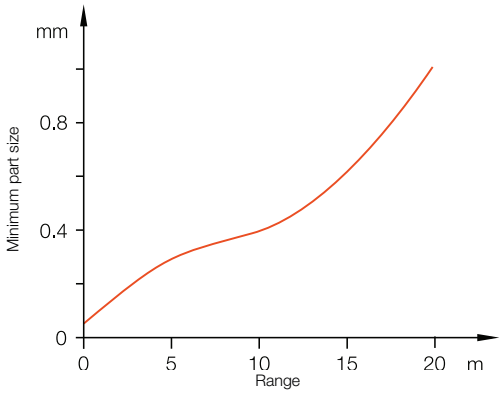
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

M18 Metal Laser Through-beam sensor

Accuracy diagram
Smallest detectable part size as a function of range.

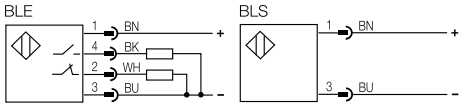




Light spot perpendicular to transport direction of the object.

Type				
Detection range				
PNP	NC/NO	Receiver	**Ordering code**	
			Part number	
PNP	NC	Receiver	**Ordering code**	
			Part number	
		Emitter	**Ordering code**	
			Part number	
Supply voltage U_S				
Output current				
No-load supply current I_0 max.				
Switching type				
Polarity reversal/short-circuit protected				
Settings				
Emitter, light type				
Wavelength				
Laser class				
Response time				
Switching frequency f				
Degree of protection as per IEC 60529				
Ambient temperature T_a				
Permissible ambient light				
Material			Housing	
			Optical surface	
Connection				

Wiring diagrams



Recommended accessories
(please order separately)

Description	Ordering code
Mounting cuff	**BAM00T3**



More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

BOS 18M
Laser through-beam sensor

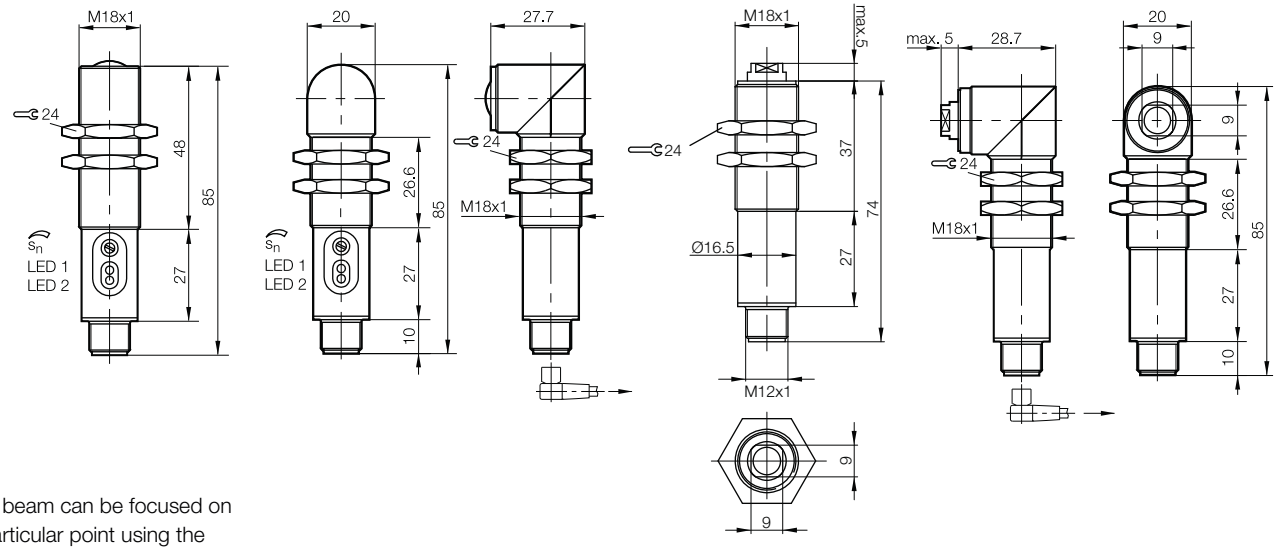

Receiver


Receiver


Emitter


Emitter

Through-beam sensor	Through-beam sensor	Through-beam sensor	Through-beam sensor
0...50 m	0...50 m	0...50 m	0...50 m
BOS0074	**BOS0076**		
BLE 18M-BA-1LT-S4-C	BLE 18MR-BA-1LT-S4-C		
BOS0075			
BLE 18M-BO-1LT-S4-C			
		BOS00AW	**BOS00AU**
		BLS 18M-XX-1LT-S4-C	BLS 18MR-XX-1LT-S4-C
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
200 mA	200 mA		
≤ 15 mA	≤ 15 mA	≤ 10 mA	≤ 10 mA
Light/dark switching	Light and dark switching		
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
18-turn potentiometer	18-turn potentiometer		
		Laser, red light	Laser, red light
		650 Nm	650 Nm
		2	2
0.08 ms	0.08 ms		
6 kHz	6 kHz		
IP 65	IP 65	IP 65	IP 65
–15...+55 °C	–15...+55 °C	–15...+55 °C	–15...+55 °C
2 klx	2 klx	2 klx	2 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Glass	Glass	Glass	Glass
M12 connector,	M12 connector,	M12 connector,	M12 connector,
4-pin	4-pin	4-pin	4-pin



The beam can be focused on a particular point using the included focusing tool. The detection of small parts is optimum in this spot.
Parts with a diameter of up to 0.03 mm can be detected at a distance of 20...80 cm between the emitter and receiver.



M18E
Stainless Steel

Photoelectric sensors from the **Proxinox** series are made of corrosion-resistant **stainless steel 1.4571** and therefore do not wear down. Their optical surface is made of 2 mm thick glass (also available in plastic for the food industry), making it stable and shockproof.
The housing design is identical for all the sensors in the **BOS 18E** series. A special housing nose and optics construction provides optimum sealing and rigidity. In addition to the usual IP 68 protection, steam cleaning is also permitted.
In addition to retroreflective and through-beam sensors with a fine-tunable range, the **BOS 18E** series offers diffuse sensors whose sensing distances of 100 mm, 200 mm to 400 mm have been fine-tuned. These diffuse sensors are manufactured with tight tolerances. This makes them ideal for rapid and simple assembly. Easily visible red light (for 100 and 200 mm) also makes them easy to align.
The through-beam model operates using infrared light. The high-energy beam can penetrate ordinary paper. The through-beam sensor is ideal for harsh environments, for example in the food processing and machine tools industry, where a sensor with a large function reserve is needed.

Features
- Supply voltage 10...30 V DC, polarity reversal protected
- Output short circuit protected
- Tough stainless steel housing without holes and with stainless steel nuts
- IP 68 degree of protection (BWN Pr. 27), can also withstand steam cleaning
- Optical surface of tough 2 mm Borofloat glass or scratch-resistant PMMA, secured in place by crimping.
- Laser-inscribed housing

Applications
- Bottling equipment
- Food industry
- Packaging industry
- Laundry and dry-cleaning equipment
- Machine tools
- Heavy industry
- Wherever other sensors don't measure up



Type ■ Ordering code □ Part number	Sensing distance/ Range	Light type		Output	Switching type		Switching frequency	U_S	Connection		Special features		Page
		Red light	Infrared	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable	Polarizing filter		
Diffuse sensor with background suppression													
BOS0016 BOS 18E-PS-1N2M-S4-D	0...40 mm	■		■	■		100 Hz	■	■				96
Diffuse sensor													
BOS0047 BOS 18E-PS-1YA-E5-D-S4	0...100 mm	■		■	■		100 Hz	■	■				96
BOS0015 BOS 18E-PO-1YA-E5-D-S4	0...100 mm	■		■		■	100 Hz	■	■				96
BOS0017 BOS 18E-PS-1XA-SA1-S4	0...100 mm		■	■	■		100 Hz	■	■				97
BOS001A BOS 18E-PS-1YB-E5-D-S4	0...200 mm	■		■	■		100 Hz	■	■				97
BOS0018 BOS 18E-PS-1XB-SA1-S4	0...200 mm		■	■	■		100 Hz	■	■				97
BOS001C BOS 18E-PS-1YD-E5-D-S4	0...400 mm	■		■	■		100 Hz	■	■				97
BOS0019 BOS 18E-PS-1XD-SA1-S4	0...400 mm		■	■	■		100 Hz	■	■				98
Retroreflective sensor													
BOS00RN BOS 18E-PS-1UB-E5-D-S4	2 m	■		■		■	100 Hz	■	■		■		98
BOS00RL BOS 18E-PO-1UB-E5-D-S4	2 m	■		■	■		100 Hz	■	■		■		98
BOS00RP BOS 18E-PS-1UB-SA1-S4	2 m	■		■		■	100 Hz	■	■		■		99
BOS0046 BOS 18E-PS-1WD-E5-D-S4	4 m	■		■		■	100 Hz	■	■				99
Through-beam sensor Receiver													
BOS00UJ BLE 18E-PS-1P-E5-D-S4	16 m		■	■		■	100 Hz	■	■				99
BOS00UF BLE 18E-PO-1P-E5-D-S4	16 m		■	■	■		100 Hz	■	■				99
BOS00UH BLE 18E-PO-1P-E5-D-S4S	16 m		■	■	■		100 Hz	■	■				99
BOS00UK BLE 18E-PS-1P-SA1-S4	16 m		■	■		■	100 Hz	■	■				99
Through-beam sensor Emitter													
BOS00UY BLS 18E-XX-1P-E5-X-S4	16 m		■					■	■				99
BOS00UZ BLS 18E-XX-1P-SA1-S4	16 m		■					■	■				99

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

M18E
Stainless Steel

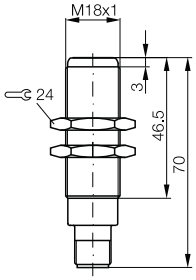


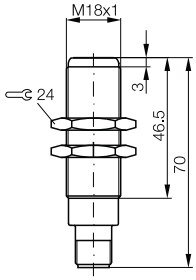


Type			Diffuse sensor with background suppression	**Diffuse sensor**
Detection range			**0...40 mm**	**0...100 mm**
PNP	NO	**Ordering code**	**BOS0016**	**BOS0047**
		Part number	BOS 18E-PS-1N2M-S4-D	BOS 18E-PS-1YA-E5-D-S4
PNP	NC	**Ordering code**		**BOS0015**
		Part number		BOS 18E-PO-1YA-E5-D-S4
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			200 mA	200 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Switching type			Light switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Response time			5 ms	5 ms
Switching frequency f			100 Hz	100 Hz
Degree of protection as per IEC 60529			IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27
Ambient temperature T_a			–5...+75 °C	–20...+75 °C
Permissible ambient light			2 klx	2 klx
Material		Housing	**Stainless steel 1.4571**	**Stainless steel 1.4571**
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 101.

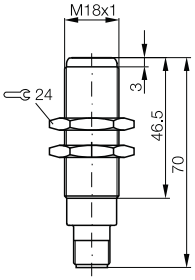


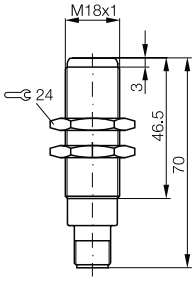


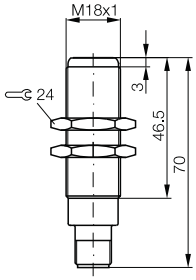


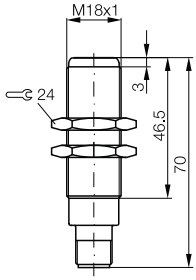



	Diffuse sensor	**Diffuse sensor**	**Diffuse sensor**	**Diffuse sensor**
	0...100 mm	**0...200 mm**	**0...200 mm**	**0...400 mm**
	BOS0017	**BOS001A**	**BOS0018**	**BOS001C**
	BOS 18E-PS-1XA-SA1-S4	BOS 18E-PS-1YB-E5-D-S4	BOS 18E-PS-1XB-SA1-S4	BOS 18E-PS-1YD-E5-D-S4
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	200 mA	200 mA	200 mA	200 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light switching	Light switching	Light switching	Light switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed
	LED, infrared	LED, red light	LED, infrared	LED, red light
	880 Nm	660 Nm	880 Nm	660 Nm
	5 ms	5 ms	5 ms	5 ms
	100 Hz	100 Hz	100 Hz	100 Hz
	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27
	–5...+75 °C	–20...+75 °C	–5...+75 °C	–20...+75 °C
	2 klx	2 klx	2 klx	2 klx
	Stainless steel 1.4571	**Stainless steel 1.4571**	**Stainless steel 1.4571**	**Stainless steel 1.4571**
	PMMA scratch-resistant	Glass	PMMA scratch-resistant	Glass
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin









M18E
Stainless Steel

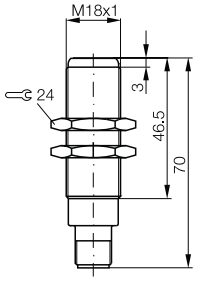


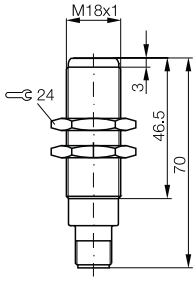


Type			**Diffuse sensor**	**Retroreflective sensor**
Detection range			**0...400 mm**	**2 m with polarizing filter**
PNP NO		**Ordering code**	**BOS0019**	**BOS00RN**
		Part number	BOS 18E-PS-1XD-SA1-S4	BOS 18E-PS-1UB-E5-D-S4
PNP NC		**Ordering code**		**BOS00RL**
		Part number		BOS 18E-PO-1UB-E5-D-S4
PNP NO	Receiver	**Ordering code**		
		Part number		
PNP NC	Receiver	**Ordering code**		
		Part number		
PNP NC	Receiver	**Ordering code**		
Output special assignment		Part number		
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			200 mA	200 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Switching type			Light switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			LED, infrared	LED, red light
Wavelength			880 Nm	660 Nm
Response time			5 ms	5 ms
Switching frequency f			100 Hz	100 Hz
Degree of protection as per IEC 60529			IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27
Ambient temperature T_a			–5...+75 °C	–20...+75 °C
Permissible ambient light			2 klx	2 klx
Material		Housing	**Stainless steel 1.4571**	**Stainless steel 1.4571**
		Optical surface	PMMA scratch-resistant	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 101.

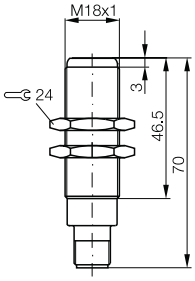


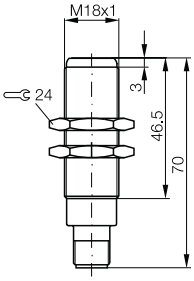


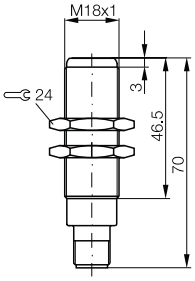


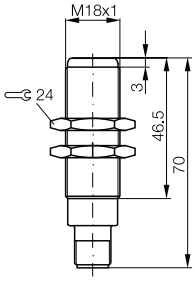



	Retroreflective sensor	**Retroreflective sensor**	**Through-beam sensor**	**Through-beam sensor**
	2 m with polarizing filter	**4 m**	**16 m**	**16 m**
	BOS00RP	**BOS0046**		
	BOS 18E-PS-1UB-SA1-S4	BOS 18E-PS-1WD-E5-D-S4		
			BOS00UJ	**BOS00UK**
			BLE 18E-PS-1P-E5-D-S4	BLE 18E-PS-1P-SA1-S4
			BOS00UF	
			BLE 18E-PO-1P-E5-D-S4	
			BOS00UH	
			BLE 18E-PO-1P-E5-D-S4S	
			BOS00UY	**BOS00UZ**
			BLS 18E-XX-1P-E5-X-S4	BLS 18E-XX-1P-SA1-S4
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	200 mA	200 mA	200 mA	200 mA
	≤ 20 mA	≤ 20 mA	≤ 15 mA (BLS ≤ 40 mA)	≤ 15 mA (BLS ≤ 35 mA)
	Dark switching	Dark switching	Light or dark switching	Dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed
	LED, red light	LED, red light	LED, infrared	LED, infrared
	660 Nm	660 Nm	880 Nm	880 Nm
	5 ms	5 ms	5 ms	5 ms
	100 Hz	100 Hz	100 Hz	100 Hz
	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27	IP 68 per BWN Pr. 27
	–20...+75 °C	–20...+75 °C	–5...+75 °C	–5...+75 °C
	2 klx	2 klx	2 klx	2 klx
	Stainless steel 1.4571	**Stainless steel 1.4571**	**Stainless steel 1.4571**	**Stainless steel 1.4571**
	PMMA scratch-resistant	Glass	Glass	PMMA scratch-resistant
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

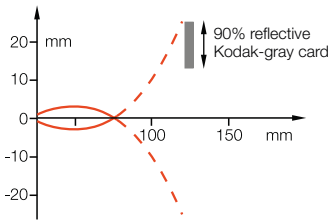






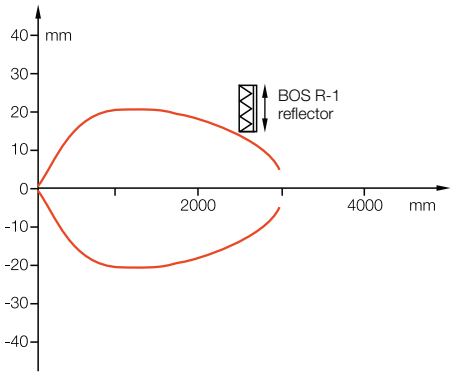


Diffuse sensor BOS 18E-...-1YA-...



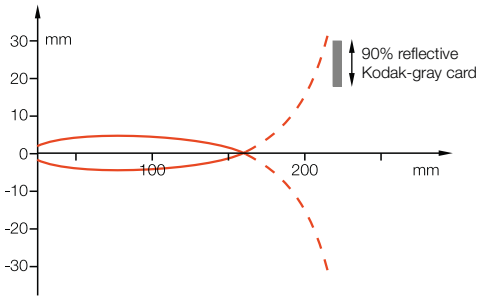
Sensing distance with side approach of Kodak-gray card.

Retroreflective sensor BOS 18E-...-1UB-...



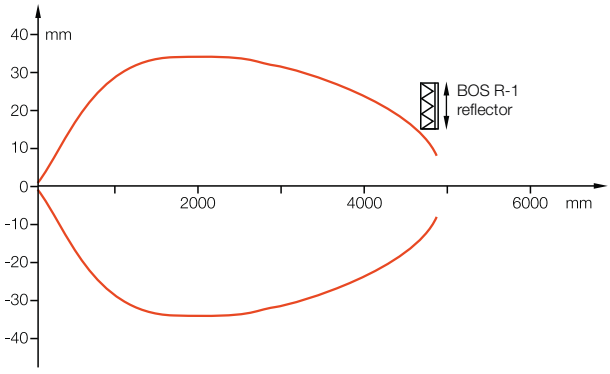
Range measured with side approach with reflector.

Diffuse sensor BOS 18E-...-1YB-...



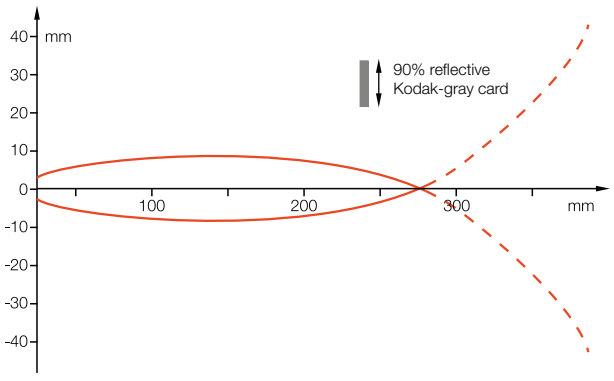
Sensing distance with side approach of Kodak-gray card.

Retroreflective sensor BOS 18E-...-1WD-...



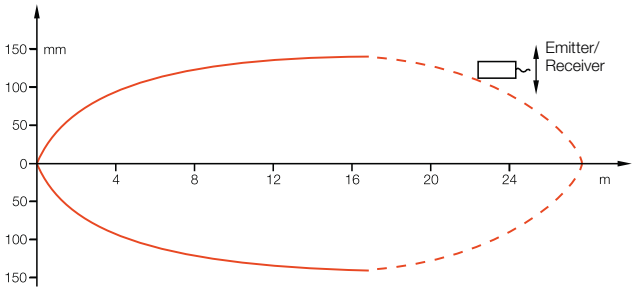
Range measured with side approach with reflector.

Diffuse sensor BOS 18E-...-1YD-...



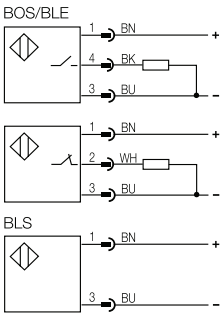
Sensing distance with side approach of Kodak-gray card.

Through-beam BLE/BLS 18E-...



For a through-beam sensor, the maximum possible offset between the emitter and receiver is measured.

Wiring diagrams



Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Reflector	**BAM00UK**
③ Round aperture	**BAM00R6**
④ Air shield	**BAM00R9**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



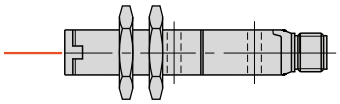
Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	5 m	**BCC0EZ9**
M12, 4-pin	Straight	PVC	Gray	5 m	**BCC0EZF**
M12, 4-pin	Angled	PUR	Black	5 m	**BCC0EZC**
M12, 4-pin	Angled	PVC	Gray	5 m	**BCC0EZH**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

BOS 18KF – with expanded product line

BOS 18KF series sensors are available with red or infrared light or with a Class 1 laser.
They are configured using a potentiometer or via teach-in. The plastic housing with flattened sides allows installation using the included M18-nuts or screws through the sensor housing.
The sensors are available as cable- or M12- connector styles with PNP- or NPN- output.





Type ■ Ordering code Part number		Sensing distance/ Range	Light type: Red light	Light type: Infrared	Light type: Laser	Output: PNP transistor	Switching type: Light switching	Switching type: Dark switching	Switching frequency	U_S: 10...30 V DC	Connection: M12 plug, 4-pin	Connection: Cable	Special features: Polarizing filter	Special features: Teach-in	Special features: Glass detection	Page
Diffuse sensor with background suppression																
BOS00JM	BOS 18KF-PA-1HA-S4-C	50...100 mm	■			■	■	■	500 Hz	■	■			■		104
BOS00JL	BOS 18KF-PA-1HA-C-02	50...100 mm	■			■	■	■	500 Hz	■		■		■		104
BOS00JW	BOS 18KF-PA-1N1R-S4-C	100 mm	■			■	■	■	1 kHz	■	■					105
BOS00JU	BOS 18KF-PA-1N1R-C-02	100 mm	■			■	■	■	1 kHz	■		■				105
Diffuse sensor with background suppression																
BOS00JK	BOS 18KF-PA-1GA-S4-C	40...100 mm	■			■	■	■	250 Hz	■	■			■		105
Diffuse sensor																
BOS00K9	BOS 18KF-PA-1XA-S4-C	0...100 mm		■		■	■	■	1 kHz	■	■					105
BOS00K8	BOS 18KF-PA-1XA-C-02	0...100 mm		■		■	■	■	1 kHz	■		■				106
BOS00JP	BOS 18KF-PA-1LOC-S4-C	0...350 mm			■	■	■	■	1.5 kHz	■	■					112
BOS00JN	BOS 18KF-PA-1LOC-C-02	0...350 mm			■	■	■	■	1.5 kHz	■		■				112
BOS00JZ	BOS 18KF-PA-1PD-S4-C	0...400 mm		■		■	■	■	1 kHz	■	■					106
BOS00JY	BOS 18KF-PA-1PD-C-02	0...400 mm		■		■	■	■	1 kHz	■		■				107
BOS00K1	BOS 18KF-PA-1PE-S4-C	0...700 mm		■		■	■	■	1 kHz	■	■					107
BOS00K0	BOS 18KF-PA-1PE-C-02	0...700 mm		■		■	■	■	1 kHz	■		■				107
Retroreflective sensor																
BOS00K7	BOS 18KF-PA-1TB-S4-C	0.1...1.7 m	■			■	■	■	1 kHz	■	■		■		■	108
BOS00K6	BOS 18KF-PA-1TB-C-02	0.1...1.7 m	■			■	■	■	1 kHz	■		■	■		■	108
BOS00K3	BOS 18KF-PA-1QD-S4-C	0.1...4.5 m	■			■	■	■	1 kHz	■	■		■			109
BOS00K2	BOS 18KF-PA-1QD-C-02	0.1...4.5 m	■			■	■	■	1 kHz	■		■	■			109
BOS00K5	BOS 18KF-PA-1RE-S4-C	0.1...5 m	■			■	■	■	1 kHz	■	■					109
BOS00K4	BOS 18KF-PA-1RE-C-02	0.1...5 m	■			■	■	■	1 kHz	■		■				109
BOS00JT	BOS 18KF-PA-1LQP-S4-C	0.1...16 m			■	■	■	■	1.5 kHz	■	■		■			113
BOS00JR	BOS 18KF-PA-1LQP-C-02	0.1...16 m			■	■	■	■	1.5 kHz	■		■	■			113
Through-beam sensor Receiver																
BOS00CK	BLE 18KF-PA-1PP-S4-C	0...20 m		■		■	■	■	250 Hz	■	■					110
BOS00CJ	BLE 18KF-PA-1PP-C-02	0...20 m		■		■	■	■	250 Hz	■		■				111
BOS00CH	BLE 18KF-PA-1LT-S4-C	0...60 m			■	■	■	■	1.5 kHz	■	■					114
BOS00CF	BLE 18KF-PA-1LT-C-02	0...60 m			■	■	■	■	1.5 kHz	■		■				115
Through-beam sensor Emitter																
BOS00EP	BLS 18KF-XX-1P-S4-L	0...20 m		■						■	■					110
BOS00EN	BLS 18KF-XX-1P-L-02	0...20 m		■						■		■				111
BOS00EM	BLS 18KF-XX-1LT-S4-L	0...60 m			■					■	■					114
BOS00EL	BLS 18KF-XX-1LT-L-02	0...60 m			■					■		■				115

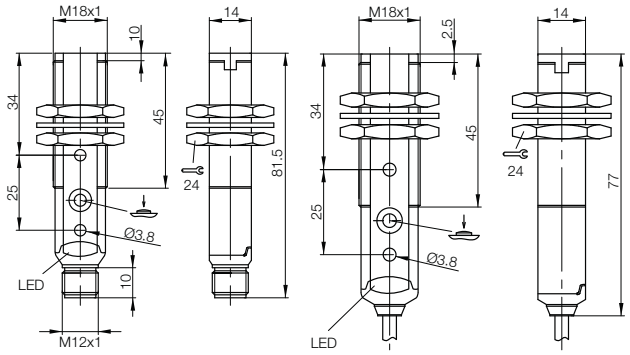
NPN on request



Type			Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range			**50...100 mm**	**50...100 mm**
PNP NC/NO		**Ordering code**		
		Part number		
PNP NC/NO	Teach-in	**Ordering code**	**BOS00JM**	**BOS00JL**
		Part number	BOS 18KF-PA-1HA-S4-C	BOS 18KF-PA-1HA-C-02
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 30 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, red light	LED, red light
Wavelength			630 Nm	630 Nm
Light spot diameter			approx. 8 mm at 100 mm	approx. 8 mm at 100 mm
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Green/red LED	Green/red LED
Response time			1 ms	1 ms
Switching frequency f			500 Hz	500 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–25...+55 °C	–25...+55 °C
Reference standard			EN 60947-5-2	EN 60947-5-2
Material		Housing	PBT	PBT
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Reference object: white, 90% reflection, 200×200 mm

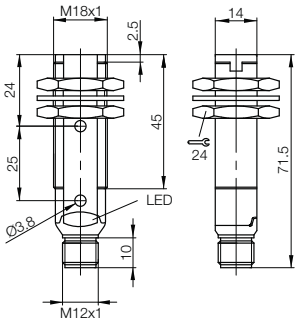
For wiring diagrams see page 119.

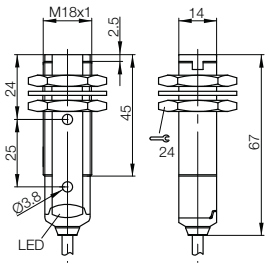


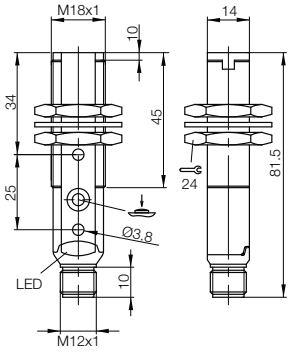


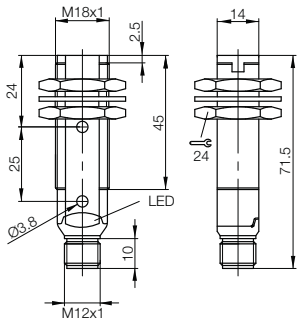



Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor
100 mm	**100 mm**	**40...100 mm**	**0...100 mm**
BOS00JW	**BOS00JU**		**BOS00K9**
BOS 18KF-PA-1N1R-S4-C	BOS 18KF-PA-1N1R-C-02		BOS 18KF-PA-1XA-S4-C
		BOS00JK	
		BOS 18KF-PA-1GA-S4-C	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 35 mA	≤ 35 mA	≤ 30 mA	≤ 35 mA
Light and dark switching	Light and dark switching	Light and dark switching	Light and dark switching
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Fixed	Fixed	Teach-in	Fixed
LED, red light	LED, red light	LED, red light	LED, infrared
630 Nm	630 Nm	630 Nm	880 Nm
approx. 20 mm at 100 mm	approx. 20 mm at 100 mm	approx. 8 mm at 100 mm	approx. 80 mm at 100 mm
Yellow LED	Yellow LED	Yellow LED	Yellow LED
Green/red LED	Green/red LED	Green/red LED	
0.5 ms	0.5 ms	2 ms	0.5 ms
1 kHz	1 kHz	250 Hz	1 kHz
IP 67	IP 67	IP 67	IP 67
–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
PBT	PBT	PBT	PBT
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm³	M12 connector, 4-pin	M12 connector, 4-pin









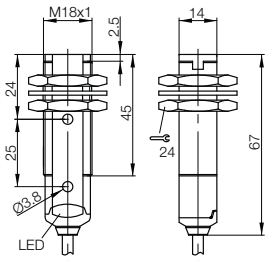


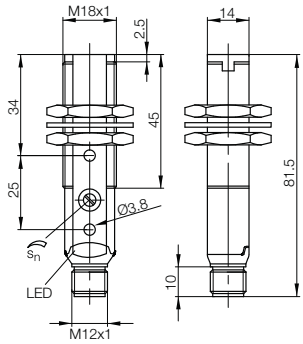


Type		**Diffuse sensor**	**Diffuse sensor**
Detection range		**0...100 mm**	**0...400 mm**
PNP NC/NO	**Ordering code**	**BOS00K8**	**BOS00JZ**
	Part number	BOS 18KF-PA-1XA-C-02	BOS 18KF-PA-1PD-S4-C
Supply voltage U_S		10...30 V DC	10...30 V DC
Output current		100 mA	100 mA
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Switching type		Light/dark (complementary)	Light/dark (complementary)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Fixed	Potentiometer, 270°
Emitter, light type		LED, infrared	LED, infrared
Wavelength		880 Nm	880 Nm
Light spot diameter		approx. 80 mm at 100 mm	approx. 100 mm at 300 mm
Output function indicator		Yellow LED	Yellow LED
Stability indicator			Green LED
Response time		0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–25...+55 °C	–25...+55 °C
Reference standard		EN 60947-5-2	EN 60947-5-2
Material	Housing	PBT	PBT
	Optical surface	PMMA	PMMA
Connection		2 m PVC cable, 4×0.14 mm³	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 119.



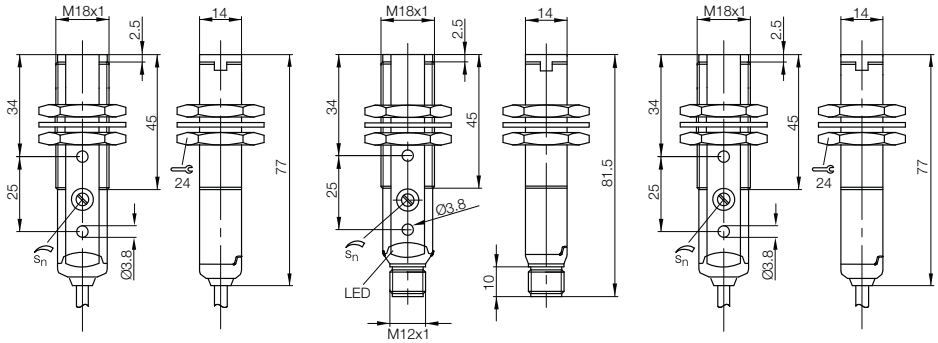








Diffuse sensor	**Diffuse sensor**	**Diffuse sensor**
0...400 mm	**0...700 mm**	**0...700 mm**
BOS00JY	**BOS00K1**	**BOS00K0**
BOS 18KF-PA-1PD-C-02	BOS 18KF-PA-1PE-S4-C	BOS 18KF-PA-1PE-C-02
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 35 mA	≤ 35 mA	≤ 35 mA
Light/dark (complementary)	Light/dark (complementary)	Light/dark (complementary)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, infrared	LED, infrared	LED, infrared
880 Nm	880 Nm	880 Nm
approx. 100 mm at 300 mm	approx. 200 mm at 600 mm	approx. 200 mm at 600 mm
Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED
0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz
IP 67	IP 67	IP 67
–25...+55 °C	–25...+55 °C	–25...+55 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
PBT	PBT	PBT
PMMA	PMMA	PMMA
2 m PVC cable, 4×0.14 mm³	M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm³



Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

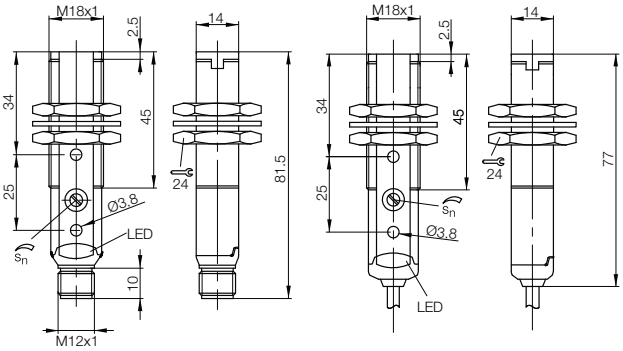




Type				**Retroreflective sensor**	**Retroreflective sensor**
Detection range				**0.1...1.7 m**	**0.1...1.7 m**
PNP	NC/NO	Polarizing filter, transparency detection	**Ordering code**	**BOS00K7**	**BOS00K6**
			Part number	BOS 18KF-PA-1TB-S4-C	BOS 18KF-PA-1TB-C-02
PNP	NC/NO	Polarizing filter	**Ordering code**		
			Part number		
PNP	NC/NO		**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 35 mA
Switching type				Light/dark (complementary)	Light/dark (complementary)
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	Potentiometer, 270°
Emitter, light type				LED, red light	LED, red light
Wavelength				660 Nm	660 Nm
Light spot diameter				approx. 45 mm at 1 m	approx. 45 mm at 1 m
Output function indicator				Yellow LED	Yellow LED
Stability indicator				Green LED	Green LED
Response time				0.5 ms	0.5 ms
Switching frequency f				1 kHz	1 kHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–25...+55 °C	–25...+55 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Reference reflector: BOS R-1

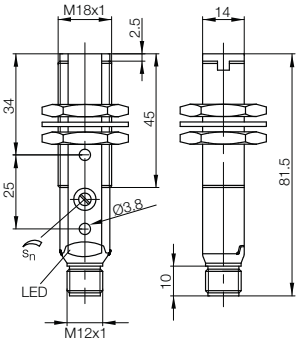
For wiring diagrams see page 119.

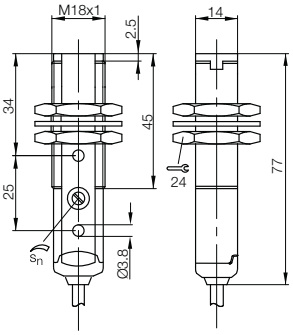


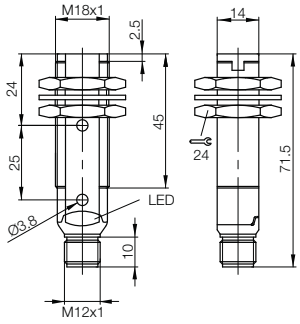


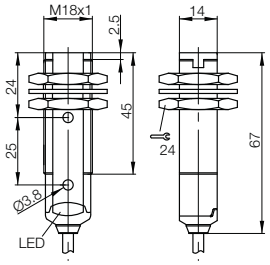



Retroreflective sensor 0.1...4.5 m	**Retroreflective sensor 0.1...4.5 m**	**Retroreflective sensor 0.1...5 m**	**Retroreflective sensor 0.1...5 m**
BOS00K3	**BOS00K2**		
BOS 18KF-PA-1QD-S4-C	BOS 18KF-PA-1QD-C-02		
		BOS00K5	**BOS00K4**
		BOS 18KF-PA-1RE-S4-C	BOS 18KF-PA-1RE-C-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 35 mA	≤ 35 mA	≤ 35 mA	≤ 35 mA
Light/dark (complementary)	Light/dark (complementary)	Light/dark (complementary)	Light/dark (complementary)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Fixed	Fixed
LED, red light	LED, red light	LED, infrared	LED, infrared
660 Nm	660 Nm	880 Nm	880 Nm
approx. 65 mm at 3 m	approx. 65 mm at 3 m	approx. 100 mm at 2 m	approx. 100 mm at 2 m
Yellow LED	Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED	Green LED
0.5 ms	0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz	1 kHz
IP 67	IP 67	IP 67	IP 67
–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
PBT	PBT	PBT	PBT
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm³	M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm³





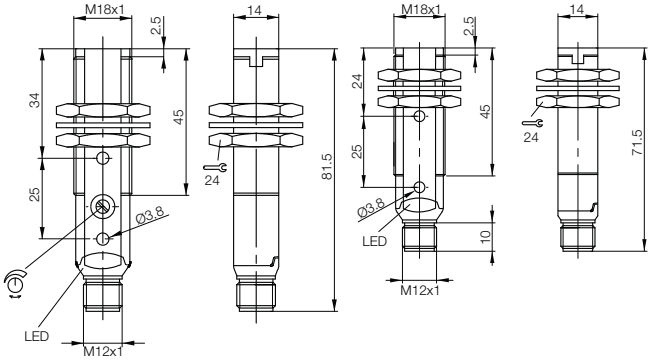






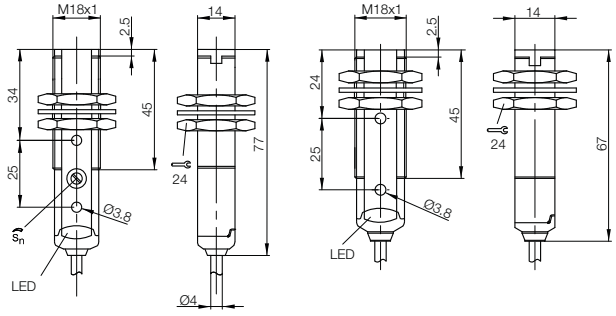
Type				**Through-beam sensor**	**Through-beam sensor**
Detection range				**0...20 m**	**0...20 m**
PNP NC/NO	Receiver		**Ordering code**	**BOS00CK**	
			Part number	BLE 18KF-PA-1PP-S4-C	
	Emitter		**Ordering code**		**BOS00EP**
			Part number		BLS 18KF-XX-1P-S4-L
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	
No-load supply current I_0 max.				≤ 30 mA	≤ 35 mA
Switching type				Light/dark (complementary)	
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	
Help functions					Test input
Emitter, light type					LED, infrared
Wavelength					880 ms
Light spot diameter					approx. 500 mm at 15 m
Power-on indicator				Green LED	Green LED
Output function indicator				Yellow LED	
Response time				2 ms	
Switching frequency f				250 Hz	
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–25...+55 °C	–25...+55 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material		Housing		PBT	PBT
		Optical surface		PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams see page 119.





Through-beam sensor	**Through-beam sensor**			
0...20 m	**0...20 m**			
BOS00CJ				
BLE 18KF-PA-1PP-C-02				
	BOS00EN			
	BLS 18KF-XX-1P-L-02			
10...30 V DC	10...30 V DC			
100 mA				
≤ 30 mA	≤ 35 mA			
Light/dark (complementary)				
Yes/Yes	Yes/Yes			
Potentiometer, 270°				
	Test input			
	LED, infrared			
	880 ms			
	approx. 500 mm at 15 m			
Green LED	Green LED			
Yellow LED				
2 ms				
250 Hz				
IP 67	IP 67			
–25...+55 °C	–25...+55 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
2 m PVC cable, 4×0.14 mm²	2 m PVC cable, 4×0.14 mm²			

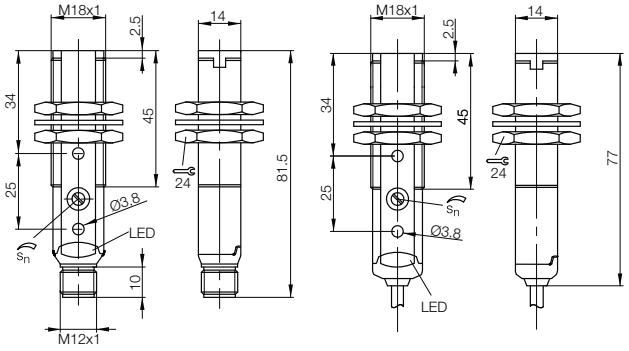




Type				**Diffuse sensor**	**Diffuse sensor**
Detection range				**0...350 mm**	**0...350 mm**
PNP	NC/NO		**Ordering code**	**BOS00JP**	**BOS00JN**
			Part number	BOS 18KF-PA-1LOC-S4-C	BOS 18KF-PA-1LOC-C-02
PNP	NC/NO	Polarizing filter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 35 mA
Switching type				Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	Potentiometer, 270°
Emitter, light type				Laser, red light	Laser, red light
Wavelength				650 Nm	650 Nm
Laser class				1	1
Resolution				approx. 0.3 mm at 50 mm approx. 0.3 mm at 100 mm approx. 0.5 mm at 150 mm	approx. 0.3 mm at 50 mm approx. 0.3 mm at 100 mm approx. 0.5 mm at 150 mm
Power-on indicator				Green LED	Green LED
Output function indicator				Yellow LED	Yellow LED
Response time				333 µs	333 µs
Switching frequency f				1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–10...+50 °C	–10...+50 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

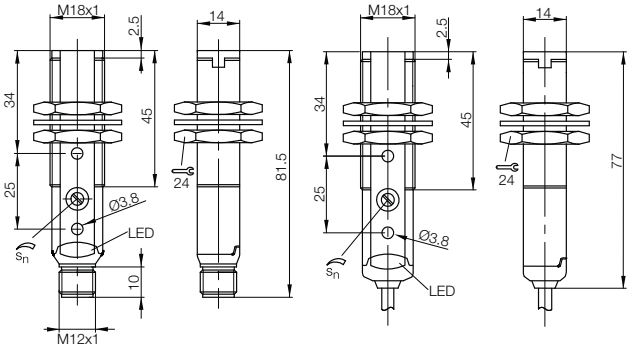
For wiring diagrams see page 119.







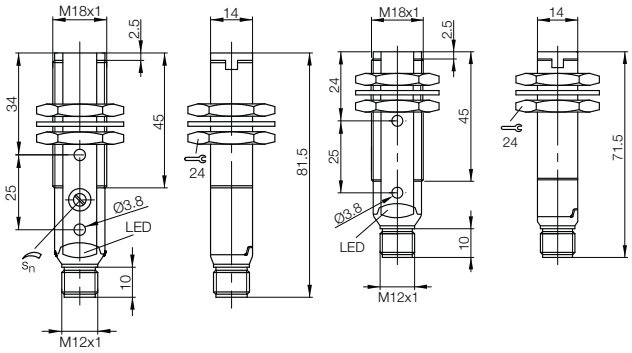
Retroreflective sensor 0.1...16 m	**Retroreflective sensor 0.1...16 m**			
BOS00JT	**BOS00JR**			
BOS 18KF-PA-1LQP-S4-C	BOS 18KF-PA-1LQP-C-02			
10...30 V DC	10...30 V DC			
100 mA	100 mA			
≤ 35 mA	≤ 35 mA			
Light and dark switching	Light and dark switching			
Yes/Yes	Yes/Yes			
Potentiometer, 270°	Potentiometer, 270°			
Laser, red light	Laser, red light			
650 Nm	650 Nm			
1	1			
approx. 0.9 mm at 1 m approx. 2 mm at 3 m	approx. 0.9 mm at 1 m approx. 2 mm at 3 m			
Green LED Yellow LED	Green LED Yellow LED			
333 µs	333 µs			
1.5 kHz	1.5 kHz			
IP 67	IP 67			
–10...+50 °C	–10...+50 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²			





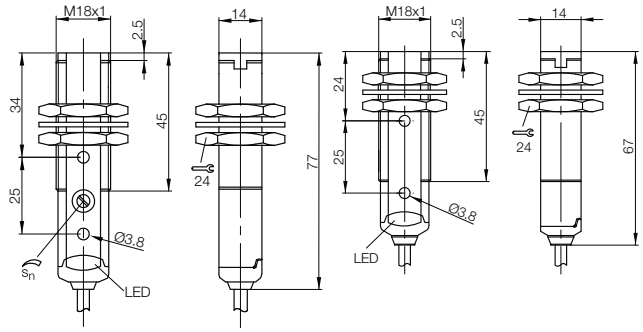
Type				**Through-beam sensor**	**Through-beam sensor**
Detection range				**0...60 m**	**0...60 m**
PNP NC/NO		Receiver	**Ordering code**	**BOS00CH**	
			Part number	BLE 18KF-PA-1LT-S4-C	
		Emitter	**Ordering code**		**BOS00EM**
			Part number		BLS 18KF-XX-1LT-S4-L
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	
No-load supply current I_0 max.				≤ 30 mA	≤ 35 mA
Switching type				Light and dark switching	
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	
Emitter, light type					Laser, red light
Wavelength					650 Nm
Laser class					1
Resolution					approx. 2.5 mm at 5 m approx. 5 mm at 10 m approx. 10 mm at 20 m
Power-on indicator				Green LED	Green LED
Output function indicator				Yellow LED	
Response time				333 µs	
Switching frequency f				1.5 kHz	
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–10...+50 °C	–10...+50 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams see page 119.

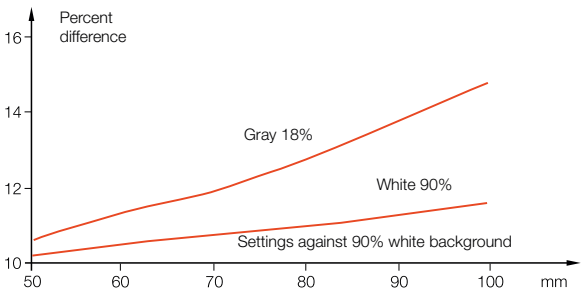




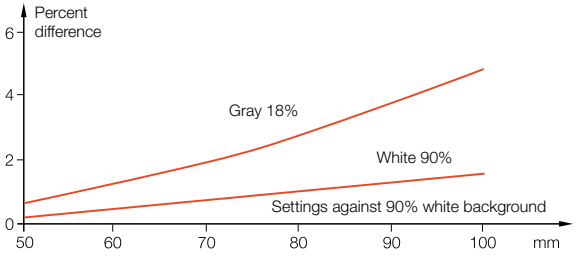
Through-beam sensor	**Through-beam sensor**			
0...60 m	**0...60 m**			
BOS00CF				
BLE 18KF-PA-1LT-C-02				
	BOS00EL			
	BLS 18KF-XX-1LT-L-02			
10...30 V DC	10...30 V DC			
100 mA				
≤ 30 mA	≤ 35 mA			
Light and dark switching				
Yes/Yes	Yes/Yes			
Potentiometer, 270°				
	Laser, red light			
	650 Nm			
	1			
	approx. 2.5 mm at 5 m approx. 5 mm at 10 m approx. 10 mm at 20 m			
Green LED	Green LED			
Yellow LED				
333 µs				
1.5 kHz				
IP 67	IP 67			
–10...+50 °C	–10...+50 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
2 m PVC cable, 4×0.14 mm²	2 m PVC cable, 4×0.14 mm²			



Diffuse sensor BOS 18KF-..-1HA-...

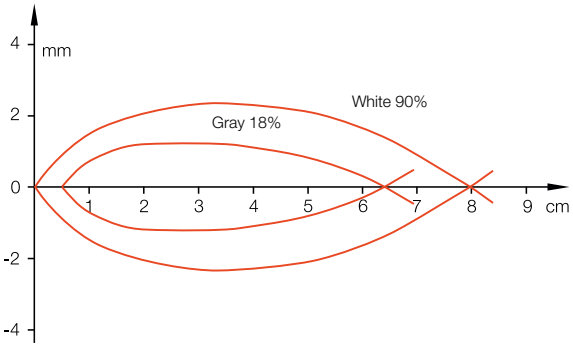


Tolerance with standard setting

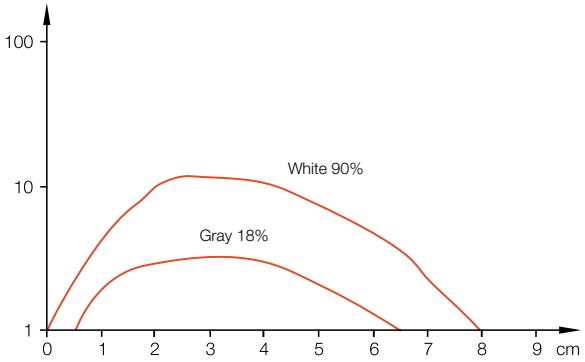


Tolerance with fine setting

Diffuse sensor BOS 18KF-..-1N1R-...

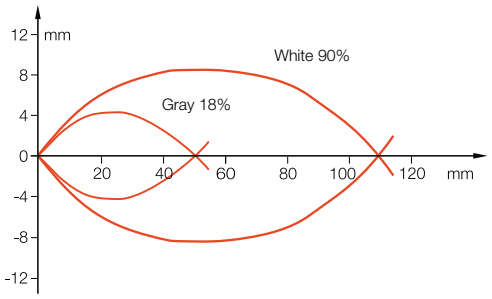


Detection range

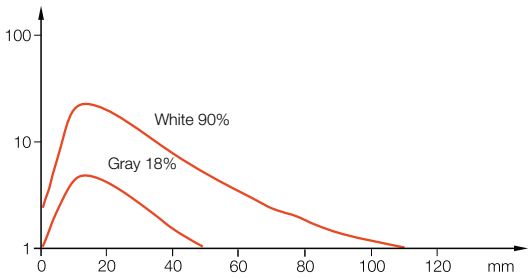


Function reserve

Diffuse sensor BOS 18KF-..-1XA-...

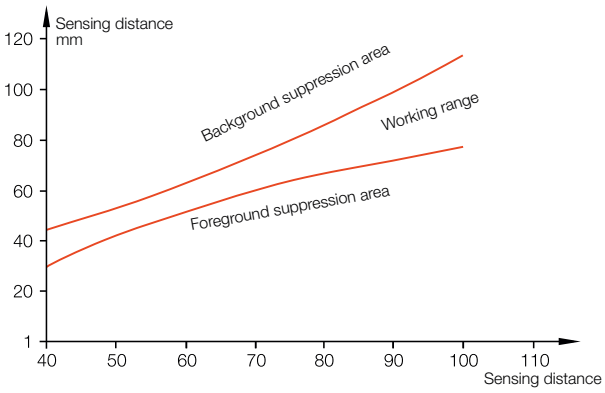


Detection range



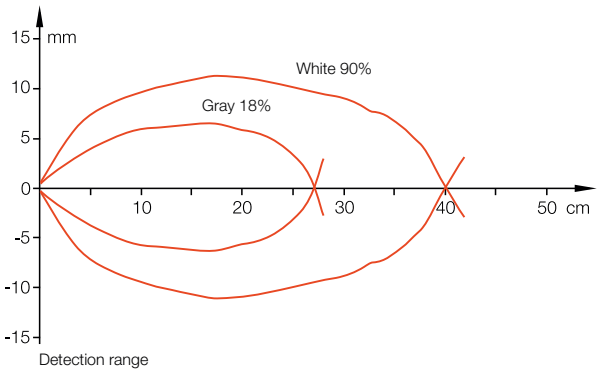
Function reserve

Diffuse sensor BOS 18KF-..-1GA-...

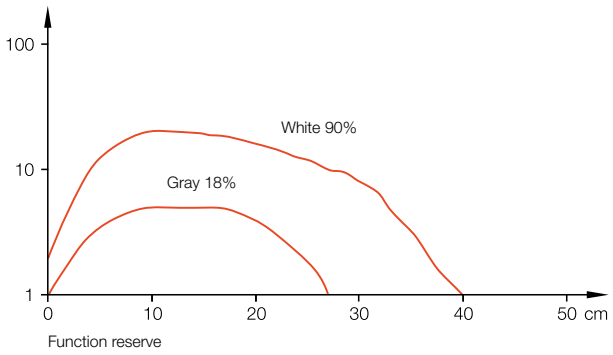


Hysteresis with standard setting

Diffuse sensor BOS 18KF-..-1PD-...

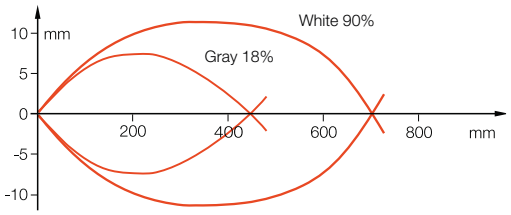


Detection range

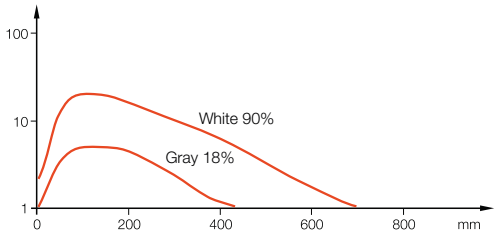


Function reserve

Diffuse sensor BOS 18KF-..-1PE-...

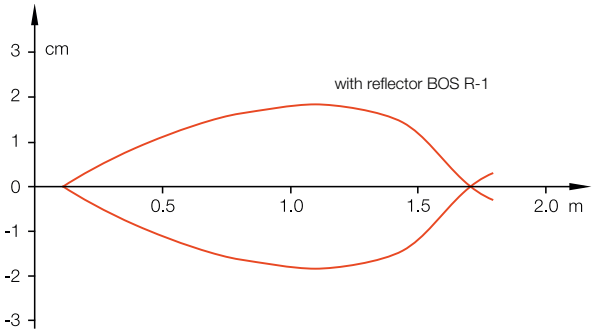


Detection range

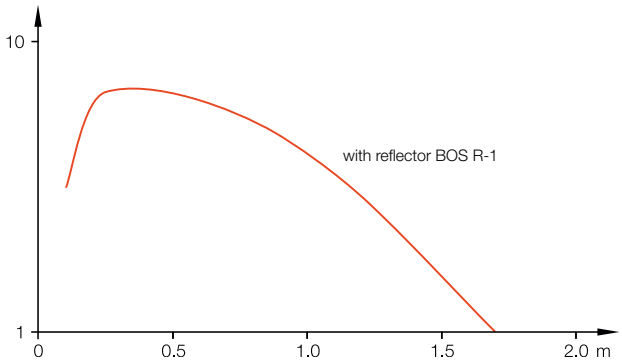


Function reserve

Retroreflective sensor BOS 18KF-..-1TB-...

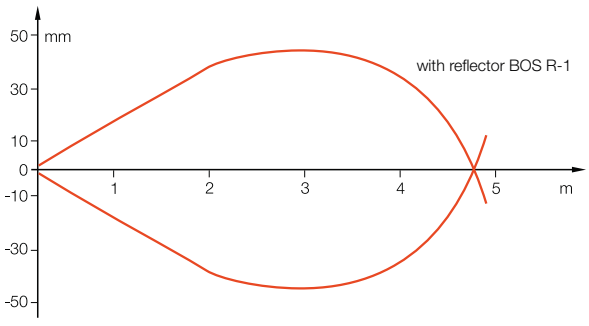


Detection range

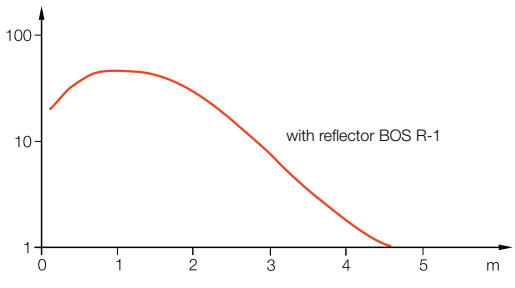


Function reserve

Retroreflective sensor BOS 18KF-..-1QD-...

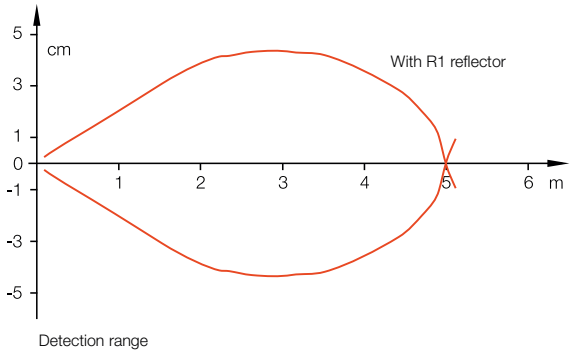


Detection range



Function reserve

Retroreflective sensor BOS 18KF-..-1RE-...

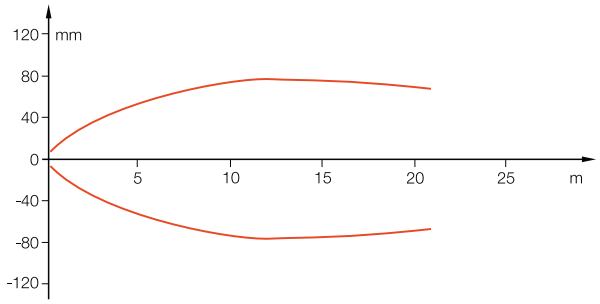


Detection range

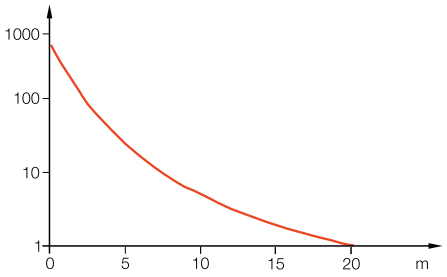


Function reserve

Through-beam sensor BLE/BLS 18KF-..-1PP/1P-...

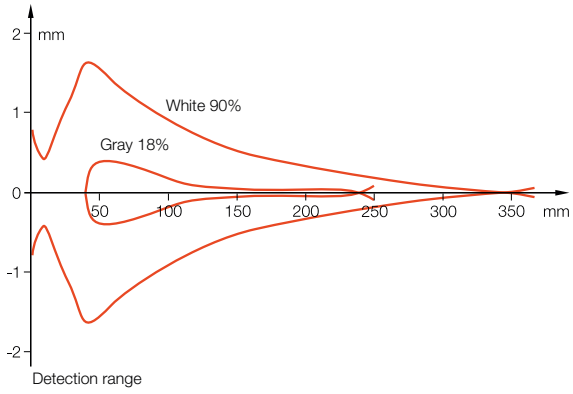


Detection range

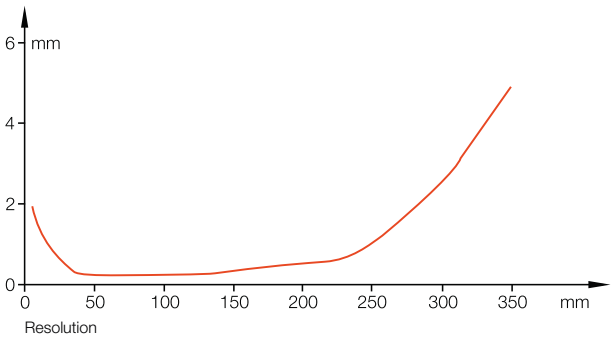


Function reserve

Diffuse sensor BOS 18KF-..-1LOC-...

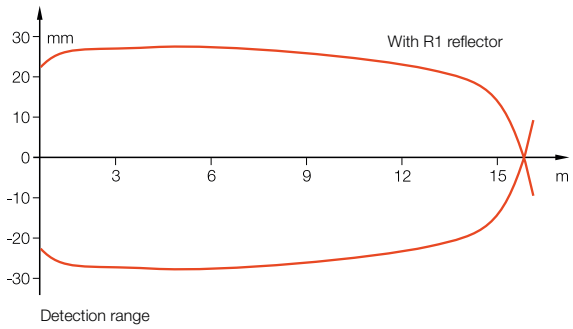


Detection range

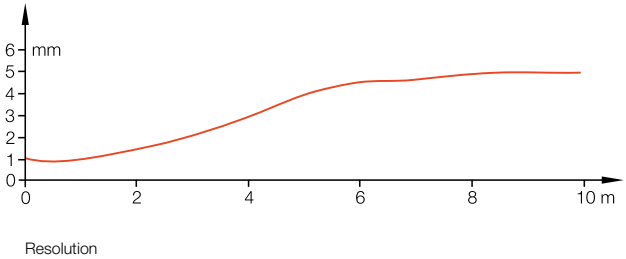


Resolution

Retroreflective sensor BOS 18KF-..-1LQP-...

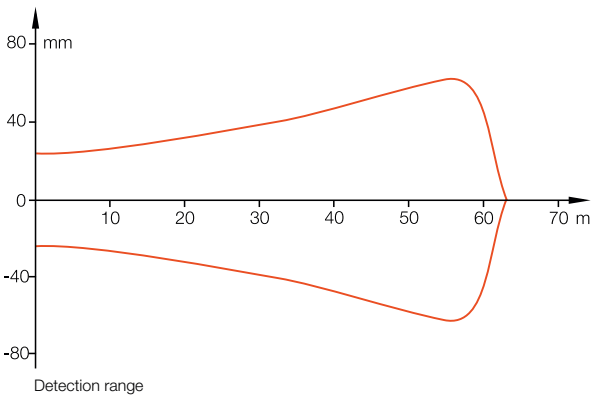


Detection range

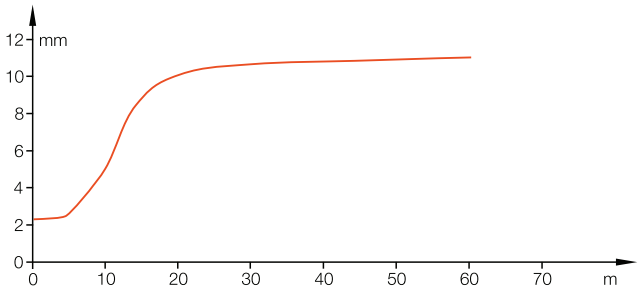


Resolution

Through-beam sensor BLE/BLS 18KF-..-1LT-...

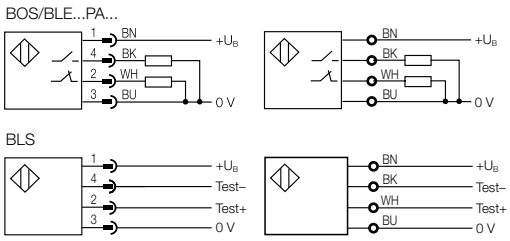


Detection range

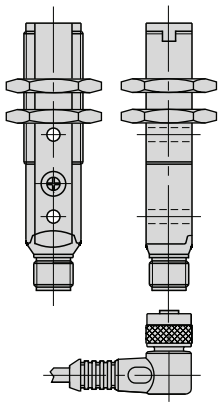


Resolution

Wiring diagrams



Connector orientation

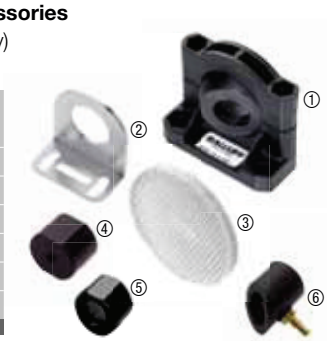


BOS 18**KF**

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**
④ Round aperture	**BAM00R6**
⑤ Cover nut	**BAM00RL**
⑥ Air shield	**BAM00R9**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

M18 Plastic with Angle Head

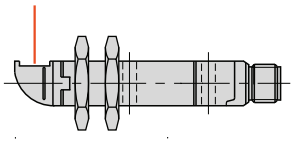
Global

BOS 18KW – with expanded product line

BOS 18KW series sensors are available with red- or infrared light or with a Class 1 laser.

They are configured using a potentiometer or via teach-in. The plastic housing with flattened sides allows installation using the included M18-nuts or screws through the sensor housing.

The sensors are available as cable- or M12- connector styles with PNP- or NPN- output.





Type ■ **Ordering code** □ Part number		Sensing distance/ Range	Light type			Output	Switching type		Switching frequency	U_S	Connection		Special features		Page
			Red light	Infrared	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable	Polarizing filter	Teach-in	
Diffuse sensor with background suppression															
BOS00LH	BOS 18KW-PA-1HA-S4-C	50...100 mm	■			■	■	■	500 Hz	■	■			■	122
BOS00LF	BOS 18KW-PA-1HA-C-02	50...100 mm	■			■	■	■	500 Hz	■		■		■	122
Diffuse sensor															
BOS00M1	BOS 18KW-PA-1XA-S4-C	0...80 mm		■		■	■	■	1 kHz	■	■				123
BOS00M0	BOS 18KW-PA-1XA-C-02	0...80 mm		■		■	■	■	1 kHz	■		■			123
BOS00LK	BOS 18KW-PA-1LOB-S4-C	0...250 mm			■	■	■	■	1.5 kHz	■	■				128
BOS00LJ	BOS 18KW-PA-1LOB-C-02	0...250 mm			■	■	■	■	1.5 kHz	■		■			128
BOS00LT	BOS 18KW-PA-1PD-S4-C	0...400 mm		■		■	■	■	1 kHz	■	■				123
BOS00LR	BOS 18KW-PA-1PD-C-02	0...400 mm		■		■	■	■	1 kHz	■		■			123
Retroreflective sensor															
BOS00LZ	BOS 18KW-PA-1TB-S4-C	0.1...1.7 m	■			■	■	■	1 kHz	■	■		■		124
BOS00LY	BOS 18KW-PA-1TB-C-02	0.1...1.7 m	■			■	■	■	1 kHz	■		■	■		124
BOS00LW	BOS 18KW-PA-1QC-S4-C	0.1...3 m	■			■	■	■	1 kHz	■	■		■		125
BOS00LU	BOS 18KW-PA-1QC-C-02	0.1...3 m	■			■	■	■	1 kHz	■		■	■		125
BOS00LM	BOS 18KW-PA-1LQH-S4-C	0.1...9 m			■	■	■	■	1.5 kHz	■	■		■		129
BOS00LL	BOS 18KW-PA-1LQH-C-02	0.1...9 m			■	■	■	■	1.5 kHz	■		■	■		129
Through-beam sensor Receiver															
BOS00CW	BLE 18KW-PA-1PP-S4-C	0...15 m		■		■	■	■	250 Hz	■	■				126
BOS00CU	BLE 18KW-PA-1PP-C-02	0...15 m		■		■	■	■	250 Hz	■		■			127
BOS00CT	BLE 18KW-PA-1LT-S4-C	0...50 m			■	■	■	■	1.5 kHz	■	■				130
Through-beam sensor Emitter															
BOS00EW	BLS 18KW-XX-1P-S4-L	0...15 m		■			■	■		■	■				126
BOS00EU	BLS 18KW-XX-1P-L-02	0...15 m		■			■	■		■		■			127
BOS00ET	BLS 18KW-XX-1LT-S4-L	0...50 m			■					■	■				130

NPN on request

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

M18 Plastic with Angle Head

Global

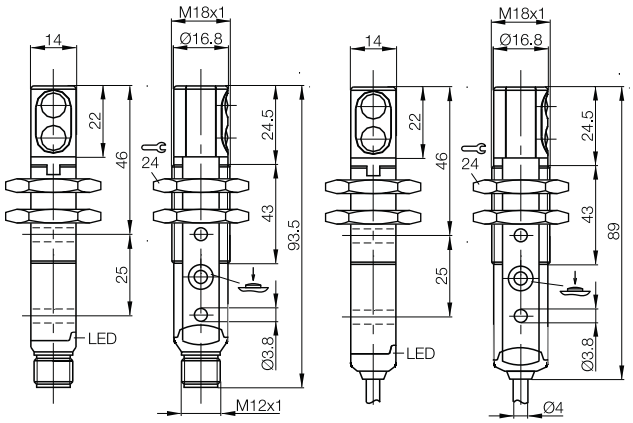




Type			Diffuse sensor with background suppression	Diffuse sensor with background suppression	
Detection range			**50...100 mm**	**50...100 mm**	
PNP NC/NO		**Ordering code**			
		Part number			
PNP NC/NO	Teach-in	**Ordering code**	**BOS00LH**	**BOS00LF**	
		Part number	BOS 18KW-PA-1HA-S4-C	BOS 18KW-PA-1HA-C-02	
Supply voltage U_S			10...30 V DC	10...30 V DC	
Output current			100 mA	100 mA	
No-load supply current I_0 max.			≤ 30 mA	≤ 35 mA	
Switching type			Light and dark switching	Light and dark switching	
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	
Settings			Teach-in	Teach-in	
Emitter, light type			LED, red light	LED, red light	
Wavelength			630 Nm	660 Nm	
Light spot diameter			approx. 10 mm at 100 mm	approx. 10 mm at 100 mm	
Output function indicator			Yellow LED	Yellow LED	
Stability indicator			Green/red LED	Green/red LED	
Response time			1 ms	0.5 ms	
Switching frequency f			500 Hz	1 kHz	
Degree of protection as per IEC 60529			IP 67	IP 67	
Ambient temperature T_a			–25...+55 °C	–25...+55 °C	
Permissible ambient light			EN 60947-5-2	EN 60947-5-2	
Material		Housing	PBT	PBT	
		Optical surface	PMMA	PMMA	
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²	

Reference object: white, 90% reflection, 200×200 mm

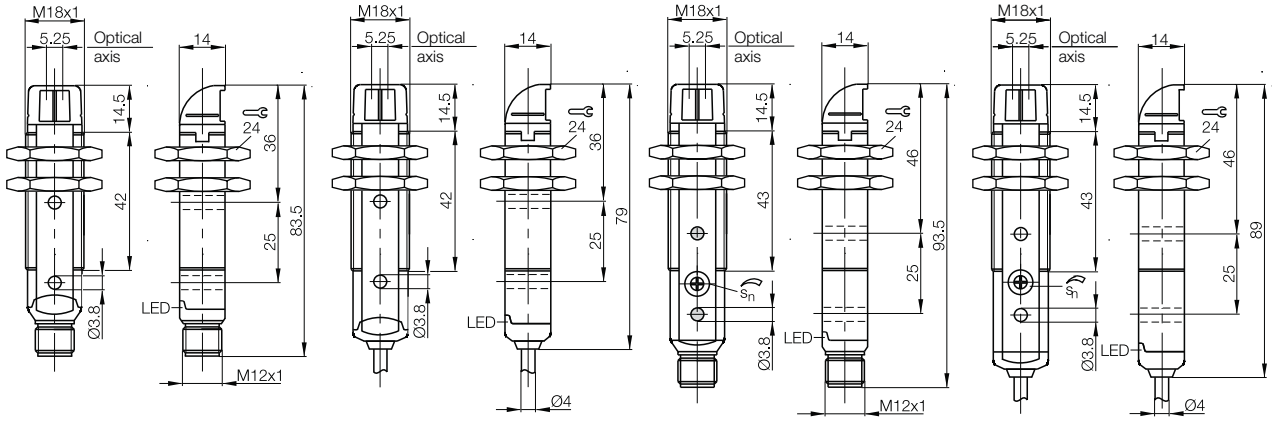
For wiring diagrams see page 133.








	Diffuse sensor	Diffuse sensor	Diffuse sensor	Diffuse sensor
	0...80 mm	**0...80 mm**	**0...400 mm**	**0...400 mm**
	BOS00M1	**BOS00M0**	**BOS00LT**	**BOS00LR**
	BOS 18KW-PA-1XA-S4-C	BOS 18KW-PA-1XA-C-02	BOS 18KW-PA-1PD-S4-C	BOS 18KW-PA-1PD-C-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	100 mA
	≤ 35 mA	≤ 35 mA	≤ 35 mA	≤ 35 mA
	Light and dark switching	Light and dark switching	Light and dark switching	Light and dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Potentiometer, 270°	Potentiometer, 270°
	LED, infrared	LED, infrared	LED, infrared	LED, infrared
	880 Nm	880 Nm	880 Nm	880 Nm
	approx. 55 mm at 100 mm	approx. 55 mm at 100 mm	approx. 35 mm at 400 mm	approx. 35 mm at 400 mm
	Yellow LED	Yellow LED	Yellow LED	Yellow LED
			Green LED	Green LED
	0.5 ms	0.5 ms	0.5 ms	0.5 ms
	1 kHz	1 kHz	1 kHz	1 kHz
	IP 67	IP 67	IP 67	IP 67
	–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	PBT	PBT	PBT	PBT
	PMMA	PMMA	PMMA	PMMA
	M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²	M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²



M18 Plastic with Angle Head

Global

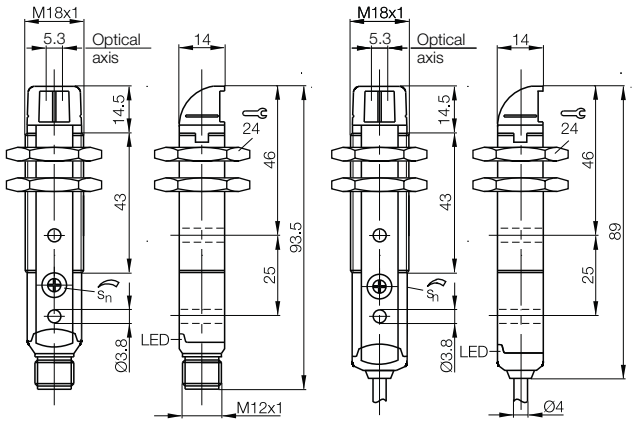




Type				**Retroreflective sensor**	**Retroreflective sensor**
Detection range				**0.1...1.7 m**	**0.1...1.7 m**
PNP	NC/ NO	Polarizing filter, Transparency detection	**Ordering code**	**BOS00LZ**	**BOS00LY**
			Part number	BOS 18KW-PA-1TB-S4-C	BOS 18KW-PA-1TB-C-02
PNP	NC/ NO	Polarizing filter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 35 mA
Switching type				Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	Potentiometer, 270°
Emitter, light type				LED, red light	LED, red light
Wavelength				660 Nm	660 Nm
Light spot diameter				approx. 60 mm at 1 m	approx. 60 mm at 1 m
Output function indicator				Yellow LED	Yellow LED
Stability indicator				Green LED	Green LED
Response time				0.5 ms	0.5 ms
Switching frequency f				1 kHz	1 kHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–25...+55 °C	–25...+55 °C
Permissible ambient light				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Reference reflector: BOS R-1

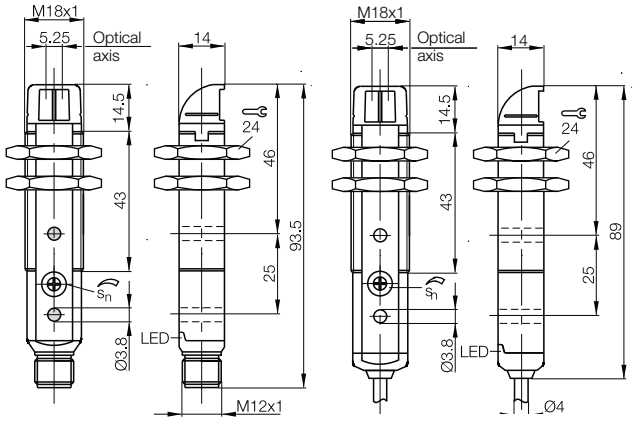
For wiring diagrams see page 133.







Retroreflective sensor 0.1...3 m	**Retroreflective sensor 0.1...3 m**			
BOS00LW	**BOS00LU**			
BOS 18KW-PA-1QC-S4-C	BOS 18KW-PA-1QC-C-02			
10...30 V DC	10...30 V DC			
100 mA	100 mA			
≤ 35 mA	≤ 35 mA			
Light and dark switching	Light and dark switching			
Yes/Yes	Yes/Yes			
Potentiometer, 270°	Potentiometer, 270°			
LED, red light	LED, red light			
660 Nm	660 Nm			
approx. 60 mm at 2 m	approx. 60 mm at 2 m			
Yellow LED	Yellow LED			
Green LED	Green LED			
0.5 ms	0.5 ms			
1 kHz	1 kHz			
IP 67	IP 67			
–25...+55 °C	–25...+55 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²			



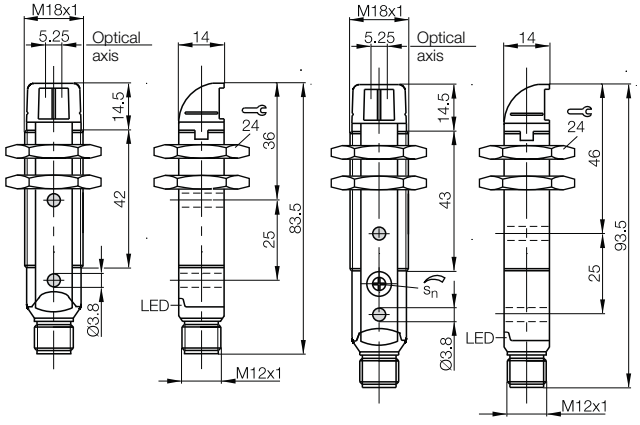
M18 Plastic with Angle Head

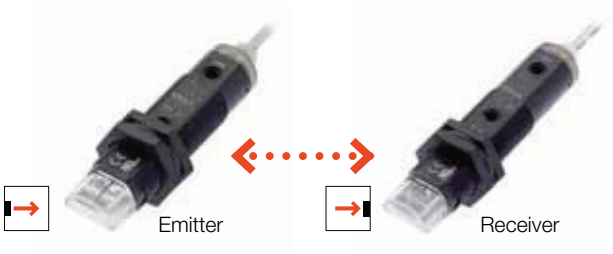
Global



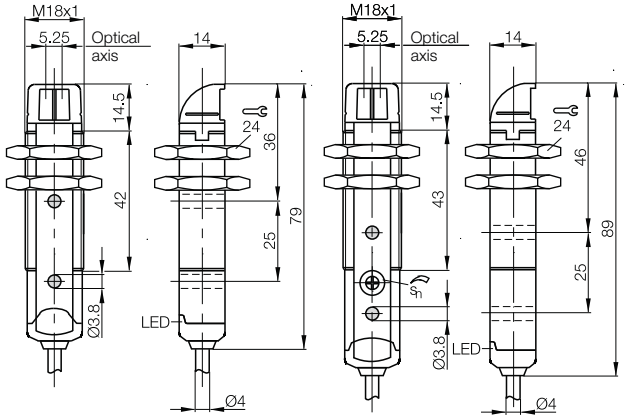
Type				**Through-beam sensor**	**Through-beam sensor**
Detection range				**0...15 m**	**0...15 m**
PNP	NC/NO	Receiver	**Ordering code**		**BOS00CW**
			Part number		BLE 18KW-PA-1PP-S4-C
PNP	NC/NO	Emitter	**Ordering code**	**BOS00EW**	
			Part number	BLS 18KW-XX-1P-S4-L	
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current					100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 30 mA
Switching type					Light and dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings					Potentiometer, 270°
Help functions				Test input	
Emitter, light type				LED, infrared	
Wavelength				880 Nm	
Light spot diameter				approx. 470 mm at 10 m	
Power-on indicator				Green LED	Green LED
Output function indicator					Yellow LED
Response time					2 ms
Switching frequency f					250 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–25...+55 °C	–25...+55 °C
Permissible ambient light				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams see page 133.





Through-beam sensor	**Through-beam sensor**			
0...15 m	**0...15 m**			
	BOS00CU			
	BLE 18KW-PA-1PP-C-02			
BOS00EU				
BLS 18KW-XX-1P-L-02				
10...30 V DC	10...30 V DC			
	100 mA			
≤ 35 mA	≤ 30 mA			
	Light and dark switching			
Yes/Yes	Yes/Yes			
	Potentiometer, 270°			
Test input				
LED, infrared				
880 Nm				
approx. 470 mm at 10 m				
Green LED	Green LED			
	Yellow LED			
	2 ms			
	250 Hz			
IP 67	IP 67			
–25...+55 °C	–25...+55 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
2 m PVC cable, 4×0.14 mm²	2 m PVC cable, 4×0.14 mm²			



M18 Plastic Laser with Angle Head

Global

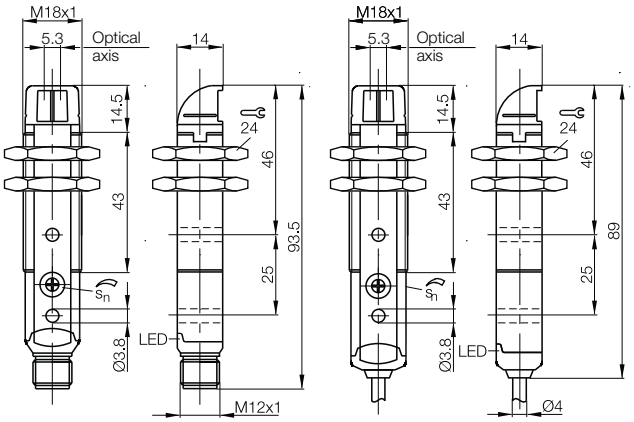




Type				**Diffuse sensor**	**Diffuse sensor**
Detection range				**0...250 mm**	**0...250 mm**
PNP	NC/NO		**Ordering code**	**BOS00LK**	**BOS00LJ**
			Part number	BOS 18KW-PA-1LOB-S4-C	BOS 18KW-PA-1LOB-C-02
PNP	NC/NO	Polarizing filter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 35 mA
Switching type				Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	Potentiometer, 270°
Emitter, light type				Laser, red light	Laser, red light
Wavelength				650 Nm	650 Nm
Laser class				1	1
Resolution				approx. 0.3 mm at 50 mm approx. 0.3 mm at 100 mm approx. 0.5 mm at 150 mm	approx. 0.3 mm at 50 mm approx. 0.3 mm at 100 mm approx. 0.5 mm at 150 mm
Power-on indicator				Green LED	Green LED
Output function indicator				Yellow LED	Yellow LED
Response time				333 µs	333 µs
Switching frequency f				1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–10...+50 °C	–10...+50 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

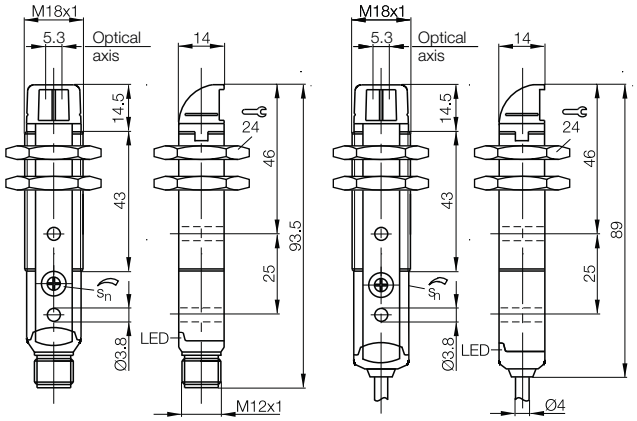
For wiring diagrams see page 133.







Retroreflective sensor 0.1...9 m	**Retroreflective sensor 0.1...9 m**			
BOS00LM	**BOS00LL**			
BOS 18KW-PA-1LQH-S4-C	BOS 18KW-PA-1LQH-C-02			
10...30 V DC	10...30 V DC			
100 mA	100 mA			
≤ 35 mA	≤ 35 mA			
Light and dark switching	Light and dark switching			
Yes/Yes	Yes/Yes			
Potentiometer, 270°	Potentiometer, 270°			
Laser, red light	Laser, red light			
650 Nm	650 Nm			
1	1			
approx. 0.9 mm at 1 m approx. 2 mm at 3 m	approx. 0.9 mm at 1 m approx. 2 mm at 3 m			
Green LED Yellow LED	Green LED Yellow LED			
333 µs	333 µs			
1.5 kHz	1.5 kHz			
IP 67	IP 67			
–10...+50 °C	–10...+50 °C			
EN 60947-5-2	EN 60947-5-2			
PBT	PBT			
PMMA	PMMA			
M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²			



M18 Plastic Laser with Angle Head

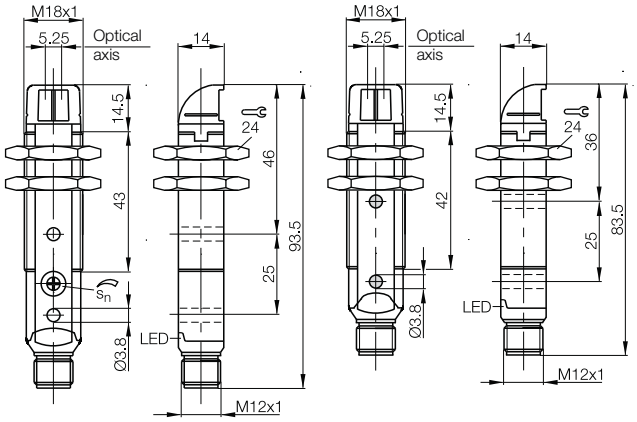
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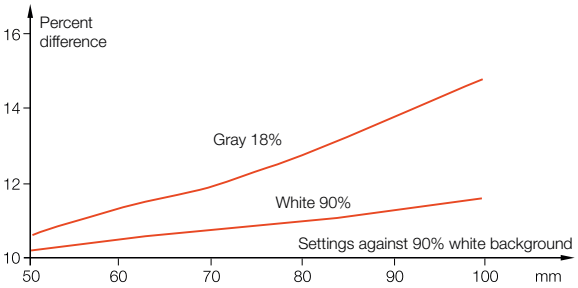


Type				**Through-beam sensor**	**Through-beam sensor**
Detection range				**0...50 m**	**0...50 m**
PNP	NC/NO	Emitter	**Ordering code**		**BOS00ET**
			Part number		BLS 18KW-XX-1LT-S4-L
PNP	NC/NO	Receiver	**Ordering code**	**BOS00CT**	
			Part number	BLE 18KW-PA-1LT-S4-C	
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	
No-load supply current I_0 max.				≤ 30 mA	≤ 35 mA
Switching type				Light and dark switching	
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	
Help function					Test input
Emitter, light type					Laser, red light
Wavelength					650 Nm
Laser class					1
Resolution					approx. 2.5 mm at 5 m approx. 5 mm at 10 mm approx. 10 mm at 20 mm
Power-on indicator				Green LED	Green LED
Output function indicator				Yellow LED	
Response time				333 µs	
Switching frequency f				1.5 kHz	
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–10...+50 °C	–10...+50 °C
Reference standard				EN 60947-5-2	EN 60947-5-2
Material			Housing	PBT	PBT
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

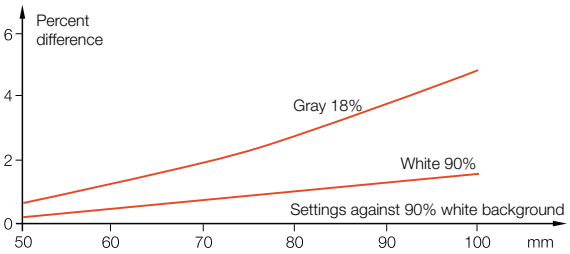
For wiring diagrams see page 133.



Diffuse sensor BOS 18KW-..-1HA-...

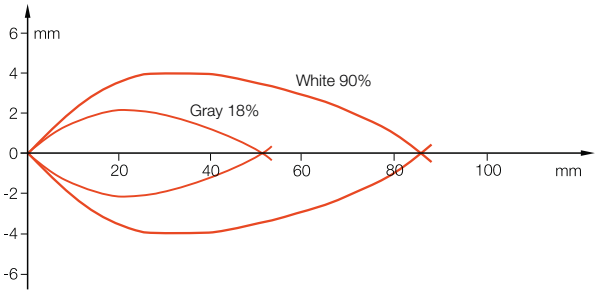


Tolerance with standard setting

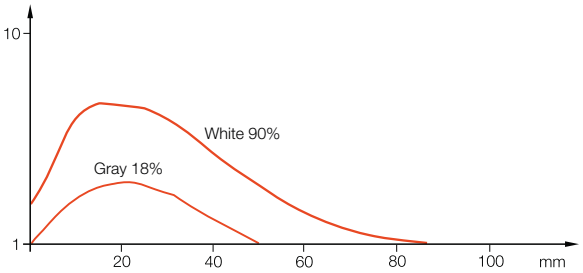


Tolerance with fine setting

Diffuse sensor BOS 18KW-..-1XA-...

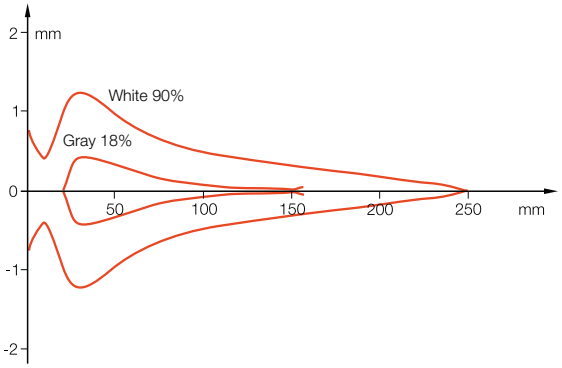


Detection range

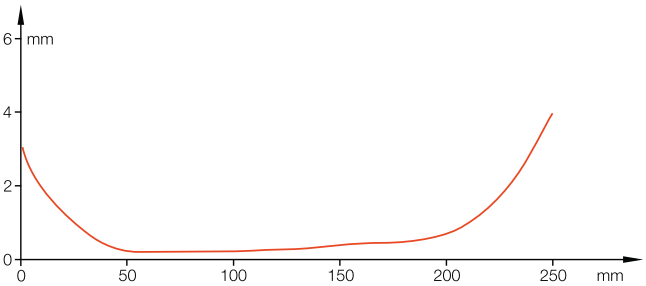


Function reserve

Diffuse sensor BOS 18KW-..-1LOB-...

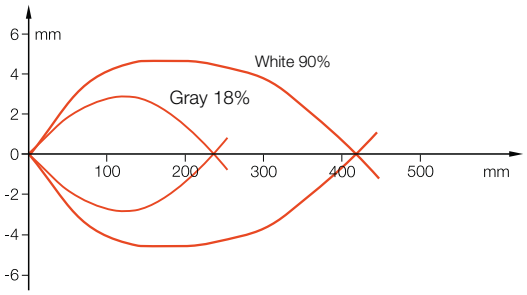


Detection range

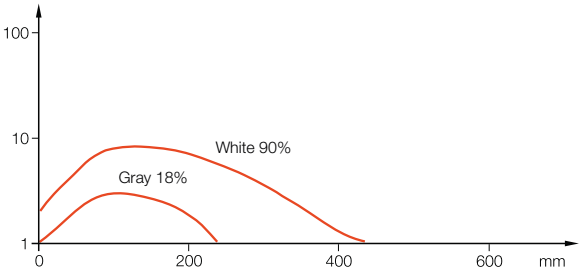


Resolution

Diffuse sensor BOS 18KW-..-1PD-...

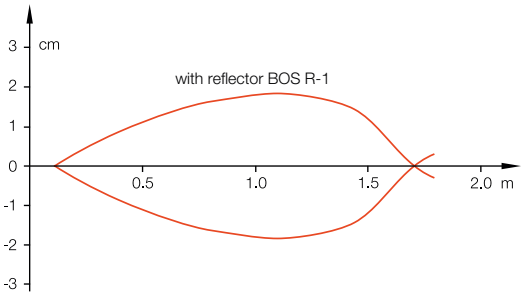


Detection range

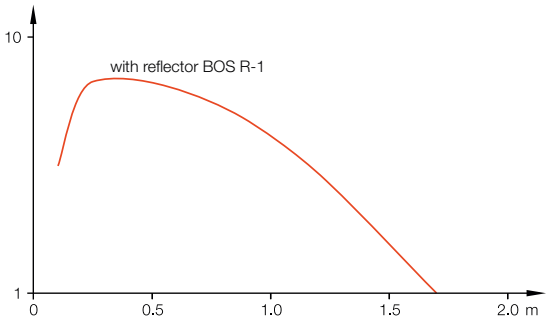


Function reserve

Retroreflective sensor BOS 18KW-..-1TB-...

