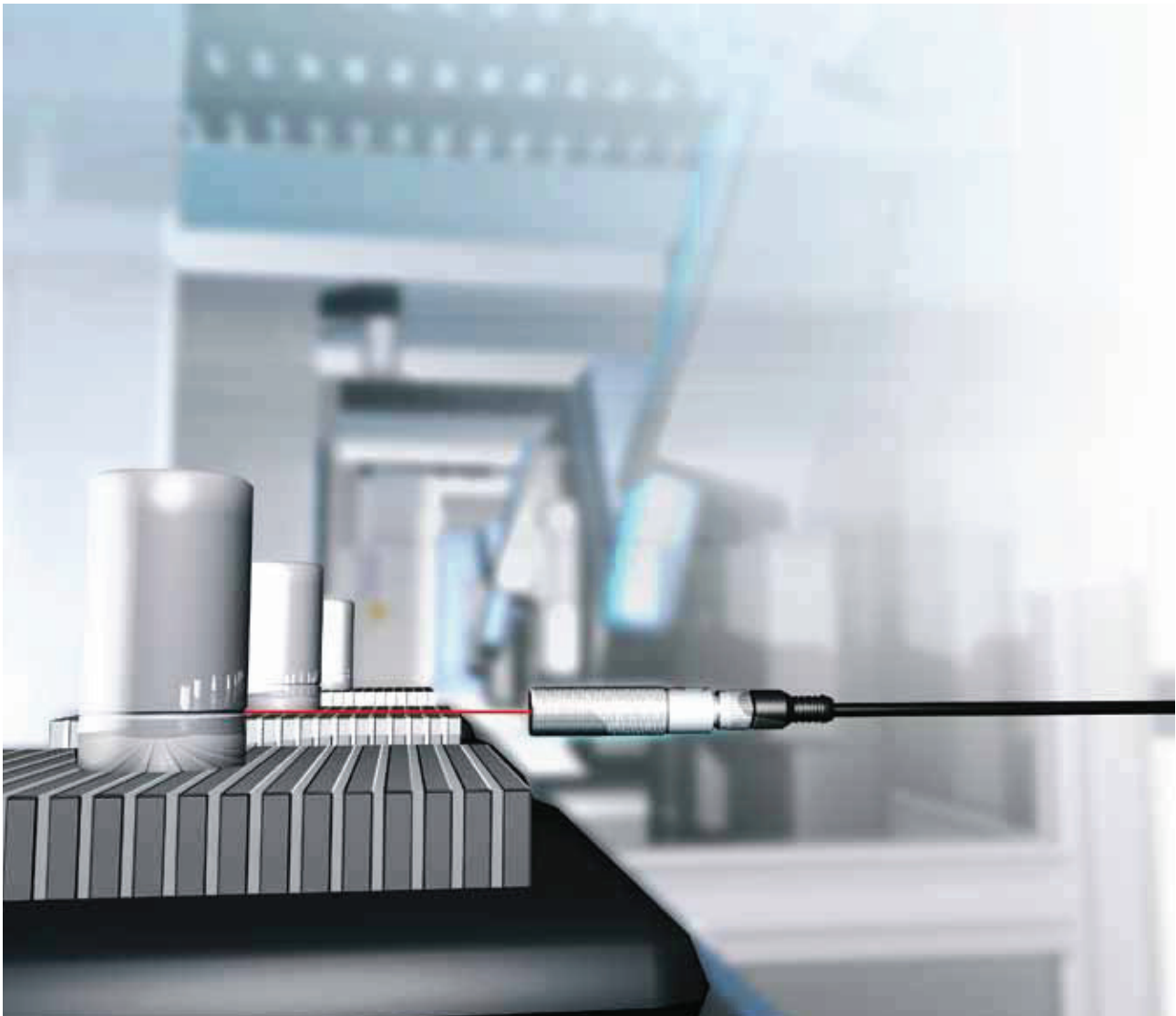


Small size – big performance

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.



Photoelectric Sensors

BOS 08M

Product overview



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

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Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors

Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

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Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

Type		Sensing distance/ Range	Material Housing		Light type		Out- put	Switching type		Switch- ing fre- quency	U _s	Connec- tion		Page
			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

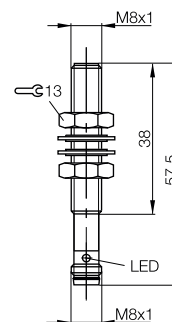
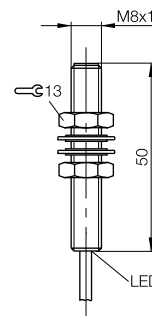
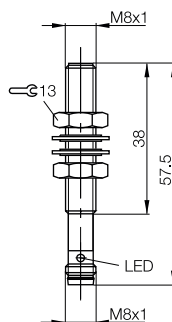
NPN on request



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 3x0.14 mm ²	M8 connector, 3-pin	

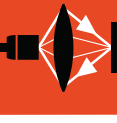
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-9

For wiring diagrams see page 41.



Photoelectric Sensors

BOS 08M



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

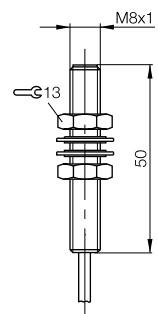
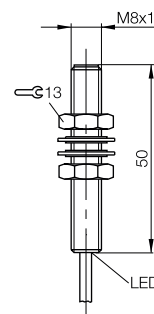
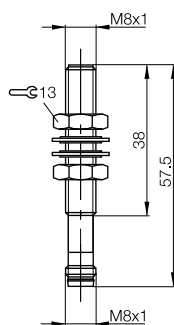
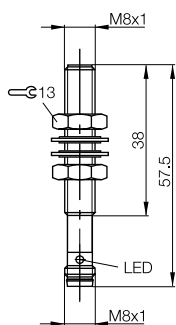
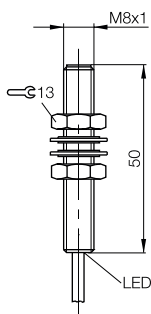
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

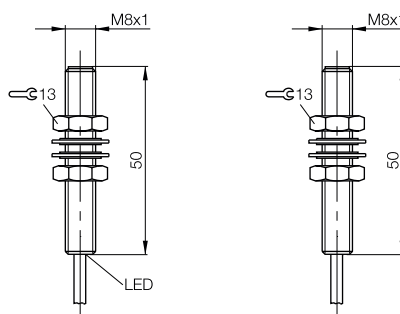


	Retroreflective sensor 25...550 mm	Through-beam sensor 0...1.1 m	Through-beam sensor 0...1.1 m	Through-beam sensor 0...1.1 m	Through-beam sensor 0...1.1 m
	BOS00RA BOS 08M-PS-PR11-02				
	BOS00R8 BOS 08M-PO-PR11-02				
		BOS00W9 BOS 08M-PS-RE11-S49		BOS018F BOS 08M-PS-RE11-02	
		BOS0153 BOS 08M-PO-RE11-S49		BOS018E BOS 08M-PO-RE11-02	
			BOS0151 BOS 08M-X-RS11-S49		BOS018H BOS 08M-X-RS11-02
	10...30 V DC 100 mA 20 mA	10...30 V DC 100 mA ≤ 15 mA	10...30 V DC 100 mA ≤ 15 mA	10...30 V DC 100 mA ≤ 15 mA	10...30 V DC 100 mA ≤ 15 mA
	Light or dark switching Yes/Yes Fixed	Light or dark switching Yes/Yes Fixed	Light or dark switching Yes/Yes Fixed	Light or dark switching Yes/Yes Fixed	Light or dark switching Yes/Yes Fixed
	LED, red light 640 Nm Yellow LED 1.25 ms 400 Hz	Yellow LED 1.25 ms 400 Hz	LED, red light 640 Nm	Yellow LED 1.25 ms 400 Hz	LED, red light 640 Nm
	IP 67 -10...+60 °C EN 60947-5-2	IP 67 -10...+60 °C EN 60947-5-2	IP 67 -10...+60 °C EN 60947-5-2	IP 67 -10...+60 °C EN 60947-5-2	IP 67 -10...+60 °C EN 60947-5-2
	Nickel-plated CuZn PMMA 2 m PUR cable, 3x0.14 mm²	Nickel-plated CuZn PMMA M8 connector, 3-pin	Nickel-plated CuZn PMMA M8 connector, 3-pin	Nickel-plated CuZn PMMA 2 m PUR cable, 3x0.14 mm²	Nickel-plated CuZn PMMA 2 m PUR cable, 2x0.14 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



Photoelectric Sensors

BOS 08M

Connection, accessories



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

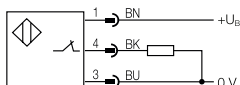
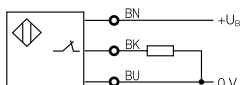
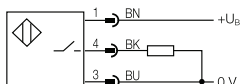
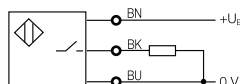
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

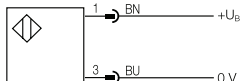
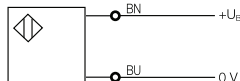
Accessories for
Photoelectric
Sensors

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.