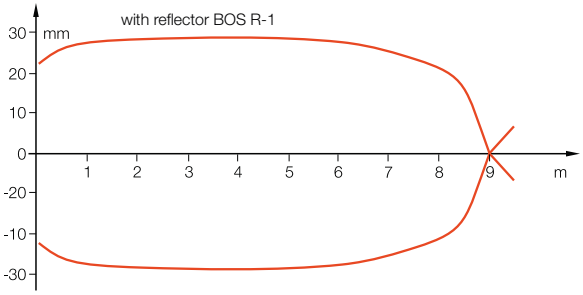


Detection range

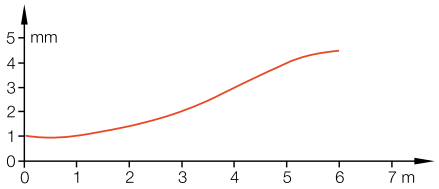


Function reserve

Retroreflective BOS 18KW-..-1LQH-...

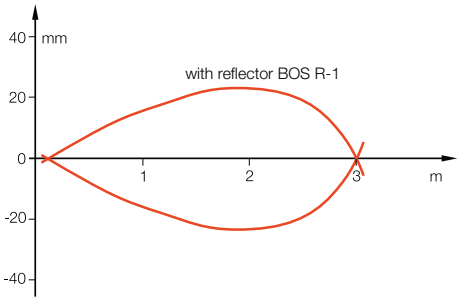


Detection range

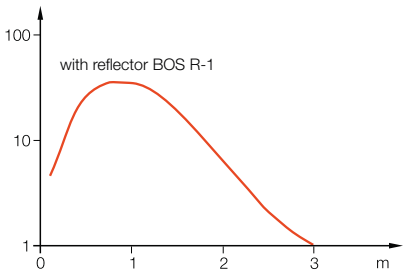


Resolution

Retroreflective sensor BOS 18KW-..-1QC-...

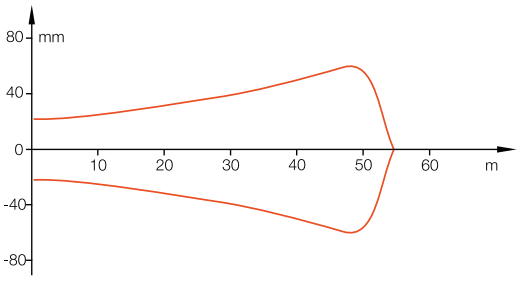


Detection range

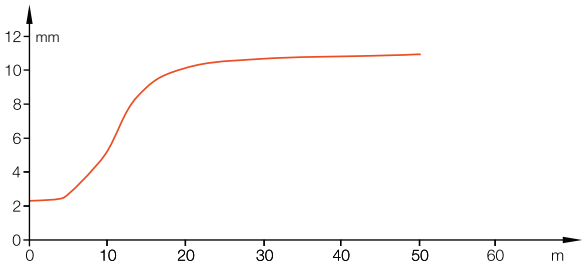


Function reserve

Through-beam sensor BLE/BLS 18KW-..-1LT-...

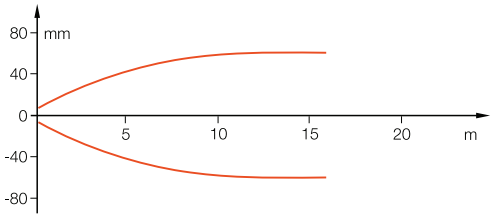


Detection range

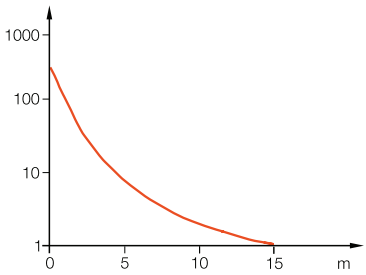


Resolution

Through-beam BLE/BLS 18KW-..-1PP/1P-...



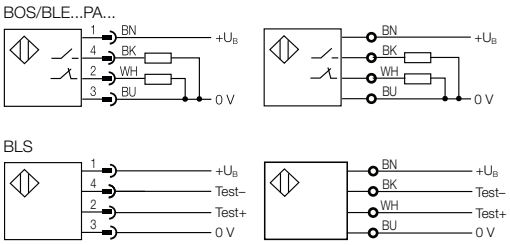
Detection range



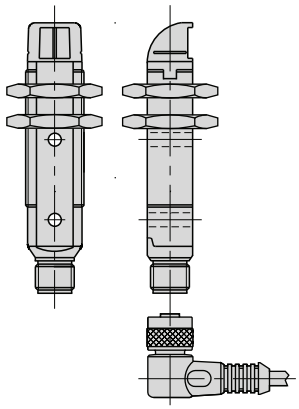
Function reserve

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Wiring diagrams



Connector orientation





Recommended accessories
(please order separately)

Description	Ordering code
① Mounting clamp	**BAM00T3**
② Mounting bracket	**BAM00RY**
③ Reflector	**BAM00UK**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

The **BOS 30M** series combines the high optical performance of large block-shaped sensors with the installation-friendly characteristics of cylindrical sensors.
The long 2 m sensing distance provides great function reserve under less than favorable operating conditions. A tough glass disk protects the optics from debris such as hot swarf, and the 18-turn- potentiometer enables precise sensitivity configuration. In addition, the integrated contamination indicator provides warning of contamination or external influences in order to avoid impairing the optics.
The BOS 30M series provides a very high performance and robust design together with special glass optical fiber BFO 18V-... A design that is particularly well-suited to the automotive industry.

Features
- Long sensing distance
- Tough design (metal housing and glass protective shield)
- 18-turn- potentiometer
- NO-/NC- toggle
- Compatible with special glass optical fiber
- Automotive industry approved
- Contamination indicator

Applications
- Automotive industry
- Conveying and warehouse equipment
- Construction machinery
- Woodworking industry
- In harsh environments

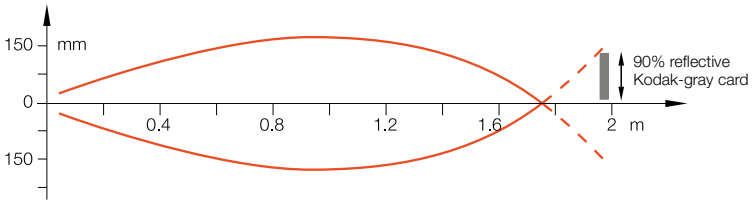


Type ■ **Ordering code** □ Part number	Sensing distance/ Range	Light type		Output		Switching type		Switching frequency	U_S	Connection		Page
		Infrared		PNP transistor	NPN transistor	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin		
Diffuse sensor												
BOS0134 BOS 30M-GA-1PH-S4-C	0...2 m	■		■		■	■	100 Hz	■	■		137
BOS008T BOS 30M-PU-1PH-SA3-C	0...2 m	■		■	■	■	■	100 Hz	■	■		137

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

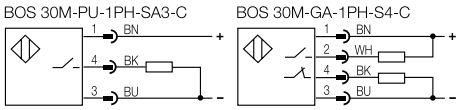
BOS 30M
Function diagram, connection, accessories

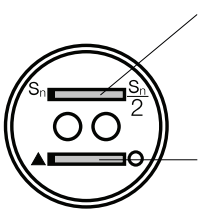
Diffuse sensor BOS 30M-..-1PH-...



Sensing distance with side approach of Kodak-gray card.

Wiring diagrams





Switch for halving the switching distance.
The switching distance can be set more precisely.
The resolution of the 18-turn spindle potentiometer is increased.

Inverting switch for toggling the final stage version, thereby converting normally closed to normally open.

Recommended accessories
(please order separately)

Description	Ordering code
Mounting clamp	**BAM00TN**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

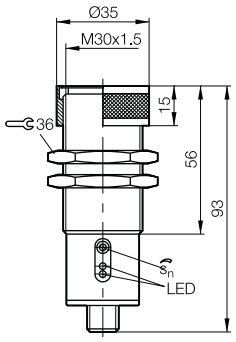
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

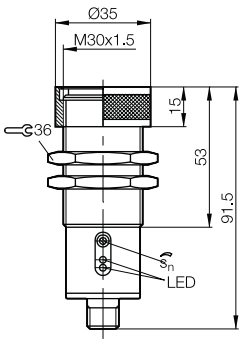


Approval for the automotive industry

Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**0...2 m**	**0...2 m**
PNP	Daylight filter	**Ordering code**		**BOS008T**
		Part number		BOS 30M-PU-1PH-SA3-C
PNP/NPN	Daylight filter	**Ordering code**	**BOS0134**	
		Part number	BOS 30M-GA-1PH-S4-C	
Supply voltage U_S			10…30 V DC	10…30 V DC
Output current			200 mA	200 mA
No-load supply current I_0 max.			≤ 40 mA	≤ 40 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 18-turn	Potentiometer, 18-turn
Emitter, light type			LED, infrared	LED, infrared
Wavelength			880 Nm	880 Nm
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Red LED	Red LED
Response time			5 ms	5 ms
Switching frequency f			100 Hz	100 Hz
Degree of protection as per IEC 60529			IP 65	IP 65
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Material		Housing	Nickel-plated CuZn	Nickel-plated CuZn
		Optical surface	Glass	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm





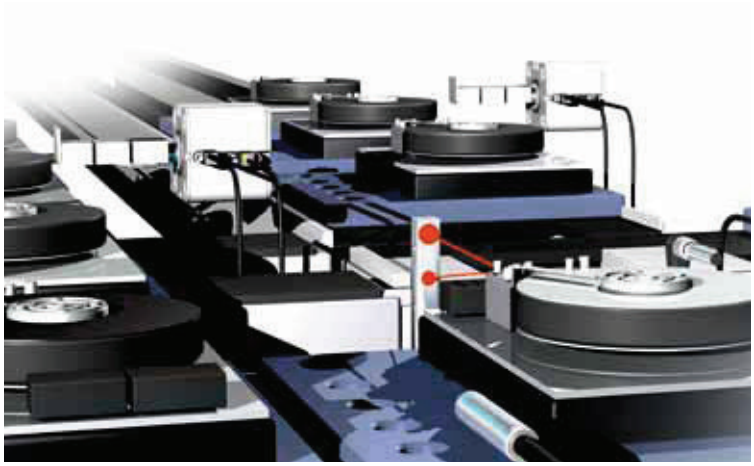


Diffuse sensor and reflection and through-beam sensor are now also available in the block-shaped housing with 8 mm edge length. These new Opto-mini.s **BOS Q08M** persuade with simple handling with fixed set detection and range. In this way, they provide the small diffuse sensors solutions in highly dynamic applications such as robot arms. This is precisely where components that have very low weight and small dimensions while retaining high switching precision are in demand.

Reliably detect the smallest parts

Balluff through-beam sensors BOS Q08M are innovative, compact products that reach a high performance level. Nothing else produces comparable results under similar conditions. These sensors are therefore particularly recommended if there is little space available. A focused light beam is able to detect even the smallest of parts, grooves or holes reliably. In this way, they check things like heights very reliably. And in cramped systems, the high-performance, compact units are also characterized by the fact that their fine laser beam (PinPoint laser/red light) can be aligned very precisely in the middle of closely set parts to ensure reliable detection.

- Small design for small spaces
- Rugged metal housing
- Reliable detection of small parts up to 0.4 mm (PinPoint red light) or 0.28 mm (laser)
- Uses a patented mounting concept for Bosch profiles that allows quick, precise positioning





Type		Sensing distance/ Range	Light type			Out-put	Switching type		Switch-ing fre-quency	U_S	Connection			Page
Ordering code / Part number			Red light	Red light pin point	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M8 connector, 3-pin	Pigtail M8 plug, 3-pin	Cable, 2 m	
Diffuse sensor with background suppression														
BOS0163	BOS Q08M-PS-KF20-00,2-S49	5...50 mm		■		■	■		400 Hz	■		■		140
BOS0168	BOS Q08M-PO-KF20-00,2-S49	5...50 mm		■		■		■	400 Hz	■		■		140
BOS0160	BOS Q08M-PS-KF20-S49	5...50 mm		■		■	■		400 Hz	■	■			140
BOS0164	BOS Q08M-PO-KF20-S49	5...50 mm		■		■		■	400 Hz	■	■			140
BOS0161	BOS Q08M-PS-KF20-02	5...50 mm		■		■	■		400 Hz	■			■	141
BOS0165	BOS Q08M-PO-KF20-02	5...50 mm		■		■		■	400 Hz	■			■	141
Diffuse sensor														
BOS0041	BOS Q08M-PS-RD11-S49	0...55 mm	■			■	■		500 Hz	■	■			141
BOS003Z	BOS Q08M-PO-RD11-S49	0...55 mm	■			■		■	500 Hz	■	■			141
BOS0040	BOS Q08M-PS-RD11-02	0...55 mm	■			■	■		500 Hz	■			■	141
BOS003Y	BOS Q08M-PO-RD11-02	0...55 mm	■			■		■	500 Hz	■			■	141
Retroreflective sensor with polarizing filter														
BOS00U6	BOS Q08M-PS-PR11-S49	25...550 mm	■			■		■	500 Hz	■	■			142
BOS00U4	BOS Q08M-PO-PR11-S49	25...550 mm	■			■	■		500 Hz	■	■			142
BOS00U5	BOS Q08M-PS-PR11-02	25...550 mm	■			■		■	500 Hz	■			■	142
BOS00U3	BOS Q08M-PO-PR11-02	25...550 mm	■			■	■		500 Hz	■			■	142
BOS01MU	BOS Q08M-PS-LR20-00-2-S49	0...100 mm	■		■			■	400 Hz	■		■		144
BOS01MW	BOS Q08M-PO-LR20-00-2-S49	0...100 mm	■		■		■		400 Hz	■		■		144
BOS01MP	BOS Q08M-PS-LR20-S49	0...100 mm	■		■			■	400 Hz	■	■			144
BOS01MR	BOS Q08M-PO-LR20-S49	0...100 mm	■		■		■		400 Hz	■	■			144
BOS01MZ	BOS Q08M-PS-LR20-02	0...100 mm	■		■			■	400 Hz	■			■	145
Through-beam sensor Receiver														
BOS00YC	BOS Q08M-PS-KE20-00,2-S49	0...2.2 m		■		■		■	400 Hz	■		■		143
BOS00Y8	BOS Q08M-PO-KE20-00,2-S49	0...2.2 m		■		■	■		400 Hz	■		■		143
BOS00YF	BOS Q08M-PS-KE20-S49	0...2.2 m		■		■		■	400 Hz	■	■			143
BOS00YA	BOS Q08M-PO-KE20-S49	0...2.2 m		■		■	■		400 Hz	■	■			143
BOS00YE	BOS Q08M-PS-KE20-02	0...2.2 m		■		■		■	400 Hz	■			■	143
BOS00Y9	BOS Q08M-PO-KE20-02	0...2.2 m		■		■	■		400 Hz	■			■	143
BOS0197	BOS Q08M-PS-LE20-00,2-S49	0...3 m			■	■		■	400 Hz	■		■		146
BOS0194	BOS Q08M-PO-LE20-00,2-S49	0...3 m			■	■	■		400 Hz	■		■		146
BOS0199	BOS Q08M-PS-LE20-S49	0...3 m			■	■		■	400 Hz	■	■			146
BOS0196	BOS Q08M-PO-LE20-S49	0...3 m			■	■	■		400 Hz	■	■			146
BOS0198	BOS Q08M-PS-LE20-02	0...3 m			■	■		■	400 Hz	■			■	147
BOS0195	BOS Q08M-PO-LE20-02	0...3 m			■	■	■		400 Hz	■			■	147
Through-beam sensor Emitter														
BOS00YH	BOS Q08M-X-KS20-00,2-S49	0...2.2 m		■						■		■		143
BOS00YK	BOS Q08M-X-KS20-S49	0...2.2 m		■						■	■			143
BOS00YJ	BOS Q08M-X-KS20-02	0...2.2 m		■						■			■	143
BOS019M	BOS Q08M-X-LS20-00,2-S49	0...3 m			■					■		■		146
BOS018K	BOS Q08M-X-LS20-S49	0...3 m			■					■	■			146
BOS018M	BOS Q08M-X-LS20-02	0...3 m			■					■			■	147

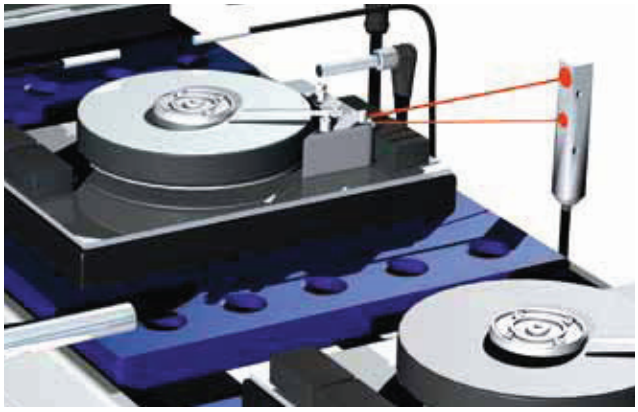
NPN on request

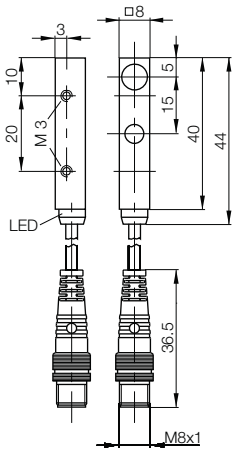


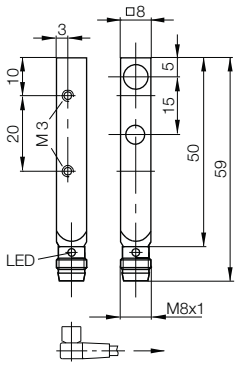
Type		Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range		**5...50 mm**	**5...50 mm**
PNP NO	**Ordering code**	**BOS0163**	**BOS0160**
	Part number	BOS Q08M-PS-KF20-00,2-S49	BOS Q08M-PS-KF20-S49
PNP NC	**Ordering code**	**BOS0168**	**BOS0164**
	Part number	BOS Q08M-PO-KF20-00,2-S49	BOS Q08M-PO-KF20-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
Output current		100 mA	100 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA
Switching type		Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Fixed	Fixed
Emitter, light type		Pin point-LED, red light	Pin point-LED, red light
Wavelength		655 Nm	655 Nm
Received light indicator		Yellow LED	Yellow LED
Response time		1.25 ms	1.25 ms
Switching frequency f		400 Hz	400 Hz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Permissible ambient light per		EN 60947-5-2	EN 60947-5-2
Material	Housing	Nickel-plated GD-Zn	Nickel-plated GD-Zn
	Optical surface	PMMA, PC	PMMA, PC
Connection		Pigtail 20 cm, M8 plug, 3-pin	M8 connector, 3-pin

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 146.





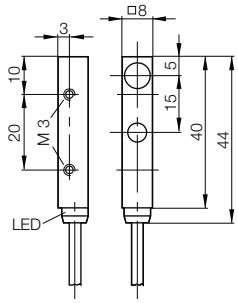


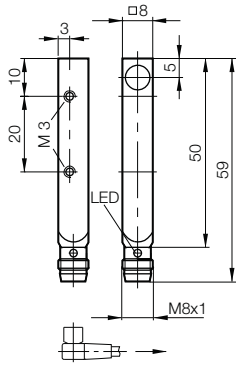


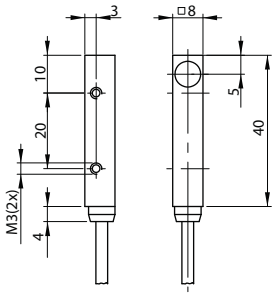


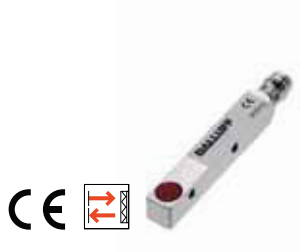


Diffuse sensor with background suppression	Diffuse sensor	Diffuse sensor
5...50 mm	**0...55 mm**	**0...55 mm**
BOS0161	**BOS0041**	**BOS0040**
BOS Q08M-PS-KF20-02	BOS Q08M-PS-RD11-S49	BOS Q08M-PS-RD11-02
BOS0165	**BOS003Z**	**BOS003Y**
BOS Q08M-PO-KF20-02	BOS Q08M-PO-RD11-S49	BOS Q08M-P0-RD11-02
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 15 mA	≤ 15 mA	≤ 15 mA
Light or dark switching	Light or dark switching	Light or dark switching
Yes/Yes	Yes/Yes	Yes/Yes
Fixed	Fixed	Fixed
Pin point-LED, red light	LED, red light	LED, red light
655 Nm	640 Nm	640 Nm
Yellow LED	Yellow LED	Yellow LED
1.25 ms	1.25 ms	1.25 ms
400 Hz	400 Hz	400 Hz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Nickel-plated GD-Zn	Nickel-plated GD-Zn	Nickel-plated GD-Zn
PMMA, PC	PMMA	PMMA
2 m PUR cable, 3×0.14 mm²	M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²







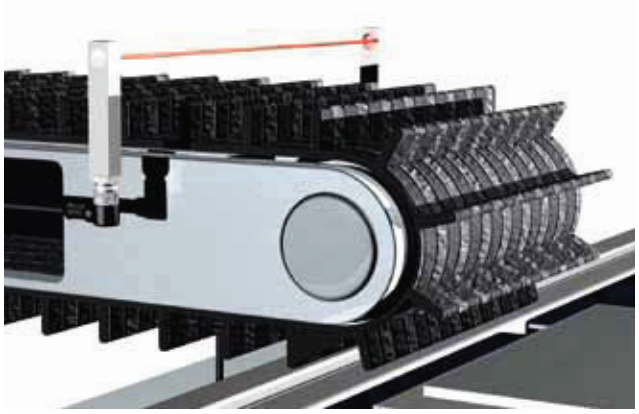


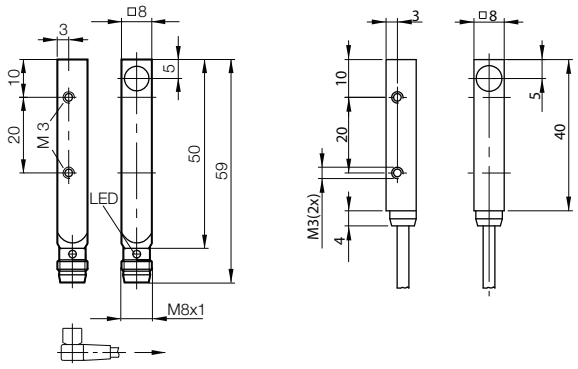


Type			**Retroreflective sensor**	**Retroreflective sensor**
Detection range			**25...550 mm**	**25...550 mm**
PNP NO	Polarizing filter	**Ordering code**	**BOS00U6**	**BOS00U5**
		Part number	BOS Q08M-PS-PR11-S49	BOS Q08M-PS-PR11-02
PNP NC	Polarizing filter	**Ordering code**	**BOS00U4**	**BOS00U3**
		Part number	BOS Q08M-PO-PR11-S49	BOS Q08M-PO-PR11-02
PNP NO	Receiver	**Ordering code**		
		Part number		
PNP NC	Receiver	**Ordering code**		
		Part number		
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Switching type			Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			LED, red light	LED, red light
Wavelength			640 Nm	640 Nm
Smallest detectable part				
Received light indicator			Yellow LED	Yellow LED
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+60 °C	–10...+60 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	Nickel-plated GD-Zn	Nickel-plated GD-Zn
		Optical surface	PMMA	PMMA
Connection			M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²

Reference reflector: BOS R-9

For wiring diagrams see page 146.



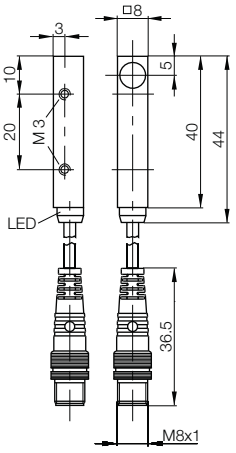


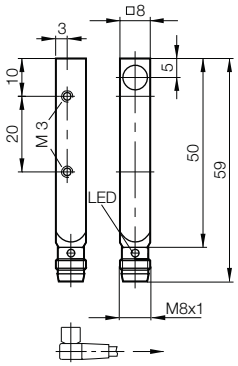


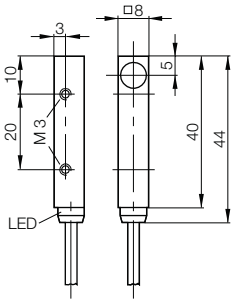




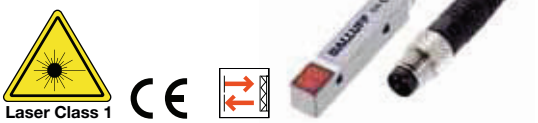
Through-beam sensor 0...2.2 m	Through-beam sensor 0...2.2 m	Through-beam sensor 0...2.2 m
BOS00YC	**BOS00YF**	**BOS00YE**
BOS Q08M-PS-KE20-00,2-S49	BOS Q08M-PS-KE20-S49	BOS Q08M-PS-KE20-02
BOS00Y8	**BOS00YA**	**BOS00Y9**
BOS Q08M-PO-KE20-00,2-S49	BOS Q08M-PO-KE20-S49	BOS Q08M-PO-KE20-02
BOS00YH	**BOS00YK**	**BOS00YJ**
BOS Q08M-X-KS20-00,2-S49	BOS Q08M-X-KS20-S49	BOS Q08M-X-KS20-02
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 15 mA	≤ 15 mA	≤ 15 mA
Light or dark switching	Light or dark switching	Light or dark switching
Yes/Yes	Yes/Yes	Yes/Yes
Fixed	Fixed	Fixed
Pin point-LED, red light	Pin point-LED, red light	Pin point-LED, red light
655 Nm	655 Nm	655 Nm
0.4 mm	0.4 mm	0.4 mm
Yellow LED	Yellow LED	Yellow LED
1.25 ms	1.25 ms	1.25 ms
400 Hz	400 Hz	400 Hz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Nickel-plated GD-Zn	Nickel-plated GD-Zn	Nickel-plated GD-Zn
PMMA	PMMA	PMMA
Pigtail 20 cm, M8 plug, 3-pin	M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²







mini.s
BOS Q08M
Laser

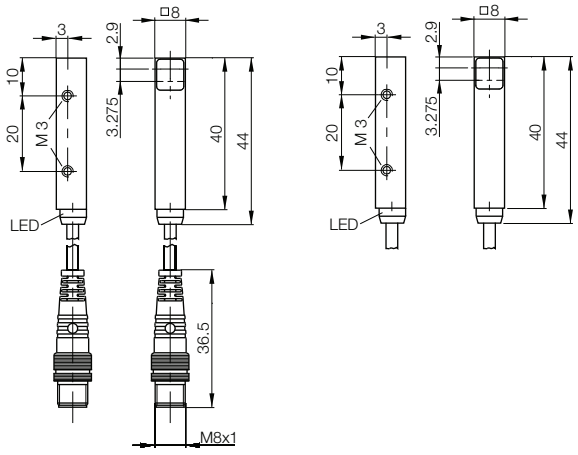




Type			**Retroreflective sensor**	**Retroreflective sensor**
Detection range			**0...1 m**	**0...1 m**
PNP NO	Polarizing filter	**Ordering code**	**BOS01MU**	**BOS01MP**
		Part number	BOS Q08M-PS-LR20-00-2-S49	BOS Q08M-PS-LR20-00-2-S49
PNP NC	Polarizing filter	**Ordering code**	**BOS01MW**	**BOS01MR**
		Part number	BOS Q08M-PO-LR20-00-2-S49	BOS Q08M-PO-LR20-00-2-S49
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA (receiver)	100 mA (receiver)
No-load supply current I_0 max.			≤ 10 mA	≤ 10 mA
Switching type			Light switching	Light switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			Laser, red light	Laser, red light
Wavelength			655 Nm	655 Nm
Laser class			1	1
Smallest detectable part			0.3 mm	0.3 mm
Received light indicator			Yellow LED	Yellow LED
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–5...+55 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	Nickel-plated GD-Zn	Nickel-plated GD-Zn
		Optical surface	PMMA	PMMA
Connection			Pigtail 20 cm, M8 connector, 3-pin	M8 connector, 3-pin

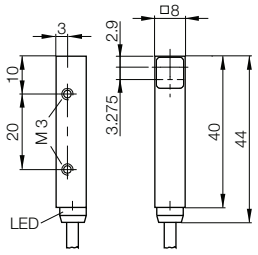
Reference reflector: BOS R-22

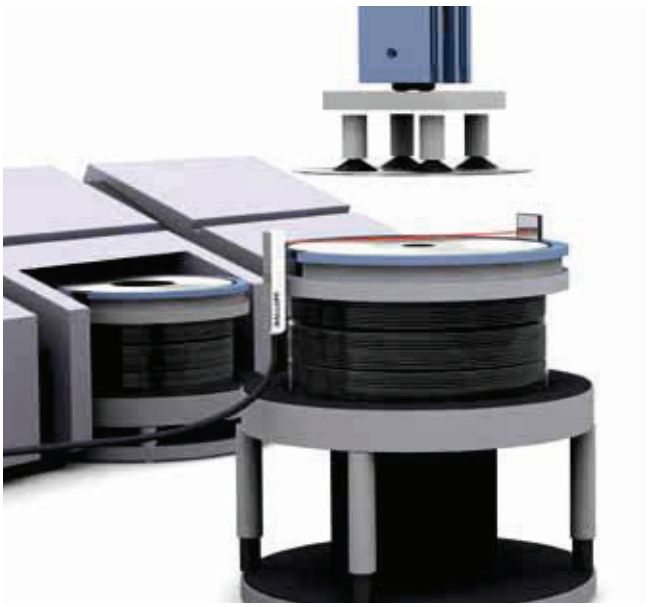
If the distance between the sensor and reflector is less than 70 mm, we recommend using the reflector BOS R-56 or the reflective tape BOS R-40.

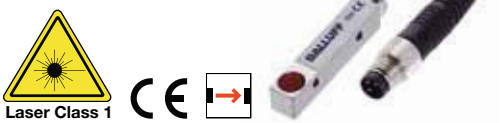




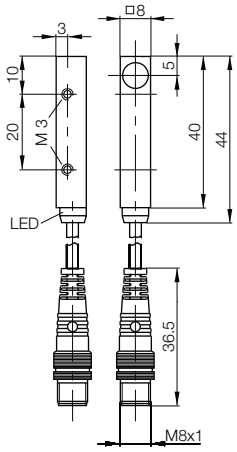
	Retroreflective sensor			
	0...1 m			
	BOS01MZ			
	BOS Q08M-PS-LR20-02			
	10...30 V DC			
	100 mA (receiver)			
	≤ 10 mA			
	Dark switching			
	Yes/Yes			
	Fixed			
	Laser, red light			
	655 Nm			
	1			
	0.3 mm			
	Yellow LED			
	1.25 ms			
	400 Hz			
	IP 67			
	–5...+55 °C			
	EN 60947-5-2			
	Nickel-plated GD-Zn			
	PMMA			
	2 m PUR cable,			
	3×0.14 mm²			

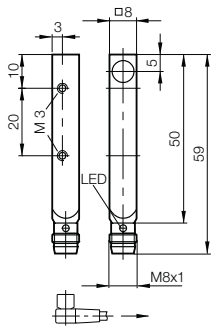






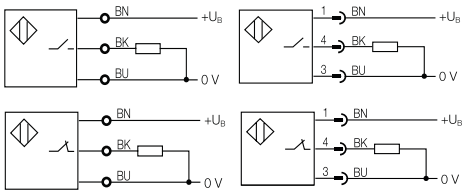
Type			**Through-beam sensor**	**Through-beam sensor**
Detection range			**0...3 m**	**0...3 m**
PNP NO	Receiver	**Ordering code**	**BOS0197**	**BOS0199**
		Part number	BOS Q08M-PS-LE20-00,2-S49	BOS Q08M-PS-LE20-S49
PNP NC	Receiver	**Ordering code**	**BOS0194**	**BOS0196**
		Part number	BOS Q08M-PO-LE20-00,2-S49	BOS Q08M-PO-LE20-S49
	Emitter	**Ordering code**	**BOS019M**	**BOS018K**
		Part number	BOS Q08M-X-LS20-00,2-S49	BOS Q08M-X-LS20-S49
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA (receiver)	100 mA (receiver)
No-load supply current I_0 max.			≤ 15 mA	≤ 15 mA
Switching type			Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			1	1
Smallest detectable part			0.28 mm	0.28 mm
Received light indicator			Yellow LED	Yellow LED
Response time			1.25 ms	1.25 ms
Switching frequency f			400 Hz	400 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			0...+50 °C	0...+50 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	Nickel-plated GD-Zn	Nickel-plated GD-Zn
		Optical surface	PMMA	PMMA
Connection			Pigtail 20 cm, M8 plug, 3-pin	M8 connector, 3-pin



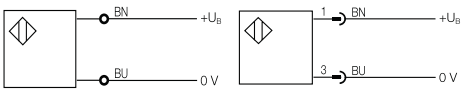


Wiring diagrams

Diffuse, retroreflective, through-beam sensor receivers

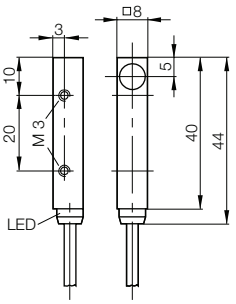


Through-beam sensor emitters





Through-beam sensor				
0...3 m				
BOS0198				
BOS Q08M-PS-LE20-02				
BOS0195				
BOS Q08M-PO-LE20-02				
BOS018M				
BOS Q08M-X-LS20-02				
10...30 V DC				
100 mA (receiver)				
≤ 15 mA				
Light or dark switching				
Yes/Yes				
Fixed				
Laser, red light				
650 Nm				
1				
0.28 mm				
Yellow LED				
1.25 ms				
400 Hz				
IP 67				
0...+50 °C				
EN 60947-5-2				
Nickel-plated GD-Zn				
PMMA				
2 m PUR cable, 3×0.14 mm²				





Clamping holders
For Bosch profile: **BES Q08-KH-3**

Recommended accessories
(please order separately)

Description	Ordering code
Reflector	**BAM00WL**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

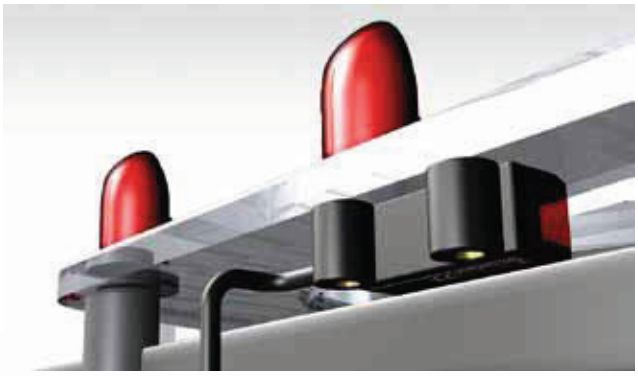
Connectors without LED are suitable for PNP and NPN sensors.

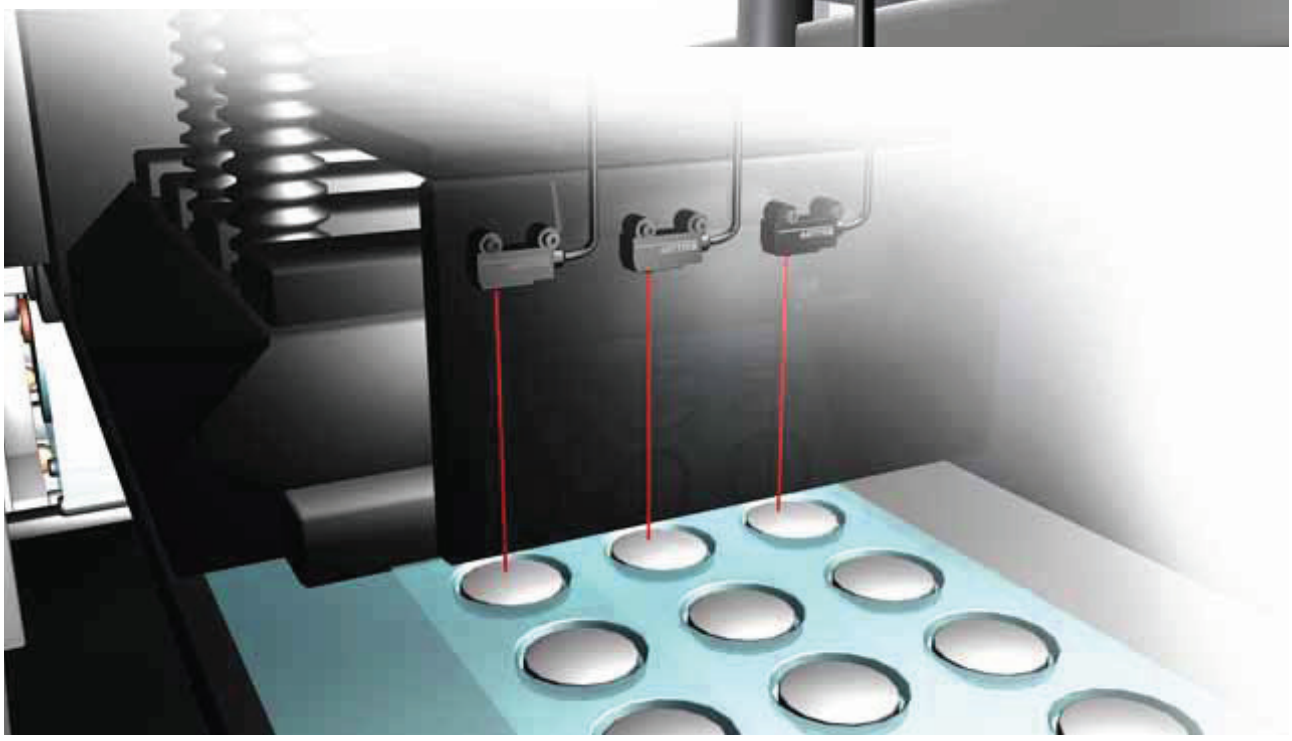
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Requirements such as extremely tight mounting spaces under the most difficult of conditions are easily handled by the sub-mini **BOS 2K series.**
The electronic circuitry is housed in a plastic enclosure just 20.6×12.5×7.6 mm. Metal sleeves in the housing ensure secure and simple mounting.
The laser-like, visible light spot makes precise small-parts detection possible. Unmatched ranges up to 1.2 m and fast response times ensure compatibility with dynamic applications.

The BOS 2K series is a complete series with diffuse sensors, retro-reflective light sensors and through-beam sensor as well as diffuse sensors with background suppression. That means this series offers the complete functionality demanded of a modern sensor series.







Type	Sensing distance/ Range	Light type		Output	Switching type		Switching frequency	U_S	Connection			Page
■ **Ordering code** □ Part number		Red light		PNP	Light switching	Dark switching		10...30 V DC	M8 connector, 3-pin	M8 connector, 4-pin	Cable	
Diffuse sensor with background suppression												
BOS0104 BOS 2K-PS-RH10-00,2-S75	1...15 mm	■		■	■		800 Hz	■		■		150
BOS0103 BOS 2K-PS-RH10-00,2-S49	1...15 mm	■		■	■		800 Hz	■	■			150
BOS00ZN BOS 2K-PO-RH10-00,2-S49	1...15 mm	■		■		■	800 Hz	■	■			150
BOS0105 BOS 2K-PS-RH10-02	1...15 mm	■		■	■		800 Hz	■			■	151
BOS0107 BOS 2K-PS-RH11-00,2-S75	1...30 mm	■		■	■		800 Hz	■		■		151
BOS0106 BOS 2K-PS-RH11-00,2-S49	1...30 mm	■		■	■		800 Hz	■	■			151
BOS0108 BOS 2K-PS-RH11-02	1...30 mm	■		■	■		800 Hz	■			■	151
BOS00ZP BOS 2K-PO-RH11-02	1...30 mm	■		■		■	800 Hz	■			■	151
Diffuse sensor												
BOS00ZY BOS 2K-PS-RD10-00,2-S75	1...55 mm	■		■	■		800 Hz	■		■		152
BOS00ZW BOS 2K-PS-RD10-00,2-S49	1...55 mm	■		■	■		800 Hz	■	■			152
BOS00ZZ BOS 2K-PS-RD10-02	1...55 mm	■		■	■		800 Hz	■			■	153
Retroreflective sensor with polarizing filter												
BOS00ZT BOS 2K-PS-PR10-00,2-S75	45...800 mm	■		■		■	800 Hz	■		■		153
BOS00ZR BOS 2K-PS-PR10-00,2-S49	45...800 mm	■		■		■	800 Hz	■	■			153
BOS00ZK BOS 2K-PO-PR10-00,2-S49	45...800 mm	■		■	■		800 Hz	■	■			153
BOS00ZU BOS 2K-PS-PR10-02	45...800 mm	■		■		■	800 Hz	■			■	153
BOS00ZL BOS 2K-PO-PR10-02	45...800 mm	■		■	■		800 Hz	■			■	153
Through-beam sensor Receiver												
BOS0101 BOS 2K-PS-RE10-00,2-S75	0...1.2 m	■		■		■	200 Hz	■		■		154
BOS0100 BOS 2K-PS-RE10-00,2-S49	0...1.2 m	■		■		■	200 Hz	■	■			155
BOS0102 BOS 2K-PS-RE10-02	0...1.2 m	■		■		■	200 Hz	■			■	155
BOS00ZM BOS 2K-PO-RE10-02	0...1.2 m	■		■	■		200 Hz	■			■	155
Through-beam sensor Emitter												
BOS010A BOS 2K-X-RS10-00,2-S75	0...1.2 m	■						■		■		154
BOS0109 BOS 2K-X-RS10-00,2-S49	0...1.2 m	■						■	■			155
BOS010C BOS 2K-X-RS10-02	0...1.2 m	■						■			■	155

NPN on request

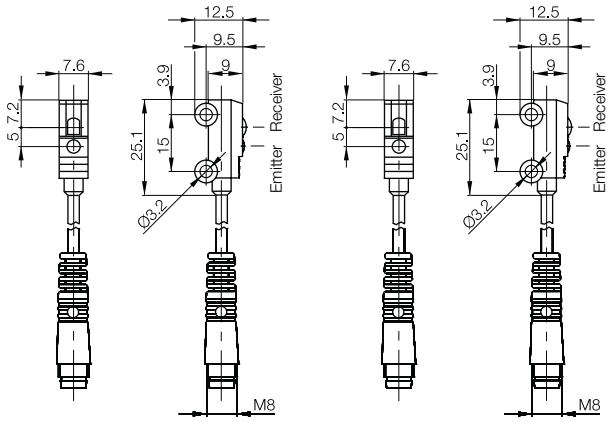
Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors



Type		Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range		**1...15 mm**	**1...15 mm**
PNP NO	**Ordering code**	**BOS0104**	**BOS0103**
	Part number	BOS 2K-PS-RH10-00,2-S75	BOS 2K-PS-RH10-00,2-S49
PNP NC	**Ordering code**		**BOS00ZN**
	Part number		BOS 2K-PO-RH10-00,2-S49
Supply voltage U_S		10...30 V DC	10…30 V DC
Output current		50 mA	50 mA
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA
Switching type		Light switching	Light or dark switching
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Fixed	Fixed
Emitter, light type		Pin point-LED, red light	Pin point-LED, red light
Wavelength		640 Nm	640 Nm
Light spot diameter		approx. 1.2 mm at 8 mm approx. 2.5 mm at 15 mm	approx. 1.2 mm at 8 mm approx. 2.5 mm at 15 mm
Output function indicator		Red LED	Red LED
Response time		0.6 ms	0.6 ms
Switching frequency f		800 Hz	800 Hz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–20...+50 °C	–20...+50 °C
Permissible ambient light per		EN 60947-5-2	EN 60947-5-2
Material	Housing	ABS	ABS
	Optical surface	PMMA	PMMA
Connection		Pigtail 20 cm, M8 plug, 4-pin	Pigtail 20 cm, M8 plug, 3-pin

Reference object: white, 90% reflection, 200×200 mm

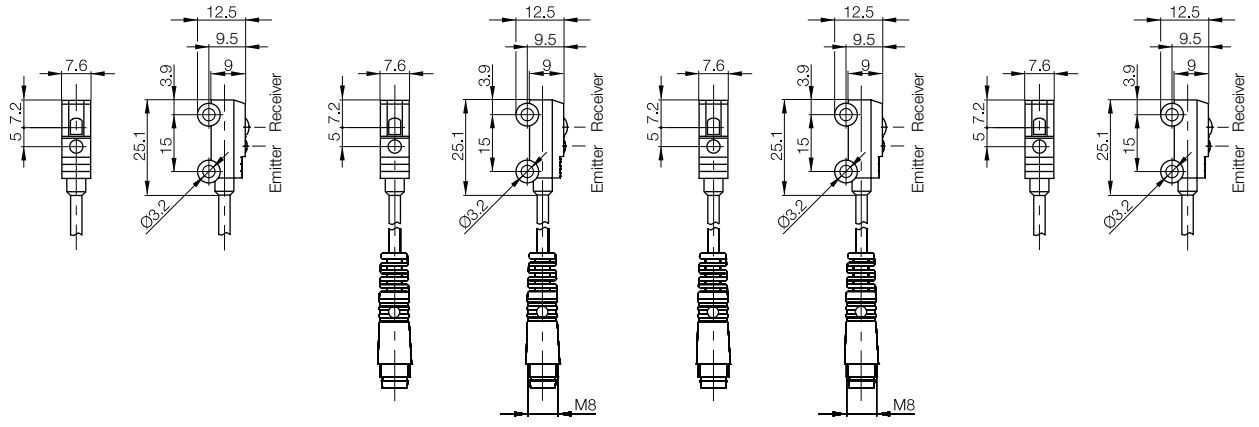
For wiring diagrams see page 157.








	Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor with background suppression
	1...15 mm	**1...30 mm**	**1...30 mm**	**1...30 mm**
	BOS0105	**BOS0107**	**BOS0106**	**BOS0108**
	BOS 2K-PS-RH10-02	BOS 2K-PS-RH11-00,2-S75	BOS 2K-PS-RH11-00,2-S49	BOS 2K-PS-RH11-02
				BOS00ZP
				BOS 2K-PO-RH11-02
	10…30 V DC	10…30 V DC	10…30 V DC	10…30 V DC
	50 mA	50 mA	50 mA	50 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light switching	Light switching	Light switching	Light or dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed
	Pin point-LED, red light	Pin point-LED, red light	Pin point-LED, red light	Pin point-LED, red light
	640 Nm	640 Nm	640 Nm	640 Nm
	approx. 1.2 mm at 8 mm	approx. 1.0 mm at 15 mm	approx. 1.0 mm at 15 mm	approx. 1.0 mm at 15 mm
	approx. 2.5 mm at 15 mm	approx. 4.5 mm at 30 mm	approx. 4.5 mm at 30 mm	approx. 4.5 mm at 30 mm
	Red LED	Red LED	Red LED	Red LED
	0.6 ms	0.6 ms	0.6 ms	0.6 ms
	800 Hz	800 Hz	800 Hz	800 Hz
	IP 67	IP 67	IP 67	IP 67
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	2 m PVC cable,	Pigtail 20 cm, M8 plug,	Pigtail 20 cm, M8 plug,	2 m PVC cable,
	3×0.09 mm²	4-pin	3-pin	3×0.09 mm²

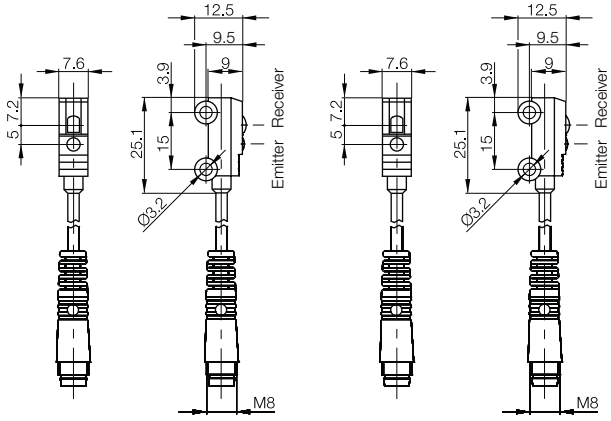




Type			**Diffuse sensor**	**Diffuse sensor**
Detection range			**1...55 mm**	**1...55 mm**
PNP NO		**Ordering code**	**BOS00ZY**	**BOS00ZW**
		Part number	BOS 2K-PS-RD10-00,2-S75	BOS 2K-PS-RD10-00,2-S49
PNP NO	Polarizing filter	**Ordering code**		
		Part number		
PNP NC	Polarizing filter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			50 mA	50 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Switching type			Light switching	Light switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Fixed	Fixed
Emitter, light type			Pin point-LED, red light	Pin point-LED, red light
Wavelength			640 Nm	640 Nm
Light spot diameter			approx. 3.5 mm at 50 mm	approx. 3.5 mm at 50 mm
Output function indicator			Red LED	Red LED
Response time			0.6 ms	0.6 ms
Switching frequency f			800 Hz	800 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–20...+50 °C	–20...+50 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	ABS	ABS
		Optical surface	PMMA	PMMA
Connection			Pigtail 20 cm, M8 plug, 4-pin	Pigtail 20 cm, M8 plug, 3-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-9

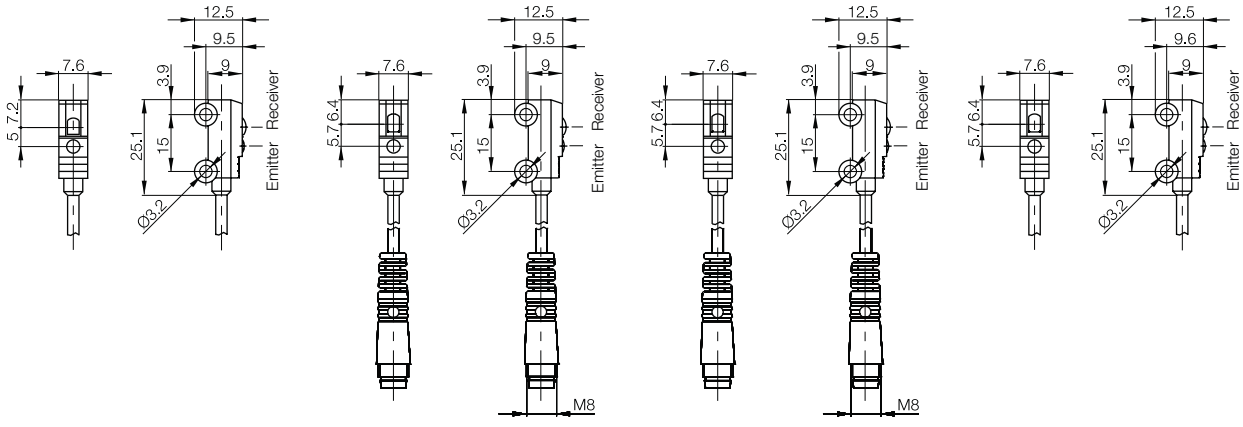
For wiring diagrams see page 157.








	Diffuse sensor	Retroreflective sensor	Retroreflective sensor	Retroreflective sensor
	1...55 mm	**45...800 mm**	**45...800 mm**	**45...800 mm**
	BOS00ZZ			
	BOS 2K-PS-RD10-02			
		BOS00ZT	**BOS00ZR**	**BOS00ZU**
		BOS 2K-PS-PR10-00,2-S75	BOS 2K-PS-PR10-00,2-S49	BOS 2K-PS-PR10-02
			BOS00ZK	**BOS00ZL**
			BOS 2K-PO-PR10-00,2-S49	BOS 2K-PO-PR10-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	50 mA	50 mA	50 mA	50 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light switching	Dark switching	Light or dark switching	Light or dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed
	Pin point-LED, red light	Pin point-LED, red light	Pin point-LED, red light	Pin point-LED, red light
	640 Nm	640 Nm	640 Nm	640 Nm
	approx. 3.5 mm at 50 mm	approx. 10 mm at 100 mm	approx. 10 mm at 100 mm	approx. 10 mm at 100 mm
	Red LED	Red LED	Red LED	Red LED
	0.6 ms	0.6 ms	0.6 ms	0.6 ms
	800 Hz	800 Hz	800 Hz	800 Hz
	IP 67	IP 67	IP 67	IP 67
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	2 m PVC cable, 3×0.09 mm²	Pigtail 20 cm, M8 plug, 4-pin	Pigtail 20 cm, M8 plug, 3-pin	2 m PVC cable, 3×0.09 mm²

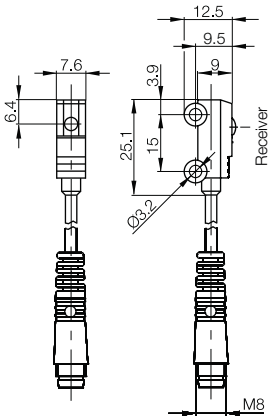


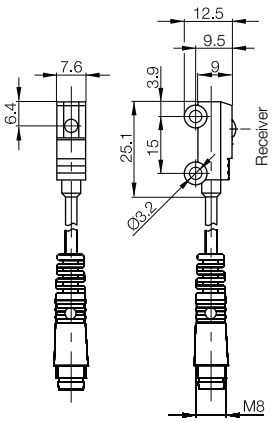

Receiver

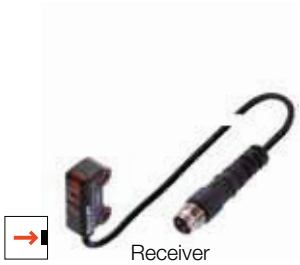

Emitter

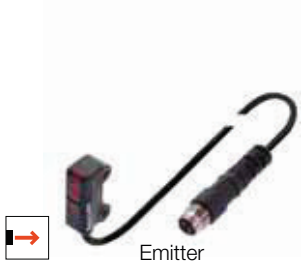
Type			**Through-beam sensor**	**Through-beam sensor**	
Detection range			**0...1.2 m**	**0...1.2 m**	
PNP NO	Receiver	**Ordering code**	**BOS0101**		
		Part number	BOS 2K-PS-RE10-00,2-S75		
PNP NC	Receiver	**Ordering code**			
		Part number			
	Emitter	**Ordering code**		**BOS010A**	
		Part number		BOS 2K-X-RS10-00,2-S75	
Supply voltage U_S			10...30 V DC	10...30 V DC	
Output current			50 mA		
No-load supply current I_0 max.			≤ 10 mA	≤ 20 mA	
Switching type			Dark switching		
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes	
Settings			Fixed		
Emitter, light type				Pin point-LED, red light	
Wavelength				640 Nm	
Output function indicator			Red LED		
Response time			2.5 ms		
Switching frequency f			200 Hz		
Degree of protection as per IEC 60529			IP 67	IP 67	
Ambient temperature T_a			–20...+50 °C	–20...+50 °C	
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2	
Material		Housing	ABS	ABS	
		Optical surface	PMMA	PMMA	
Connection			Pigtail 20 cm, M8 plug, 4-pin	Pigtail 20 cm, M8 plug, 4-pin	

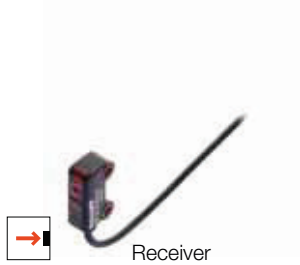
For wiring diagrams see page 157.

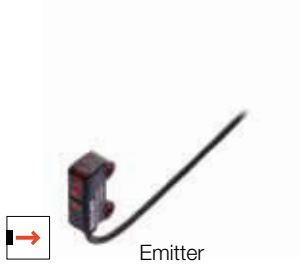




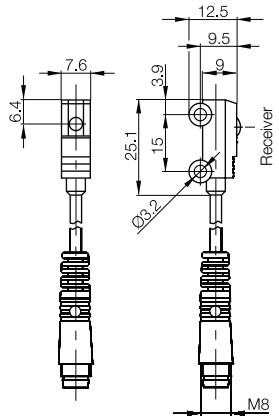


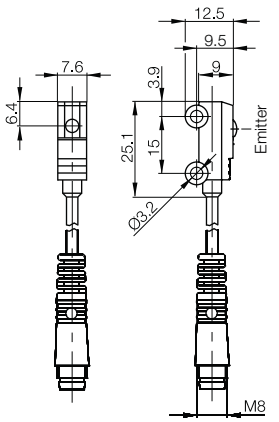


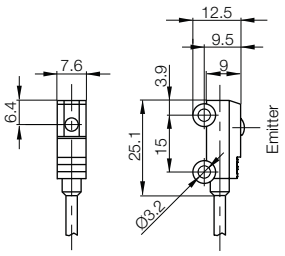


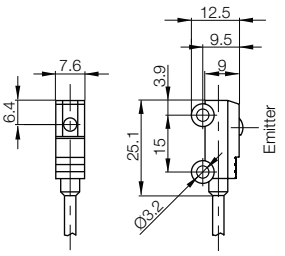


	Through-beam sensor	**Through-beam sensor**	**Through-beam sensor**	**Through-beam sensor**
	0...1.2 m	**0...1.2 m**	**0...1.2 m**	**0...1.2 m**
	BOS0100		**BOS0102**	
	BOS 2K-PS-RE10-00,2-S49		BOS 2K-PS-RE10-02	
			BOS00ZM	
			BOS 2K-PO-RE10-02	
		BOS0109		**BOS010C**
		BOS 2K-X-RS10-00,2-S49		BOS 2K-X-RS10-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	50 mA		50 mA	
	≤ 10 mA	≤ 20 mA	≤ 10 mA	≤ 20 mA
	Dark switching		Light or dark switching	
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed		Fixed	
		Pin point-LED, red light		Pin point-LED, red light
		640 Nm		640 Nm
	Red LED		Red LED	
	2.5 ms		2.5 ms	
	200 Hz		200 Hz	
	IP 67	IP 67	IP 67	IP 67
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	Pigtail 20 cm, M8 plug,	Pigtail 20 cm, M8 plug,	2 m PVC cable,	2 m PVC cable,
	3-pin	3-pin	3×0.09 mm²	3×0.09 mm²

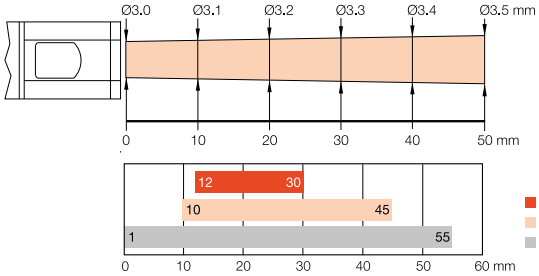








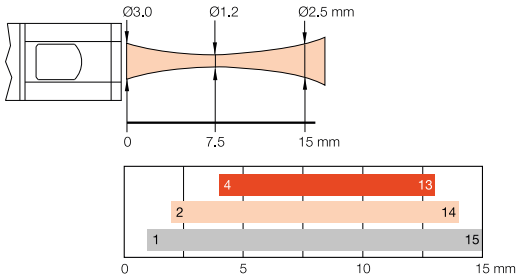
Light spot diameter
Diffuse, 50 mm



Diffuse sensor

Sensing range on black, 6% remission
Sensing range on gray, 18% remission
Sensing range on white, 90% remission

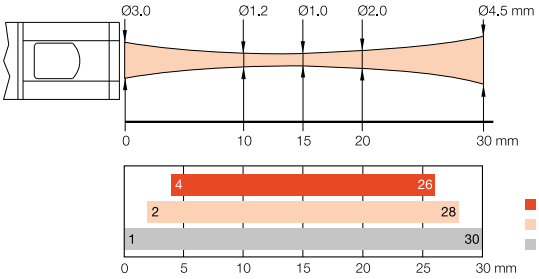
Light spot diameter
Diffuse sensor with background suppression, 15 mm



Diffuse sensor
with background suppression
15 mm

Sensing range on black, 6% remission
Sensing range on gray, 18% remission
Sensing range on white, 90% remission

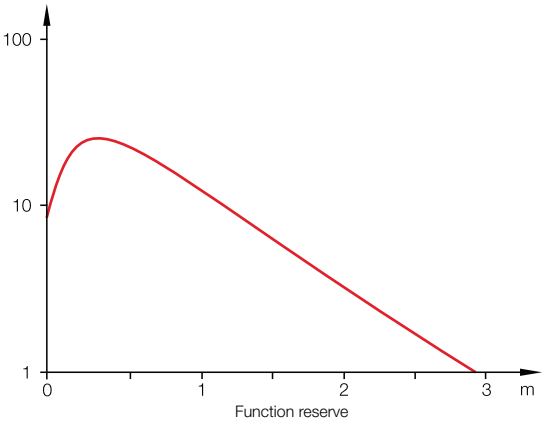
Light spot diameter
Diffuse sensor with background suppression, 30 mm



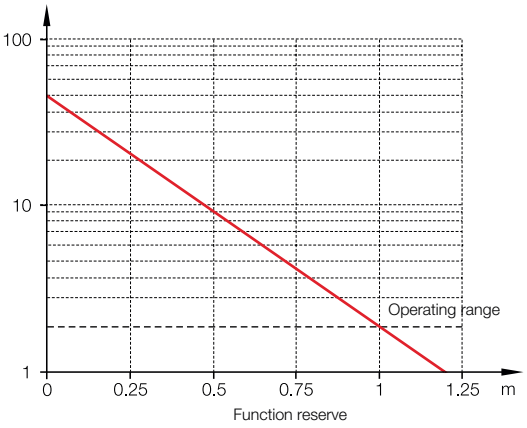
Diffuse sensor
with background suppression
30 mm

Sensing range on black, 6% remission
Sensing range on gray, 18% remission
Sensing range on white, 90% remission

Retroreflective sensor



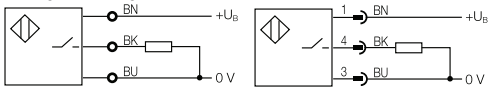
Through-beam sensor



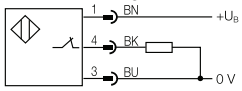
Wiring diagrams

Diffuse sensor

PNP light switching

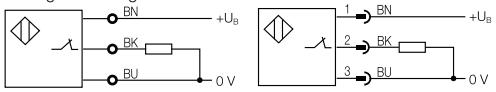


PNP dark switching

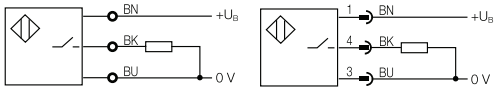


Retroreflective, through-beam receiver

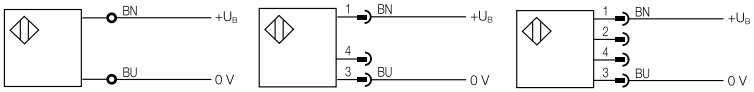
PNP light switching



PNP dark switching



Through-beam sensor emitters

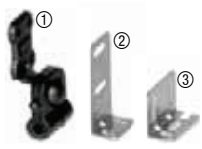


Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

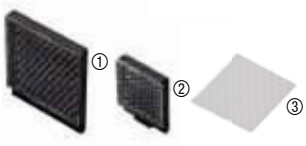
Recommended accessories

(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00T4**
② Mounting bracket	**BAM00T6**
③ Mounting bracket	**BAM00T5**



Description	Ordering code
① Reflector	**BAM00WL**
② Reflector	**BAM00W0**
③ Reflective tape	**BAM00W5**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors

(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

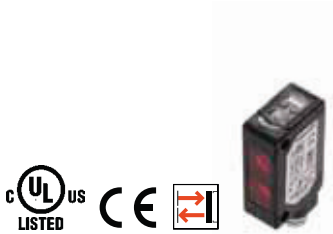
The advantage of miniature sensors is easy to see:
Small size with big performance makes for flexibility and design freedom. Not only are they easier to install, above all, many applications can be solved easily with a mini-sensor. Even the photoelectric BOS 5K series stands out due to its optical power and its compact design. This series includes various diffuse sensors with background suppression, diffuse sensors with narrow spot geometry, energetic diffuse sensors, retroreflective models with polarizing filter and through-beam sensors. For electrical connection of the sensors, plugs with a cable or M8-plugs are available.

The new **BOS 5K** series features:
- Small, compact design
- Concentration on the most important basic functions
- Attractive price in the lower segment
- Wide-ranging accessories for increased functionality



Type		Sensing distance/ Range	Light type		Output		Switching type		Switching frequency	U_S	Connection			Page
■ **Ordering code** □ Part number			Red light	Infrared	PNP		Light switching	Dark switching		10...30 V DC	M8 connector, 3-pin	M8 connector, 4-pin	Cable	
Diffuse sensor with background suppression														
BOS012A	BOS 5K-PS-RH12-S75	40...200 mm	■		■		■		500 Hz	■		■		160
BOS011Z	BOS 5K-PO-RH12-S75	40...200 mm	■		■			■	500 Hz	■		■		160
BOS015U	BOS 5K-PS-RH12-S49	40...200 mm	■		■		■		500 Hz	■	■			160
BOS015W	BOS 5K-PO-RH12-S49	40...200 mm	■		■			■	500 Hz	■	■			160
BOS0129	BOS 5K-PS-RH12-02	40...200 mm	■		■		■		500 Hz	■			■	161
BOS011Y	BOS 5K-PO-RH12-02	40...200 mm	■		■			■	500 Hz	■			■	161
Diffuse sensor														
BOS0124	BOS 5K-PS-ID10-S75	0...900 mm		■	■		■		500 Hz	■		■		161
BOS011L	BOS 5K-PO-ID10-S75	0...900 mm		■	■			■	500 Hz	■		■		161
BOS015J	BOS 5K-PS-ID10-S49	0...900 mm		■	■		■		500 Hz	■	■			161
BOS015K	BOS 5K-PO-ID10-S49	0...900 mm		■	■			■	500 Hz	■	■			161
BOS0123	BOS 5K-PS-ID10-02	0...900 mm		■	■		■		500 Hz	■			■	161
BOS011K	BOS 5K-PO-ID10-02	0...900 mm		■	■			■	500 Hz	■			■	161
Diffuse small beam														
BOS0128	BOS 5K-PS-RD11-S75	50...200 mm	■		■		■		500 Hz	■		■		162
BOS011W	BOS 5K-PO-RD11-S75	50...200 mm	■		■			■	500 Hz	■		■		162
BOS015N	BOS 5K-PS-RD11-S49	50...200 mm	■		■		■		500 Hz	■	■			162
BOS015P	BOS 5K-PO-RD11-S49	50...200 mm	■		■			■	500 Hz	■	■			162
BOS0127	BOS 5K-PS-RD11-02	50...200 mm	■		■		■		500 Hz	■			■	163
BOS011U	BOS 5K-PO-RD11-02	50...200 mm	■		■			■	500 Hz	■			■	163
Retroreflective sensor with polarizing filter														
BOS012E	BOS 5K-PS-RR10-S75	0.1...4 m	■		■			■	500 Hz	■		■		163
BOS0121	BOS 5K-PO-RR10-S75	0.1...4 m	■		■		■		500 Hz	■		■		163
BOS0122	BOS 5K-PO-RR10-S75-S	0.1...4 m	■		■		■		500 Hz	■		■		163
BOS015E	BOS 5K-PS-RR10-S49	0.1...4 m	■		■			■	500 Hz	■	■			163
BOS015C	BOS 5K-PO-RR10-S49	0.1...4 m	■		■		■		500 Hz	■	■			163
BOS012C	BOS 5K-PS-RR10-02	0.1...4 m	■		■			■	500 Hz	■			■	163
BOS0120	BOS 5K-PO-RR10-02	0.1...4 m	■		■		■		500 Hz	■			■	163
Through-beam sensor														
BOS0126	BOS 5K-PS-IX10-S75	0...10 m		■	■			■	500 Hz	■		■		164
BOS011R	BOS 5K-PO-IX10-S75	0...10 m		■	■		■		500 Hz	■		■		164
BOS011T	BOS 5K-PO-IX10-S75-S	0...10 m		■	■		■		500 Hz	■		■		164
BOS0158	BOS 5K-PS-IX10-S49	0...10 m		■	■			■	500 Hz	■	■			165
BOS0157	BOS 5K-PO-IX10-S49	0...10 m		■	■		■		500 Hz	■	■			165
BOS0125	BOS 5K-PS-IX10-02	0...10 m		■	■			■	500 Hz	■			■	165
BOS011N	BOS 5K-PO-IX10-02	0...10 m		■	■		■		500 Hz	■			■	165

NPN on request

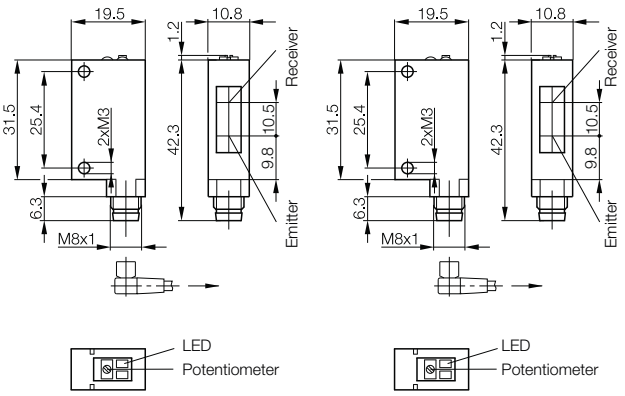




Type			Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range			**40...200 mm**	**40...200 mm**
PNP NO		**Ordering code**	**BOS012A**	**BOS015U**
		Part number	BOS 5K-PS-RH12-S75	BOS 5K-PS-RH12-S49
PNP NC		**Ordering code**	**BOS011Z**	**BOS015W**
		Part number	BOS 5K-PO-RH12-S75	BOS 5K-PO-RH12-S49
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 30 mA
Switching type			Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 6-turn	Potentiometer, 6-turn
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Output function indicator			Yellow LED	Yellow LED
Stability indicator				
Response time			1 ms	1 ms
Switching frequency f			500 Hz	500 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–25...+55 °C	–25...+55 °C
Permissible ambient light per			5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)
Material		Housing	PC/PBT	PC/PBT
		Optical surface	PC	PC
Connection			M8 connector, 4-pin	M8 connector, 3-pin

Reference object: white, 90% reflection, 200×200 mm

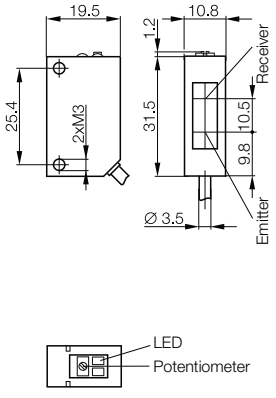
For wiring diagrams see page 167.

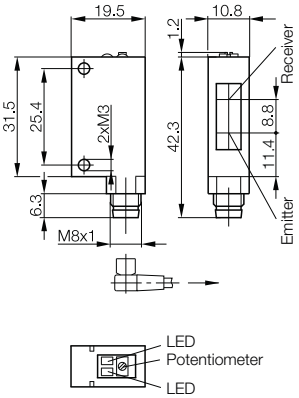


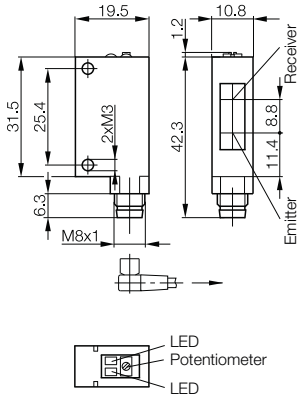


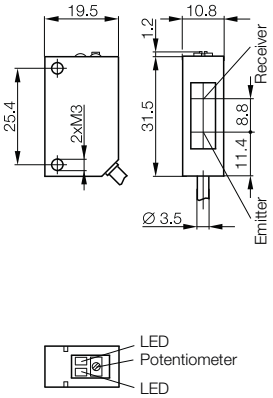



Diffuse sensor with background suppression	Diffuse sensor	Diffuse sensor	Diffuse sensor
40...200 mm	**0...900 mm**	**0...900 mm**	**0...900 mm**
BOS0129	**BOS0124**	**BOS015J**	**BOS0123**
BOS 5K-PS-RH12-02	BOS 5K-PS-ID10-S75	BOS 5K-PS-ID10-S49	BOS 5K-PS-ID10-02
BOS011Y	**BOS011L**	**BOS015K**	**BOS011K**
BOS 5K-PO-RH12-02	BOS 5K-PO-ID10-S75	BOS 5K-PO-ID10-S49	BOS 5K-PO-ID10-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
Light or dark switching	Light or dark switching	Light or dark switching	Light or dark switching
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 6-turn	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, red light	LED, infrared	LED, infrared	LED, infrared
660 Nm	880 Nm	880 Nm	880 Nm
Yellow LED	Yellow LED	Yellow LED	Yellow LED
	Green LED	Green LED	Green LED
1 ms	1 ms	1 ms	1 ms
500 Hz	500 Hz	500 Hz	500 Hz
IP 67	IP 67	IP 67	IP 67
–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)
PC/PBT	PC/PBT	PC/PBT	PC/PBT
PC	PC	PC	PC
2 m PVC cable, 3×0.2 mm²	M8 connector, 4-pin	M8 connector, 3-pin	2 m PVC cable, 3×0.2 mm²







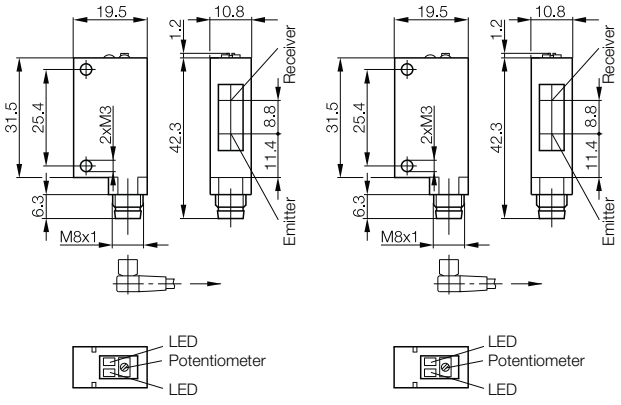




Type				**Small beam diffuse sensor**	**Small beam diffuse sensor**
Detection range				**50...200 mm**	**50...200 mm**
PNP	NO		**Ordering code**	**BOS0128**	**BOS015N**
			Part number	BOS 5K-PS-RD11-S75	BOS 5K-PS-RD11-S49
PNP	NC		**Ordering code**	**BOS011W**	**BOS015P**
			Part number	BOS 5K-PO-RD11-S75	BOS 5K-PO-RD11-S49
PNP	NC	Special assignment	**Ordering code**		
		Output	Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 30 mA	≤ 30 mA
Switching type				Light or dark switching	Light or dark switching
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Potentiometer, 270°	Potentiometer, 270°
Emitter, light type				LED, red light	LED, red light
Wavelength				660 Nm	660 Nm
Output function indicator				Yellow LED	Yellow LED
Stability indicator				Green LED	Green LED
Response time				1 ms	1 ms
Switching frequency f				500 Hz	500 Hz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–25...+55 °C	–25...+55 °C
Permissible ambient light				5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)
Material			Housing	PC/PBT	PC/PBT
			Optical surface	PC	PC
Connection				M8 connector, 4-pin	M8 connector, 3-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

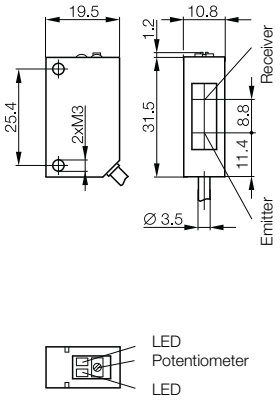
For wiring diagrams see page 167.

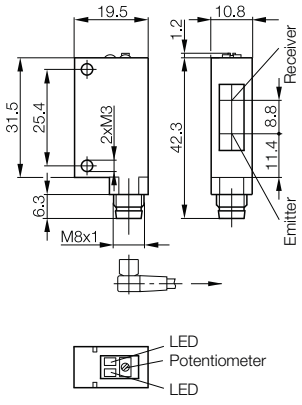


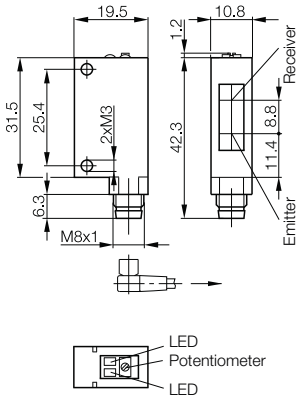


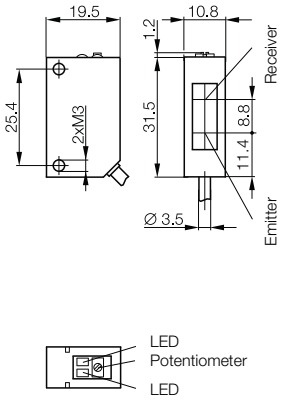



	Small beam diffuse sensor	**Retroreflective sensor**	**Retroreflective sensor**	**Retroreflective sensor**
	50...200 mm	**0.1...4 m**	**0.1...4 m**	**0.1...4 m**
	BOS0127	**BOS012E**	**BOS015E**	**BOS012C**
	BOS 5K-PS-RD11-02	BOS 5K-PS-RR10-S75	BOS 5K-PS-RR10-S49	BOS 5K-PS-RR10-02
	BOS011U	**BOS0121**	**BOS015C**	**BOS0120**
	BOS 5K-PO-RD11-02	BOS 5K-PO-RR10-S75	BOS 5K-PO-RR10-S49	BOS 5K-PO-RR10-02
		BOS0122		
		BOS 5K-PO-RR10-S75-S		
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	100 mA
	≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
	Light or dark switching	Light or dark switching	Light or dark switching	Light or dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm	660 Nm
	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	Green LED	Green LED	Green LED	Green LED
	1 ms	1 ms	1 ms	1 ms
	500 Hz	500 Hz	500 Hz	500 Hz
	IP 67	IP 67	IP 67	IP 67
	–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)
	PC/PBT	PC/PBT	PC/PBT	PC/PBT
	PC	PC	PC	PC
	2 m PVC cable, 3×0.2 mm²	M8 connector, 4-pin	M8 connector, 3-pin	2 m PVC cable, 3×0.2 mm²







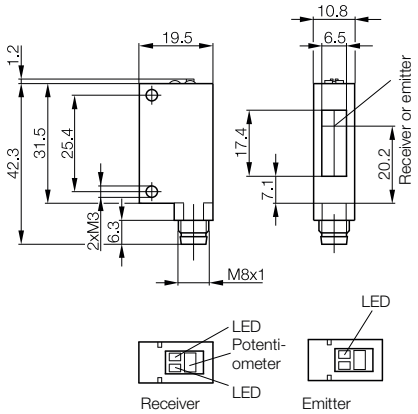




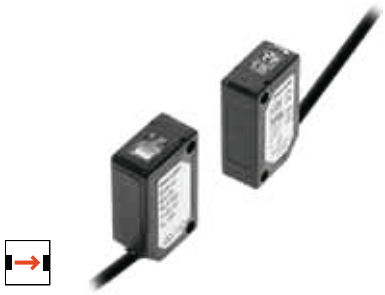
Type				**Through-beam sensor**
Detection range				**0...10 m**
PNP	NO		**Ordering code**	**BOS0126**
			Part number	BOS 5K-PS-IX10-S75
PNP	NC		**Ordering code**	**BOS011R**
			Part number	BOS 5K-PO-IX10-S75
PNP	NC	Special assignment	**Ordering code**	**BOS011T**
		Output	Part number	BOS 5K-PO-IX10-S75-S
Supply voltage U_S				10...30 V DC
Output current				100 mA
No-load supply current I_0 max.				≤ 20 mA (receiver), ≤ 15 mA (emitter)
Switching type				Light or dark switching
Polarity reversal/short-circuit protected				Yes/Yes
Settings				Potentiometer, 270°
Emitter, light type				LED, infrared
Wavelength				880 Nm
Power-on indicator				Green LED (emitter)
Output function indicator				Yellow LED (receiver)
Stability indicator				Green LED (receiver)
Response time				1 ms
Switching frequency f				500 Hz
Degree of protection as per IEC 60529				IP 67
Ambient temperature T_a				–25...+55 °C
Permissible ambient light				5 klx (artificial light)/10 klx (sunlight)
Material			Housing	PC/PBT
			Optical surface	PC
Connection				M8 connector, 4-pin

For wiring diagrams see page 167.

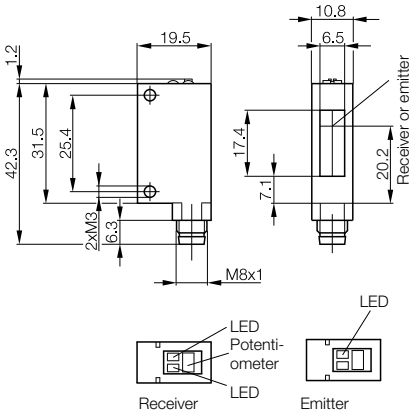
Ordering code includes emitter and receiver.

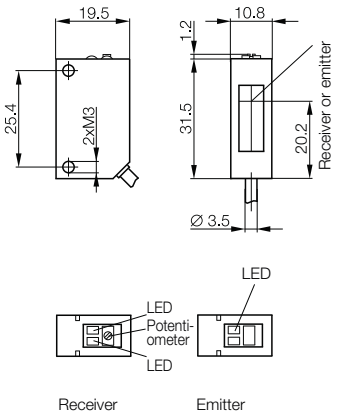






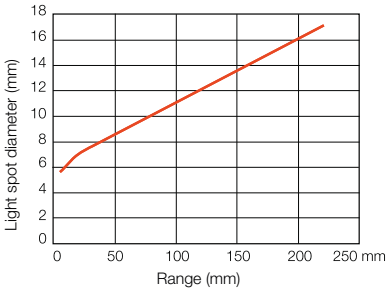
	Through-beam sensor	Through-beam sensor
	0...10 m	**0...10 m**
	BOS0158	**BOS0125**
	BOS 5K-PS-IX10-S49	BOS 5K-PS-IX10-02
	BOS0157	**BOS011N**
	BOS 5K-PO-IX10-S49	BOS 5K-PO-IX10-02
	10...30 V DC	10...30 V DC
	100 mA	100 mA
	≤ 20 mA (receiver), ≤ 15 mA (emitter)	≤ 20 mA (receiver), ≤ 15 mA (emitter)
	Light or dark switching	Light or dark switching
	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°
	LED, infrared	LED, infrared
	880 Nm	880 Nm
	Green LED (emitter)	Green LED (emitter)
	Yellow LED (receiver)	Yellow LED (receiver)
	Green LED (receiver)	Green LED (receiver)
	1 ms	1 ms
	500 Hz	500 Hz
	IP 67	IP 67
	–25...+55 °C	–25...+55 °C
	5 klx (artificial light)/10 klx (sunlight)	5 klx (artificial light)/10 klx (sunlight)
	PC/PBT	PC/PBT
	PC	PC
	M8 connector, 3-pin	2 m PVC cable, 3(2)×0.2 mm² (emitter)



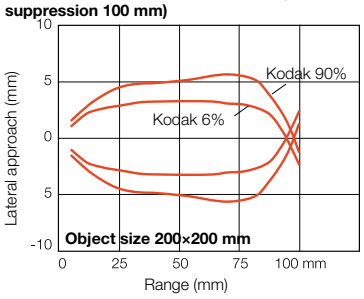


Diffuse sensor with background suppression BOS 5K-_ _-RH12-_ _

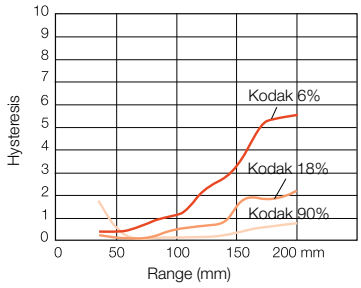
Light spot diameter



Characteristic response curve (background suppression 100 mm)

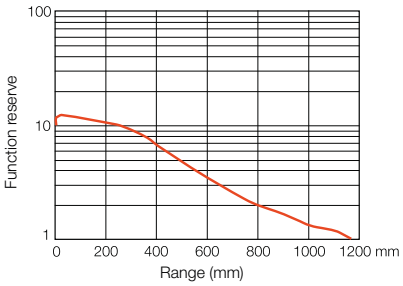


Range vs. hysteresis

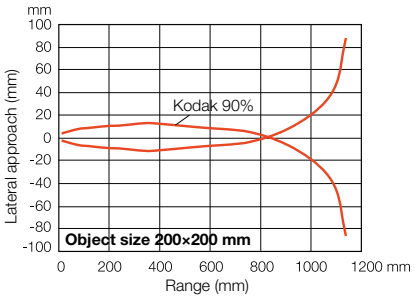


Diffuse sensor BOS 5K-_ _-ID10-_ _

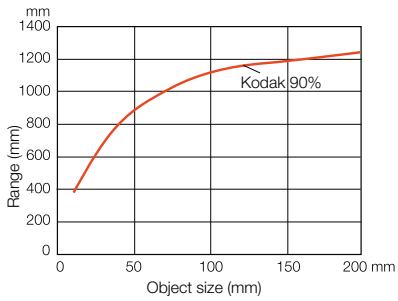
Receiving characteristics



Characteristic response curve

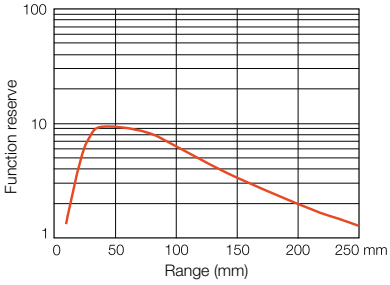


Object size vs. hysteresis

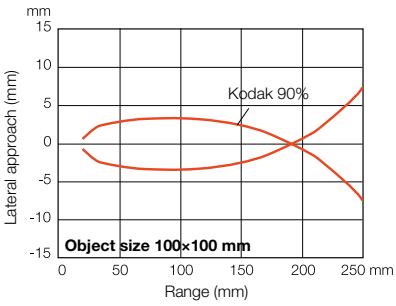


Diffuse sensor, small beam BOS 5K-_ _-RD11-_ _

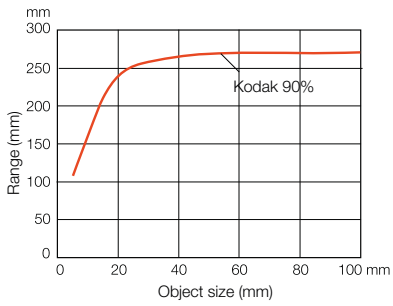
Receiving characteristics



Characteristic response curve

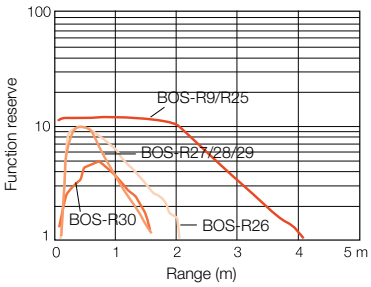


Object size vs. hysteresis

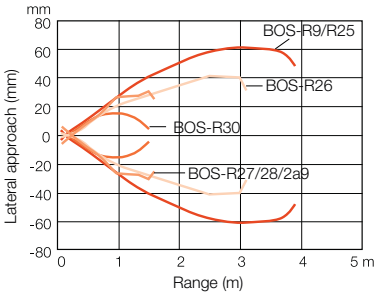


Retroreflective sensor BOS 5K-_ _-RR10-_ _

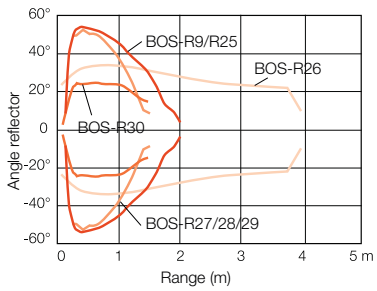
Receiving characteristics



Characteristic response curve

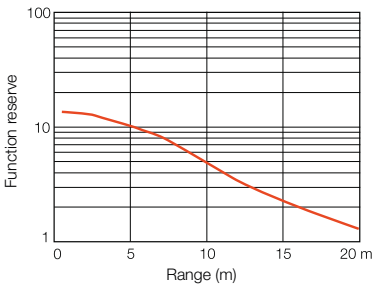


Angular offset

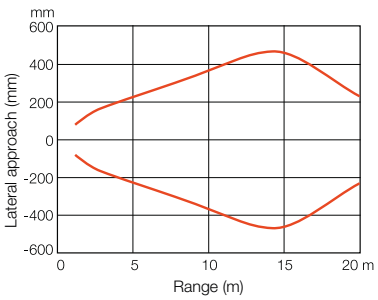


Through-beam sensor BOS 5K-_ _-IX10-_ _

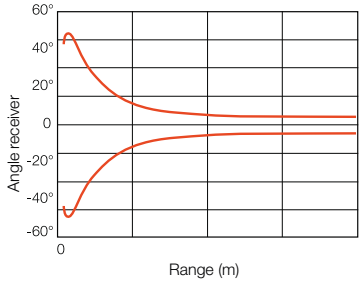
Receiving characteristics



Characteristic response curve

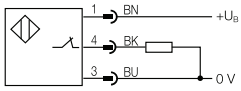


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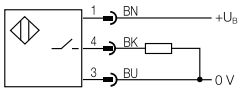


Wiring diagrams

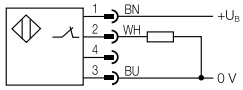
BOS 5K PO-...-S49



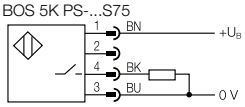
BOS 5K PS-...-S49



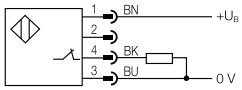
BOS 5K PO-...S75



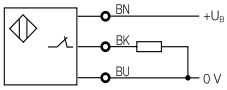
BOS 5K PS-...S75



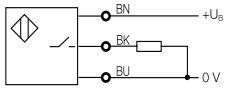
BOS 5K PO-...-S75S



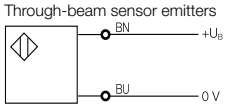
BOS 5K PO-...-02

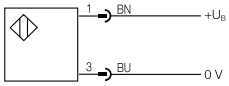


BOS 5K PS-...-02



Through-beam sensor emitters





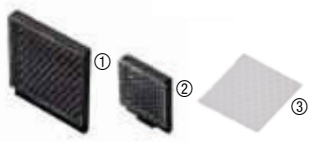


Recommended accessories
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00U5**
② Mounting bracket	**BAM00U6**
③ Mounting bracket	**BAM00U7**



Description	Ordering code
① Reflector	**BAM00WL**
② Reflector	**BAM00W0**
③ Reflective tape	**BAM00W5**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

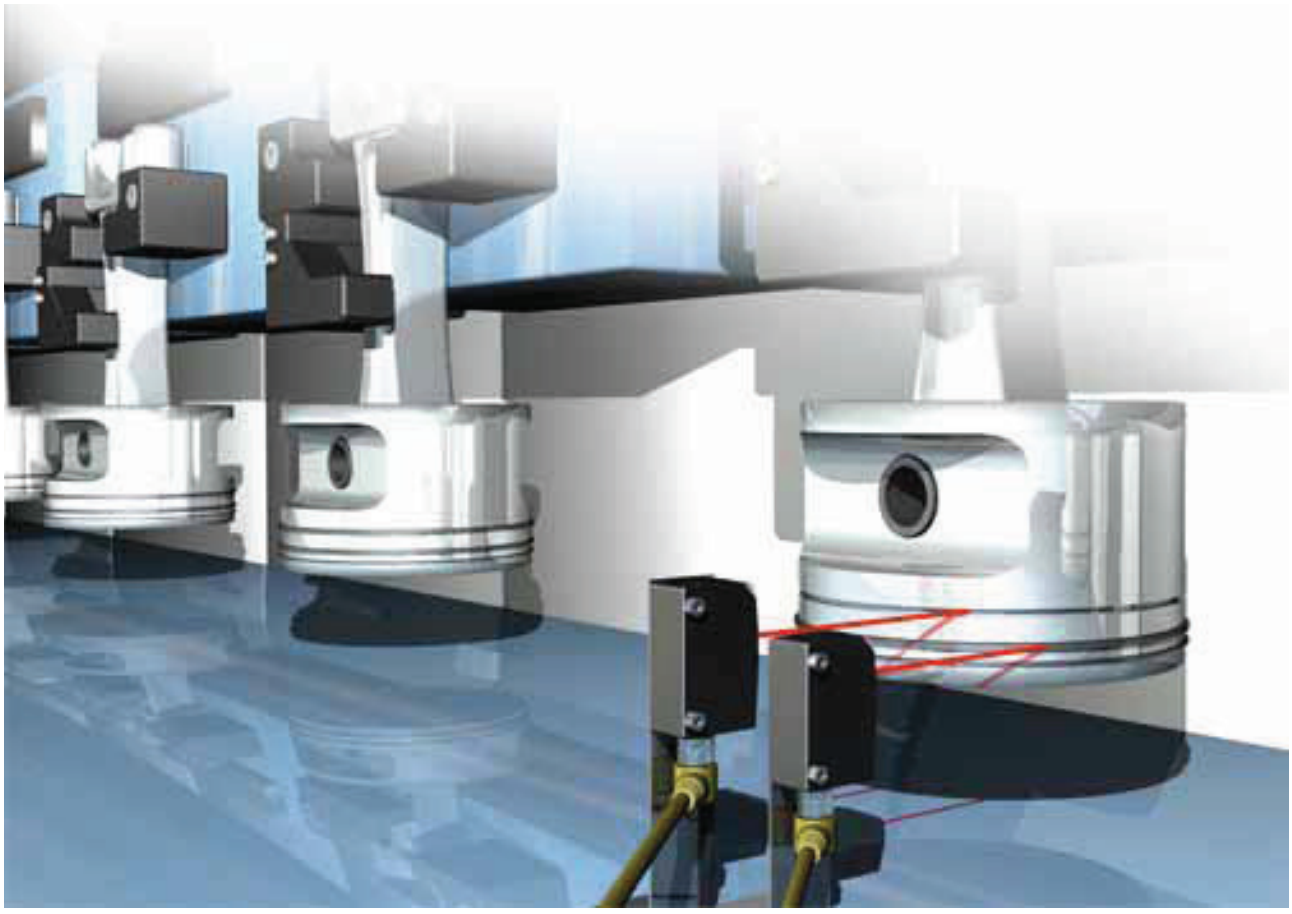
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Due to its high performance, the **BOS 6K** can be used almost anywhere. When space is at a premium, it is particularly advantageous. This is because its small size allows better integration of the sensors into the machine. Red light and background suppression make the sensor extremely user-friendly.
Additionally, there are multiple varieties of lasers for an "absolute" detection of small parts, so that even objects smaller than 1 mm can be accurately measured.
Calibration using the control lines means the sensor can be installed at virtually inaccessible locations. Dynamic teach-in in running operation means less attention needs to be paid to the sensors.

Features
- Teach-in-button and control line
- Dynamic teach-in possible (i. e., without stopping the machine)
- Multi-function display visible from any direction
- Disable buttons
- Versions with 3- or 4-pin M8-plug or with 2 m cable
- Solid workmanship with IP 67 protection
- Red light- and laser versions

Applications
- Packaging machines
- Handling- and assembly
- Specialty machines
- Printing and paper machinery





Type ■ Ordering code □ Part number	Sensing distance/ Range	Light type		Out-put	Switching type		Switch-ing fre-quency	U_S	Connection			Special features			Page
		Red light	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M8 connector, 3-pin	M8 connector, 4-pin	Cable	Polarizing filter	Glass detection	Autocollimation	
Diffuse sensor with background suppression															
BOS009Y BOS 6K-PU-1HA-S75-C	25...100 mm	■		■	■	■	1 kHz	■		■					170
BOS009U BOS 6K-PU-1HA-S49-C	25...100 mm	■		■	■	■	1 kHz	■	■						170
BOS009T BOS 6K-PU-1HA-C-02	25...100 mm	■		■	■	■	1 kHz	■			■				171
BOS00A0 BOS 6K-PU-1LHA-S75-C	20...60 mm		■	■	■	■	1 kHz	■		■					176
BOS009Z BOS 6K-PU-1LHA-C-02	20...60 mm		■	■	■	■	1 kHz	■			■				176
BOS00A2 BOS 6K-PU-1LHA-SA1-S75-C	30...110 mm		■	■	■	■	1 kHz	■		■					177
BOS00A1 BOS 6K-PU-1LHA-SA1-C-02	30...110 mm		■	■	■	■	1 kHz	■			■				177
Diffuse sensor															
BOS00A9 BOS 6K-PU-1OC-S75-C	20...300 mm	■		■	■	■	1 kHz	■		■					171
BOS00A8 BOS 6K-PU-1OC-S49-C	20...300 mm	■		■	■	■	1 kHz	■	■						171
BOS00A7 BOS 6K-PU-1OC-C-02	20...300 mm	■		■	■	■	1 kHz	■			■				171
Retroreflective sensor															
BOS00AE BOS 6K-PU-1QA-S75-C	50...700 mm	■		■	■	■	1 kHz	■		■		■	■		172
BOS00AC BOS 6K-PU-1QA-S49-C	50...700 mm	■		■	■	■	1 kHz	■	■			■	■		172
BOS00AA BOS 6K-PU-1QA-C-02	50...700 mm	■		■	■	■	1 kHz	■			■	■	■		173
BOS00A4 BOS 6K-PU-1LQA-S75-C	0.05...3 m		■	■	■	■	4 kHz	■		■		■			177
BOS00A3 BOS 6K-PU-1LQA-C-02	0.05...3 m		■	■	■	■	4 kHz	■			■	■			177
BOS00AJ BOS 6K-PU-1QC-S75-C	0.05...3 m	■		■	■	■	1 kHz	■		■		■			173
BOS00AH BOS 6K-PU-1QC-S49-C	0.05...3 m	■		■	■	■	1 kHz	■	■			■			173
BOS00AF BOS 6K-PU-1QC-C-02	0.05...3 m	■		■	■	■	1 kHz	■			■	■			173
Retroreflective sensor with autocollimation															
BOS00AL BOS 6K-PU-1TA-S75-C	0...500 mm	■		■	■	■	1 kHz	■		■		■	■	■	174
BOS00AK BOS 6K-PU-1TA-C-02	0...500 mm	■		■	■	■	1 kHz	■			■	■	■	■	174
BOS01CH BOS 6K-PU-1LQD-S75-C	0...4 m		■	■	■	■	4 kHz	■		■		■		■	178
BOS01HH BOS 6K-PU-1LQD-S49-C	0...4 m		■	■	■	■	4 kHz	■	■			■		■	178
Through-beam sensor Receiver															
BOS007J BLE 6K-PU-1E-S75-C	0...6.5 m	■		■	■	■	500 Hz	■		■					175
BOS007H BLE 6K-PU-1E-S49-C	0...6.5 m	■		■	■	■	500 Hz	■	■						175
BOS007F BLE 6K-PU-1E-C-02	0...6.5 m	■		■	■	■	500 Hz	■			■				175
Through-beam sensor Emitter															
BOS007P BLS 6K-XX-1E-S75	0...6.5 m	■						■		■					175
BOS007N BLS 6K-XX-1E-S49	0...6.5 m	■						■	■						175
BOS007M BLS 6K-XX-1E-02	0...6.5 m	■						■			■				175

NPN on request

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

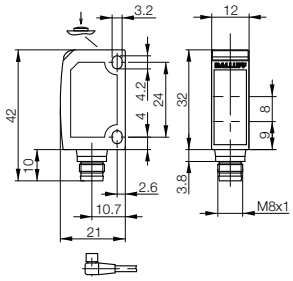


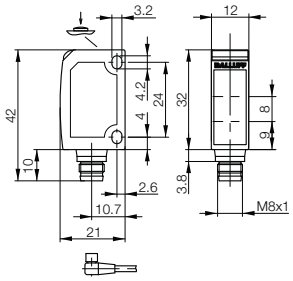


Type		Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range		**25...100 mm**	**25...100 mm**
PNP NC/NO	**Ordering code**	**BOS009Y**	**BOS009U**
	Part number	BOS 6K-PU-1HA-S75-C	BOS 6K-PU-1HA-S49-C
Supply voltage U_S		10...30 V DC	10...30 V DC
Output current		100 mA	100 mA
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Teach-in	Teach-in
Emitter, light type		LED, red light	LED, red light
Wavelength		660 Nm	660 Nm
Light spot diameter		approx. 5x5 mm at 60 mm	approx. 5x5 mm at 60 mm
Gray value shift (90%/18%)		≤ 10%	≤ 10%
Distance hysteresis		≤ 5 %	≤ 5 %
Switching state indicator		Yellow LED	Yellow LED
Stability indicator		Green LED	Green LED
Response time		0.5 ms	0.5 ms
Switching frequency f		1 KHz	1 KHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–20...+60 °C	–20...+60 °C
Permissible ambient light per		5 klx	5 klx
Material	Housing	Impact-resistant ABS	Impact-resistant ABS
	Optical surface	PMMA	PMMA
Connection		M8 connector, 4-pin	M8 connector, 3-pin

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 180.

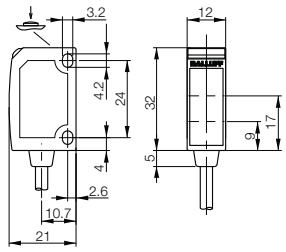


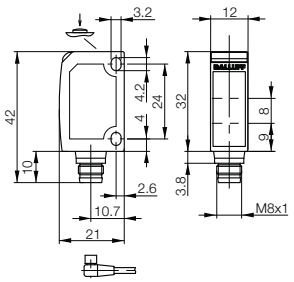


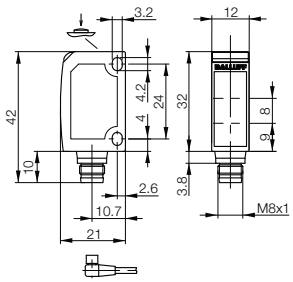


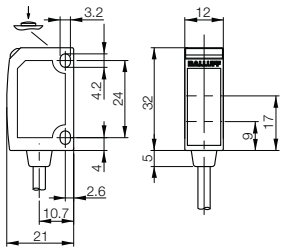


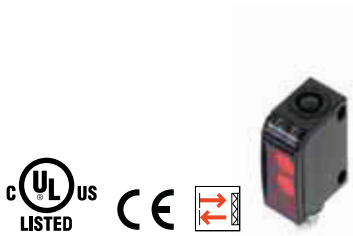

Diffuse sensor with background suppression	Diffuse sensor	Diffuse sensor	Diffuse sensor
25...100 mm	**20...300 mm**	**20...300 mm**	**20...300 mm**
BOS009T	**BOS00A9**	**BOS00A8**	**BOS00A7**
BOS 6K-PU-1HA-C-02	BOS 6K-PU-1OC-S75-C	BOS 6K-PU-1OC-S49-C	BOS 6K-PU-1OC-C-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 35 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Teach-in	Teach-in	Teach-in	Teach-in
LED, red light	LED, red light	LED, red light	LED, red light
660 Nm	660 Nm	660 Nm	660 Nm
approx. 5x5 mm at 60 mm	approx. 12x12 mm at 160 mm	approx. 12x12 mm at 160 mm	approx. 12x12 mm at 160 mm
≤ 10%			
≤ 5 %			
Yellow LED	Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED	Green LED
0.5 ms	0.5 ms	0.5 ms	0.5 ms
1 KHz	1 KHz	1 KHz	1 KHz
IP 67	IP 67	IP 67	IP 67
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
5 klx	5 klx	5 klx	5 klx
Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
PMMA	PMMA	PMMA	PMMA
2 m PVC cable,	M8 connector,	M8 connector,	2 m cable PCV,
4×0.14 mm²	4-pin	3-pin	4×0.14 mm²







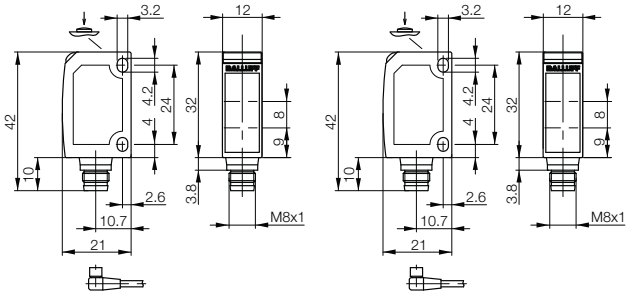




Type				**Retroreflective sensor**	**Retroreflective sensor**
Detection range				**50...700 mm**	**50...700 mm**
PNP	NC/NO	Polarizing filter, Glass detection	**Ordering code**	**BOS00AE**	**BOS00AC**
			Part number	BOS 6K-PU-1QA-S75-C	BOS 6K-PU-1QA-S49-C
PNP	NC/NO	Polarizing filter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 35 mA	≤ 35 mA
Switching type				Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Teach-in	Teach-in
Emitter, light type				LED, red light	LED, red light
Wavelength				660 Nm	660 Nm
Light spot diameter				20×20 mm up to 500 mm	20×20 mm up to 500 mm
Switching state indicator				Yellow LED	Yellow LED
Stability indicator				Green LED	Green LED
Response time				0.5 ms	0.5 ms
Switching frequency f				1 KHz	1 KHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–20...+60 °C	–20...+60 °C
Permissible ambient light per				5 klx	5 klx
Material			Housing	Impact-resistant ABS	Impact-resistant ABS
			Optical surface	PMMA	PMMA
Connection				M8 connector, 4-pin	M8 connector, 3-pin

Reference reflector: BOS R-9

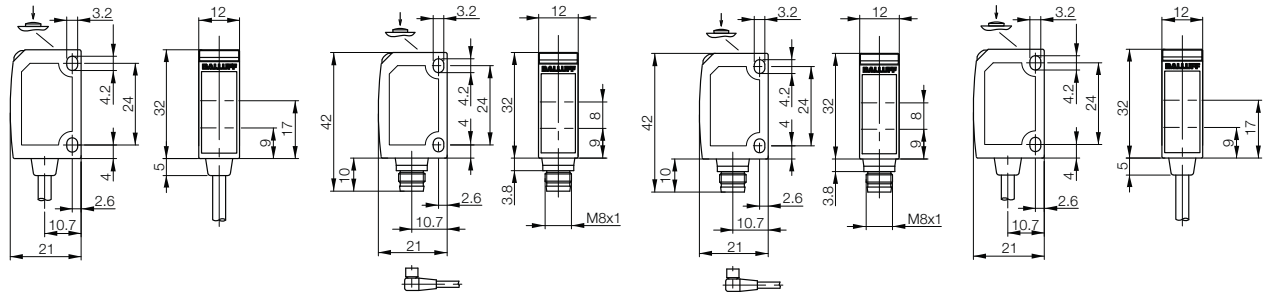
For wiring diagrams see page 180.

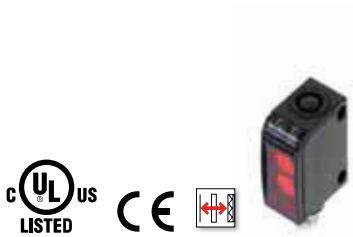







	Retroreflective sensor	**Retroreflective sensor**	**Retroreflective sensor**	**Retroreflective sensor**
	50...700 mm	**0.05...3 m**	**0.05...3 m**	**0.05...3 m**
	BOS00AA			
	BOS 6K-PU-1QA-C-02			
		BOS00AJ	**BOS00AH**	**BOS00AF**
		BOS 6K-PU-1QC-S75-C	BOS 6K-PU-1QC-S49-C	BOS 6K-PU-1QC-C-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA	100 mA
	≤ 35 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in	Teach-in	Teach-in	Teach-in
	LED, red light	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm	660 Nm
	20×20 mm up to 500 mm	approx. 75x75 mm at 1.5 m	approx. 75x75 mm at 1.5 m	approx. 75x75 mm at 1.5 m
	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	Green LED	Green LED	Green LED	Green LED
	0.5 ms	0.5 ms	0.5 ms	0.5 ms
	1 KHz	1 KHz	1 KHz	1 KHz
	IP 67	IP 67	IP 67	IP 67
	–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
	5 klx	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	2 m cable PCV,	M8 connector,	M8 connector,	2 m cable PCV,
	4×0.14 mm²	4-pin	3-pin	4×0.14 mm²



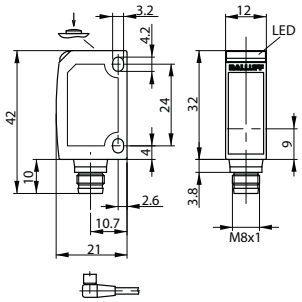


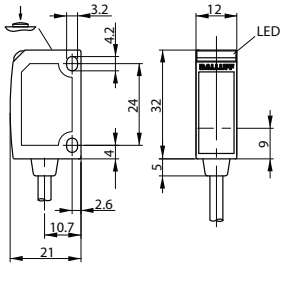


Type			**Retroreflective light sensor with autocollimation**	**Retroreflective light sensor with autocollimation**
Detection range			**0...500 mm**	**0...500 mm**
PNP NC/NO	Polarizing filter, glass detection, autocollimation	**Ordering code**	**BOS00AL**	**BOS00AK**
		Part number	BOS 6K-PU-1TA-S75-C	BOS 6K-PU-1TA-C-02
PNP NC/NO	Receiver	**Ordering code**		
		Part number		
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Light spot diameter			20×20 mm up to 500 mm	20×20 mm up to 500 mm
Switching state indicator			Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED
Response time			0.5 ms	0.5 ms
Switching frequency f			1 KHz	1 KHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light per			5 klx	5 klx
Material		Housing	Impact-resistant ABS	Impact-resistant ABS
		Optical surface	PMMA	PMMA
Connection			M8 connector, 4-pin	2 m cable PCV, 4×0.14 mm²
			can only be used with reflector BOS R-22	can only be used with reflector BOS R-22

Reference reflector: BOS R-22

For wiring diagrams see page 180.



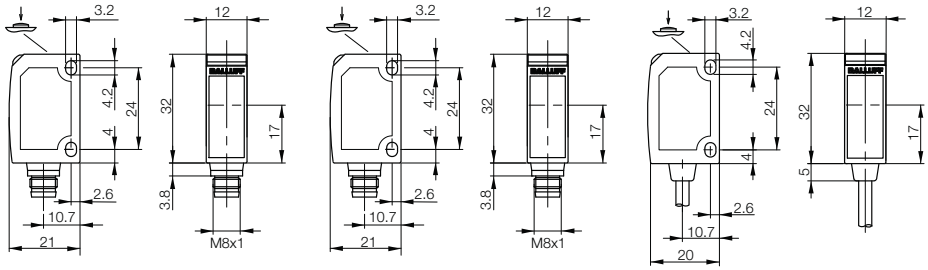








	Through-beam sensor	Through-beam sensor	Through-beam sensor
	0...6.5 m	**0...6.5 m**	**0...6.5 m**
	BOS007J	**BOS007H**	**BOS007F**
	BLE 6K-PU-1E-S75-C	BLE 6K-PU-1E-S49-C	BLE 6K-PU-1E-C-02
	BOS007P	**BOS007N**	**BOS007M**
	BLS 6K-XX-1E-S75	BLS 6K-XX-1E-S49	BLS 6K-XX-1E-02
	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA
	≤ 25 mA	≤ 25 mA	≤ 25 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in	Teach-in	Teach-in
	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm
	Yellow LED	Yellow LED	Yellow LED
	Green LED	Green LED	Green LED
	1 ms	1 ms	1 ms
	500 Hz	500 Hz	500 Hz
	IP 67	IP 67	IP 67
	–20...+60 °C	–20...+60 °C	–20...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
	PMMA	PMMA	PMMA
	M8 connector,	M8 connector,	2 m cable PCV,
	4-pin	3-pin	4×0.14 mm²



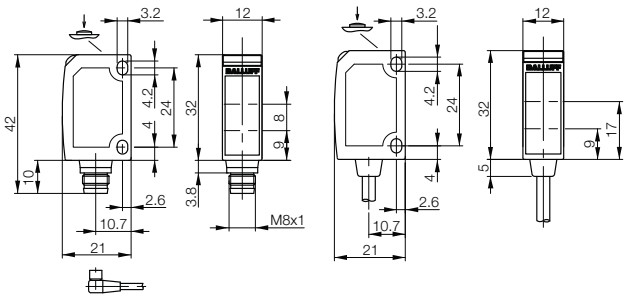




Type				Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range				**20...60 mm**	**20...60 mm**
PNP	NC/NO		**Ordering code**	**BOS00A0**	**BOS009Z**
			Part number	BOS 6K-PU-1LHA-S75-C	BOS 6K-PU-1LHA-C-02
PNP	NC/NO	Polarizing filter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	10...30 V DC
Output current				100 mA	100 mA
No-load supply current I_0 max.				≤ 25 mA	≤ 25 mA
Switching type				Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Teach-in	Teach-in
Emitter, light type				Laser, red light	Laser, red light
Wavelength				650 Nm	650 Nm
Laser class				1	1
Light spot diameter				0.5 mm in focus (35 mm)	0.5 mm in focus (35 mm)
Distance hysteresis					
Gray value shift (90%/18%)				≤ 7%	≤ 7%
Switching state indicator				Yellow LED	Yellow LED
Stability indicator				Green LED	Green LED
Response time				0.5 ms	0.5 ms
Switching frequency f				1 KHz	1 KHz
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–20...+60 °C	–20...+60 °C
Permissible ambient light per				EN 60947-5-2	EN 60947-5-2
Material			Housing	Impact-resistant ABS	Impact-resistant ABS
			Optical surface	PMMA	PMMA
Connection				M8 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

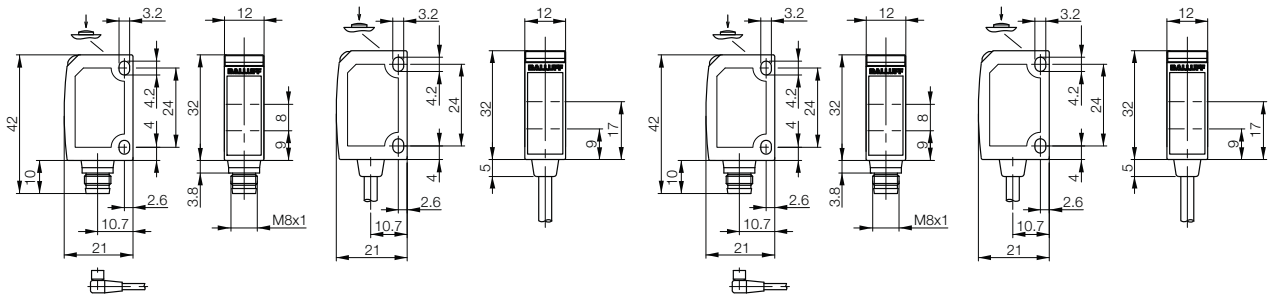
Reference object: white, 18% reflection, 200×200 mm
Reference reflector: BOS R-22

For wiring diagrams see page 180.





Diffuse sensor with background suppression	Diffuse sensor with background suppression	Retroreflective sensor	Retroreflective sensor
30...110 mm	**30...110 mm**	**0.05...3 m**	**0.05...3 m**
BOS00A2	**BOS00A1**		
BOS 6K-PU-1LHA-SA1-S75-C	BOS 6K-PU-1LHA-SA1-C-02		
		BOS00A4	**BOS00A3**
		BOS 6K-PU-1LQA-S75-C	BOS 6K-PU-1LQA-C-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Teach-in	Teach-in	Teach-in	Teach-in
Laser, red light	Laser, red light	Laser, red light	Laser, red light
650 Nm	650 Nm	650 Nm	650 Nm
2	2	1	1
0.7 mm in focus (85 mm ± 5 mm)	0.7 mm in focus (85 mm ± 5 mm)	1 mm in 300 mm	1 mm in 300 mm
≤ 7%	≤ 7%		
Yellow LED	Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED	Green LED
0.5 ms	0.5 ms	0.125 ms	0.125 ms
1 KHz	1 KHz	4KHz	4KHz
IP 67	IP 67	IP 67	IP 67
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
PMMA	PMMA	PMMA	PMMA
M8 connector,	2 m cable PCV,	M8 connector,	2 m cable PCV,
4-pin	4×0.14 mm²	4-pin	4×0.14 mm²



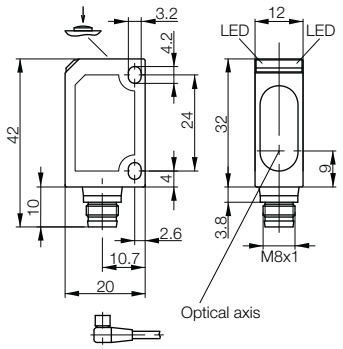


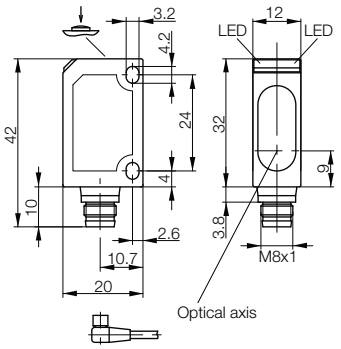


Type			**Retroreflective light sensor with autocollimation**	**Retroreflective light sensor with autocollimation**
Detection range			**0...4 m**	**0...4 m**
PNP	Polarizing filter	**Ordering code**	**BOS01CH**	**BOS01HH**
		Part number	BOS 6K-PU-1LQD-S75-C	BOS 6K-PU-1LQD-S49-C
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			1	1
Light spot diameter			2 mm in 2500 mm	2 mm in 2500 mm
Switching state indicator			Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED
Response time			0.125 ms	0.125 ms
Switching frequency f			4KHz	4KHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	Impact-resistant ABS	Impact-resistant ABS
		Optical surface	PMMA	PMMA
Connection			M8 connector, 4-pin	M8 connector, 3-pin

Reference reflector: BOS R-22

Wiring diagrams on page 176.





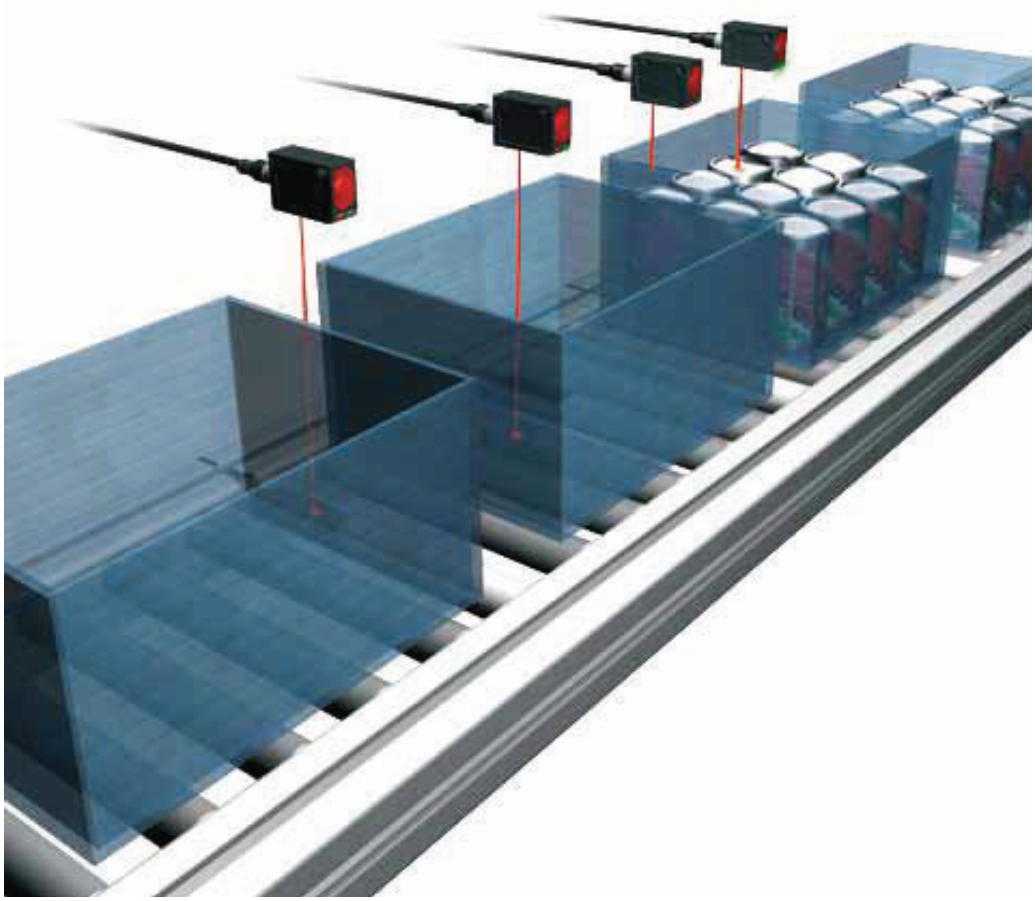
Photoelectric Sensors

Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL

Photoelectric Sensors with Special Properties

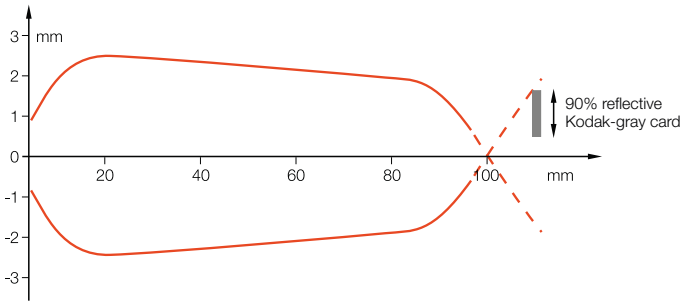
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



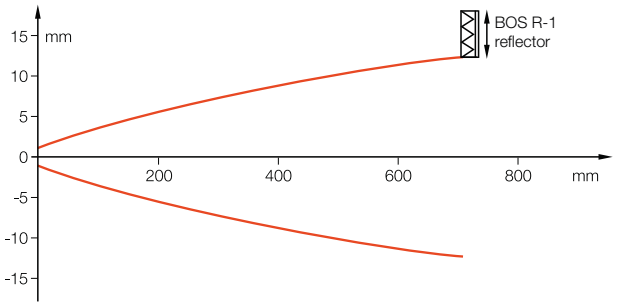
Function diagrams , connection

Diffuse sensor BOS 6K-..-1HA-...



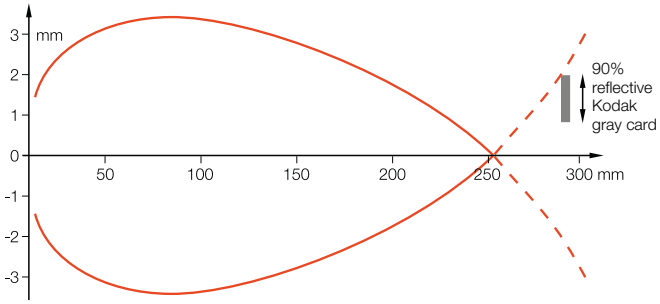
Sensing distance with side approach of Kodak-gray card.

Retroreflective sensor BOS 6K-..-1QA-...



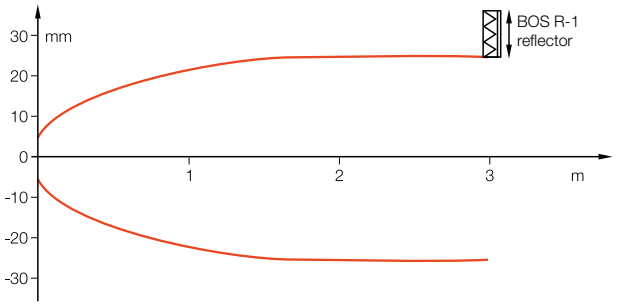
Range measured with side approach with reflector.

Diffuse sensor BOS 6K-..-1OC-...



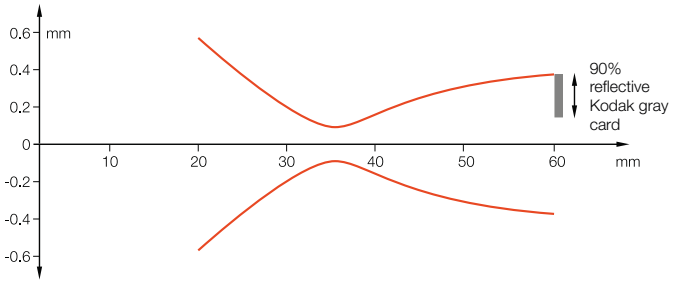
Sensing distance with side approach of Kodak-gray card.

Retroreflective sensor BOS 6K-..-1QC-...



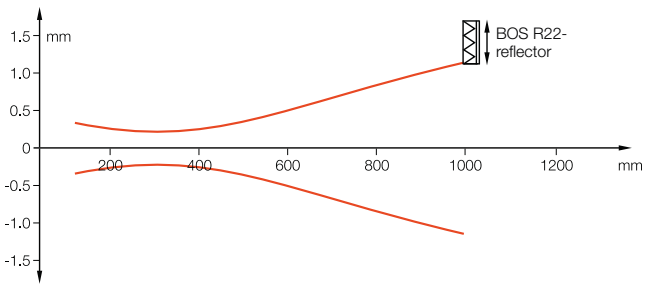
Range measured with side approach with reflector.

Diffuse sensor BOS 6K-...-1LHA-...



Sensing distance with side approach of Kodak-gray card.

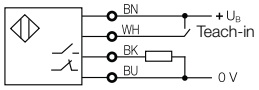
Retroreflective sensor BOS 6K-...-1LQA-...



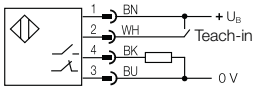
Range measured with side approach with reflector.

Wiring diagrams

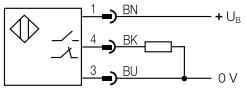
BOS 6K-P.../BLE 6K-P



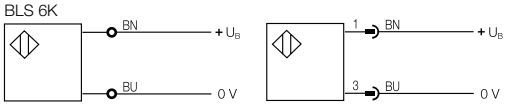
BOS 6K-P...-S75/BLE 6K-P....S75



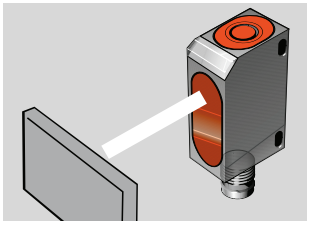
BOS 6K-P...-S49/BLE 6K-P...S49



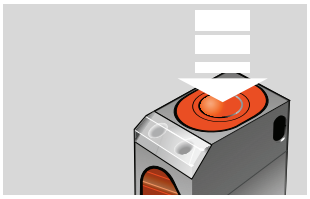
BLS 6K



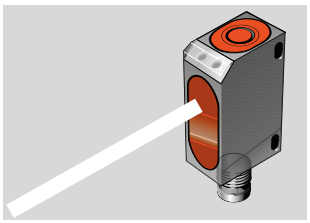
Diffuse sensor



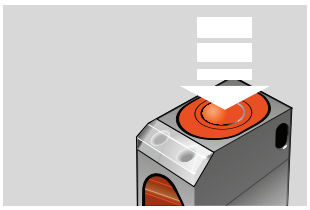
Direct sensor at object.



Press button for approx. 3 sec. until both LEDs flash at the same time.

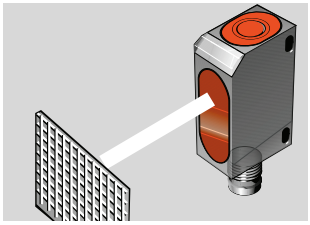


Remove object from beam path.

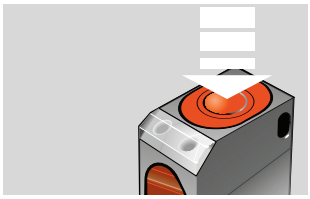


Hold down button for 1 sec. Green LED flashes briefly and then stays on. The sensor is ready.
If both LEDs blink at the same time, reconfigure your settings.

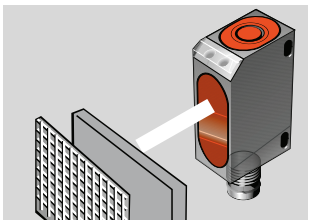
Retroreflective/through-beam



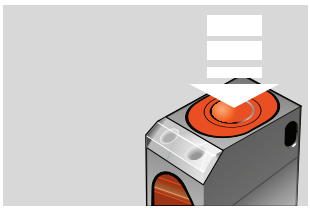
Direct sensor at reflector/ receiver.



Press button for approx. 3 sec. until both LEDs flash at the same time.



Bring objects into detection range.



Hold down button for 1 sec. Green LED flashes briefly and then stays on. The sensor is ready.
If both LEDs blink at the same time, reconfigure your settings.

Recommended accessories
(please order separately)

Description	Ordering code
① Reflector	**BAM00UK**
② Reflector	**BAM00WL**
③ Laser reflector	**BAM00UY**
④ Mounting bracket	**BAM00UH**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

BOS 21M – the complete series in one compact, robust metal housing with comprehensive functionality. State-of-the-art sensor technology and innovative manufacturing technologies leave nothing to be desired for versatile applications in robotics and automation, packaging technology, installing, and handling technology, etc. Teach-in switches and potentiometers assure fast startup as well as simple and economical operation of the sensors.
A wide range of accessories such as mounting brackets, stands, dovetail clamps, etc., enable adjustable mounting of the sensors in any position.



Type Ordering code Part number	Sensing distance/ Range	Light type			Output	Switching type		Switching frequency	U_S	Connection	Special features					Page
		Red light	Infrared	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 connector, 4-pin	Teach-in	Polarizing filter	Autocollimation	Glass detection	Output special assignment	
Diffuse sensor with background suppression																
BOS0034 BOS 21M-PUS-LH12-S4	50...100 mm			■	■	■	■	1 kHz	■	■	■					190
BOS0035 BOS 21M-PUS-RH12-S4	70...200 mm	■			■	■	■	1 kHz	■	■	■					184
BOS0036 BOS 21M-PUS-RV13-S4	70...200 mm	■			■	■	■	1 kHz	■	■	■					185
Diffuse sensor																
BOS0033 BOS 21M-PA-RD10-S4	0.01...1 m	■			■	■	■	500 Hz	■	■						185
BOS0031 BOS 21M-PA-ID10-S4	0.05...2 m		■		■	■	■	500 Hz	■	■						185
BOS0032 BOS 21M-PA-LD10-S4	0...600 mm			■	■	■	■	2 kHz	■	■						191
Retroreflective sensor																
BOS00TR BOS 21M-PA-PR10-S4	0.1...8 m	■			■	■	■	1 kHz	■	■		■				186
BOS00TT BOS 21M-PA-PR10-S4S	0.1...8 m	■			■	■	■	1 kHz	■	■		■			■	186
BOS00TL BOS 21M-PA-LR10-S4	0.1...20 m			■	■	■	■	2 kHz	■	■		■				191
BOS00TM BOS 21M-PA-LR10-S4S	0.1...20 m			■	■	■	■	2 kHz	■	■		■			■	191
Retroreflective sensor with autocollimation																
BOS00TN BOS 21M-PA-PK10-S4	0...4 m	■			■	■	■	1 kHz	■	■		■	■			187
BOS00TP BOS 21M-PA-PK10-S4S	0...4 m	■			■	■	■	1 kHz	■	■		■	■		■	187
Retroreflective sensor for Detecting Glass																
BOS00TY BOS 21M-PA-PT14-S4	0...2 m	■			■	■	■	1 kHz	■	■		■	■	■		187
BOS00TU BOS 21M-PA-PT10-S4	0...2 m	■			■	■	■	1 kHz	■	■		■	■	■		187
BOS00TW BOS 21M-PA-PT10-S4S	0...2 m	■			■	■	■	1 kHz	■	■		■	■	■	■	187
Through-beam sensor Receiver																
BOS00WT BOS 21M-PA-IE10-S4	0...20 m		■		■	■	■	500 Hz	■	■						188
BOS00WU BOS 21M-PA-IE10-S4S	0...20 m		■		■	■	■	500 Hz	■	■					■	188
BOS00WW BOS 21M-PA-LE10-S4	0...60 m			■	■	■	■	1.5 kHz	■	■						191
BOS00WY BOS 21M-PA-LE10-S4S	0...60 m			■	■	■	■	1.5 kHz	■	■					■	191
Through-beam sensor Emitter																
BOS00WZ BOS 21M-XT-IS11-S4	0...20 m		■						■	■						189
BOS00Y0 BOS 21M-XT-LS11-S4	0...60 m			■					■	■						191

NPN on request

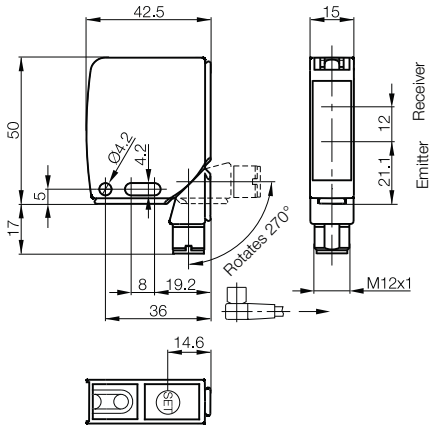
Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors



Type		**Diffuse sensor with background suppression**	
Detection range		**70...200 mm**	
PNP NC/NO	**Ordering code**	**BOS0035**	
	Part number	BOS 21M-PUS-RH12-S4	
PNP NC/NO	**Ordering code**		
	Part number		
Supply voltage U_S		10...30 V DC	
Output current		100 mA	
No-load supply current I_0 max.		≤ 50 mA	
Switching type		Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	
Settings		Teach-in	
Emitter, light type		LED, red light	
Wavelength		670 Nm	
Output function indicator		Yellow LED	
Stability indicator		Green/red LED	
Response time		0.5 ms	
Switching frequency f		1 kHz	
Degree of protection as per IEC 60529		IP 67	
Ambient temperature T_a		–10...+50 °C	
Permissible ambient light		10 klx	
Material	Housing	GD-Zn/Al	
	Optical surface	PMMA	
Connection		M12 connector, 4-pin	

Reference object: white, 90% reflection, 200×200 mm

Wiring diagrams on page 195.

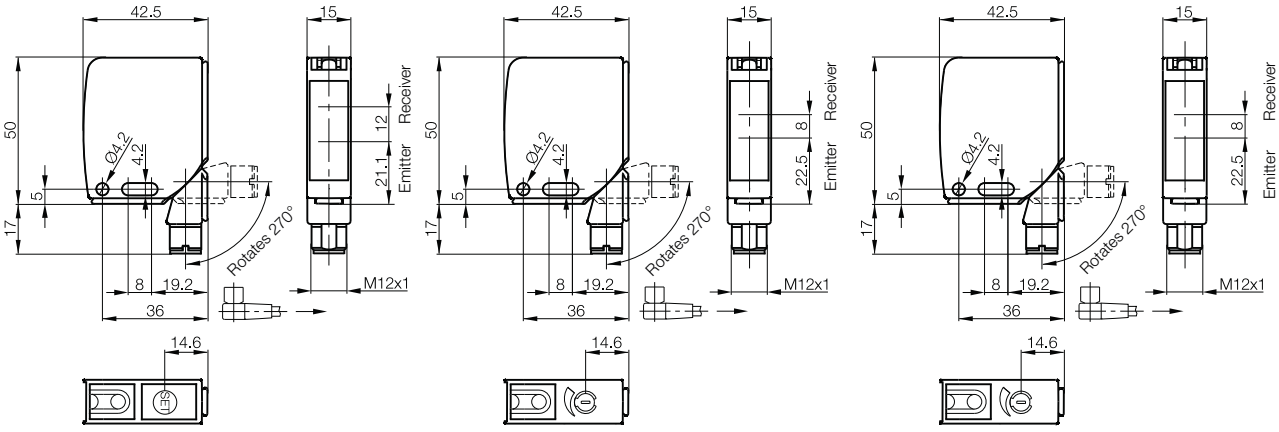








Diffuse sensor with foreground and background suppression	Diffuse sensor	Diffuse sensor
70...200 mm	**0.01...1 m**	**0.05...2 m**
BOS0036		
BOS 21M-PUS-RV13-S4		
	BOS0033	**BOS0031**
	BOS 21M-PA-RD10-S4	BOS 21M-PA-ID10-S4
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 50 mA	≤ 35 mA	≤ 35 mA
Light/dark switching (selectable)	Light/dark (complementary)	Light/dark (complementary)
Yes/Yes	Yes/Yes	Yes/Yes
Teach-in	Potentiometer, 270°	Potentiometer, 270°
LED, red light	LED, red light	LED, infrared
670 Nm	650 Nm	880 Nm
Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED
0.5 ms	1 ms	1 ms
1 kHz	500 Hz	500 Hz
IP 67	IP 67	IP 67
–10...+50 °C	–25...+55 °C	–25...+55 °C
10 klx	10 klx	10 klx
GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

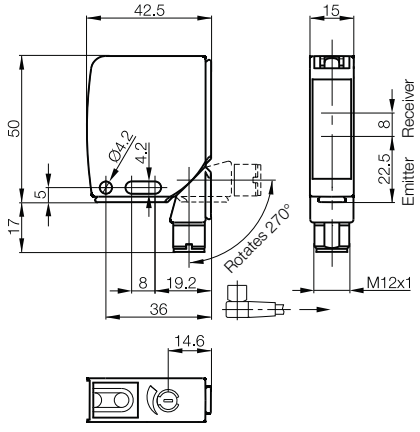




Type				**Retroreflective sensor**
Detection range				**0.1...8 m**
PNP	NC/ NO	Polarizing filter	**Ordering code**	**BOS00TR**
			Part number	BOS 21M-PA-PR10-S4
PNP	NC/ NO	Polarizing filter Output special assignment	**Ordering code**	**BOS00TT**
			Part number	BOS 21M-PA-PR10-S4S
PNP	NC/ NO	Polarizing filter, autocollimation	**Ordering code**	
			Part number	
PNP	NC/ NO	Polarizing filter, autocollimation Output special assignment	**Ordering code**	
			Part number	
PNP	NC/ NO	Polarizing filter, glass detection, autocollimation	**Ordering code**	
			Part number	
PNP	NC/ NO	Polarizing filter, glass detection, autocollimation, Output special assignment	**Ordering code**	
			Part number	
Supply voltage U_S				10...30 V DC
Output current				100 mA
No-load supply current I_0 max.				≤ 35 mA
Switching type				Light/dark (complementary)
Polarity reversal/short-circuit protected				Yes/Yes
Settings				Potentiometer, 270°
Emitter, light type				LED, red light
Wavelength				650 Nm
Output function indicator				Yellow LED
Stability indicator				Green LED
Response time				0.5 ms
Switching frequency f				1 kHz
Degree of protection as per IEC 60529				IP 67
Ambient temperature T_a				–25...+55 °C
Permissible ambient light				10 klx
Material			Housing	GD-Zn/Al
			Optical surface	PMMA
Connection				M12 connector, 4-pin

Reference reflector: BOS R-1

For wiring diagrams see page 195.

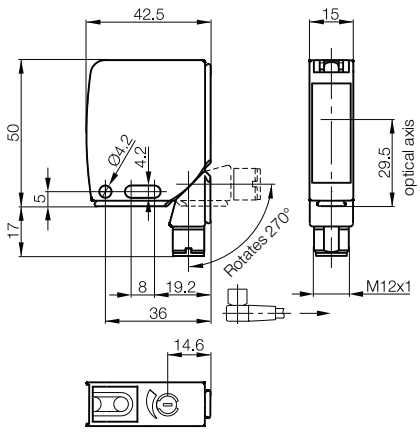


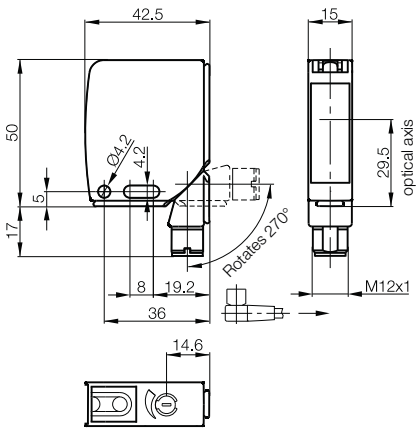


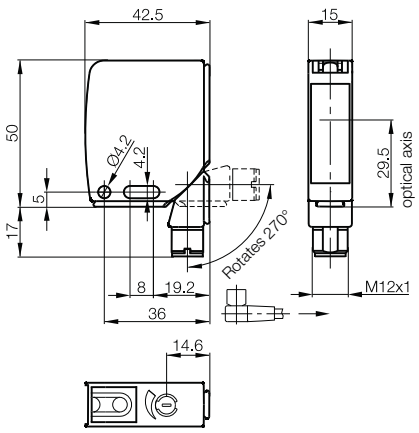




	Retroreflective sensor with autocollimation 0...4 m	Retroreflective sensor for Detecting Glass 0...2 m	Retroreflective sensor for Detecting Glass 0...2 m
	BOS00TN		
	BOS 21M-PA-PK10-S4		
	BOS00TP		
	BOS 21M-PA-PK10-S4S		
		BOS00TU	**BOS00TY**
		BOS 21M-PA-PT10-S4	BOS 21M-PA-PT14-S4
		BOS00TW	
		BOS 21M-PA-PT10-S4S	
	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	Light/dark (complementary)	Light/dark (complementary)	Light/dark (complementary)
	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light	LED, red light
	650 Nm	650 Nm	650 Nm
	Yellow LED	Yellow LED	Yellow LED
	Green LED		
	0.5 ms	0.5 ms	0.5 ms
	1 kHz	1 kHz	1 kHz
	IP 67	IP 67	IP 67
	–25...+55 °C	–25...+55 °C	–25...+55 °C
	10 klx	10 klx	10 klx
	GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
	Glass	Glass	PMMA
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



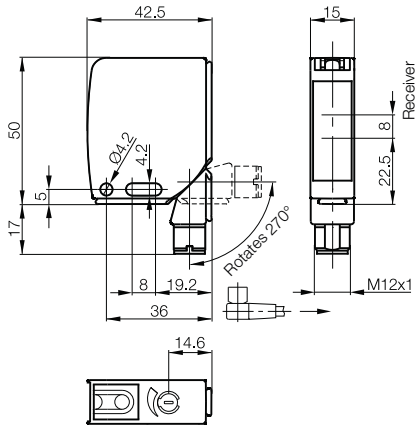






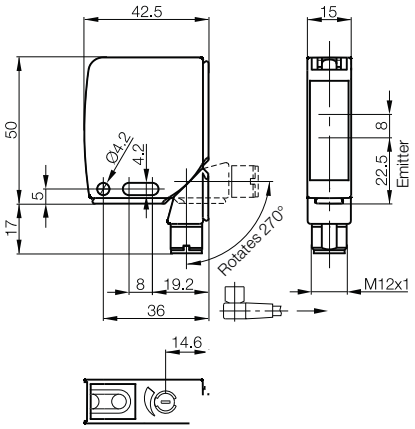
Type				**Through-beam sensor**	
Detection range				**0...20 m**	
PNP	NC/	Receiver	**Ordering code**	**BOS00WT**	
	NO		Part number	BOS 21M-PA-IE10-S4	
PNP	NC/	Receiver	**Ordering code**	**BOS00WU**	
	NO	Output special assignment	Part number	BOS 21M-PA-IE10-S4S	
		Emitter	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	
Output current				100 mA	
No-load supply current I_0 max.				≤ 35 mA	
Switching type				Light/dark (complementary)	
Polarity reversal/short-circuit protected				Yes/Yes	
Settings				Potentiometer, 270°	
Help functions					
Emitter, light type				LED, infrared	
Wavelength				880 Nm	
Power-on indicator					
Output function indicator				Yellow LED (receiver)	
Stability indicator				Green LED (receiver)	
Response time				1 ms	
Switching frequency f				500 Hz	
Degree of protection as per IEC 60529				IP 67	
Ambient temperature T_a				–25...+55 °C	
Permissible ambient light				10 klx	
Material			Housing	GD-Zn/Al	
			Optical surface	PMMA	
Connection				M12 connector, 4-pin	

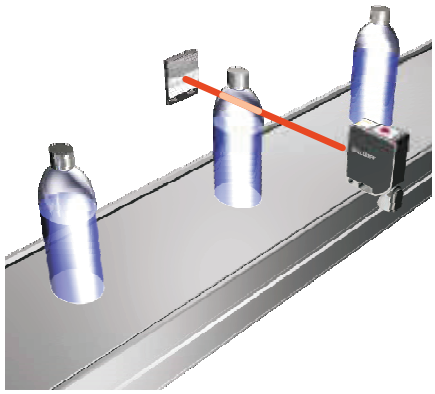
For wiring diagrams see page 195.





	Through-beam sensor
	0...20 m
	BOS00WZ
	BOS 21M-XT-IS11-S4
	10...30 V DC
	≤ 35 mA
	Yes/Yes
	Test input
	Green LED
	IP 67
	–25...+55 °C
	10 klx
	GD-Zn/Al
	PMMA
	M12 connector, 4-pin





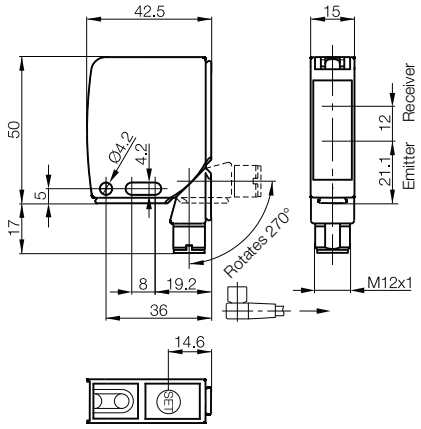
BOS 21M Laser



Type				**Diffuse sensor with background suppression**
Detection range				**50...100 mm**
PNP	NC/NO		**Ordering code**	**BOS0034**
			Part number	BOS 21M-PUS-LH12-S4
PNP	NC/NO	Polarizing filter	**Ordering code**	
			Part number	
PNP	NC/NO	Polarizing filter	**Ordering code**	
		Output special assignment	Part number	
PNP	NC/NO	Receiver	**Ordering code**	
			Part number	
PNP	NC/NO	Receiver	**Ordering code**	
		Output special assignment	Part number	
		Emitter	**Ordering code**	
			Part number	
Supply voltage U_S				10...30 V DC
Output current				100 mA
No-load supply current I_0 max.				60 mA
Switching type				Light/dark switching (selectable)
Polarity reversal/short-circuit protected				Yes/Yes
Settings				Teach-in
Help functions				
Emitter, light type				Laser, red light
Wavelength				650 Nm
Laser class				1
Power-on indicator				
Output function indicator				Yellow LED
Stability indicator				Green/red LED
Response time				0.5 ms
Switching frequency f				1 kHz
Degree of protection as per IEC 60529				IP 67
Ambient temperature T_a				–10...+50 °C
Permissible ambient light				5 klx
Material			Housing	GD-Zn/Al
			Optical surface	PMMA
Connection				M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

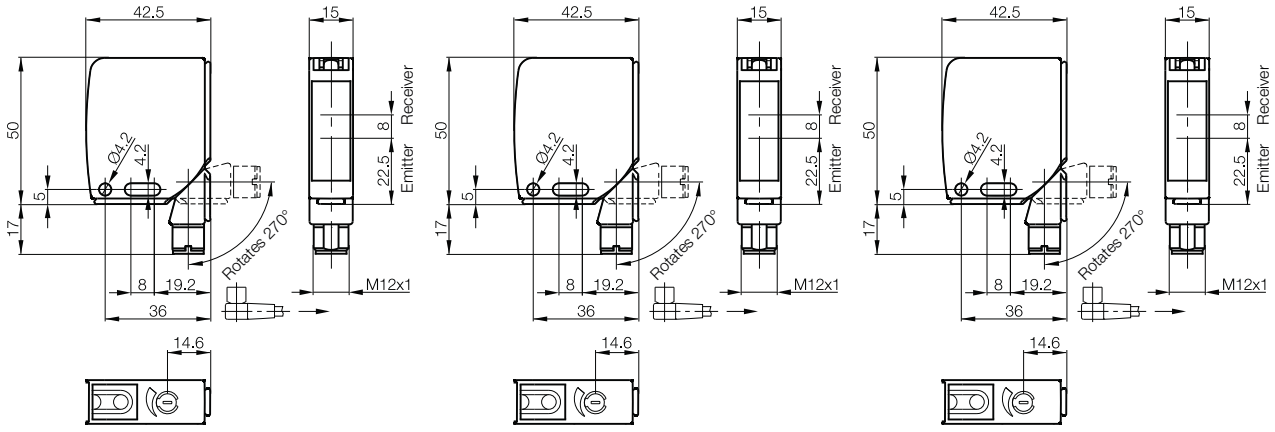
For wiring diagrams see page 195.





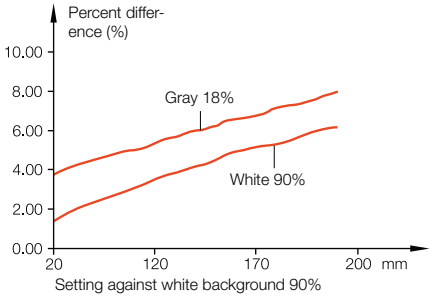


	Diffuse sensor	**Retroreflective sensor**	**Through-beam sensor**
	0...600 mm	**0.1...20 m**	**0...60 m**
	BOS0032		
	BOS 21M-PA-LD10-S4		
		BOS00TL	
		BOS 21M-PA-LR10-S4	
		BOS00TM	
		BOS 21M-PA-LR10-S4S	
			BOS00WW
			BOS 21M-PA-LE10-S4
			BOS00WY
			BOS 21M-PA-LE10-S4S
			BOS00Y0
			BOS 21M-XT-LS11-S4
	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA
	35 mA	35 mA	≤ 35 mA
	Light/dark (complementary)	Light/dark (complementary)	Light/dark (complementary)
	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
			Test input (emitter)
	Laser, red light	Laser, red light	Laser, red light
	650 Nm	650 Nm	650 Nm
	1	1	1
	Green LED	Green LED	Green LED
	Yellow LED	Yellow LED	Yellow LED
	0.25 ms	0.25 ms	1 ms
	2 kHz	2 kHz	500 Hz
	IP 67	IP 67	IP 67
	–10...+50 °C	–10...+50 °C	–25...+55 °C
	5 klx	5 klx	10 klx
	GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
	PMMA	PMMA	PMMA
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



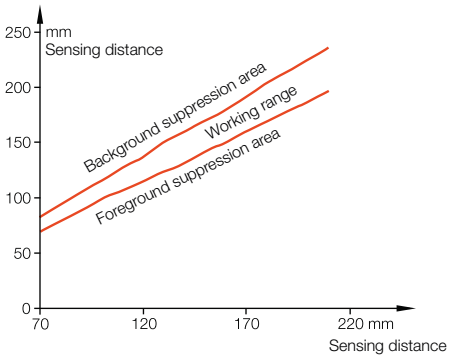
Function diagrams

Diffuse sensor with background suppression
BOS 21M-PUS-RH12



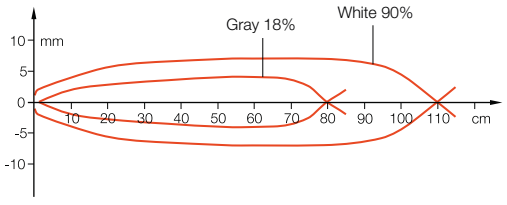
Detection range

Diffuse sensor with fore- and background suppression
BOS 21M-PUS-RV13

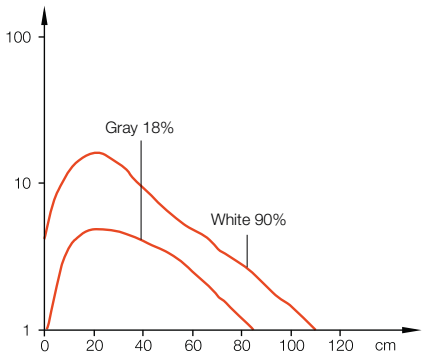


Detection range

Diffuse sensor
BOS 21M-PA-RD10

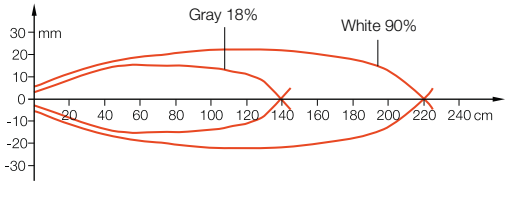


Detection range

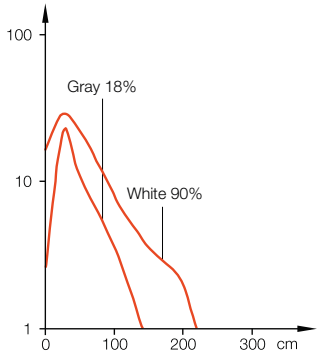


Function reserve

Diffuse sensor, long range
BOS 21M-PA-ID10

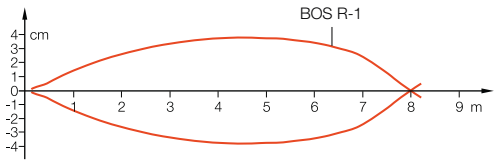


Detection range

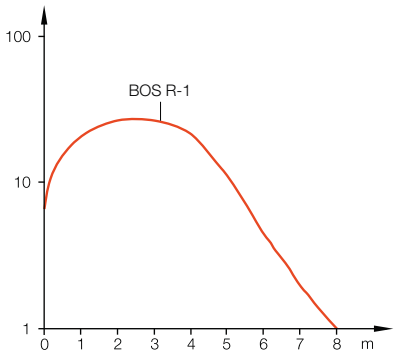


Function reserve

Retroreflective sensor with polarization
BOS 21M-PA-PR10

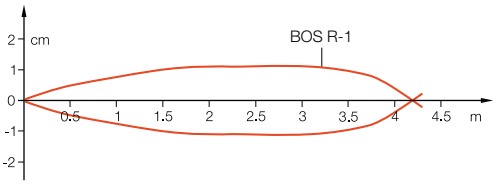


Detection range

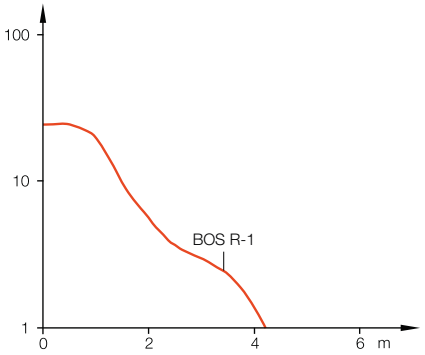


Function reserve

Retroreflective sensor with autocollimation
BOS 21M-PA-PK10

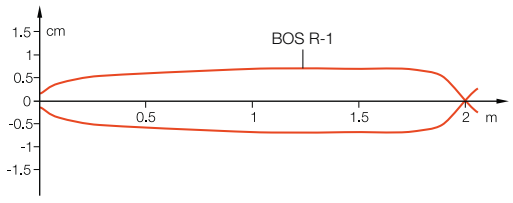


Detection range

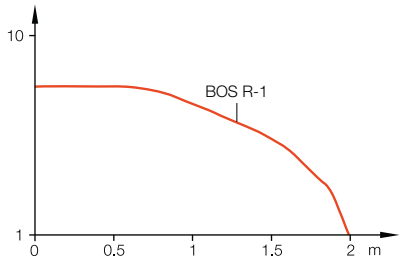


Function reserve

Retroreflective sensor with glass detection
BOS 21M-PA-PT_-S4

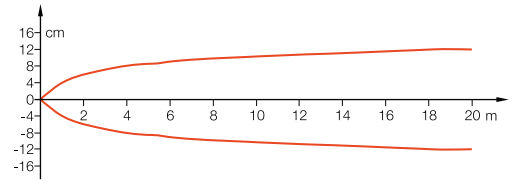


Detection range

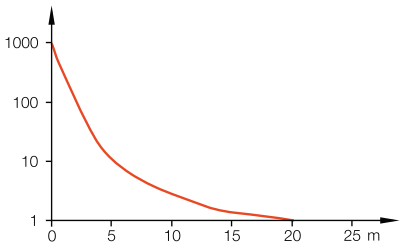


Resolution

Through-beam sensor
BOS 21M-PA-IE10



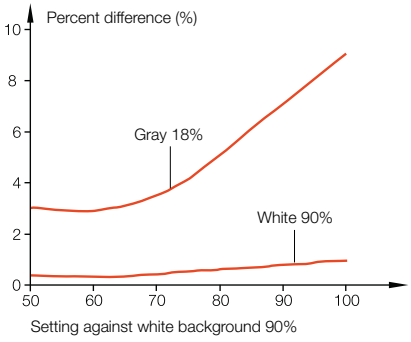
Detection range



Function reserve

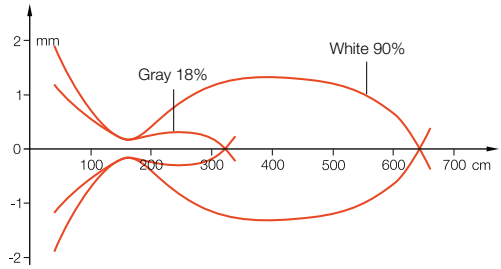
Function diagrams

Laser diffuse sensor with background suppression
BOS 21M-PUS-LH12-

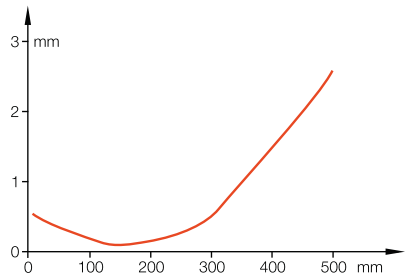


Tolerance with standard setting

Laser diffuse sensor
BOS 21M-PA-LD10-

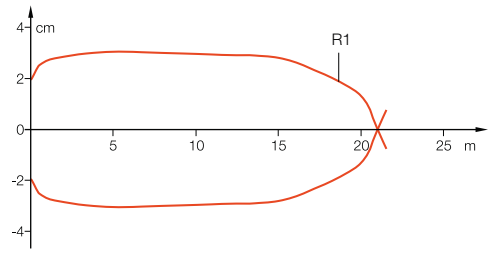


Detection range

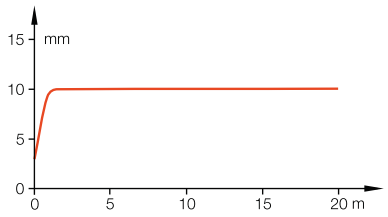


Resolution

Laser retroreflective sensor with polarization
BOS 21M-PA-LR10-

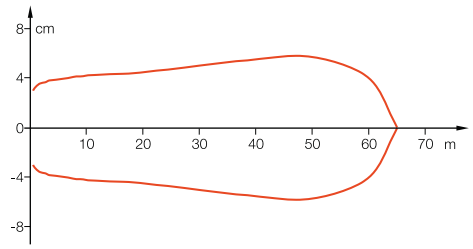


Detection range

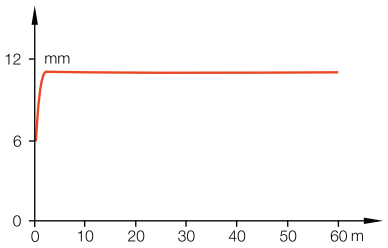


Resolution

Laser through-beam sensor
BOS 21M-PA-LE10-



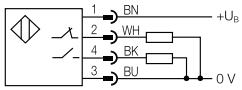
Detection range



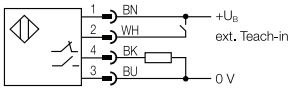
Resolution

Wiring diagrams

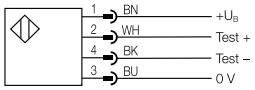
BOS 21M-PA-...S4



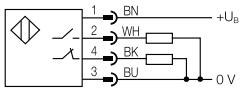
BOS 21M-PUS-...S4



BOS 21M-XT-...S4



BOS 21M-PA-...S4S





Recommended accessories
(please order separately)

Description	Ordering code
① Reflector	**BAM00UK**
② Reflector	**BAM00WL**
③ Clamping holders	**BAM00TF**
④ Clamping holders	**BAM00TH**
⑤ Adapter plate	**BAM00T7**
⑥ Mounting bracket	**BAM00T9**
⑦ Mounting bracket	**BAM00TA**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

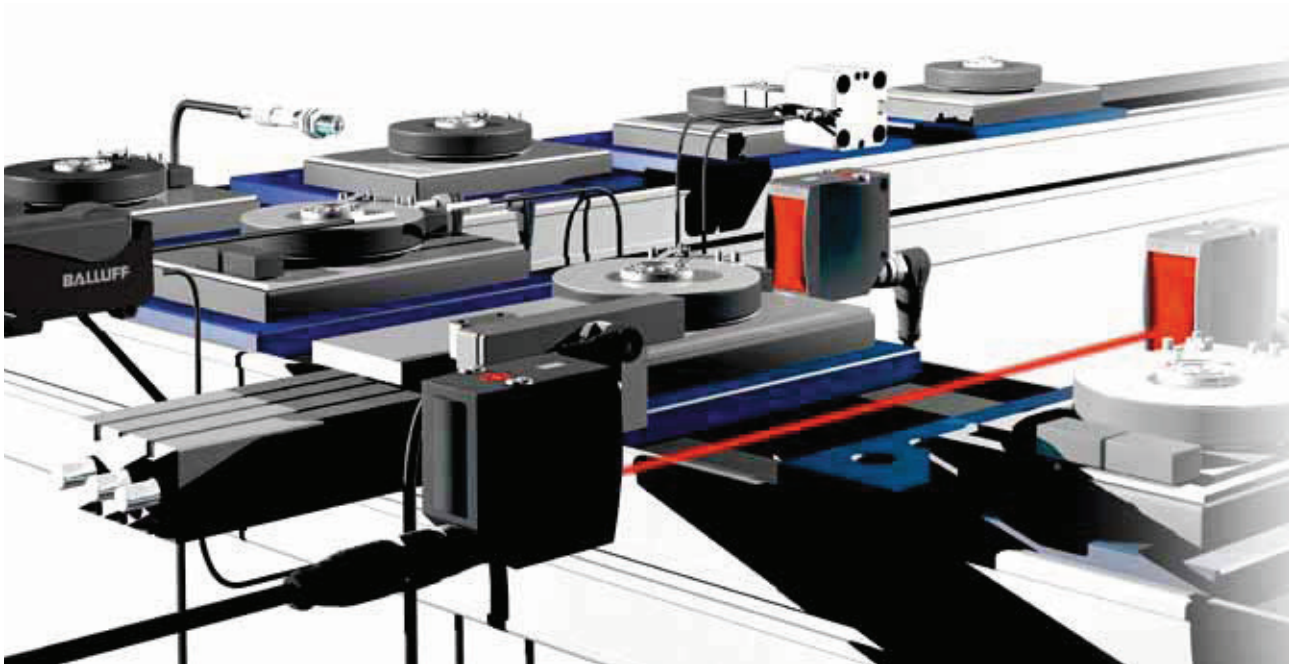
The new photoelectric series **BOS 23K** stands for precise switching behavior with exact positioning tasks. Its high ranges and compact design provide for great freedom in designing the system.

The laser variants are ideal for detecting small parts.

Additional Features

- Highly visible red light/laser light for precision alignment
- LEDs visible from all sides
- Adjustable mounting options
- Outstanding price/performance ratio





Type		Sensing distance/ Range	Light type		Output	Switching type		Switching frequency	U_S	Connection		Special features				Page
Ordering code / Part number			Red light	Laser	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 connector, 4-pin		Polarizing filter	Laser Class 1	Teach-in	Autocollimation	
Diffuse sensor with background suppression																
BOS01FL	BOS 23K-PA-RH10-S4	70...800 mm	■		■	■	■	600 Hz	■	■						198
BOS0178	BOS 23K-PU-RH10-S4	70...800 mm	■		■	■	■	600 Hz	■	■						198
BOS017C	BOS 23K-PU-LH10-S4	120...600 mm		■	■	■	■	1 kHz	■	■			■			200
BOS01FR	BOS 23K-PA-LH10-S4	120...600 mm		■	■	■	■	1 kHz	■	■			■			200
BOS01FT	BOS 23K-PA-LH20-S4	150...800 mm		■	■	■	■	1 kHz	■	■						200
BOS017H	BOS 23K-PU-LH20-S4	150...800 mm		■	■	■	■	1 kHz	■	■						200
Diffuse sensor																
BOS01FM	BOS 23K-PA-RD10-S4	0...2 m	■		■	■	■	600 Hz	■	■				■		198
BOS016Z	BOS 23K-PU-RD10-S4	0...2 m	■		■	■	■	600 Hz	■	■				■		198
BOS0175	BOS 23K-PU-LD20-S4	0...1.2 m		■	■	■	■	600 Hz	■	■				■		201
Retroreflective sensor																
BOS01FN	BOS 23K-PA-RR10-S4	0...14 m	■		■	■	■	600 Hz	■	■		■		■		199
BOS016P	BOS 23K-PU-RR10-S4	0...14 m	■		■	■	■	600 Hz	■	■		■		■		199
BOS01HJ	BOS 23K-PA-LR10-S4	0...14 m		■	■	■	■	2 kHz	■	■		■	■	■		201
BOS016U	BOS 23K-PU-LR10-S4	0...14 m		■	■	■	■	2 kHz	■	■		■	■	■		201
Retroreflective sensor with autocollimation																
BOS01NC	BOS 23K-PA-LK10-S4	0.1...20 m	■	■	■	■	■	2.5 kHz	■	■		■	■	■	■	203
Through-beam sensor Receiver																
BOS01FP	BOS 23K-PA-RE10-S4	0...25 m	■		■	■	■	500 Hz	■	■				■		199
BOS016F	BOS 23K-PU-RE10-S4	0...25 m	■		■	■	■	500 Hz	■	■				■		199
BOS01FU	BOS 23K-PA-LE10-S4	0...30 m		■	■	■	■	3.5 kHz	■	■			■	■		201
BOS016L	BOS 23K-PU-LE10-S4	0...30 m		■	■	■	■	3.5 kHz	■	■			■	■		201
Through-beam sensor Emitter																
BOS016E	BOS 23K-XT-RS11-S4	0...25 m	■						■	■				■		199
BOS016K	BOS 23K-XT-LS11-S4	0...30 m		■					■	■			■	■		201

NPN on request

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

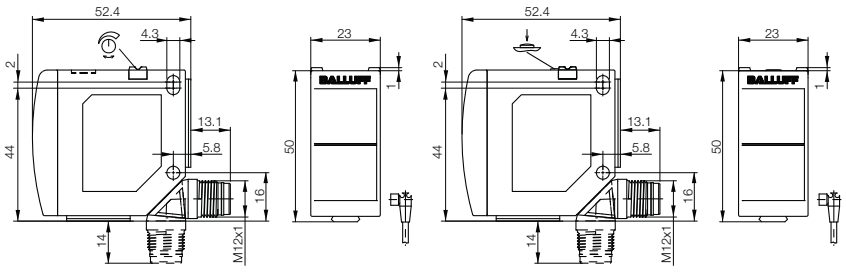




Type			**Diffuse sensor with background suppression**	**Diffuse sensor**
Detection range			**90 % 3...1200 mm** **18 % 5...800 mm** **6 % 10...600 mm**	**90 % 5...2000 mm** **18 % 10...1200 mm** **6 % 90...600 mm**
PNP	Complementary	**Ordering code**	**BOS01FL**	**BOS01FM**
		Part number	BOS 23K-PA-RH10-S4	BOS 23K-PA-RD10-S4
PNP	NO/NC switchable	**Ordering code**	**BOS0178**	**BOS016Z**
		Part number	BOS 23K-PU-RH10-S4	BOS 23K-PU-RD10-S4
PNP	Complementary	**Ordering code**		
		Part number		
PNP	NO/NC switchable	**Ordering code**		
		Part number		
PNP	Receiver	**Ordering code**		
		Part number		
PNP	Receiver	**Ordering code**		
		Part number		
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 30 mA
Switching type			Light/dark	Light/dark
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			18-turn potentiometer	Teach-in / control input
Emitter, light type			LED, red light	LED, red light
Wavelength			640 Nm	640 Nm
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Flashing yellow LED	Flashing yellow LED
Response time			0.833 ms	0.833 ms
Switching frequency f			600 Hz	600 Hz
Degree of protection as per IEC 60529			IP 67/IP 69K	IP 67/IP 69K
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	PC-ABS	PC-ABS
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	M12 connector, 4-pin

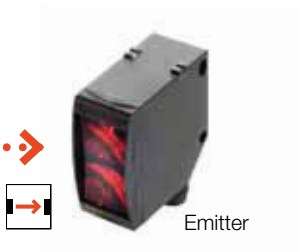
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 207.

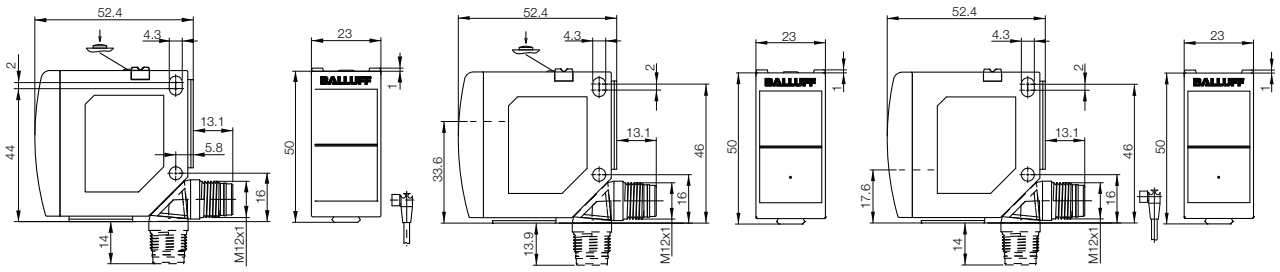








	Retroreflective sensor 0.3...12 m	Through-beam sensor 0...20 m	Through-beam sensor 0...20 m
	BOS01FN		
	BOS 23K-PA-RR10-S4		
	BOS016P		
	BOS 23K-PU-RR10-S4		
		BOS01FP	
		BOS 23K-PA-RE10-S4	
		BOS016F	
		BOS 23K-PU-RE10-S4	
			BOS016E
			BOS 23K-XT-RS11-S4
	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	
	≤ 30 mA	≤ 30 mA	≤ 30 mA
	Light/dark	Light/dark	
	Yes/Yes	Yes/Yes	
	Teach-in / control input	Teach-in / control input	
	LED, red light	LED, red light	
	640 Nm	640 Nm	
	Green LED	Green LED	
	Yellow LED	Yellow LED	
	Flashing yellow LED	Flashing yellow LED	
	0.833 ms	1 ms	
	600 Hz	500 Hz	
	IP 67/IP 69K	IP 67/IP 69K	IP 67/IP 69K
	–20...+60 °C	–20...+60 °C	–20...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	PC-ABS	PC-ABS	PC-ABS
	PMMA	PMMA	PMMA
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin





Laser Class 1

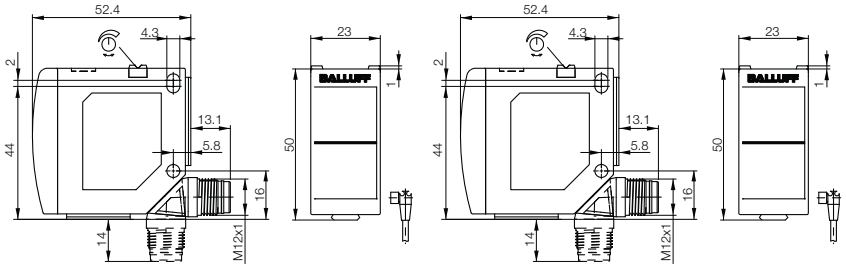


Laser Class 2

Type			**Diffuse sensor with background suppression**	**Diffuse sensor with background suppression**
Detection range			**90 % 5...800 mm** **18 % 10...600 mm** **6 % 30...500 mm**	**90 % 5...1000 mm** **18 % 10...800 mm** **6 % 15...700 mm**
PNP	Complementary	**Ordering code**	**BOS01FR**	**BOS01FT**
		Part number	BOS 23K-PA-LH10-S4	BOS 23K-PA-LH20-S4
PNP	NO/NC switchable	**Ordering code**	**BOS017C**	**BOS017H**
		Part number	BOS 23K-PU-LH10-S4	BOS 23K-PU-LH20-S4
PNP	Complementary	**Ordering code**		
		Part number		
PNP	NO/NC switchable	**Ordering code**		
		Part number		
PNP	NO/NC Receiver	**Ordering code**		
		Part number		
PNP	NO/NC Receiver	**Ordering code**		
		Part number		
	Emitter	**Ordering code**		
		Part number		
Supply voltage U_S			12...30 V DC	12...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 30 mA	≤ 30 mA
Switching type			Light/dark	Light/dark
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			18-turn potentiometer	18-turn potentiometer
Emitter, light type			Laser, red light	Laser, red light
Wavelength			655 Nm	655 Nm
Laser class			1	2
Light spot diameter			2 mm at 600 mm	2.5x3.5 mm at 800 mm
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Flashing yellow LED	Flashing yellow LED
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Degree of protection as per IEC 60529			IP 67/IP 69K	IP 67/IP 69K
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	PC-ABS	PC-ABS
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 207.





Laser Class 2

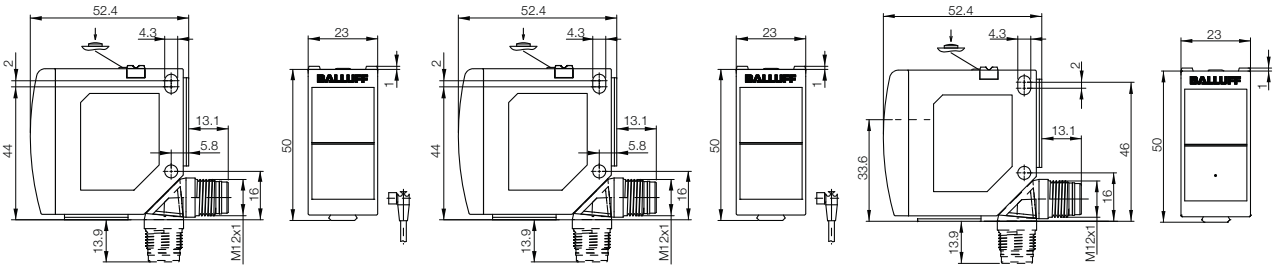


Laser Class 1



Laser Class 1

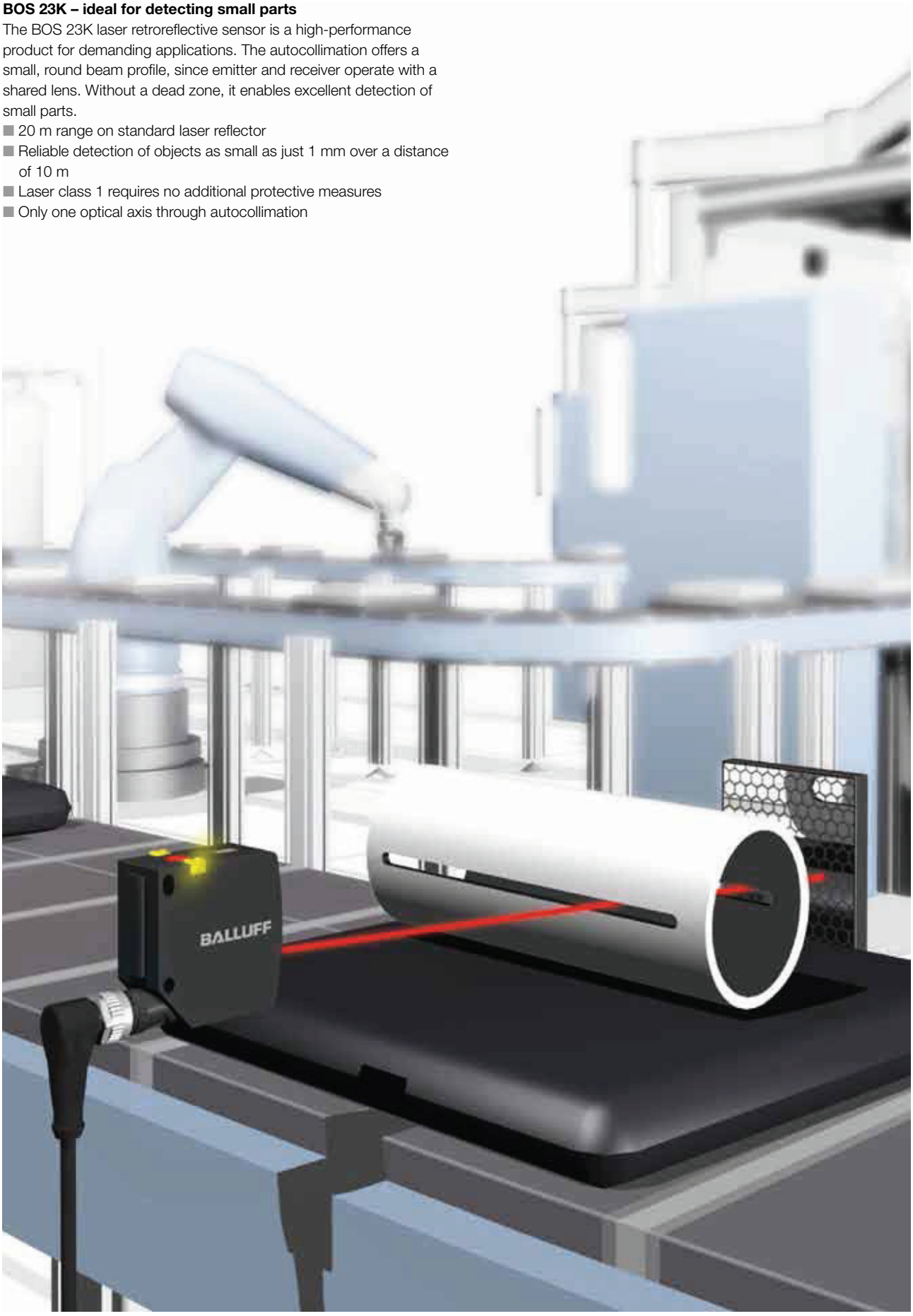
	Diffuse sensor	Retroreflective sensor	Through-beam sensor
	90 % 5...1200 mm **18 % 10...700 mm** **6 % 100...400 mm**	**0.3...12 m**	**0...25 m**
	BOS0175		
	BOS 23K-PU-LD20-S4		
		BOS01HJ	
		BOS 23K-PA-LR10-S4	
		BOS016U	
		BOS 23K-PU-LR10-S4	
			BOS01FU
			BOS 23K-PA-LE10-S4
			BOS016L
			BOS 23K-PU-LE10-S4
			BOS016K
			BOS 23K-XT-LS11-S4
	10...30 V DC	10...30 V DC	10...30 V DC
	100 mA	100 mA	100 mA
	≤ 30 mA	≤ 30 mA	≤ 30 mA
	Light/dark	Light/dark	Light/dark
	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in button / control input	Teach-in button / control input	Teach-in button / control input
	Laser, red light	Laser, red light	Laser, red light
	655 Nm	655 Nm	655 Nm
	2	1	1
	1.2x2.2 m at 1200 mm		17 mm at 14 m
	Green LED	Green LED	Green LED
	Yellow LED	Yellow LED	Yellow LED
	Flashing yellow LED	Flashing yellow LED	Flashing yellow LED
	0.833 ms	0.25 ms	0.14 ms
	600 Hz	2 kHz	3.5 kHz
	IP 67/IP 69K	IP 67/IP 69K	IP 67/IP 69K
	–20...+60 °C	–20...+60 °C	–20...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	PC-ABS	PC-ABS	PC-ABS
	PMMA	PMMA	PMMA
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



BOS 23K – ideal for detecting small parts

The BOS 23K laser retroreflective sensor is a high-performance product for demanding applications. The autocollimation offers a small, round beam profile, since emitter and receiver operate with a shared lens. Without a dead zone, it enables excellent detection of small parts.

- 20 m range on standard laser reflector
- Reliable detection of objects as small as just 1 mm over a distance of 10 m
- Laser class 1 requires no additional protective measures
- Only one optical axis through autocollimation



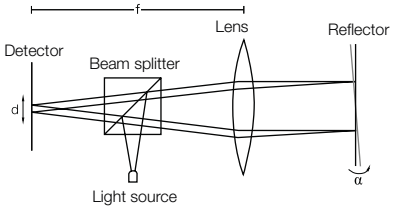
BOS 23K Laser retroreflective sensor with autocollimation



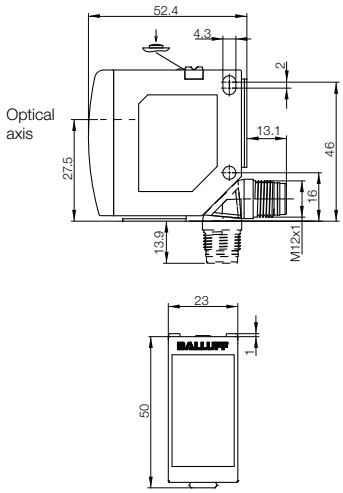
Type		**Retroreflective sensor**
Detection range		**0.1...20 m**
2×PNP complementary	**Ordering code**	**BOS01NC**
	Part number	BOS 23K-PA-LK10-S4
Supply voltage U_S		10...30 V DC
Output current		100 mA
No-load supply current I_0 max.		≤ 30 mA
Switching type		Light/dark
Polarity reversal/short-circuit protected		Yes/Yes
Settings		Teach-in button / control input
Emitter, light type		Laser, red light
Wavelength		655 Nm
Laser class		1
Power-on indicator		Green LED
Output function indicator		Yellow LED
Stability indicator		Flashing yellow LED
Response time		0.2 ms
Switching frequency f		2.5 kHz
Degree of protection as per IEC 60529/DIN 40050		IP 67/IP 69K
Ambient temperature T_a		–20...+60 °C
Permissible ambient light		EN 60947-5-2
Material	Housing	PC-ABS
	Optical surface	PMMA
Connection		M12 connector, 4-pin
Reference reflector		BOS R-22

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-22

For wiring diagrams see page 207.

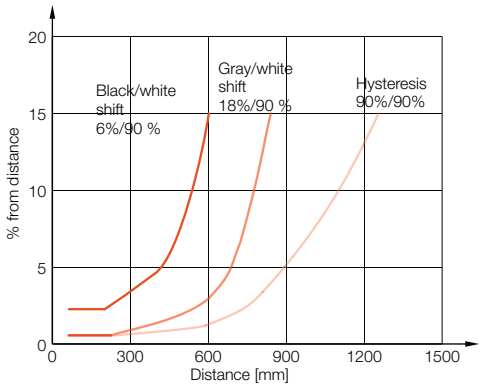


Internal structure

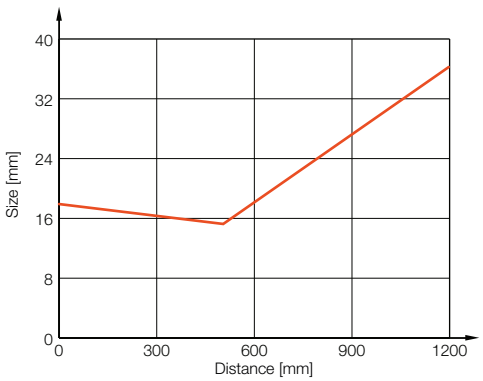


Function diagrams

Diffuse sensor with background suppression BOS 23K-..-RH10-...
Scanning features



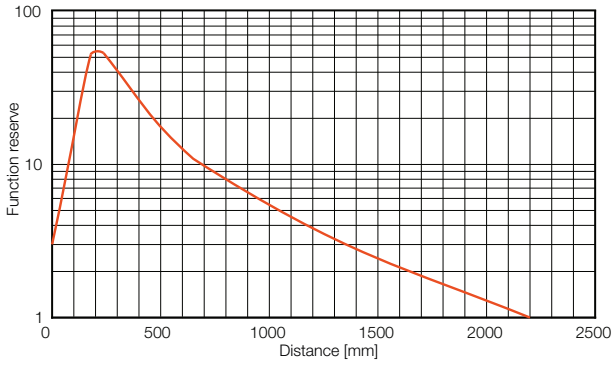
Diffuse sensor with background suppression BOS 23K-..-RH10-...
Light spot size



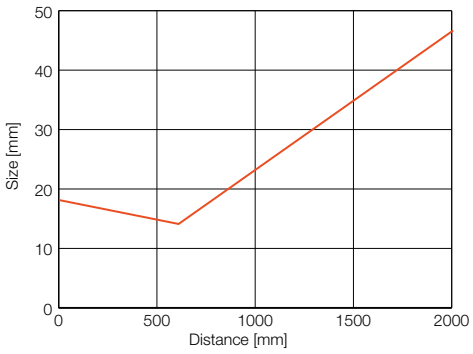
Detection range BOS 23K-..-RH10-...

Reference material	Detection range
White 90%	3...1200 mm
Gray 18%	5...800 mm
Black 6%	10...600 mm

Diffuse sensor BOS 23K-..-RD10-...
Function reserve



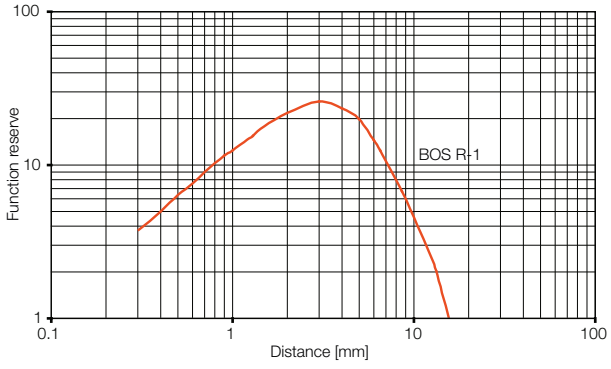
Diffuse sensor BOS 23K-..-RD10-...
Light spot size



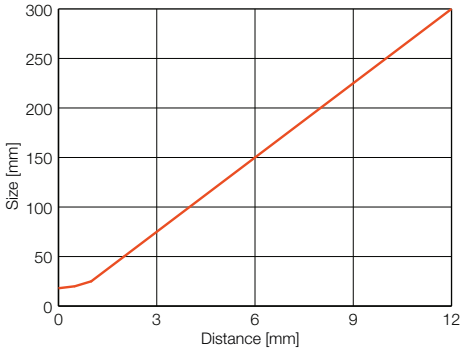
Detection range BOS 23K-..-RD10-...