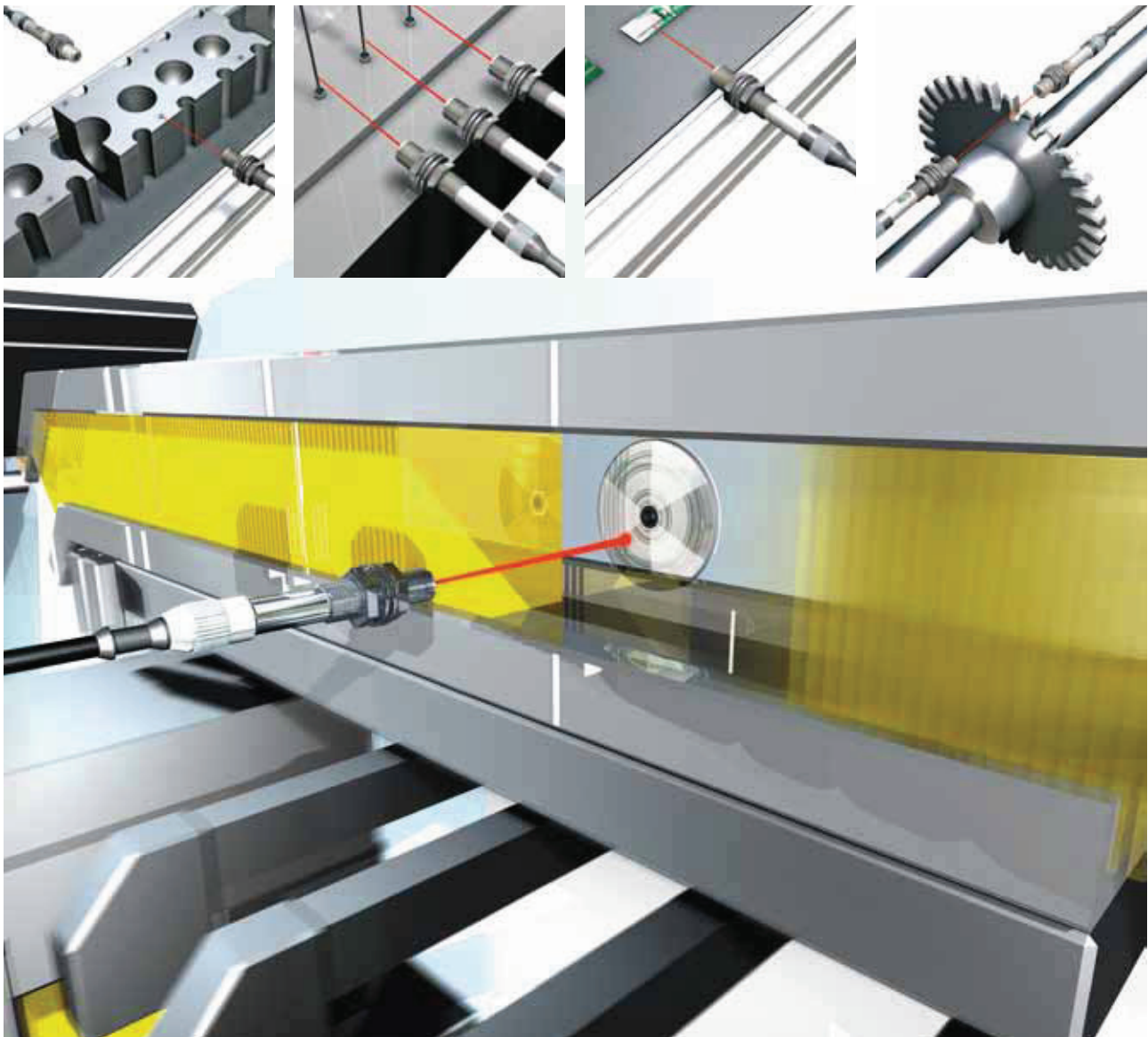
For long ranges or for detecting small parts, laser through-beam light sensors are available in two different designs.

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



Photoelectric Sensors

BOS 12M Global

Product overview



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 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
 Through-beam sensor Receiver 																
BOS00WF	BOS 12M-PA-LE10-S4									1 kHz						51
BOS00WE	BOS 12M-PA-LE10-03									1 kHz						51
 Through-beam sensor Emitter 																
BOS00WH	BOS 12M-X-LS11-S4	0...3 m														51
BOS00WL	BOS 12M-X-LS11-S4	0...3 m														51
BOS00WK	BOS 12M-X-LS11-03	0...3 m														51
BOS00WJ	BOS 12M-X-LS12-S4	0...30 m														51
BOS00WN	BOS 12M-X-LS12-S4	0...30 m														51
BOS00WM	BOS 12M-X-LS12-03	0...30 m														51

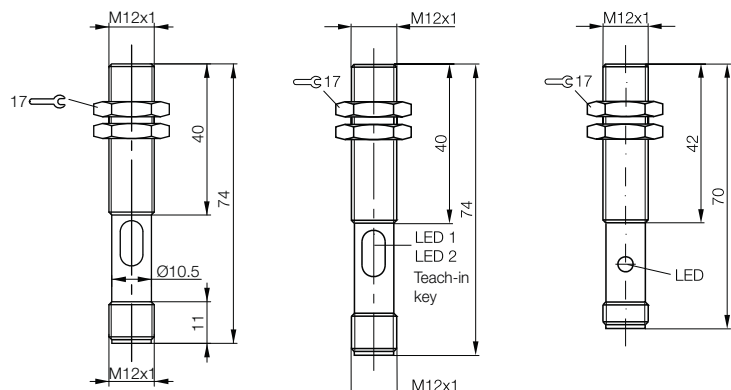
NPN on request



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

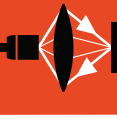
Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 49.



Photoelectric Sensors

BOS 12M Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

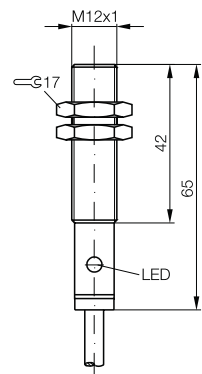
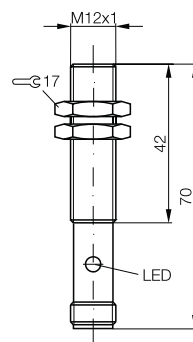
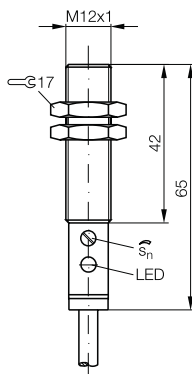
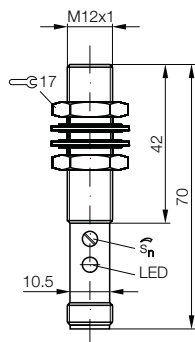
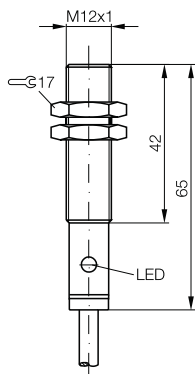
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



	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 BOS 12M-PS-1YA-B0-C-03	BOS000W BOS 12M-PS-1PB-S4-C	BOS000U BOS 12M-PS-1PB-B0-C-03	BOS0043 BOS 12M-PS-1YB-S4-C	BOS0013 BOS 12M-PS-1YB-B0-C-03
	BOS000N BOS 12M-PO-1YA-B0-C-03			BOS000T BOS 12M-PO-1YB-S4-C	BOS000R 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 660 Nm	LED, infrared light 880 Nm	LED, infrared light 880 Nm	LED, red light 660 Nm	LED, red light 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, 3x0.34 mm²	M12 connector, 4-pin	3 m PVC cable, 3x0.34 mm²	M12 connector, 4-pin	3 m PVC cable, 3x0.34 mm²

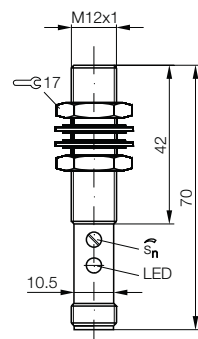
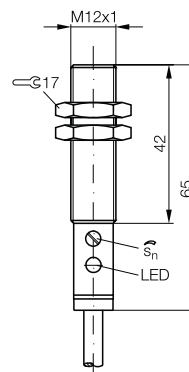
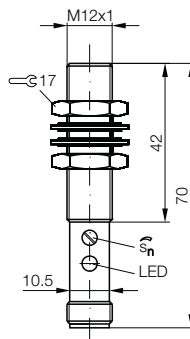




Type		Diffuse sensor 1...400 mm	Diffuse sensor 1...400 mm	Retroreflective sensor 0...1.5 m	
Detection range					
PNP NO	Ordering code	BOS0045	BOS000Y		
	Part number	BOS 12M-PS-1PD-S4-C	BOS 12M-PS-1PD-B0-C-03		
PNP NC	Ordering code	BOS0044	BOS000L		
	Part number	BOS 12M-PO-1PD-S4-C	BOS 12M-PO-1PD-B0-C-03		
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, 3x0.34 mm ²	M12 connector, 4-pin	

Reference object: white, 90% reflection, 200x200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 49.



Photoelectric Sensors

BOS 12M Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

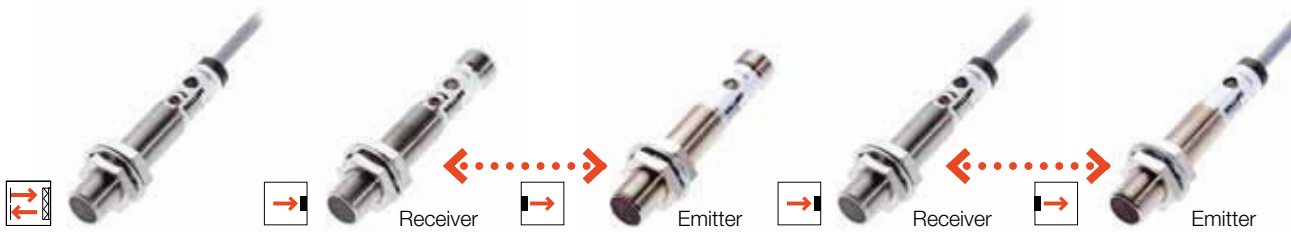
Angle Sensors

BWL

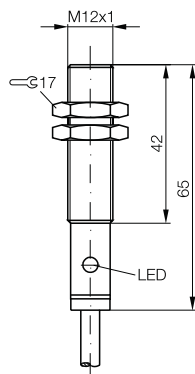
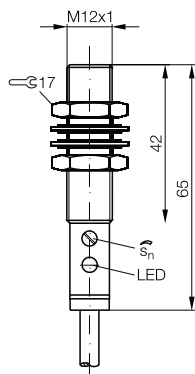
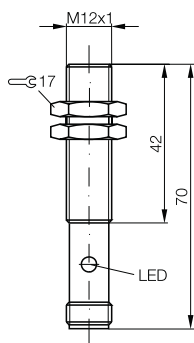
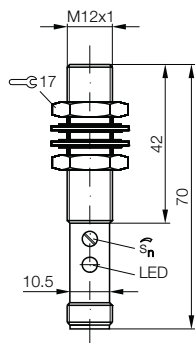
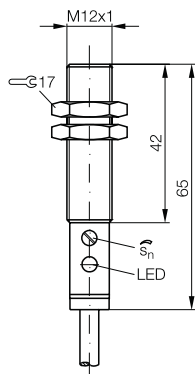
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