Reference material	Detection range
White 90%	5...2000 mm
Gray 18%	10...1200 mm
Black 6%	90...600 mm

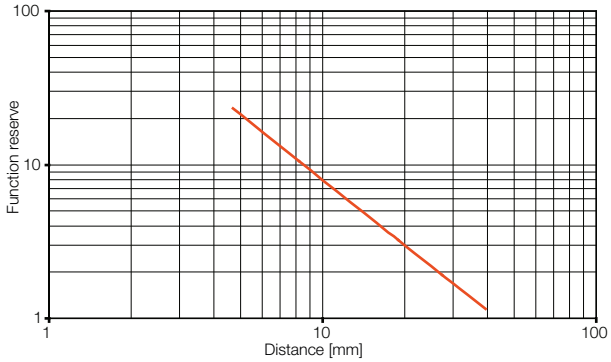
Retroreflective sensor BOS 23K-..-RR10-...
Function reserve



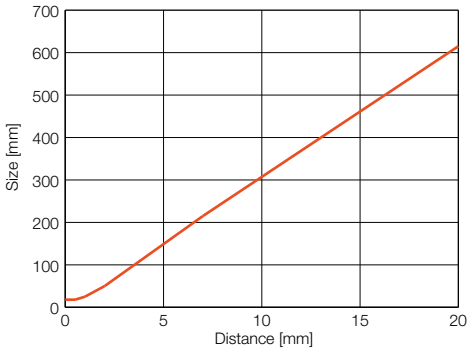
Retroreflective sensor BOS 23K-..-RR10-...
Light spot diameter



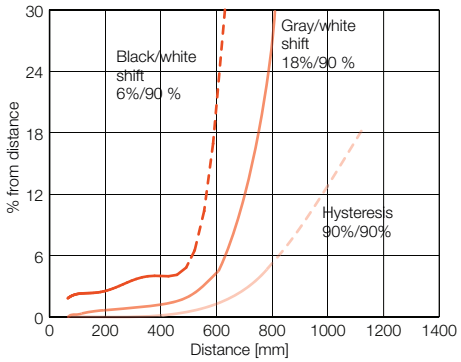
Through-beam sensor BOS 23K-..-RS../RE
Function reserve



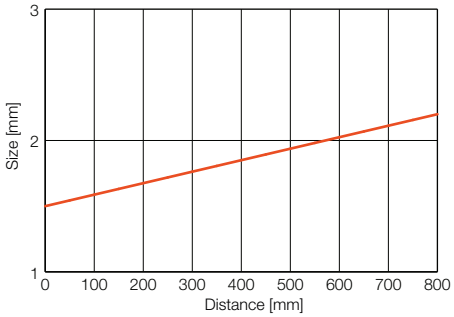
Through-beam sensor BOS 23K-..-RS../RE
Light spot size



Laser diffuse sensor with background suppression BOS 23K-..-LH10-...
Scanning features



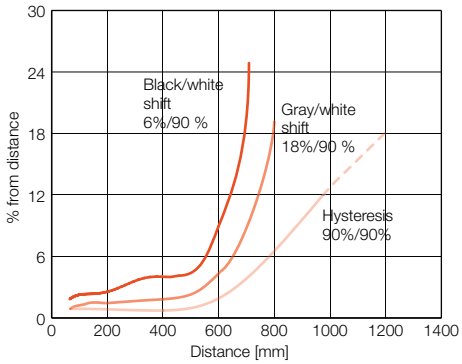
Laser diffuse sensor with background suppression BOS 23K-..-LH10-...
Light spot size



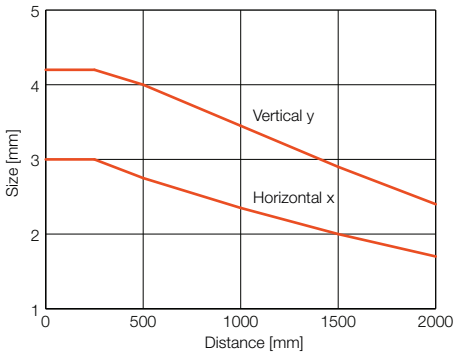
Detection range BOS 23K-..-LH10-...

Reference material	Detection range
White 90%	5...800 mm
Gray 18%	10...600 mm
Black 6%	30...500 mm

Laser diffuse sensor with background suppression BOS 23K-..-LH20-...
Scanning features



Laser diffuse sensor with background suppression BOS 23K-..-LH20-...
Light spot size

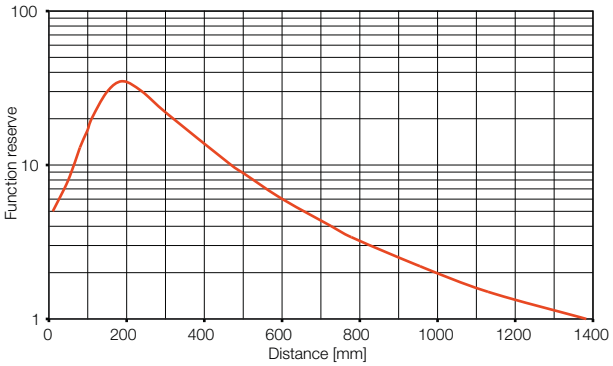


Detection range BOS 23K-..-LH20-...

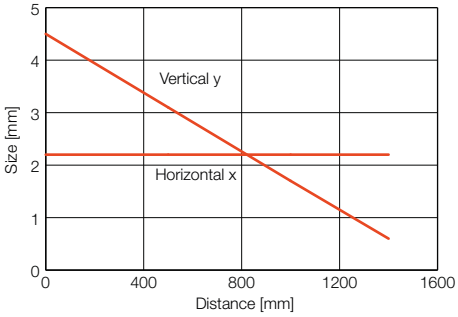
Reference material	Detection range
White 90%	5...1000 mm
Gray 18%	10...800 mm
Black 6%	15...700 mm

Function diagrams

Laser diffuse sensor BOS 23K-..-LD20-... Function reserve



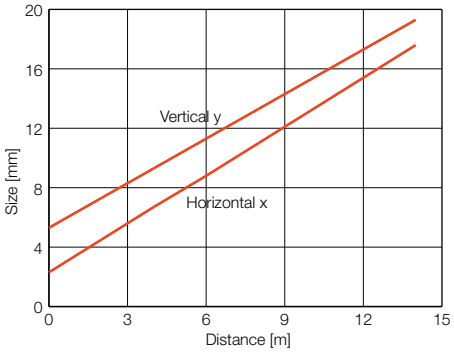
Laser diffuse sensor BOS 23K-..-LD20-... Light spot size



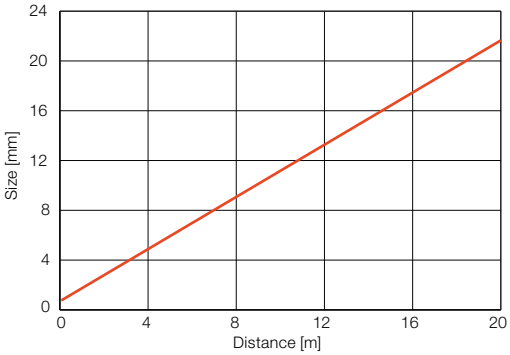
Detection range BOS 23K-..-LD20-...

Reference material	Detection range
White 90%	5...1200 mm
Gray 18%	10...700 mm
Black 6%	100...400 mm

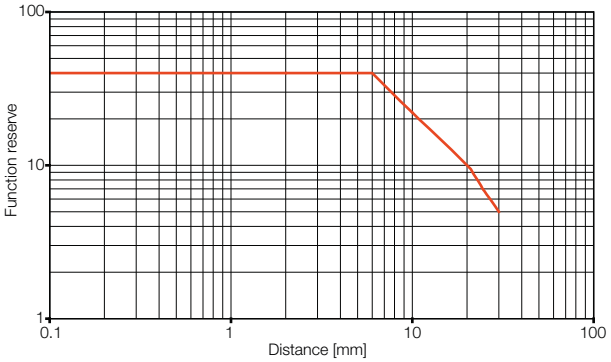
Laser retroreflective sensor BOS 23K-..-LR10-... Light spot size



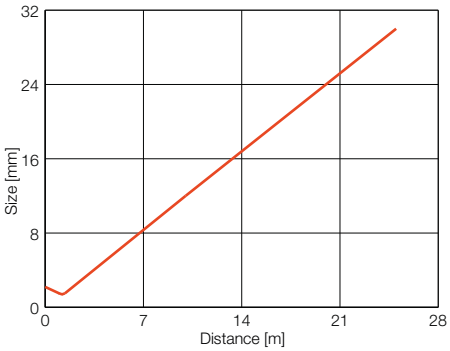
Laser light sensor with autocollimation, BOS 23K-PA-LK10-S4, light spot size



Laser through-beam sensor BOS 23K-..-LE../LS..-... Function reserve

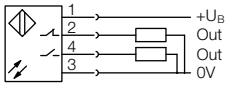


Laser through-beam sensor BOS 23K-..-LE../LS-... Light spot size

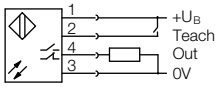


Wiring diagrams

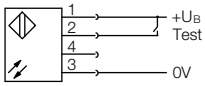
BOS 23K-PA-...



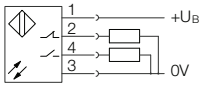
BOS 23K-PU-...



BOS 23K-XT-...



BOS 23K-PA-LK10-S4



Recommended accessories
(please order separately)

Description	Ordering code
① Reflector	**BAM00UK**
② Reflector	**BAM00WL**
③ Laser reflector	**BAM00UY**
④ Reflective tape	**BAM01JM**
⑤ Clamping holders	**BAM00TF**
⑥ Clamping holders	**BAM00TH**
⑦ Weld protection	**BAM01L8**
⑧ Mounting bracket	**BAM01FK**
⑨ Mounting bracket	**BAM01FM**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

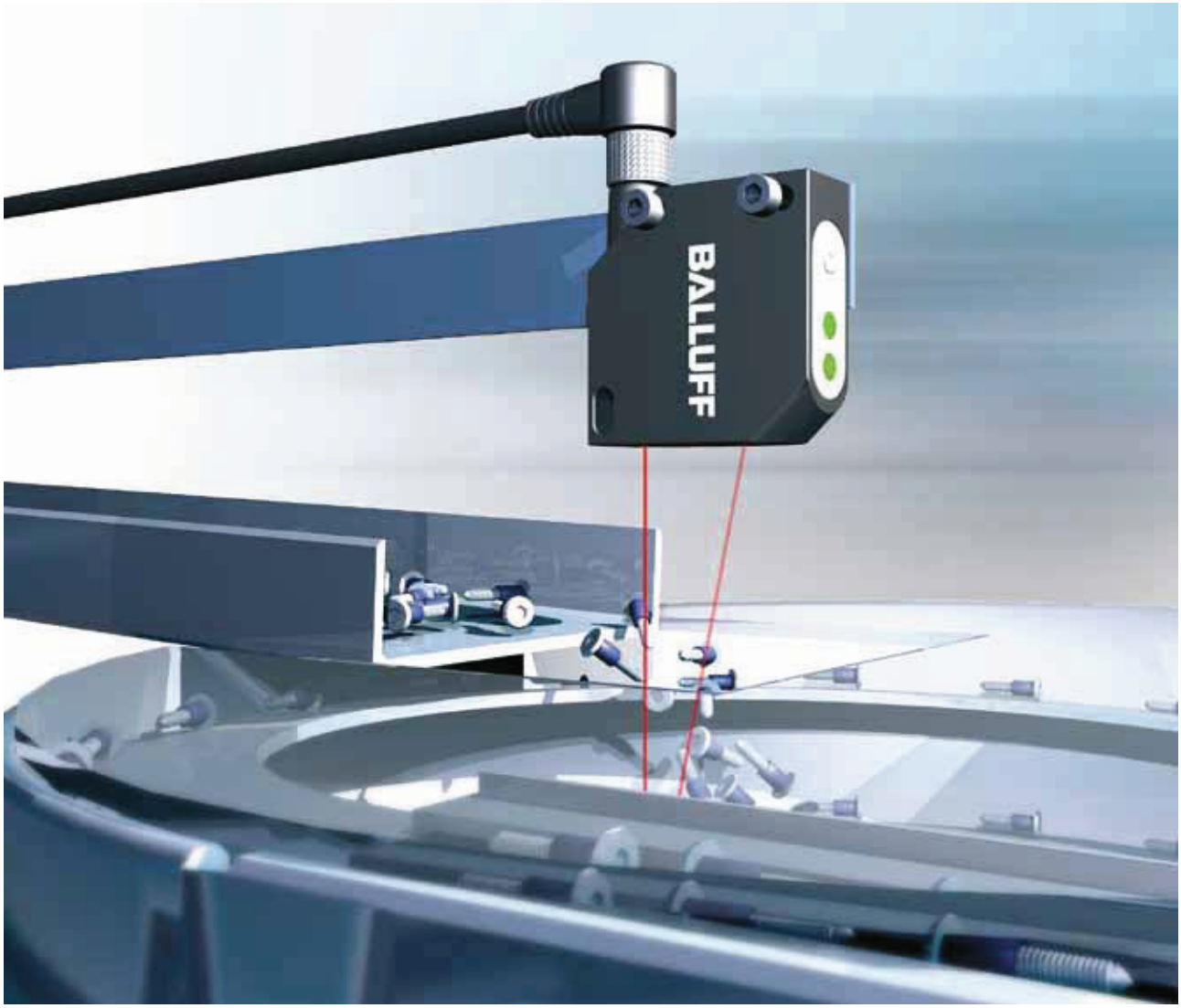
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

The BOS 26K series is ideally suited wherever greater demands are made in terms of precision, handling, high sensing distance or range, and detection of small parts.
The retroreflective sensors feature autocollimation, that is, the emitter and receiver beams coincide geometrically.
Advantage: Exact switching points for any desired side-approaching object in the entire beam path.
The diffuse sensor with background suppression **BOS 26K-..-1LHB,** with its focused light beam, can accurately detect very small objects in virtually any color between 30 and 150 mm. The focusing feature enables a spot size of just 0.1 mm at a distance of 80 mm.

Features
- Rotatable M12 connector
- Precise setting mechanism with two revolutions (720°)
- Clear digital display for the sensitivity setting
- Switching status and contamination indicator visible from any direction
- Complementary PNP output
- High switching frequency for laser version

Applications
- Precise detection of small parts
- Positioning tasks
- Detail checking
- Conveyor inspection (background suppression)
- Conveyor technology
- Automation technology
- Handling machines, robotics
- Machine tool building
- Specialty machines



Type	Ordering code / Part number	Sensing distance/ Range	Light type: Red light	Light type: Infrared	Light type: Laser	Output: PNP	Switching type: Light switching	Switching type: Dark switching	Switching frequency	U_S: 10...30 V DC	Connection: M12 connector, 4-pin	Special features: Polarizing filter	Special features: Autocollimation	Special features: Laser Class 1	Special features: Alarm output	Page
Diffuse sensor with background suppression																
BOS008C	BOS 26K-PA-1LHA-SA1-S4-C	40...60 mm			■	■	■	■	2.5 kHz	■	■					212
BOS008E	BOS 26K-PA-1LHB-S4-C	30...150 mm			■	■	■	■	2.5 kHz	■	■					213
BOS0089	BOS 26K-PA-1HC-S4-C	30...300 mm	■			■	■	■	1 kHz	■	■					210
BOS008F	BOS 26K-PA-1LHC-S4-C	50...300 mm			■	■	■	■	2.5 kHz	■	■					213
BOS008A	BOS 26K-PA-1IE-S4-C	150...600 mm		■		■	■	■	800 Hz	■	■					211
Retroreflective sensor with polarizing filter																
BOS008M	BOS 26K-PA-1QE-S4-C	0...5.5 mm	■			■	■	■	1 kHz	■	■	■	■			211
BOS008N	BOS 26K-PO-1QE-SA1-C	0...5.5 mm	■			■	■		1 kHz	■	■	■	■		■	211
BOS008L	BOS 26K-PA-1LQP-S4-C	0...20 m			■	■	■	■	2.5 kHz	■	■	■	■	■		214
BOS008J	BOS 26K-PA-1LQE-SA1-S4-C	0...7 mm			■	■	■	■	2.5 kHz	■	■	■	■	■		215
BOS008K	BOS 26K-PA-1LQE-SA2-S4-C	0...6 mm			■	■	■	■	2.5 kHz	■	■	■	■	■		215

NPN on request

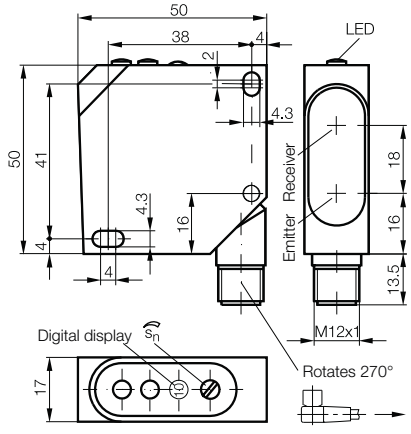
Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors



Type				**Diffuse sensor with background suppression**	
Detection range				**30...300 mm**	
PNP	NC/NO		**Ordering code**	**BOS0089**	
			Part number	BOS 26K-PA-1HC-S4-C	
PNP	NC/NO	Polarizing filter, autocollimation,	**Ordering code**		
			Part number		
PNP	NC	Polarizing filter, autocollimation, Alarm output	**Ordering code**		
			Part number		
Supply voltage U_S				10...30 V DC	
Output current				200 mA	
No-load supply current I_0 max.				≤ 35 mA	
Switching type				Light/dark (complementary)	
Polarity reversal/short-circuit protected				Yes/Yes	
Settings				2-turn potentiometer with indicator	
Help function					
Emitter, light type				LED, red light, pulsed	
Wavelength				660 Nm	
Light spot diameter				approx. 8 mm at 200 mm	
Gray value shift (90%/18%)				8 %	
Distance hysteresis				<5%	
Power-on indicator				Green LED	
Output function indicator				Yellow LED	
Stability indicator				Red LED	
Response time				0.5 ms	
Switching frequency f				1 kHz	
Degree of protection as per IEC 60529				IP 67	
Ambient temperature T_a				–20...+60 °C	
Permissible ambient light				EN 60947-5-2	
Material			Housing	ABS, impact-resistant	
			Optical surface	PMMA	
Connection				M12 connector, 4-pin	

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 217.

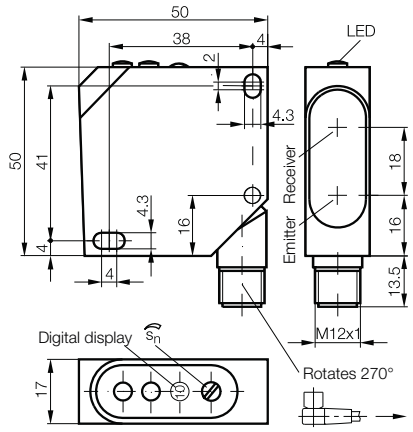


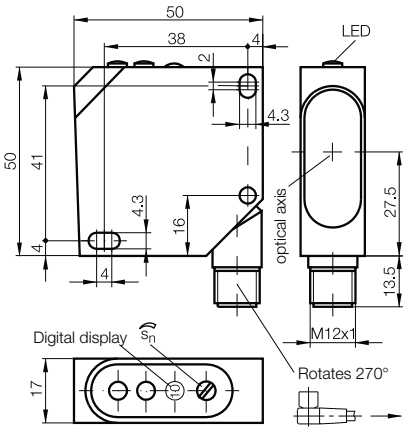


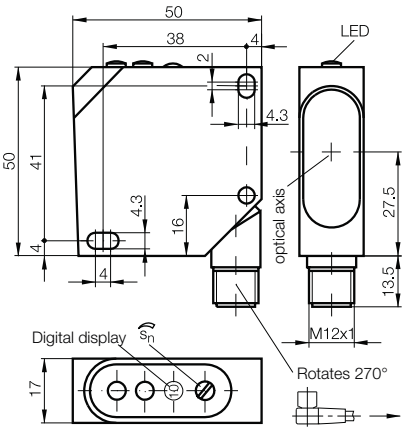




Diffuse sensor with background suppression	Retroreflective sensor	Retroreflective sensor
150...600 mm	**0...5.5 m**	**0...5.5 m**
BOS008A		
BOS 26K-PA-1IE-S4-C		
	BOS008M	
	BOS 26K-PA-1QE-S4-C	
		BOS008N
		BOS 26K-PO-1QE-SA1-C
10...30 V DC	10...30 V DC	10...30 V DC
200 mA	200 mA	200 mA
≤ 70 mA	≤ 30 mA	≤ 30 mA
Light/dark (complementary)	Light/dark (complementary)	Light switching
Yes/Yes	Yes/Yes	Yes/Yes
2-turn potentiometer with indicator	2-turn potentiometer with indicator	2-turn potentiometer with indicator
		Contamination output
LED, infrared, pulsed	LED, red light, pulsed	LED, red light, pulsed
880 Nm	660 Nm	660 Nm
approx. 20 mm at 400 mm	Ø 15 mm in 500 mm	Ø 15 mm in 500 mm
12 %		
<5%		
Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED
Red LED	Red LED	Red LED
0.625 ms	0.5 ms	0.5 ms
800 Hz	1 kHz	1 kHz
IP 67	IP 67	IP 67
–20...+60 °C	–20...+60 °C	–20...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
ABS, impact-resistant	ABS, impact-resistant	ABS, impact-resistant
PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin







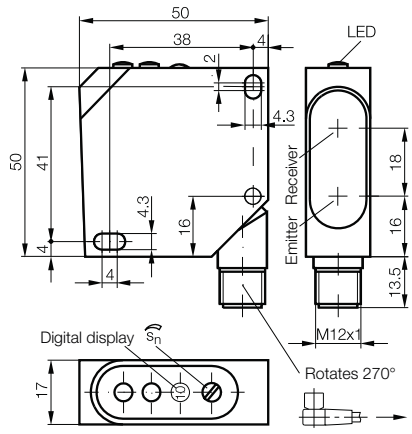
BOS 26K Laser



Type			**Diffuse sensor with background suppression**
Detection range			**40...60 mm**
PNP NC/NO		**Ordering code**	**BOS008C**
		Part number	BOS 26K-PA-1LHA-SA1-S4-C
Supply voltage U_S			10...30 V DC
Output current			200 mA
No-load supply current I_0 max.			≤ 50 mA
Switching type			Light/dark (complementary)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			2-turn potentiometer with indicator
Emitter, light type			Laser, red light
Wavelength			670 Nm
Laser class			2
Light spot diameter			see table
Gray value shift (90%/18%)			1 %
Distance hysteresis			≤ 50 µm
Power-on indicator			Green LED
Output function indicator			Yellow LED
Stability indicator			Red LED
Response time			0.2 ms
Switching frequency f			2.5 kHz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–20...+45 °C
Permissible ambient light			EN 60947-5-2
Material		Housing	ABS, impact-resistant
		Optical surface	PMMA
Connection			M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 217.



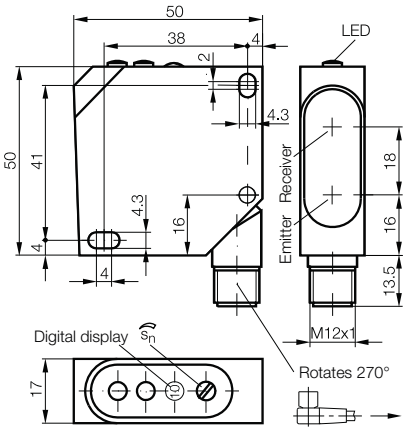
Light spot diameter [mm]

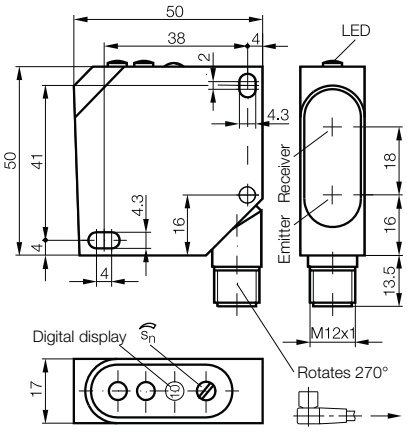
Sensing distance	40	45	50	55	60
Light spot Ø	0.25	0.7	1.1	1.5	1.8





Diffuse sensor with background suppression	**Diffuse sensor with background suppression**	
30...150 mm	**50...300 mm**	
BOS008E	**BOS008F**	
BOS 26K-PA-1LHB-S4-C	BOS 26K-PA-1LHC-S4-C	
10...30 V DC	10...30 V DC	
200 mA	200 mA	
≤ 50 mA	≤ 50 mA	
Light/dark (complementary)	Light/dark (complementary)	
Yes/Yes	Yes/Yes	
2-turn potentiometer with indicator	2-turn potentiometer with indicator	
Laser, red light	Laser, red light	
670 Nm	650 Nm	
2	2	
see table	3×1 mm at 300 mm	
8 %	5 %	
5 %	2 %	
Green LED	Green LED	
Yellow LED	Yellow LED	
Red LED	Red LED	
0.2 ms	0.2 ms	
2.5 kHz	2.5 kHz	
IP 67	IP 67	
–15...+45 °C	–20...+45 °C	
5 klx	5 klx	
ABS, impact-resistant	ABS, impact-resistant	
PMMA	PMMA	
M12 connector, 4-pin	M12 connector, 4-pin	





Light spot diameter [mm]

Sensing distance	30	60	80	100	150
Light spot Ø	1.8	0.7	0.1	1.1	2.5

Light spot diameter [mm]

Sensing distance	50	100	200	
Light spot Ø	5×1.8	4×1.5	3.8×1.2	

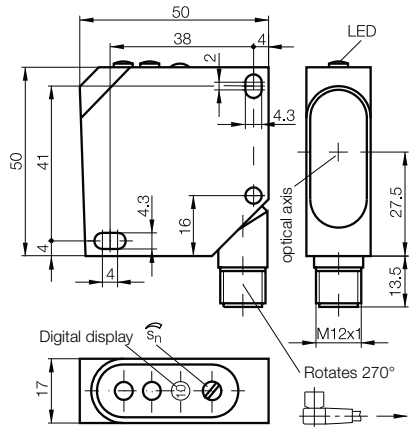


Laser Class 1

Type				**Retroreflective sensor**	
Detection range				**0...20 m**	
PNP	NC/NO	Polarizing filter, autocollimation	**Ordering code**	**BOS008L**	
			Part number	BOS 26K-PA-1LQP-S4-C	
Supply voltage U_S				10...30 V DC	
Output current				200 mA	
No-load supply current I_0 max.				≤ 40 mA	
Switching type				Light/dark (complementary)	
Polarity reversal/short-circuit protected				Yes/Yes	
Settings				2-turn potentiometer with indicator	
Emitter, light type				Laser, red light	
Wavelength				650 Nm	
Laser class				1	
Light spot diameter				11 mm in 12 m	
Power-on indicator				Green LED	
Output function indicator				Yellow LED	
Stability indicator				Red LED	
Response time				0.2 ms	
Switching frequency f				2.5 kHz	
Degree of protection as per IEC 60529				IP 67	
Ambient temperature T_a				–20...+45 °C	
Permissible ambient light				5 klx	
Material			Housing	ABS, impact-resistant	
			Optical surface	PMMA	
Connection				M12 connector, 4-pin	

Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 217.



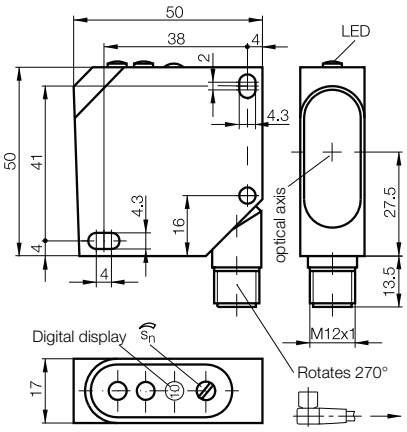
Light spot diameter

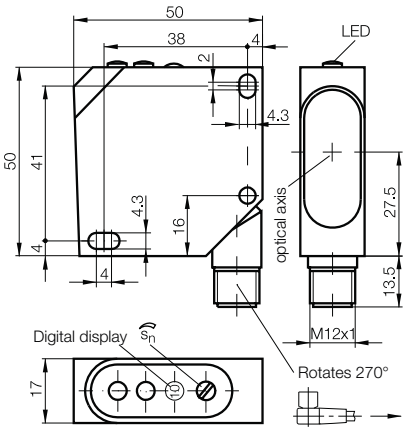
Sensing distance [m]	4	12	20	
Light spot Ø [mm]	4	11	19	





Retroreflective sensor	**Retroreflective sensor**	
0...7 m	**0...6 m**	
BOS008J	**BOS008K**	
BOS 26K-PA-1LQE-SA1-S4-C	BOS 26K-PA-1LQE-SA2-S4-C	
10...30 V DC	10...30 V DC	
200 mA	200 mA	
≤ 40 mA	≤ 40 mA	
Light/dark (complementary)	Light/dark (complementary)	
Yes/Yes	Yes/Yes	
2-turn potentiometer with indicator	2-turn potentiometer with indicator	
Laser, red light	Laser, red light	
650 Nm	650 Nm	
1	1	
1.5 mm in 150 mm	1.5 mm in 50 mm	
Green LED	Green LED	
Yellow LED	Yellow LED	
Red LED	Red LED	
0.2 ms	0.2 ms	
2.5 kHz	2.5 kHz	
IP 67	IP 67	
–20...+45 °C	–20...+45 °C	
5 klx	5 klx	
ABS, impact-resistant	ABS, impact-resistant	
PMMA	PMMA	
M12 connector, 4-pin	M12 connector, 4-pin	

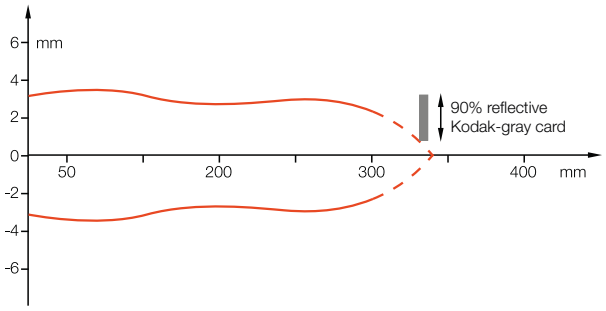




Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

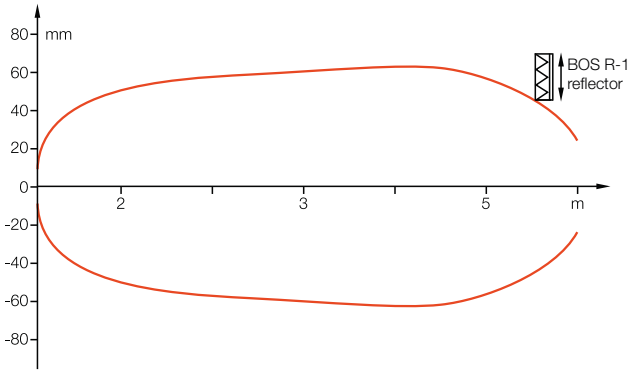
Function diagrams

Diffuse sensor BOS 26K-..-1HC-...



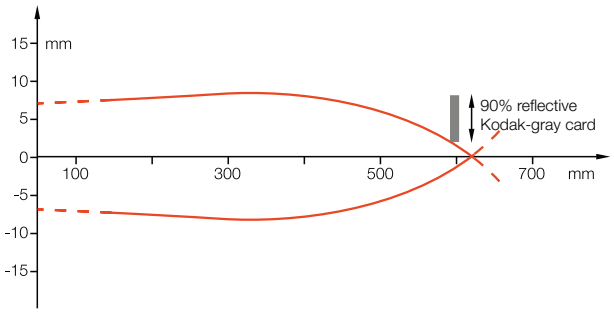
Sensing distance with side approach of Kodak-gray card.

Retroreflective sensor BOS 26K-..-1QE-...



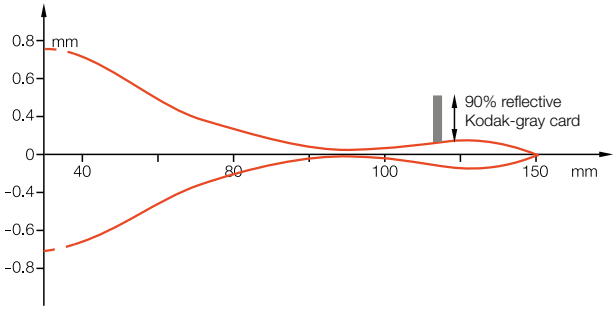
Range measured with side approach with reflector.

Diffuse sensor BOS 26K-..-1IE-...



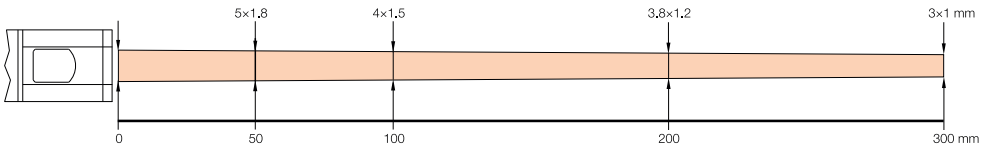
Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 26K-..-1LHB-...

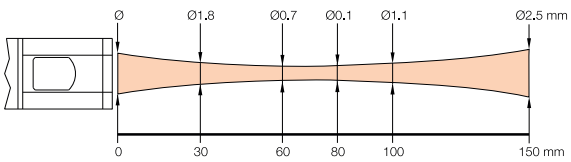


Sensing distance with side approach of Kodak-gray card.

Light beam geometry BOS 26K...1LHC



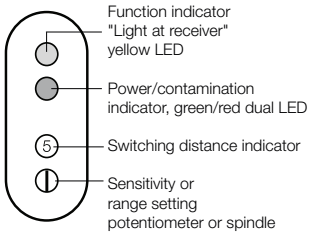
Light beam geometry BOS 26K...1LHB



Contamination indicator

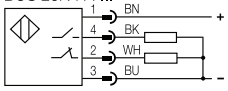
The BOS 26K has 2 -LED indicators: a yellow one for the function indicator and a green/red one for the power- and contamination indicator. Should the received light intensity drop below a certain level, this will be indicated by the red LED. This allows contamination or maladjustment to be detected early.

Indicators and operating elements

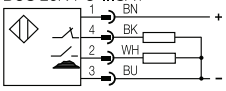


Wiring diagrams

BOS 26K-PA-...



BOS 26K-PO-...SA1



Recommended accessories
(please order separately)

Description		Ordering code
①	Reflector	**BAM00UK**
②	Reflector	**BAM00WL**
③	Laser reflector	**BAM00UY**
④	Laser reflector	**BAM00UM**
⑤	Laser reflector	**BAM00UN**
⑥	Mounting bracket	**BAM00TK**
⑦	Adapter plate	**BAM00T7**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

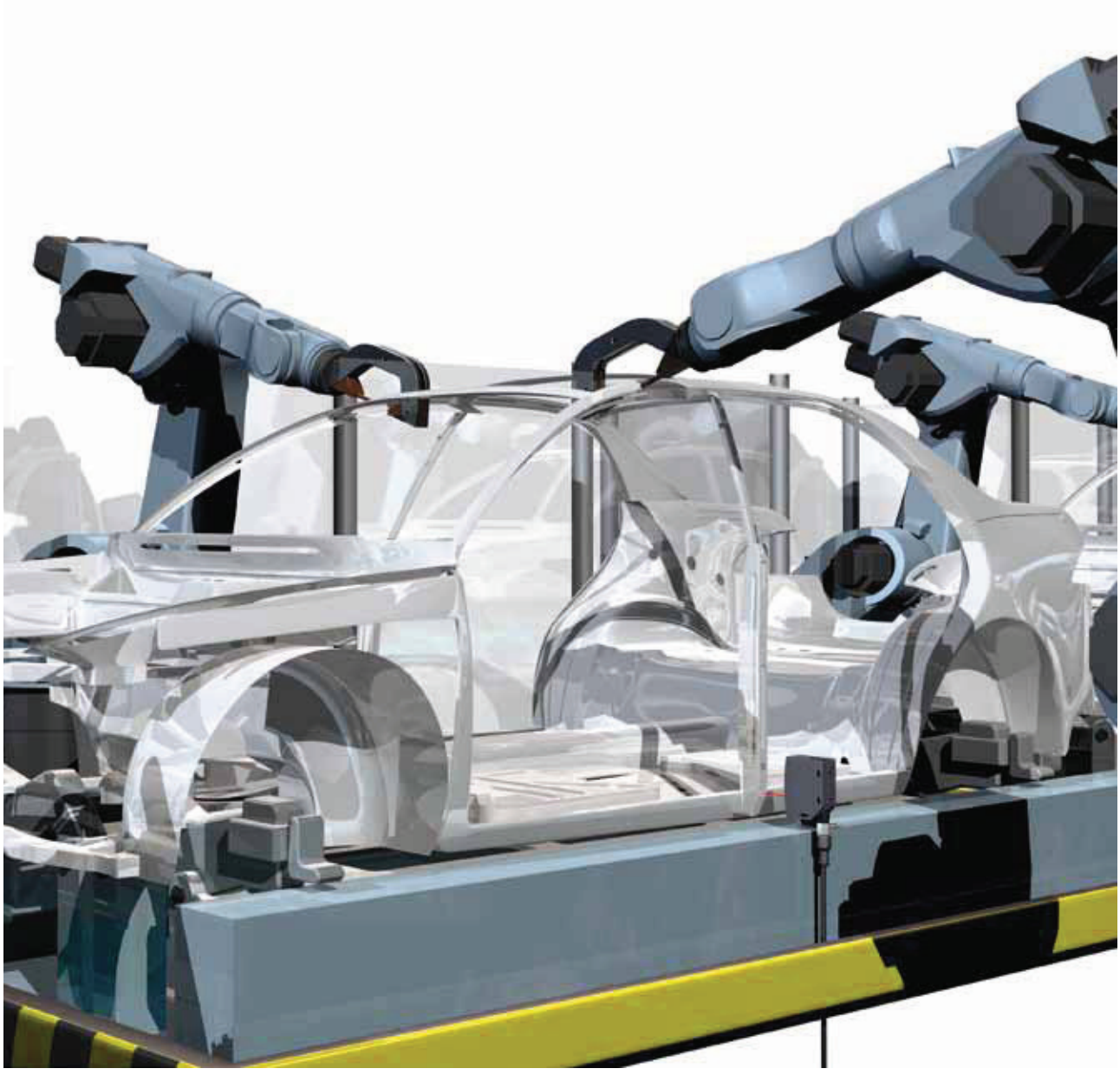
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

The new light barriers and diffuse sensors in the BOS 50K series combine top performance and compact dimensions. Thanks to their long range, these all-rounders are suitable for use in numerous sectors: from the automotive industry all the way to wood processing. The background suppression is particularly impressive with an almost color-independent detection of objects – and that at maximum sensing distance.

The most important features at a glance

- Reliable object detection even at large distances
- Real background suppression for a sensing distance of up to 2 m even on dark objects
- Simple alignment due to bright, clearly visible beam spot
- Simple and fast setting with potentiometer
- Through-beam sensor with test input for function check
- Varied and time-saving assembly options



Type	Sensing distance/ Range	Light type		Output			Switching type		Switching frequency	U_S	Connection	Special features		Page
Ordering code / Part number		Red light		PNP transistor	IO-Link	Contamination output	Light switching	Dark switching		10...30 V DC	M12 connector, 4-pin	Polarizing filter	Teach-in	
Diffuse sensor with background suppression														
BOS018P BOS 50K-PA-RH12-S4	200...2000 mm	■		■			■	■	500 Hz	■	■			220
BOS018N BOS 50K-PS-RH12-S4	200...2000 mm	■		■			■		500 Hz	■	■			220
BOS0156 BOS 50K-PSV-RH12-S4	200...2000 mm	■		■		■	■		500 Hz	■	■			220
BOS018U BOS 50K-POV-RH12-S4	200...2000 mm	■		■		■	■		500 Hz	■	■			220
Diffuse sensor														
BOS01CS BOS 50K-PA-RD10-S4	1...2000 mm	■		■			■	■	400 Hz	■	■			221
BOS01CP BOS 50K-PS-RD10-S4	1...2000 mm	■		■			■		400 Hz	■	■			221
BOS01J0 BOS 50K-PO-RD10-S4	1...2000 mm	■		■				■	400 Hz	■	■			221
BOS01JA BOS 50K-PU-RD11-S4	1...3500 mm	■		■			■	■	200 Hz	■	■		■	221
BOS01JJ BOS 50K-PI-RD11-S4	1...3500 mm	■		■	■		■	■	200 Hz	■	■		■	221
Retroreflective sensor														
BOS01CR BOS 50K-PA-PR10-S4	0.1...18 m	■		■			■	■	400 Hz	■	■	■		222
BOS01CL BOS 50K-PS-PR10-S4	0.1...18 m	■		■				■	400 Hz	■	■	■		222
BOS01HY BOS 50K-PO-PR10-S4	0.1...18 m	■		■			■		400 Hz	■	■	■		222
Through-beam sensor Receiver														
BOS01CK BOS 50K-PA-RE10-S4	0...60 m	■		■			■	■	400 Hz	■	■			223
BOS01CM BOS 50K-PS-RE10-S4	0...60 m	■		■				■	400 Hz	■	■			223
BOS01HZ BOS 50K-PO-RE10-S4	0...60 m	■		■			■		400 Hz	■	■			223
Through-beam sensor Emitter														
BOS01EU BOS 50K-X-RS10-S4		■								■	■			223
BOS01CN BOS 50K-XT-RS10-S4		■								■	■			223

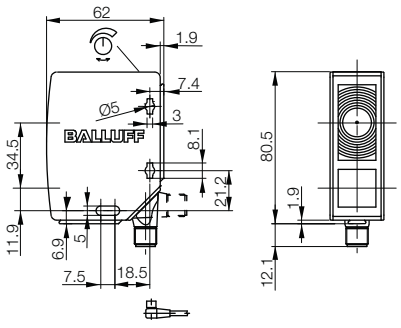
NPN on request



Type			**Diffuse sensor with background suppression**
Detection range			**200...2000 mm**
PNP	Complementary	**Ordering code**	**BOS018P**
		Part number	BOS 50K-PA-RH12-S4
PNP	NO/NC	**Ordering code**	
	Switchable	Part number	
PNP	NO/NC	**Ordering code**	
	Switchable IO-Link	Part number	
PNP	NO	**Ordering code**	**BOS018N**
		Part number	BOS 50K-PS-RH12-S4
PNP	NC	**Ordering code**	
		Part number	
PNP	NO with	**Ordering code**	**BOS0156**
	Error output	Part number	BOS 50K-PSV-RH12-S4
PNP	NC with	**Ordering code**	**BOS018U**
	Error output	Part number	BOS 50K-POV-RH12-S4
Supply voltage U_S			10...30 V DC
Output current			100 mA
No-load supply current I_0 max.			≤ 50 mA
Switching type			Light/dark switching
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Potentiometer, 10-turn
Emitter, light type			LED, red light
Wavelength			630 Nm
Light spot diameter			75×75 mm at 1.5 m
Gray value shift (90%/18%)			8 %
Power indicator			Green LED
Received light indicator			Yellow LED
Stability indicator			
Error indicator			Yellow LED (flashes)
Response time			1 ms
Switching frequency f			500 Hz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–10...+60 °C
Permissible ambient light			10 klx
Material		Housing	ABS/PC
		Optical surface	Glass
Connection			M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

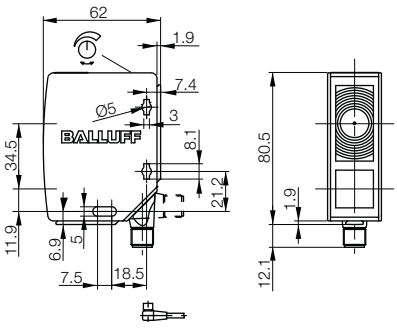
For wiring diagrams see page 227.

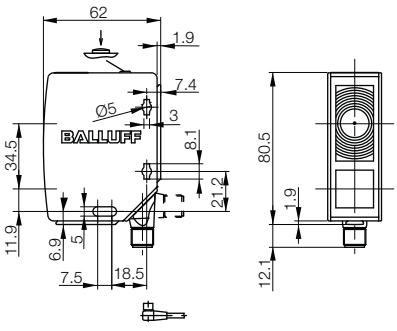






	Diffuse sensor	**Diffuse sensor**
	1...2000 mm	**1...3500 mm**
	BOS01CS	
	BOS 50K-PA-RD10-S4	
		BOS01JA
		BOS 50K-PU-RD11-S4
		BOS01JJ **IO**-Link
		BOS 50K-PI-RD11-S4
	BOS01CP	
	BOS 50K-PS-RD10-S4	
	BOS01J0	
	BOS 50K-PO-RD10-S4	
	10...30 V DC	10...30 V DC
	100 mA	100 mA
	≤ 50 mA	≤ 50 mA
	Light/dark switching	Light/dark switching
	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Teach-in
	LED, red light	LED, red light
	630 Nm	630 Nm
	50×50 mm at 2 m	80×80 mm at 3.5 m
	Green LED	Green LED
	Yellow LED	Yellow LED
	Yellow LED, flashes	Yellow LED, flashes
	1.25 ms	2.5 ms
	400 Hz	200 Hz
	IP 67	IP 67
	–5...+55 °C	–5...+55 °C
	5 klx	10 klx
	ABS/PC	ABS/PC
	Glass	Glass
	M12 connector, 4-pin	M12 connector, 4-pin



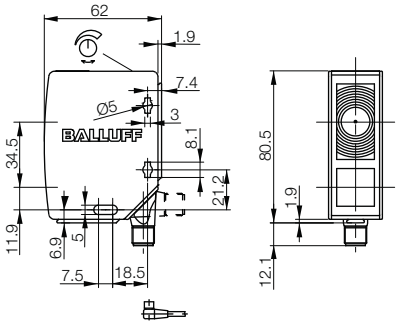




Type				**Retroreflective sensor**
Detection range				**0.1...18 m**
PNP	NO/NC	Polarizing filter	**Ordering code**	**BOS01CR**
			Part number	BOS 50K-PA-PR10-S4
PNP	NO	Polarizing filter	**Ordering code**	**BOS01CL**
			Part number	BOS 50K-PS-PR10-S4
PNP	NC	Polarizing filter	**Ordering code**	**BOS01HY**
			Part number	BOS 50K-PO-PR10-S4
	Emitter	Test input	**Ordering code**	
			Part number	
	Emitter		**Ordering code**	
			Part number	
Supply voltage U_S				10...30 V DC
Output current				100 mA
No-load supply current I_0 max.				≤ 50 mA
Switching type				Light/dark
Polarity reversal/short-circuit protected				Yes/Yes
Settings				Potentiometer, 270°
Emitter, light type				LED, red light
Wavelength				630 Nm
Light spot diameter				200×200 mm at 10 m
Power indicator				Green LED
Received light indicator				Yellow LED
Stability indicator				Yellow LED flashes
Response time				1.25 ms
Switching frequency f				400 Hz
Degree of protection as per IEC 60529				IP 67
Ambient temperature T_a				–5...+55 °C
Permissible ambient light				10 klx
Material			Housing	ABS/PC
			Optical surface	Glass
Connection				M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

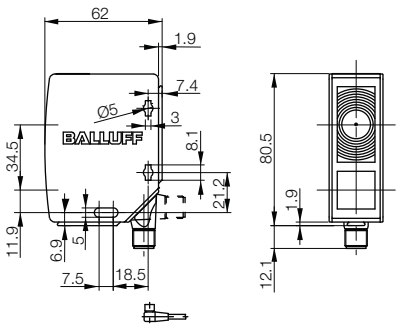
For wiring diagrams see page 227.

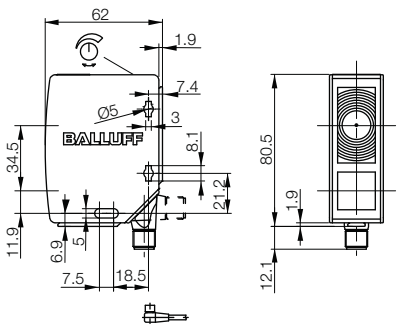






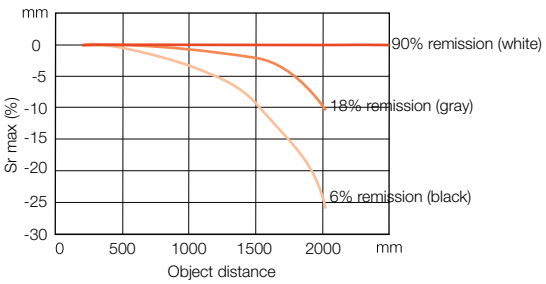
	Through-beam sensor	**Through-beam sensor**
	0...60 m	**0...60 m**
	BOS01CK	
	BOS 50K-PA-RE10-S4	
	BOS01CM	
	BOS 50K-PS-RE10-S4	
	BOS01HZ	
	BOS 50K-PO-RE10-S4	
		BOS01CN
		BOS 50K-XT-RS10-S4
		BOS01EU
		BOS 50K-X-RS10-S4
	10...30 V DC	10...30 V DC
	100 mA	
	≤ 35 mA	≤ 50 mA
	Light/dark	
	Yes/Yes	Yes/Yes
	Fixed	Potentiometer, 270°
		LED, red light
		630 Nm
		180×180 mm at 10 m
	Green LED	Green LED
	Yellow LED	
	1.25 ms	
	400 Hz	
	IP 67	IP 67
	–5...+55 °C	–5...+55 °C
	10 klx	10 klx
	ABS/PC	ABS/PC
	Glass	Glass
	M12 connector, 4-pin	M12 connector, 4-pin





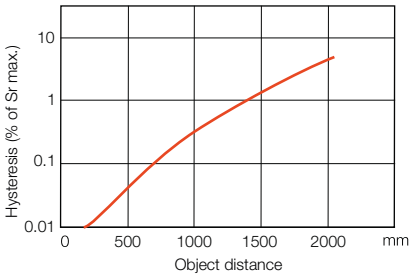
Function diagrams

Diffuse sensor with background suppression
BOS 50K-..-RH12-S4-...



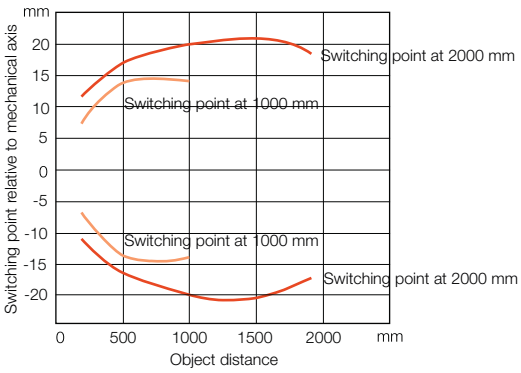
Switching distance deviation depending on object distance
With differing level of remission

Diffuse sensor
BOS 50K-..-RH12-S4-...



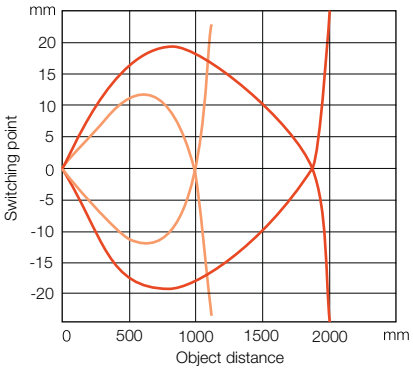
Switching hysteresis depending on object distance

Diffuse sensor with background suppression
BOS 50K-..-RH12-S4-...



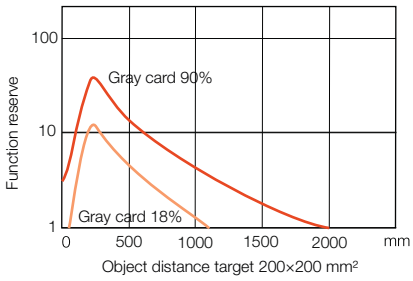
Response curve with switch-on point from left and right side

Diffuse sensor
BOS 50K-..-RD10-S4



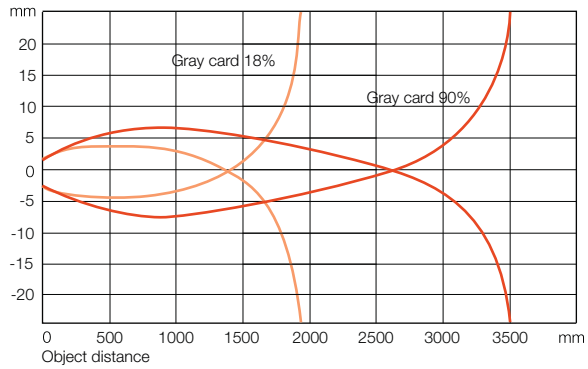
Response curve depending on distance

Diffuse sensor
BOS 50K-..-RD10-S4



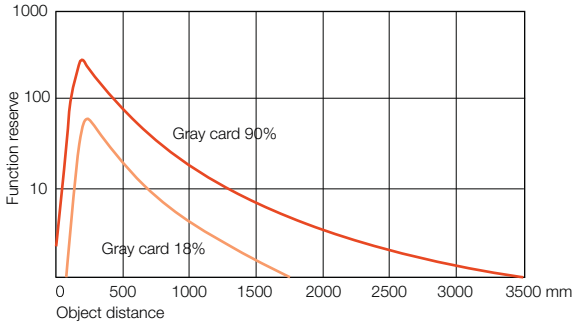
Function reserve depending on distance

Diffuse sensor
BOS 50K-..-RD11-S4



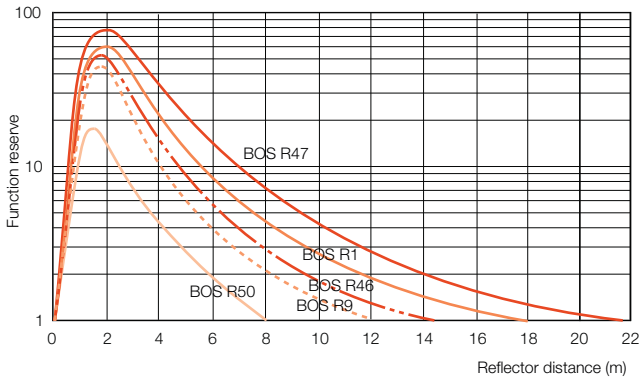
Response curve depending on object distance

Diffuse sensor
BOS 50K-..-RD11-S4



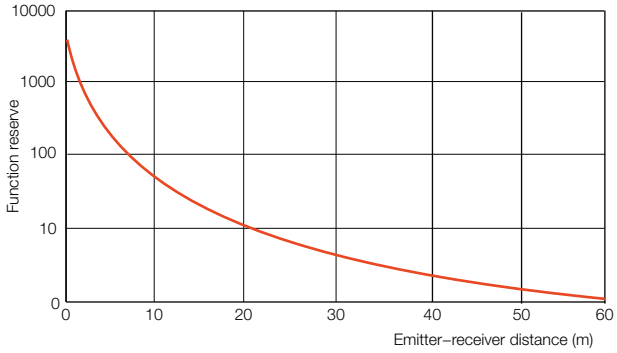
Function reserve depending on object distance

Retroreflective sensor
BOS 50K-..-PR10-S4

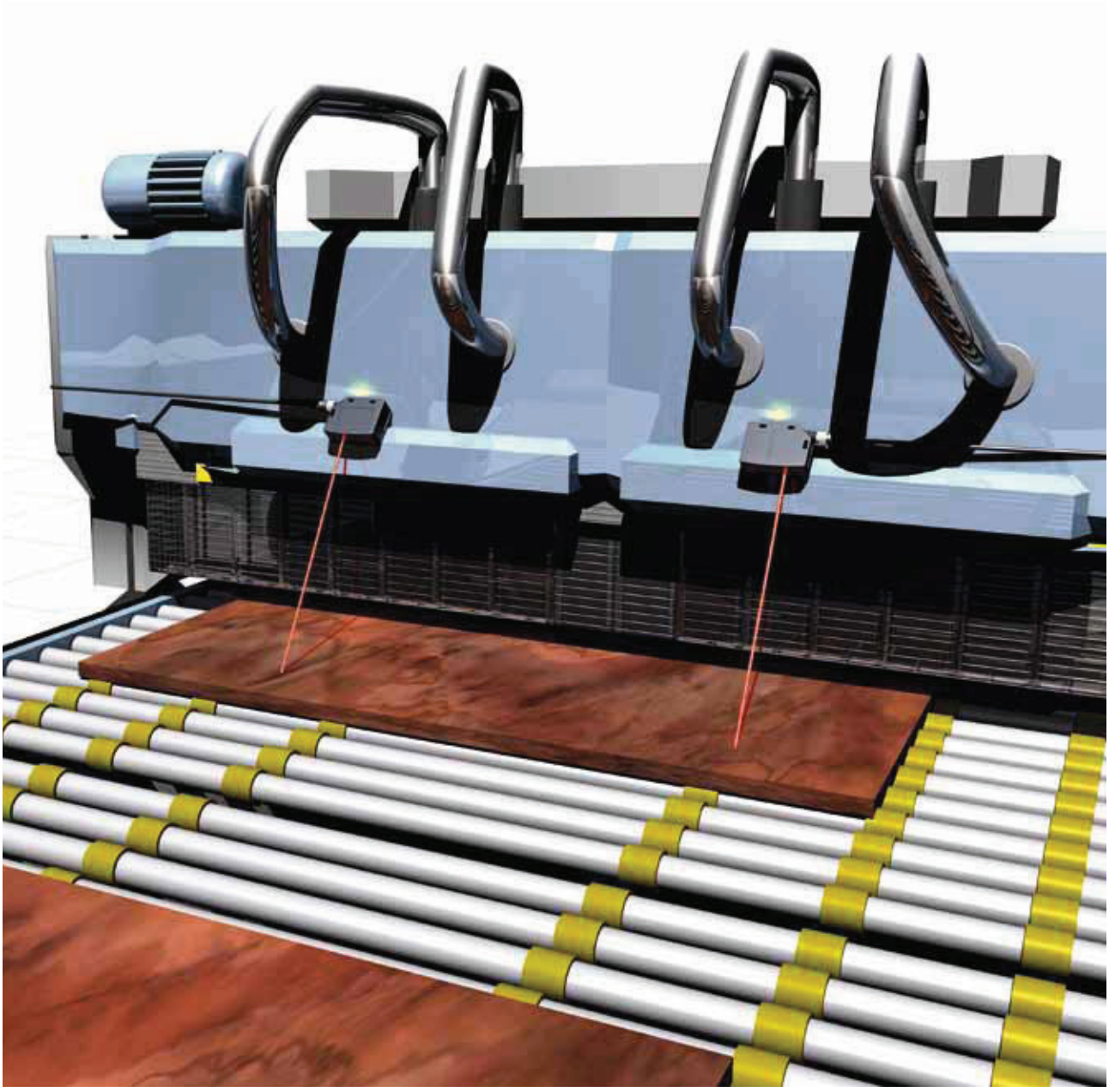


Function reserve depending on distance between sensor and reflector

Through-beam sensor
BOS 50K-..-RE/RS10-S4



Function reserve depending on distance between emitter and receiver



BOS 50K
Light spot sizes, function diagrams, connection, accessories

Light spot sizes

BOS 50K...RD10...

Distance	Light spot Ø
0.5 m	25×25 mm
1 m	30×30 mm
2 m	45×45 mm

BOS 50K...PR10...

Distance	Light spot Ø
0.5 m	25×25 mm
1 m	30×30 mm
2 m	45×45 mm
3 m	65×65 mm
4 m	85×85 mm

BOS 50K...PS10...

Distance	Light spot Ø
10 m	200×200 mm

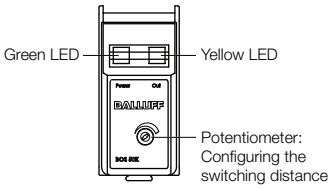
BOS 50K...RD11...

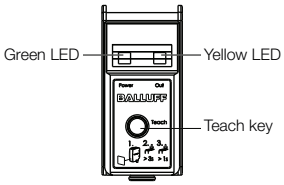
Distance	Light spot Ø
0.5 m	25×25 mm
1 m	30×30 mm
2 m	45×45 mm
3 m	65×65 mm
3.5 m	75×75 mm

BOS 50K...RH1210...

Distance	Light spot Ø
200 mm	22×22 mm
2000 mm	80×80 mm

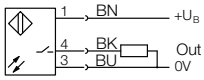
Indicators and operating elements



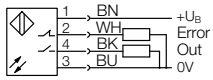


Wiring diagrams

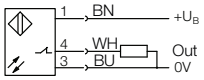
BOS 50K-PS...



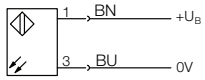
BOS 50K-PSV...



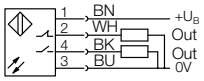
BOS 50K-PO...



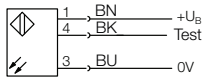
BOS 50K-X...



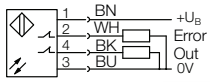
BOS 50K-PA...



BOS 50K-PA...



BOS 50K-POV...





Recommended accessories
(please order separately)

Description		Ordering code
①	Reflector	BAM00UK
②	Reflector	BAM00WL
③	Reflector	BAM01JN
④	Reflector	BAM01JP
⑤	Reflective tape	BAM01JM
⑥	Mounting bracket	BAM01E8
⑦	Weld protection	BAM01U6



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

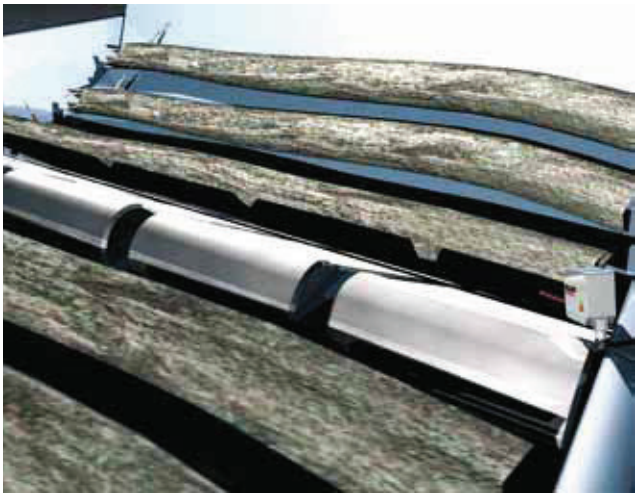
Suitable connectors
(please order separately)

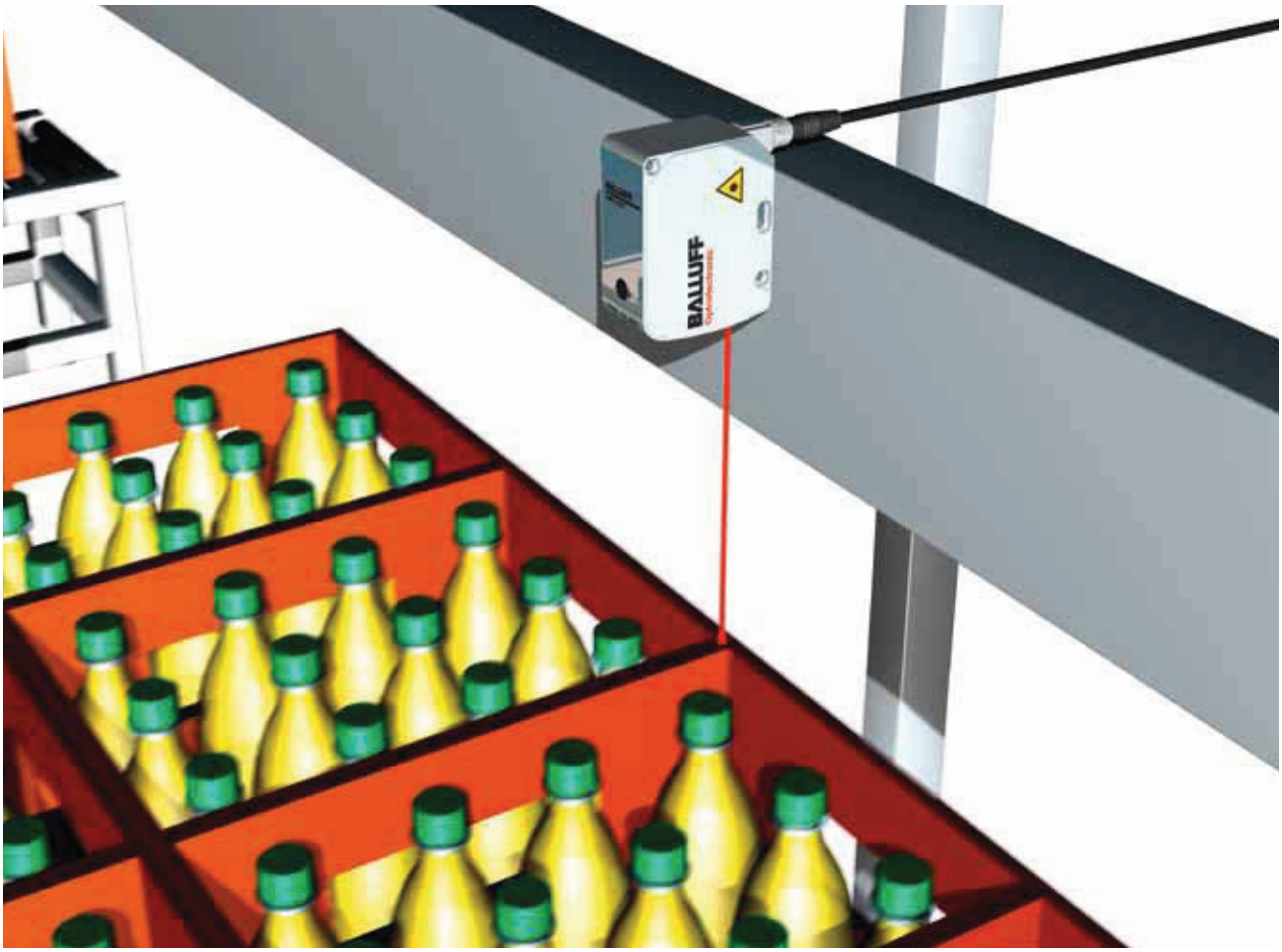
Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	BCC032F
M12, 4-pin	Straight	PVC	Gray	2 m	BCC0367
M12, 4-pin	Angled	PUR	Black	2 m	BCC032Y
M12, 4-pin	Angled	PVC	Gray	2 m	BCC036N

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

The **BOS 63M** is a specialist among the diffuse sensors with regard to background suppression. The laser makes it ideally suited for detecting objects from far away when they are right in front of a background. The precise laser beam detects even small objects or object details from great distances.
With two solid 4-turn potentiometers, the two switching outputs can be configured independently and exactly. An integrated error indicator informs you about the current sensor status.





Type	Sensing distance/ Range	Light type	Output	Switching type	Switching frequency	U_S	Connection	Special features	Page
Ordering code / Part number		Laser	2× PNP transistor	Light switching		15...30 V DC	M12 connector, 4-pin		
Diffuse sensor with background suppression									
BOS019J BOS 63M-PS-LH13-S4	0.2...6 m	■	■	■	250 Hz	■	■		230

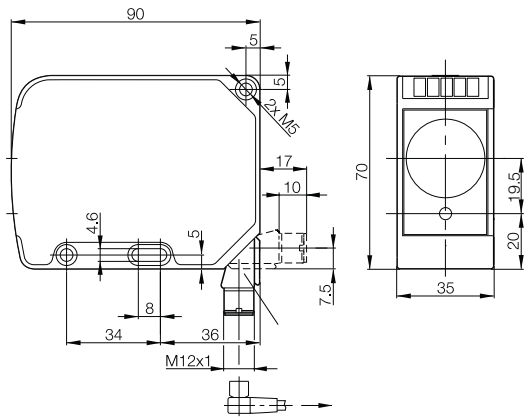
NPN on request

BOS 63
M Laser

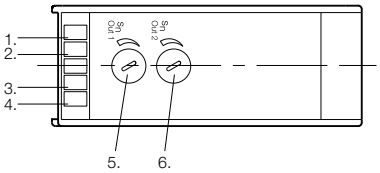


Type		**Diffuse sensor with background suppression**
Detection range		**0.2...6 m**
2× PNP	**Ordering code**	**BOS019J**
	Part number	BOS 63M-PS-LH13-S4
Supply voltage U_S		15…30 V DC
Output current		200 mA
No-load supply current I_0 max.		75 mA
Switching type		Light switching
Polarity reversal/short-circuit protected		Yes/Yes
Settings		Potentiometer, 4-turn (2x)
Emitter, light type		Laser, red light
Wavelength		660 Nm
Laser class		2
Light spot size		10 mm
Gray value shift		≤ 1.5%
Switching hysteresis		≤ 15 mm
Repeat accuracy		≤ ±4 mm
Power-on indicator		Green LED
Output function indicator		Yellow LED (2x)
Error indicator		Red LED
Response time		2 ms
Switching frequency f		250 Hz
Degree of protection as per IEC 60529		IP 67
Ambient temperature T		–10...+60°C
Permissible ambient light		10 klx
Material	Housing	GD-AL
	Optical surface	Glass
Connection		M12 connector, 4-pin

Reference object: white, 90% reflection, 200×200 mm

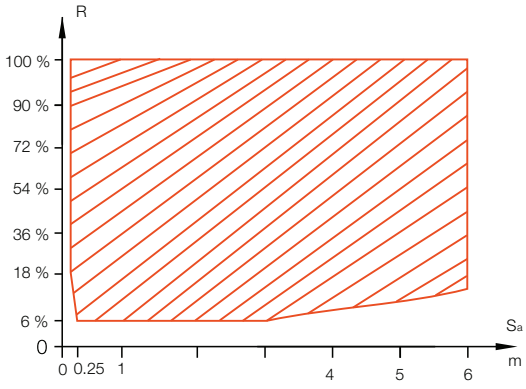


Indicators and operating elements

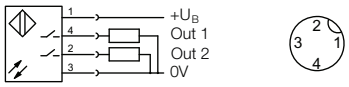


1. Power indicator (green)
2. Output function indicator Out 1 (yellow)
3. Output function indicator Out 2 (yellow)
4. Error indicator (red)
5. 4-turn potentiometer for switching distance 1
6. 4-turn potentiometer for switching distance 2

Working range as a function of object reflectivity



Wiring diagram



Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00P6**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

The new photoelectric sensor family BOS 64K is suitable for being connected directly to a power grid with 230 V. A 24 V power supply is not required. The relay output makes it possible to directly switch loads up to 3 A. The housing with IP 67 degree of protection is made of fiberglass-reinforced plastic.

For a wide variety of applications you can get diffuse sensors, diffuse sensors with background suppression (HGA), retroreflective sensors and through-beam sensors.

The diffuse, retroreflective and through-beam sensors can be conveniently adjusted using a 240° potentiometer. The diffuse sensor with background suppression is precisely adapted to applications via a 7-turn potentiometer. Numerous special functions such as On and Off delay or One-Shot with an adjustable time are available.

Applications

- Monitoring of doors and gates
- Scanning the loading of pallets
- Detecting vehicles on a ramp
- With applications requiring a high range
- If no power supply is available





Type	Ordering code / Part number	Sensing distance/ Range	Light type: Red light	Light type: Infrared	Output: Relay	Switching type: Light switching	Switching type: Dark switching	Switching frequency	U_S: 20...240 V AC	U_S: 24...60 V DC	Connection: Screw terminal	Page
Diffuse sensor with background suppression												
BOS01K1	BOS 64K-AA-IH12-TG	0.2...2 m		■	■	■	■	20 Hz	■	■	■	234
Diffuse sensor												
BOS01K2	BOS 64K-AA-ID10-TG	0.05...2 m		■	■	■	■	20 Hz	■	■	■	234
Retroreflective sensor with polarizing filter												
BOS01K3	BOS 64K-AA-PR10-TG	0.1...10 m	■		■	■	■	20 Hz	■	■	■	235
Through-beam sensor Receiver												
BOS01K4	BOS 64K-AA-IE10-TG	0...50 m		■	■	■	■	20 Hz	■	■	■	235
Through-beam sensor Emitter												
BOS01K5	BOS 64K-AA-IS10-TG	0...50 m		■					■	■	■	235

Photoelectric Sensors
Photoelectric Sensors
Cylinder Designs
Block Designs
Fork Sensors BGL
Angle Sensors BWL
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors





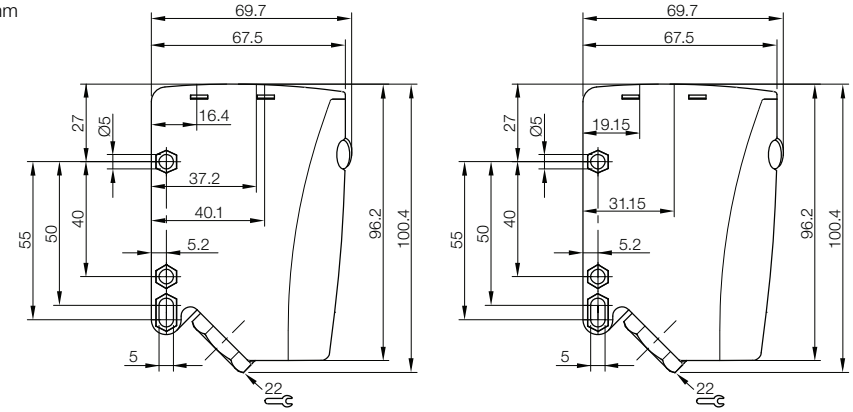


Type		**Diffuse sensor with background suppression**	**Diffuse sensor**
Detection range		**0.2...2 m**	**0.05...2 m**
Time function	**Ordering code**	**BOS01K1**	**BOS01K2**
	Part number	BOS 64K-AA-IH12-TG	BOS 64K-AA-ID10-TG
Time function	**Ordering code**		
Polarizing filter, red light	Part number		
Time function	**Ordering code**		
Receiver	Part number		
Time function	**Ordering code**		
Emitter	Part number		
Supply voltage AC U_S		24...240 V AC	24...240 V AC
Supply voltage DC U_S		24...60 V DC	24...60 V DC
Switching type		Light and dark (switchable)	Light and dark (switchable)
Light type		Infrared	Infrared
Settings		Potentiometer, 7-turn	Potentiometer, 240°
Power-on indicator			
Output function indicator		Yellow LED	Yellow LED
Stability indicator		Green LED	Green LED
Response time		25 ms	25 ms
Switching frequency f		20 Hz	20 Hz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–25...+55 °C	–25...+55 °C
Permissible ambient light		as per EN 60947-5-2	as per EN 60947-5-2
Material	Housing	PBT (fiberglass-reinforced)	PBT (fiberglass-reinforced)
	Optical surface	PC	PC
Connection		Screw terminal	Screw terminal

Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 237.

Mounting bracket in scope of delivery for sensor.





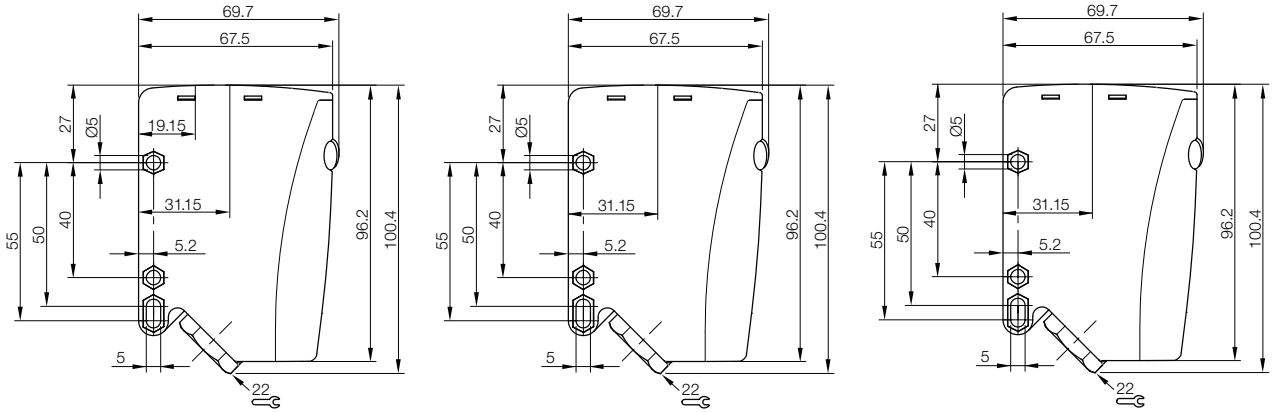


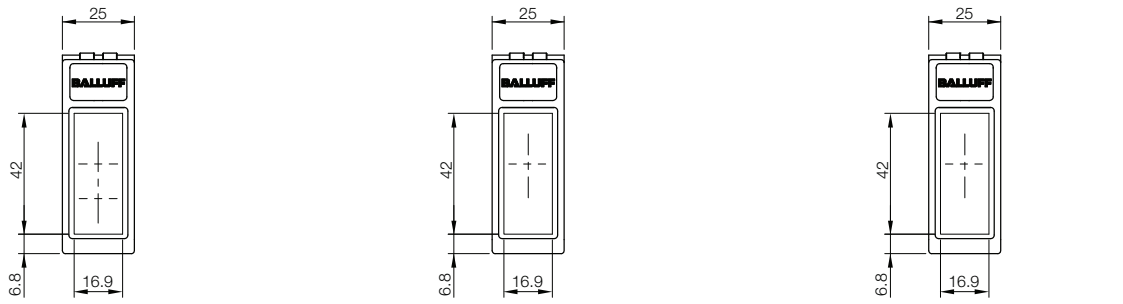
Wiring chamber





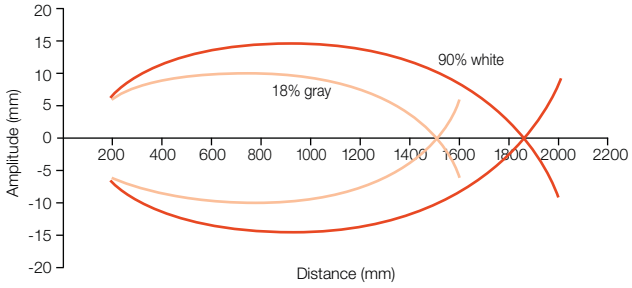
	Retroreflective sensor 0.1...10 m	Through-beam sensor 0...50 m	Through-beam sensor 0...50 m
	BOS01K3		
	BOS 64K-AA-PR10-TG		
		BOS01K4	
		BOS 64K-AA-IE10-TG	
			BOS01K5
			BOS 64K-AA-IS10-TG
	24...240 V AC	24...240 V AC	24...240 V AC
	24...60 V DC	24...60 V DC	24...60 V DC
	Light and dark (switchable)	Light and dark (switchable)	
	Red light	Infrared	Infrared
	Potentiometer, 240°	Potentiometer, 240°	
			Green LED
	Yellow LED	Yellow LED	
	Green LED	Green LED	
	25 ms	25 ms	
	20 Hz	20 Hz	
	IP 67	IP 67	IP 67
	–25...+55 °C	–25...+55 °C	–25...+55 °C
	as per EN 60947-5-2	as per EN 60947-5-2	
	PBT (fiberglass-reinforced)	PBT (fiberglass-reinforced)	PBT (fiberglass-reinforced)
	PC	PC	PC
	Screw terminal	Screw terminal	Screw terminal



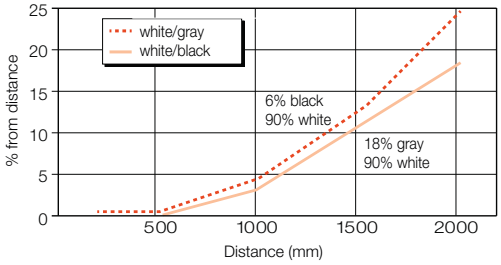


BOS 64K (AC)
Function diagrams, connection

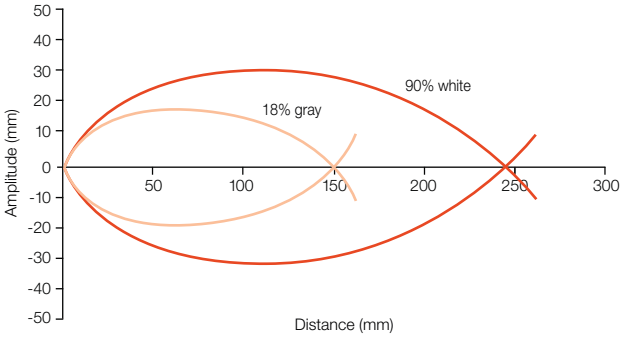
Diffuse sensor with background suppression, BOS01K1



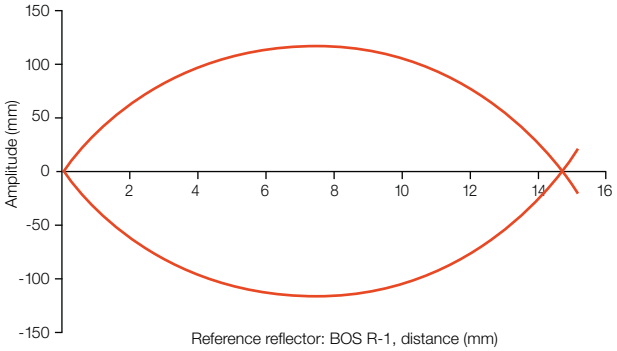
scanning features



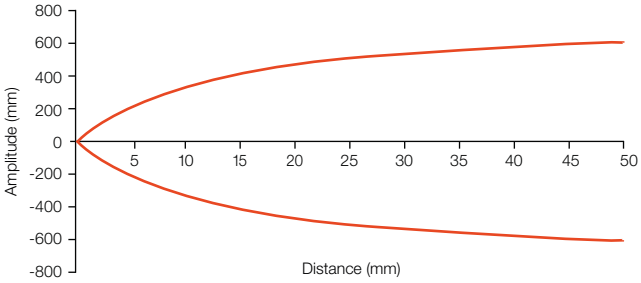
Diffuse sensor, BOS01K2



Retroreflective light sensor on BOS R-1
BOS01K3, BOS01K4

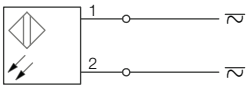


Through-beam sensor, BOS01K5

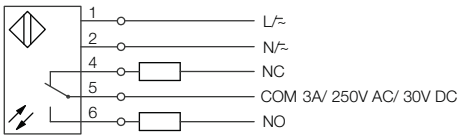


Wiring diagrams

BOS 64K through-beam sensor, emitter,
AC/DC, direct/alternating current voltage,
Screw terminals



BOS 64K diffuse sensor, diffuse sensor with background suppression,
Through-beam sensor, receiver,
AC/DC, direct/alternating current voltage,
Relay-changeover contact, screw terminals



Recommended accessories
(please order separately)

Description	Ordering code
Reflector	**BAM00UK**



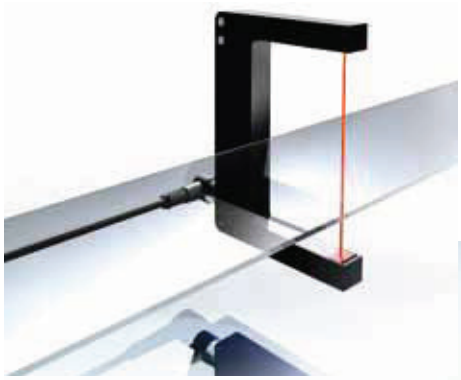
You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Through-beam sensors are unsurpassed in their accuracy, their ability to distinguish small parts and fine detail and their operating reliability. However, they do take some time to install and configure. This does not apply to fork sensors, since the emitter and receiver are already installed and easy to adjust. Nevertheless, their accuracy, ability to distinguish small parts and fine detail and their operating reliability is outstanding. Laser fork sensors achieve the best results in these kinds of tasks. Balluff laser fork sensors are ideally used for precisely positioning and reliably detecting fast-moving processes and small parts. This opens a vast range of applications in robotics and automation.

Features
- Integrated electronic processor unit
- Rugged metal housing
- Glass optical surface
- High resolution
- Available in red light, laser light, IR or pin point
- Identical housing dimensions for all light types
- 10×10 mm fork arm, even for large fork openings
- Stackable
- Laser Class 1

Applications
- Parts sensing on conveyor and feed belts
- Label sensing on transparent backing material
- Part dimension checking
- Counting parts in assembly lines
- Tool break monitoring
- Position checking
- Feed control on automatic assembly equipment
- Checking for completeness (e.g. connector pins)
- Level monitoring of containers
- Handling- and assembly





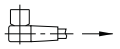
Type		Fork opening	Resolution	Light type					Output		Switching type		Switching frequency	U_S	Connection		Features		Page
				Red light	Red light, pin point	Laser light	Infrared	Red and green light	PNP transistor	DSC (Dynamic Sensor Control)	Light switching	Dark switching		10...30 V DC	M8 plug, 3-pin	M8 plug, 4-pin	Transparency detection	Fluid detection	
Ordering code																			
Part number																			
Fork sensors																			
BGL001W	BGL 5A-001-S49	5 mm	0.3 mm	■					■		■	■	3 kHz	■	■				240
BGL001Z	BGL 5A-005-S49	5 mm	0.2 mm		■				■		■	■	5 kHz	■	■				244
BGL0021	BGL 5A-007-S49	5 mm	0.8 mm				■		■		■	■	3 kHz	■	■				248
BGL0001	BGL 10A-001-S49	10 mm	0.3 mm	■					■		■	■	3 kHz	■	■				240
BGL0003	BGL 10A-005-S49	10 mm	0.2 mm		■				■		■	■	5 kHz	■	■				244
BGL0005	BGL 10A-007-S49	10 mm	0.8 mm				■		■		■	■	3 kHz	■	■				248
BGL000R	BGL 20A-001-S49	20 mm	0.3 mm	■					■		■	■	1.5 kHz	■	■				241
BGL000U	BGL 20A-005-S49	20 mm	0.2 mm		■				■		■	■	5 kHz	■	■				245
BGL000Y	BGL 20A-007-S49	20 mm	0.8 mm				■		■		■	■	2 kHz	■	■				249
BGL0016	BGL 30A-001-S49	30 mm	0.3 mm	■					■		■	■	1.5 kHz	■	■				241
BGL0019	BGL 30A-003-S49	30 mm	50 µm			■			■		■	■	5 kHz	■	■				252
BGL001C	BGL 30A-005-S49	30 mm	0.2 mm		■				■		■	■	5 kHz	■	■				245
BGL001F	BGL 30A-007-S49	30 mm	0.8 mm				■		■		■	■	2 kHz	■	■				249
BGL003J	BGL 30A-011-S49	30 mm	0.6 mm				■		■		■	■	2 kHz	■	■			■	256
BGL003N	BGL 30A-013-S49	30 mm	0.8 mm				■		■	■	■	■	200 Hz	■	■				257
BGL001J	BGL 50A-001-S49	50 mm	0.4 mm	■					■		■	■	1.5 kHz	■	■				241
BGL001M	BGL 50A-003-S49	50 mm	80 µm			■			■		■	■	5 kHz	■	■				253
BGL001P	BGL 50A-005-S49	50 mm	0.3 mm		■				■		■	■	5 kHz	■	■				245
BGL001T	BGL 50A-007-S49	50 mm	1.0 mm				■		■		■	■	2 kHz	■	■				249
BGL003P	BGL 50A-013-S49	50 mm	1.0 mm				■		■	■	■	■	200 Hz	■	■				257
BGL0023	BGL 80A-001-S49	80 mm	0.4 mm	■					■		■	■	1.5 kHz	■	■				242
BGL0025	BGL 80A-003-S49	80 mm	0.1 mm			■			■		■	■	5 kHz	■	■				253
BGL0027	BDL 80A-005-S49	80 mm	0.4 mm		■				■		■	■	5 kHz	■	■				246
BGL0029	BDL 80A-007-S49	80 mm	1.2 mm				■		■		■	■	2 kHz	■	■				250
BGL002T	BDL 80A-009-S49	80 mm	50 µm			■			■		■	■	5 kHz	■	■		■		255
BGL003L	BDL 80A-011-S49	80 mm	0.8 mm				■		■		■	■	2 kHz	■	■			■	257
BGL003R	BDL 80A-013-S49	80 mm	1.2 mm				■		■	■	■	■	200 Hz	■	■				257
BGL0007	BGL 120A-001-S49	120 mm	0.5 mm	■					■		■	■	1.5 kHz	■	■				242
BGL0009	BGL 120A-003-S49	120 mm	0.15 mm			■			■		■	■	5 kHz	■	■				253
BGL000C	BGL 120A-005-S49	120 mm	0.5 mm		■				■		■	■	5 kHz	■	■				246
BGL000F	BGL 120A-007-S49	120 mm	1.5 mm				■		■		■	■	1 kHz	■	■				250
BGL000J	BGL 180A-001-S49	180 mm	0.6 mm	■					■		■	■	1.5 kHz	■	■				243
BGL000L	BGL 180A-005-S49	180 mm	0.6 mm		■				■		■	■	5 kHz	■	■				247
BGL000N	BGL 180A-007-S49	180 mm	1.5 mm				■		■		■	■	2 kHz	■	■				251
BGL0010	BGL 220A-001-S49	220 mm	0.6 mm	■					■		■	■	1.5 kHz	■	■				243
BGL0012	BGL 220A-005-S49	220 mm	0.6 mm		■				■		■	■	5 kHz	■	■				247
BGL0014	BGL 220A-007-S49	220 mm	1.5 mm				■		■		■	■	2 kHz	■	■				251
BGL002L	BGL 21-IR	2 mm	0.25 mm				■		■		■	■	25 kHz	■		■			259
BGL002M	BGL 21-RG	2 mm	0.25 mm					■	■		■	■	25 kHz	■		■			259

NPN on request

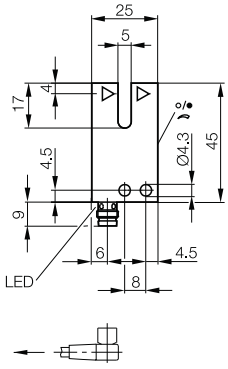


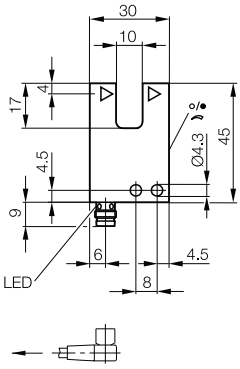


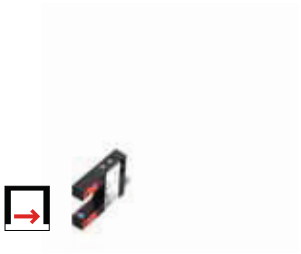
Series		**BGL**	**BGL**	
Fork opening		**5 mm**	**10 mm**	
Fork depth		**17 mm**	**17 mm**	
PNP NO/NC	**Ordering code**	**BGL001W**	**BGL0001**	
	Part number	BGL 5A-001-S49	BGL 10A-001-S49	
Supply voltage U_S		10...30 V DC	10...30 V DC	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
Output current		200 mA	200 mA	
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Potentiometer, 270°	Potentiometer, 270°	
Emitter, light type		LED, red light	LED, red light	
Wavelength		640 Nm	640 Nm	
Resolution (smallest discernible part)		0.3 mm	0.3 mm	
Repeat accuracy		20 µm	20 µm	
Switching hysteresis		≤ 0.1 mm	≤ 0.1 mm	
Output function indicator		Yellow LED	Yellow LED	
Response time		0.166 ms	0.166 ms	
Switching frequency		3 kHz	3 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature T_a		–10...+60 °C	–10...+60 °C	
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2	
Material	Housing	GD-Zn	GD-Zn	
	Optical surface	Glass	Glass	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	

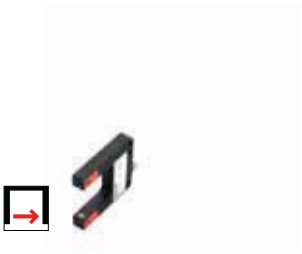


Other fork openings on request.



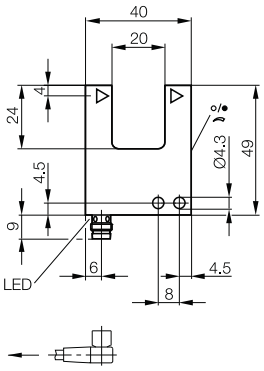


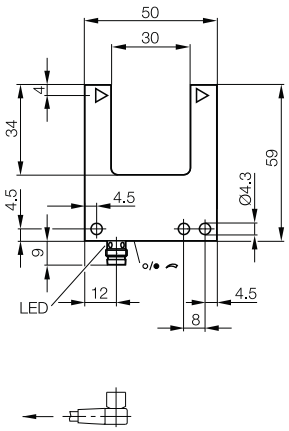


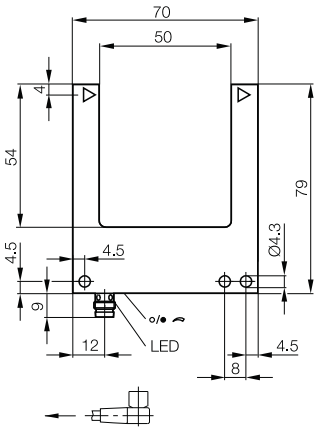




BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL000R	**BGL0016**	**BGL001J**
BGL 20A-001-S49	BGL 30A-001-S49	BGL 50A-001-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, red light	LED, red light	LED, red light
640 Nm	640 Nm	640 Nm
0.3 mm	0.3 mm	0.4 mm
20 µm	20 µm	40 µm
≤ 0.1 mm	≤ 0.1 mm	≤ 0.15 mm
Yellow LED	Yellow LED	Yellow LED
0.33 ms	0.33 ms	0.33 ms
1.5 kHz	1.5 kHz	1.5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin

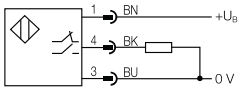


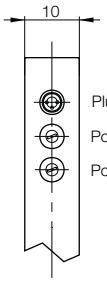




Wiring diagram

PNP



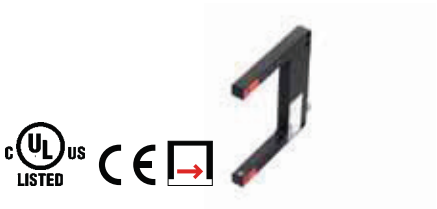


Plug, LED output function indicator

Potentiometer light/dark switching

Potentiometer, sensitivity

Fork Sensors
Red light

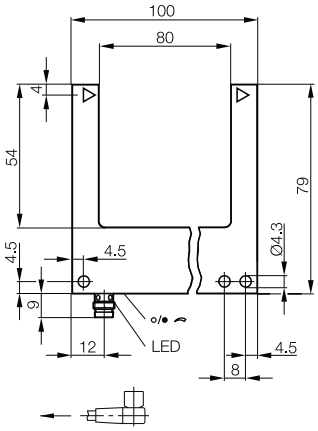


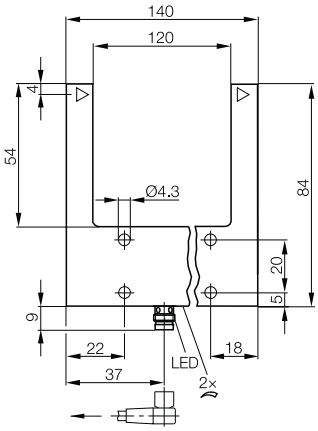


Series		**BGL**	**BGL**	
Fork opening		**80 mm**	**120 mm**	
Fork depth		**54 mm**	**54 mm**	
PNP NO/NC	**Ordering code**	**BGL0023**	**BGL0007**	
	Part number	BGL 80A-001-S49	BGL 120A-001-S49	
Supply voltage U_S		10...30 V DC	10...30 V DC	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
Output current		200 mA	200 mA	
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Potentiometer, 270°	Potentiometer, 270°	
Emitter, light type		LED, red light	LED, red light	
Wavelength		640 Nm	640 Nm	
Resolution (smallest discernible part)		0.4 mm	0.5 mm	
Repeat accuracy		60 µm	80 µm	
Switching hysteresis		≤ 0.2 mm	≤ 0.2 mm	
Output function indicator		Yellow LED	Yellow LED	
Response time		0.33 ms	0.33 ms	
Switching frequency		1.5 kHz	1.5 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature T_a		–10...+60 °C	–10...+60 °C	
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2	
Material	Housing	GD-Zn	GD-Zn	
	Optical surface	Glass	Glass	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	


Connector orientation

Other fork openings on request.

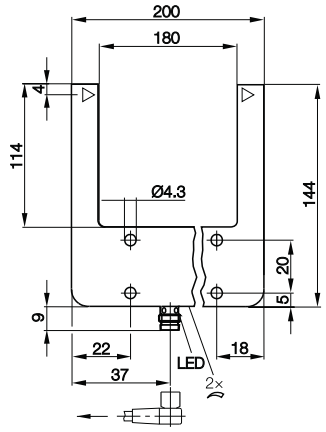


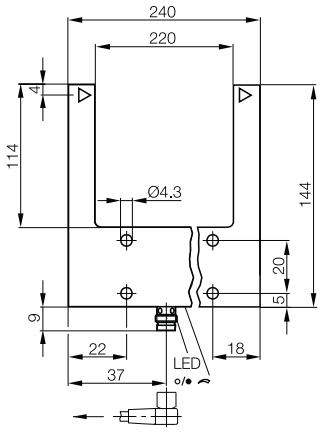


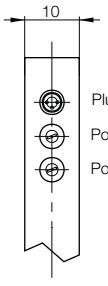




	BGL	BGL	
	180 mm	**220 mm**	
	114 mm	**114 mm**	
	BGL000J	**BGL0010**	
	BGL 180A-001-S49	BGL 220A-001-S49	
	10...30 V DC	10...30 V DC	
	≤ 35 mA	≤ 35 mA	
	200 mA	200 mA	
	Light/dark switching (selectable)	Light/dark switching (selectable)	
	Yes/Yes	Yes/Yes	
	Potentiometer, 270°	Potentiometer, 270°	
	LED, red light	LED, red light	
	640 Nm	640 Nm	
	0.6 mm	0.6 mm	
	80 µm	80 µm	
	≤ 0.2 mm	≤ 0.2 mm	
	Yellow LED	Yellow LED	
	0.33 ms	0.33 ms	
	1.5 kHz	1.5 kHz	
	IP 67	IP 67	
	–10...+60 °C	–10...+60 °C	
	EN 60947-5-2	EN 60947-5-2	
	GD-Zn	GD-Zn	
	Glass	Glass	
	M8 connector, 3-pin	M8 connector, 3-pin	

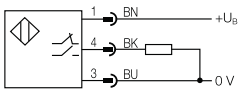






Wiring diagram

PNP



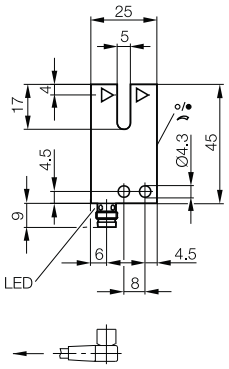


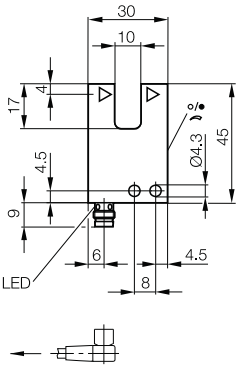


Series		**BGL**	**BGL**	
Fork opening		**5 mm**	**10 mm**	
Fork depth		**17 mm**	**17 mm**	
PNP NO/NC	**Ordering code**	**BGL001Z**	**BGL0003**	
	Part number	BGL 5A-005-S49	BGL 10A-005-S49	
Supply voltage U_S		10...30 V DC	10...30 V DC	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
Output current		200 mA	200 mA	
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Potentiometer, 270°	Potentiometer, 270°	
Emitter, light type		Red light, pin point	Red light, pin point	
Wavelength		640 Nm	640 Nm	
Resolution (smallest discernible part)		0.2 mm	0.2 mm	
Repeat accuracy		20 µm	20 µm	
Switching hysteresis		≤ 70 µm	≤ 70 µm	
Output function indicator		Yellow LED	Yellow LED	
Response time		0.1 ms	0.1 ms	
Switching frequency		5 kHz	5 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature T_a		–10...+60 °C	–10...+60 °C	
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2	
Material	Housing	GD-Zn	GD-Zn	
	Optical surface	Glass	Glass	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	

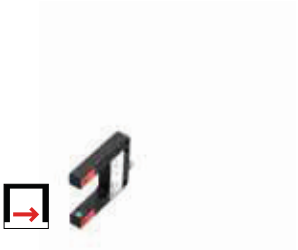

Connector orientation

Other fork openings on request.



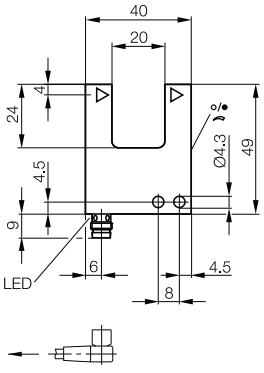


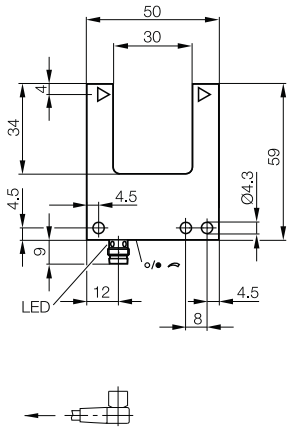


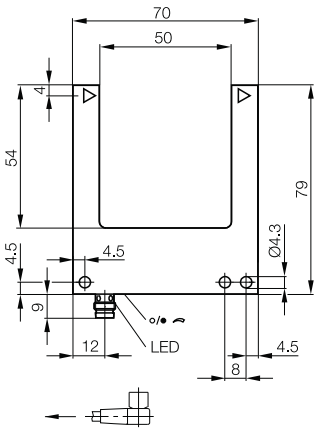


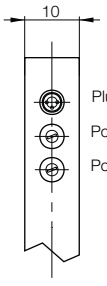


BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL000U	**BGL001C**	**BGL001P**
BGL 20A-005-S49	BGL 30A-005-S49	BGL 50A-005-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Red light, pin point	Red light, pin point	Red light, pin point
640 Nm	640 Nm	640 Nm
0.2 mm	0.2 mm	0.3 mm
20 µm	20 µm	30 µm
≤ 70 µm	≤ 70 µm	≤ 0.1 mm
Yellow LED	Yellow LED	Yellow LED
0.1 ms	0.1 ms	0.1 ms
5 kHz	5 kHz	5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin









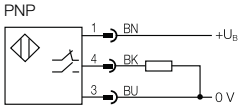
Plug, LED output function indicator

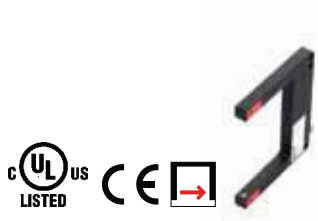
Potentiometer light/dark switching

Potentiometer, sensitivity

Wiring diagram

PNP



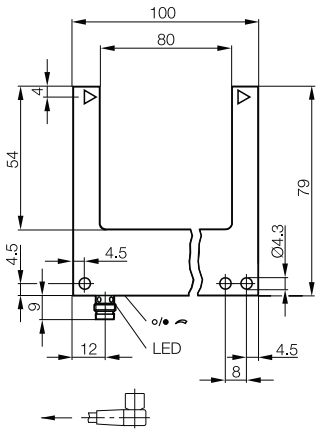


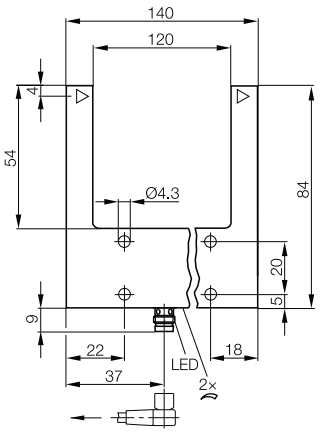


Series		**BGL**	**BGL**	
Fork opening		**80 mm**	**120 mm**	
Fork depth		**54 mm**	**54 mm**	
PNP NO/NC	**Ordering code**	**BGL0027**	**BGL000C**	
	Part number	BGL 80A-005-S49	BGL 120A-005-S49	
Supply voltage U_S		10...30 V DC	10...30 V DC	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
Output current		200 mA	200 mA	
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Potentiometer, 270°	Potentiometer, 270°	
Emitter, light type		Red light, pin point	Red light, pin point	
Wavelength		640 Nm	640 Nm	
Resolution (smallest discernible part)		0.4 mm	0.5 mm	
Repeat accuracy		40 µm	50 µm	
Switching hysteresis		≤ 0.15 mm	≤ 0.15 mm	
Output function indicator		Yellow LED	Yellow LED	
Response time		0.1 ms	0.1 ms	
Switching frequency		5 kHz	5 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature T_a		–10...+60 °C	–10...+60 °C	
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2	
Material	Housing	GD-Zn	GD-Zn	
	Optical surface	Glass	Glass	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	


Connector orientation

Other fork openings on request.

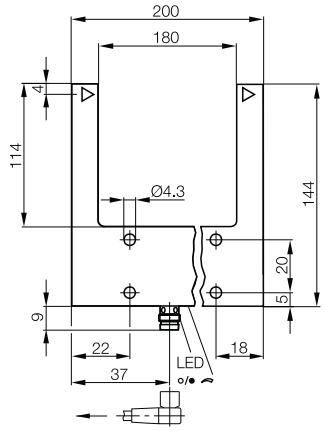


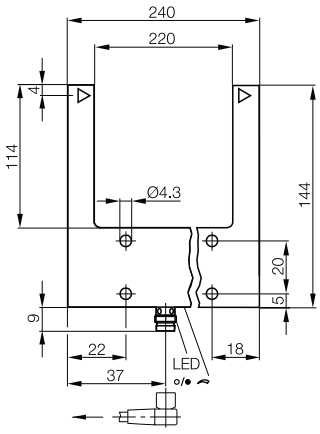


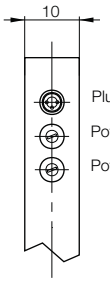




	BGL	BGL	
	180 mm	**220 mm**	
	114 mm	**114 mm**	
	BGL000L	**BGL0012**	
	BGL 180A-005-S49	BGL 220A-005-S49	
	10...30 V DC	10...30 V DC	
	≤ 35 mA	≤ 35 mA	
	200 mA	200 mA	
	Light/dark switching (selectable)	Light/dark switching (selectable)	
	Yes/Yes	Yes/Yes	
	Potentiometer, 270°	Potentiometer, 270°	
	Red light, pin point	Red light, pin point	
	640 Nm	640 Nm	
	0.6 mm	0.6 mm	
	60 µm	60 µm	
	≤ 0.2 mm	≤ 0.2 mm	
	Yellow LED	Yellow LED	
	0.1 ms	0.1 ms	
	5 kHz	5 kHz	
	IP 67	IP 67	
	–10...+60 °C	–10...+60 °C	
	EN 60947-5-2	EN 60947-5-2	
	GD-Zn	GD-Zn	
	Glass	Glass	
	M8 connector, 3-pin	M8 connector, 3-pin	







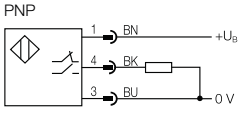
Plug, LED output function indicator

Potentiometer light/dark switching

Potentiometer, sensitivity

Wiring diagram

PNP



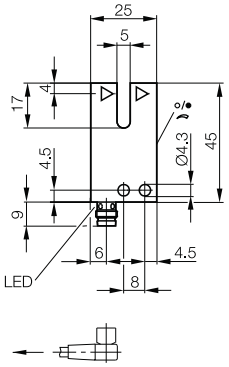


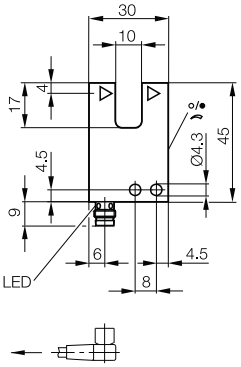


Series		**BGL**	**BGL**	
Fork opening		**5 mm**	**10 mm**	
Fork depth		**17 mm**	**17 mm**	
PNP NO/NC	**Ordering code**	**BGL0021**	**BGL0005**	
	Part number	BGL 5A-007-S49	BGL 10A-007-S49	
Supply voltage U_S		10...30 V DC	10...30 V DC	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
Output current		200 mA	200 mA	
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Potentiometer, 270°	Potentiometer, 270°	
Emitter, light type		Infrared	Infrared	
Wavelength		880 Nm	880 Nm	
Resolution (smallest discernible part)		0.8 mm	0.8 mm	
Repeat accuracy		0.1 mm	0.1 mm	
Switching hysteresis		≤ 0.3 mm	≤ 0.3 mm	
Power-on indicator		Green LED	Green LED	
Output function indicator		Yellow LED	Yellow LED	
Response time		0.166 ms	0.166 ms	
Switching frequency		3 kHz	3 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature T_a		–10...+60 °C	–10...+60 °C	
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2	
Material	Housing	GD-Zn	GD-Zn	
	Optical surface	Glass	Glass	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	


Connector orientation

Other fork openings on request.



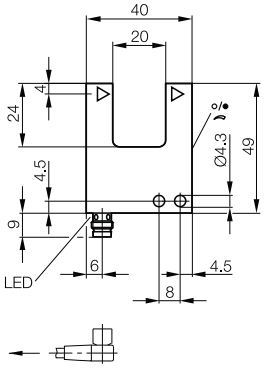


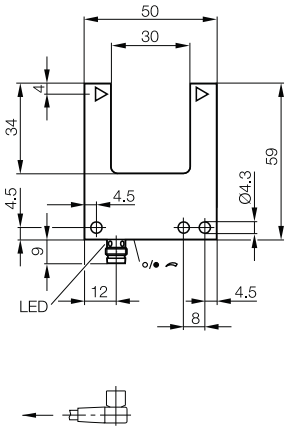


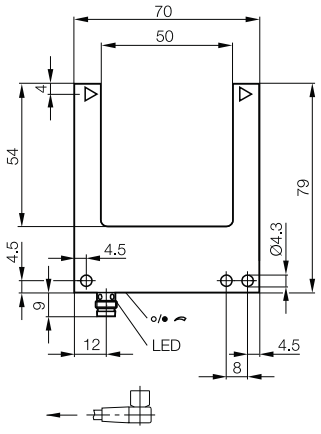


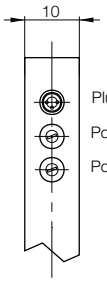


BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL000Y	**BGL001F**	**BGL001T**
BGL 20A-007-S49	BGL 30A-007-S49	BGL 50A-007-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Infrared	Infrared	Infrared
880 Nm	880 Nm	880 Nm
0.8 mm	0.8 mm	1 mm
0.1 mm	0.1 mm	0.12 mm
≤ 0.3 mm	≤ 0.3 mm	≤ 0.3 mm
Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED
0.25 ms	0.25 ms	0.25 ms
2 kHz	2 kHz	2 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin









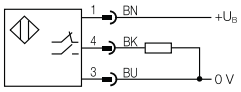
Plug, LED output function indicator

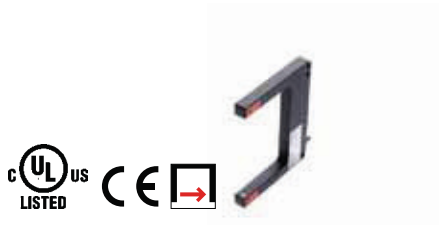
Potentiometer light/dark switching

Potentiometer, sensitivity

Wiring diagram

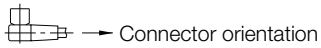
PNP



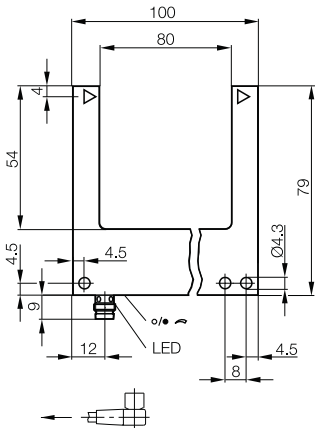


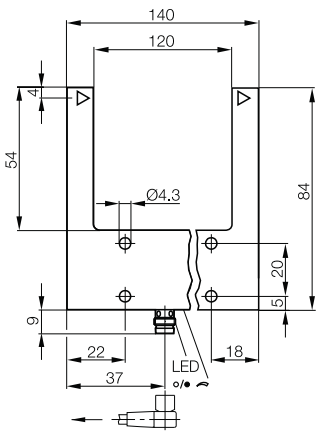


Series		**BGL**	**BGL**
Fork opening		**80 mm**	**120 mm**
Fork depth		**54 mm**	**54 mm**
PNP NO/NC	**Ordering code**	**BGL0029**	**BGL000F**
	Part number	BGL 80A-007-S49	BGL 120A-007-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Infrared	Infrared
Wavelength		880 Nm	880 Nm
Resolution (smallest discernible part)		1.2 mm	1.5 mm
Repeat accuracy		0.15 mm	0.2 mm
Switching hysteresis		≤ 0.4 mm	≤ 0.5 mm
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Response time		0.33 ms	0.5 ms
Switching frequency		2 kHz	1 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin



Other fork openings on request.

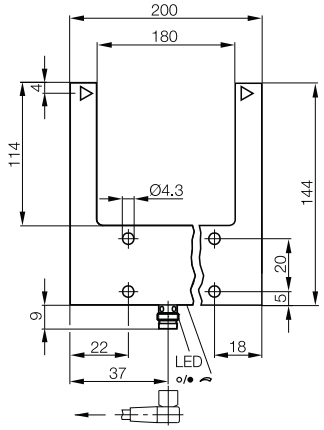


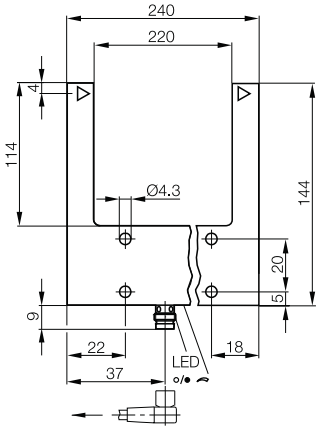


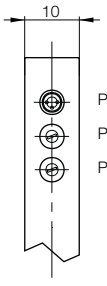




	BGL	BGL	
	180 mm	**220 mm**	
	114 mm	**114 mm**	
	BGL000N	**BGL0014**	
	BGL 180A-007-S49	BGL 220A-007-S49	
	10...30 V DC	10...30 V DC	
	≤ 35 mA	≤ 35 mA	
	200 mA	200 mA	
	Light/dark switching (selectable)	Light/dark switching (selectable)	
	Yes/Yes	Yes/Yes	
	Potentiometer, 270°	Potentiometer, 270°	
	Infrared	Infrared	
	880 Nm	880 Nm	
	1.5 mm	1.5 mm	
	0.2 mm	0.2 mm	
	≤ 0.5 mm	≤ 0.5 mm	
	Green LED	Green LED	
	Yellow LED	Yellow LED	
	0.25 ms	0.25 ms	
	2 kHz	2 kHz	
	IP 67	IP 67	
	–10...+60 °C	–10...+60 °C	
	EN 60947-5-2	EN 60947-5-2	
	GD-Zn	GD-Zn	
	Glass	Glass	
	M8 connector, 3-pin	M8 connector, 3-pin	



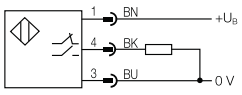




Plug, LED output function indicator
Potentiometer light/dark switching
Potentiometer, sensitivity

Wiring diagram

PNP

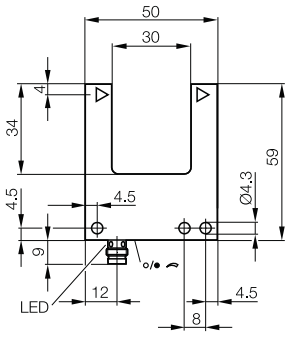


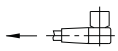


Series			**BGL**
Fork opening			**30 mm**
Fork depth			**34 mm**
PNP	NO/NC	**Ordering code**	**BGL0019**
		Part number	BGL 30A-003-S49
PNP	NO/NC	**Ordering code**	
Transparency detection		Part number	
Supply voltage U_S			10...30 V DC
No-load supply current I_0 max.			≤ 20 mA
Output current			200 mA
Switching type			Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Potentiometer, 270°
Emitter, light type			Laser, red light
Wavelength			650 Nm
Laser class			1
Resolution (smallest discernible part)			50 µm
Repeat accuracy			10 µm
Switching hysteresis			20 µm
Output function indicator			Yellow LED
Response time			0.1 ms
Switching frequency			5 kHz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–10...+60 °C
Ambient light limit according to			EN 60947-5-2
Material		Housing	GD-Zn
		Optical surface	Glass
Connection			M8 connector, 3-pin

 Connector orientation

Other fork openings on request.



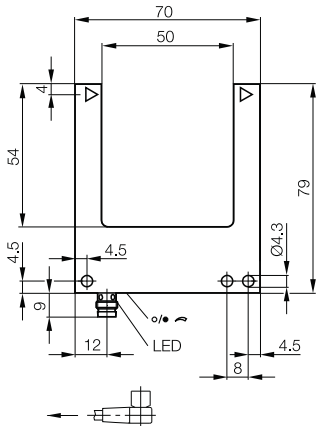


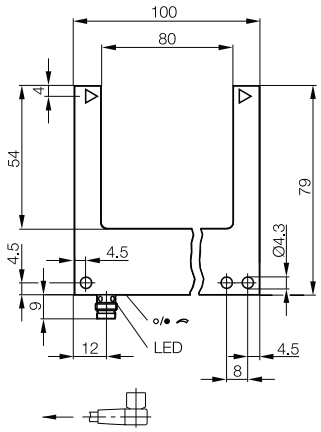


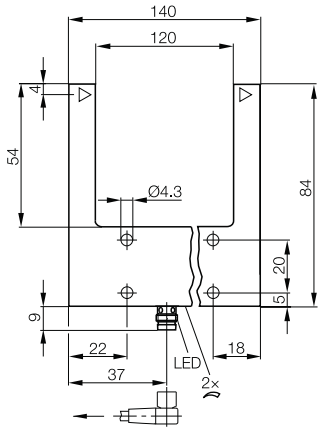


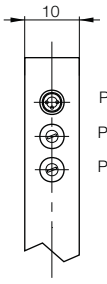


BGL	**BGL**	**BGL**
50 mm	**80 mm**	**120 mm**
54 mm	**54 mm**	**54 mm**
BGL001M	**BGL0025**	**BGL0009**
BGL 50A-003-S49	BGL 80A-003-S49	BGL 120A-003-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 20 mA	≤ 20 mA	≤ 20 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Laser, red light	Laser, red light	Laser, red light
650 Nm	650 Nm	650 Nm
1	1	1
80 µm	0.1 mm	0.15 mm
10 µm	10 µm	10 µm
25 µm	30 µm	50 µm
Yellow LED	Yellow LED	Yellow LED
0.1 ms	0.1 ms	0.1 ms
5 kHz	5 kHz	5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin









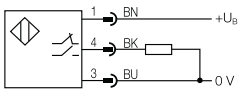
Plug, LED output function indicator

Potentiometer light/dark switching

Potentiometer, sensitivity

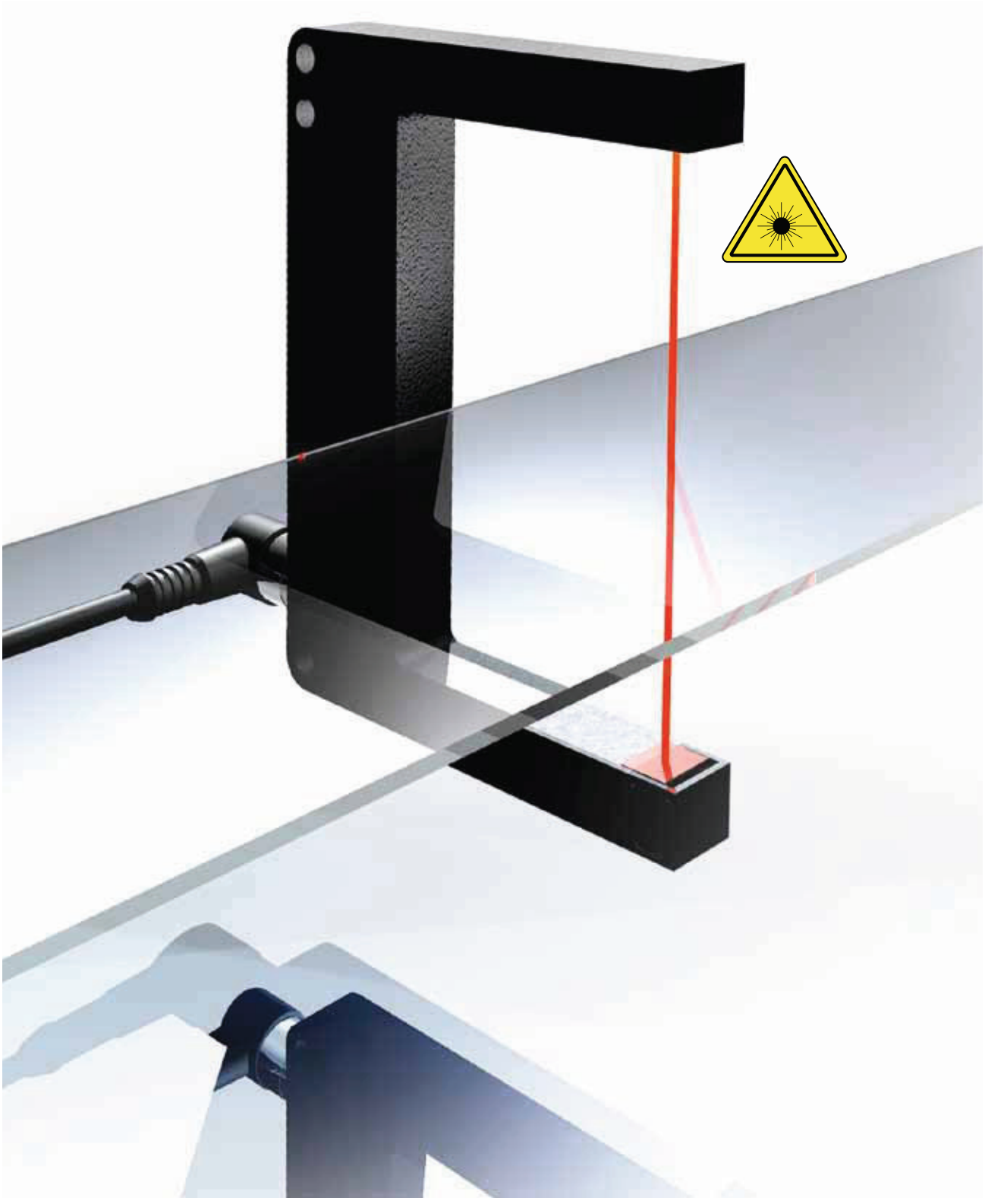
Wiring diagram

PNP



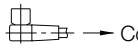
Reliable transparency detection with Laser fork sensors BGL

- No misalignment of emitter and receiver
- Easy, fast commissioning
- Reliable detection of transparent objects

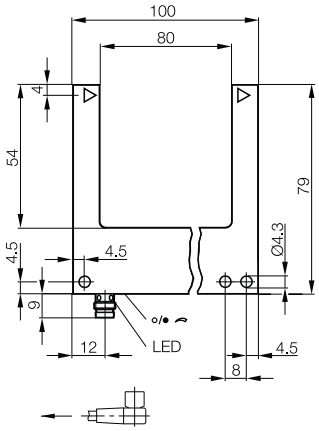




Series			**BGL transparent detection**
Fork opening			**80 mm**
Fork depth			**54 mm**
PNP	NO/NC	**Ordering code**	**BGL002T**
Transparency detection		Part number	BGL 80A-009-S49
Supply voltage U_S			10...30 V DC
No-load supply current I_0 max.			≤ 20 mA
Output current			200 mA
Switching type			Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Potentiometer, 270°
Special features			detects transparent objects
Emitter, light type			Laser Class 1
Wavelength			650 Nm
Resolution (smallest discernible part)			50 µm
Repeat accuracy			10 µm
Switching hysteresis			30 µm
Power-on indicator			
Output function indicator			Yellow LED
Response time			0.1 ms
Switching frequency			5 kHz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–10...+60 °C
Ambient light limit according to			EN 60947-5-2
Material		Housing	GD-Zn
		Optical surface	Glass
Connection			M8 connector, 3-pin



Other fork openings on request.



Maximum reliability – simple handling

Balluff BGL laser fork sensors ensure completely reliable detection of transparent objects.

They also provide the unsurpassed benefits of fork sensors: Emitters and receivers do not have to be aligned, and misalignment no longer occurs. BGL laser fork sensors are therefore characterized by simple and fast commissioning as well as maximum reliability.





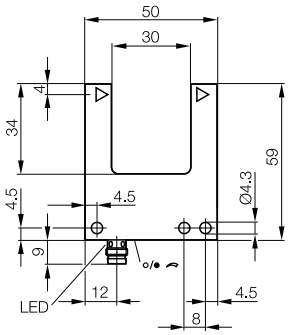
Fluid detection
The photoelectric sensors with fork openings of 30 mm and 80 mm are suitable for detecting the level of clear, colored or turbid fluids with a water content > 15% through transparent container walls. Balluff offers a solution for applications where other sensors reach their limits. For example, this fork sensor can detect fluids containing water in small, transparent hoses with a diameter of ≤ 6 mm.

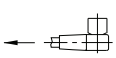
Dynamic Sensor Control (DSC)
provides high-quality information in addition to the sensor function. This lets users immediately detect whether increasing contamination has started impairing the accuracy of a sensor, and does so during ongoing operations. This enables immediate correction. Accordingly, DSC increases the productivity of systems and machines.

Series			**BGL fluid detection**
Fork opening			**30 mm**
Fork depth			**34 mm**
PNP	NO/NC	**Ordering code**	**BGL003J**
Fluid detection		Part number	BGL 30A-011-S49
PNP	NO/NC	**Ordering code**	
DSC (Dynamic Sensor Control)		Part number	
Supply voltage U_S			10...30 V DC
No-load supply current I_0 max.			≤ 35 mA
Output current			200 mA
Switching type			Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Potentiometer, 270°
Special features			detects liquids with 15% or more water
Emitter, light type			Infrared
Wavelength			1480 Nm
Resolution (smallest discernible part)			0.6 mm
Repeat accuracy			0.1 mm
Switching hysteresis			≤ 0.2 mm
Power-on indicator			Green LED
Output function indicator			Yellow LED
Response time			0.25 ms
Switching frequency			2 kHz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–10...+60 °C
Ambient light limit according to			EN 60947-5-2
Material		Housing	GD-Zn
		Optical surface	Glass
Connection			M8 connector, 3-pin


Connector orientation

Other fork openings on request.







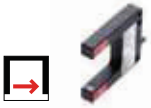
Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

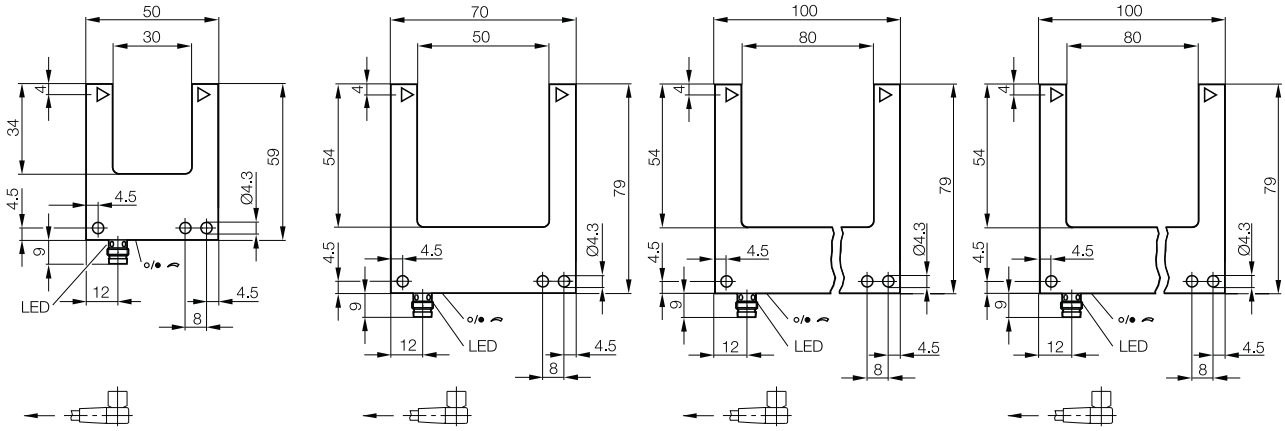
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

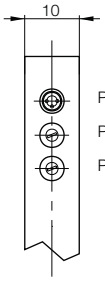
Mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.






BGL with DSC	**BGL with DSC**	**BGL fluid detection**	**BGL with DSC**
30 mm	**50 mm**	**80 mm**	**80 mm**
34 mm	**54 mm**	**54 mm**	**54 mm**
		BGL003L	
		BGL 80A-011-S49	
BGL003N	**BGL003P**		**BGL003R**
BGL 30A-013-S49	BGL 50A-013-S49		BGL 80A-013-S49
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Contamination detection	Contamination detection	detects liquids with 15% or more water	Contamination detection
Infrared	Infrared	Infrared	Infrared
880 Nm	880 Nm	1480 Nm	880 Nm
0.8 mm	1 mm	0.8 mm	1.2 mm
0.1 mm	0.12 mm	0.1 mm	0.15 mm
≤ 0.3 mm	≤ 0.3 mm	≤ 0.2 mm	≤ 0.4 mm
Green LED	Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED	Yellow LED
2.5 ms	0.25 ms	0.25 ms	2.5 ms
200 Hz	200 Hz	2 kHz	200 Hz
IP 67	IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin

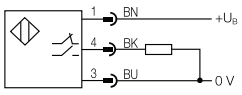




Plug, LED output function indicator
Potentiometer light/dark switching
Potentiometer, sensitivity

Wiring diagram

PNP

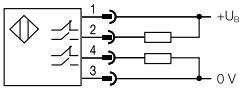


The fork sensor BGL 21 is a photoelectric sensor using a microcontroller for the setup process and function monitoring. All the user needs to do is press a button to access all the data needed for configuring the sensor.
An adjustment aid on the top and bottom of the sensor specifies the object position during configuration.
The internal microcontroller monitors all settings to ensure optimum switching frequency, repeat accuracy and rejection of optical interference and ambient light. The **BGL 21-RG** has a red and green emitter diode, which is ideal for detecting colored markings on transparent backing material. Which color of emitter light is more appropriate for the particular task is automatically determined during setup.
The **BGL 21-IR** model with an infrared emitter makes it possible to scan labels or holes on backing material.

Features
- Fast, fully automatic sensor calibration
- User interface has just one button and two LEDs
- Very short response time and high repeat accuracy
- Very resistant to optical interference and ambient light
- NPN/PNP output on separate pins with overload protection
- M8 connector block can be rotated 90°
- Metal housing

Applications
- Detecting markings on backing material
- Label detection
- Monitoring web tracking
- Web break monitoring
- Hole checking in thin materials (< 2 mm)

Wiring diagram





Suitable connectors
(please order separately)

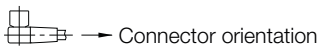
Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

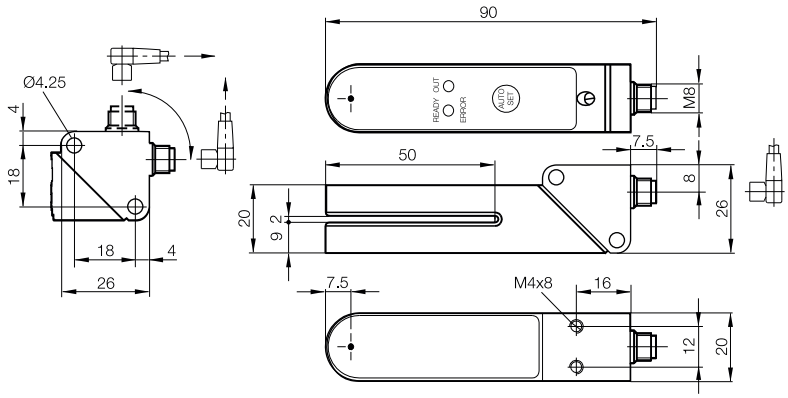
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**



Series		**BGL**	**BGL**
Fork opening		**2 mm**	**2 mm**
Fork depth		**50 mm**	**50 mm**
PNP/NPN NC/NO	**Ordering code**	**BGL002L**	**BGL002M**
	Part number	BGL 21-IR	BGL 21-RG
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 55 mA	≤ 55 mA
Output current		100 mA	100 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Teach-in	Teach-in
Emitter, light type		Infrared	Red and green light
Wavelength		880 Nm	636 nm/536 nm
Resolution (smallest discernible part)		1 mm	0.5 mm
Repeat accuracy		80 µm	80 µm
Switching hysteresis		≤ 0.2 mm	≤ 0.2 mm
Output function indicator		Yellow LED	Yellow LED
Power/error indicator		Green/red LED	Green/red LED
Response time		20 µs	20 µs
Switching frequency		25 kHz	25 kHz
Degree of protection as per IEC 60529		IP 65	IP 65
Ambient temperature T_a		–20...+60 °C	–20...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	Anodized aluminum	Anodized aluminum
	Optical surface	Glass	Glass
Connection		M8 connector, 4-pin	M8 connector, 4-pin





Angle sensors are needed whenever space is too tight for fork sensors and you can no longer find a (simple) solution for applications. This is due to the fact that, with nearly identical specifications, the design of the Balluff angle sensors **BWL Standard** can be used to find a solution for even more applications. The design and beam geometry allow objects to be approached and scanned from almost any direction, while red light and laser variants ensure versatile use.



Applications
- Assembly and handling technology
- Robotic systems
- Position and location control

Benefits
- High accuracy
- Visible light spot for easy alignment
- Can be installed even in tight mounting conditions

The Balluff angle sensor **BWL Automotive** is a powerful photoelectric sensor designed for harsh industrial use. Its housing is tough and allows for variable mounting options.
Objects are reliably detected, even under extremely difficult conditions.
A strong infrared emitter ensures a large function reserve and various designs allow for flexible use, allowing the creation of elegant solutions for a vast number of applications.



Applications
- Robotic systems
- Position and location control

Angle sensors BWL
Product overview

Ordering code	Type	Optical axis	Resolution	Light type: Infrared	Light type: Red light	Light type: Red light, pin point	Light type: Laser	Output: PNP transistor	Switching type: Light switching	Switching type: Dark switching	Switching frequency	U_S: 10...30 V DC	Connection: M8 plug, 3-pin	Connection: M12 connector, 4-pin	Page
	Angle sensors Standard														
BWL000F	BWL 4040D-R011-S49	40/40 mm	0.4 mm		■			■	■	■	1.5 kHz	■	■		262
BWL000J	BWL 4040D-R013-S49	40/40 mm	0.3 mm			■		■	■	■	5 kHz	■	■		264
BWL000C	BWL 4040D-L011-S49	40/40 mm	80 µm				■	■	■	■	5 kHz	■	■		268
BWL0009	BWL 4040D-I011-S49	40/40 mm	1.0 mm	■				■	■	■	2 kHz	■	■		266
BWL000R	BWL 5454D-R011-S49	54/54 mm	0.4 mm		■			■	■	■	1.5 kHz	■	■		262
BWL000U	BWL 5454D-R013-S49	54/54 mm	0.4 mm			■		■	■	■	5 kHz	■	■		264
BWL000N	BWL 5454D-L011-S49	54/54 mm	100 µm				■	■	■	■	5 kHz	■	■		268
BWL000L	BWL 5454D-I011-S49	54/54 mm	1.2 mm	■				■	■	■	2 kHz	■	■		266
BWL0012	BWL 6868D-R011-S49	68/68 mm	0.5 mm		■			■	■	■	1.5 kHz	■	■		263
BWL001N	BWL 6868D-R013-S49	68/68 mm	0.4 mm			■		■	■	■	5 kHz	■	■		265
BWL0010	BWL 6868D-L011-S49	68/68 mm	120 µm				■	■	■	■	5 kHz	■	■		269
BWL000Y	BWL 6868D-I011-S49	68/68 mm	1.5 mm	■				■	■	■	2 kHz	■	■		267
BWL0019	BWL 9090D-R011-S49	90/90 mm	0.6 mm		■			■	■	■	1.5 kHz	■	■		263
BWL001C	BWL 9090D-R013-S49	90/90 mm	0.5 mm			■		■	■	■	5 kHz	■	■		265
BWL0017	BWL 9090D-L011-S49	90/90 mm	150 µm				■	■	■	■	5 kHz	■	■		269
BWL0015	BWL 9090D-I011-S49	90/90 mm	1.5 mm	■				■	■	■	1 kHz	■	■		267
BWL0005	BWL 110110D-R011-S49	110/110 mm	0.6 mm		■			■	■	■	1.5 kHz	■	■		263
BWL0007	BWL 110110D-R013-S49	110/110 mm	0.6 mm			■		■	■	■	5 kHz	■	■		265
BWL0003	BWL 110110D-L011-S49	110/110 mm	0.2 mm				■	■	■	■	5 kHz	■	■		269
BWL0001	BWL 110110D-I011-S49	110/110 mm	1.5 mm	■				■	■	■	2 kHz	■	■		267
	Angle sensors Automotive														
BWL001F	BWL 2222B-001-S4	22/22 mm		■				■		■	1 kHz	■		■	270
BWL001H	BWL 2222C-001-S4	22/22 mm		■				■		■	1 kHz	■		■	270
BWL001J	BWL 4241A-001-S4	43/43 mm		■				■		■	1 kHz	■		■	271
BWL001K	BWL 4241A-001-S49	43/43 mm		■				■		■	1 kHz	■	■		271
BWL001L	BWL 4260A-001-S4	42/62 mm		■				■		■	1 kHz	■		■	271
BWL001M	BWL 4260A-001-S49	42/62 mm		■				■		■	1 kHz	■	■		271

NPN on request

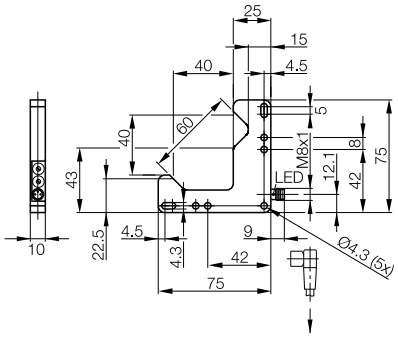
Angle Sensors
Red light

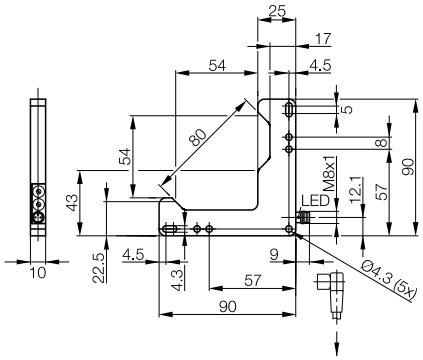




Series		**BWL**	**BWL**
Optical axis		**40/40 mm**	**54/54**
PNP NO/NC	**Ordering code**	**BWL000F**	**BWL000R**
	Part number	BWL 4040D-R011-S49	BWL 5454D-R011-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		LED, red light	LED, red light
Wavelength		640 Nm	640 Nm
Resolution (smallest discernible part)		0.4 mm	0.4 mm
Repeat accuracy		40 µm	60 µm
Switching hysteresis		≤ 0.15 mm	≤ 0.2 mm
Output function indicator		Yellow LED	Yellow LED
Response time		0.33 ms	0.33 ms
Switching frequency		1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin





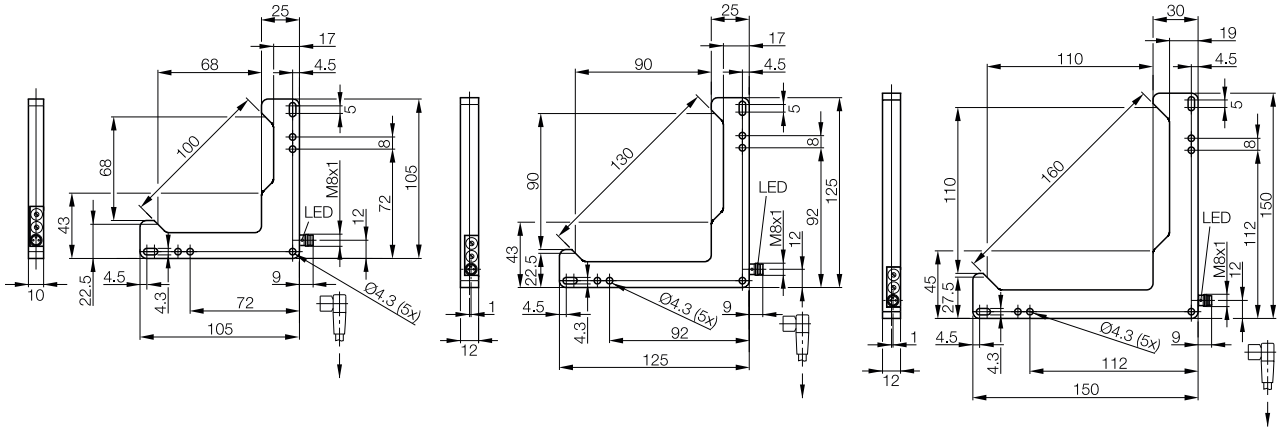


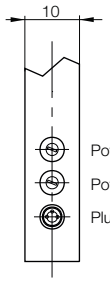






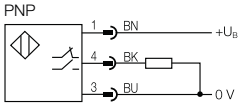
	BWL	BWL	BWL
	68/68 mm	**90/90 mm**	**110/110 mm**
	BWL0012	**BWL0019**	**BWL0005**
	BWL 6868D-R011-S49	BWL 9090D-R011-S49	BWL 110110D-R011-S49
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	200 mA	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light	LED, red light
	640 Nm	640 Nm	640 Nm
	0.5 mm	0.6 mm	0.6 mm
	80 µm	80 µm	80 µm
	≤ 0.2 mm	≤ 0.2 mm	≤ 0.2 mm
	Yellow LED	Yellow LED	Yellow LED
	0.33 ms	0.33 ms	0.33 ms
	1.5 kHz	1.5 kHz	1.5 kHz
	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn	GD-Zn
	Glass	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin





Potentiometer, sensitivity
Potentiometer light/dark switching
Plug, LED output function indicator

Wiring diagram

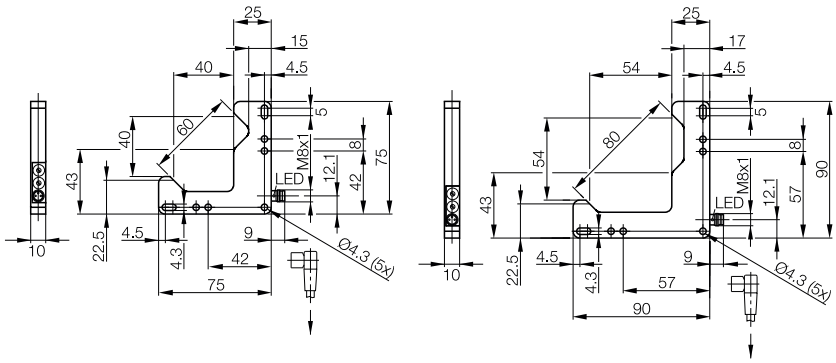


Angle Sensors Pin Point



Series		**BWL**	**BWL**
Optical axis		**40/40 mm**	**54/54**
PNP NO/NC	**Ordering code**	**BWL000J**	**BWL000U**
	Part number	BWL 4040D-R013-S49	BWL 5454D-R013-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Red light, pin point	Red light, pin point
Wavelength		640 Nm	640 Nm
Resolution (smallest discernible part)		0.3 mm	0.4 mm
Repeat accuracy		30 µm	40 µm
Switching hysteresis		≤ 0.1 mm	≤ 0.15 mm
Output function indicator		Yellow LED	Yellow LED
Response time		0.1 ms	0.1 ms
Switching frequency		5 kHz	5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin

Connector orientation

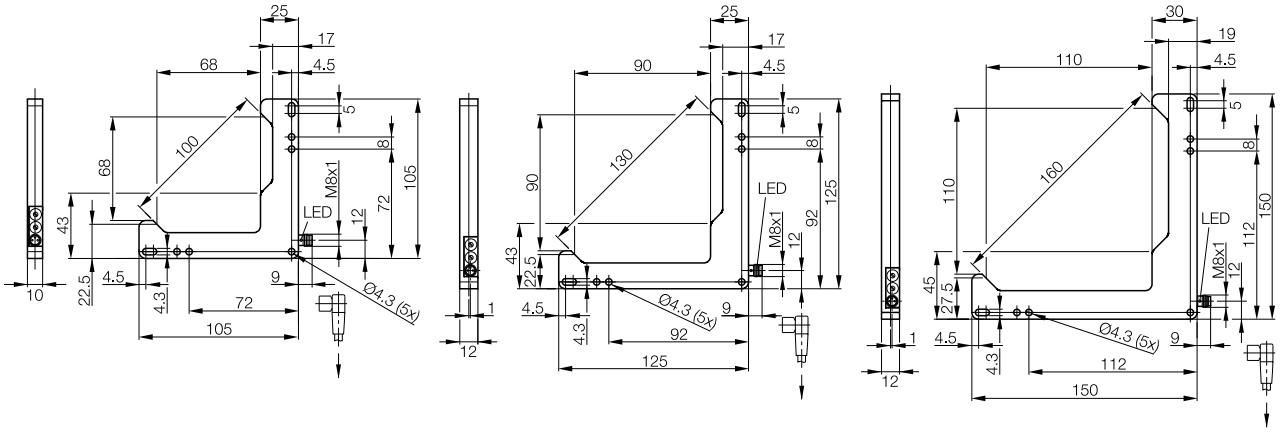




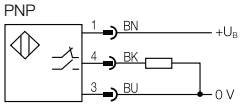


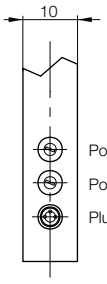


	BWL	BWL	BWL
	68/68 mm	**90/90 mm**	**110/110 mm**
	BWL001N	**BWL001C**	**BWL0007**
	BWL 6868D-R013-S49	BWL 9090D-R013-S49	BWL 110110D-R013-S49
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	200 mA	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	Red light, pin point	Red light, pin point	Red light, pin point
	640 Nm	640 Nm	640 Nm
	0.4 mm	0.5 mm	0.6 mm
	40 µm	50 µm	60 µm
	≤ 0.15 mm	≤ 0.15 mm	≤ 0.2 mm
	Yellow LED	Yellow LED	Yellow LED
	0.1 ms	0.1 ms	0.1 ms
	5 kHz	5 kHz	5 kHz
	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn	GD-Zn
	Glass	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin



Wiring diagram



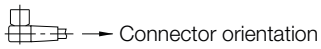


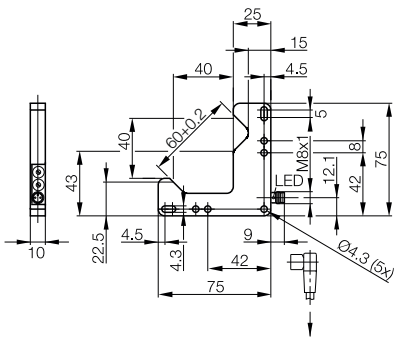
Potentiometer, sensitivity
Potentiometer light/dark switching
Plug, LED output function indicator

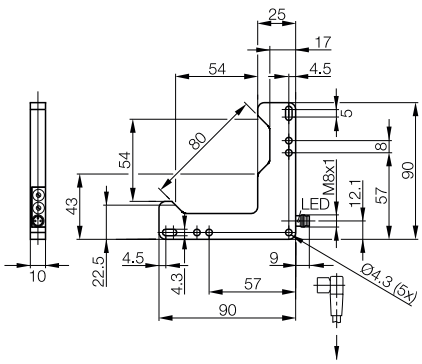




Series		**BWL**	**BWL**
Optical axis		**40/40 mm**	**54/54 mm**
PNP NO/NC	**Ordering code**	**BWL0009**	**BWL000L**
	Part number	BWL 4040D-I011-S49	BWL 5454D-I011-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Infrared	Infrared
Wavelength		880 Nm	880 Nm
Resolution (smallest discernible part)		1 mm	1.2 mm
Repeat accuracy		0.12 mm	0.15 mm
Switching hysteresis		≤ 0.3 mm	≤ 0.4 mm
Operating function indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Response time		0.25 ms	0.25 ms
Switching frequency		2 kHz	2 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin





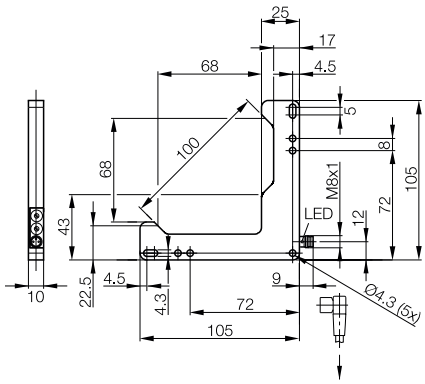


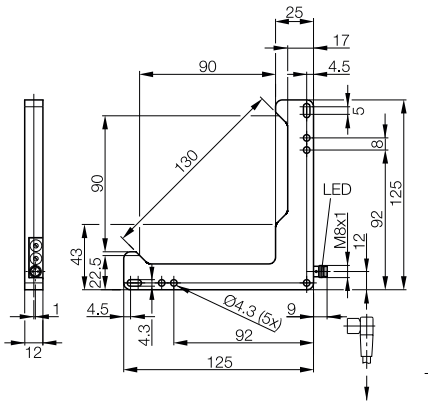


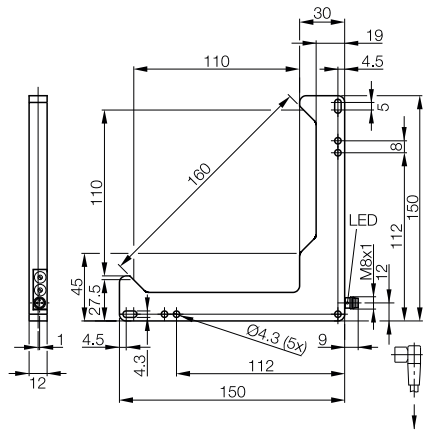




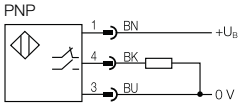
	BWL	BWL	BWL
	68/68 mm	**90/90 mm**	**110/110 mm**
	BWL000Y	**BWL0015**	**BWL0001**
	BWL 6868D-I011-S49	BWL 9090D-I011-S49	BWL 110110D-I011-S49
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	200 mA	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
	Infrared	Infrared	Infrared
	880 Nm	880 Nm	880 Nm
	1.5 mm	1.5 mm	1.5 mm
	0.2 mm	0.2 mm	0.2 mm
	≤ 0.5 mm	≤ 0.5 mm	≤ 0.5 mm
	Green LED	Green LED	Green LED
	Yellow LED	Yellow LED	Yellow LED
	0.25 ms	0.33 ms	0.25 ms
	2 kHz	1 kHz	2 kHz
	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn	GD-Zn
	Glass	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin

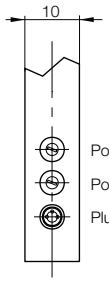




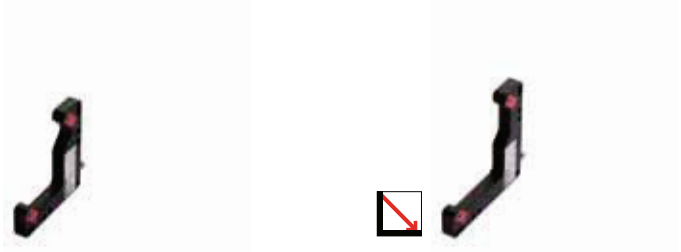


Wiring diagram

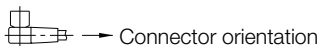


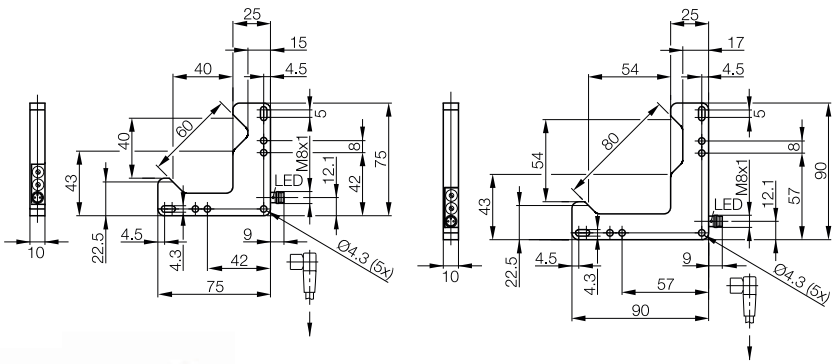


Potentiometer, sensitivity
Potentiometer light/dark switching
Plug, LED output function indicator



Series		**BWL**	**BWL**
Optical axis		**40/40 mm**	**54/54 mm**
PNP NO/NC	**Ordering code**	**BWL000C**	**BWL000N**
	Part number	BWL 4040D-L011-S49	BWL 5454D-L011-S49
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Laser, red light	Laser
Wavelength		640 Nm	640 Nm
Laser class		1	1
Resolution (smallest discernible part)		80 µm	100 µm
Repeat accuracy		≤ 10 µm	10 µm
Switching hysteresis		≤ 25 µm	≤ 35 µm
Output function indicator		Yellow LED	Yellow LED
Response time		0.1 ms	0.1 ms
Switching frequency		5 kHz	5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin







Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

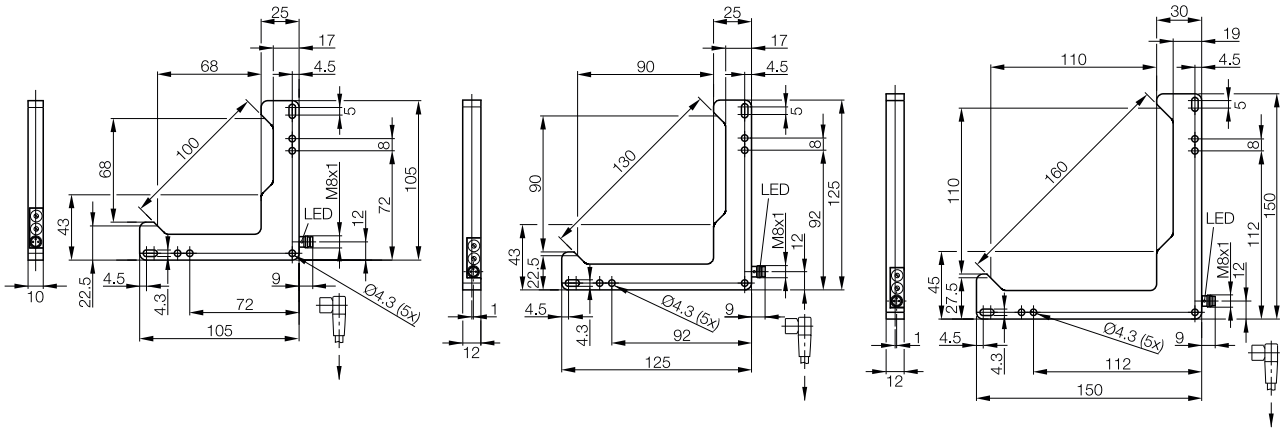
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**



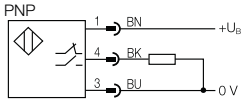


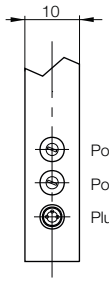


BWL	BWL	BWL
68/68 mm	**90/90 mm**	**110/110 mm**
BWL0010	**BWL0017**	**BWL0003**
BWL 6868D-L011-S49	BWL 9090D-L011-S49	BWL 110110D-L011-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 20 mA	≤ 20 mA	≤ 20 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Laser	Laser	Laser
640 Nm	640 Nm	640 Nm
1	1	1
120 µm	150 µm	0.2 mm
≤ 15 µm	≤ 15 µm	≤ 20 µm
≤ 40 µm	≤ 50 µm	≤ 70 µm
Yellow LED	Yellow LED	Yellow LED
0.1 ms	0.1 ms	0.1 ms
5 kHz	5 kHz	5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin



Wiring diagram

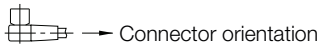


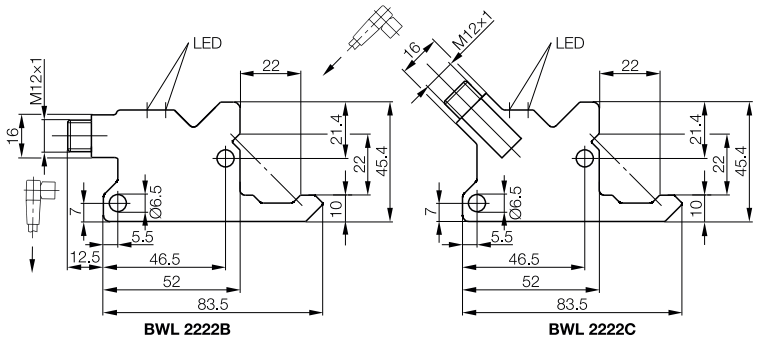


Potentiometer, sensitivity
Potentiometer light/dark switching
Plug, LED output function indicator




Series		**BWL**	**BWL**
Optical axis		**22/22 mm**	**22/22 mm**
PNP NO/NC	**Ordering code**	**BWL001F**	**BWL001H**
	Part number	BWL 2222B-001-S4	BWL 2222C-001-S4
Supply voltage U_S		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		≤ 200 mA	≤ 200 mA
Switching type		Dark switching	Dark switching
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Emitter, light type		Infrared	Infrared
Wavelength		880 Nm	880 Nm
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Stand-by delay		100 ms	100 ms
Response time		≤ 0.5 ms	≤ 0.5 ms
Switching frequency		1 kHz	1 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	Corrosion-resistant steel	Corrosion-resistant steel
	Optical surface	PMMA	PMMA
Connection		M12 connector, 4-pin	M12 connector, 4-pin





Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Suitable connectors
(please order separately)

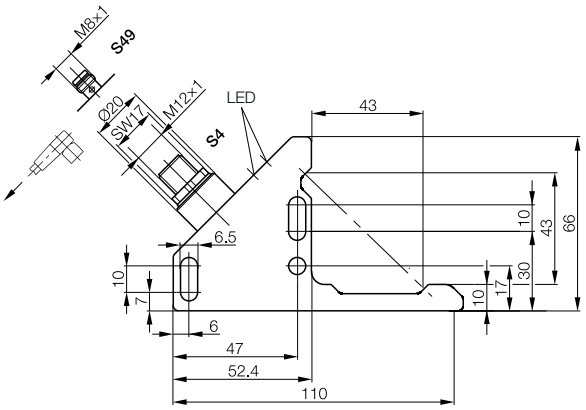


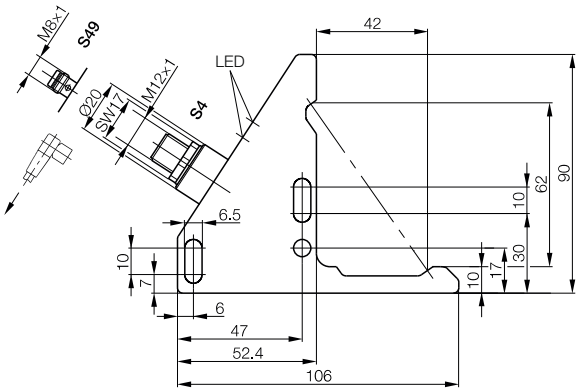
Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

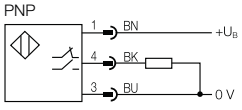


	BWL	BWL	BWL	BWL
	43/43 mm	**43/43 mm**	**42/62 mm**	**42/62 mm**
	BWL001J	**BWL001K**	**BWL001L**	**BWL001M**
	BWL 4241A-001-S4	BWL 4241A-001-S49	BWL 4260A-001-S4	BWL 4260A-001-S49
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA	≤ 35 mA
	≤ 200 mA	≤ 200 mA	≤ 200 mA	≤ 200 mA
	Dark switching	Dark switching	Dark switching	Dark switching
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Infrared	Infrared	Infrared	Infrared
	880 Nm	880 Nm	880 Nm	880 Nm
	Green LED	Green LED	Green LED	Green LED
	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	100 ms	100 ms	100 ms	100 ms
	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms
	1 kHz	1 kHz	1 kHz	1 kHz
	IP 67	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	Corrosion-resistant steel	Corrosion-resistant steel	Corrosion-resistant steel	Corrosion-resistant steel
	PMMA	PMMA	PMMA	PMMA
	M12 connector, 4-pin	M8 connector, 3-pin	M12 connector, 4-pin	M8 connector, 3-pin





Wiring diagram



Photoelectric Sensors

Photoelectric sensors with special properties

Certain applications require sensors with special properties. Balluff's photoelectric sensors with special properties. For instance, color sensors reliably detect even the slightest color differences. The first-class True Color Sensor is at home in quality control as well as sorting systems. Contrast sensors and luminescence sensors are perfectly suited for detection tasks, such as reading marks on packaging and sensing fill levels, determining contours, measuring thickness, etc.

Our broad selection of fork sensors with various widths and light types allow optimal adaptation to many detection tasks. Angle sensors or optical window sensors are available as another alternative, in addition to light grids for packaging larger objects involving longer distances.
But even if it looks like there is no space for a photoelectric sensor, Balluff provides a solution: fiber optics in glass and plastic versions.



Photoelectric Sensors with Special Properties

Photoelectric Sensors with Special Properties

Analog fork sensors BGL_C	274
Optical window sensors BOW	280
Light grids BLG	284
Color sensors BFS	288
Contrast sensors BKT	294
Luminescence sensors BLT	306
Optical fiber base units BFB/BOS	312
Plastic fiber optics BFO	326
Glass fiber optics BFO	344



Basic information and definitions can be found on **page 934.**

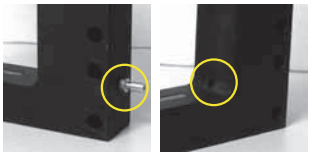
Analog Fork Sensors

In-process correction
Thanks to their lighting strip, analog fork sensors not only detect objects with absolute reliability, they also determine their positions with complete accuracy. That means that readjustments can easily be made during a process, process reliability and product quality are significantly increased, and more efficiency becomes a welcome "side effect".

Technical highlights
- Analog signal proportional to the skin depth of the object
- Constant value, even in the event of height variations
- High degree of soiling resistance and compensation
- Fieldbus connection with IO-Link
- Ideal for web edge control



Integral air rinsing nozzle to prevent dust from accumulating on the emitter and receiver optics. Simple connection via standard pneumatic system.





Analog fork sensors BGL_C
Product overview

Type		Fork opening	Resolution	Light type		Output						Switching type		Switching frequency	U_S	Connection	Page
Ordering code / Part number				Red light		0–10 V	4-20 mA	1× PNP transistor	2× PNP transistor	DSC (Dynamic Sensor Control)	IO-Link	Light switching	Dark switching		18...30 V DC	M12 connector, 4-pin, A-coded	
Fork sensors																	
BGL002Z	BGL 30C-001-S4	30 mm	80 µm	■					■			■	■	500 Hz	■	■	276
BGL0031	BGL 30C-003-S4	30 mm	80 µm	■			■	■				■	■	500 Hz	■	■	276
BGL0033	BGL 30C-005-S4	30 mm	80 µm	■		■		■				■	■	500 Hz	■	■	277
BGL0036	BGL 30C-009-S4	30 mm	80 µm	■					■	■		■	■	500 Hz	■	■	276
BGL0037	BGL 50C-001-S4	50 mm	80 µm	■					■			■	■	500 Hz	■	■	277
BGL0039	BGL 50C-003-S4	50 mm	80 µm	■			■	■				■	■	500 Hz	■	■	277
BGL003C	BGL 50C-005-S4	50 mm	80 µm	■		■		■				■	■	500 Hz	■	■	277
BGL003H	BGL 50C-009-S4	50 mm	80 µm	■					■	■		■	■	500 Hz	■	■	277
Fork sensors with IO-Link																	
BGL0035	BGL 30C-007-S4	30 mm	80 µm	■							■				■	■	278
BGL003F	BGL 50C-007-S4	50 mm	80 µm	■							■				■	■	278

NPN on request

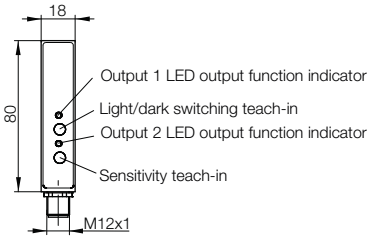
Photoelectric Sensors
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Analog Fork Sensors BGL_C
Optical Window Sensors BOW
Light Grids BLG
Color Sensors BFS
Contrast Sensors BKT
Luminescence Sensors BLT
Optical Fiber Base Units BFB/ BOS
Plastic Fiber Optics BFO
Glass Fiber Optics BFO
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

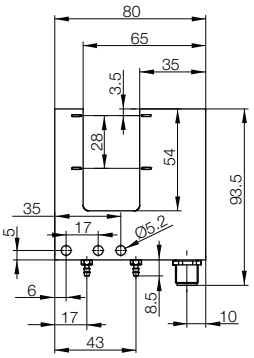


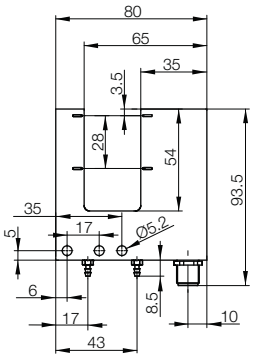


Series				**BGL analog**	**BGL analog**
Fork opening				**30 mm**	**30 mm**
Fork depth				**54 mm**	**54 mm**
PNP	2 switching outputs	NC/NO	**Ordering code**	**BGL002Z**	
			Part number	BGL 30C-001-S4	
PNP	1 analog and 1 switching/ error output	NC/NO	**Ordering code**		**BGL0031**
			Part number		BGL 30C-003-S4
PNP	2 switching outputs with DSC	NC/NO	**Ordering code**	**BGL0036**	
			Part number	BGL 30C-009-S4	
Supply voltage U_S				18...30 V DC	18...30 V DC
No-load supply current I_0 max.				≤ 20 mA	≤ 20 mA
Output current				100 mA	100 mA
Analog output					4...20 mA
Switching type				Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected				Yes/Yes	Yes/Yes
Settings				Teach-in	Teach-in
Emitter, light type				Red light	Red light
Wavelength				633 Nm	633 Nm
Resolution (smallest discernible part)				≤ 80 µm	≤ 80 µm
Repeat accuracy				0.15 mm	0.15 mm
Switching hysteresis				< 0.4 mm	< 0.4 mm
Output function indicator				2× yellow LED	2× yellow LED
Response time				2 ms	2 ms
Switching frequency				500 Hz	500 Hz
Measurement field length				28 mm	28 mm
Degree of protection as per IEC 60529				IP 67	IP 67
Ambient temperature T_a				–5...+55°C	–5...+55°C
Ambient light limit according to				EN 60947-5-2	EN 60947-5-2
Material			Housing	Anodized aluminum	Anodized aluminum
			Optical surface	PMMA	PMMA
Connection				M12 connector, 4-pin	M12 connector, 4-pin

For wiring diagrams and suitable connectors, see page 279.



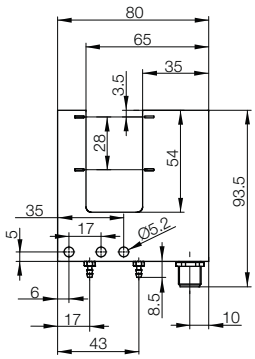


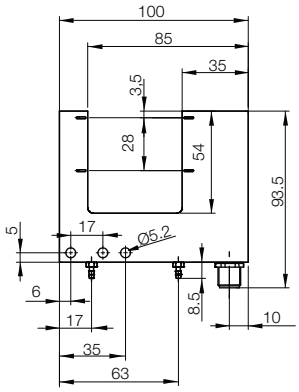


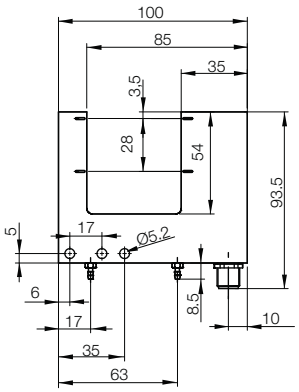


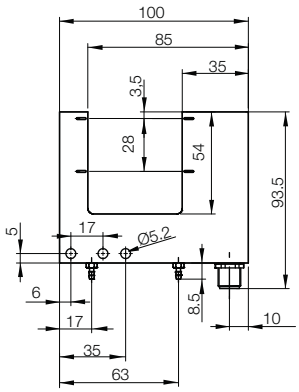



BGL analog **30 mm** **54 mm**	**BGL analog** **50 mm** **54 mm**	**BGL analog** **50 mm** **54 mm**	**BGL analog** **50 mm** **54 mm**
	BGL0037		
	BGL 50C-001-S4		
BGL0033		**BGL0039**	**BGL003C**
BGL 30C-005-S4		BGL 50C-003-S4	BGL 50C-005-S4
	BGL003H		
	BGL 50C-009-S4		
18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC
≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
100 mA	100 mA	100 mA	100 mA
0...10 V DC		4...20 mA	0...10 V DC
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Teach-in	Teach-in	Teach-in	Teach-in
Red light	Red light	Red light	Red light
633 Nm	633 Nm	633 Nm	633 Nm
≤ 80 µm	≤ 80 µm	≤ 80 µm	≤ 80 µm
0.15 mm	0.15 mm	0.15 mm	0.15 mm
< 0.4 mm	< 0.4 mm	< 0.4 mm	< 0.4 mm
2× yellow LED	2× yellow LED	2× yellow LED	2× yellow LED
2 ms	2 ms	2 ms	2 ms
500 Hz	500 Hz	500 Hz	500 Hz
28 mm	28 mm	28 mm	28 mm
IP 67	IP 67	IP 67	IP 67
–5...+55°C	–5...+55°C	–5...+55°C	–5...+55°C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin













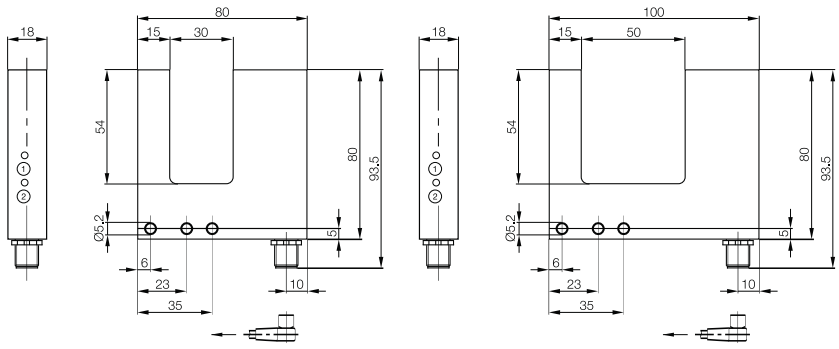
Series			**BGL analog, Series C Premium**	**BGL analog, Series C Premium**
Fork opening			**30 mm**	**50 mm**
Fork depth			**54 mm**	**54 mm**
PNP	With IO-Link	**Ordering code**	**BGL0035**	**BGL003F**
		Part number	BGL 30C-007-S4	BGL 50C-007-S4
Supply voltage U_S			18...30 V DC	18...30 V DC
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Output current			Max. 100 mA per output	Max. 100 mA per output
Analog output			4...20 mA	4...20 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Response time			≤ 1 ms	≤ 1 ms
Settings			2× teach button	2× teach button
Emitter, light type			Red light	Red light
Wavelength			633 Nm	633 Nm
Resolution			0.1 mm	0.1 mm
Repeat accuracy			0.15 mm	0.15 mm
Switching hysteresis			< 0.4 mm	< 0.4 mm
Hysteresis			±0.8 %	±0.8 %
Output function indicator			2× yellow LED	2× yellow LED
Response time			2 ms	2 ms
Switching frequency			500 Hz	500 Hz
Measurement field length			28 mm	28 mm
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55°C	–5...+55°C
Ambient light limit according to			EN 60947-5-2	EN 60947-5-2
Material		Housing	Anodized aluminum	Anodized aluminum
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin, A-coded	M12 connector, 4-pin, A-coded

IO-Link

Mode	COM 2	COM 2
Transfer rate	38.4 kbaud	38.4 kbaud
IO-Link process data length	2 input bytes	2 input bytes
Value range	000 H...03FF H	000 H...03FF H
Diagnostics	Contamination	Contamination
Parameters	Switching points/switching range, button disable, NO/NC switch, analog value characteristics	Switching points/switching range, button disable, NO/NC switch, analog value characteristics

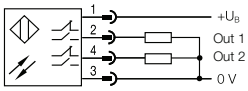
Integral air rinsing nozzle to prevent dust from accumulating on the emitter and receiver optics. Simple connection via standard pneumatic system.



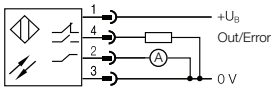


Wiring diagrams

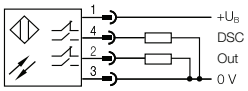
BGL... 001-S4



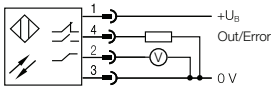
BGL... 003-S4



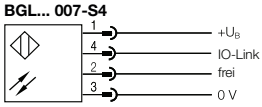
BGL... 009-S4



BGL... 005-S4



BGL... 007-S4





Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

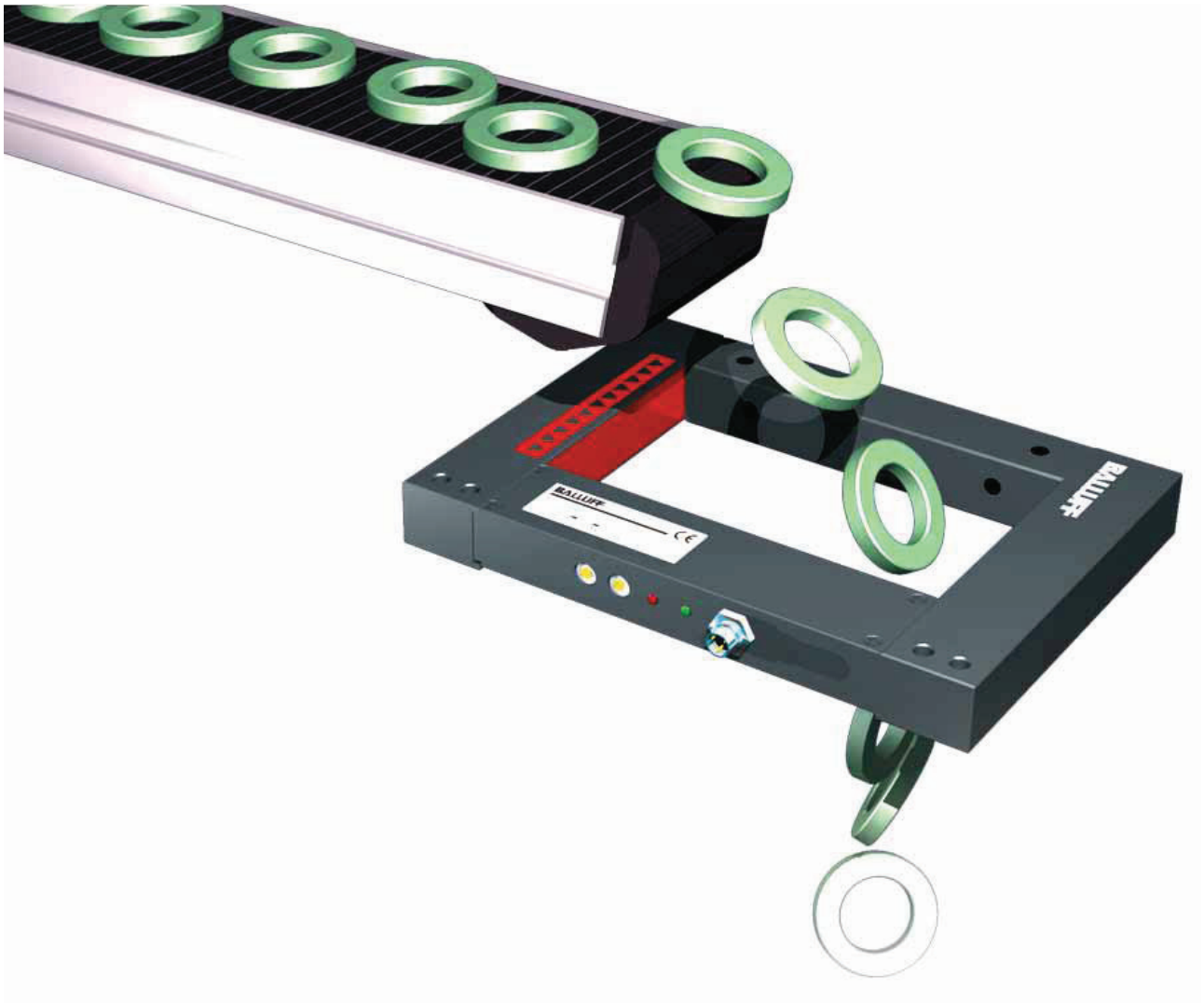
Photoelectric Sensors
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Analog Fork sensors BGL_C
Optical Window Sensors BOW
Light Grids BLG
Color Sensors BFS
Contrast Sensors BKT
Luminescence Sensors BLT
Optical Fiber Base Units BFB/ BOS
Plastic Fiber Optics BFO
Glass Fiber Optics BFO
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Optical Window Sensors

The ideal use for optical window sensors BOW is when objects do not just have to be scanned in some places, but throughout an entire area (window) instead. Thanks to their multitude of beams arranged in parallel, they can detect objects in a broad window. A constant, high resolution is ensured at each location in the window in the process.
BOW sensors are dynamic, which means that parts are detected in the active area when they are moving.

Features
- Constant, high resolution
- Dynamic operation
- Only moving objects are detected, so feed trays and the like do not affect the measurement
- Detects small parts down to 1 mm
- Adjustable output signal length
- Adjustable sensitivity
- Three window sizes
- Standard M8 connector

Applications
- Compressed air feeding of small parts
- Thread break monitoring
- Eject monitoring
- Counting/separating parts



Photoelectric Sensors with Special Properties

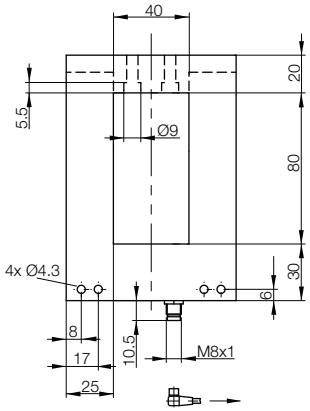
Optical window sensors BOW

Product overview

Type		Active area	Resolution	Light type: Infrared	Output: PNP transistor	Switching type: Dark switching	Principle: Dynamic	U_S: 10...30 V DC	Connection: M8 plug, 3-pin	Page
Ordering code / Part number										
Optical window sensors										
BOW001A	BOW A-0408-PS-C-S49	40×80 mm	1 mm	■	■	■	■	■	■	282
BOW001J	BOW A-0808-PS-C-S49	80×80 mm	1 mm	■	■	■	■	■	■	283
BOW0012	BOW A-1208-PS-C-S49	120×80 mm	1.2 mm	■	■	■	■	■	■	283



Series		**BOW**
Active area		**40×80 mm**
PNP NC/NO	**Ordering code**	**BOW001A**
	Part number	BOW A-0408-PS-C-S49
Supply voltage U_S		10...30 V DC
No-load supply current I_0 max.		≤ 40 mA
Output current		200 mA
Switching type		Dark switching
Polarity reversal/short-circuit protected		Yes/Yes
Settings		2× Potentiometer, 270°
Emitter, light type		LED, infrared
Wavelength		880 Nm
Resolution (smallest discernible part)		1.0 mm
Power-on indicator		Green LED
Output function indicator		Red LED
Turn-on delay		0.2 ms
Signal duration for pulse stretching		10...300 ms adjustable
Switching frequency		3...100 Hz dyn.
Degree of protection as per IEC 60529		IP 67
Ambient temperature T_a		–10...+55 °C
Ambient light limit according to		EN 60947-5-2
Material	Housing	Anodized aluminum
	Optical surface	PMMA
Connection		M8 connector, 3-pin





Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

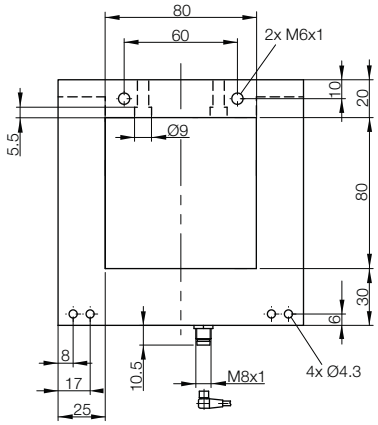
Connectors without LED are suitable for PNP and NPN sensors.

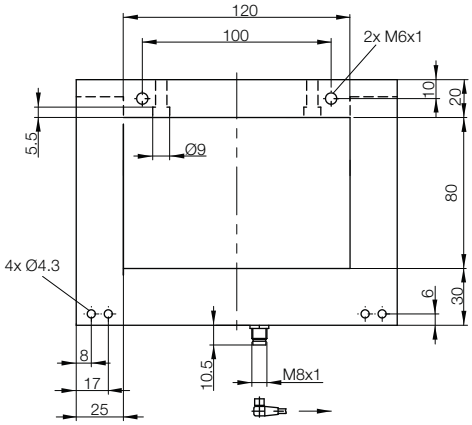
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

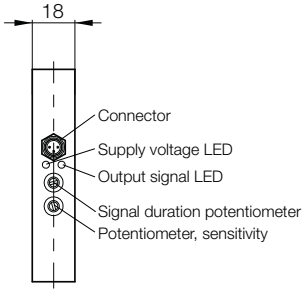




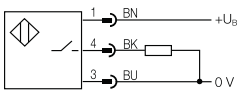
	BOW	BOW
	80×80 mm	**120×80 mm**
	BOW001J	**BOW0012**
	BOW A-0808-PS-C-S49	BOW A-1208-PS-C-S49
	10...30 V DC	10...30 V DC
	≤ 45 mA	≤ 60 mA
	200 mA	200 mA
	Dark switching	Dark switching
	Yes/Yes	Yes/Yes
	2× Potentiometer, 270°	2× Potentiometer, 270°
	LED, infrared	LED, infrared
	880 Nm	880 Nm
	1.0 mm	1.2 mm
	Green LED	Green LED
	Red LED	Red LED
	0.2 ms	0.2 ms
	10...300 ms adjustable	10...300 ms adjustable
	3...100 Hz dyn.	3...100 Hz dyn
	IP 67	IP 67
	–10...+55 °C	–10...+55 °C
	EN 60947-5-2	EN 60947-5-2
	Anodized aluminum	Anodized aluminum
	PMMA	PMMA
	M8 connector, 3-pin	M8 connector, 3-pin







Wiring diagram

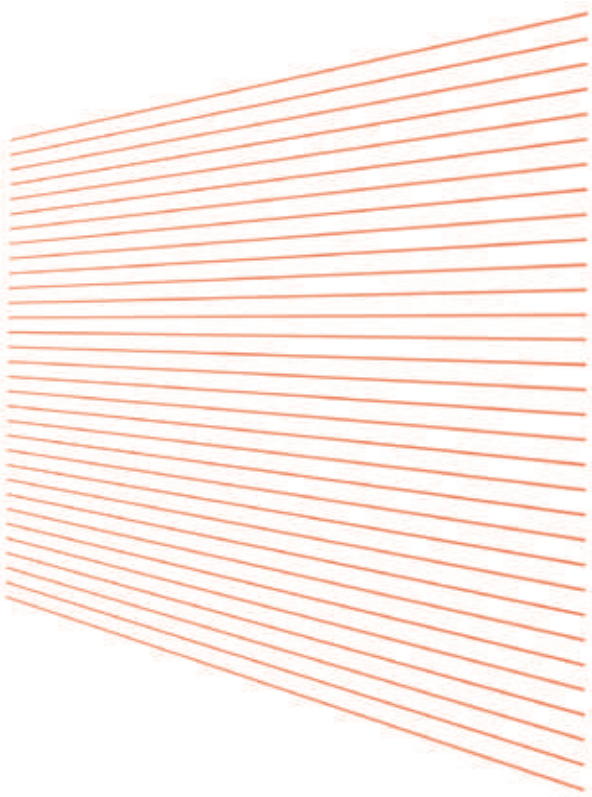


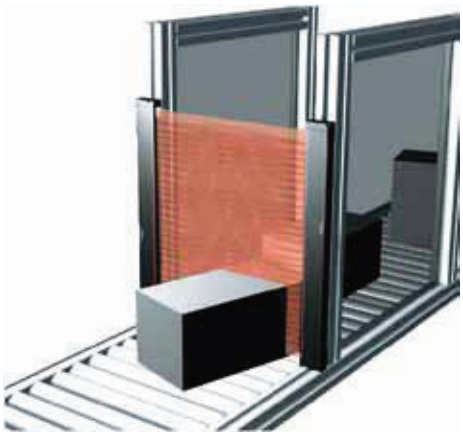
When installing with exposure to ambient light, make sure that the receiver is located on the connector side.

Light grids BLG are normally used for reliably detecting wide and very large objects. BLG sensors are available in various measurement field heights of 100, 150 and 300 mm and allow both large and small ranges. Light grids with a measurement field height of 100 and 150 mm can be ordered with low or high resolution.
The light grid can be simply and quickly installed using the supplied mounting bracket. Setup and installation are user friendly and easy to accomplish.
The system features an analog voltage output for outputting the height or width of an object directly. An additional switching output indicates whether the object is within the monitored range.