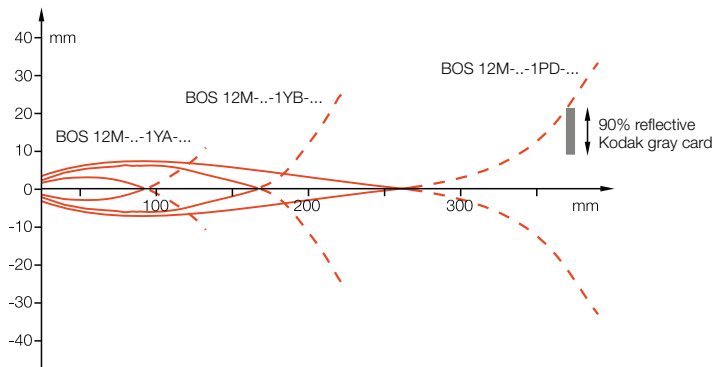
Accessories for Photoelectric Sensors



	Retroreflective sensor 0...1.5 m	Through-beam sensor 0...5 m	Through-beam sensor 0...5 m	Through-beam sensor 0...5 m	Through-beam sensor 0...5 m
	BOS00RK BOS 12M-PS-1QA-B0-C-03				
	BOS00RH BOS 12M-PO-1QA-B0-C-03				
		BOS00UE BLE 12M-PA-1PD-S4-C		BOS00UC BLE 12M-PA-1PD-B0-C-03	
			BOS00W2 BLS 12M-XX-1RD-S4-L		BOS00UW 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	≤ 200 mA	≤ 200 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	Light or dark switching	Light and dark switching	Yes/Yes	Light and dark switching	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, 4-pin	M12 connector, 4-pin	3 m PVC cable, 3×0.34 mm ²	3 m PVC cable, 3×0.34 mm ²
	3×0.34 mm ²				

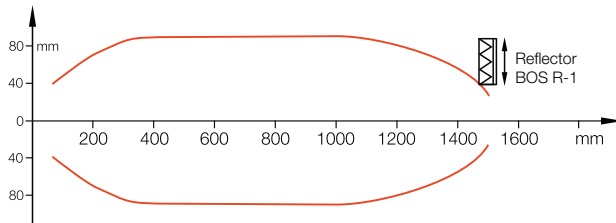


Diffuse sensor BOS 12M-...-1YA/1YB/1PD-...



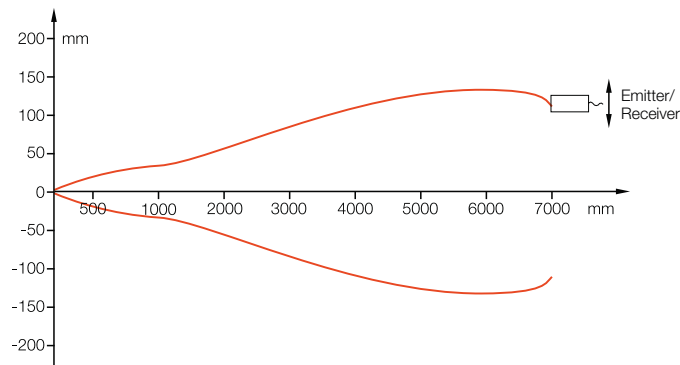
Sensing distance measured with side approach of Kodak gray card.

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.

Photoelectric Sensors

BOS 12M Global

Accessories, Connection

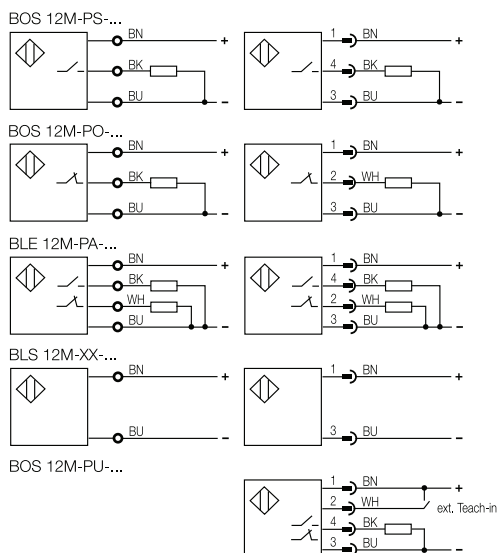
Orientation aid

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.

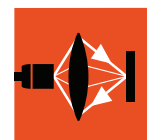
Suitable connectors (please order separately)

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.



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

Photoelectric Sensors

BOS 12M

Connection

M12 Metal Laser

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.

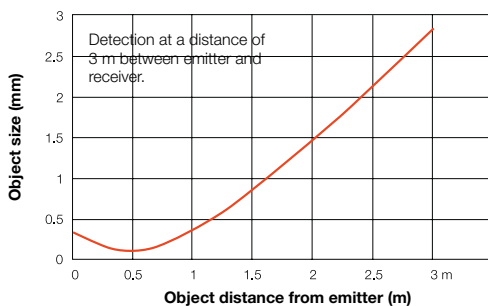
The **LS12** version is not focused and is used for long ranges up to 30 m. The receivers can be PNP or NPN, and any emitter can be combined with any receiver.

All sensors are Laser Class 1 and are available with a connector or cable.

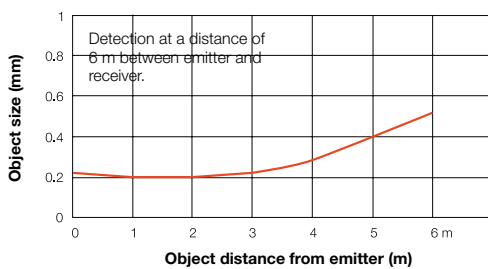


Small parts detection

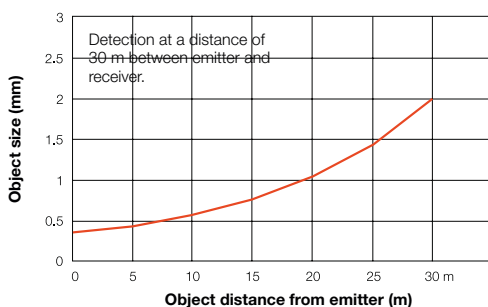
BOS 12M-XT-**LS11**-..



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

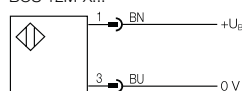


BOS 12M-XT-**LS12**-..

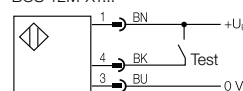


Wiring diagrams

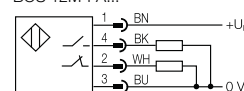
Emitter
BOS 12M-X-..



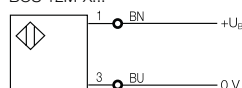
Emitter
BOS 12M-XT-..



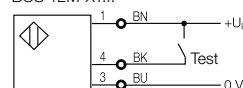
Receiver
BOS 12M-PA-..



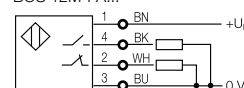
Emitter
BOS 12M-X-..



Emitter
BOS 12M-XT-..



Receiver
BOS 12M-PA-..





Photoelectric Sensors

BOS 12M



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

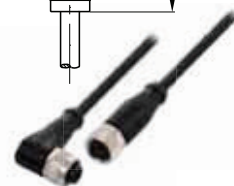
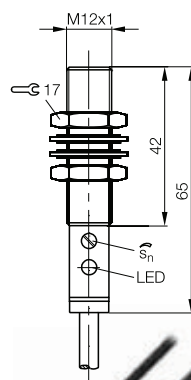
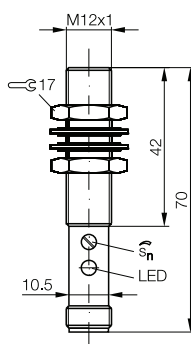
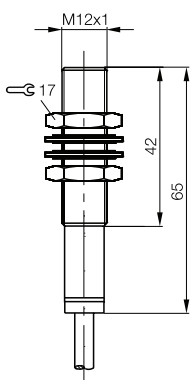
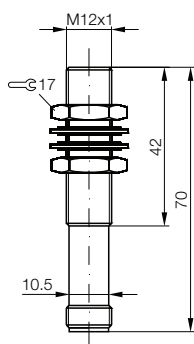
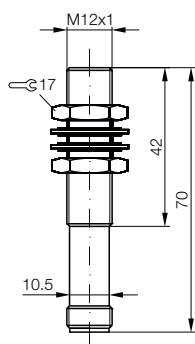
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



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
≤ 10 mA	≤ 10 mA	≤ 10 mA	≤ 200 mA ≤ 15 mA	≤ 200 mA ≤ 15 mA
Yes/Yes	Yes/Yes	Yes/Yes	Light/dark switching (complementary) Yes/Yes Potentiometer, 270°	Light/dark switching (complementary) Yes/Yes Potentiometer, 270°
Laser, red light 655 Nm 1	Test input Laser, red light 655 Nm 1	Test input Laser, red light 655 Nm 1		
			Yellow LED 0.5 ms 1 kHz	Yellow LED 0.5 ms 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, 3x0.34 mm ²	M12 connector, 4-pin	3 m PVC cable, 4x0.34 mm ²



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

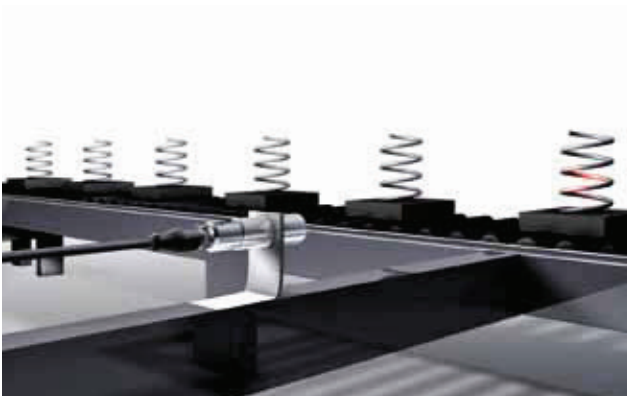


Precise switching behavior – excellent repeat accuracy

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



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 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