Features
- Easy to connect
- Easy to install
- Ready for operation immediately
- No cumbersome configuration of parameters
- Ranges 150 mm...2.1 m
- Measurement field heights 100, 150, 300 mm
- Analog output

Applications
- Counting parts
- Height measurement and height checking
- Presence verification
- Slack and position checking
- Pallet checking
- Web monitoring
- Position and material monitoring





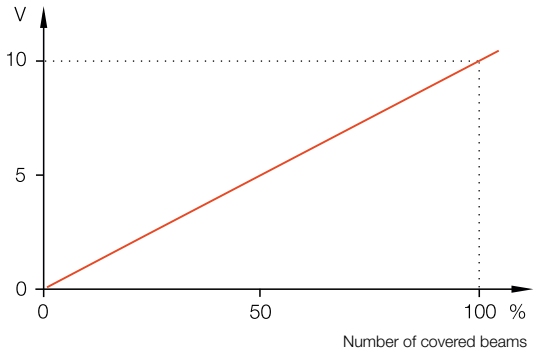
Photoelectric Sensors with Special Properties

Light grids BLG

Product overview

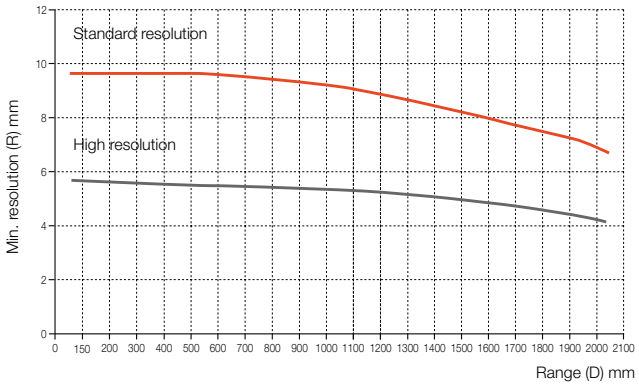
Type	Ordering code / Part number	Measuring field height	Range		Resolution		Light type		Output		Switching type		U_S	Connection		Page
			0.15...2.1 m		5 mm	7 mm	Infrared		PNP transistor	Analog 0...10 V	Dark switching		24 V DC	M12 plug		
Light grids																
BLG0001	BLG 1-010-210-050-PV01-SX	100 mm	■		■		■		■	■	■		■	■		287
BLG0002	BLG 1-010-210-070-PV01-SX	100 mm	■			■	■		■	■	■		■	■		287
BLG0003	BLG 1-015-210-050-PV01-SX	150 mm	■		■		■		■	■	■		■	■		287
BLG0004	BLG 1-015-210-070-PV01-SX	150 mm	■			■	■		■	■	■		■	■		287
BLG0005	BLG 1-030-210-070-PV01-SX	300 mm	■			■	■		■	■	■		■	■		287

Analog output



Resolution diagram

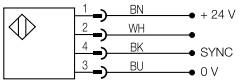
Range 0.15...2.1 m



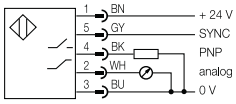
Series			
Measurement field height			
PNP	NO	Resolution 5 mm	**Ordering code**
			Part number
PNP	NO	Resolution 7 mm	**Ordering code**
			Part number
Supply voltage U_S			
No-load supply current I_0 max.			Emitter
			Receiver
Output current			
Switching type			
Short-circuit protected			
Analog output			
Settings			
Emitter, light type			
Wavelength			
Power-on indicator			Emitter/Receiver
Output function indicator			
Degree of protection as per IEC 60529			
Ambient temperature T_a			
Material			Housing
			Optical surface
Connection			Emitter
			Receiver

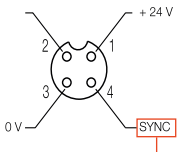
Wiring diagrams

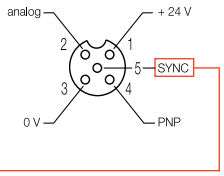
Emitter



Receiver







Recommended accessories
(please order separately)



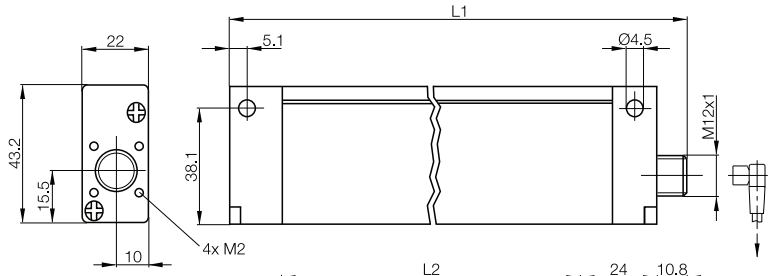
Mounting bracket
(included)







BLG	BLG	BLG
100 mm	**150 mm**	**300 mm**
BLG0001	**BLG0003**	
BLG 1-010-210-050-PV01-SX	BLG 1-015-210-050-PV01-SX	
BLG0002	**BLG0004**	**BLG0005**
BLG 1-010-210-070-PV01-SX	BLG 1-015-210-070-PV01-SX	BLG 1-030-210-070-PV01-SX
24 V DC	24 V DC	24 V DC
≤ 150 mA	≤ 150 mA	≤ 150 mA
≤ 50 mA no load	≤ 50 mA no load	≤ 50 mA no load
100 mA	100 mA	100 mA
Dark switching	Dark switching	Dark switching
Yes	Yes	Yes
0...10 V	0...10 V	0...10 V
Fixed	Fixed	Fixed
LED, infrared	LED, infrared	LED, infrared
880 Nm	880 Nm	880 Nm
Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED
IP 65	IP 65	IP 65
0...+55 °C	0...+55 °C	0...+55 °C
Black anodized aluminum	Black anodized aluminum	Black anodized aluminum
PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
M12 connector, 5-pin	M12 connector, 5-pin	M12 connector, 5-pin



	L1	L2
BLG 1-010	150	107
BLG 1-015	200	157
BLG 1-030	350	307



Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**
M12, 5-pin	Angled	PUR	Black	5 m	**BCC08FC**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**



Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Use the plug connector without an LED!

Applications
Color sensors open up a wide range of various applications, such as in the packaging industry, robotics, automation, quality assurance or in the process industry.
Automated processes can be simplified and accelerated using the versatile color sensors for detecting color nuances in carpets and textiles or for color markings on packagings or labels.

The **BFS 26K** and **BFS 27K** series of color sensors operate using pulsed white light, making them particularly insensitive to ambient light. The light reflected back from the object is received and processed by three different receivers (red, green, blue).

The various light spot geometry configurations of the respective sensors (round, rectangular or square) can reliably detect even the smallest color markings.
Numerous special functions such as color scanning, pulse expansion and blanking input provide additional application flexibility.

Features
- Microcontroller-based
- Pulsed white light
- Various light spot geometries
- 3 different colors can be identified at the same time
- 5-stage adjustable color tolerance

The **BFS 27K** with a clearly organized operating panel and large display enables various colors and the selection of all functions to be taught in easily using teach-in.
Modes C (color type) and C+I (color type + intensity) as well as 10 tolerance levels can be set separately for all 3 channels. Pulse extension of 0...40 ms can also be selected and is applied to all channels. Balluff Sensorware allows the set functions to be visualized over the RS485 interface.

- Display
- Autocollimation
- Versions with high switching frequency or for dark colors
- Color type or color type + intensity operating modes
- Serial RS485 interface



Photoelectric Sensors with Special Properties

Color sensors BFS

Product overview

Type ■ Ordering code □ Part number	Sensing distance/ Range	Light type		Output				U_S			Connection					Page
		White light		3×PNP transistor	3×Push-pull	IO-Link	RS 232 interface	12...28 V DC	18...30 V DC	24 V	M12 plug, 8-pin	M12 plug, 5-pin	Cable	Color scan	True color	
True color sensor																
BFS000L BFS 33M-GSS-F01-PU-02	400 mm	■			■		■			■			■		■	291
Color sensors																
BFS0001 BFS 26K-PS-L01-S115	12...32 mm	■		■				■			■			■		293
BFS0002 BFS 26K-PS-L02-S115-C	15...30 mm	■		■				■			■			■		293
BFS0003 BFS 26K-PS-L03-S115-C	18...22 mm	■		■				■			■			■		293
BFS000F BFS 26K-GI-L04-S92	12...32 mm	■				■			■			■				293



For distinguishing between the smallest of color nuances at the highest level

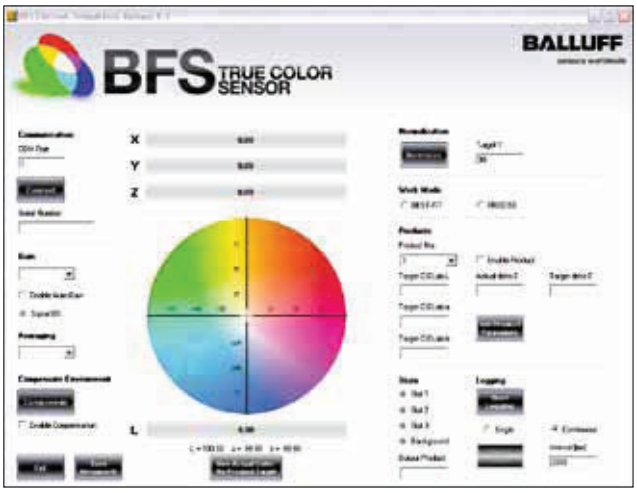
The True Color sensor BFS 33M is in a completely different league to conventional RGB sensors. Thanks to its high resolution, it not only detects colors but can also reliably distinguish between nuances. The True Color sensor thus detects, for instance minimal color deviations in injection molded parts. And it can also tell if a metal enters production polished or unpolished. Faded colors or poor print quality are detected in an instant and separated. It thus opens up completely new dimensions in quality control. The sensor uses three digital outputs and a serial interface to perform evaluations. The lab color space values are transmitted directly via this interface.

Features

- Detection of and distinguishing between a random number of colors
- Reliably distinguishes between the smallest of color nuances
- Large sensing distance up to 400 mm
- Simple configuration and visualization using software
- Robust metal housing

Industries

- Automotive industry
- Plastics processing
- Packaging industry
- Handling and assembly
- Printing industry
- Wood processing





Recommended accessories
(please order separately)

Description	Ordering code
① Optical fiber M4 (coaxial), 2 m long	BFO00C9
② Optics (short-range), 7 mm, screwed onto M4 optical fiber	BAM00NT
③ Optical fiber M6 (coaxial), 1 m long	BFO00FP
④ Optical fiber M6 (coaxial), 2 m long	BFO00C4
⑤ Optical fiber M6 (coaxial), 5 m long	BFO00FN
⑥ Optics (adjustable), 200 mm sensing distance, screwed onto M6 optical fiber	BAM01U2
⑦ Optics (long-range), 400 mm sensing distance, screwed onto M6 optical fiber	BAM01PA
⑧ Interface cable (shielded)	BCC0ARP
⑨ RS232/USB interface converter	BAE009A



More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

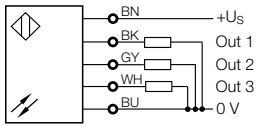
Photoelectric Sensors with Special Properties

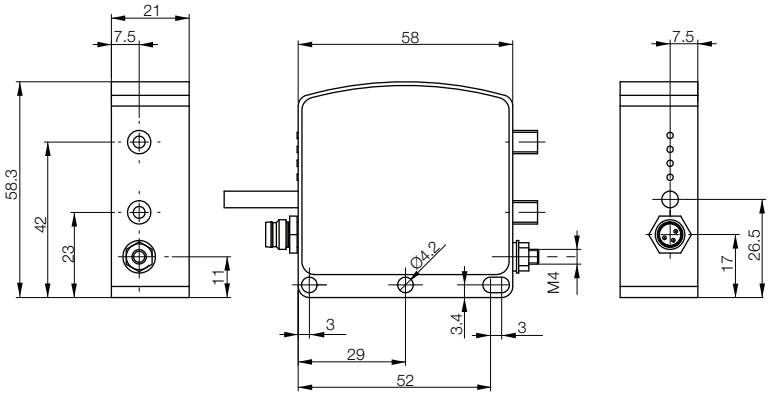
True Color sensor BFS 33M



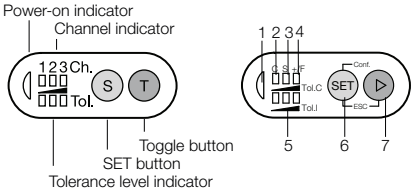
Series		**BFS 33M**
Working range		**400 mm (with long-range optics)**
3× Push-pull	**Ordering code**	**BFS000L**
RS 232 interface	Part number	BFS 33M-GSS-F01-PU-02
Supply voltage U_S		24 V DC ±10%
No-load supply current I_0 max.		40 mA
Output current		30 mA
Polarity reversal/short-circuit protected		Yes/Yes
Settings		via software
Emitter, light type		LED, white light
Color space		CIELab
Light spot diameter		Depends on the fiber optics
Color resolution tolerance		Adjustable (software)
Resolution		8 amplifier stages of 12 bits each
Color resolution		< 0.5 dE
Repeat accuracy		< 1 dE
Ready indicator		Green LED
Output function indicator		3× Yellow LED (binary encoding)
Response time		0.33 ms
Switching frequency		1.5 kHz
Degree of protection as per IEC 60529		IP 54
Ambient temperature T_a		+10...+55 °C
Permissible ambient light		EN 60947-5-2
Housing material		Al coated
Connection		2 m PUR cable, 5×0.25 mm²

Wiring diagram





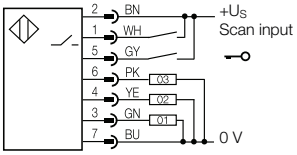
Indicators and operating elements



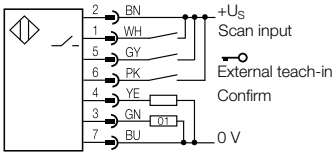
1. Power-on indicator
2. Output function indicator/teach-in indicator
3. Teach-in indicator (color range)
4. Teach-in indicator (special function)
5. Tolerance level/special function
6. Setting, teaching in
7. Advancing

Wiring diagrams

BFS 26K-PS...
Two modes are available.
1. Normal mode "factory setting"

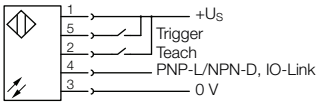


2. External teach-in
setting using "special functions"

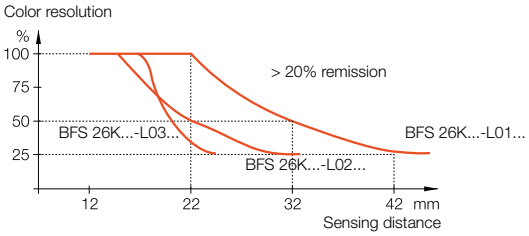


Disabling input:
> 12 V = Buttons locked,
< 3 V = Buttons not locked

BFS 26K-GI...



Color resolution/sensing distance diagram



Series		
Light spot diameter		
Diffuse mode working range		
Retroreflective working range		
3× PNP	**Ordering code**	
	Part number	
1× Push-pull, IO-Link	**Ordering code**	
	Part number	
Supply voltage U_S		
No-load supply current I_0 max.		
Output current		
Switching type		
Polarity reversal/short-circuit protected		
Settings		
Emitter, light type		
Light spot geometry		
Sensing distance tolerance		
Color resolution tolerance		
Ready indicator		
Output function indicator Ch. 1...Ch. 3		
Output function indicator Tol. 1...Tol. 5		
Stand-by delay		
Response time		
Switching frequency		
Time function		
Degree of protection as per IEC 60529		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00TK**



Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 8-pin	Straight	PUR	Black	5 m	**BCC0995**
M12, 8-pin	Angled	PUR	Black	5 m	**BCC06K5**

Connectors without LED are suitable for PNP and NPN sensors.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

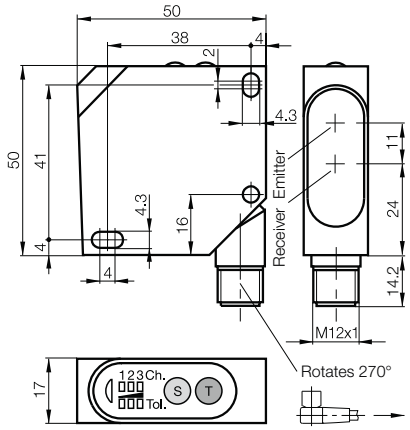


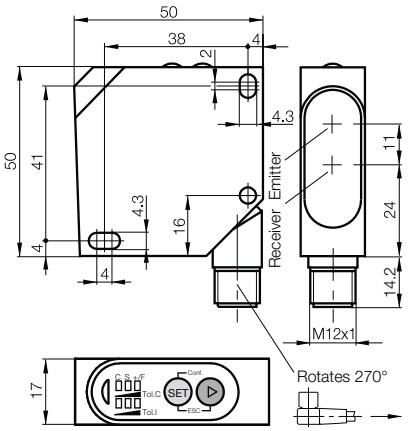






	BFS 26K **Ø 4 mm at 22 mm sensing distance** **12...32 mm** **50...200 mm**	**BFS 26K** **2×2 mm at 22 mm sensing distance** **15...30 mm**	**BFS 26K** **5×1 mm at 22 mm sensing distance** **18...22 mm**	**BFS 26K** **Ø 4 mm at 22 mm sensing distance** **12...32 mm**
	BFS0001	**BFS0002**	**BFS0003**	
	BFS 26K-PS-L01-S115	BFS 26K-PS-L02-S115-C	BFS 26K-PS-L03-S115-C	
				BFS000F
				BFS 26K-GI-L04-S92
	12...28 V DC	12...28 V DC	12...28 V DC	18...30 V DC
	≤ 40 mA	≤ 40 mA	≤ 40 mA	≤ 40 mA
	100 mA	100 mA	100 mA	100 mA
	Light switching	Light switching	Light switching	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in	Teach-in	Teach-in	Teach-in
	Pulsed white light	Pulsed white light	Pulsed white light	Pulsed white light
	Round	Square	Rectangular	Round
	±6 mm at Tol.3	±5 mm at Tol.3	±2 mm at Tol.3	±6 mm at Tol C3 and Tol I2
	Adjustable in 5 levels	Adjustable in 5 levels	Adjustable in 5 levels	
	Green LED	Green LED	Green LED	
	3×Yellow LED	3×Yellow LED	3×Yellow LED	
	3×Red LED	3×Red LED	3×Red LED	
	300 ms	300 ms	300 ms	300 ms
	1 ms	1 ms	1 ms	
	500 Hz	500 Hz	500 Hz	500 Hz (SIO mode)
	50 ms release delay selectable	50 ms release delay selectable	50 ms release delay selectable	50 ms release delay selectable
	IP 67	IP 67	IP 67	IP 67
	–10...+55 °C	–10...+55 °C	–10...+55 °C	–10...+55 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	M12 connector, 8-pin	M12 connector, 8-pin	M12 connector, 8-pin	M12 connector, 5-pin





Contrast Sensor

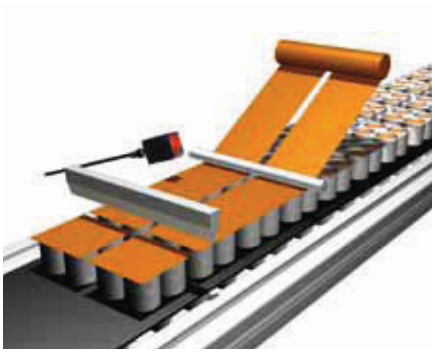
Contrast sensors BKT

Contrast sensors are high-resolution diffuse sensors that distinguish objects based on their gray values.
Color, brightness and reflectivity have a strong effect on the measurement result.
The measuring distance should be kept constant when gray values differ only slightly. The resolution of the sensor decreases with increasing sensing distance.
Multiple series with various light types and functions are available for the multitude of uses for sensors.

Applications

- Sensing markings on packaging material
- Synchronizing cutting or separating processes
- Checking for adhesive, ink and color
- Position checking of printing templates
- Sensing objects based on contrast







Photoelectric Sensors with Special Properties

Contrast sensors BKT

Product overview

Type		Sensing distance	Light type			Output			Switching type		Switching frequency	U_S	Connection				Page
■ Ordering code □ Part number			White light	Red, green and blue light	Laser light	PNP transistor	NPN transistor	Analog output	Light switching	Dark switching		10...30 V DC	M8 plug, 4-pin	M12 plug, 4-pin	M12 plug, 5-pin	Cable	
Contrast sensors																	
BKT000A	BKT 6K-001-P-S75	40...150 mm			■	■			■	■	1 kHz	■	■				297
BKT0008	BKT 6K-001-N-S75	40...150 mm			■		■		■	■	1 kHz	■	■				297
BKT0009	BKT 6K-001-P-02	40...150 mm			■	■			■	■	1 kHz	■				■	297
BKT0007	BKT 6K-001-N-02	40...150 mm			■		■		■	■	1 kHz	■				■	297
BKT000H	BKT 18KF-001-P-S4	10 mm	■			■			■	■	5 kHz	■		■			299
BKT000F	BKT 18KF-001-P-02	10 mm	■			■			■	■	5 kHz	■				■	299
BKT000Y	BKT 21M-002-P-S4	19 mm	■			■			■	■	5 kHz	■		■			301
BKT000W	BKT 21M-002-N-S4	19 mm	■				■		■	■	5 kHz	■		■			301
BKT0001	BKT 67M-001-U-S92	9 mm*		■		■	■	■	■	■	15 kHz	■			■		303
BKT0002	BKT 67M-002-U-S92	9 mm*		■		■	■	■	■	■	15 kHz	■			■		303
BKT0003	BKT 67M-003-U-S92	9 mm*		■		■	■	■	■	■	25 kHz	■			■		303
BKT0004	BKT 67M-004-U-S92	9 mm*		■		■	■	■	■	■	25 kHz	■			■		303
BKT0005	BKT 67M-005-U-S92	9 mm*		■		■	■		■	■	30 kHz	■			■		303
BKT0006	BKT 67M-006-U-S92	9 mm*		■		■	■		■	■	30 kHz	■			■		303

*Longer sensing distances using interchangeable optics

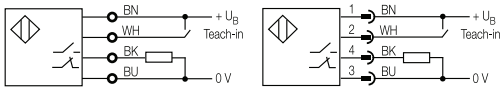
Laser Contrast Sensor

The laser contrast sensor **BKT 6K** is designed to reliably detect small areas of contrast variances. Even the narrowest lines can be detected reliably in the optimum working range of 70...100 mm. Larger areas are capable of being detected outside this range.

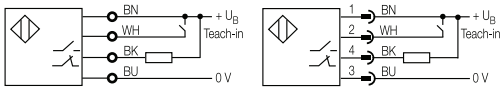
Programming the sensor is easy using its teach-in button or a control line.

Wiring diagrams

BKT 6K-001-P



BKT 6K-001-N





Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00UH**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

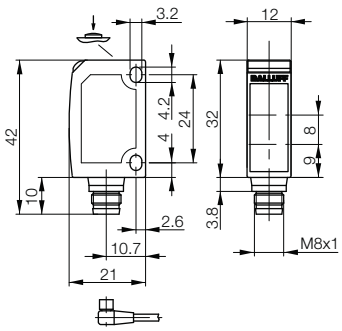
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

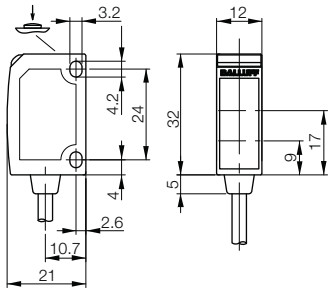




Series			**BKT 6K**	**BKT 6K**
Working distance			**40...150 mm***	**40...150 mm***
PNP	NC/NO	**Ordering code**	**BKT000A**	**BKT0009**
		Part number	BKT 6K-001-P-S75	BKT 6K-001-P-02
NPN	NC/NO	**Ordering code**	**BKT0008**	**BKT0007**
		Part number	BKT 6K-001-N-S75	BKT 6K-001-N-02
Supply voltage U_S			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Output current			100 mA	100 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			2	2
Light spot diameter			0.7 mm at the focus (85 mm ± 15 mm)	0.7 mm at the focus (85 mm ± 15 mm)
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED
Response time			0.5 ms	0.5 ms
Switching frequency			1 kHz	1 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	Impact-resistant ABS	Impact-resistant ABS
		Optical surface	PMMA	PMMA
Connection			M8 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

*Optimum working range for small markings: 70...100 mm.

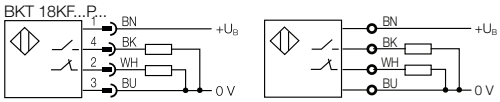




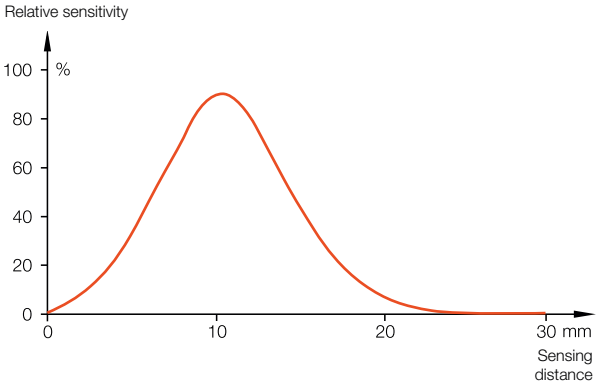
White Light Contrast Sensor

The contrast sensor **BKT 18KF** operates with white light and draws attention with its ability to be configured simply at just the press of a button. It detects colored markings as well as gray levels on various surfaces. In the standard setting the sensor operates using dark switching.
Precise configuration is available for slight contrast differences. The switching type can also be selected in this setting.

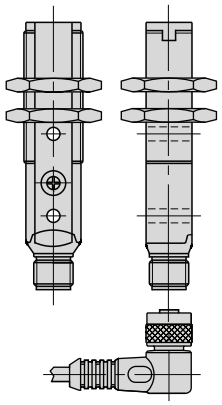
Wiring diagrams



Function diagram



Connector orientation





Recommended accessories
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00RY**
② Mounting clamp	**BAM00T3**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

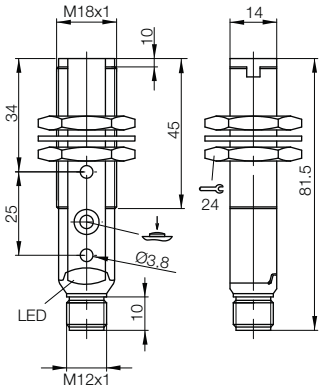
Connectors without LED are suitable for PNP and NPN sensors.

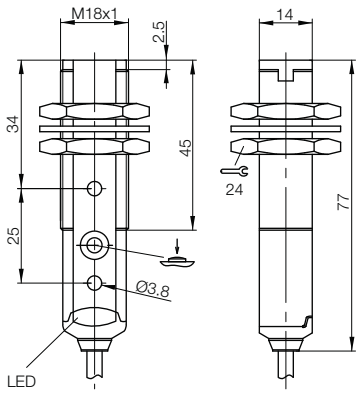
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**





Series			**BKT**	**BKT**
Working distance			**10 mm±2 mm**	**10 mm±2 mm**
PNP	NC/NO	**Ordering code**	**BKT000H**	**BKT000F**
		Part number	BKT 18KF-001-P-S4	BKT 18KF-001-P-02
Supply voltage U_S			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Output current			100 mA	100 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, white light	LED, white light
Wavelength			400...700 nm	400...700 nm
Light spot diameter			ca. 4.5 mm 10 mm	ca. 4.5 mm 10 mm
Output function indicator			Yellow LED	Yellow LED
Power/error indicator			Green/red LED	Green/red LED
Response time			100 µs	100 µs
Switching frequency			5 kHz	5 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–25...+55 °C	–25...+55 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	PBT	PBT
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

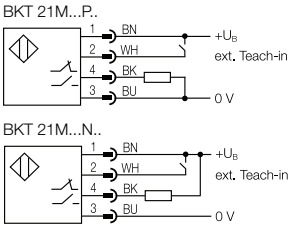




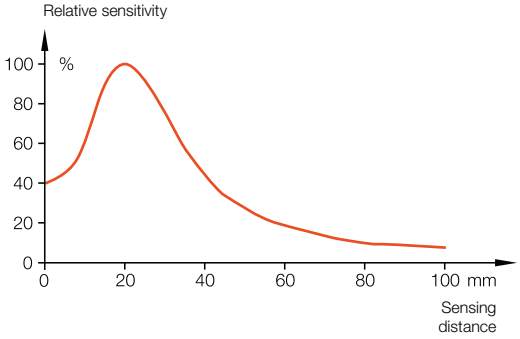
White Light Contrast Sensor

The **BKT 21M** contrast sensor uses white light and can be programmed at the push of a button. It detects colored markings as well as gray levels on various surfaces. In its standard setting the sensor is dark switching (markings with less light intensity are detected as the background).
Precise configuration is available for slight contrast differences. The switching type can also be selected in this setting.

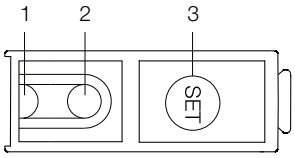
Wiring diagrams



Function diagram



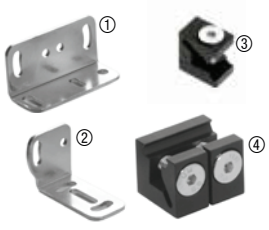
Indicators and operating elements



1 Output function indicator (yellow)
2 Power-/error indicator (green/red)
3 SET- button

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00T9**
② Mounting bracket	**BAM00TA**
③ Clamping holders	**BAM00TF**
④ Clamping holders	**BAM00TH**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

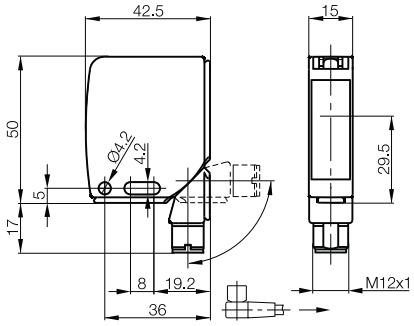
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Photoelectric Sensors with Special Properties
Contrast sensors BKT 21M



Series			**BKT**
Working distance			**19 mm±2 mm**
PNP	NC/NO	**Ordering code**	**BKT000Y**
		Part number	BKT 21M-002-P-S4
NPN	NC/NO	**Ordering code**	**BKT000W**
		Part number	BKT 21M-002-N-S4
Supply voltage U_S			10...30 V DC
No-load supply current I_0 max.			≤ 30 mA
Output current			100 mA
Switching type			Light/dark switching (adjustable in precise mode)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Teach-in
Emitter, light type			LED, white light
Wavelength			400...700 nm
Light spot diameter			ca. 3.5 mm 19 mm
Output function indicator			Yellow LED
Power/error indicator			Green/red LED
Response time			0.1 ms
Switching frequency			5 kHz
Time function			20 ms off-delay
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–25...+55 °C
Permissible ambient light			EN 60947-5-2
Material		Housing	GD-Zn/Al
		Optical surface	Glass
Connection			M12 connector, 4-pin



R-G-B Contrast Sensor

Specially designed for print mark detection

- Three models for any application complexity
- Red, green or blue light emission for unique color identification
- Rugged aluminum housing
- Greatest freedom in equipment design with optional front or bottom light exit

Series		
Working distance		
PNP and NPN transistor (selectable)	**Ordering code**	
Vertical light spot	Part number	
PNP and NPN transistor (selectable)	**Ordering code**	
Horizontal light spot	Part number	
Supply voltage U_S		
No-load supply current I_0 max.		
Output current		
Switching type		
Analog output		
Polarity reversal/short-circuit protected		
Settings		
Additional function		
Emitter, light type		
Wavelength		
Light spot diameter		
Output function indicator		
Power/error indicator		
Time function display		
Response time		
Switching frequency		
Time function		
Degree of protection as per IEC 60529		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

*Longer sensing distance using interchangeable optics

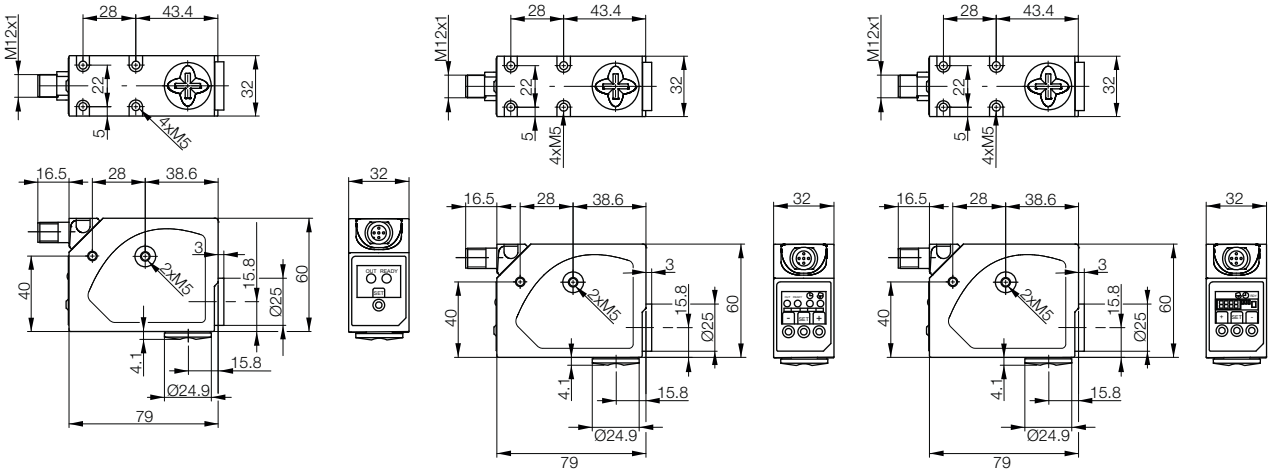






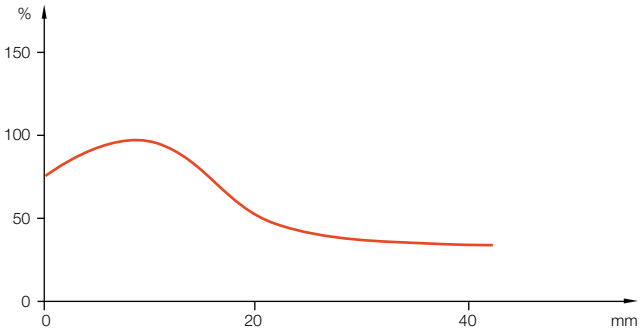


BKT	**BKT**	**BKT**
9 mm* ± 3 mm	**9 mm* ± 3 mm**	**9 mm* ± 3 mm**
BKT0001	**BKT0003**	**BKT0005**
BKT 67M-001-U-S92	BKT 67M-003-U-S92	BKT 67M-005-U-S92
BKT0002	**BKT0004**	**BKT0006**
BKT 67M-002-U-S92	BKT 67M-004-U-S92	BKT 67M-006-U-S92
10...30 V DC	10...30 V DC	10...30 V DC
≤ 50 mA	≤ 85 mA	≤ 35 mA
100 mA	100 mA	100 mA
Light/Dark (automatic)	Light/Dark (automatic)	Light/Dark (automatic)
1...3 V	1...3 V	
Yes/Yes	Yes/Yes	Yes/Yes
Teach-in button	3 teach-in buttons	3 teach-in buttons
	Segment display	4-digit display
Red, green and blue light	Red, green and blue light	Red, green and blue light
630 nm/520 nm/465 nm	630 nm/520 nm/465 nm	630 nm/520 nm/465 nm
1.5×5 mm	1.5×5 mm	1.5×5 mm
Yellow LED	Yellow LED	Yellow LED
Green LED	Green LED	Green LED
	Orange LED	
33 µs	25 µs	17 µs
15 kHz	20 kHz	30 kHz
	20 ms (can be activated)	
IP 67	IP 67	IP 67
–10...+55 °C	–10...+55 °C	–10...+55 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Al	Al	Al
PMMA	PMMA	PMMA
M12 connector, 5-pin	M12 connector, 5-pin	M12 connector, 5-pin

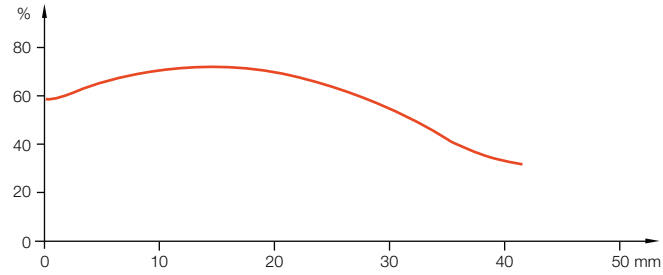


Contrast sensors BKT 67M
Function diagrams

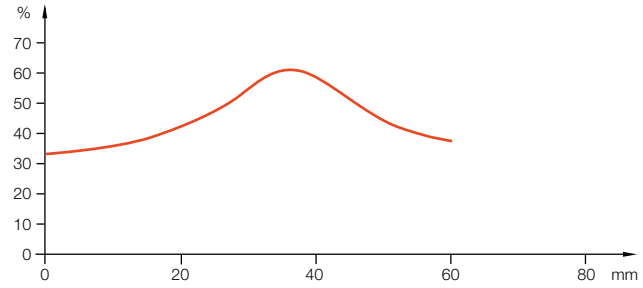
BKT 67M with BKT M-PK-2 (standard lens)
BKT M-PK-4



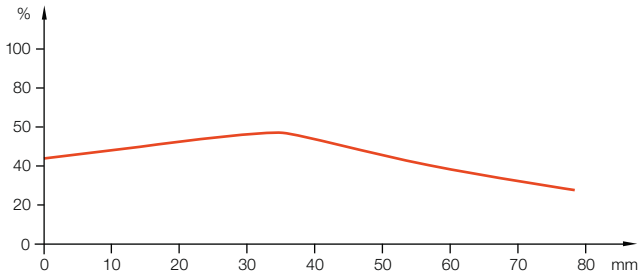
BKT 67M with BKT M-PK-1



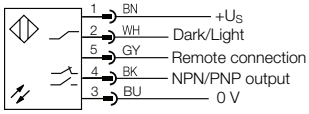
BKT 67M with BKT M-PK-3



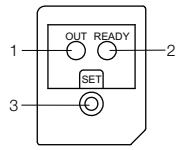
BKT 67M with BKT M-PK-5



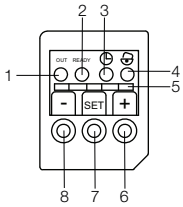
Wiring diagram



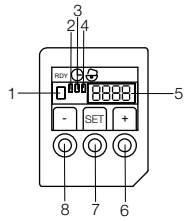
Indicators and operating elements



1. Output function indicator
2. Power indicator
3. SET key



1. Output function indicator
2. Power indicator
3. Time delay indicator
4. Button status indicator
5. Switching threshold level indicator
6. + key
7. SET key
8. - key



1. Output function indicator
2. Power indicator
3. Time delay indicator
4. Button status indicator
5. Scattered quantity of light indicator
6. + key
7. SET key
8. - key

Photoelectric Sensors
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Analog Fork Sensors BGL_C
Optical Window Sensors BOW
Light Grids BLG
Color Sensors BFS
Contrast Sensors BKT
Luminescence Sensors BLT
Optical Fiber Base Units BFB/ BOS
Plastic Fiber Optics BFO
Glass Fiber Optics BFO
Photoelectric Distance Sensors for Analog Distance Measurement
Accessories for Photoelectric Sensors

Recommended accessories
(please order separately)

Description	Focal length/ focus	Ordering code
① Lens	18 mm	**BAM0120**
② Lens	9 mm	**BAM0121**
③ Lens	28 mm	**BAM0122**
④ Lens	50 mm	**BAM00P3**
⑤ Intermediate ring		**BAM00P2**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**
M12, 5-pin	Angled	PUR	Black	5 m	**BCC08FC**

Connectors without LED are suitable for PNP and NPN sensors.

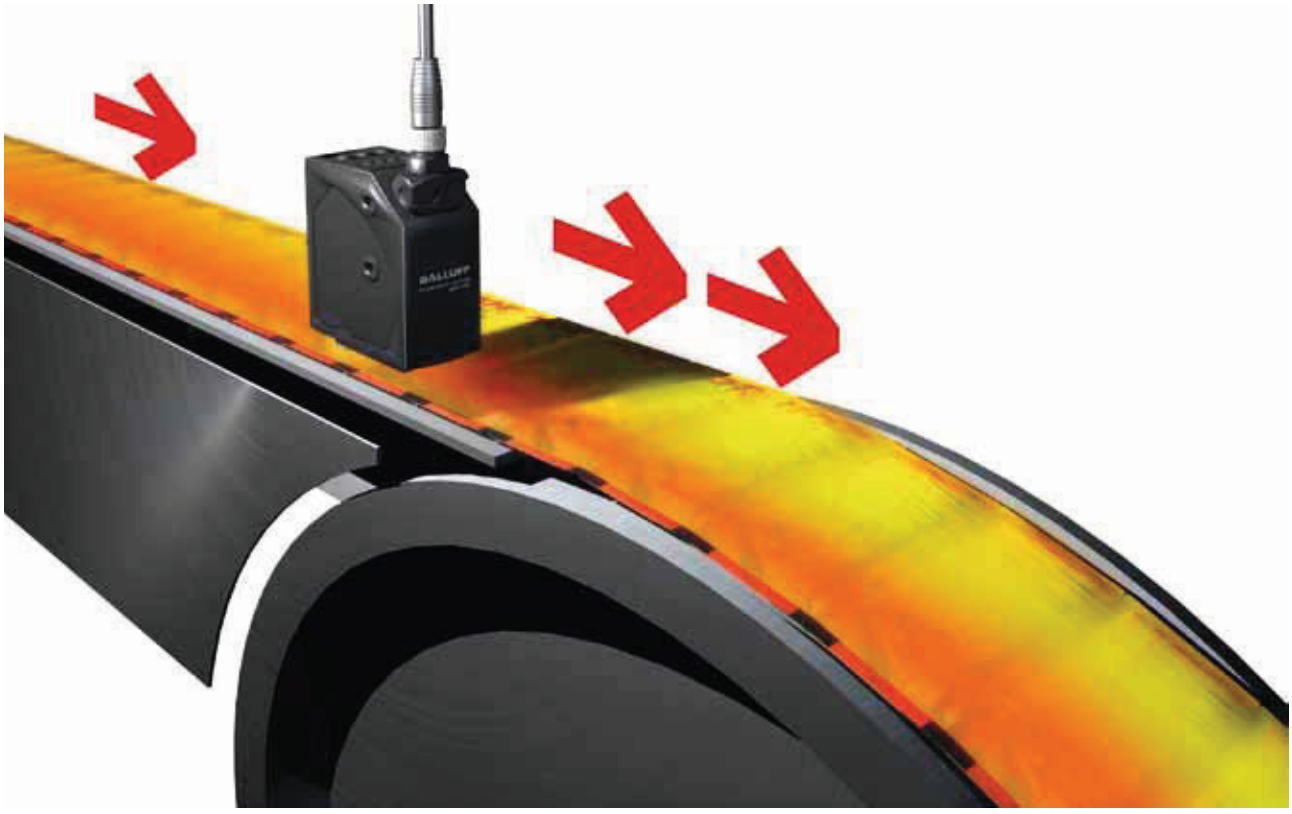
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Photoelectric sensors usually detect the target or the desired target features themselves. If that is not possible, the object can be marked with fluorescent substances. These markings are invisible to the human eye, but are detected by luminescence sensors with their UV light.
Luminescence sensors detect any kind of fluorescent substance, even if markings are applied lightly.

Applications

- Logistics (marking, selecting)
- Assembly (guiding, monitoring, sorting)
- Packaging machines
  (to monitor cutting, folding)
- Ceramics industry (e.g. positioning parts)
- Wood industry (e.g. checking the glue bead)
- Pharmaceuticals (control tasks in the manufacturing process)
- Textiles (e.g. guiding cuts)
- Food industry





Photoelectric Sensors with Special Properties

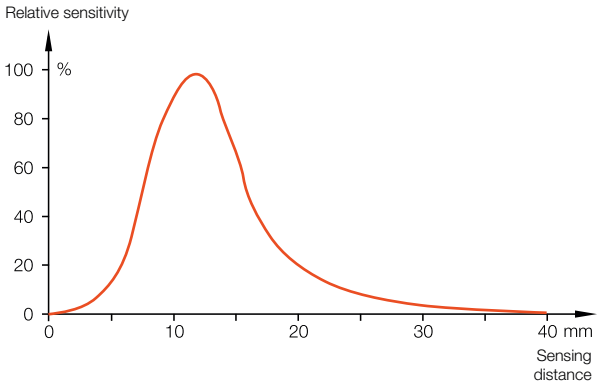
Luminescence sensors BLT

Product overview

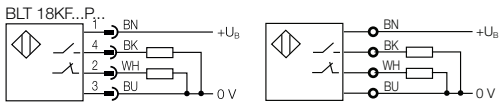
Ordering code / Part number	Type	Sensing distance	Light type: UV light	Output: PNP	Output: NPN	Switching type: Light switching	Switching type: Dark switching	Switching frequency	U_S: 10...30 V DC	Connection: M12 plug, 4-pin	Connection: Cable	Page
Luminescence sensors												
BLT0004	BLT 18KF-001-P-S4	8...20 mm	■	■		■	■	1 kHz	■	■		309
BLT0003	BLT 18KF-001-P-02	8...20 mm	■	■		■	■	1 kHz	■		■	309
BLT0009	BLT 21M-001-P-S4	0...40 mm	■	■		■	■	2 kHz	■	■		311
BLT0008	BLT 21M-001-N-S4	0...40 mm	■		■	■	■	2 kHz	■	■		311

The luminescence sensor **BLT 18KF** detects any type of luminescent markings on any surface and automatically adjusts to ambient conditions. The sensor is calibrated with the simple push of a button. (Markings with a luminescence greater than the background are detected.)
A precise setting is available for slightly luminescent markings. The switching type can be freely selected in this case.

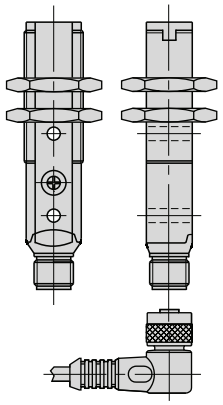
Function diagram



Wiring diagrams



Connector orientation



Recommended accessories
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00RY**
② Mounting clamp	**BAM00T3**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

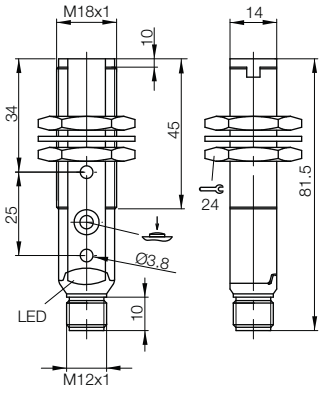
Connectors without LED are suitable for PNP and NPN sensors.

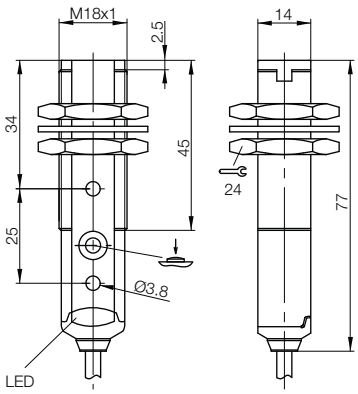
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**





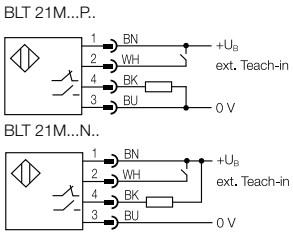
Series			**BLT**	**BLT**
Working range			**8...20 mm**	**8...20 mm**
PNP	NC/NO	**Ordering code**	**BLT0004**	**BLT0003**
		Part number	BLT 18KF-001-P-S4	BLT 18KF-001-P-02
Supply voltage U_S			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Output current			100 mA	100 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, UV	LED, UV
Wavelength			370 Nm	370 Nm
Light spot diameter			approx. 3 mm at 20 mm	approx. 3 mm at 20 mm
Output function indicator			Yellow LED	Yellow LED
Power/error indicator			Green/red LED	Green/red LED
Response time			0.5 ms	0.5 ms
Switching frequency			1 kHz	1 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–25...+55 °C	–25...+55 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	PBT	PBT
		Optical surface	PMMA	PMMA
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²



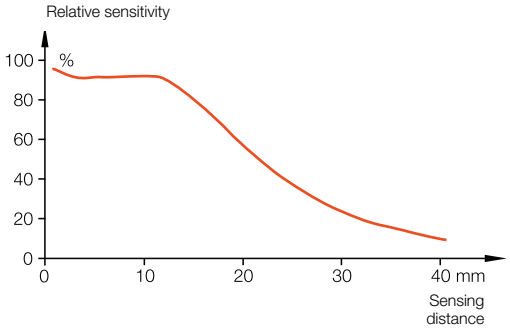


The luminescence sensor **BLT 21M** detects any type of luminescent markings on any surface and automatically adjusts to ambient conditions. The sensor is calibrated with the simple push of a button. (Markings with a luminescence greater than the background are detected.)
A precise setting is available for slightly luminescent markings. The switching type can be freely selected in this case.

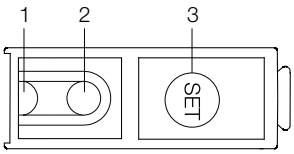
Wiring diagrams



Function diagram



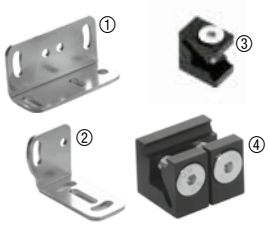
Indicators and operating elements



1	Output function indicator (yellow)
2	Power-/error indicator (green/red)
3	SET- button

Recommended accessories
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00T9**
② Mounting bracket	**BAM00TA**
③ Clamping holders	**BAM00TF**
④ Clamping holders	**BAM00TH**



You can find special accessories for diffuse sensors, such as **reflectors, apertures, lenses, filters and deflection heads,** in this catalog starting on page 376.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

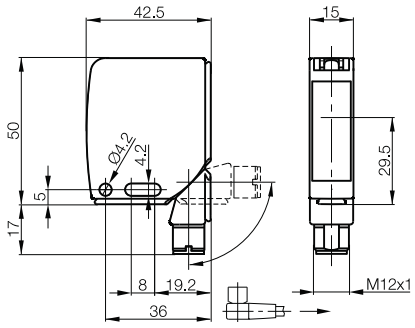
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Luminescence sensors BLT 21M



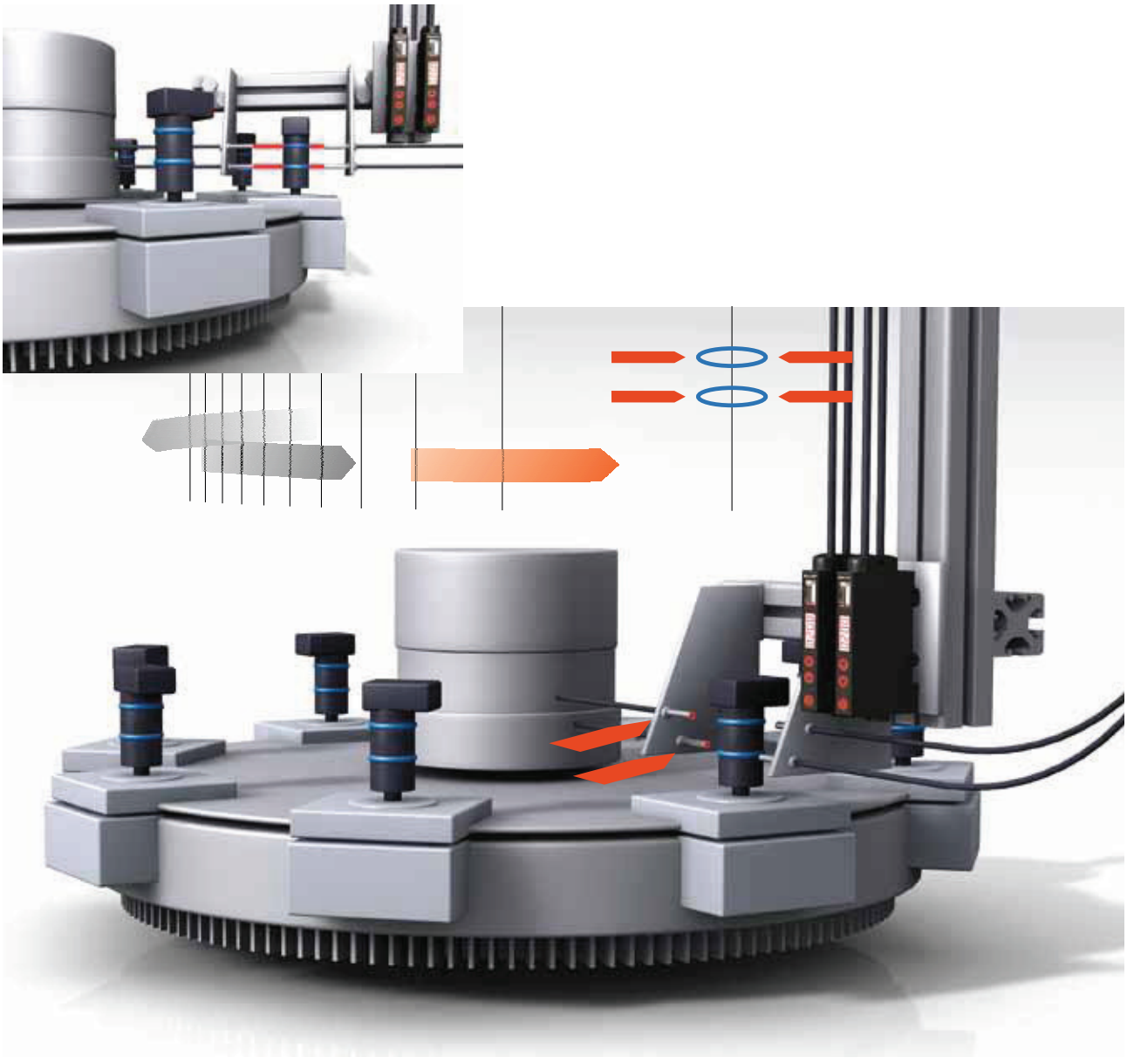
Series		**BLT**
Working range		**0...40 mm**
PNP NC/NO	**Ordering code**	**BLT0009**
	Part number	BLT 21M-001-P-S4
NPN NC/NO	**Ordering code**	**BLT0008**
	Part number	BLT 21M-001-N-S4
Supply voltage U_S		10...30 V DC
No-load supply current I_0 max.		≤ 30 mA
Output current		100 mA
Switching type		Light and dark switching (adjustable in precise mode)
Polarity reversal/short-circuit protected		Yes/Yes
Settings		Teach-in
Emitter, light type		LED, UV
Wavelength		370 Nm
Light spot diameter		ca. 1.5 mm at 10 mm
Output function indicator		Yellow LED
Power/error indicator		Green/red LED
Response time		250 µs
Switching frequency		2 kHz
Time function		20 ms off-delay
Degree of protection as per IEC 60529		IP 67
Ambient temperature T_a		–10...+55 °C
Permissible ambient light		EN 60947-5-2
Material	Housing	GD-Zn/Al
	Optical surface	Glass
Connection		M12 connector, 4-pin



Fiber optics are needed whenever there is not enough space for a photoelectric sensor.
Plastic fiber optics are the right choice if the requirements for toughness, ambient temperature or chemical resistance are not very high. A wide range of special base units with different outputs and various functions is available when using these fiber optics: from the simple version with a potentiometer to the high-end unit with a display. The base units generally operate using red light.
The base units for glass fiber optics find use in harsh environments thanks to their powerful infrared light. Temperatures of up to 250 °C and oil mist are not a problem thanks to the various models of glass fiber optics.

Applications

- Small parts detection
- Suitable for tight mounting conditions
- Inspecting parts features
- Counting (e.g. counting drops)
- Precise parts positioning
- Assembly and handling technology
- Robotics



Photoelectric Sensors with Special Properties

Optical fiber base units BFB/BOS

Product overview

Type	Light type		Output				Switching type		Switching frequency	U_S		Connection				Special features		Page
■ Ordering code □ Part number	Red light	Infrared light	PNP	NPN	Analog output	Alarm output	Light switching	Dark switching		10...30 V DC	11...26 V DC	M8 plug, 3-pin	M8 plug, 4-pin	M12 plug, 4-pin	Cable	Teach-in	Display	
Base units for plastic optical fibers																		
BFB0004 BFB 75K-001-P-S75	■		■				■	■	1.5 kHz	■			■			■		315
BFB0002 BFB 75K-001-N-S75	■			■			■	■	1.5 kHz	■			■			■		315
BFB0003 BFB 75K-001-P-02	■		■				■	■	1.5 kHz	■					■	■		315
BFB0001 BFB 75K-001-N-02	■			■			■	■	1.5 kHz	■					■	■		315
BFB0006 BFB 75K-002-P-S75	■		■				■	■	8 kHz	■			■			■	■	317
BFB0005 BFB 75K-002-N-S75	■			■			■	■	8 kHz	■			■			■	■	317
BFB0008 BFB 75K-003-P-02	■		■		■		■	■	8 kHz	■					■	■	■	317
BFB0007 BFB 75K-003-N-02	■			■	■		■	■	8 kHz	■					■	■	■	317
BOS003K BOS 73K-PU-1FR-C-02	■		■			■	■	■	1 kHz		■		■			■	■	319
BOS003L BOS 73K-PU-1FR-C-S75-00,1	■		■			■	■	■	1 kHz		■				■	■	■	319
BOS014L BOS 73K-PU-1FR-C-S49-00,3	■		■				■	■	1 kHz		■	■				■	■	319
BOS009R BOS 6K-PU-1FR-S75-C	■		■				■	■	1 kHz	■			■			■		321
BOS009P BOS 6K-PU-1FR-C-02	■		■				■	■	1 kHz	■					■	■		321
BOS008W BOS 6K-NU-1FR-S75-C	■			■			■	■	1 kHz	■			■			■		321
BOS008U BOS 6K-NU-1FR-C-02	■			■			■	■	1 kHz	■					■	■		321
BOS00JJ BOS 18KF-PA-1FR-S4-C	■		■				■	■	1 kHz	■				■				323
BOS00JH BOS 18KF-PA-1FR-C-02	■		■				■	■	1 kHz	■					■			323
BOS00HL BOS 18KF-NA-1FR-S4-C	■			■			■	■	1 kHz	■				■				323
BOS00HK BOS 18KF-NA-1FR-C-02	■			■			■	■	1 kHz	■					■			323
Base units for glass optical fibers																		
BOS0049 BOS 18M-PA-1PD-E5-C-S4		■	■				■	■	100 Hz	■				■				324
BOS0080 BOS 18M-PU-1PD-SA5-C		■	■				■	■	1 kHz	■				■				324
BOS001P BOS 18M-PA-1PF-E5-C-S4		■	■				■	■	200 Hz	■				■				325
BOS007U BOS 18M-GU-1PF-S4-Y		■	■	■			■	■	1 kHz	■				■				325
BOS0134 BOS 30M-GA-1PH-S4-C		■	■	■			■	■	100 Hz	■				■				325

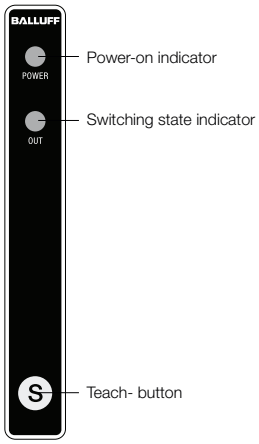
Base Units for Plastic Optical Fibers

The **BFB 75K-001…**
is ideal for any kind of standard application. This affordable sensor is installed on DIN rails and makes a great entry-level model. Ease of setting using a teach-in procedure on the sensor or via an external teach line make the sensor especially user-friendly.

Features
- Red light
- Teach-in
- Connector and cable versions

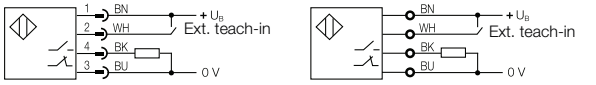
Mounting notes for fiber optics
The resistance of the sealing ring must be overcome when connecting the fiber optics to the base unit.

Operating panel



Wiring diagrams

BFB 75K-001-P



BFB 75K-001-N





Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Recommended accessories
(please order separately)

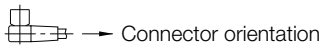
Suitable fiber optics can be found on page 343 and in our **Accessories** catalog.

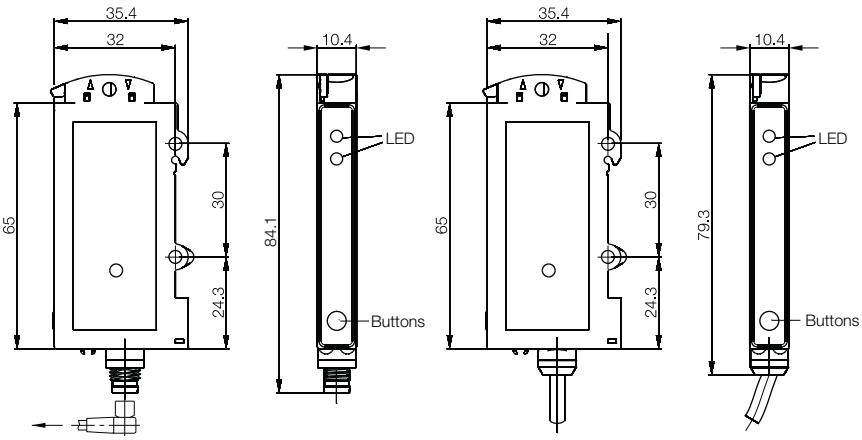
Optical fiber base units BFB 75K





Series			**BFB 75K**	**BFB 75K**
Plastic fiber optic base unit			**for plastic fiber optics with an outside diameter of 2.2 mm**	**for plastic fiber optics with an outside diameter of 2.2 mm**
PNP	NC/NO	**Ordering code**	**BFB0004**	**BFB0003**
		Part number	BFB 75K-001-P-S75	BFB 75K-001-P-02
NPN	NC/NO	**Ordering code**	**BFB0002**	**BFB0001**
		Part number	BFB 75K-001-N-S75	BFB 75K-001-N-02
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Light spot diameter			Depends on the fiber optics	Depends on the fiber optics
Power-on indicator			Green LED	Green LED
Switching state indicator			Yellow LED	Yellow LED
Switching frequency f			1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529			IP 64	IP 64
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	ABS	ABS
		Optical surface	Depends on fiber optics	Depends on fiber optics
Connection			M8 connector, 4-pin	2 m PVC cable, 4×0.14 mm²





Base Units for Plastic Optical Fibers

The **BFB 75K-002...**
The high-end amplifier offers perfect performance with 12-bit resolution, a 4-digit display and a switching frequency up to 8 kHz. Various operating modes such as Fine or High Distance allow the sensor to be better adapted to the respective application.
Several sensors can be installed next to each other. Up to four sensors installed adjacent to each other are synchronized to avoid mutual interference in an application. They are synchronized automatically after the supply voltage is turned on.
Adjustable time functions, window programming and fine-tuning for the switching point expand its range of application options.

An additional analog output makes the **BFB 75K-003...** version a great all-rounder. The output signal is in proportion to the remission or to the distance of the target object. All of the functions of the BFB 75K-02 variant are included.

Mounting notes for fiber optics
The resistance of the sealing ring must be overcome when connecting the fiber optics to the base unit.

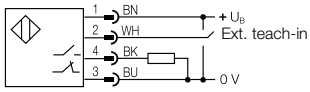
Operating mode	Standard	High Resolution	High switching frequency	High Range size
Sensing distance*	150 mm	70 mm	70 mm	300 mm
Switching frequency	1 kHz	125 Hz	8 kHz	125 Hz

*Depending on fiber optics used

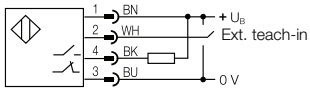
Features
- Display
- 4 operating modes
- No mutual interference
- Variant with analog output

Wiring diagrams

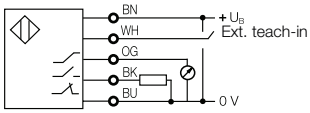
BFB 75K-002-P



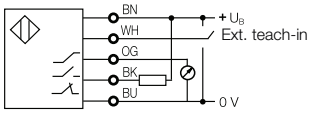
BFB 75K-002-N



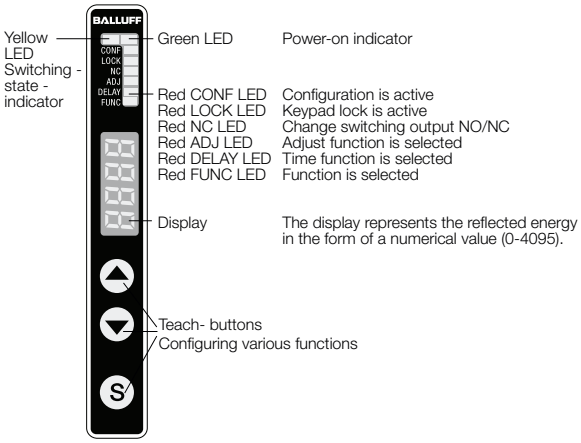
BFB 75K-003-P



BFB 75K-003-N



Operating panel





Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Recommended accessories
(please order separately)

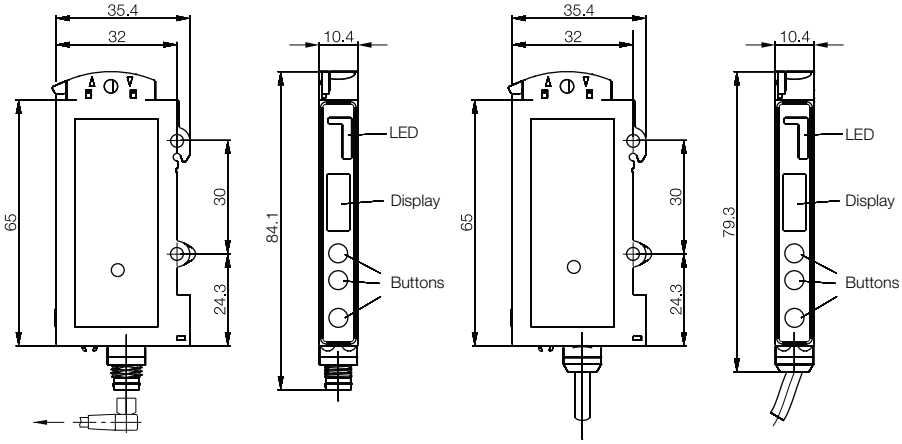
Suitable fiber optics can be found **on page 343** and in our **Accessories** catalog.

Optical fiber base units BFB 75K





Series			**BFB 75K**	**BFB 75K**
Plastic fiber optic base unit			**for plastic fiber optics with an outside diameter of 2.2 mm**	**for plastic fiber optics with an outside diameter of 2.2 mm**
PNP	NC/NO	**Ordering code**	**BFB0006**	**BFB0008**
		Part number	BFB 75K-002-P-S75	BFB 75K-003-P-02
NPN	NC/NO	**Ordering code**	**BFB0005**	**BFB0007**
		Part number	BFB 75K-002-N-S75	BFB 75K-003-N-02
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 25 mA	≤ 20 mA
Analog output				0...10 V (max. 2 mA)
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, red light	LED, red light
Wavelength			630 Nm	630 Nm
Light spot diameter			Depends on the fiber optics	Depends on the fiber optics
Power-on indicator			Green LED	Green LED
Switching state indicator			Yellow LED	Yellow LED
Status indicator			6× red LEDs	6× red LEDs
Display			4-digit	4-digit
Switching frequency f		Standard	1.5 kHz	1.5 kHz
		Fast Mode	8 kHz	8 kHz
Time function			Adjustable 1...2000 ms delay for switching on and/or off	Adjustable 1...2000 ms delay for switching on and/or off
Degree of protection as per IEC 60529			IP 64	IP 64
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light per			EN 60947-5-2	EN 60947-5-2
Material		Housing	ABS	ABS
		Optical surface	Depends on fiber optics	Depends on fiber optics
Connection			M8 connector, 4-pin	2 m PVC cable, 5×0.14 mm²



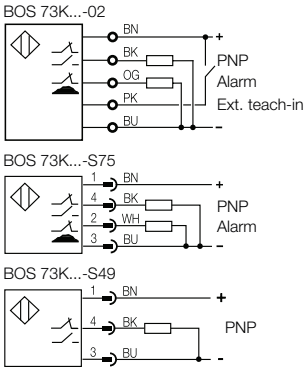
Base Units for Plastic Optical Fibers

The **BOS 73K** with display simplifies sensor handling and provides a precise overview of its settings.
The display shows sensitivity, signal strength as well as additional functions.
The switching point and hysteresis can be acquired automatically or set manually. The powerful red light emitter permits very long sensing distances and ranges.
A switching- and alarm output is also provided as an output and time functions can also be set.
Multiple sensors can be used without them interfering with each other thanks to two transmission channels.

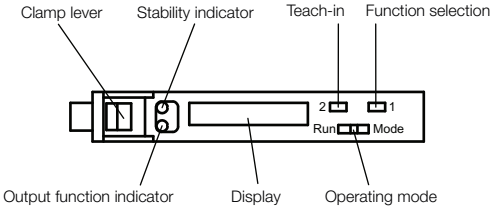
Features

- LCD display with backlighting
- Settings via teach-in
- Powerful red light emitter for long ranges
- Contamination output
- All time functions can be set from 10...120 ms
- Two transmission channels

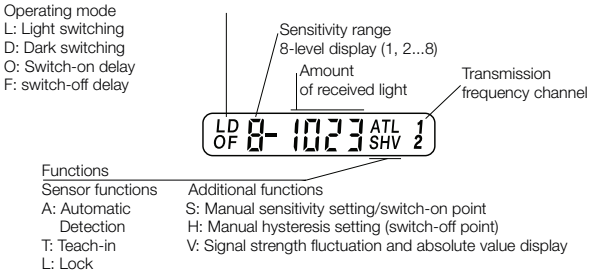
Wiring diagrams



Operating panel



Display



Series		
Plastic fiber optic base unit		
PNP NC/NO	**Ordering code**	
	Part number	
Supply voltage U_S		
Switching frequency f	Switching output	
	Alarm output	
No-load supply current I_0 max.		
Switching type		
Polarity reversal/short-circuit protected		
Settings		
Emitter, light type		
Wavelength		
Light spot diameter		
Output function indicator		
Stability indicator		
Display		
Response time		
Switching frequency f	Standard	
Time function		
Degree of protection as per IEC 60529		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

Mounting materials included!



Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**



Suitable connectors
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 3-pin	Straight	PUR	Black	2 m	**BCC02M8**
M8, 3-pin	Straight	PVC	Gray	2 m	**BCC02NU**
M8, 3-pin	Angled	PUR	Black	2 m	**BCC02ML**
M8, 3-pin	Angled	PVC	Gray	2 m	**BCC02P5**

Connectors without LED are suitable for PNP and NPN sensors.

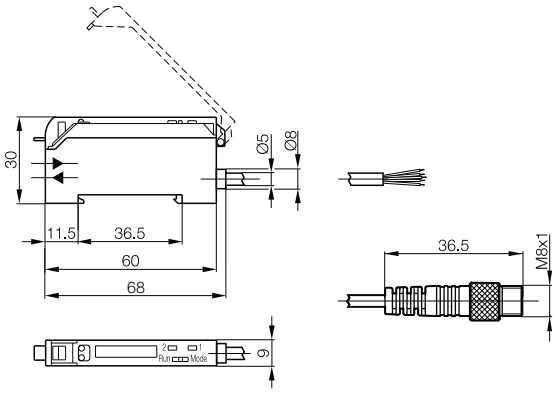
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**







	BOS 73K for plastic fiber optics with an outside diameter of 2.2 mm	BOS 73K for plastic fiber optics with an outside diameter of 2.2 mm	BOS 73K for plastic fiber optics with an outside diameter of 2.2 mm
	BOS003K	**BOS003L**	**BOS014L**
	BOS 73K-PU-1FR-C-02	BOS 73K-PU-1FR-C-S75-00,1	BOS 73K-PU-1FR-C-S49-00,3
	11...26 V DC	11...26 V DC	11...26 V DC
	100 mA	100 mA	100 mA
	50 mA	50 mA	
	≤ 50 mA	≤ 50 mA	≤ 50 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in/Manually using buttons	Teach-in/Manually using buttons	Teach-in/Manually using buttons
	LED, red light	LED, red light	LED, red light
	660 Nm	660 Nm	660 Nm
	Depends on the fiber optics	Depends on the fiber optics	Depends on the fiber optics
	Orange LED	Orange LED	Orange LED
	Green LED	Green LED	Green LED
	Backlit LCD	Backlit LCD	Backlit LCD
	Channel 1: 0.5 ms	Channel 1: 0.5 ms	Channel 1: 0.5 ms
	Channel 2: 0.6 ms	Channel 2: 0.6 ms	Channel 2: 0.6 ms
	Channel 1: 1 kHz	Channel 1: 1 kHz	Channel 1: 1 kHz
	Channel 2: 833 Hz	Channel 2: 833 Hz	Channel 2: 833 Hz
	On/off delay	On/off delay	On/off delay
	10…120 ms selectable	10…120 ms selectable	10…120 ms selectable
	IP 54	IP 54	IP 54
	–25...+55 °C	–25...+55 °C	–25...+55 °C
	Artificial light ≤ 10 klx, Sunlight ≤ 20 klx	Artificial light ≤ 10 klx, Sunlight ≤ 20 klx	Artificial light ≤ 10 klx, Sunlight ≤ 20 klx
	ABS	ABS	ABS
	Depends on fiber optics	Depends on fiber optics	Depends on fiber optics
	2 m PVC cable, 5×0.2 mm²	Pigtail 10 cm, M8 connector, 4-pin	Pigtail 30 cm, M8 connector, 3-pin



Recommended accessories
(please order separately)

Suitable fiber optics can be found **on page 343**
and in our **Accessories** catalog.

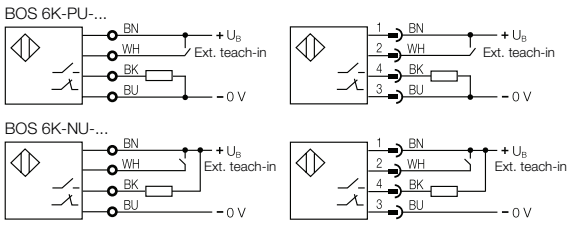
Base Units for Plastic Optical Fibers

The **BOS 6K** series also offers a optical fiber base unit that is easy to teach in externally using a button or control line. Together with the BFO series of fiber optics, an enclosure rating of IP 67 is provided.

Features

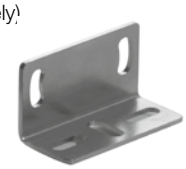
- Teach-in
- Contamination indicator
- Control line for external teach-in
- Disable buttons

Wiring diagrams



Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00UH**



Suitable fiber optics can be found **on page 343** and in our **Accessories** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	2 m	**BCC02N2**
M8, 4-pin	Straight	PVC	Gray	2 m	**BCC02PL**
M8, 4-pin	Angled	PUR	Black	2 m	**BCC02NC**
M8, 4-pin	Angled	PVC	Gray	2 m	**BCC02PZ**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

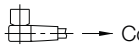
Photoelectric Sensors with Special Properties

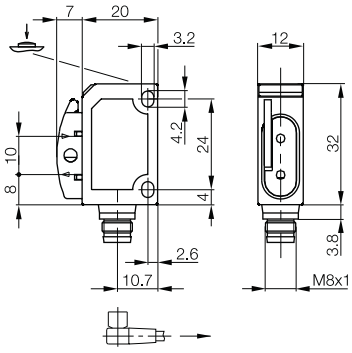
Optical fiber base units BOS 6K

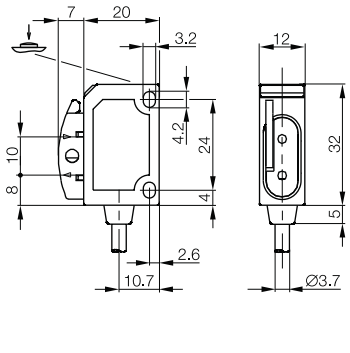




Series			**BOS 6K**	**BOS 6K**
Plastic fiber optic base unit			**for plastic fiber optics with an outside diameter of 2.2 mm**	**for plastic fiber optics with an outside diameter of 2.2 mm**
PNP	NC/NO	**Ordering code**	**BOS009R**	**BOS009P**
		Part number	BOS 6K-PU-1FR-S75-C	BOS 6K-PU-1FR-C-02
NPN	NC/NO	**Ordering code**	**BOS008W**	**BOS008U**
		Part number	BOS 6K-NU-1FR-S75-C	BOS 6K-NU-1FR-C-02
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			100 mA	100 mA
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Light spot diameter			Depends on range/sensing distance	Depends on range/sensing distance
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Number of conductors × conductor cross-section				4×0.14 mm²
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–20...+60 °C	–20...+60 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	ABS	ABS
		Optical surface	Depends on fiber optics	Depends on fiber optics
Connection			M8 connector, 4-pin	2 m PVC cable







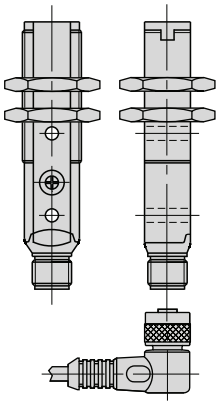
Base Units for Plastic Optical Fibers

The optical fiber base unit **BOS 18KF** is a highlight far away from DIN rail installation, distinguishing itself with simple operation and installation.

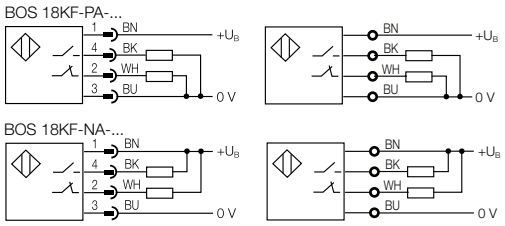
Features

- Sensitivity setting using 270°- potentiometer
- Cap nut for adapting optical fibers

Connector orientation



Wiring diagrams



Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00RY**



Suitable fiber optics can be found **on page 343** and in our **Accessories** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

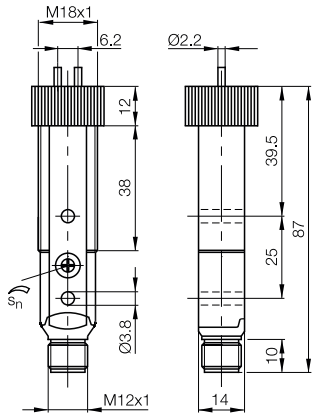
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

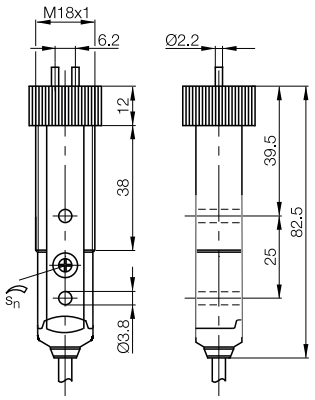
Optical fiber base units BOS 18KF





Series			**BOS 18KF**	**BOS 18KF**
Plastic fiber optic base unit			**for plastic fiber optics with an outside diameter of 2.2 mm**	**for plastic fiber optics with an outside diameter of 2.2 mm**
PNP	NC/NO	**Ordering code**	**BOS00JJ**	**BOS00JH**
		Part number	BOS 18KF-PA-1FR-S4-C	BOS 18KF-PA-1FR-C-02
NPN	NC/NO	**Ordering code**	**BOS00HL**	**BOS00HK**
		Part number	BOS 18KF-NA-1FR-S4-C	BOS 18KF-NA-1FR-C-02
Supply voltage US			10...30 V DC	10...30 V DC
No-load supply current I0 max.			≤ 35 mA	≤ 35 mA
Output current			100 mA	100 mA
Switching type			Light and dark switching	Light and dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			LED, red light	LED, red light
Wavelength			660 Nm	660 Nm
Light spot diameter			Depends on range/sensing distance	Depends on range/sensing distance
Output function indicator			Yellow LED	Yellow LED
Stability indicator			Green LED	Green LED
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature Ta			–25...+55 °C	–25...+55 °C
Permissible ambient light			EN 60947-5-2	EN 60947-5-2
Material		Housing	PBT	PBT
		Optical surface	Depends on fiber optics	Depends on fiber optics
Connection			M12 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

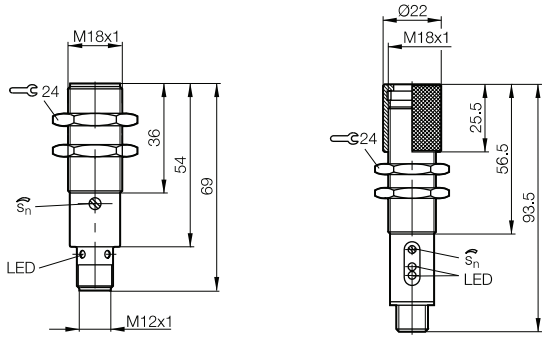




Base Units for Glass Optical Fibers



Type			BOS 18M for glass fiber optics	BOS 18M for glass fiber optics
PNP	NC/NO	**Ordering code**	**BOS0049**	**BOS0080**
		Part number	BOS 18M-PA-1PD-E5-C-S4	BOS 18M-PU-1PD-SA5-C
PNP/NPN	NC/NO	**Ordering code**		
		Part number		
Supply voltage U_S			10...30 V DC	10...30 V DC
Output current			200 mA	200 mA
No-load supply current I_0 max.			≤ 20 mA	≤ 25 mA
Switching type			Light/dark switching (complementary)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	18-turn potentiometer
Emitter, light type			LED, infrared	LED, infrared
Wavelength			880 Nm	880 Nm
Response time			5 ms	5 ms
Switching frequency f			100 Hz	1 kHz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–5...+55 °C	–20...+60 °C
Permissible ambient light			5 klx	2 klx
Material		Housing	Nickel-plated CuZn	Nickel-plated CuZn
		Optical surface	PMMA	Glass
Connection			M12 connector, 4-pin	M12 connector, 4-pin



Recommended accessories
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00RY**



Suitable fiber optics can be found **on page 343** and in our **Accessories** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories Line** catalog.

Suitable connectors
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	2 m	**BCC032F**
M12, 4-pin	Straight	PVC	Gray	2 m	**BCC0367**
M12, 4-pin	Angled	PUR	Black	2 m	**BCC032Y**
M12, 4-pin	Angled	PVC	Gray	2 m	**BCC036N**

Connectors without LED are suitable for PNP and NPN sensors.

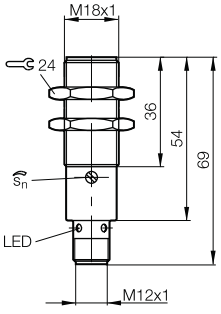
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

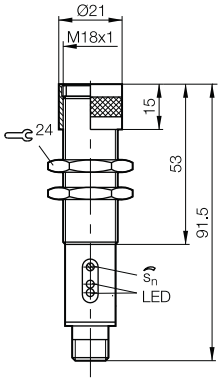


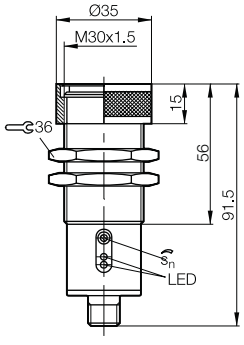




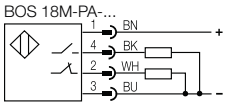
BOS 18M **for glass fiber optics**	**BOS 18M** **for glass fiber optics**	**BOS 30M** **for glass fiber optics**
BOS001P		
BOS 18M-PA-1PF-E5-C-S4		
	BOS007U	**BOS0134**
	BOS 18M-GU-1PF-S4-Y	BOS 30M-GA-1PH-S4-C
10...30 V DC	11...30 V DC	10...30 V DC
200 mA	200 mA	200 mA
≤ 20 mA	≤ 25 mA	≤ 40 mA
Light/dark switching (complementary)	Light/dark switching (selectable)	Light/dark switching (complementary)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	18-turn potentiometer	18-turn potentiometer
LED, infrared	LED, infrared	LED, infrared
880 Nm	880 Nm	880 Nm
2.5 ms	0.5 ms	5 ms
200 Hz	1 kHz	100 Hz
IP 67	IP 65	IP 65
–5...+55 °C	–20...+60 °C	–20...+60 °C
5 klx	1 klx	1 klx
Nickel-plated CuZn	Nickel-plated CuZn	Nickel-plated CuZn
PMMA	Glass	Glass
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

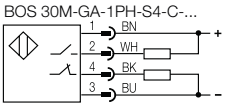


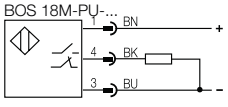


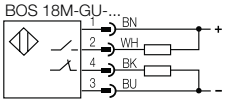


Wiring diagrams







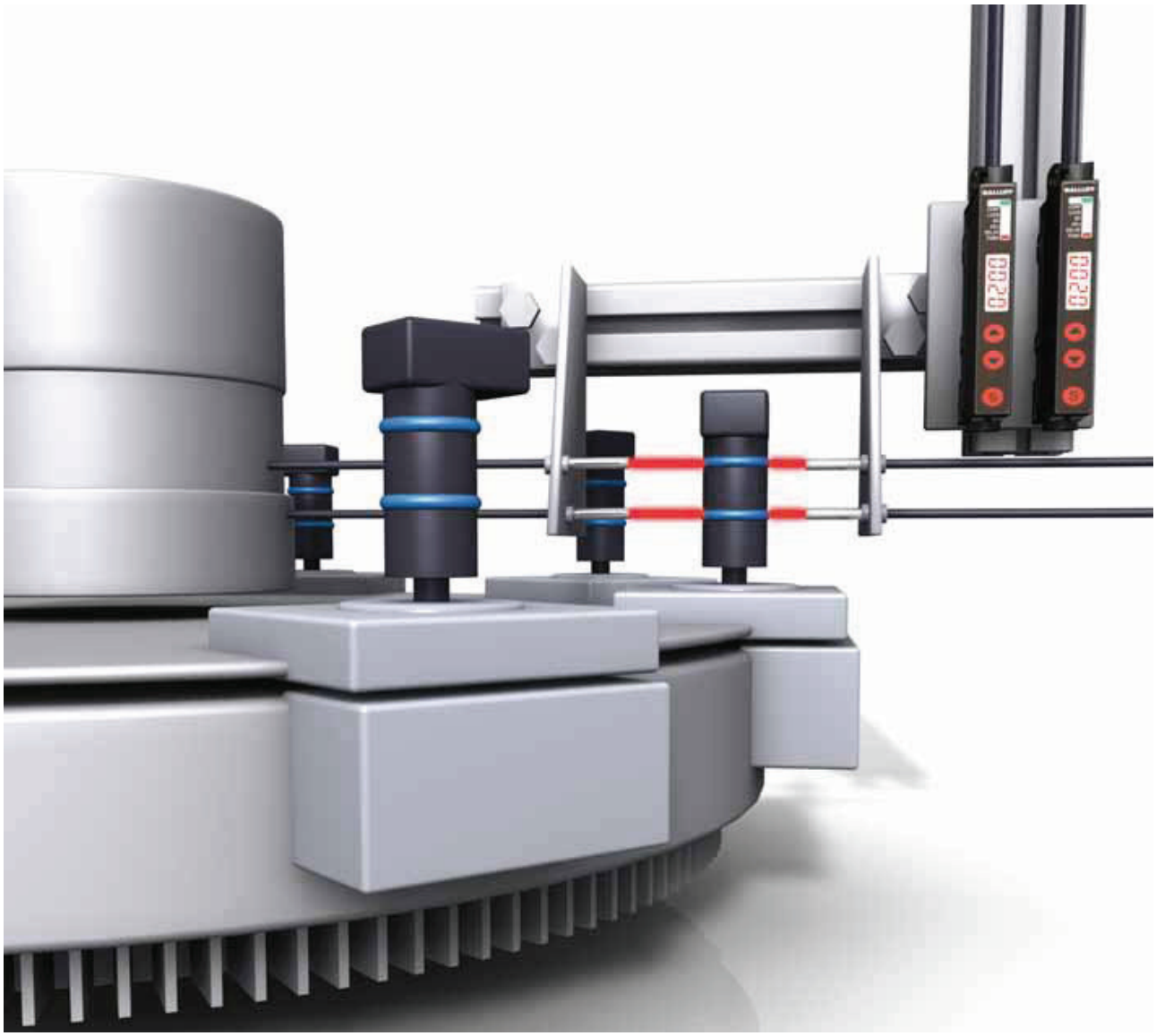


Plastic Fiber Optics

Fiber optics are generally available in a diffuse sensor or through-beam design.
The diffuse sensors have an integrated emitter and receiver fiber at the optical head; the through-beam sensors use two separate optical fibers.
It is easy to see why optical fibers are so commonly used: The variety of end configurations, with straight or angled light exit, flexible optical head or coaxial fiber arrangement, the various fiber diameters and the ability to trim them to the desired length.

Another plus
For full flexibility there are also the user-fabricated fiber optics: Their duplex cable can be cut to length and combined with various end pieces at will.

Applications
- Small parts detection
- For tight mounting conditions
- Inspecting parts features
- Counting (e.g. counting drops)
- Precise parts positioning
- Handling and assembly technology
- Robotics



Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Product overview

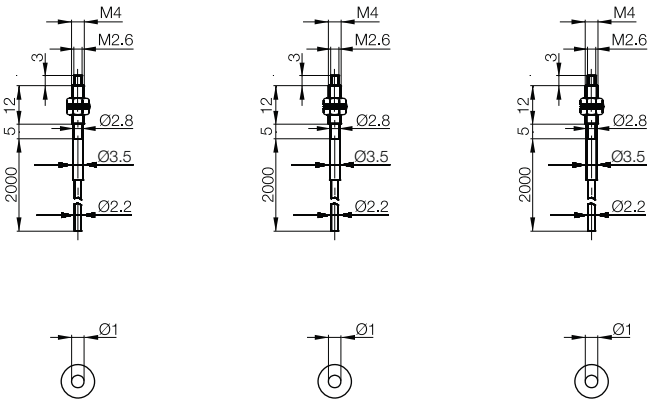
Type ■ Ordering code □ Part number	Optical head	Light exit		Fiber arrangement			Core diameter				Features			Page
		Straight	90°	Standard	Coaxial	Light grids	1.5 mm	1.0 mm	0.5 mm	0.25 mm	Bendable optical tip	Extended temperature range	Highly flexible	
Through-beam fiber optics														
BFO005M	BFO D22-LA-KB-EAK-10-02	M4	■		■				■					328
BFO005T	BFO D22-LAH-KB-EAK-10-02	M4	■		■				■				■	328
BFO005W	BFO D22-LAT-KB-EAK-10-02	M4	■		■				■			■		328
BFO005U	BFO D22-LAP-KB-EAK-15-02	M4	■		■			■						329
BFO00002	BFO D22-LA-TB-EAK-10-02	M4	■		■				■			■		329
BFO005N	BFO D22-LA-NB-PZK-10-02	M4	■		■				■			■		329
BFO00AW	BFO D22-LAH-BK-EAK-10-02	M4		■	■				■				■	329
BFO005R	BFO D22-LA-RB-EAK-10-02	M3	■		■				■					330
BFO0000C	BFO N22-LA-FB-EAK-05-01	M2	■		■					■				330
BFO00AY	BFO D22-LAT-YB-EAK-10-0,5	Ø3		■	■				■			■		330
BFO005P	BFO D22-LA-QB-PAK-05-02	Ø3		■	■				■					331
BFO00056	BFO D13-LA-QB-EAK-05-02	Ø3		■	■					■				331
BFO00051	BFO D10-LA-CB-EAK-05-02	Ø2	■		■					■				331
BFO00057	BFO D13-LA-WB-EAK-05-02	Ø2		■	■				■					331
BFO00AP	BFO D22-LA-GD-EAK-52-02	10×10	■				■				■			332
BFO005H	BFO D22-LA-AD-EAK-52-02	20×10	■				■				■			332
BFO005K	BFO D22-LA-BD-EAK-52-02	15×15		■			■				■			332
BFO00067	BFO D25-LA-CD-EAK-110-02	19×25	■				■				■			333
BFO00C5	BFO D25-LA-ED-EAK-250-0,5	19×38		■			■				■			333
BFO00068	BFO D25-LA-ED-EAK-250-02	19×38		■			■				■			333
BFB00C8	BFO D25 LA-HD-EAK-465-02	23×55		■			■				■			333
BFO00058	BFO D13-LG-05-EAK-30-02	15×41		■							■			334
BFO00059	BFO D13-LG-10-EAK-30-02	20×32		■							■			334
BFO0000E	BFO D22-LAH-ZB-EAK-10-02	5×4		■	■				■				■	334
BFO00C6	BFO D10-LAH-CK-EAK-05-02	11×6		■	■					■			■	335
BFO00C7	BFO D10-LAH-DK-EAK-05-02	13×7		■	■					■			■	335
Diffuse sensor fiber optics														
BFO00061	BFO D22-XA-LB-EAK-20-02	M6	■		■				■					336
BFO00063	BFO D22-XAH-LB-EAK-20-02	M6	■		■				■				■	336
BFO00065	BFO D22-XAT-LB-EAK-20-02	M6	■		■				■			■		336
BFO00064	BFO D22-XAP-LB-EAK-30-02	M6	■		■			■						337
BFO00066	BFO D22-XB-LB-EAK-15-02	M6	■			■			■					337
BFO00007	BFO D22-XBF-LB-EAK-15-02	M6	■			■			■				■	337
BFO00004	BFO D22-XA-SB-EAK-20-02	M6	■		■				■		■			337
BFO00005	BFO D22-XA-UB-EAK-20-02	M4	■		■				■					338
BFO00006	BFO D22-XB-UB-EAK-15-02	M4	■			■			■					338
BFO00055	BFO D10-XAH-KB-EAK-10-02	M4	■		■				■				■	338
BFO005C	BFO D13-XB-KB-EAK-10-02	M4	■			■				■				339
BFO00053	BFO D10-XA-HB-EAK-10-02	M4	■		■					■	■			339
BFO00054	BFO D10-XA-RB-EAK-10-02	M3	■		■					■				339
BFO005E	BFO D13-XB-RB-EAK-10-02	M3	■			■				■				339
BFO00C3	BFO D10-XA-VB-EAK-10-02	M3	■		■				■		■			339
BFO00052	BFO D10-XA-GB-EAK-10-02	M3	■		■					■	■			340
BFO005A	BFO D13-XA-JB-EAK-20-02	Ø3	■		■				■					340
BFO00062	BFO D22-XA-MB-PAK-10-02	Ø3		■	■					■				340
BFO00AT	BFO D13-XB-AB-EAK-10-01	Ø2.5	■			■			■					341
BFO00AR	BFO D13-XV-AK-EAK-50-02	13×20		■					■					341
BFO005Z	BFO D22-XA-CD-EAK-110-02	19×25	■				■				■			341
BFO00060	BFO D22-XA-ED-EAK-250-02	19×38		■			■				■			341



Optical head		**M4 thread**	**M4 thread**	**M4 thread**	
Features		**Standard**	**Highly flexible**	**Temperature rated**	
Straight light exit	**Ordering code**	**BFO005M**	**BFO005T**	**BFO005W**	
	Part number	BFO D22-LA-KB-EAK-10-02	BFO D22-LAH-KB-EAK-10-02	BFO D22-LAT-KB-EAK-10-02	
90° light exit	**Ordering code**				
	Part number				
Sheathing Ø		2.2 mm	2.2 mm	2.2 mm	
Core Ø		1 mm	1 mm	1 mm	
Fiber length		2 m	2 m	2 m	
Fiber bending radius		≥ 25 mm	≥ 2 mm	≥ 25 mm	
Head bending radius					
Temperature range		–55...+70 °C	–40...+70 °C	–55...+105 °C	
Range	with BFB 75K-001	500 mm	300 mm	600 mm	
	with BFB 75K-002*	500 mm	300 mm	600 mm	
	with BFB 73K	500 mm	300 mm	500 mm	
	with BFB 6K	220 mm	200 mm	230 mm	
	with BFB 18KF	120 mm	90 mm	120 mm	

Packaging unit: 2 pcs.