Type		Sensing distance/ Range	Light exit		Light type		Output		Switching type		Switching frequency	U _s	Con- nection		Special features					Page
			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	
 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

Photoelectric Sensors

BOS 18M

Product overview



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors

Sensors for Analog

Distance Measurement

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

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Accessories for Photoelectric Sensors

Type		Sensing distance/Range	Light exit	Light type	Output	Switching type	Switching frequency	U _s	Con-nection	Special features	Page
			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

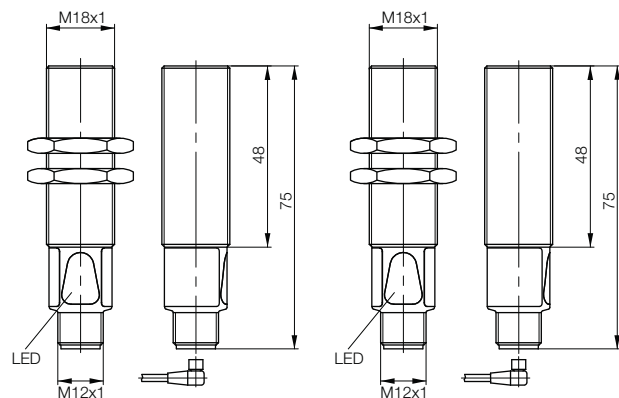
NPN on request



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	

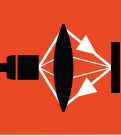
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 61.



Photoelectric Sensors

BOS 18M Global



Photoelectric
Sensors

Photoelectric
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Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

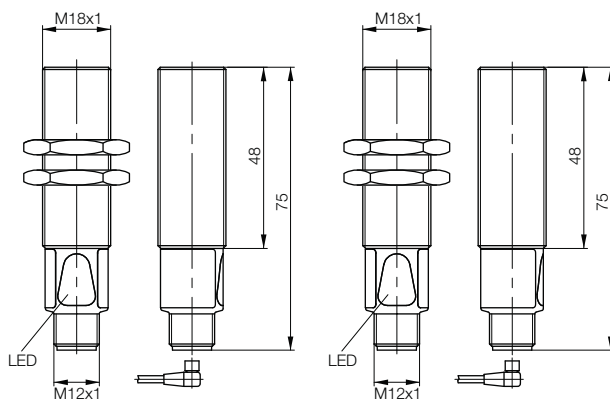
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



	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		





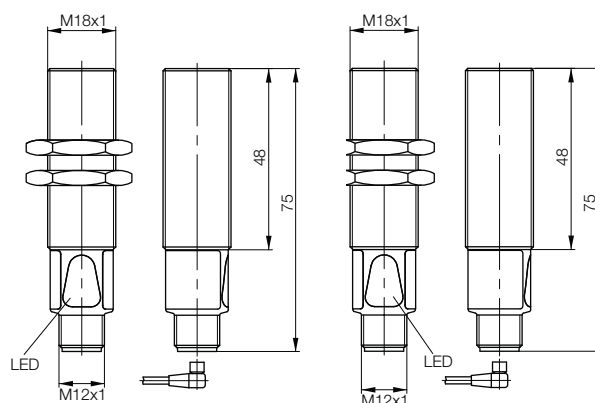
Receiver



Emitter

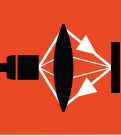
Type			Through-beam sensor	Through-beam sensor	
Detection range			0...20 m	0...20 m	
PNP NO	Receiver	Ordering code	BOS01FE		
		Part number	BOS 18M-PS-RE23-S4		
PNP NC	Receiver	Ordering code	BOS01FF		
		Part number	BOS 18M-PO-RE23-S4		
Emitter		Ordering code		BOS01FH	
		Part number		BOS 18M-X-RS23-S4	
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.



Photoelectric Sensors

BOS 18M Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

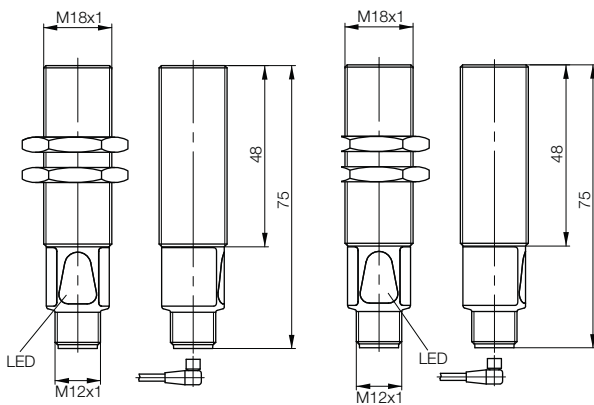
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

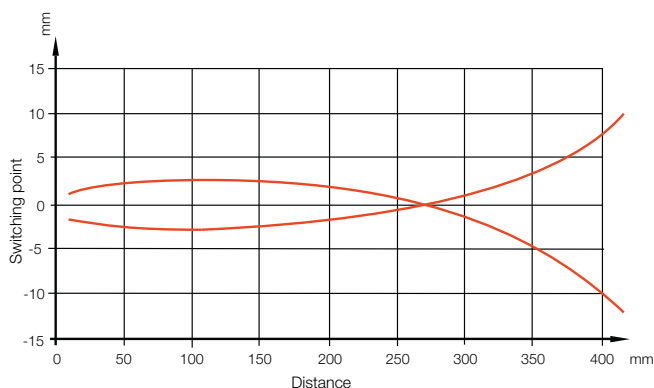
Accessories for Photoelectric Sensors



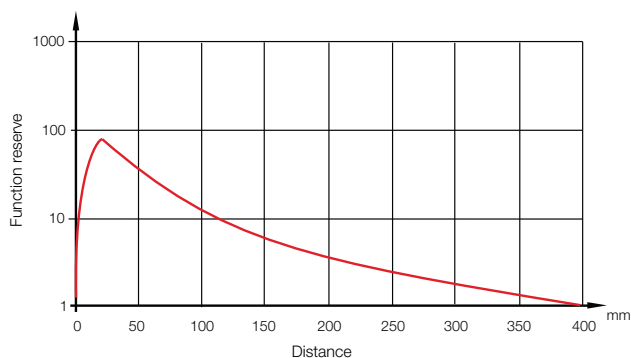
Through-beam sensor 0...50 m	Through-beam sensor 0...50 m		
BOS01HP			
BOS 18M-PS-IE23-S4			
	BOS01HM		
	BOS 18M-X-IS23-S4		
10...30 V DC	10...30 V DC		
100 mA			
≤ 30 mA	≤ 20 mA		
Dark switching			
Yes/Yes	Yes/Yes		
Fixed	Fixed		
LED, infrared	LED, infrared		
850 Nm	850 Nm		
Yellow LED	Green LED		
1.25 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		



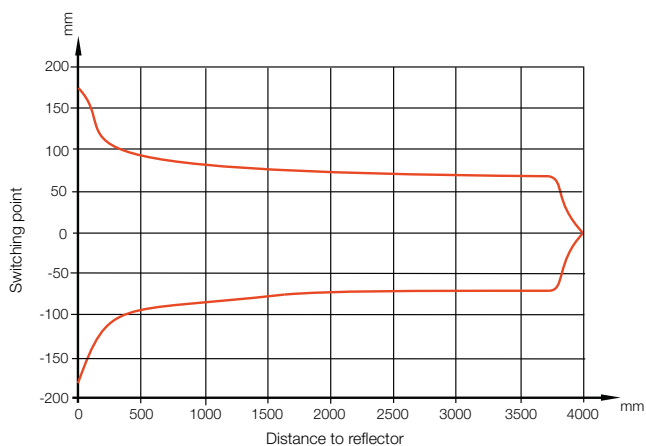
Diffuse sensor BOS 18M...RD23
 response curve



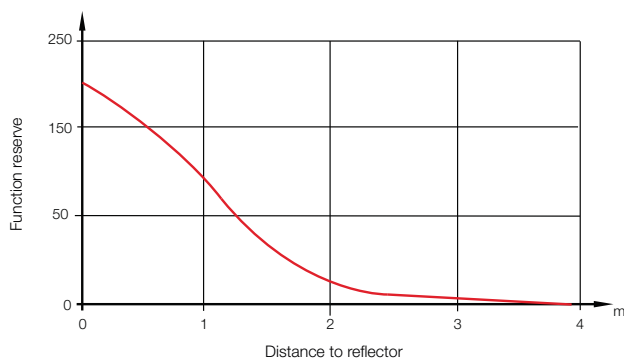
Diffuse sensor BOS 18M...RD23
 function reserve



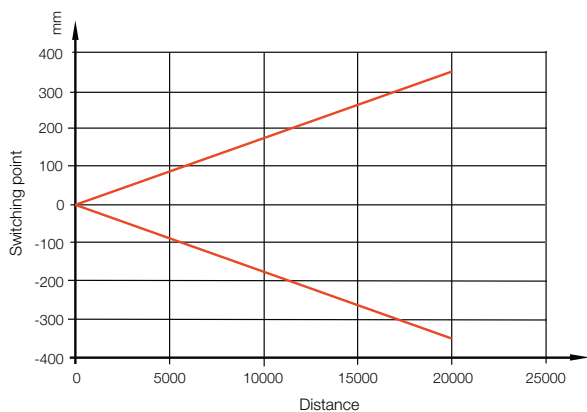
Retroreflective sensor BOS 18M...PR23
 response curve



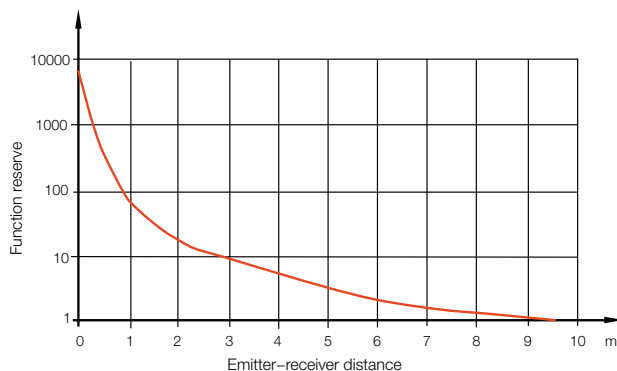
Retroreflective sensor BOS 18M...PR23
 Function reserve



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



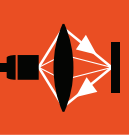
Through-beam sensor BOS 18M...RE/RS23
 Function reserve



Photoelectric Sensors

BOS 18M Global

Connection, accessories



Photoelectric
Sensors

Photoelectric
Sensors

**Cylinder
Designs**

Block Designs

Fork Sensors
BGL

Angle Sensors
BWL

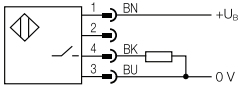
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

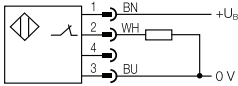
Accessories for
Photoelectric
Sensors

Wiring diagrams

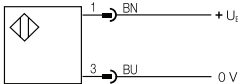
BOS 18M-PS...



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



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



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.

Connectors without LED are suitable for PNP and NPN sensors.

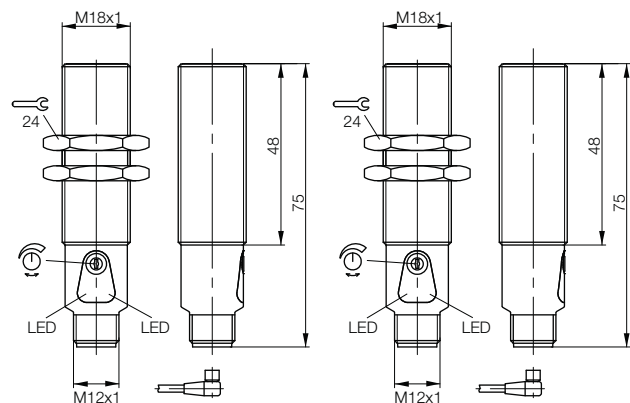
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.



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			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	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.



Photoelectric Sensors

BOS 18M red light



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

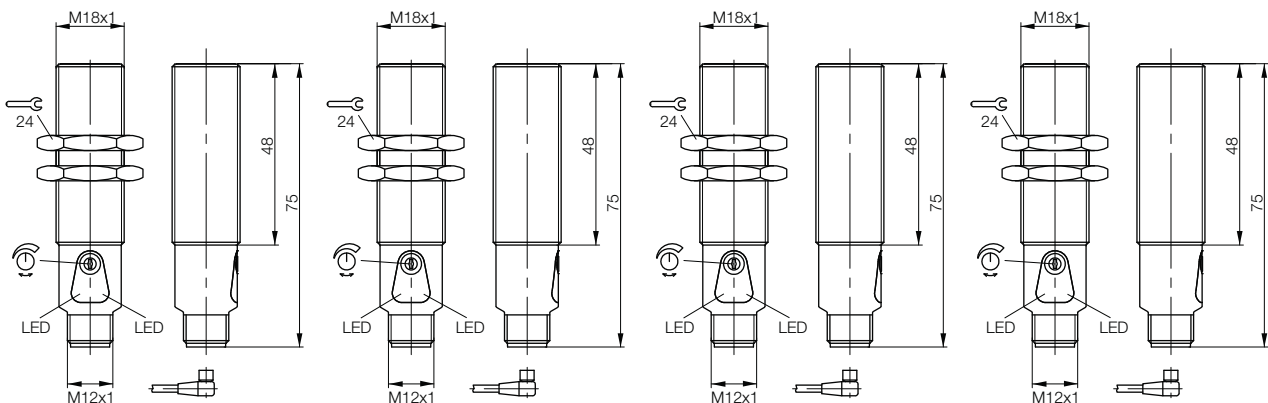
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Diffuse sensor with background suppression 30...300 mm	Diffuse sensor with background suppression 30...300 mm	Diffuse sensor with background suppression 30...300 mm	Diffuse sensor with background suppression 30...300 mm
BOS014W BOS 18M-PA-RH22-S4	BOS019P BOS 18M-PS-RH22-S4	BOS019N BOS 18M-PSV-RH22-S4	BOS019R BOS 18M-POV-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

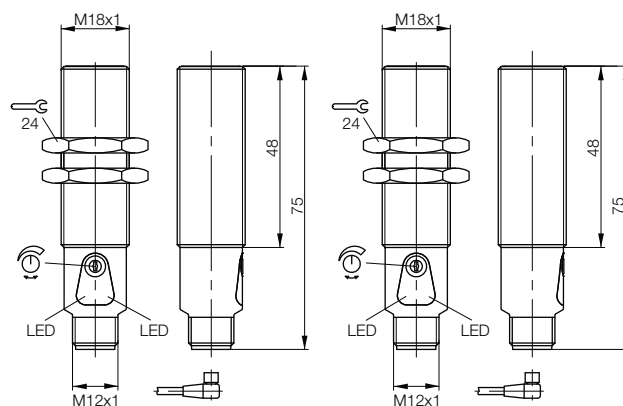




Type			Diffuse sensor	Diffuse sensor
Detection range			1...300 mm	1...300 mm
PNP	NC/NO	Ordering code	BOS01CA	
		Part number	BOS 18M-PA-RD21-S4	
PNP	NO	Ordering code		BOS01E7
		Part number		BOS 18M-PS-RD21-S4
PNP	NC	Ordering code		
		Part number		
Supply voltage U_s			10...30 V DC	10...30 V DC
Output 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.



Photoelectric Sensors

BOS 18M red light



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

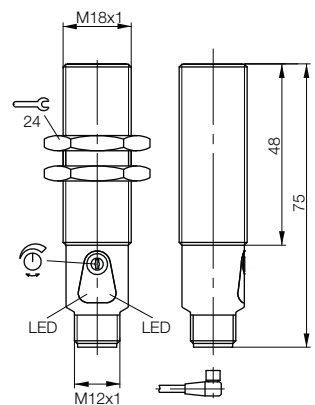
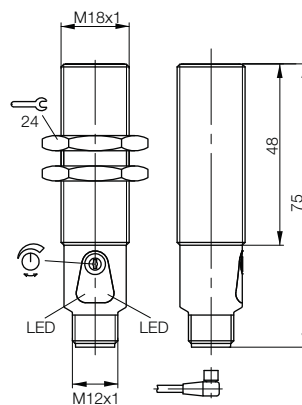
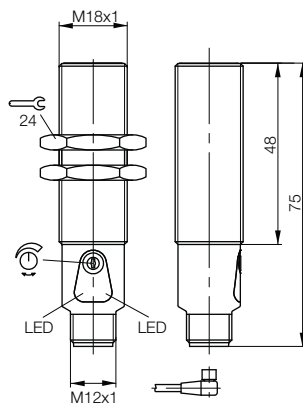
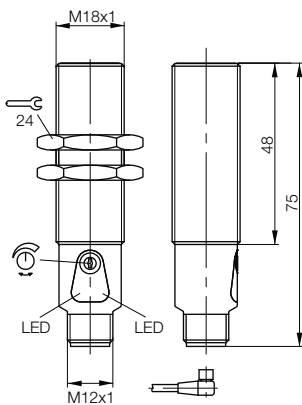
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Diffuse sensor 1...300 mm	Diffuse sensor 1...600 mm	Diffuse sensor 1...600 mm	Diffuse sensor 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, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

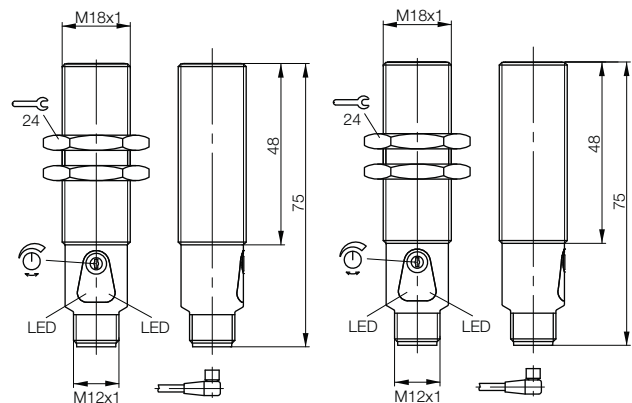




Type			Retroreflective sensor 7 m	Retroreflective sensor 7 m	
Detection range					
PNP	NC/NO	Ordering code	BOS01CE		
		Part number	BOS 18M-PA-PR20-S4		
PNP	NC/NO	Ordering code		BOS01FJ	
	Output special assignment	Part number		BOS 18M-PA-PR20-S4S	
PNP	NO	Ordering code			
		Part number			
PNP	NC	Ordering 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.



Photoelectric Sensors

BOS 18M red light



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

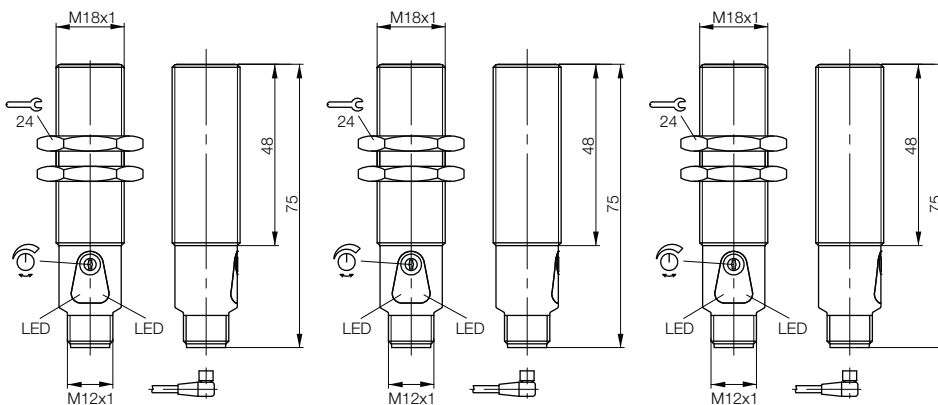
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 7 m	Retroreflective sensor 7 m	Retroreflective sensor 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	





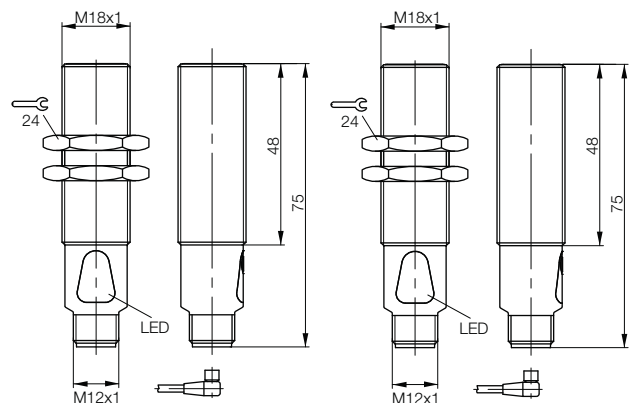
Receiver



Receiver

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.