*Max. range in standard mode



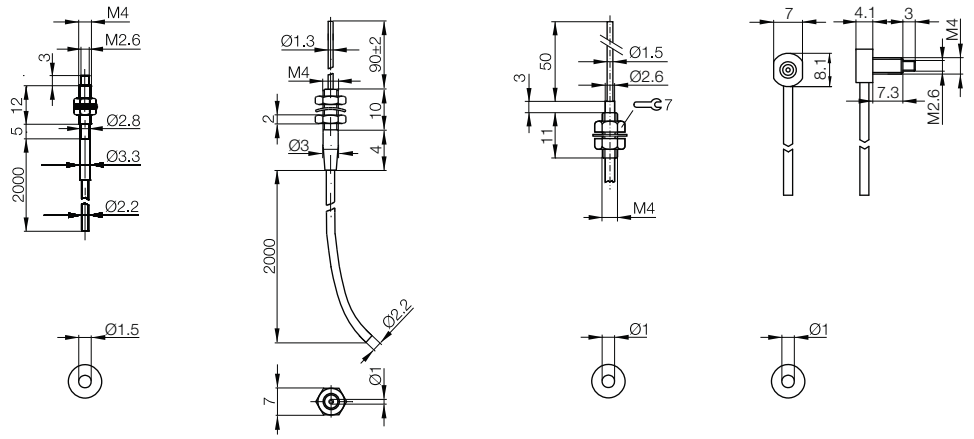
Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Through-beam principle



	M4 thread Long range	M4 thread Bendable optical tip	M4 thread Bendable optical tip	M4 thread Highly flexible	
	BFO005U	**BFO0002**	**BFO005N**		
	BFO D22-LAP-KB-EAK-15-02	BFO D22-LA-TB-EAK-10-02	BFO D22-LA-NB-PZK-10-02		
				BFO00AW	
				BFO D22-LAH-BK-EAK-10-02	
	2.2 mm	2.2 mm	2.2 mm	2.2 mm	
	1.5 mm	1 mm	1 mm	1 mm	
	2 m	2 m	2 m	2 m	
	≥ 40 mm	≥ 25 mm	≥ 25 mm	≥ 2 mm	
		≥ 10 mm	≥ 10 mm		
	–55...+70 °C	–30...+60 °C	–55...+70 °C	–40...+70 °C	
	800 mm	450 mm	500 mm	250 mm	
	800 mm	450 mm	500 mm	250 mm	
	800 mm	400 mm	500 mm	250 mm	
	500 mm	200 mm	250 mm	170 mm	
	250 mm	110 mm	120 mm	80 mm	

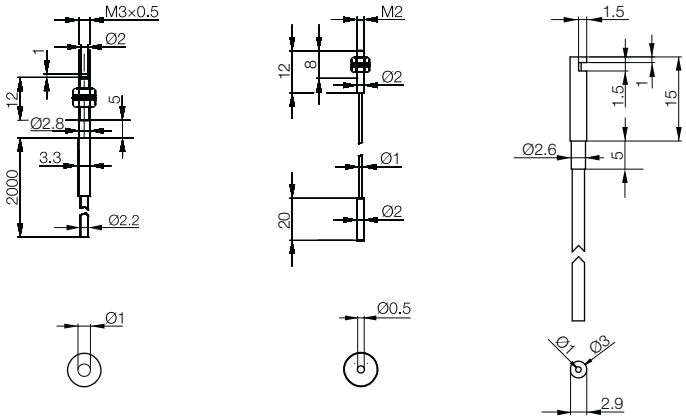




Optical head		**M3 thread**	**M2 thread**	**Ø 3**	
Features		**Standard**	**Precision**	**Temperature rated**	
Straight light exit	**Ordering code**	**BFO005R**	**BFO000C**		
	Part number	BFO D22-LA-RB-EAK-10-02	BFO N22-LA-FB-EAK-05-01		
90° light exit	**Ordering code**			**BFO00AY**	
	Part number			BFO D22-LAT-YB-EAK-10-0,5	
Sheathing Ø		2.2 mm	1 mm	2.2 mm	
Core Ø		1 mm	0.5 mm	1 mm	
Fiber length		2 m	2 m	0.5 m	
Fiber bending radius		≥ 25 mm	≥ 10 mm	≥ 25 mm	
Head bending radius					
Temperature range		–55...+70 °C	–30...+60 °C	–55...+70 °C	
Range	with BFB 75K-001	500 mm	140 mm	600 mm	
	with BFB 75K-002*	500 mm	140 mm	600 mm	
	with BFB 73K	450 mm	130 mm	500 mm	
	with BFB 6K	220 mm	50 mm	230 mm	
	with BFB 18KF	100 mm	20 mm	120 mm	

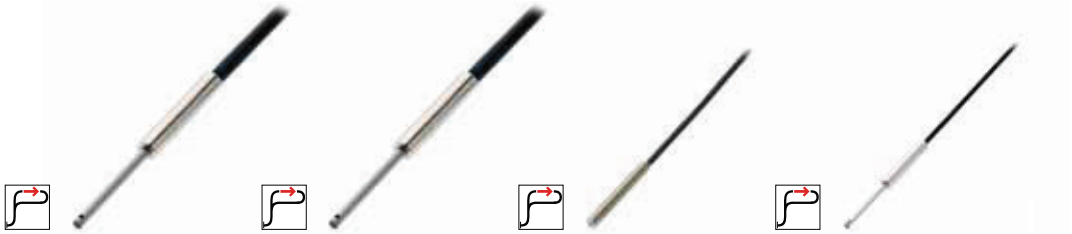
Packaging unit: 2 pcs.

*Max. range in standard mode

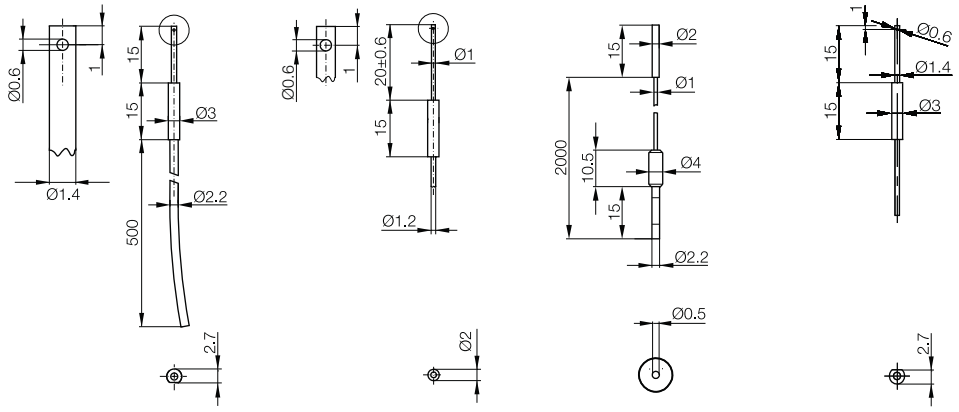


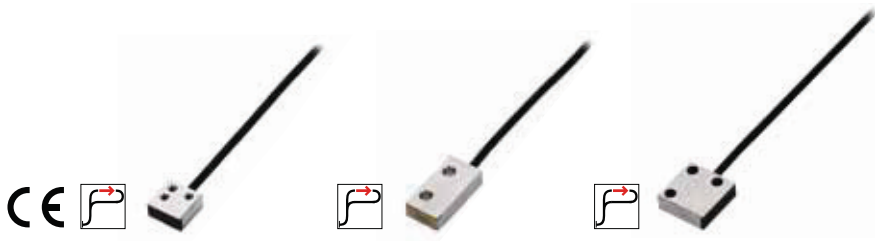
Photoelectric Sensors with Special Properties

Plastic fiber optics BFO
Through-beam principle



	Ø 3 Light exit on side	Ø 3 Light exit on side	Ø 2 Precision	Ø 2 Standard	
			BFO0051		
			BFO D10-LA-CB-EAK-05-02		
	BFO005P	**BFO0056**		**BFO0057**	
	BFO D22-LA-QB-PAK-05-02	BFO D13-LA-QB-EAK-05-02		BFO D13-LA-WB-EAK-05-02	
	2.2 mm	1.3 mm	1 mm	1.3 mm	
	1 mm	0.5 mm	0.5 mm	1 mm	
	2 m	2 m	2 m	2 m	
	≥ 25 mm	≥ 15 mm	≤ 15 m	≥ 25 mm	
	–40...+70 °C	–35...+65 °C	–55...+70 °C	–40...+70 °C	
	120 mm	110 mm	130 mm	75 mm	
	120 mm	110 mm	130 mm	75 mm	
	115 mm	105 mm	120 mm	70 mm	
	65 mm	–	–	–	
	35 mm	25 mm	–	20 mm	

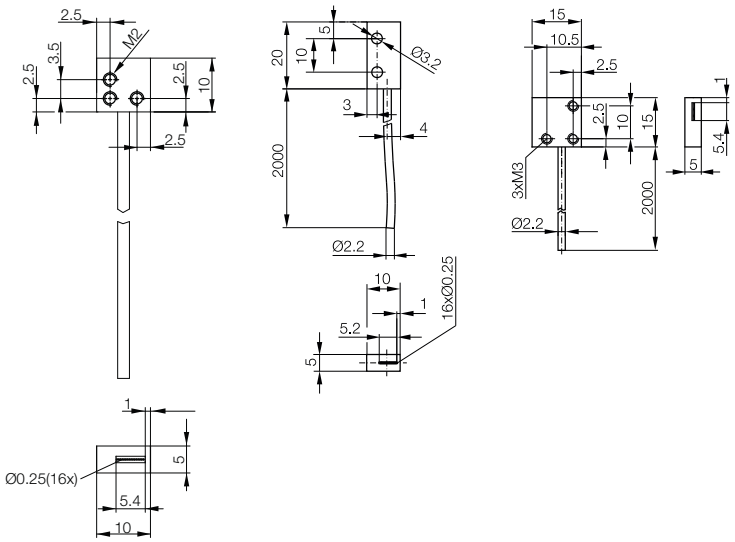




Optical head		**10×10 mm**	**20×10 mm**	**15×15 mm**	
Features		**Light grids**	**Light grids**	**Light grids**	
Straight light exit	**Ordering code**	**BFO00AP**	**BFO005H**		
	Part number	BFO D22-LA-GD-EAK-52-02	BFO D22-LA-AD-EAK-52-02		
90° light exit	**Ordering code**			**BFO005K**	
	Part number			BFO D22-LA-BD-EAK-52-02	
Sheathing Ø		2.2 mm	2.2 mm	2.2 mm	
Core Ø		16×0.25 mm	16×0.25 mm	16×0.25 mm	
Fiber length		2 m	2 m	2 m	
Fiber bending radius		≥ 25 mm	≥ 25 mm	≥ 25 mm	
Temperature range		–55...+70 °C	–35...+65 °C	–55...+70 °C	
Range	with BFB 75K-001	600 mm	450 mm	400 mm	
	with BFB 75K-002*	600 mm	450 mm	400 mm	
	with BFB 73K	600 mm	400 mm	350 mm	
	with BFB 6K	350 mm	220 mm	180 mm	
	with BFB 18KF	230 mm	130 mm	110 mm	

Packaging unit: 2 pcs.

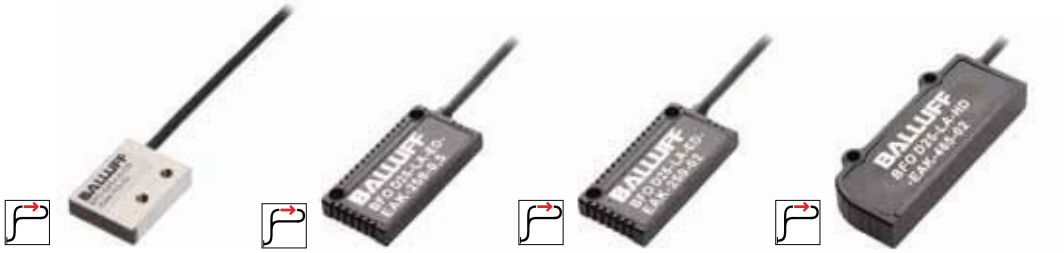
*Max. range in standard mode



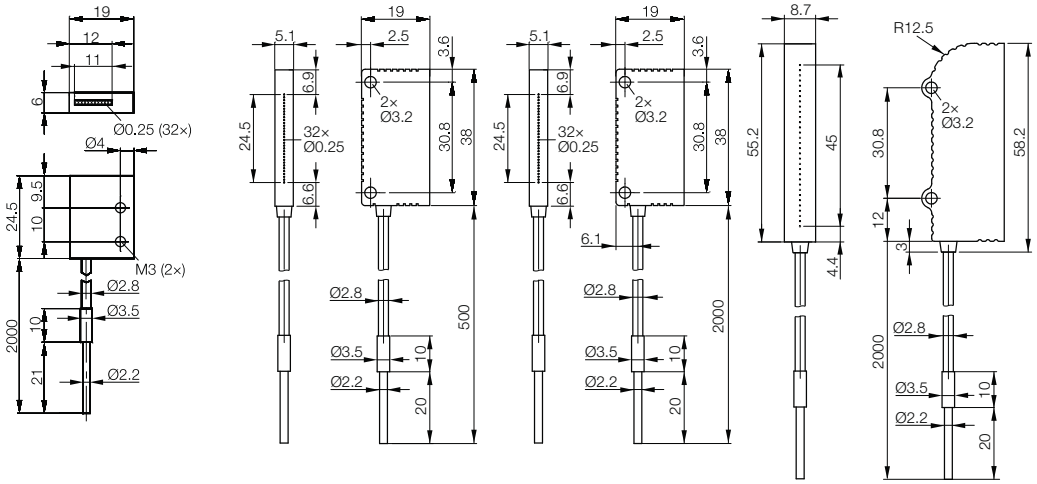
Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Through-beam principle



19×25 mm	19×38 mm	19×38 mm	23×55 mm
Light grids	**Light grids**	**Light grids**	**Light grids**
BFO0067			
BFO D25-LA-CD-EAK-110-02			
	BFO00C5	**BFO0068**	**BFO00C8**
	BFO D25-LA-ED-EAK-250-0,5	BFO D25-LA-ED-EAK-250-02	BFO D25 LA-HD-EAK-465-02
2.8 mm	2.8 mm	2.8 mm	2.8 mm
32×0.25 mm	32×0.25 mm	32×0.25 mm	32×0.25 mm
2 m	0.5 m	2 m	2 m
≥ 10 mm	≥ 60 mm	≥ 60 mm	≥ 60 mm
–55...+70 °C	–55...+70 °C	–55...+70 °C	–55...+70 °C
600 mm	550 mm	550 mm	550 mm
600 mm	550 mm	550 mm	550 mm
600 mm	550 mm	550 mm	550 mm
350 mm	360 mm	360 mm	360 mm
230 mm	210 mm	210 mm	210 mm

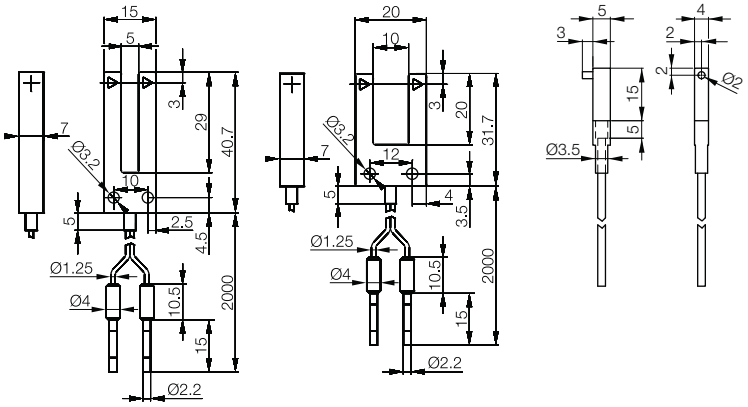


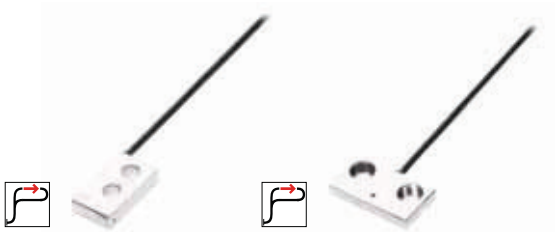


Optical head		**15×41 mm**	**20×32 mm**	**5×4 mm**	
Features		**Fork**	**Fork**	**Highly flexible**	
Straight light exit	**Ordering code**				
	Part number				
90° light exit	**Ordering code**	**BFO0058**	**BFO0059**	**BFO000E**	
	Part number	BFO D13-LG-05-EAK-30-02	BFO D13-LG-10-EAK-30-02	BFO D22-LAH-ZB-EAK-10-02	
Sheathing Ø		2×1.25 mm	2×1.25 mm	2.2 mm	
Core Ø		2×0.25 mm	2×0.25 mm	1 mm	
Fiber length		2 m	2 m	2 m	
Fiber bending radius		≥ 10 mm	≥ 10 mm	≥ 2 mm	
Temperature range		–55...+70 °C	–55...+70 °C	–55...+70 °C	
Range	with BFB 75K-001	5 mm	10 mm	300 mm	
	with BFB 75K-002*	5 mm	10 mm	300 mm	
	with BFB 73K	5 mm	10 mm	300 mm	
	with BFB 6K	5 mm	10 mm	200 mm	
	with BFB 18KF	5 mm	10 mm	90 mm	

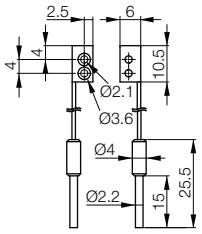
Packaging unit: 2 pcs.

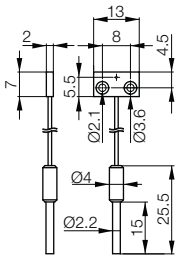
*Max. range in standard mode





	11×6 mm **Highly flexible**	**13×7 mm** **Highly flexible**			
	BFO00C6	**BFO00C7**			
	BFO D10-LAH-CK-EAK-05-02	BFO D10-LAH-DK-EAK-05-02			
	1 mm	1 mm			
	0.5 mm	0.5 mm			
	2 m	2 m			
	≥ 1 mm	≥ 1 mm			
	–40...+70 °C	–40...+70 °C			
	55 mm	50 mm			
	55 mm	50 mm			
	45 mm	40 mm			
	–	–			
	20 mm	20 mm			

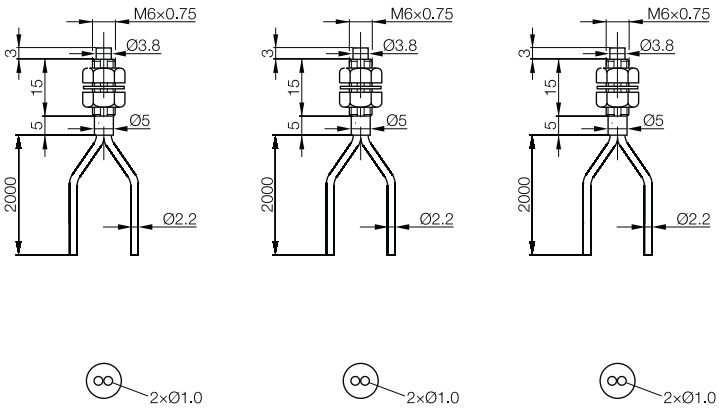






Optical head		**M6 thread**	**M6 thread**	**M6 thread**
Features		**Standard**	**Highly flexible**	**Temperature rated**
Straight light exit	**Ordering code**	**BFO0061**	**BFO0063**	**BFO0065**
	Part number	BFO D22-XA-LB-EAK-20-02	BFO D22-XAH-LB-EAK-20-02	BFO D22-XAT-LB-EAK-20-02
Sheathing Ø		2×2.2 mm	2×2.2 mm	2×2.2 mm
Core Ø		2×1 mm	2×1 mm	2×1 mm
Fiber bending radius		≥ 25 mm	≥ 2 mm	≥ 25 mm
Head bending radius				
Temperature range		–55...+70 °C	–40...+70 °C	–55...+115 °C
Range	with BFB 75K-001	150 mm	120 mm	130 mm
	with BFB 75K-002*	150 mm	120 mm	130 mm
	with BFB 73K	150 mm	120 mm	130 mm
	with BFB 6K	100 mm	70 mm	90 mm
	with BFB 18KF	50 mm	30 mm	50 mm

*Max. range in standard mode



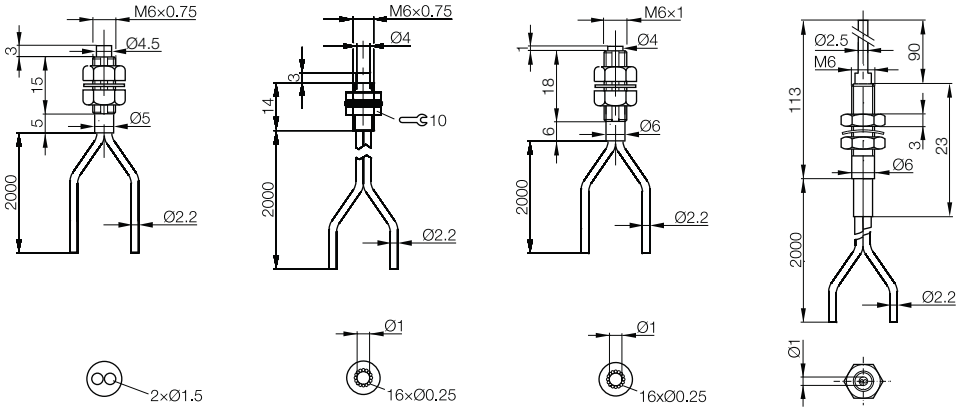
Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Sensor principle



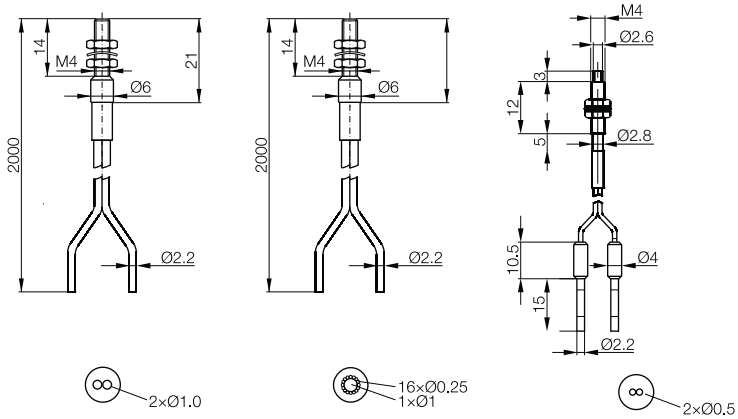
	M6 thread	**M6 thread**	**M6 thread**	**M6 thread**
	Long range	**Coaxial**	**Coaxial, flexible**	**Bendable optical tip**
	BFO0064	**BFO0066**	**BFO0007**	**BFO0004**
	BFO D22-XAP-LB-EAK-30-02	BFO D22-XB-LB-EAK-15-02	BFO D22-XBF-LB-EAK-15-02	BFO D22-XA-SB-EAK-20-02
	2×2.2 mm	2×2.2 mm	2×2.2 mm	2×2.2 mm
	2×1.5 mm	1×1 mm/16×0.25 mm	1×1 mm/16×0.25 mm	2×1 mm
	≥ 40 mm	≥ 25 mm	≥ 5 mm	≥ 25 mm
				≥ 15 mm
	–55...+70 °C	–55...+70 °C	–40...+60 °C	–35...+65 °C
	180 mm	120 mm	110 mm	130 mm
	180 mm	120 mm	110 mm	130 mm
	180 mm	120 mm	120 mm	130 mm
	130 mm	80 mm	70 mm	90 mm
	100 mm	50 mm	30 mm	40 mm





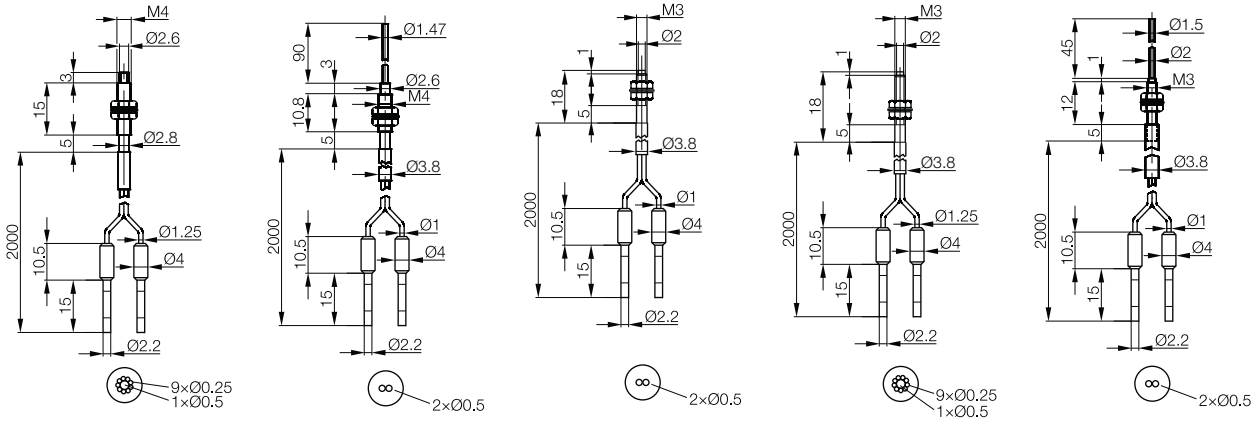
Optical head		**M4 thread**	**M4 thread**	**M4 thread**	
Features		**Standard**	**Coaxial**	**Highly flexible**	
Straight light exit	**Ordering code**	**BFO0005**	**BFO0006**	**BFO0055**	
	Part number	BFO D22-XA-UB-EAK-20-02	BFO D22-XB-UB-EAK-15-02	BFO D10-XAH-KB-EAK-10-02	
Sheathing Ø		2×2.2 mm	2×2.2 mm	2×1 mm	
Core Ø		2×1 mm	1×1 mm/16×0.25 mm	2×0.5 mm	
Fiber bending radius		≥ 25 mm	≥ 25 mm	≥ 1 mm	
Head bending radius					
Temperature range		–35...+65 °C	–40...+60 °C	–40...+70 °C	
Range	with BFB 75K-001	120 mm	130 mm	40 mm	
	with BFB 75K-002*	120 mm	130 mm	40 mm	
	with BFB 73K	120 mm	130 mm	30 mm	
	with BFB 6K	80 mm	90 mm	–	
	with BFB 18KF	40 mm	50 mm	10 mm	

*Max. range in standard mode





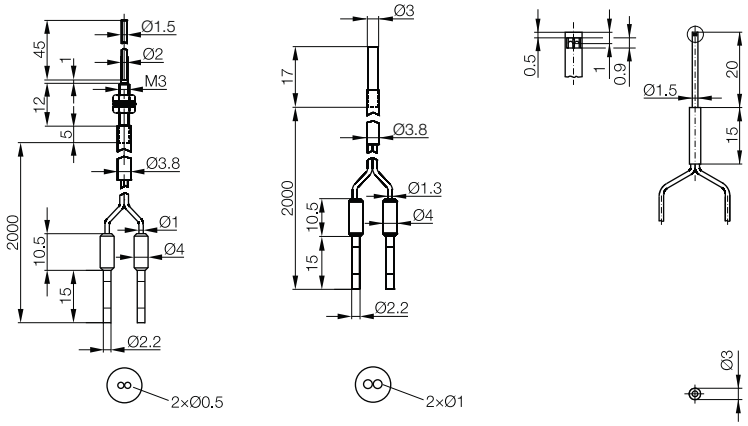
	M4 thread Coaxial	M4 thread Bendable optical tip	M3 thread Standard	M3 thread Coaxial	M3 thread Bendable optical tip
	BFO005C	**BFO0053**	**BFO0054**	**BFO005E**	**BFO00C3**
	BFO D13-XB-KB-EAK-10-02	BFO D10-XA-HB-EAK-10-02	BFO D10-XA-RB-EAK-10-02	BFO D13-XB-RB-EAK-10-02	BFO D10-XA-VB-EAK-10-02
	2×1.25 mm	2×1 mm	2×1 mm	2×1.25 mm	2×1 mm
	1×0.5 mm/9×0.25 mm	2×0.5 mm	2×0.5 mm	1×0.5 mm/9×0.25 mm	2×0.5 mm
	≥ 15 mm	≥ 15 mm	≥ 15 mm	≥ 15 mm	≥ 15 mm
		≥ 10 mm			≥ 10 mm
	–55...+70 °C	–55...+70 °C	–55...+70 °C	–40...+60 °C	–55...+70 °C
	60 mm	50 mm	50 mm	60 mm	50 mm
	60 mm	50 mm	50 mm	60 mm	50 mm
	60 mm	40 mm	40 mm	–	40 mm
	–	–	–	–	–
	20 mm	10 mm	10 mm	20 mm	10 mm





Optical head		**M3 thread**	**Ø 3 mm**	**Ø 3 mm**	
Features		**Standard**	**Standard**	**Standard**	
Straight light exit	**Ordering code**	**BFO0052**	**BFO005A**		
	Part number	BFO D10-XA-GB-EAK-10-02	BFO D13-XA-JB-EAK-20-02		
90° light exit	**Ordering code**			**BFO0062**	
	Part number			BFO D22-XA-MB-PAK-10-02	
Sheathing Ø		2×1 mm	2×1.3 mm	2×1 mm	
Core Ø		2×0.5 mm	2×1 mm	2×0.5 mm	
Fiber bending radius		≥ 15 mm	≥ 25 mm	≥ 25 mm	
Head bending radius		≥ 10 mm			
Temperature range		–55...+70 °C	–55...+70 °C	–40...+70 °C	
Range	with BFB 75K-001	50 mm	130 mm	35 mm	
	with BFB 75K-002*	50 mm	130 mm	35 mm	
	with BFB 73K	40 mm	130 mm	25 mm	
	with BFB 6K	–	–	–	
	with BFB 18KF	10 mm	50 mm	–	

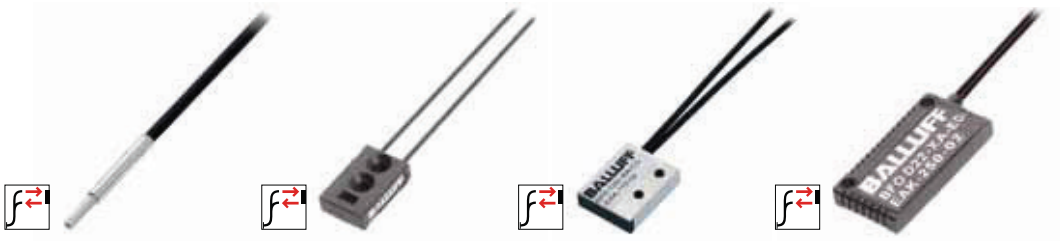
*Max. range in standard mode



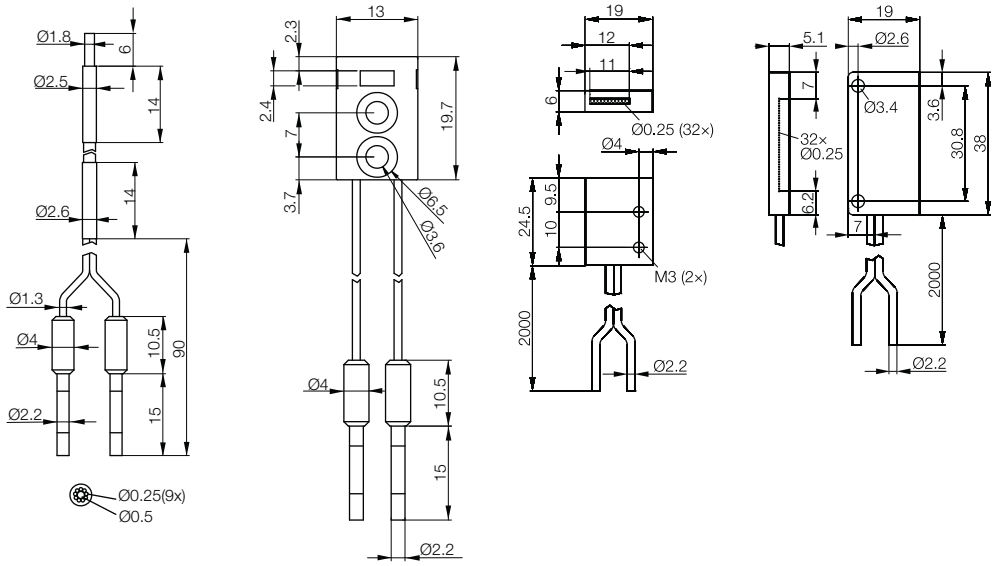
Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Sensor principle



Ø 2.5 mm	13×20 mm	19×25 mm	19×38 mm
Coaxial	Standard	Light grids	Light grids
BFO00AT		**BFO005Z**	
BFO D13-XB-AB-EAK-10-01		BFO D22-XA-CD-EAK-110-02	
	BFO00AR		**BFO0060**
	BFO D13-XV-AK-EAK-50-02		BFO D22-XA-ED-EAK-250-02
2×1.3 mm	2×1.3 mm	2.2 mm	2.2 mm
1×0.5 mm/9×0.25 mm	2×1 mm	32×0.25 mm	32×0.25 mm
≥ 15 mm	≥ 25 mm	≥ 25 mm	≥ 25 mm
–55...+70 °C	–55...+70 °C	–55...+70 °C	–55...+70 °C
50 mm	1...6 mm	100 mm	90 mm
50 mm	1...6 mm	100 mm	90 mm
40 mm	1...6 mm	100 mm	90 mm
–	–	70 mm	60 mm
10 mm	–	40 mm	30 mm



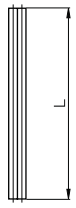
Customized solutions with plastic fiber optics for user assembly

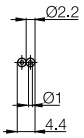
If you are not satisfied with "off-the-shelf" solutions, we have a better suggestion here.
Optical fibers can be user-cut to the desired length from a 20 m roll. This way you only use as much plastic optical fiber as you actually need. Considerable savings, especially if multiple sensors are used. For simple applications you may not need an end piece. A simple clamp will suffice. Or for convenience and flexibility, select from among the available end pieces. The plastic optical fiber is simply crimped into the end piece. Tedious gluing is eliminated. The end piece can be removed at any time.



Size	**2.2×4.4 mm** duplex cable
Through-beam sensor range with L = 2 m	**150 mm**
Cable length	20 m
Ordering code	**BFO005Y**
Part number	BFO D22-LD-EAK-10-20
Sheathing Ø	2×1 mm
Core Ø	2.2 mm
Ambient temperature Ta	–40...+85 °C
Tension on optical fiber and connection parts at 20 °C	6 N

Cutting tool BFO CT is included.







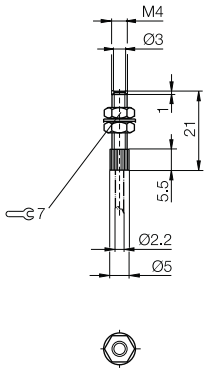


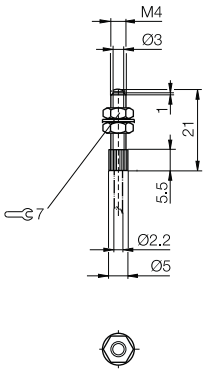


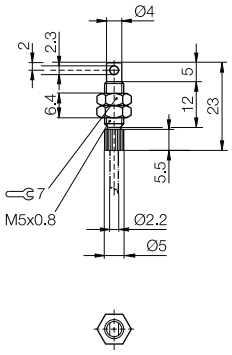


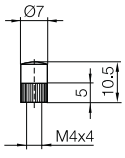
Size		**M4**	**M4**	**Ø 4 mm/M5**	**Ø 7 mm**
Features		End piece without lens	End piece with lens	90° end piece	Adapter lens
Used with		BFO D22-LD-EAK-10-..	BFO D22-LD-EAK-10-..	BFO D22-LD-EAK-10-..	BFO D22-LD-BC-10
Range		**150 mm**	**450 mm**	**150 mm**	**1500 mm**
Ordering code		**BFO005J**	**BFO005L**	**BFO005F**	**BAM00NW**
Part number		BFO D22-LA-BC-10	BFO D22-LA-CC-30	BFO D22-LA-AC-20	BFO D22-LA-AC-20
Material	Optical surface	Plastic (fibers)	Glass	Glass	Glass
	Threaded tube	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Packaging unit		1 pc.	1 pc.	1 pc.	1 pc.

Range when used with 2 m plastic fiber cable.









Photoelectric Sensors with Special Properties

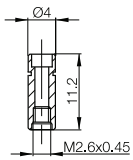
Adapter lens, deflection head, focus lens, adapter, cutting tool

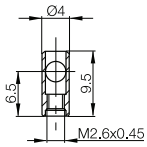
Adapter lens, deflection head, focus lens, adapter and cutting tool are assigned to accessories, which we mark in gray.

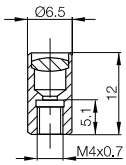


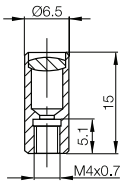



Description	Adapter lens	90° deflection head	Focus lens	Focus lens
Use	For through-beam optical fibers M2.6×0.45	For through-beam optical fibers M2.6×0.45	For coaxial diffuse sensor optical fibers M4×0.7	For coaxial diffuse sensor optical fibers M4×0.7
Ordering code	**BAM00NN**	**BAM00NP**	**BAM00NR**	**BAM00NT**
Part number	BFO 02-PK-1	BFO 02-UK-1	BFO 04-FL-1	BFO 04-FL-2
Sensing distance/range distance with corresponding fiber optics	×10	×0.7	19 mm±2 mm	7 mm±2 mm
Packaging unit	2 pcs.	2 pcs.	1 pc.	1 pc.





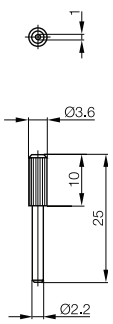


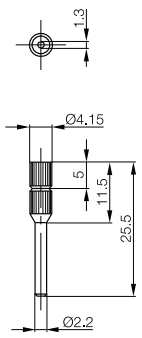


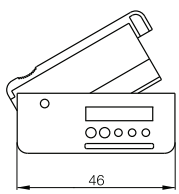




Description	Adapter	Adapter	Cutting tool
Use	For plastic fiber optics Ø 1 mm for connecting to fiber optic base units	For plastic fiber optics Ø 1.3 mm for connecting to fiber optic base units	For trimming plastic fiber optics Ø 1 mm or Ø 2.2 mm
Ordering code	**BAM000J**	**BAM00P1**	**BAM000E**
Part number	BFO D10-LA-DC-10	BFO D13-LA-EC-10	BFO CT
Packaging unit	2 pcs.	2 pcs.	1 pc.







The BFO 18 series of glass fiber optics are designed for series BOS 18M cylindrical sensors and are used wherever a high level of function reserve or chemical resistance is required. Likewise, temperatures over 200 °C pose no problem.

Various straight or right-angle versions are available with a polyurethane jacket, corrugated metal armor or silicon protective jacket.

UZG type
- Polyurethane jacket
- Strain relief
- Glass optical fiber bundle
- Flexible
- Excellent chemical resistance
- Does not become brittle from oils and cooling emulsions
- Temperature resistance –20...+85 °C

MZG type
- Corrugated metal armor
- Strain relief
- Glass optical fiber bundle
- Resistant to high temperatures –20...+170 °C (up to +250 °C for a fixed installation)
- Flexible
- Crush-resistant
- Resistant to hot swarf

SMG type

Silicon protection jacket
Corrugated metal armor with glass optical fiber bundle strain relief
- Extended temperature range
- –40...+150 °C
- Highly flexible
- Crush-resistant



Photoelectric Sensors with Special Properties

Glass fiber optics BFO 18

Product overview

Type		Max. sensing distance	Version		Light exit		Auto-motive approval	Page
■ **Ordering code** □ Part number		For BOS 18M-...-1PF-...	Through-beam	Buttons	Straight	Angled		
Through-beam fiber optics								
BFO0001Z	BFO 18A-LGG-MZG-10-0,5	400 mm	■		■			346
BFO0020	BFO 18A-LGG-MZG-10-1	400 mm	■		■			346
BFO0023	BFO 18A-LGG-SMG-10-0,5	400 mm	■		■			346
BFO0024	BFO 18A-LGG-SMG-10-1	400 mm	■		■			346
BFO0001P	BFO 18A-LFF-MZG-10-0,5	400 mm	■			■		346
BFO0001R	BFO 18A-LFF-MZG-10-1	400 mm	■			■		346
BFO0001U	BFO 18A-LFF-SMG-10-0,5	400 mm	■			■		346
BFO0001W	BFO 18A-LFF-SMG-10-1	400 mm	■			■		346
BFO0000M	BFO 18A-LAA-UZG-20-0,5	700 mm	■		■			347
BFO0000N	BFO 18A-LAA-UZG-20-1	700 mm	■		■			347
BFO0000F	BFO 18A-LAA-MZG-20-0,5	700 mm	■		■			347
BFO0000H	BFO 18A-LAA-MZG-20-1	700 mm	■		■			347
BFO0000Z	BFO 18A-LCC-UZG-20-1	700 mm	■		■			347
BFO0000U	BFO 18A-LCC-SMG-20-0,5	700 mm	■		■			347
BFO0000W	BFO 18A-LCC-SMG-10-1	700 mm	■		■			347
BFO0001N	BFO 18A-LEE-UZG-20-0,5	700 mm	■			■		347
BFO0001H	BFO 18A-LEE-UZG-20-1	700 mm	■			■		347
BFO00013	BFO 18A-LEE-MZG-20-0,5	700 mm	■			■		347
BFO00014	BFO 18A-LEE-MZG-20-1	700 mm	■			■		347
BFO00019	BFO 18A-LEE-SMG-20-0,5	700 mm	■			■		347
BFO0001A	BFO 18A-LEE-SMG-20-1	700 mm	■			■		347
BFO0003Y	BFO 18V-LCC-MZG-23-0,5	2000 mm	■		■		■	347
BFO00042	BFO 18V-LCC-SMG-23-0,5	2000 mm	■		■		■	347
BFO0004C	BFO 18V-LDD-SMG-23-0,5	2000 mm	■			■	■	347
BFO0004F	BFO 18V-LDD-SMG-23-1	2000 mm	■			■	■	347
Diffuse sensor fiber optics								
BFO0003R	BFO 18A-XAG-MZG-15-0,5	50 mm		■	■			348
BFO0003T	BFO 18A-XAG-MZG-15-1	50 mm		■	■			348
BFO0003H	BFO 18A-XAF-MZG-15-0,5	50 mm		■		■		348
BFO0003J	BFO 18A-XAF-MZG-15-1	50 mm		■		■		348
BFO0003M	BFO 18A-XAF-SMG-15-0,5	50 mm		■		■		348
BFO0003N	BFO 18A-XAF-SMG-15-1	50 mm		■		■		348
BFO0002M	BFO 18A-XAA-UZG-30-0,5	100 mm		■	■			349
BFO0002N	BFO 18A-XAA-UZG-30-1	100 mm		■	■			349
BFO00026	BFO 18A-XAA-MZG-30-0,5	100 mm		■	■			349
BFO00027	BFO 18A-XAA-MZG-30-1	100 mm		■	■			349
BFO0002F	BFO 18A-XAA-SMG-30-0,5	100 mm		■	■			349
BFO0002H	BFO 18A-XAA-SMG-30-1	100 mm		■	■			349
BFO0002W	BFO 18A-XAC-SMG-30-1	100 mm		■	■			349
BFO0002U	BFO 18A-XAC-SMG-30-0,5	100 mm		■	■			349
BFO0003C	BFO 18A-XAE-UZG-30-0,5	100 mm		■		■		349
BFO0003E	BFO 18A-XAE-UZG-30-1	100 mm		■		■		349
BFO00031	BFO 18A-XAE-MZG-30-0,5	100 mm		■		■		349
BFO00037	BFO 18A-XAE-SMG-30-0,5	100 mm		■		■		349
BFO00038	BFO 18A-XAE-SMG-30-1	100 mm		■		■		349
BFO0004M	BFO 18V-XAC-MZG-30-0,5	200 mm		■	■		■	349
BFO0004P	BFO 18V-XAC-SMG-30-0,5	200 mm		■	■		■	349
BFO0004R	BFO 18V-XAC-SMG-30-1	200 mm		■	■		■	349
BFO0004U	BFO 18V-XAD-MZG-30-0,5	200 mm		■		■	■	349
BFO0004Y	BFO 18V-XAD-SMG-30-0,5	200 mm		■		■	■	349
BFO0004Z	BFO 18V-XAD-SMG-30-1	200 mm		■		■	■	349

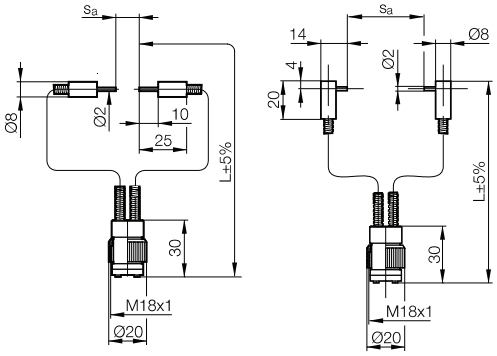


Through-beam sensor	BOS 18M-...-PD-..	Range	**100 mm**	**100 mm**
with	BOS 18M-...-1PF-...	Range	**400 mm**	**400 mm**
	BOS 30M-...	Range		
UZG type		**Ordering code**		
0.5 m		Part number		
UZG type		**Ordering code**		
1 m		Part number		
MZG type		**Ordering code**	**BFO001Z**	**BFO001P**
0.5 m		Part number	BFO 18A-LGG-MZG-10-0,5	BFO 18A-LFF-MZG-10-0,5
MZG type		**Ordering code**	**BFO0020**	**BFO001R**
1 m		Part number	BFO 18A-LGG-MZG-10-1	BFO 18A-LFF-MZG-10-1
SMG type		**Ordering code**	**BFO0023**	**BFO001U**
0.5 m		Part number	BFO 18A-LGG-SMG-10-0,5	BFO 18A-LFF-SMG-10-0,5
SMG type		**Ordering code**	**BFO0024**	**BFO001W**
1 m		Part number	BFO 18A-LGG-SMG-10-1	BFO 18A-LFF-SMG-10-1
Glass optical fiber bundle diameter			1 mm	1 mm
Max. tension on optical fibers and connection parts			80 N	80 N
Min. bending radius			60 mm	60 mm
Can be used with	BOS 18M-PA-1PD...		Yes	Yes
	BOS 18M-PU-1PD-SA1.../-SA4.../-SA5...		Yes (remove adapter disk)	Yes (remove adapter disk)
	BOS 18M-GU-1PF-...		Yes (remove adapter disk)	Yes (remove adapter disk)
	BOS 18M-PA-1PF-...		Yes	Yes
	BOS 30M-... (use BFO 30-A1 adapter)		No	No

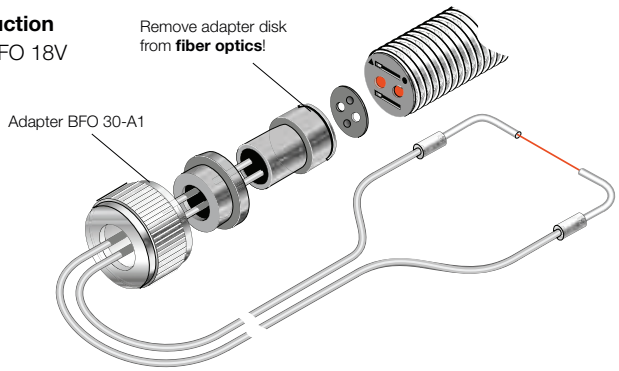
Additional lengths available (in 0.5 m increments)! Please submit an inquiry.

Please append the desired length L of the fiber optics cable to the ordering code.
Adjustments from 0.5 m to max. 2 m possible.
Example:
BFO 18...-30-**0,5** for **0.5 m** fiber length
BFO 18...-30-**2** for **2** m fiber length

Important!
With a fiber optic through-beam sensor, the base unit's normally open signal switches to a normally closed signal!



Mounting instruction
BOS 30M with BFO 18V



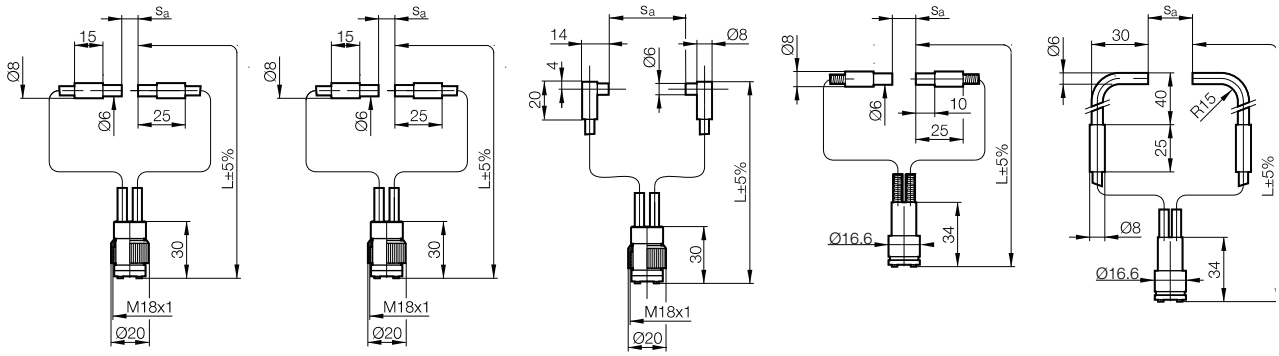
Photoelectric Sensors with Special Properties

Glass fiber optics BFO 18

Through-beam principle



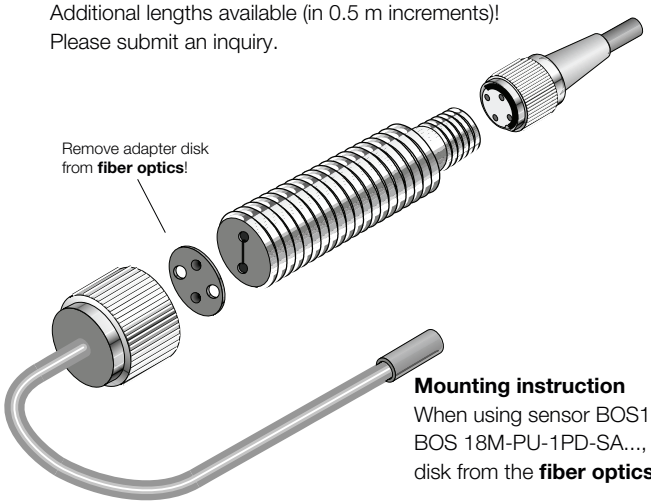
	200 mm **700 mm**	**200 mm** **700 mm**	**200 mm** **700 mm**	**200 mm**	**200 mm**
				2000 mm	**2000 mm**
	BFO000M		**BFO001N**		
	BFO 18A-LAA-UZG-20-0,5		BFO 18A-LEE-UZG-20-0,5		
	BFO000N	**BFO000Z**	**BFO001H**		
	BFO 18A-LAA-UZG-20-1	BFO 18A-LCC-UZG-20-1	BFO 18A-LEE-UZG-20-1		
	BFO000F		**BFO0013**	**BFO003Y**	
	BFO 18A-LAA-MZG-20-0,5		BFO 18A-LEE-MZG-20-0,5	BFO 18V-LCC-MZG-23-0,5	
	BFO000H		**BFO0014**		
	BFO 18A-LAA-MZG-20-1		BFO 18A-LEE-MZG-20-1		
		BFO000U	**BFO0019**	**BFO0042**	**BFO004C**
		BFO 18A-LCC-SMG-20-0,5	BFO 18A-LEE-SMG-20-0,5	BFO 18V-LCC-SMG-23-0,5	BFO 18V-LDD-SMG-23-0,5
		BFO000W	**BFO001A**		**BFO004F**
		BFO 18A-LCC-SMG-10-1	BFO 18A-LEE-SMG-20-1		BFO 18V-LDD-SMG-23-1
	2 mm	2 mm	2 mm	2 mm	2 mm
	80 N	80 N	80 N	80 N	80 N
	60 mm	60 mm	60 mm	60 mm	60 mm
	Yes	Yes	Yes	No	No
	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)
	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	No	No
	Yes	Yes	Yes	No	No
	No	No	No	Yes (remove adapter disk)	Yes (remove adapter disk)

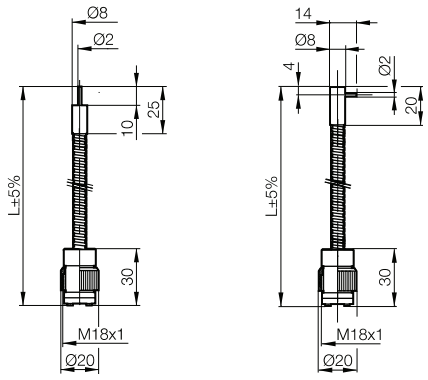




Diffuse sensor with	BOS 18M-...-PD-.../BOS 18M-...-1PF-...		**10 mm/50 mm**	**10 mm/50 mm**	
	BOS 30M-...				
Retroreflective	BOS 18M-...-PD-.../BOS 18M-...-1PF-...		**300 mm/1000 mm**	**300 mm/1000 mm**	
sensor with	BOS 30M-...				
UZG type		**Ordering code**			
0.5 m		Part number			
UZG type		**Ordering code**			
1 m		Part number			
MZG type		**Ordering code**	**BFO003R**	**BFO003H**	
0.5 m		Part number	BFO 18A-XAG-MZG-15-0,5	BFO 18A-XAF-MZG-15-0,5	
MZG type		**Ordering code**	**BFO003T**	**BFO003J**	
1 m		Part number	BFO 18A-XAG-MZG-15-1	BFO 18A-XAF-MZG-15-1	
SMG type		**Ordering code**		**BFO003M**	
0.5 m		Part number		BFO 18A-XAF-SMG-15-0,5	
SMG type		**Ordering code**		**BFO003N**	
1 m		Part number		BFO 18A-XAF-SMG-15-1	
Glass optical fiber bundle diameter			1.5 mm	1.5 mm	
Max. tension on optical fibers and connection parts			80 N	80 N	
Min. bending radius			60 mm	60 mm	
Can be used with	BOS 18M-PA-1PD...		Yes	Yes	
	BOS 18M-PU-1PD-SA1.../-SA4.../-SA5...		Yes (remove adapter disk)	Yes (remove adapter disk)	
	BOS 18M-GU-1PF-...		Yes (remove adapter disk)	Yes (remove adapter disk)	
	BOS 18M-PA-1PF-...		Yes	Yes	
	BOS 30M-...		No	No	
Sensing distance with	BOS 18M-PA-1PD...		10 mm	10 mm	
	BOS 18M-PU-1PD-SA1.../-SA4.../-SA5...		10 mm	10 mm	
	BOS 18M-...-1PF-...		50 mm	50 mm	
	BOS 30M-...				
Range with	BOS 18M-PA-1PD...		300 mm	300 mm	
	BOS 18M-PU-1PD-SA1.../-SA4.../-SA5...		300 mm	300 mm	
	BOS 18M-...-1PF-...		1000 mm	1000 mm	
	BOS 30M-...				

Additional lengths available (in 0.5 m increments)!
Please submit an inquiry.



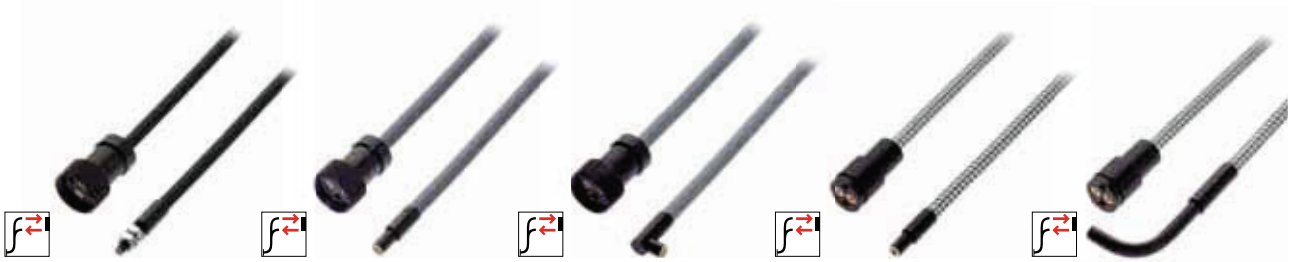


Mounting instruction
When using sensor BOS18M-GU-1PF-S4-Y or BOS 18M-PU-1PD-SA..., please remove the adapter disk from the **fiber optics.**

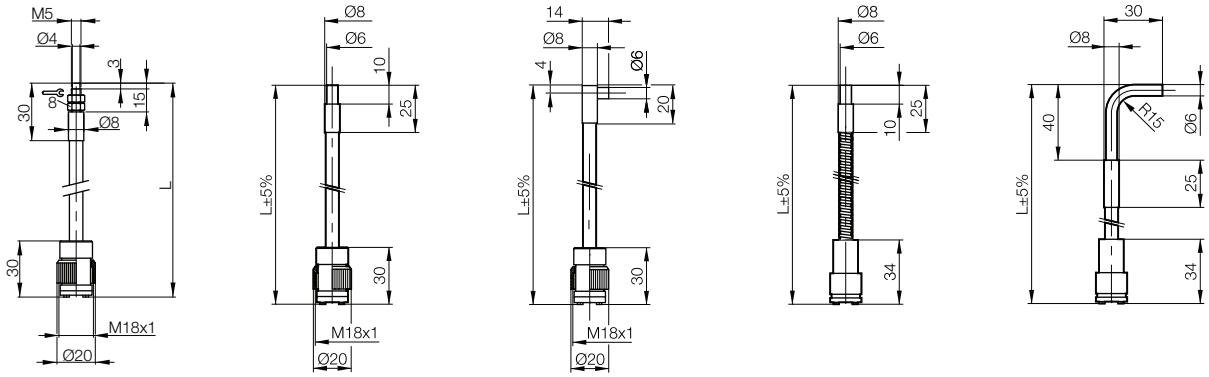
Photoelectric Sensors with Special Properties

Glass fiber optics BFO 18

Buttons



20 mm/100 mm	**20 mm/100 mm**	**20 mm/100 mm**	**20 mm**	**20 mm**
			200 mm	**200 mm**
500 mm/1000 mm	**500 mm/1000 mm**	**500 mm/1000 mm**	**500 mm**	**500 mm**
			2000 mm	**2000 mm**
BFO002M		**BFO003C**		
BFO 18A-XAA-UZG-30-0,5		BFO 18A-XAE-UZG-30-0,5		
BFO002N		**BFO003E**		
BFO 18A-XAA-UZG-30-1		BFO 18A-XAE-UZG-30-1		
BFO0026		**BFO0031**	**BFO004M**	**BFO004U**
BFO 18A-XAA-MZG-30-0,5		BFO 18A-XAE-MZG-30-0,5	BFO 18V-XAC-MZG-30-0,5	BFO 18V-XAD-MZG-30-0,5
BFO0027				
BFO 18A-XAA-MZG-30-1				
BFO002F	**BFO002U**	**BFO0037**	**BFO004P**	**BFO004Y**
BFO 18A-XAA-SMG-30-0,5	BFO 18A-XAC-SMG-30-0,5	BFO 18A-XAE-SMG-30-0,5	BFO 18V-XAC-SMG-30-0,5	BFO 18V-XAD-SMG-30-0,5
BFO002H	**BFO002W**	**BFO0038**	**BFO004R**	**BFO004Z**
BFO 18A-XAA-SMG-30-1	BFO 18A-XAC-SMG-30-1	BFO 18A-XAE-SMG-30-1	BFO 18V-XAC-SMG-30-1	BFO 18V-XAD-SMG-30-1
3 mm	3 mm	3 mm	3 mm	3 mm
80 N	80 N	80 N	80 N	80 N
60 mm	60 mm	60 mm	60 mm	60 mm
Yes	Yes	Yes	No	No
Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)
Yes (remove adapter disk)	Yes (remove adapter disk)	Yes (remove adapter disk)	No	No
Yes	Yes	Yes	No	No
No	No	No	Yes (remove adapter disk)	Yes (remove adapter disk)
20 mm	20 mm	20 mm		
20 mm	20 mm	20 mm	20 mm	20 mm
100 mm	100 mm	100 mm		
			200 mm	200 mm
500 mm	500 mm	500 mm		
500 mm	500 mm	500 mm	500 mm	500 mm
1000 mm	1000 mm	1000 mm		
			2000 mm	2000 mm



Sensing distances referenced to a 90% reflective Kodak gray card.
Diffuse sensor with glass fiber optics as a retroreflective light sensor: Ranges are referenced to BOS R-1 reflector.

When being used as a retroreflective sensor, twice the switching distance must be used as the object dead zone.

Photoelectric Sensors

Photoelectric distance sensors for analog distance measurement

Photoelectric distance sensors are used when distances to objects need to be measured or monitored or their precise position is to determined. They support positioning tasks, material flow controls and level detections in the most diverse of applications – also across large distances.

Users have a wide range of output signals available. Depending on the type, these include analog current and voltage outputs or serial interfaces. However, variants with IO-Link are available for a simple and efficient connection to higher-level control systems.



Contents

Block Designs

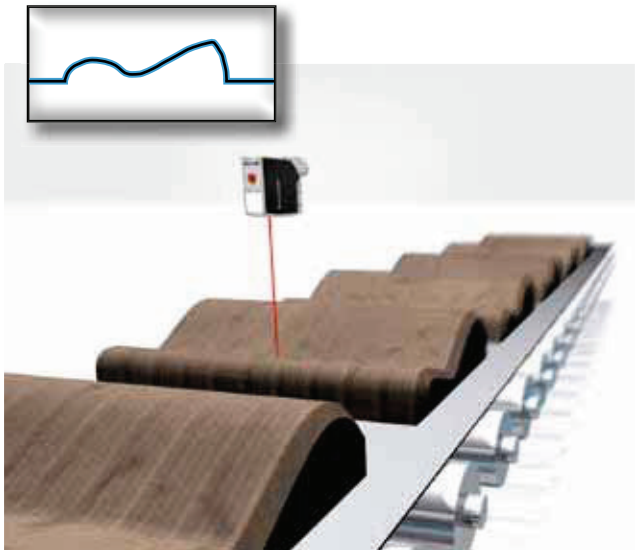
Product overview	353
BOD 6K	354
BOD 21M	356
BOD 26K	358
BOD 63M	366
BOD 66M	370

Basic information and definitions can be found on **page 934.**

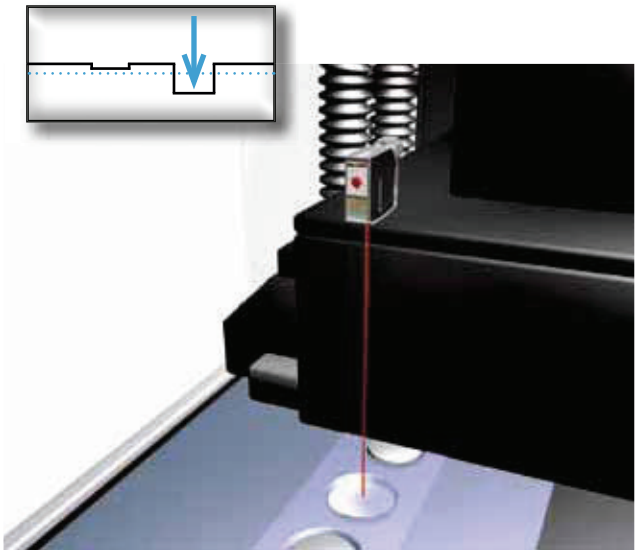


Optical distance sensors are used when distances of objects need to be measured or monitored with precise position determination. Distance measurement is based on the triangulation principle, where light travel time is measured.
PSD-elements or CCD-arrays are used for the receiving elements, with the emitter consisting of a red light- or laser light source. Analog current and voltage values, serial interfaces and digital outputs are available to the user.

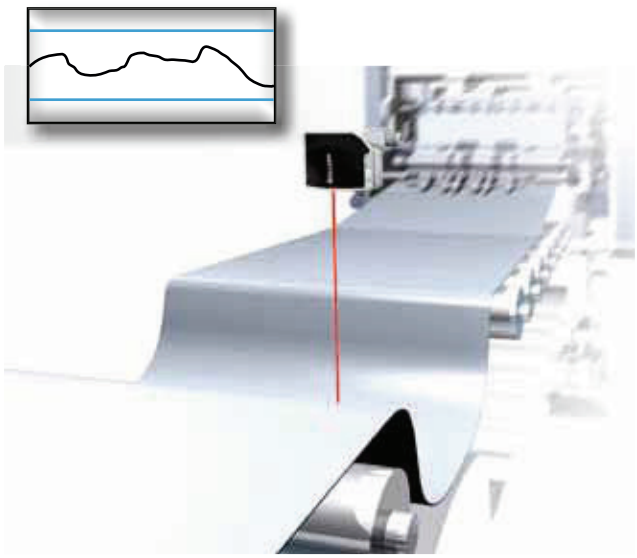
Applications
- Control tasks
- Sensing
- Object positioning
- Level detection



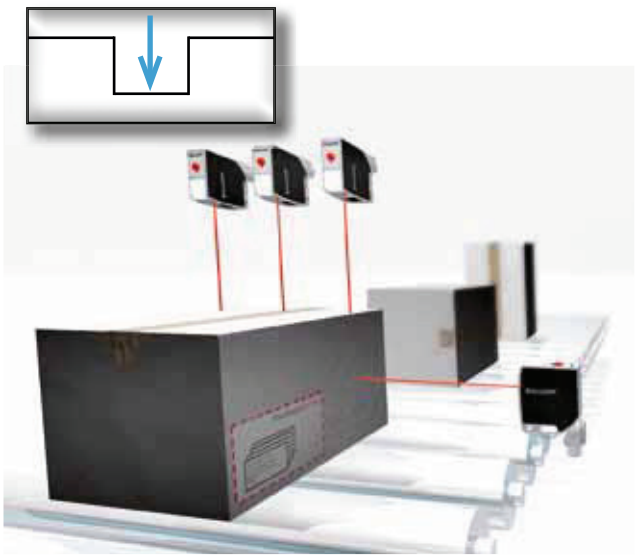
Contour checking
Optical distance sensors continuously detect dimensions or contours on tongue and groove boards. Analog sensing detects individual defects and gradual deviations directly for permanent monitoring of the production process.



Blister packaging
Optical distance sensors monitor the packaging process, optimize product filling and increase system productivity.
Before foil packaging is closed up, a BOD 21M checks the individual compartments and detects missing or extra items.



Sag monitoring
Film and web material has to be transported at a uniform speed in order to be processed with precision. Tension-free material transport succeeds using the BOD 21M, which dynamically detects the height of the sag section.



Adaptive feed
Multiple optical distance sensors measure components, assembled units and packages on a conveying line. BOD 21M sensors evaluate the outer dimension and contour so that these various parts can be transported to the next appropriate process steps. The rugged metal housing guarantees long service life of the installation.

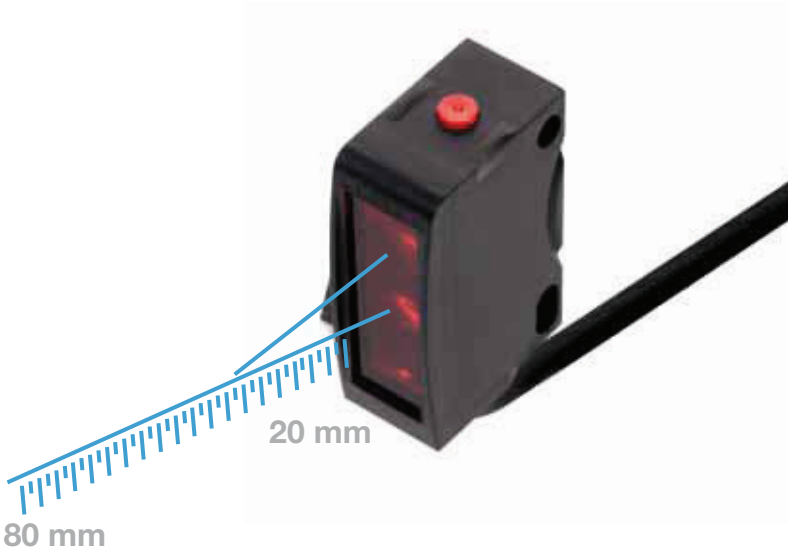
Type		Working range	Resolution	Light type		Analog output			Output						Us		Connection					Page
				Red light	Laser light	0...10 V	1...10 V	4...20 mA	RS485 interface	PNP transistor	IO-Link	2× PNP transistor	Alarm output	Push-pull PNP/NPN	15...30 V DC	18...30 V DC	M8 connector, 4-pin	M12 connector, 4-pin	M12 connector, 5-pin	M12 connector, 8-pin	Cable	
Ordering code / Part number																						
Distance sensor																						
BOD001L	BOD 6K-RA02-S75	20...80 mm	20 µm	■			■			■					■		■					355
BOD001M	BOD 6K-RA02-02	20...80 mm	20 µm	■			■			■					■						■	355
BOD000L	BOD 21M-LA01-S92	25...45 mm	30 µm		■		■					■				■			■			356
BOD000P	BOD 21M-LB01-S92	25...45 mm	30 µm		■			■				■				■			■			356
BOD000M	BOD 21M-LA02-S92	20...200 mm	100...200 µm		■		■					■				■			■			357
BOD000R	BOD 21M-LB02-S92	20...200 mm	100...200 µm		■			■				■				■			■			357
BOD000N	BOD 21M-LA04-S92	20...500 mm	100...500 µm		■		■					■				■			■			357
BOD000T	BOD 21M-LB04-S92	20...500 mm	100...500 µm		■			■				■				■			■			357
BOD0002	BOD 26K-LA01-S4-C	45...85 mm	80 µm		■	■										■				■		359
BOD0004	BOD 26K-LA02-S4-C	45...85 mm	20 µm		■	■										■				■		359
BOD0001	BOD 26K-LA01-C-06	45...85 mm	80 µm		■	■										■					■	359
BOD0003	BOD 26K-LA02-C-06	45...85 mm	20 µm		■	■										■					■	359
BOD0005	BOD 26K-LB04-S115-C	30...100 mm	0.1% of Wh		■			■				■				■				■		361
BOD000C	BOD 26K-LBR04-S115-C	30...100 mm	0.1% of Wh		■			■	■			■				■				■		361
BOD0006	BOD 26K-LB05-S115-C	80...300 mm	0.1% of Wh		■			■				■				■				■		363
BOD000E	BOD 26K-LBR05-S115-C	80...300 mm	0.1% of Wh		■			■	■			■				■				■		363
BOD0007	BOD 26K-LB06-S92-C	30...100 mm	0.1 % of Wh-Wl		■			■		■						■			■			365
BOD0008	BOD 26K-LB07-S92-C	80...300 mm	0.1 % of Wh-Wl		■			■		■						■			■			365
BOD0012	BOD 63M-LI06-S4	200...6000 mm	1 mm	■	■						■							■				367
BOD000U	BOD 63M-LA02-S115	200...2000 mm	1 mm		■	■						■	■		■					■		367
BOD0010	BOD 63M-LB02-S115	200...2000 mm	1 mm		■			■				■	■		■					■		367
BOD000W	BOD 63M-LA04-S115	200...6000 mm	1 mm		■	■						■	■		■					■		369
BOD0011	BOD 63M-LB04-S115	200...6000 mm	1 mm		■			■				■	■		■					■		369
BOD001H	BOD 66M-RA11-S92	100...600 mm	100...500 µm	■			■							■		■			■			371
BOD001C	BOD 66M-RB11-S92	100...600 mm	100...500 µm	■				■						■		■			■			371
BOD001J	BOD 66M-RA12-S92	100...800 mm	100...800 µm		■		■							■		■			■			373
BOD001K	BOD 66M-LB12-S92	100...800 mm	100...800 µm		■			■						■		■			■			373
BOD001E	BOD 66M-LA14-S92	150...2000 mm	1...3 mm		■		■							■		■			■			373
BOD001F	BOD 66M-LB14-S92	150...2000 mm	1...3 mm		■			■						■		■			■			373

NPN on request

Photoelectric Sensors
Photoelectric Sensors
Photoelectric Sensors with Special Properties
Photoelectric Distance Sensors for Analog Distance Measurement
Block Designs
Accessories for Photoelectric Sensors

The New Generation!

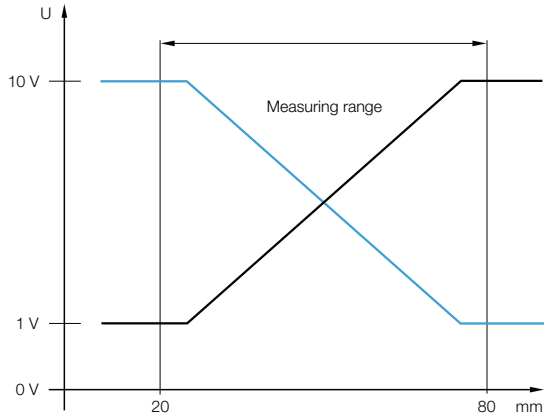
The new generation of BOD 6K sensors with a resolution of 20 µm is a real alternative for short-range measurement tasks! The new **BOD 6K** provides a distance-proportional analog output signal with falling voltage over an adjustable measuring range of 20 to 80 mm. With a switching output adjustable using teach-in, the sensor can also be used as a sensing device with background suppression.



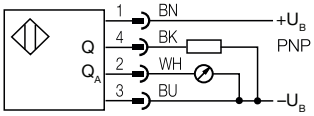
Features

- Adjustable measuring range between 20...80 mm
- Analog output 1...10 V
- Adjustable background suppression
- Switching output PNP, NO/NC selection
- Teach-in (measuring range and switching output can be adjusted independently of each other)
- Disable buttons
- Connector or cable version
- 20 µm resolution
- Invertable analog characteristic
- IP 69K/IP 67

Analog output BOD 6K-RA0...



Wiring diagram



Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00UH**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.



Suitable connectors:
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M8, 4-pin	Straight	PUR	Black	5 m	**BCC02N3**
M8, 4-pin	Angled	PUR	Black	5 m	**BCC02NE**

Connectors without LED are suitable for PNP and NPN sensors.

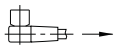
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

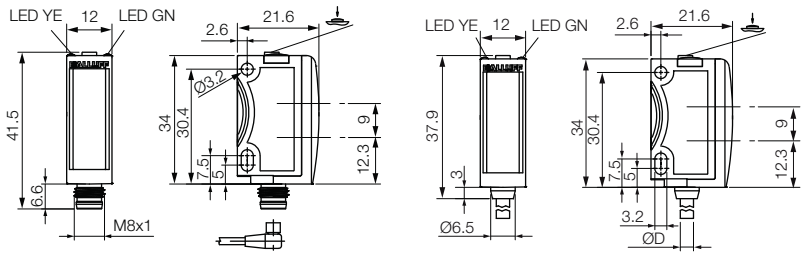




Series		**BOD 6K**	**BOD 6K**
Working range		**20...80 mm**	**20...80 mm**
Measuring range		**60 mm**	**60 mm**
PNP NO/NC	**Ordering code**	**BOD001L**	**BOD001M**
	Part number	BOD 6K-RA02-S75	BOD 6K-RA02-02
Supply voltage U_S		13...30 V DC	13...30 V DC
Analog output		1...10 V (max. 3 mA)	1...10 V (max. 3 mA)
No-load supply current I_0 max.		≤ 30 mA at 24 V DC	≤ 30 mA at 24 V DC
Output current		≤ 100 mA	≤ 100 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Teach-in	Teach-in
Emitter, light type		LED, red light	LED, red light
Wavelength		632 Nm	632 Nm
Light spot diameter		5×5 mm at 50 mm	5×5 mm at 50 mm
Resolution		20 µm	20 µm
Linearity		±0.4 mm	±0.4 mm
Repeat accuracy		< 0.4 mm	< 0.4 mm
Temperature drift		0.1 mm/°K	0.1 mm/°K
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Switching frequency f		≤ 1000 Hz	≤ 1000 Hz
Degree of protection as per IEC 60529		IP 67/IP 69K	IP 67/IP 69K
Ambient temperature T_a		–20...+60 °C	–20...+60 °C
Permissible ambient light		5 klx	5 klx
Material	Housing	ABS	ABS
	Optical surface	PMMA	PMMA
Connection		M8 connector, 4-pin	2 m PVC cable, 4×0.14 mm²

Measurement values referenced to
100×100 mm, 90% reflective Kodak gray card.



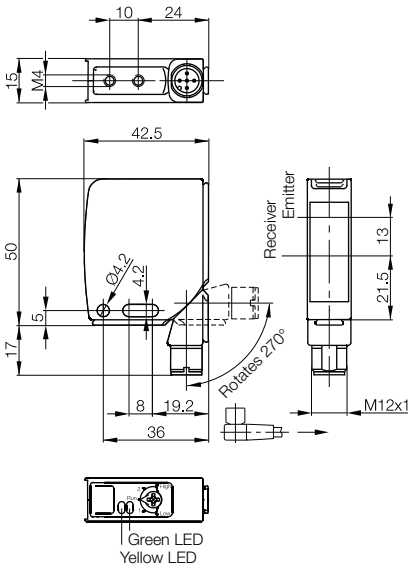


The BOD 21M is connected using a 5-pin M12 plug. The connector orientation can be set over a range of 270°, allowing the BOD 21M to be attached in any position.



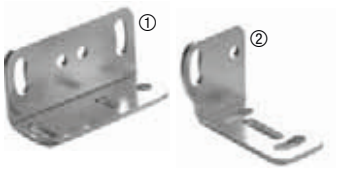
Series			**BOD 21M**	**BOD 21M**
Working range			**25...45 mm**	**25...45 mm**
Measuring range			**20 mm**	**20 mm**
2× PNP NO/NC		**Ordering code**	**BOD000L**	**BOD000P**
		Part number	BOD 21M-LA01-S92	BOD 21M-LB01-S92
Supply voltage U_S			18...30 V DC	18...30 V DC
Analog output			1...10 V (max. 3 mA)	4...20 mA
Settings			Teach-in (rotary switch)	Teach-in (rotary switch)
Switching type			Light/dark switching	Light/dark switching
Emitter, light type			Laser, pulsed red light	Laser, pulsed red light
Wavelength			630 Nm	630 Nm
Laser class			2	2
Light spot diameter			Ø 1 mm at 45 mm	Ø 1 mm at 45 mm
Temperature drift			≤ 0.2 %/°K	≤ 0.2 %/°K
Resolution			30 µm	30 µm
Linearity			±0.5 %	±0.5 %
Stand-by delay			≤ 300 ms	≤ 300 ms
On/off delay			≤ 7 ms	≤ 7 ms
Switching frequency f			≤ 70 Hz	≤ 70 Hz
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Degree of protection as per IEC 60529			IP 67	IP 67
Polarity reversal/short-circuit protected			Yes	Yes
Permissible ambient light			5 klx	5 klx
Ambient temperature T_a			–10...+50 °C	–10...+50 °C
Material		Housing	GD-Zn	GD-Zn
		Optical surface	Glass	Glass
Connection			M12 connector, 5-pin	M12 connector, 5-pin

Measured values referenced to Kodak gray card 90% reflective.
Connector orientation



Recommended accessories:
(please order separately)

Description	Ordering code
① Mounting bracket	**BAM00T9**
② Mounting bracket	**BAM00TA**



You can find special accessories for photoelectric sensors in our **Object Detection** catalog.



Suitable connectors:
(please order separately)

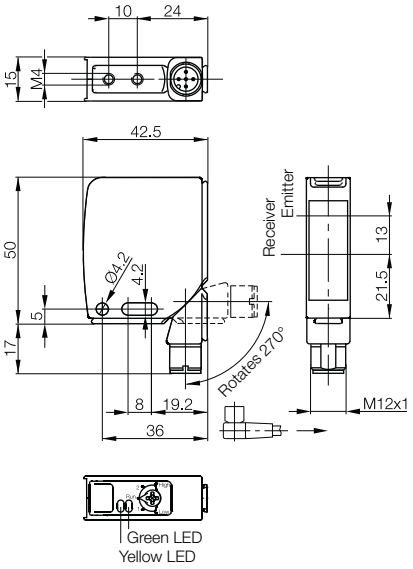
Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**

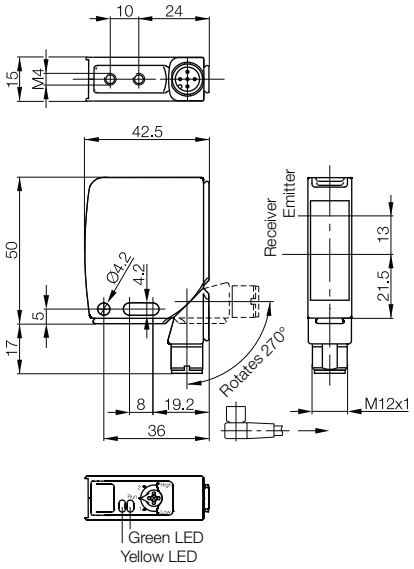
Connectors without LED are suitable for PNP and NPN sensors.





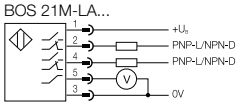

	BOD 21M 20...200 mm 180 mm BOD000M	BOD 21M 20...200 mm 180 mm BOD000R	BOD 21M 20...500 mm 480 mm BOD000N	BOD 21M 20...500 mm 480 mm BOD000T
	BOD 21M-LA02-S92	BOD 21M-LB02-S92	BOD 21M-LA04-S92	BOD 21M-LB04-S92
	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC
	1...10 V (max. 3 mA)	4...20 mA	1...10 V (max. 3 mA)	4...20 mA
	Teach-in (rotary switch)	Teach-in (rotary switch)	Teach-in (rotary switch)	Teach-in (rotary switch)
	Light/dark switching	Light/dark switching	Light/dark switching	Light/dark switching
	Laser, pulsed red light	Laser, pulsed red light	Laser, pulsed red light	Laser, pulsed red light
	630 Nm	630 Nm	630 Nm	630 Nm
	2	2	2	2
	Ø 1 mm at 200 mm	Ø 1 mm at 200 mm	1×6 mm at 500 mm	1×6 mm at 500 mm
	≤ 0.2 %/°K	≤ 0.2 %/°K	≤ 0.2 %/°K	≤ 0.2 %/°K
	100...200 µm	100...200 µm	100...500 µm	100...500 µm
	±1 %	±1 %	±1% (to 200 mm) ±3% (200...500 mm)	±1% (to 200 mm) ±3% (200...500 mm)
	≤ 300 ms	≤ 300 ms	≤ 300 ms	≤ 300 ms
	≤ 7 ms	≤ 7 ms	≤ 7 ms	≤ 7 ms
	≤ 70 Hz	≤ 70 Hz	≤ 70 Hz	≤ 70 Hz
	Green LED	Green LED	Green LED	Green LED
	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	IP 67	IP 67	IP 67	IP 67
	Yes	Yes	Yes	Yes
	5 klx	5 klx	5 klx	5 klx
	–10...+50 °C	–10...+50 °C	–10...+50 °C	–10...+50 °C
	GD-Zn	GD-Zn	GD-Zn	GD-Zn
	Glass	Glass	Glass	Glass
	M12 connector, 5-pin	M12 connector, 5-pin	M12 connector, 5-pin	M12 connector, 5-pin



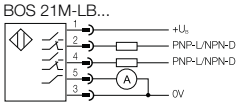


Wiring diagrams

BOS 21M-LA...



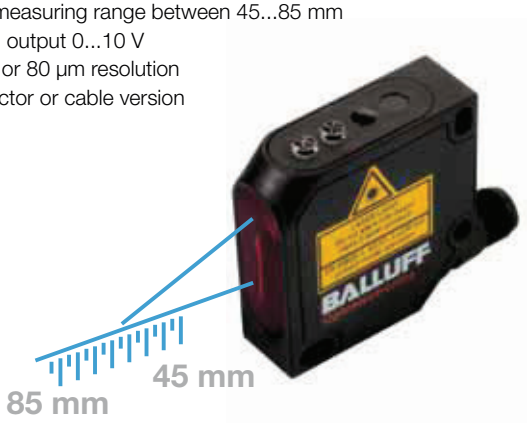
BOS 21M-LB...



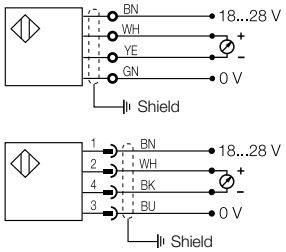
BOD 26K-LA Laser

Features

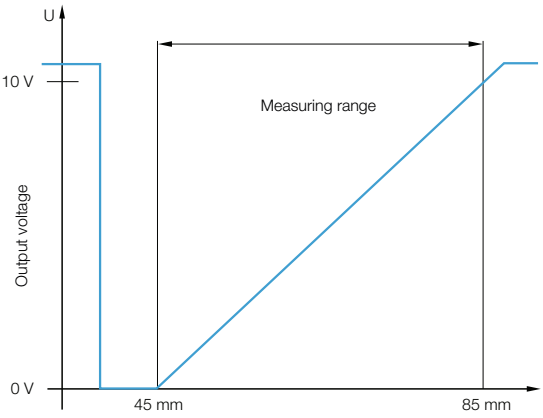
- Fixed measuring range between 45...85 mm
- Analog output 0...10 V
- 20 µm or 80 µm resolution
- Connector or cable version



Wiring diagrams



Analog output BOD 26K-LA0...



Series		
Working range		
Measuring range		
Ordering code		
Part number		
Supply voltage U_S		
Analog output		
No-load supply current I_0 max.		
Output current		
Polarity reversal/short-circuit protected		
Settings		
Emitter, light type		
Wavelength		
Laser class		
Light spot diameter		
Temperature drift		
Resolution		
Linearity		
Power-on indicator		
Contamination indicator		
Cutoff frequency		
Rise time (from 10% to 90%)		
Fall-off time (from 90% to 10%)		
Degree of protection as per IEC 60529		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

Measured values referenced to Kodak gray card 90% reflective.

 Connector orientation

Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00TK**



Suitable connectors:
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 4-pin	Straight	PUR	Black	5 m	**BCC032L**

Connectors without LED are suitable for PNP and NPN sensors.

Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

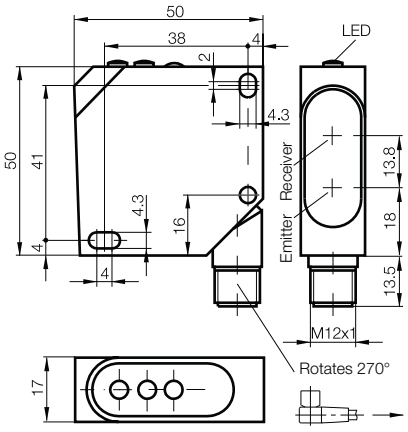
More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.

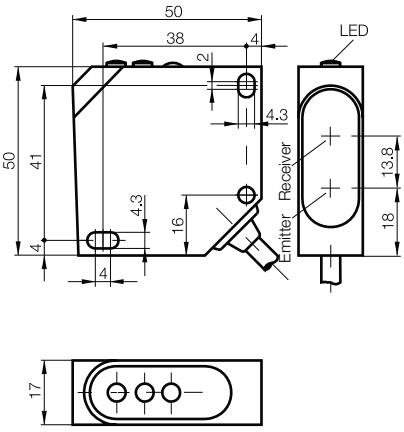
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**






	BOD 26K	BOD 26K	BOD 26K	BOD 26K
	45...85 mm	**45...85 mm**	**45...85 mm**	**45...85 mm**
	40 mm	**40 mm**	**40 mm**	**40 mm**
	BOD0002	**BOD0004**	**BOD0001**	**BOD0003**
	BOD 26K-LA01-S4-C	BOD 26K-LA02-S4-C	BOD 26K-LA01-C-06	BOD 26K-LA02-C-06
	18...28 V DC	18...28 V DC	18...28 V DC	18...28 V DC
	0...10 V (max. 3 mA)	0...10 V (max. 3 mA)	0...10 V (max. 3 mA)	0...10 V (max. 3 mA)
	35 mA	35 mA	35 mA	35 mA
	100 mA	100 mA	100 mA	100 mA
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Fixed	Fixed	Fixed	Fixed
	Laser, red light	Laser, red light	Laser, red light	Laser, red light
	670 Nm	670 Nm	670 Nm	670 Nm
	2	2	2	2
	Ø 0.8 mm at 65 mm	Ø 0.8 mm at 65 mm	Ø 0.8 mm	Ø 0.8 mm
	18 µm/K	18 µm/K	18 µm/K	18 µm/K
	80 µm	20 µm	80 µm	20 µm
	≤ 1 % of Wh	≤ 1 % of Wh	≤ 1 % of Wh	≤ 1 % of Wh
	Green LED	Green LED	Green LED	Green LED
	Red LED	Red LED	Red LED	Red LED
	400 Hz	40 Hz	400 Hz	40 Hz
	3 ms	30 ms	3 ms	30 ms
	2 ms	20 ms	2 ms	20 ms
	IP 67	IP 67	IP 67	IP 67
	0...+45 °C	0...+45 °C	0...+45 °C	0...+45 °C
	3000 Lux	3000 Lux	3000 Lux	3000 Lux
	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	M12 connector, 4-pin	M12 connector, 4-pin	6 m PVC cable, 4×0.25 mm²	6 m PVC cable, 4×0.25 mm²

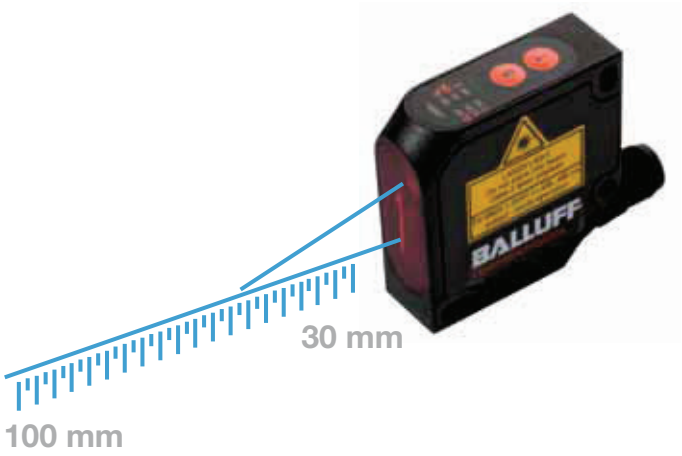




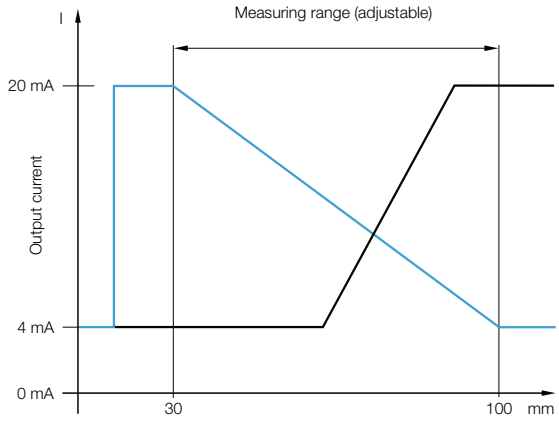
BOD 26K-LB Laser

Features

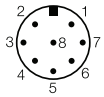
- Adjustable measuring range between 30...100 mm
- Adjustable analog output 4...20 mA: Rising or falling
- Optional with RS485-interface (for master-slave-mode) and for visualization using a computer (additional software required)
- 2 switching outputs with adjustable switching points
- Teach-in
- Adjustable averaging
- Numerous additional functions



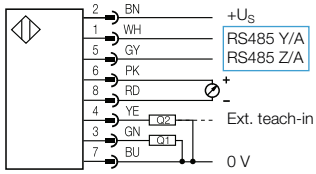
Analog output BOD 26K-LB(R)04...