Photoelectric Sensors

BOS 18M red light



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

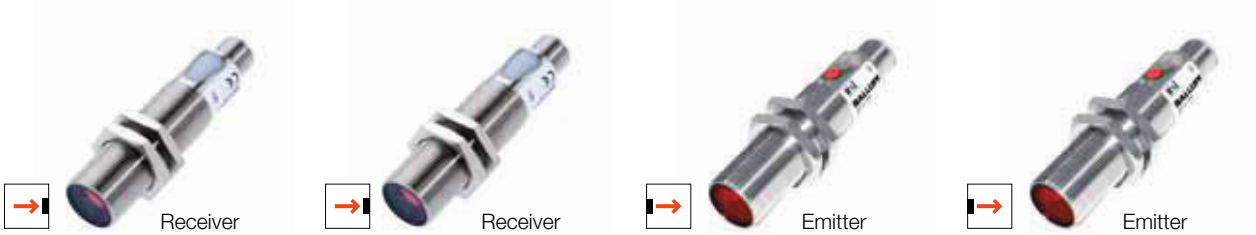
Angle Sensors

BWL

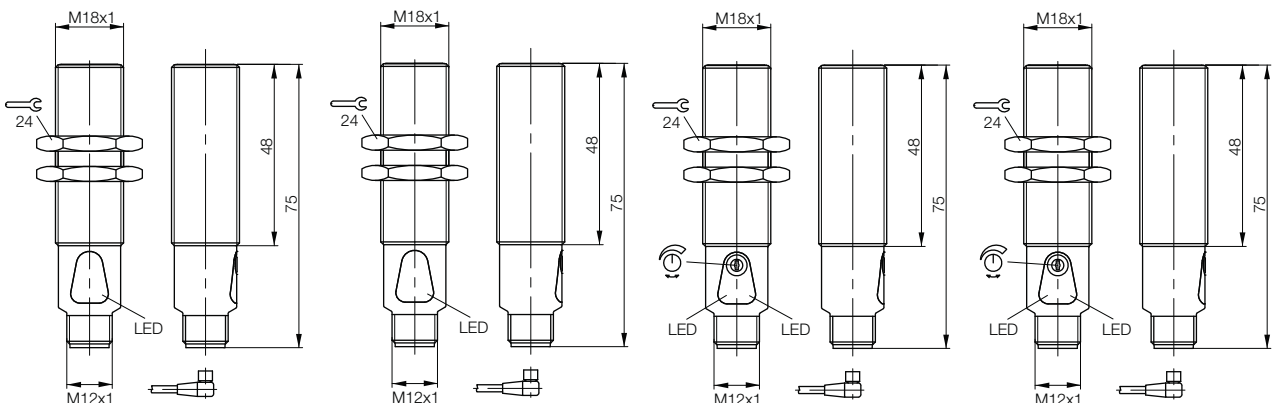
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



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

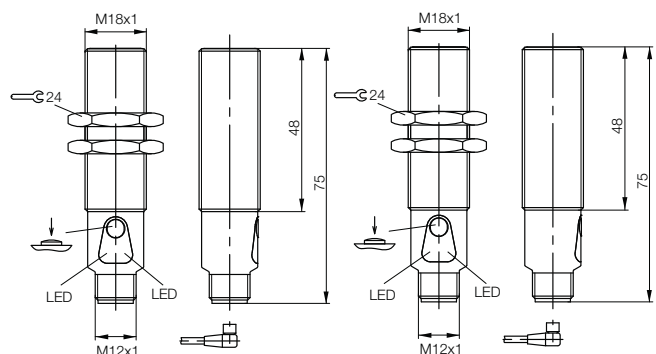




Type	Diffuse sensor		
Detection range	1...500 mm		
PNP NC/NO	Error output	Ordering code	BOS01J8
		Part number	BOS 18M-PUV-RD30-S4
PNP NC/NO	Dynamic Sensor Control	Ordering code	BOS01CU
		Part number	BOS 18M-PUD-RD30-S4
PNP NC/NO	Polarizing filter, Error output	Ordering code	
		Part number	
PNP NC/NO	Polarizing filter, Dynamic Sensor Control	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.	≤ 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

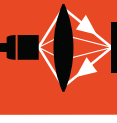
Reference object: white, 90% reflection, 200×200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 75.



Photoelectric Sensors

BOS 18M red light



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

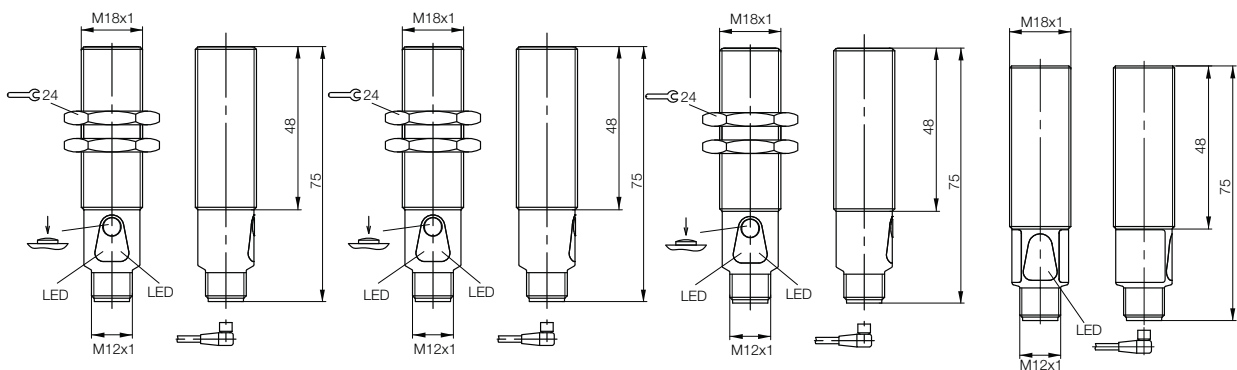
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 5 m	Retroreflective sensor 5 m	Through-beam sensor 0...20 m	Through-beam sensor 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

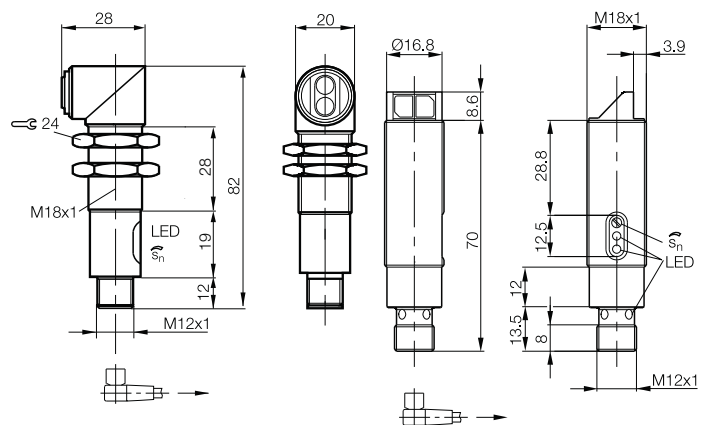




Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression	
Detection range	40...120 mm		10...120 mm	
PNP NC/NO	Ordering code	BOS0081		
	Part number	BOS 18MR-PA-1HA-S4-C		
PNP NO	Ordering code		BOS010J	
	Part number		BOS 18MR-PS-1HA-E5-C-S4	
PNP NC/NO Receiver	Ordering 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	Housing	Nickel-plated brass
	Optical surface	Glass	Optical surface	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.



Photoelectric Sensors

BOS 18M red light



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

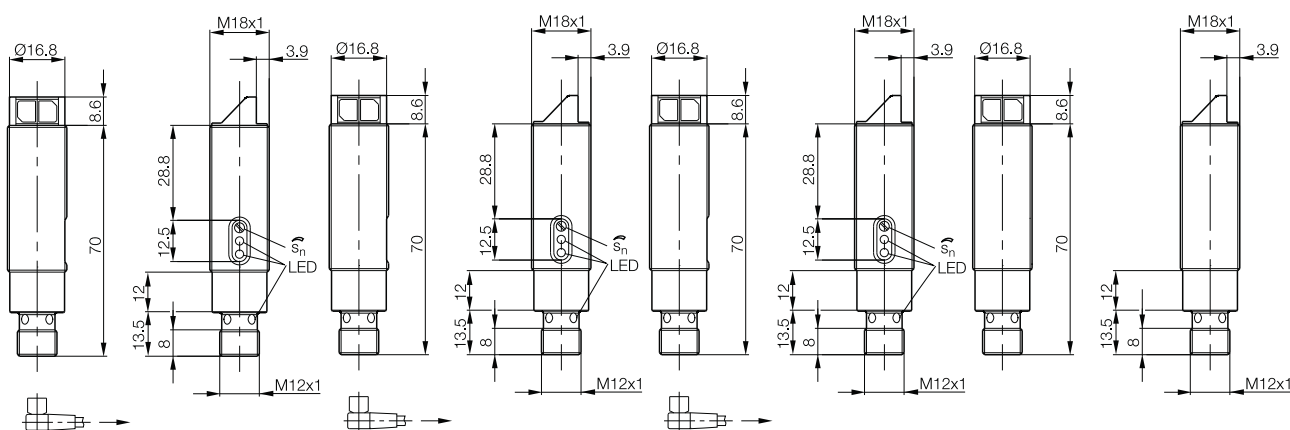
Accessories for Photoelectric Sensors



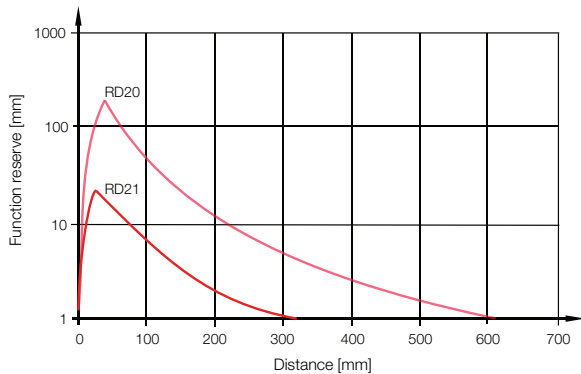
Receiver

Emitter

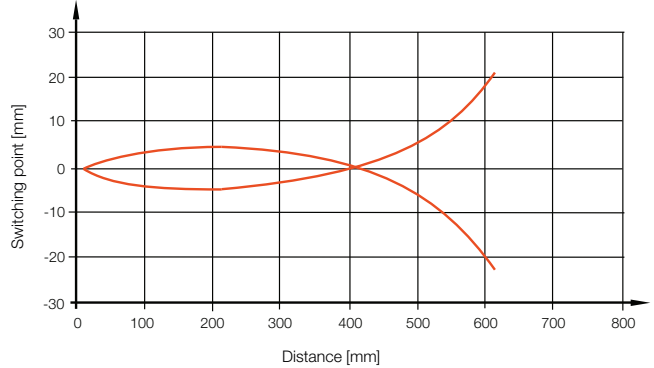
Diffuse sensor 0...400 mm	Retroreflective sensor 2 m	Through-beam sensor 0...16 m	Through-beam sensor 0...16 m
BOS010K	BOS010L	BOS010E	BOS010F
BOS 18MR-PS-10D-E5-C-S4	BOS 18MR-PS-1QB-E5-C-S4	BLE 18MR-PA-1PP-E5-C-S4	BLS 18MR-XX-1P-E5-L-S4
10...36 V DC	10...36 V DC	10...36 V DC	10...36 V DC
200 mA	200 mA	200 mA	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, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



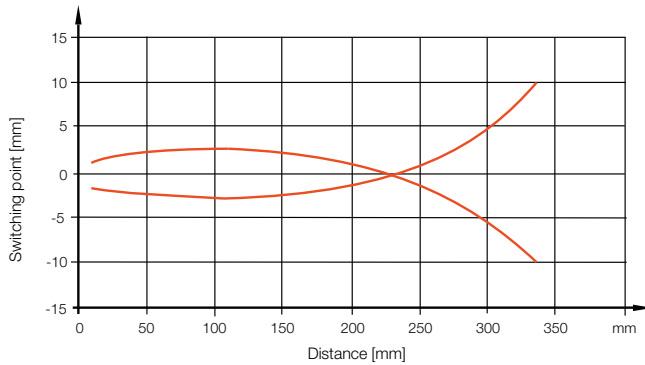
Diffuse sensor BOS 18M...RD
function reserve



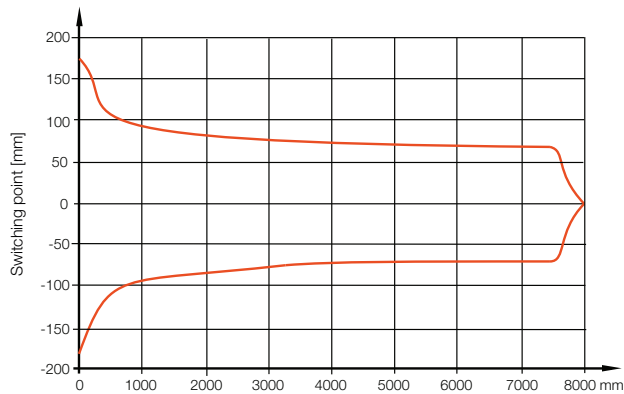
Diffuse sensor BOS 18M...RD20
Response curve



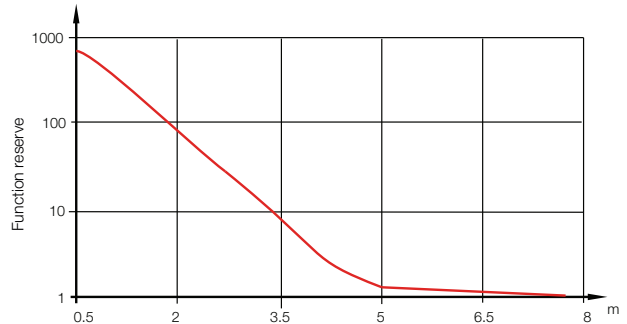
Diffuse sensor BOS 18M...RD21..
Reponse curve



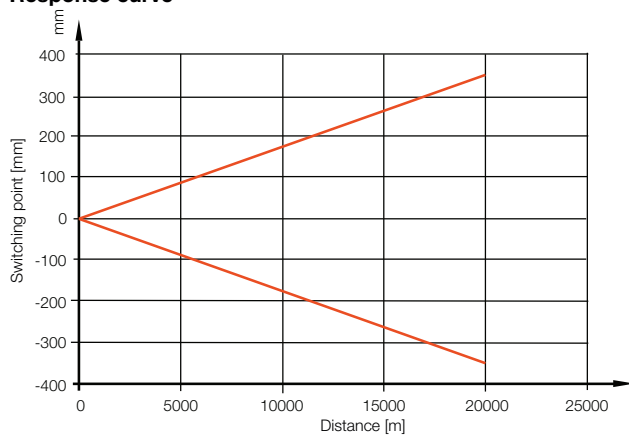
Retroreflective sensor BOS 18M...PR20...
Response curve



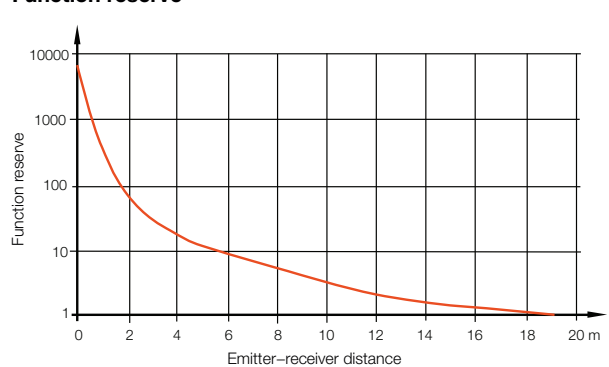
Retroreflective sensor BOS 18M...PR20...
Function reserve



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



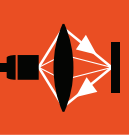
Through-beam sensor BOS 18M...RE/RS20
Function reserve



Photoelectric Sensors

BOS 18M red light

Light spot size, connection, accessories



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

Diffuse sensor BOS 18M light spot sizes

...RD20...

...RD21...

...PR20...

...RS20...

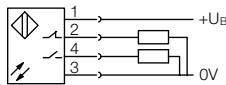
Distance	Light spot Ø	Distance	Light spot Ø
30 mm	9 mm	30 mm	9 mm
100 mm	11×11 mm	100 mm	11×11 mm
300 mm	24×24 mm	300 mm	24×24 mm
600 mm	48×48 mm		

Distance	Light spot Ø	Distance	Light spot Ø
3 cm	13 mm	3 cm	14 mm
10 cm	14 mm	10 cm	17 mm
30 cm	20×20 mm	30 cm	25 mm
1 m	45×45 mm	60 cm	32×32 mm
2 m	80×80 mm	1 m	45×45 mm
3 m	120×120 mm	2 m	80×80 mm
		3 m	118×118 mm

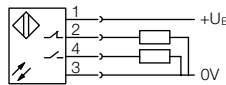
Wiring diagrams

Red light

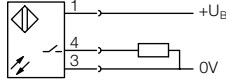
BOS 18M-PA-...S4



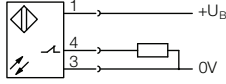
BOS 18M-PA-...S4S



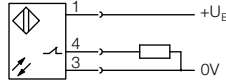
BOS 18M-PS-...S4



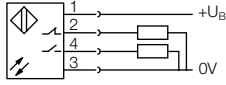
BOS 18M-PO-...S4



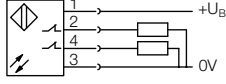
BOS 18M-PO-...S4S



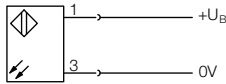
BOS 18M-PSV



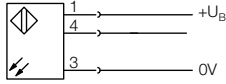
BOS 18M-POV



BOS 18M-X



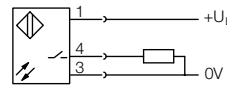
BOS 18M-XT



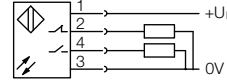
Wiring diagrams

Angled

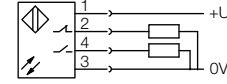
BOS 18MR-PS-...



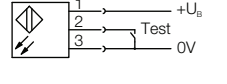
BOS 18MR-PA-...



BLE 18MR-PA-...S4S



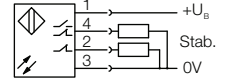
BLS 18MR-XX



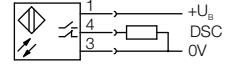
Wiring diagrams

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



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



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.

Connectors without LED are suitable for PNP and NPN sensors.

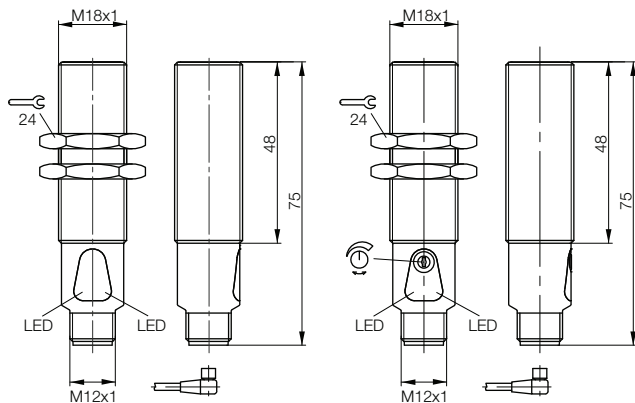
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.