Connector diagram



Wiring diagram



Only the variant BOD 26K-LB**R**...

Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00TK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.

Suitable connectors:
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 8-pin	Straight	PVC	Gray	5 m	**BCC0995**
M12, 8-pin	Angled	PVC	Gray	5 m	**BCC0998**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

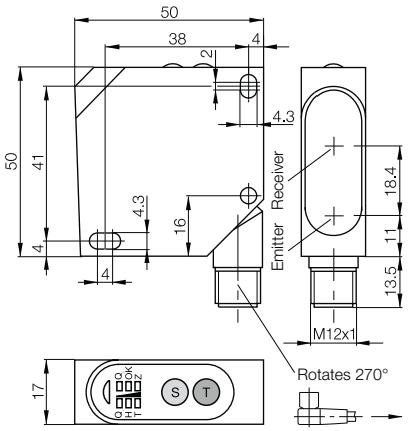


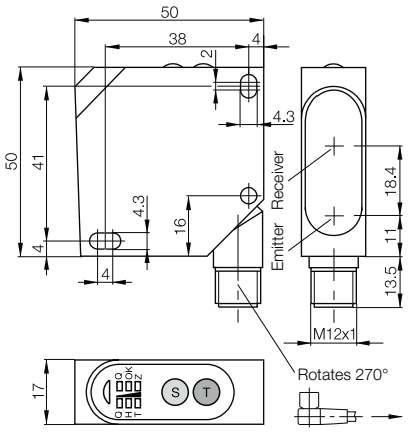


Series		**BOD 26K**	**BOD 26K**
Working range		**30...100 mm**	**30...100 mm**
Measuring range		**adjustable max. 70 mm**	**adjustable max. 70 mm**
2× PNP NO/NC	**Ordering code**	**BOD0005**	**BOD000C**
	Part number	BOD 26K-LB04-S115-C	BOD 26K-LBR04-S115-C
Supply voltage U_S		18...30 V DC	18...30 V DC
Analog output		4...20 mA	4...20 mA
No-load supply current I_0 max.		≤ 40 mA	≤ 40 mA
Output current max.		100 mA	100 mA
Switching type		Light/dark switching	Light/dark switching
Interface			**RS485**
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Teach-in	Teach-in
Additional function			Master-slave mode
Emitter, light type		Laser, red light	Laser, red light
Wavelength		650 Nm	650 Nm
Laser class		2	2
Light spot diameter		1.5 mm × 3.25 mm at 100 mm	1.5 mm × 3.25 mm at 100 mm
Resolution		< 0.1 % of Wh	< 0.1 % of Wh
Linearity		< 0.25 % of Wh	< 0.25 % of Wh
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Switching frequency		1 kHz	1 kHz
Time function		50 ms pulse extension	50 ms pulse extension
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Permissible ambient light		5000 Lux	5000 Lux
Material	Housing	Impact-resistant ABS	Impact-resistant ABS
	Optical surface	PMMA	PMMA
Connection		M12 connector, 8-pin	M12 connector, 8-pin

Measured values referenced to Kodak gray card 90% reflective.

Connector orientation

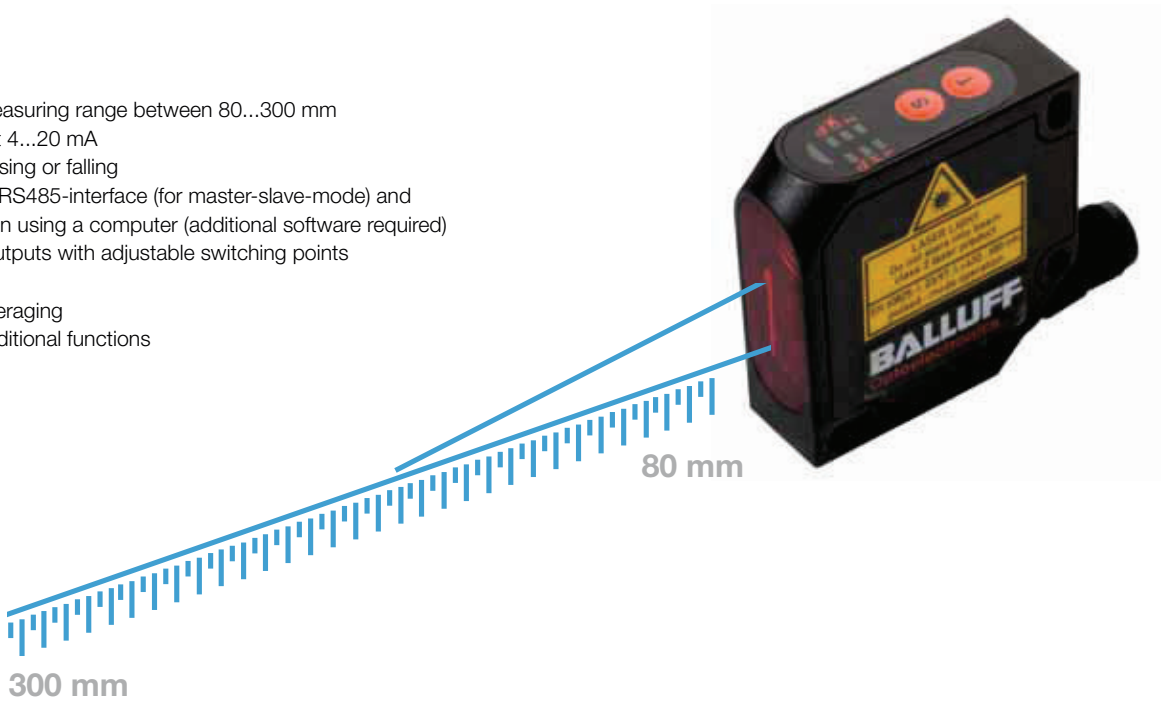




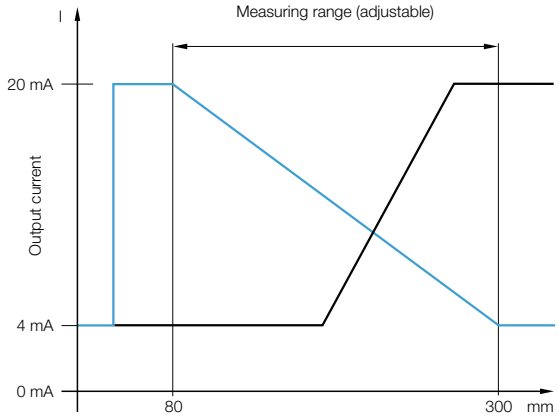
BOD 26K-LB
Laser

Features

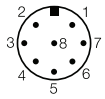
- Adjustable measuring range between 80...300 mm
- Analog output 4...20 mA
  Adjustable: Rising or falling
- Optional with RS485-interface (for master-slave-mode) and for visualization using a computer (additional software required)
- 2 switching outputs with adjustable switching points
- Teach-in
- Adjustable averaging
- Numerous additional functions



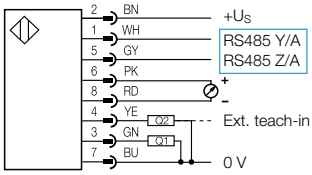
Analog output BOD 26K-LB(R)05...



Connector diagram



Wiring diagram



Only the variant BOD 26K-LB**R**...

Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00TK**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.



Suitable connectors:
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 8-pin	Straight	PVC	Gray	5 m	**BCC0995**
M12, 8-pin	Angled	PVC	Gray	5 m	**BCC0998**

Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

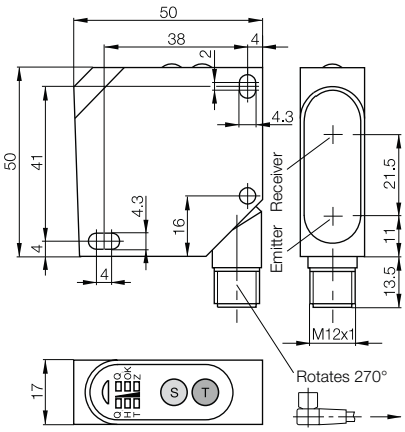


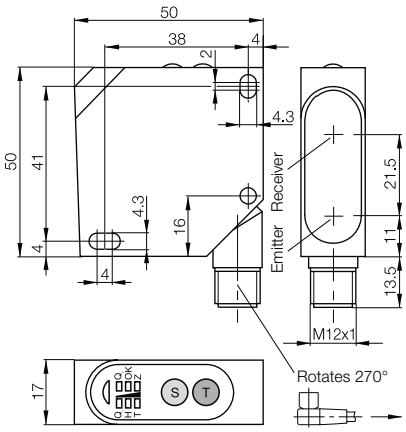


Series		**BOD 26K**	**BOD 26K**
Working range		**80...300 mm**	**80...300 mm**
Measuring range		**adjustable max. 220 mm**	**adjustable max. 220 mm**
2× PNP NO/NC	**Ordering code**	**BOD0006**	**BOD000E**
	Part number	BOD 26K-LB05-S115-C	BOD 26K-LBR05-S115-C
Supply voltage U_S		18...30 V DC	18...30 V DC
Analog output		4...20 mA	4...20 mA
No-load supply current I_0 max.		≤ 40 mA	≤ 40 mA
Output current		100 mA	100 mA
Switching type		Light/dark switching	Light/dark switching
Interface			**RS485**
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Teach-in	Teach-in
Additional function			Master-slave mode
Emitter, light type		Laser, red light	Laser, red light
Wavelength		650 Nm	650 Nm
Laser class		2	2
Light spot diameter		2 mm × 4.5 mm at 300 mm	2 mm × 4.5 mm at 300 mm
Resolution		< 0.1 % of Wh	< 0.1 % of Wh
Linearity		< 0.25 % of Wh	< 0.25 % of Wh
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Switching frequency		1 kHz	1 kHz
Time function		50 ms pulse extension	50 ms pulse extension
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Permissible ambient light		5000 Lux	5000 Lux
Material	Housing	Impact-resistant ABS	Impact-resistant ABS
	Optical surface	PMMA	PMMA
Connection		M12 connector, 8-pin	M12 connector, 8-pin

Measured values referenced to Kodak gray card 90% reflective.

Connector orientation



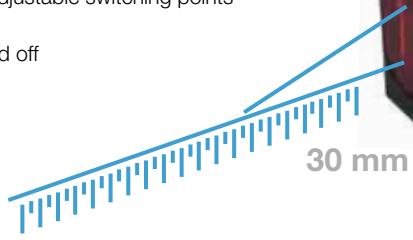


BOD 26K-LB Laser

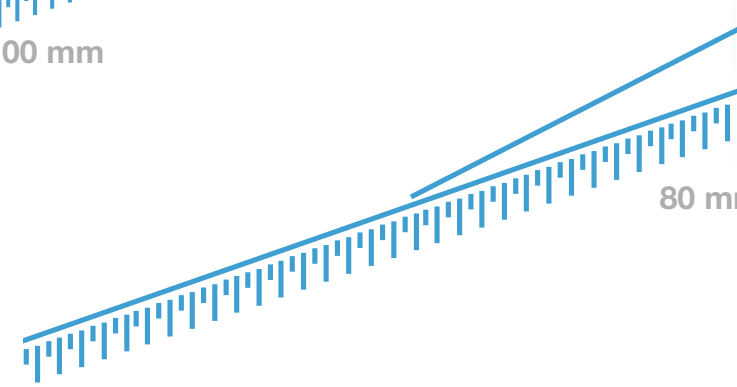
Features

- Adjustable measuring range
- Analog output 4...20 mA
  Adjustable: Rising or falling
- 1 switching output with adjustable switching points
- Teach-in
- Laser beam can be turned off





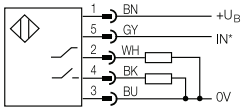




Connector diagram

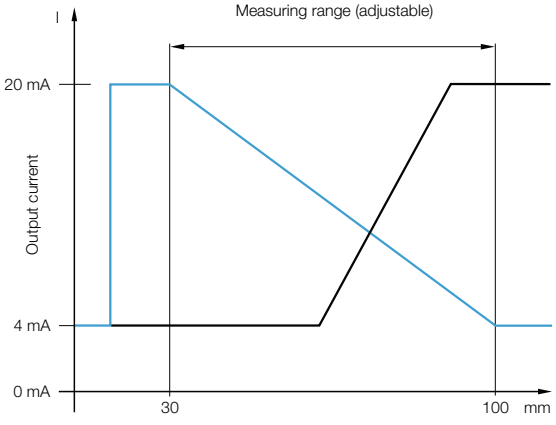


Wiring diagram

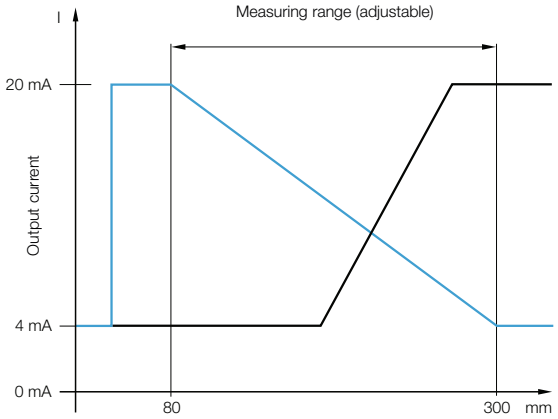


*Laser shut-off (+U_S)
Key disable (0 V)

Analog output BOD 26K-LB06...



Analog output BOD 26K-LB07...



Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00TK**



Suitable connectors:
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**
M12, 5-pin	Angled	PUR	Black	5 m	**BCC08FC**

Connectors without LED are suitable for PNP and NPN sensors.

Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.

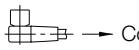
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

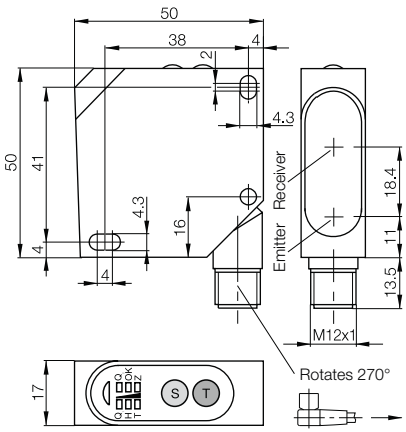


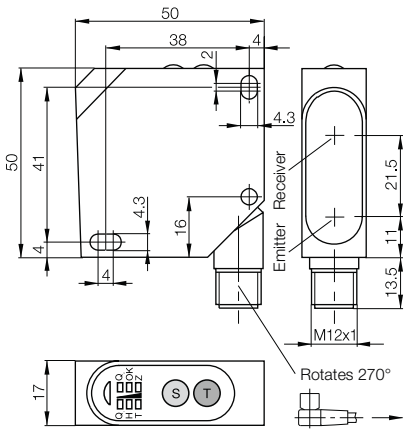


Series			**BOD 26K**	**BOD 26K**
Working range			**30...100 mm**	**80...300 mm**
Measuring range			**adjustable max. 70 mm**	**adjustable max. 220 mm**
PNP	NO/NC	**Ordering code**	**BOD0007**	**BOD0008**
		Part number	BOD 26K-LB06-S92-C	BOD 26K-LB07-S92-C
Supply voltage U_S			18...30 V DC	18...30 V DC
Analog output			4...20 mA	4...20 mA
No-load supply current I_0 max.			≤ 40 mA	≤ 40 mA
Output current			100 mA	100 mA
Switching type			Light/dark switching	Light/dark switching
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Teach-in	Teach-in
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 Nm	650 Nm
Laser class			2	2
Light spot diameter			1.5 mm × 3.25 mm at 100 mm	2 mm × 4.5 mm at 300 mm
Resolution			< 0.1 % of (Wh-Wl)	< 0.1 % of (Wh-Wl)
Linearity			< 0.25 % of (Wh-Wl)	< 0.25 % of (Wh-Wl)
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Switching frequency			1 kHz	1 kHz
Time function			50 ms pulse extension	50 ms pulse extension
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+60 °C	–10...+60 °C
Permissible ambient light			5000 Lux	5000 Lux
Material		Housing	Impact-resistant ABS	Impact-resistant ABS
		Optical surface	PMMA	PMMA
Connection			M12 connector, 5-pin	M12 connector, 8-pin

Measured values referenced to Kodak gray card 90% reflective.







Distance sensors BOD 63M Laser

Laser class
The emitter meets Laser Class 2 per EN 60825-1:2001-11.
This means no additional safety measures are necessary.
Install the device so that the laser warning label is easily visible.

The **BOD 63M** in a robust metal housing has a working range of 200...2000/6000 mm. It has adjustable background suppression and an analog output with 0...10 V or 4...20 mA. Speed of light measurement enables longer ranges than using triangulation or energetic light scanners.
The switching outputs are set using a multi-turn-potentiometer.
This innovative sensor technology is used in applications where traditional methods meet either technological or economical limits. Such applications include detecting small objects at large distances and operating in difficult conditions, such as if sensing must be performed "outside" of processes with high temperatures or in robotic cells.

Features

- Small laser spot for detecting small objects over large distances
- Virtually independent of the reflective properties of the target object within a specific sensing distance
- Background suppression across the entire working range
- Analog, switching and alarm output
- Laser beam can be turned off

Applications

- Exact detection tasks over long distances (e.g. due to design limitations or heat at the target location)
- Detecting objects with changing colors, shiny surfaces or unfavorable angles to the light beam
- Flexible solutions for position detection, level measurement and monitoring, distance and height measurement, quality assurance applications

Series	
Working range	
Measuring range	
2× PNP NO	**Ordering code**
	Part number
Supply voltage U_S	
Analog output	
No-load supply current I_0 max.	
Switching type	
Switching points	
Polarity reversal/short-circuit protected	
Settings	
Emitter, light type	
Wavelength	
Laser class	
Light spot diameter	
Resolution	
Gray value shift	
Repeat accuracy per BWN	
Temperature drift	
Output curve deviation	
Switching hysteresis	
On/off delay	
Stand-by delay	
Switching frequency	
Power-on indicator	
Switching output	
Stability indicator	
Response time	
Degree of protection as per IEC 60529	
Ambient temperature T_a	
Permissible ambient light	
Material	Housing
	Optical surface
Connection	
IO-Link	
Mode	
Transfer rate	
Value range analog	
Diagnostics	
Parameters	

Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00P6**



More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.



Suitable connectors:
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 8-pin	Straight	PVC	Gray	5 m	**BCC0995**
M12, 8-pin	Angled	PVC	Gray	5 m	**BCC0998**

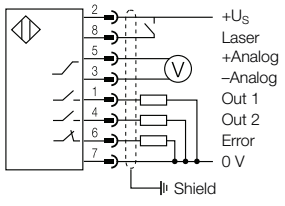
Connectors without LED are suitable for PNP and NPN sensors.

More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

Measured values referenced to Kodak gray card 90% reflective.

Connector orientation

Wiring diagram



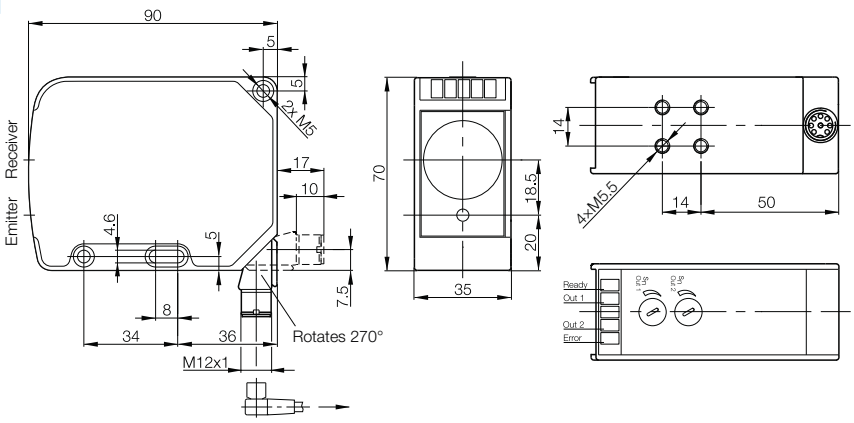




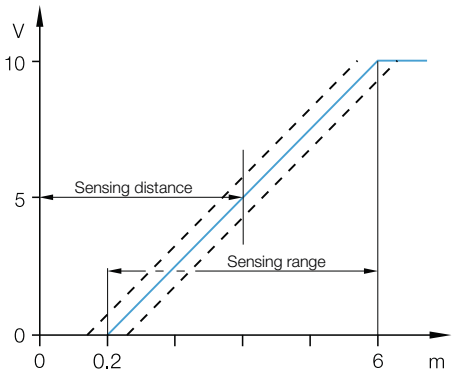


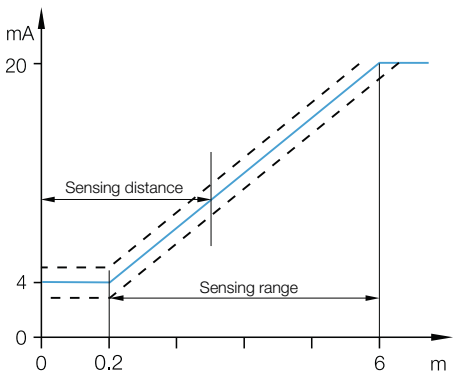
	BOD 63M	**BOD 63M**	**BOD 63M**
	200...6000 mm	**200...2000 mm**	**200...2000 mm**
	5800 mm	**1800 mm**	
	BOD0012	**BOD000U**	**BOD0010**
	BOD 63M-LI06-S4	BOD 63M-LA02-S115	BOD 63M-LB02-S115
	18...30 V DC	15...30 V DC	15...30 V DC
		0...10 V	**4...20 mA**
	90 mA	≤ 75 mA	≤ 75 mA
	Light switching	Light switching	Light switching
	2		
	Yes/Yes	Yes/Yes	Yes/Yes
	Teach-in	Potentiometer, 4 revolutions	Potentiometer, 4 revolutions
	Laser, red light	Laser, red light	Laser, red light
	660 Nm	660 Nm	660 Nm
	2 per EN 60825	2 per EN 60825	2 per EN 60825
	5 mm at 3 m, 10 mm at 6 m	9 mm at 2000 mm	9 mm at 2000 mm
	1 mm	≤ 1 mm	≤ 1 mm
	≤ 1.5%	≤ 2 %	≤ 2 %
	≤ ±4 mm	≤ ±3 mm	≤ ±3 mm
	≤ 1.5 mm/K	≤ 0.6 mm/K	≤ 0.6 mm/K
	≤ ±1 % of Wh	≤ ±2 % of Wh	≤ ±2 % of Wh
	≤ 15 mm	≤ 10 mm	≤ 10 mm
	≤ 3.3 ms		
	≤ 20 ms	≤ 20 ms	≤ 20 ms
	150 Hz	250 Hz	250 Hz
	Green LED	Green LED	Green LED
	Yellow LED	2× yellow LED	2× yellow LED
	Red LED	Red LED	Red LED
		≤ 2 ms	≤ 2 ms
	IP 67	IP 67	IP 67
	–10...+60 °C	–10...+60 °C	–10...+60 °C
	≤ 10 klx	≤ 10 klx	≤ 10 klx
	Anodized aluminum	Anodized aluminum	Anodized aluminum
	Glass	Glass	Glass
	M12 connector, 4-pin	M12 connector, 8-pin	M12 connector, 8-pin

	COM 2
	38.4 kbaud
	00C8 H...1770 H for W_l...W_h
	Stability indicator
	Switching points, laser on/off, button disable

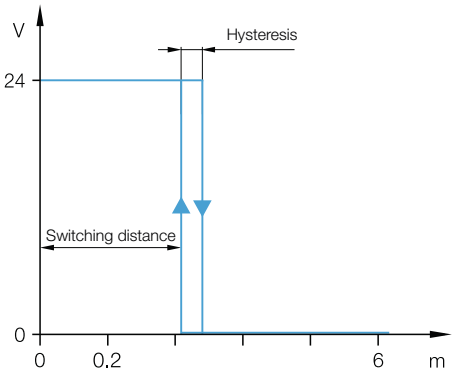


Analog output

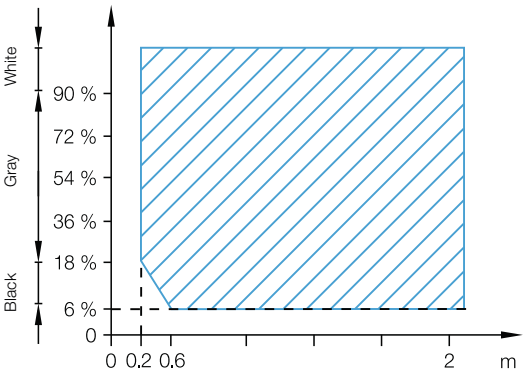




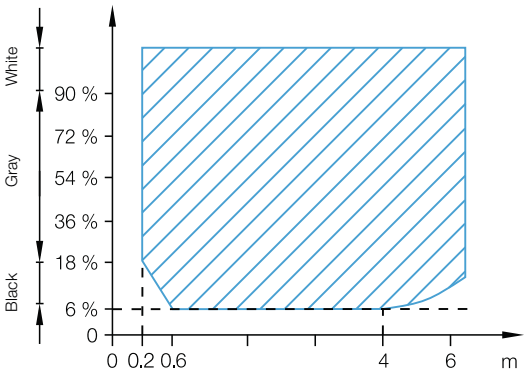
Switching output



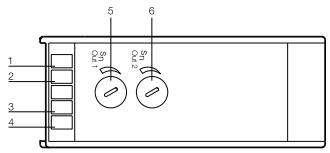
Measuring range BOD 63M-LA/LB02... depending on object reflection



Measuring range BOD 63M-LA/LB04... depending on object reflection

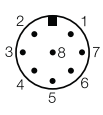


Indicators and operating elements



1 Supply voltage (green)
2 Switching output Out 1 (yellow)
3 Switching output Out 2 (yellow)
4 Stability indicator (red)
5 Potentiometer Out 1, 4 revolutions
6 Potentiometer Out 2, 4 revolutions

Connector diagram



Pin-assignment	Cable color	
1	White	Out 1
2	Brown	$+U_S$
3	Green	–Analog output
4	Yellow	Out 2
5	Gray	+Analog output
6	pink	Stability indicator
7	Blue	0 V
8	Red	Laser shut-off
Knurled nut	Braided shield	Shield

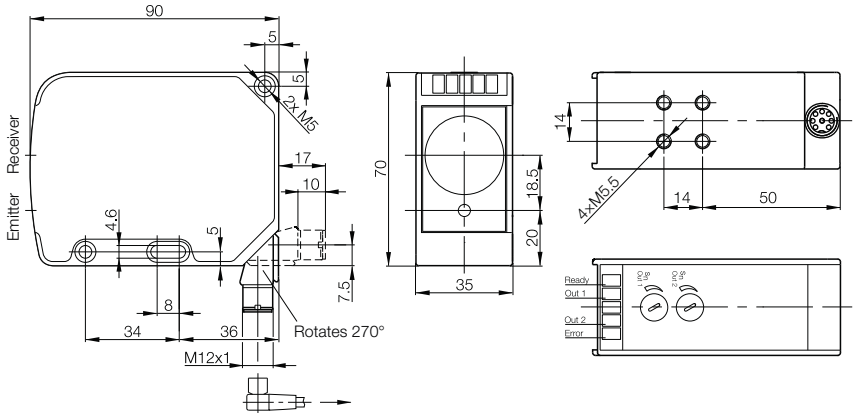




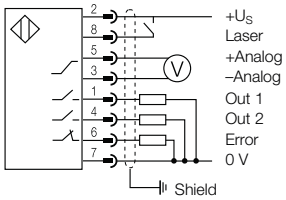
Series		**BOD 63M**	**BOD 63M**
Working range		**200...6000 mm**	**200...6000 mm**
Measuring range		**5800 mm**	**5800 mm**
2× PNP NO	**Ordering code**	**BOD000W**	**BOD0011**
	Part number	BOD 63M-LA04-S115	BOD 63M-LB04-S115
Supply voltage U_S		15...30 V DC	15...30 V DC
Analog output		**0...10 V**	**4...20 mA**
No-load supply current I_0 max.		≤ 75 mA	≤ 75 mA
Output current	Switching output	200 mA	200 mA
	Error output	200 mA	200 mA
Switching type		Light switching	Light switching
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 4 revolutions	Potentiometer, 4 revolutions
Emitter, light type		Laser, red light	Laser, red light
Wavelength		660 Nm	660 Nm
Laser class		2 per EN 60825	2 per EN 60825
Light spot diameter		10 mm at 6000 mm	10 mm at 6000 mm
Resolution		1 mm	1 mm
Gray value shift		≤ 1.5%	≤ 1.5%
Repeat accuracy per BWN		≤ ±4 mm	≤ ±4 mm
Temperature drift		≤ 1.5 mm/K	≤ 1.5 mm/K
Output curve deviation		≤ ±1 % of Wh	≤ ±1 % of Wh
Switching hysteresis		≤ 15 mm	≤ 15 mm
Power-on indicator		Green LED	Green LED
Switching output		2× yellow LED	2× yellow LED
Stability indicator		Red LED	Red LED
Stand-by delay		≤ 20 ms	≤ 20 ms
Response time		≤ 2 ms	≤ 2 ms
Switching frequency		250 Hz	250 Hz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Permissible ambient light		≤ 10 klx	≤ 10 klx
Material	Housing	Anodized aluminum	Anodized aluminum
	Optical surface	Glass	Glass
Connection		M12 connector, 8-pin	M12 connector, 8-pin

Measured values referenced to Kodak gray card 90% reflective.

Connector orientation



Wiring diagram



Distance measurements with high resolution are achieved using triangulation and modern CCD technology.
The **BOD 66M-R_01** with analog voltage- or current output and an additional switching output can measure or monitor distance and, at the same time, operate as a light sensor with background suppression for object detection.
The BOD 66M-R_01 uses red light over a measuring range of 100...600 mm at a resolution of 0.5 mm.

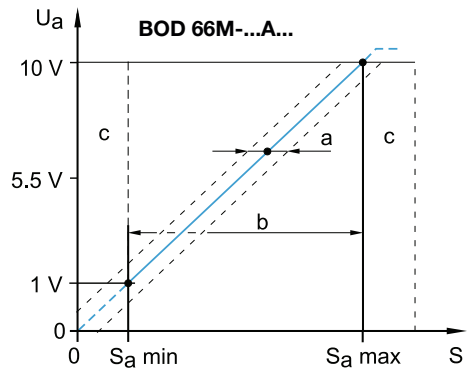
Features

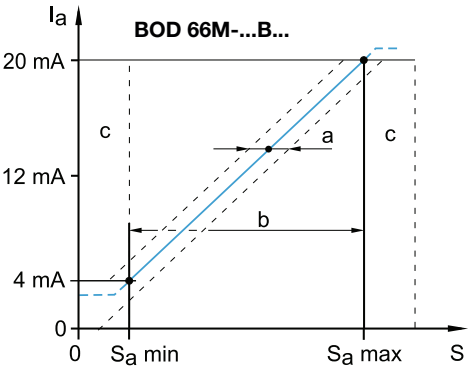
- Extremely color and ambient light insensitive
- Working range 100...600 mm
- Resolution 0.1...0.5 mm
- Analog output with voltage (1...10 V) or current (4...20 mA)
- Robust metal housing with display and keyboard
- Scratch-resistant glass optics
- Inverted characteristic
- Extensive configuration using OLED display and membrane keyboard

Applications

- Fill-level monitoring
- Positioning tasks
- Winding diameter detection
- Profile measurement
- Sag control

Analog output BOD 66M-R...



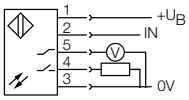


a = Linearity
b = Working range of analog output
c = Non-defined range

Connector diagram



Wiring diagram



Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00P9**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.



Suitable connectors:
(please order separately)

Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**
M12, 5-pin	Angled	PUR	Black	5 m	**BCC08FC**

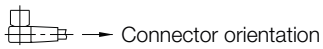
Connectors without LED are suitable for PNP and NPN sensors.

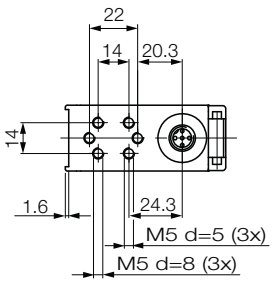
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**

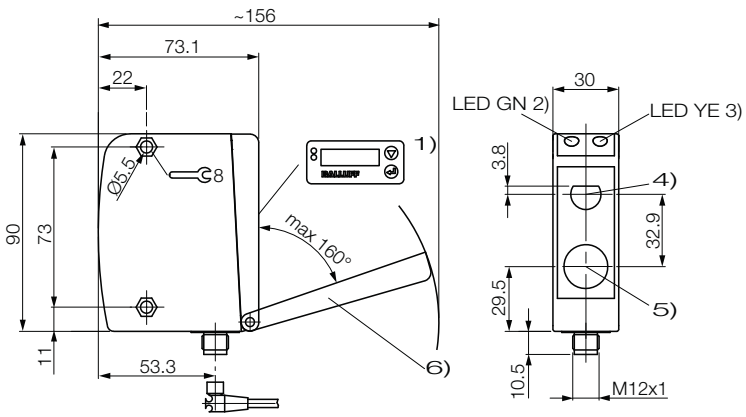




Series		**BOD 66M**	**BOD 66M**
Working range		**100...600 mm**	**100...600 mm**
Measuring range		**500 mm, adjustable**	**500 mm, adjustable**
PNP/NPN	**Ordering code**	**BOD001H**	**BOD001C**
NO/NC	Part number	BOD 66M-RA11-S92	BOD 66M-RB11-S92
Supply voltage U_S		18...30 V DC	18...30 V DC
Analog output		**1...10 V**	**4...20 mA**
No-load supply current I_0 max.		150 mA	150 mA
Switching type		NO/NC	NO/NC
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Display/keyboard	Display/keyboard
Emitter, light type		LED, red light	LED, red light
Wavelength		655 Nm	655 Nm
Laser class		2	2
Light spot diameter		Ø 15 mm at 600 nm	Ø 15 mm at 600 nm
Resolution		100...500 µm	100...500 µm
Reproducibility max.		±0.5% of Wh	±0.5% of Wh
Output curve deviation		±1.5% of W	±1.5% of W
Temperature drift		0.04 %/°K (% of W)	0.04 %/°K (% of W)
Power-on indicator		LED	LED
Output function indicator		LED	LED
Response time max.		15 ms	15 ms
Switching frequency		200...1000 Hz	200...1000 Hz
Degree of protection as per IEC 60529		IP 65	IP 65
Ambient temperature T_a		–20...+50 °C	–20...+50 °C
Permissible ambient light		5000 Lux	5000 Lux
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		Connector, M12×1-S92	Connector, M12×1-S92







BOD 66M-L Laser

The **BOD 66M-L_04** features an analog as well as an additional switching output.
It measures the object position across a range from 150...2000 mm. In addition, it allows the switching output (background suppression) to be configured in the same range using teach-in. Forward-looking laser- and CCD-technology ensure accuracy and reliability.

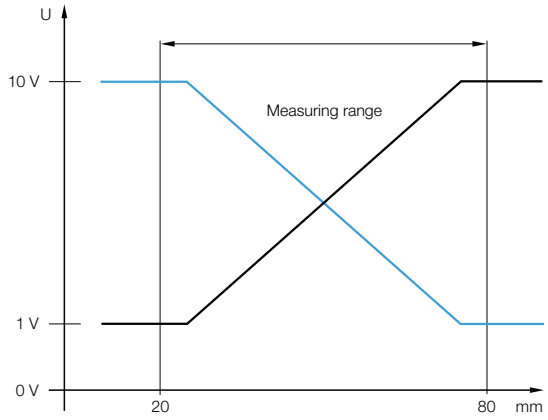
Laser class
The emitter meets Laser Protection Class 2 per EN 60825-1:2001-11. This means no additional safety measures are necessary.
Install the device so that the laser warning label is easily visible.

Features
- Expansion of the measuring ranges: 150...800 mm and 150...2000 mm
- Small light spot over the entire range
- Extremely color and ambient light insensitive
- Teachable analog and switching outputs
- Optimized resolution
- Configuration using display and membrane keyboard
- Rugged metal housing
- Optimized switching frequency distance, suitable for highly dynamic applications

Applications
- Background suppression up to 2 m
- Analog measuring at up to 2 m target distance
- Positioning tasks

Series	
Working range	
Measuring range	
PNP/NPN	**Ordering code**
NO/NC	Part number
Supply voltage U_S	
Analog output	
No-load supply current I_0 max.	
Switching type	
Polarity reversal/short-circuit protected	
Settings	
Emitter, light type	
Wavelength	
Laser class	
Light spot diameter	
Resolution	
Reproducibility max.	
Characteristic deviation max.	
Temperature drift	
Absolute measuring accuracy	
Power-on indicator	
Output function indicator	
Response time	
Switching frequency	
Degree of protection as per IEC 60529	
Ambient temperature T_a	
Permissible ambient light	
Material	Housing
	Optical surface
Connection	

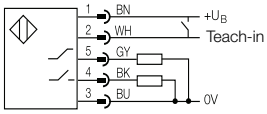
Analog output BOD 66M-L...



Connector diagram



Wiring diagram



Recommended accessories:
(please order separately)

Description	Ordering code
Mounting bracket	**BAM00P9**



Special accessories for photoelectric sensors, such as **reflectors, apertures, lenses, filters and deflection heads** can be found in our **Object Detection** catalog.

More mechanical accessories: You can find a large selection of mounting components of all types, such as clamping holders, mounting brackets and the Balluff mounting system BMS, in our **Accessories catalog**.

Suitable connectors:
(please order separately)



Size	Design	Cable material	Color	Length	Ordering code
M12, 5-pin	Straight	PUR	Black	5 m	**BCC098C**
M12, 5-pin	Angled	PUR	Black	5 m	**BCC08FC**

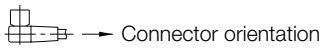
Connectors without LED are suitable for PNP and NPN sensors.

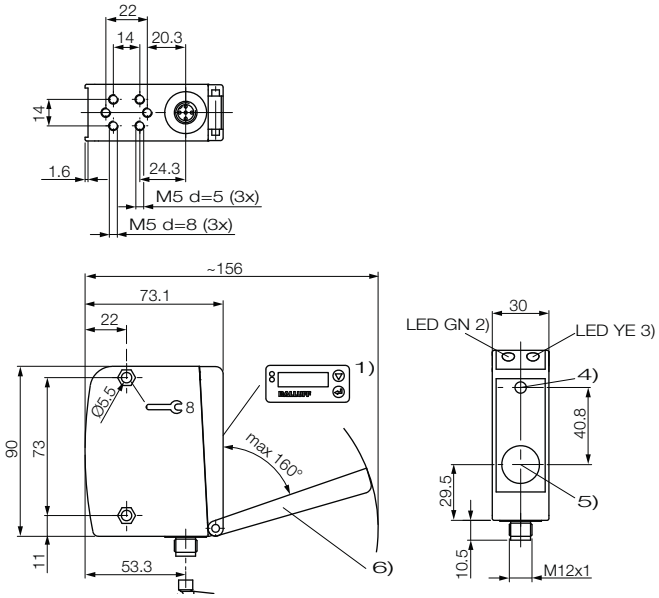
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity catalog.**






	BOD 66M	BOD 66M	BOD 66M	BOD 66M
	150...800 mm	**150...800 mm**	**150...2000 mm**	**150...2000 mm**
	650 mm, adjustable	**650 mm, adjustable**	**1850 mm, adjustable**	**1850 mm, adjustable**
	BOD001J	**BOD001K**	**BOD001E**	**BOD001F**
	BOD 66M-LA12-S92	BOD 66M-LB12-S92	BOD 66M-LA14-S92	BOD 66M-LB14-S92
	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC
	1...10 V	**4...20 mA**	**1...10 V**	**4...20 mA**
	150 mA	150 mA	150 mA	150 mA
	NO/NC	NO/NC	NO/NC	NO/NC
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	Display/keyboard	Display/keyboard	Display/keyboard	Display/keyboard
	Laser, red light	Laser, red light	Laser, red light	Laser, red light
	655 Nm	655 Nm	655 Nm	655 Nm
	2	2	2	2
	Ø 1 mm at 800 mm	Ø 1 mm at 800 mm	2 mm × 6 mm at 2000 mm	2 mm × 6 mm at 2000 mm
	100...800 µm	100...800 µm	1...3 mm	1...3 mm
	±0.5 % of Wh	±0.5 % of Wh	±0.5 % of Wh	±0.5 % of Wh
	±1.5 % of W	±1.5 % of W	±1.5 % of W	±1.5 % of W
	0.04 %/K (% of W)	0.04 %/K (% of W)	0.04 %/K (% of W)	0.04 %/K (% of W)
	±2% (at the measuring distance)	±2% (at the measuring distance)	±2% (at the measuring distance)	±2% (at the measuring distance)
	LED	LED	LED	LED
	LED	LED	LED	LED
	15 ms	15 ms	15 ms	15 ms
	200...1000 Hz	200...1000 Hz	200...1000 Hz	200...1000 Hz
	IP 65	IP 65	IP 65	IP 65
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C
	5000 Lux	5000 Lux	5000 Lux	5000 Lux
	GD-Zn	GD-Zn	GD-Zn	GD-Zn
	Glass	Glass	Glass	Glass
	Connector, M12×1-S92	Connector, M12×1-S92	Connector, M12×1-S92	Connector, M12×1-S92





Photoelectric Sensors

Accessories for photoelectric sensors

Complete optical accessories – from mounting brackets, reflectors, lenses and holding systems etc. for standard applications and applications under more difficult ambient conditions.



Contents

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Intermediate ring 387
Protective end caps 388
Deflection heads 390
Diagonal mirrors 391

Fasteners
Mounting brackets 392
Holder system 399
Clamps 400
Adapter plate 400
Cover bracket 400
Tools 401





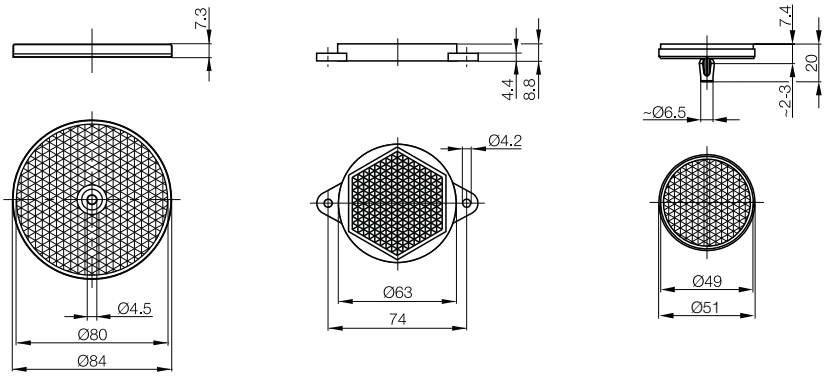
Basic information and definitions can be found on **page 934.**

Round reflectors



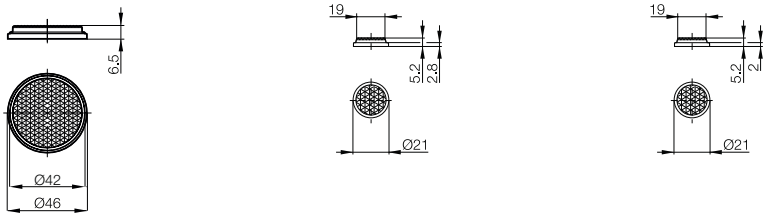


Size	Reflector Ø 84 mm	Reflector Ø 62 mm	Reflector Ø 51 mm
Fasteners	M4 screw	Two M4 screws	Rivet with mounting tabs
Ordering code	**BAM00UK**	**BAM0126**	**BAM00UP**
Part number	BOS R-1	BOS R-10	BOS R-14
Material	PMMA/ABS	PMMA/ABS	PC
Triple size	4 mm	4 mm	4 mm
Mounting accessories	BOS 21-AD-1		
Special features			More chemical resistant
Temperature range	–20…+60 °C	–20…+60 °C	0…+100 °C





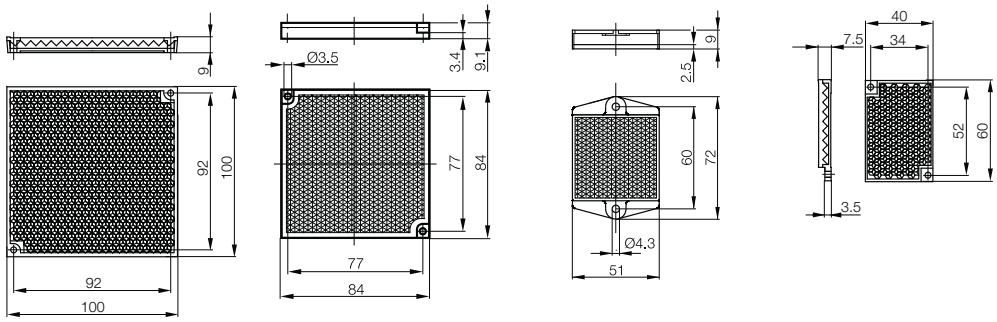
Size	Reflector Ø 46 mm	Reflector Ø 21 mm	Reflector Ø 21 mm
Fasteners	Glue	Glue	Glue
Ordering code	**BAM00UW**	**BAM00W4**	**BAM00UR**
Part number	BOS R-2	BOS R-3	BOS R-15
Material	PMMA/ABS	PMMA/ABS	PC
Triple size	2.5 mm	2 mm	2 mm
Special features			More chemical resistant
Temperature range	–20…+60 °C	–20…+60 °C	–20…+99 °C



Block-shaped reflectors

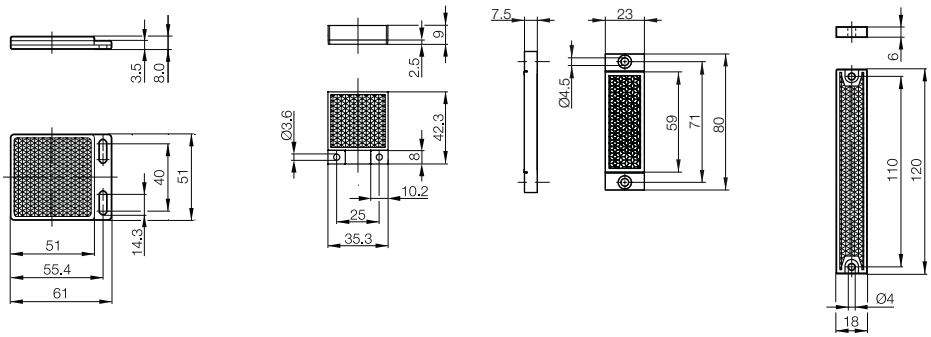


Size	Reflector 100×100 mm	Reflector 84×84 mm	Reflector 51×72 mm	Reflector 60×40 mm
Fasteners	Two M3 screws	Two M3 screws	Two M4 screws	Two M3 screws
Ordering code	**BAM01JN**	**BAM00UL**	**BAM00UZ**	**BAM01JP**
Part number	BOS R-47	BOS R-11	BOS R-25	BOS R-46
Material	PMMA/ABS	PMMA/ABS	PMMA	PMMA/ABS
Triple size	4 mm	4 mm	4 mm	4 mm
Temperature range	–20…+60 °C	–20…+60 °C	0…+50 °C	–20…+60 °C





Size	Reflector 51×61 mm	Reflector 35×42 mm	Reflector 23×80 mm	Reflector 18×120 mm
Fasteners	Two M4 screws	Two M3 screws	Two M4 screws	Two M4 screws
Ordering code	**BAM00WL**	**BAM00W0**	**BAM01LA**	**BAM00WA**
Part number	BOS R-9	BOS R-26	BOS R-48	BOS R-5
Material	PMMA/ABS	PMMA	PMMA/ABS	PMMA/ABS
Triple size	4 mm	4 mm	4 mm	4 mm
Mounting accessories		BOS 5-HW-5		
Temperature range	–20…+60 °C	0…+50 °C	–20…+60 °C	–20…+60 °C



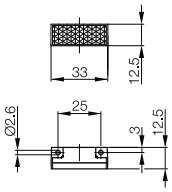
Block-shaped reflectors

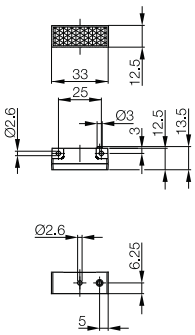


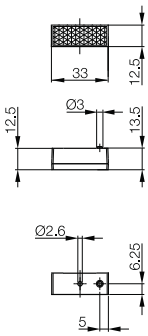




Size	**Reflector 33×12 mm**	**Reflector 33×12 mm**	**Reflector 33×12 mm**
Fasteners	Side screws	Rear and side screws	Rear screws
Ordering code	**BAM00W3**	**BAM00W1**	**BAM00W2**
Part number	BOS R-29	BOS R-27	BOS R-28
Material	PMMA	PMMA	PMMA
Triple size	2.3 mm	2.3 mm	2.3 mm
Mounting accessories	BOS 5-HW-1/2	BOS 5-HW-1/2	
Temperature range	0…+50 °C	0…+50 °C	0…+50 °C

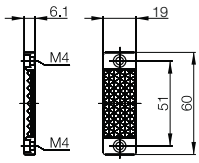


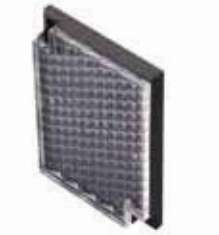






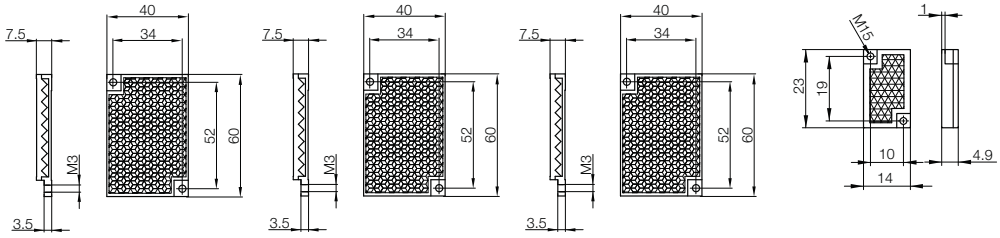
Size	**Reflector 18×60 mm**		
Fasteners	Two M4 screws		
Ordering code	**BAM00W7**		
Part number	BOS R-33		
Material	PMMA/ABS		
Triple size	4 mm		
Temperature range	–20…+60 °C		



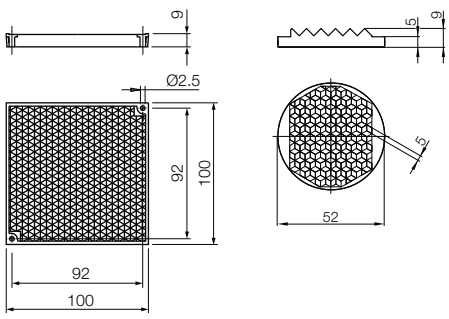


Size	Reflector 60×40 mm	Reflector 60×40 mm	Reflector 60×40 mm	Reflector 14×23 mm
Fasteners	Two M3 screws	Two M3 screws	Two M3 screws	Two M1.5 screws
Ordering code	**BAM00W8**	**BAM01CM**	**BAM01HE**	**BAM01NH**
Part number	BOS R-34	BOS R-36	BOS R-44	BOS R-49
Material	Hot thermoplastic	PMMA/ABS	Solidchem	Hot thermoplastic
Triple size	4 mm	4 mm	4 mm	0.9 mm
Special features	Heat-resistant	Anti-fogging	Chemical-resistant	Heat-resistant; For laser applications
Temperature range	–20…+150 °C	–20…+60 °C	–20…+140 °C	–20…+110 °C





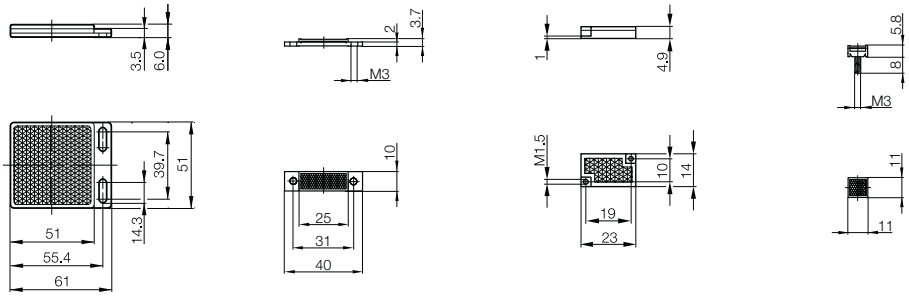

Size	Cubic corner 100×100 mm	Reflector Ø 52 mm		
Fasteners	Screw M3	Clamps		
Ordering code	**BAM01CN**	**BAM01H6**		
Part number	BOS R-37	BOS R-31		
Material	PC	Borosilicate		
Triple size	4 mm	4 mm		
Special features		Glass reflector		
Temperature range	–20…+100 °C	–20…+500 °C		



Reflectors for laser retroreflective light sensors



Size	Reflector 51×62 mm	Reflector 40×10 mm	Reflector 14×23 mm	Reflector 11×11 mm	
Fasteners	Two M4 screws	Two M3 screws	Two M1.5 screws	M3 screw	
Ordering code	**BAM00UY**	**BAM01H9**	**BAM00UM**	**BAM01H8**	
Part number	BOS R-22	BOS R-41	BOS R-12	BOS R-39	
Material	PMMA/ABS	PMMA/ABS	PMMA/ABS	PMMA/ABS	
Triple size	1.2 mm	1.2 mm	0.9 mm	0.9 mm	
Mounting accessories	BOS 5-HW-6				
Temperature range	–20…+60 °C	–20…+60 °C	–20…+60 °C	–20…+60 °C	

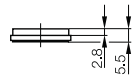


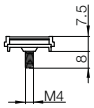


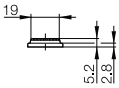


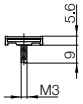


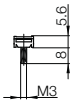
	Reflector Ø 25 mm	Reflector Ø 25 mm	Reflector Ø 21 mm	Reflector Ø 19 mm	Reflector Ø 10 mm
	Glue	M4 screw	Glue	M3 screw	M3 screw
	BAM00UN	**BAM01HC**	**BAM00UT**	**BAM01HA**	**BAM01H7**
	BOS R-13	BOS R-43	BOS R-16	BOS R-42	BOS R-38
	PMMA/ABS	PMMA/ABS	PMMA/ABS	PMMA/ABS	PMMA/ABS
	1.2 mm	1.2 mm	1.2 mm	0.9 mm	0.9 mm
	–20…+60 °C	–20…+60 °C	–20…+60 °C	–20…+60 °C	–20…+60 °C





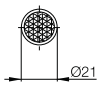










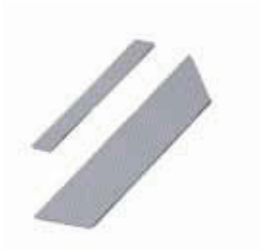




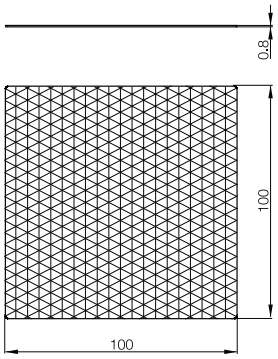


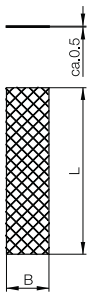
Reflective foils

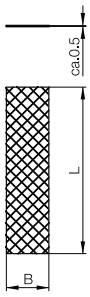




Description		Reflective foils (standard)	Reflective foils (standard)	Reflective foils (standard) (not for polarized light)	
Fasteners		Self-adhesive	Self-adhesive	Self-adhesive	
50 mm × 45 m	**Ordering code**			**BAM00WE**	
	Part number			BOS R-6-45	
50 mm × 22 m	**Ordering code**		**BAM00WH**		
	Part number		BOS R-7-22		
25 mm × 22 m	**Ordering code**		**BAM00WK**		
	Part number		BOS R-8-22		
50 mm × 25 cm	**Ordering code**		**BAM00WF**	**BAM00WC**	
	Part number		BOS R-7-0,25	BOS R-6-0,25	
25 mm × 25 cm	**Ordering code**		**BAM00WJ**		
	Part number		BOS R-8-0,25		
300 × 200 mm	**Ordering code**				
	Part number				
200 × 200 mm	**Ordering code**			**BAM00W9**	
	Part number			BOS R-35	
100 × 100 mm	**Ordering code**	**BAM01JM**			
	Part number	BOS R-50			
90 × 50 mm	**Ordering code**		**BAM00W6**		
	Part number		BOS R-32-0,40		
100 × 50 mm	**Ordering code**				
	Part number				
40 × 35 mm	**Ordering code**				
	Part number				
Material		PMMA	PMMA	PMMA	
Special features				Not for polarized light	
Temperature range		–20…+60 °C	–20…+60 °C	–20…+60 °C	



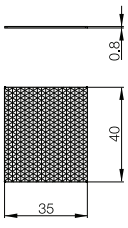


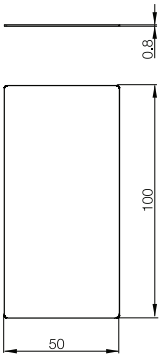


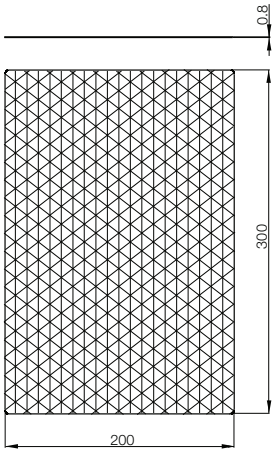




	Reflective tape	**Reflective tape**	**Reflective tape**
	Self-adhesive	Self-adhesive	Self-adhesive
			BAM01HF
			BOS R-45
		BAM01CF	
		BAM R-40	
	BAM00W5		
	BOS R-30 (standard)		
	PMMA	PMMA	PMMA
		Special for laser sensors	Standard and laser sensors for large surfaces
	–20…+60 °C	–20…+60 °C	–20…+60 °C







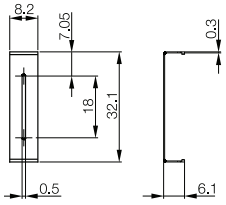
Slit apertures

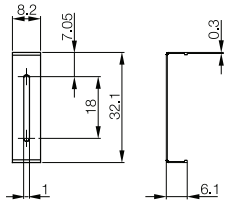


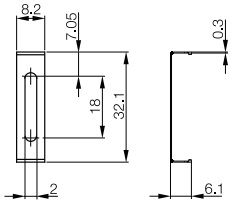


Description	Vertical slit aperture	Vertical slit aperture	Vertical slit aperture
Use	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors
Ordering code	**BAM00TU**	**BAM00TW**	**BAM00TY**
Part number	BOS 5-BL-1	BOS 5-BL-2	BOS 5-BL-3
Aperture size	0.5 mm, vertical	1 mm, vertical	2 mm, vertical
Range*	1.0 (2.5 m)	1.5 (3.5 m)	3.5 (6 m)
Min. object*	0.5 (7 mm)	1.0 (7 mm)	2.0 (7 mm)
Packaging unit	2 pcs.	2 pcs.	2 pcs.

*Values in brackets apply to slit apertures on one side



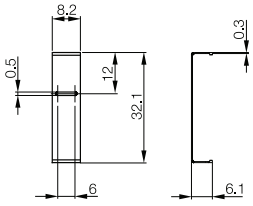


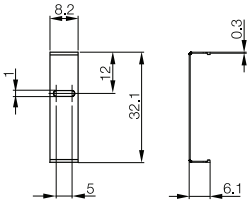


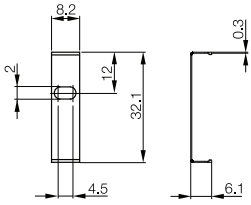




Description	Horizontal slit aperture	Horizontal slit aperture	Horizontal slit aperture
Use	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors
Ordering code	**BAM00TZ**	**BAM00U0**	**BAM00U1**
Part number	BOS 5-BL-4	BOS 5-BL-5	BOS 5-BL-6
Aperture size	0.5 mm horizontal	1 mm horizontal	2 mm horizontal
Range	0.7 (2 m)	1.5 (3 m)	3.0 (5.5 m)
Min. object	0.4 (7 mm)	0.7 (7 mm)	1.5 (7 mm)
Packaging unit	2 pcs.	2 pcs.	2 pcs.





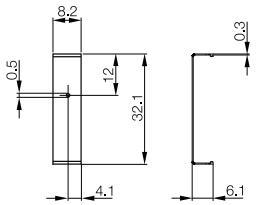


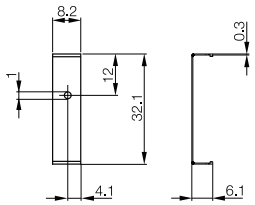
Aperture diaphragms, weld protection

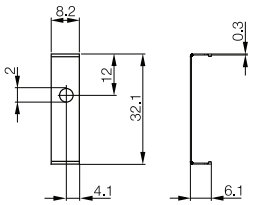




Description	Round aperture	Round aperture	Round aperture
Use	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors	For BOS 5K through-beam sensors
Ordering code	**BAM00U2**	**BAM00U3**	**BAM00U4**
Part number	BOS 5-BL-7	BOS 5-BL-8	BOS 5-BL-9
Aperture size	0.5 mm Ø	1 mm Ø	2 mm Ø
Range	0.08 (0.8 m)	0.3 (1.5 m)	1.2 (2.5 m)
Min. object	0.3 (5 mm)	0.6 (5 mm)	1.5 (7 mm)
Packaging unit	2 pcs.	2 pcs.	2 pcs.



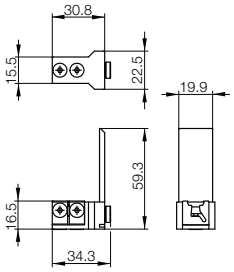


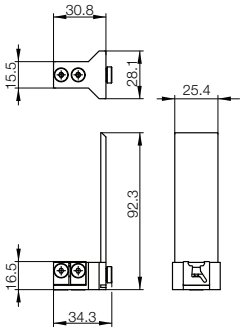



Sensor not included in the standard scope of delivery!


Sensor not included in the standard scope of delivery!

Description	Weld protection	Weld protection	
Use	For BOS 23K	For BOS 50K	
Ordering code	**BAM01L8**	**BAM01U6**	
Part number	BAM PC-XO-006-23K-1	BAM PC-XO-006-50K-1	





Spare glass panes for weld protection BAM01L8 and BAM01U6

Ordering code	**BAM01YL**	**BAM01YM**
Part number	BAM PC-XO-006-23K-G/RK	BAM PC-XO-006-50K-G/RK

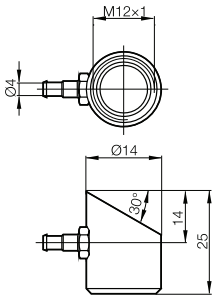
Air shield

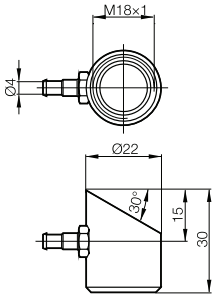




Description		**Air shield**	**Air shield**
Use		For BOS 12 and tube with 4 mm inner diameter	For BOS 18 and tube with 4 mm inner diameter
Focal length/focus			
Ordering code		**BAM00PY**	**BAM00R9**
Part number		BOS 12-LT-1	BOS 18-LT-1
Material	Lens	Glass	Glass
	Mount	Al	Al

The air shield with a compressed air source prevents premature contamination of the optics.







Description	**Air blow**
Type	For clamping cylinders
Use	For blowing clear sensors and reflectors (minimum pressure 8 bar)
Ordering code	**BAM0041**
Part number	BMS CZ-M-D12-I-001
Material	Anodized aluminum

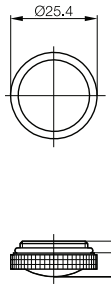
Lenses, intermediate ring

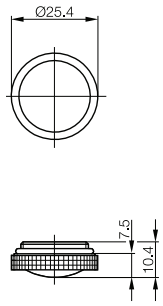


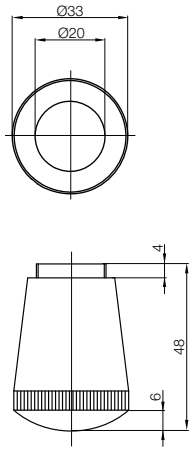


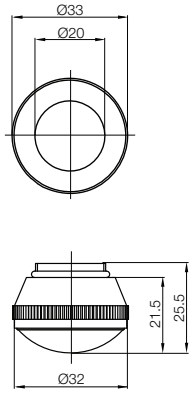


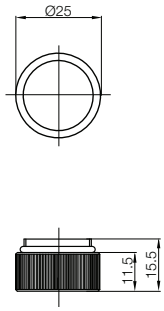
	Lens	Lens	Lens	Lens	Intermediate ring
	For BKT 67 for increasing the sensing range (light spot 2×7 mm)	For BKT 67 standard lenses (light spot 1.5×4 mm)	For BKT 67 for increasing the sensing range (light spot 2×8 mm)	For BKT 67 for increasing the sensing range (light spot 2.5×11 mm)	Intermediate ring with lens for increased resolution for BKT 67 in combination with M-PK-2. It is screwed in between the sensor and the 9 mm lens.
	18 mm	9 mm	28 mm	50 mm	
	BAM0120	**BAM0121**	**BAM0122**	**BAM00P3**	**BAM00P2**
	BKT M-PK-1	BKT M-PK-2	BKT M-PK-3	BKT M-PK-5	BKT M-PK-4
	Glass	Glass	Glass	Glass	Glass
	Al	Al	Al	Al	Al









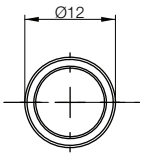


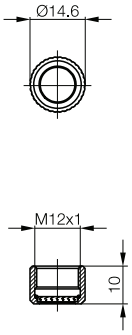
Protective nuts





Description		**M8 protective end cap**	**M12 protective end cap**
Use		For BOS 08	For BOS 12
Ordering code		**BAM01Y5**	**BAM01Y6**
Part number		BAM PC-X0-005-08M-4	BOS PC-XO-005-12M-4
Material	Mount	Stainless steel	Stainless steel
	Disk	Glass	Glass



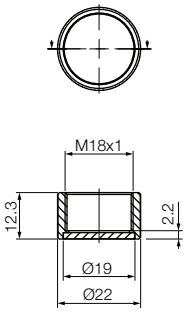


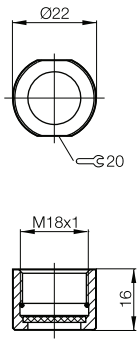
The protective end cap (cap nut) is made with tempered glass and can be used with all M12 photoelectric sensors.
The protective glass is used to protect the optics from mechanical or thermal damage, such as weld spatter.





	M18 protective end cap	Cover nut	
	For BOS 18 with flat front surface	For BOS 18	
	BAM01NC	**BAM00RL**	
	BAM PC-XO-005-18M-4	BOS 18-SM-1	
	Stainless steel	POM	
	Glass	Glass	





The protective cap can be used in combination with all BOS 18M and BOS 18K sensors. It protects the sensor optics from external effects, such as welding spatter.
For increased protection, the BOS 18-SM-2 is made of metal, providing even better protection for the sensor optics. The heat-protecting glass closes off flush with the front surface of the cover nut. This prevents dust deposits from forming, which can impact the range.
A ring between the sensor and protective glass makes sure the system is sealed.

The protective end cap is made with tempered glass and can be used with all M18 photoelectric sensors.
The protective glass is used to protect the optics from mechanical or thermal damage, such as weld spatter.

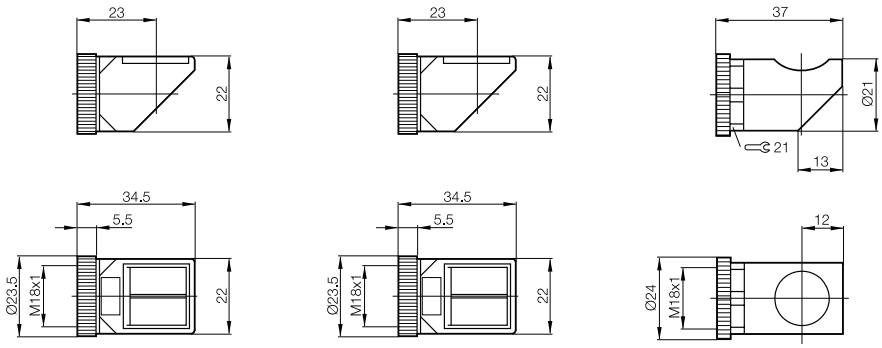
Deflection heads







Description	90° deflection head	90° deflection head	90° deflection head
Use	For diffuse, retroreflective and through-beam sensors BOS 18 (except laser)	For diffuse, retroreflective and through-beam sensors BOS 18 (except laser)	For diffuse, retroreflective and through-beam sensors BOS 18
Ordering code	**BAM00RP**	**BAM00RT**	**BAM00RR**
Part number	BOS 18-UK-1	BOS 18-UK-2	BOS 18-UK-10

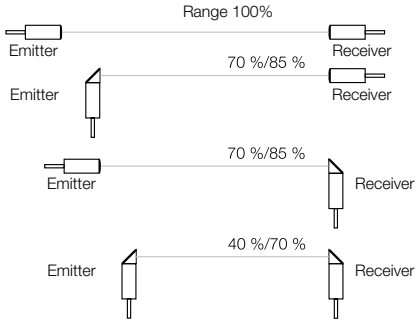


	BOS 18-UK-1	BOS 18-UK-2	BOS 18-UK-10
Diffuse sensor			
BOS 18…-XA-…100 mm	RF = 45 %		RF = 50 %
BOS 18…-XB-…200 mm	RF = 25 %		RF = 50 %
BOS 18…-PB-…200 mm	RF = 25 %		RF = 50 %
BOS 18…-XD-…400 mm		RF = 25 %	RF = 30 %
BOS 18…-PD-…400 mm		RF = 25 %	RF = 30 %
Retroreflective sensor			
BOS 18…-RB-…2 m		RF = 20 %	RF = 20 %
BOS 18…-RD-…4 m		RF = 20 %	RF = 20 %
Through-beam sensor			
BLE 18…-P-…16 m		RF = 15 %	RF = 30 %
BLS 18…-XX-…16 m		RF = 15 %	RF = 30 %

Deflection heads, suitable combinations

All BOS 18 photoelectric sensors can be equipped with a 90° deflection head.

The table shows the appropriate deflection head for each switch type and indicates the corresponding reduction factor (RF) to apply to the range. With a through-beam sensor, the emitter and the receiver can be equipped with a 90° deflection head. Each deflection head reduces the range by approx. 15% ... 50%.

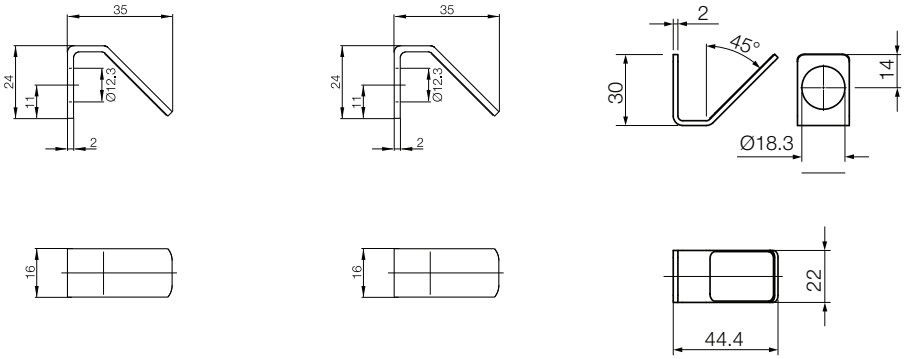








Diagonal mirror For diffuse and through-beam sensors BOS 12	**Diagonal mirror** For laser through-beam sensors BOS 12	**Deflector** For Series 18M For Series 18K	
BAM00R0	**BAM00R1**	**BAM00RU**	
BOS 12-WS-1	BOS 12-WS-2	BOS 18-WS-1	



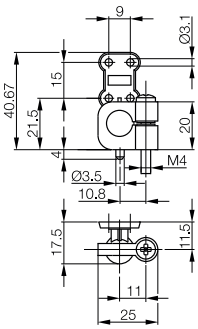
When using the angled mirror, the sensing range is reduced by 30% for the M12 diffuse and M12 through-beam sensors. Not suitable for retroreflective sensors.

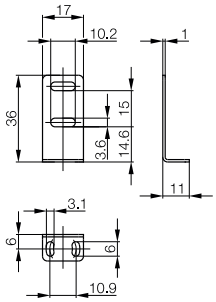
Mounting bracket
BOS 2, BOS 5

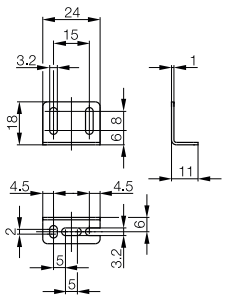




Description	Mounting bracket	Mounting bracket	Mounting bracket
Use	For BOS 2K	For BOS 2K	For BOS 2K
Ordering code	**BAM00T4**	**BAM00T6**	**BAM00T5**
Part number	BOS 2-HW-1	BOS 2-HW-2	BOS 2-HW-3



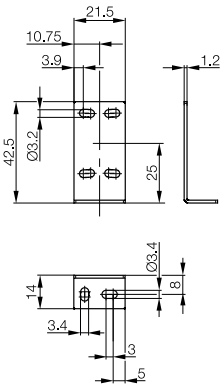


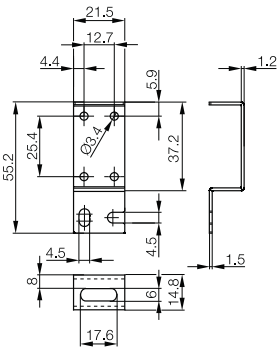


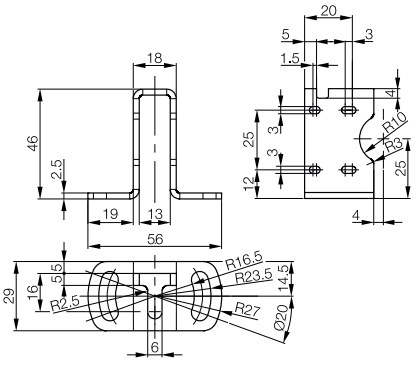




Description	Mounting bracket	Mounting bracket	Mounting bracket
Use	For BOS 5K	For BOS 5K	For BOS 5K
Ordering code	**BAM00U5**	**BAM00U6**	**BAM00U7**
Part number	BOS 5-HW-1	BOS 5-HW-2	BOS 5-HW-3





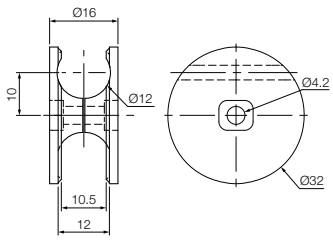


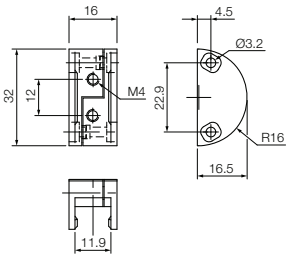
Mounting bracket
BOS 6, BOS 18

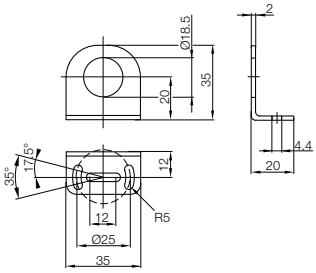




Description	Mounting brackets	Mounting brackets	Mounting bracket
Use	For Series 6K For M12 rods	for BOS 6K	For BOS 18
Ordering code	**BAM022C**	**BAM022A**	**BAM00RY**
Part number	BAM CS-M-D12-S6K-00	BAM MC-XO-030-6K-4	BOS 18,0-HW-1
Material	Stainless steel	Stainless steel	

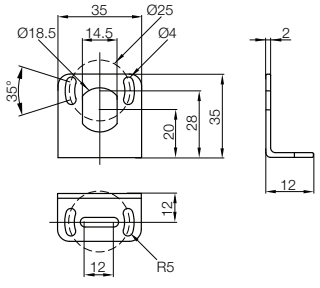


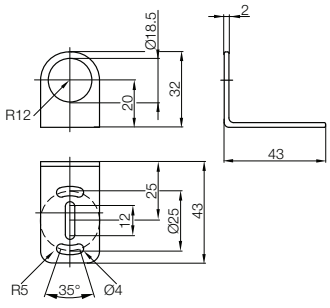







Description	Mounting bracket	Mounting bracket	
Use	For BOS 18K, BOS 18KW	For BOS 18	
Ordering code	**BAM00RZ**	**BAM00T0**	
Part number	BOS 18,0-HW-2	BOS 18,0-HW-3	





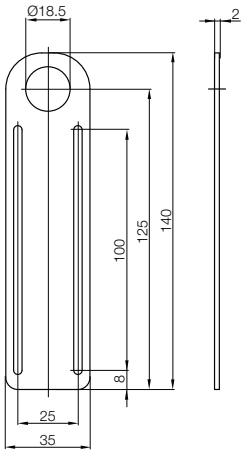
Mounting bracket
BOS 18, BOS 21

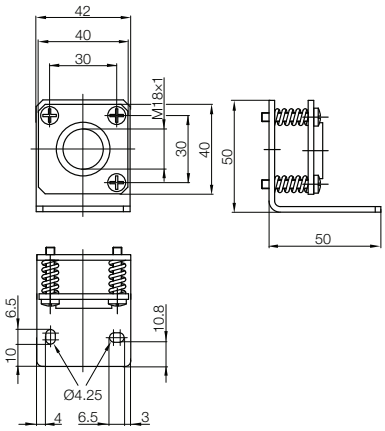


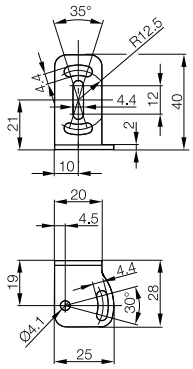




Description	Mounting bracket	Mounting bracket	Mounting bracket
Use	For BOS 18	For BOS 18 laser sensors	for BOS 21M
Ordering code	**BAM00T1**	**BAM00T2**	**BAM00TA**
Part number	BOS 18,0-HW-4	BOS 18,0-HW-6	BOS 21-HW-2





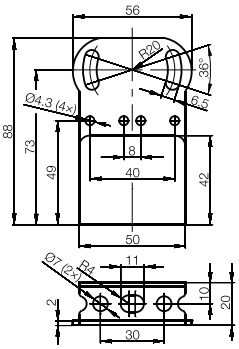


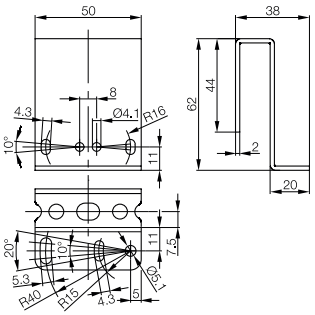


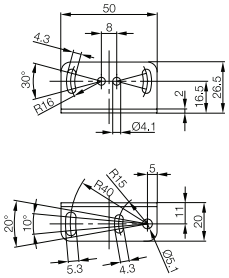




Description	Mounting bracket	Mounting bracket	Mounting bracket
Use	for BOS 21M	for BOS 21M	for BOS 21M
Ordering code	**BAM00TE**	**BAM00TC**	**BAM00T9**
Part number	BOS 21-HW-4	BOS 21-HW-3	BOS 21-HW-1
Material			Stainless steel





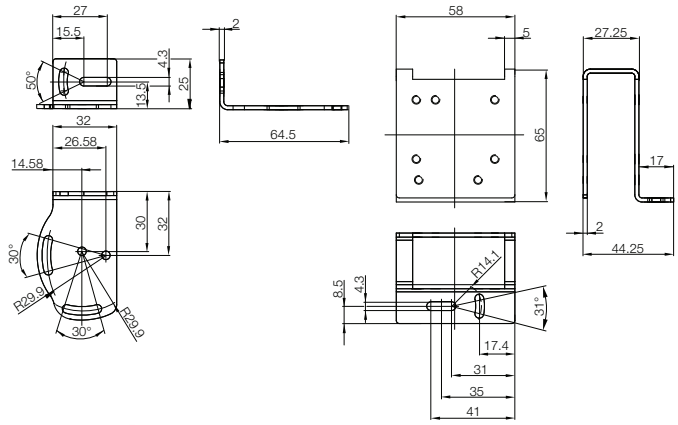


Mounting bracket
BOS 23, BOS 36, BOS 65, BOS 66, BOS 74



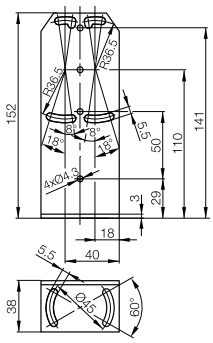


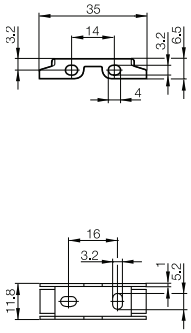
Description	**Mounting bracket**	**Mounting bracket**	
Use	For BOS 23	For BOS 23K	
Ordering code	**BAM01FM**	**BAM01FK**	
Part number	BAM MB-X0-007-B05-4	BAM MB-X0-006-B05-4	
Material	Stainless steel	Stainless steel	





Description	**Mounting bracket**	**Mounting bracket**
Use	For BOD 66M	For BOS 74K
Ordering code	**BAM00P9**	**BAM00UJ**
Part number	BOD 66-HW-1	BOS 74-HW-1
Material	Stainless steel	



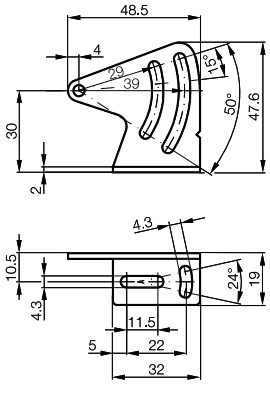


Mounting brackets
BOS Mix





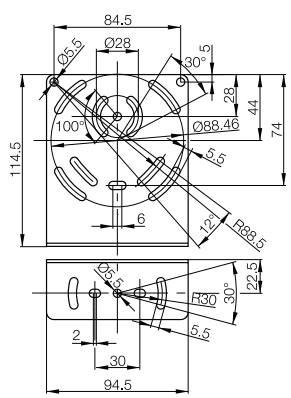
Description	Mounting bracket	Mounting brackets	Mounting brackets
Use	For BOS 26K, BOS 21M	For BOS 23K, BOS 26K, BOS R06	For BOS 26K, BOS 50K, BOS R06
Ordering code	**BAM00TK**	**BAM0225**	**BAM0226**
Part number	BOS 26-HW-1	BAM MB-XO-014-B10-4-RRR	BAM MB-XO-014-B10-4-BRR
Material		Stainless steel	Stainless steel







Description	Mounting bracket	Mounting bracket	Mounting bracket
Use	For BOS 63M, BOD 63M	For reflectors BOS R-9 and BOS R-22	For reflectors BOS R-10 and BOS R-25
Ordering code	**BAM00P6**	**BAM00UA**	**BAM00U8**
Part number	BOS 63-HW-1	BOS 5-HW-6	BOS 5-HW-4
Material	Stainless steel		

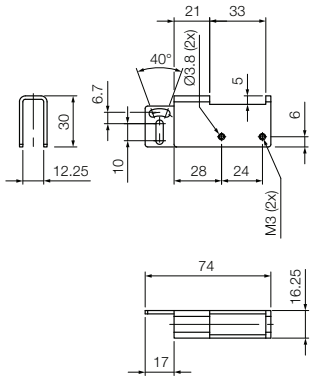








Description	**Mounting brackets**	**Mounting brackets**	**Mounting bracket**
Use	For BOS 23K, BOS 26K, BUS R06	For BOS 23K, BOS 26K, BUS R06	For BOS 6K and BOS 21M
Ordering code	**BAM0227**	**BAM0228**	**BAM00UH**
Part number	BAM MB-XO-014-B10-4-BLS	BAM MB-XO-014-B10-4-RLS	BOS 6-HW-1
Material	Stainless steel	Stainless steel	Stainless steel

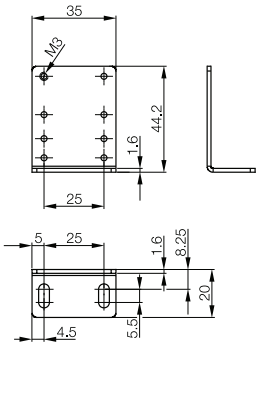






Stainless Steel

Description	**Mounting bracket**	**Mounting bracket**	
Use	For BOS 50K/23K	For BOS R-26 reflectors	
Ordering code	**BAM01E8**	**BAM00U9**	
Part number	BAM MB-X0-005-B04-4	BOS 5-HW-5	
Material	Stainless steel		



Sensor holder for Q08, mounting bracket

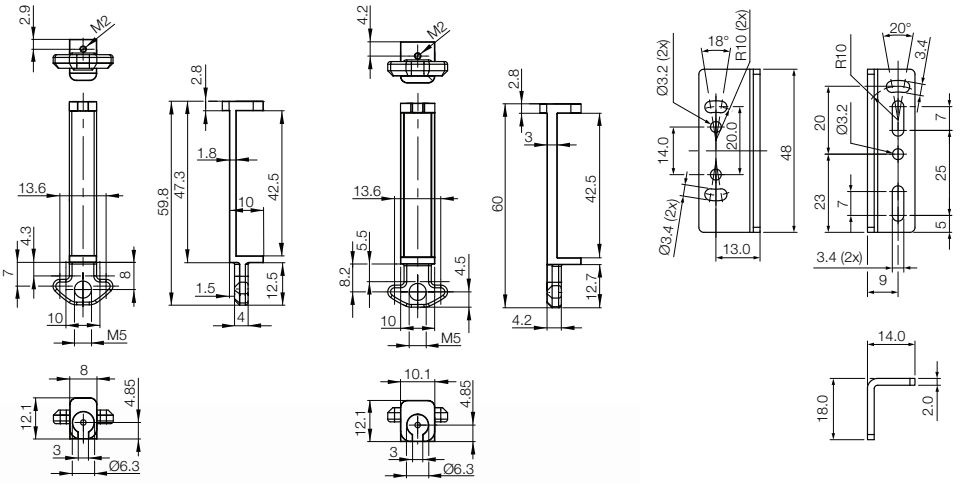






Description	8×8 mm sensor holder	8×8 mm sensor holder	Mounting brackets
Use	For sensors BOS and BES Q08 in ITEM profiles with 8 mm groove	For sensors BOS and BES Q08 in Bosch profiles with 10 mm groove	For BOS Q08M-…
Ordering code	**BAM00NJ**	**BAM01AU**	**BAM01YW**
Part number	BES Q08-KH-2	BES Q08-KH-3	BAM MB-XA-013-Q08-4
Material	CuBe 2	CuBe 2	Stainless steel

Sensor installation could hardly be easier.
Just lay the sensor in the holder and screw it in securely. Afterward, the sensor can be inserted directly from above into the profile groove – in whatever position you would like. The holder accepts all inductive and optical 8×8 cable sensors. These sensors are mainly used in handling and conveyor technology.



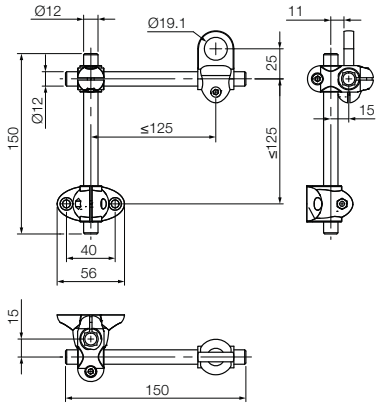




Your added bonus
A patented mounting concept ensures flush installation in aluminum profiles.



Description	**Starter set – plastic**	
Use	For flexible mounting; for all cylindrical sensors with M18 external thread. May be combined with other Balluff accessories.	
Ordering code	**SET011L**	
Part number	BAV BP-PH-00064-01	





The mounting rods are knurled full-length.
This prevents any position change.

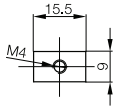
Clamps, adapter plate, cover bracket

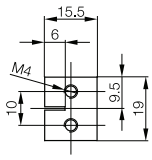


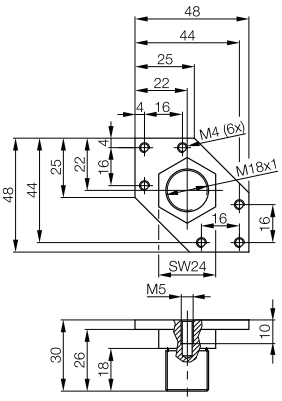


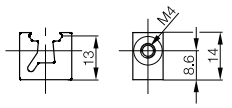


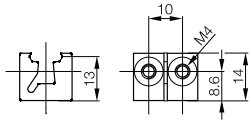
Description	Clamping holders	Clamping holders	Adapter plate
Use	Sensors with dovetail for BOS 21M	Sensors with dovetail for BOS 21M	For BOS 21M, BOS 25K, BOS 26K and BOS R-1
Ordering code	**BAM00TF**	**BAM00TH**	**BAM00T7**
Part number	BOS 21-KH-1	BOS 21-KH-2	BOS 21-AD-1





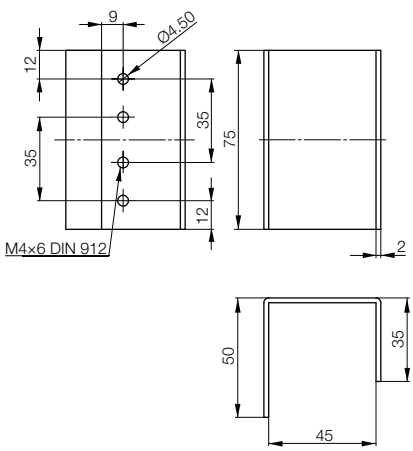






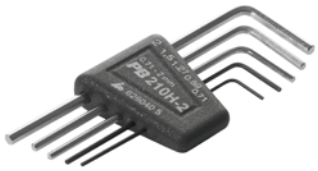


Description	Cover bracket
Type	For mounting with BAM003C sensor holder
Use	For Photoelectric Distance Sensors BOD 63M and 66M for covering and for mechanical protection
Ordering code	**BAM003Z**
Part number	BMS CZ-M-B-001
Material	Anodized aluminum









Description	**BMF hex key**	**Hex key set 0.7-2.0**
Type	Folding Allen key set, with additional blades, 8-piece	
Use	Tool set for all BMF sensors and BMF mounting brackets as well as for sensors having a potentiometer, e.g. BOS, BCS, BUS, etc.	Tool set for BMF sensors and BMF angle brackets
Material No.	**139868**	**123264**
Material	Blade: chrome vanadium steel, fully hardened, galvanically treated. Handle: ergonomic, fiberglass-reinforced housing, 55 mm long.	

		mm
0.7		
0.9		
1.3		
1.5		
2.0		
2.5		
		3.0
	PH00	

0.71
0.89
1.27
1.5
2.0

Application

Practical folding holder for Allen keys to prevent them from getting lost. Especially good for turning very small screws, for example, for tightening down or accurately adjusting sensors.

Sturdy housing with release button for easily selecting the right blade. Eyelet with matching carabiner hook. Self-service packaging for Euro hole display.