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.



Photoelectric Sensors

BOS 18M infrared



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

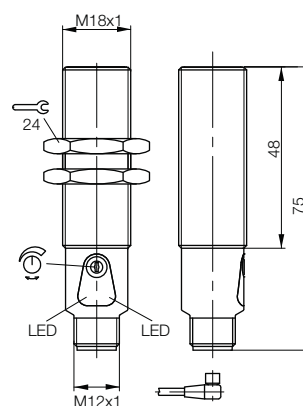
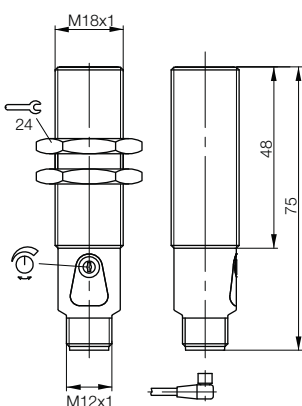
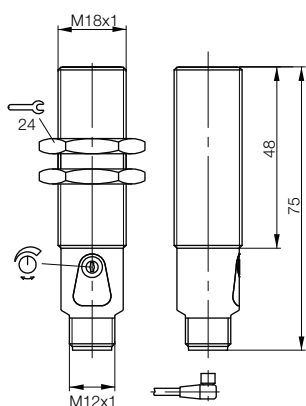
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 7 m Polarizing filter BOS01HR BOS 18M-PA-IR21-S4	Retroreflective sensor 10 m BOS01F0 BOS 18M-PA-IR20-S4	Retroreflective sensor 10 m 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

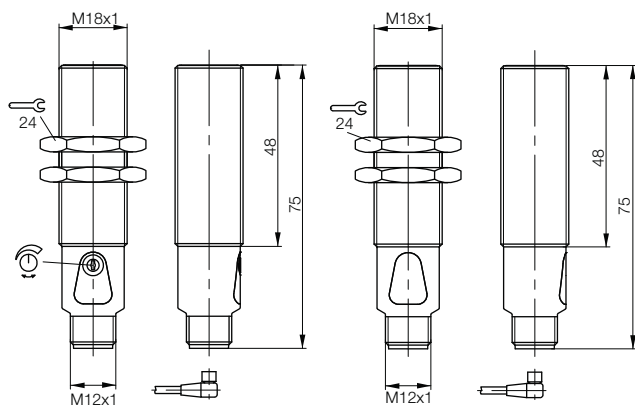


Emitter

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	Ordering code	BOS01HN	BOS01HU
		Test input	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.



Photoelectric Sensors

BOS 18M infrared



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



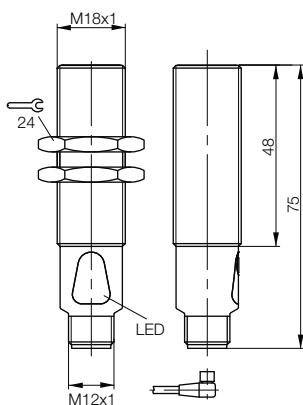
Through-beam sensor
0...50 m/0...100 m

BOS01F3

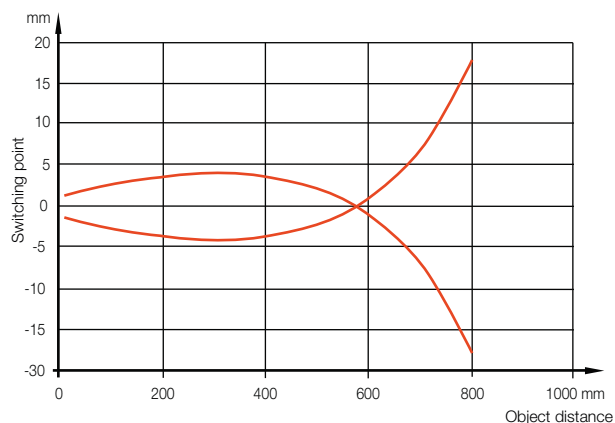
BOS 18M-PA-IE20-S4

10...30 V DC
100 mA
≤ 20 mA
Light and dark switching
Yes/Yes

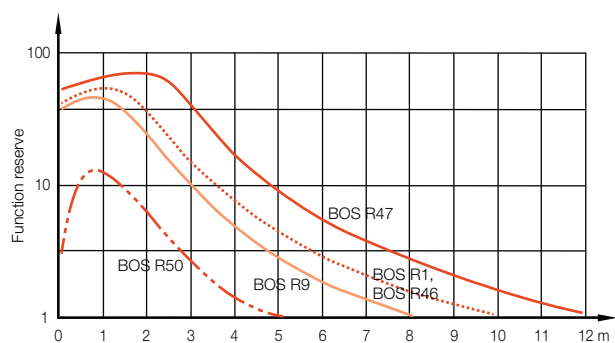
LED, infrared
850 Nm
1.25 ms
400 Hz
IP 67
-5...+55 °C
5 klx
Nickel-plated brass
Glass
M12 connector,
4-pin



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



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



Photoelectric Sensors

BOS 18M infrared

Connection, accessories



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

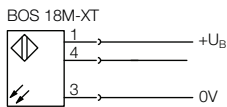
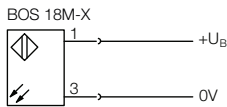
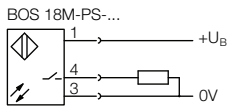
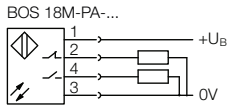
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors

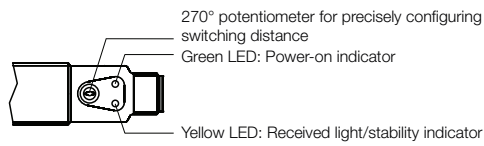
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors

Wiring diagrams



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



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



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.

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
BOS 18M Laser
Sensing distance 150 mm

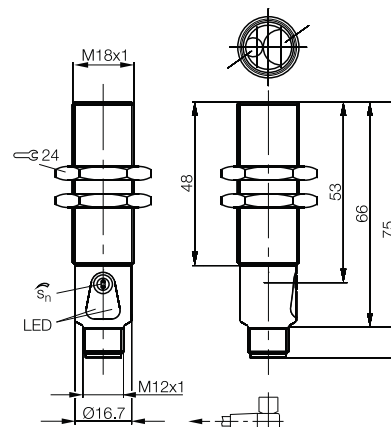
M18 Metal Laser



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.





Photoelectric Sensors

BOS 18M Laser

Sensing distance 150 mm, 350 mm



Diffuse sensor with background suppression 30...150 mm	Diffuse sensor with background suppression 30...150 mm	Diffuse sensor 0...350 mm	Diffuse sensor 0...350 mm
	BOS01C4 BOS 18M-PSV-LH23-S4		
BOS01C5 BOS 18M-PA-LH23-S4		BOS013H BOS 18M-PA-LD10-S4	BOS013F 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



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

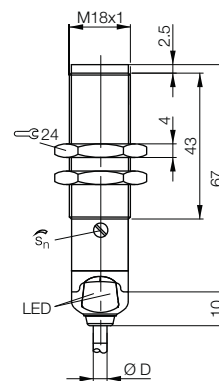
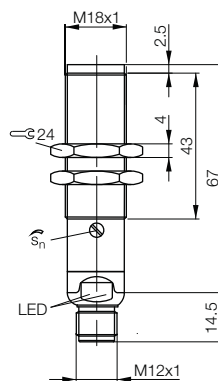
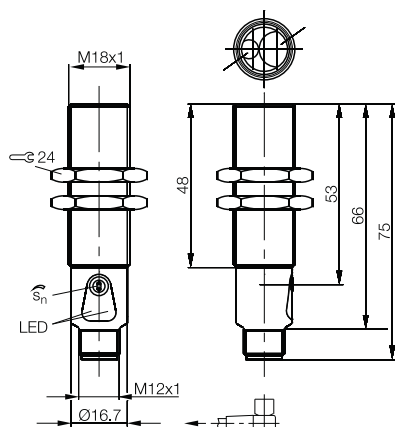
Angle Sensors

BWL

Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors

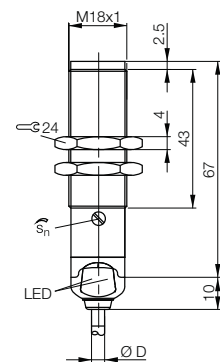
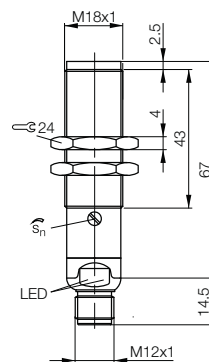




Type			Retroreflective sensor with polarizing filter	Retroreflective sensor with polarizing filter	
Detection range			0.1...16 m	0.1...16 m	
PNP	NC/NO	Ordering code	BOS013M	BOS013L	
			Part number	Part number	
			BOS 18M-PA-LR10-S4	BOS 18M-PA-LR10-02	
Emitter			Ordering code		
			Part number		
Supply 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 μ s	333 μ s	
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, 4x0.14 mm	

Reference reflector: BOS R-1

For wiring diagrams see page 91.





Photoelectric Sensors

BOS 18M Laser

Range 60 m



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

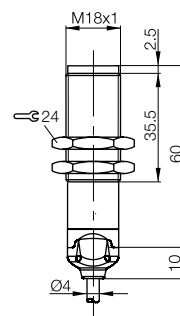
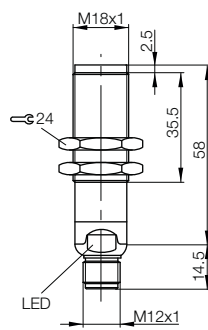
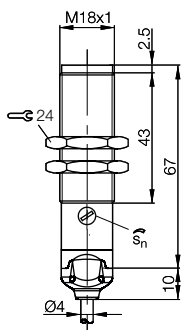
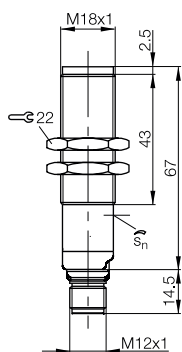
BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

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		BOS013P
BOS 18M-PA-LE10-S4	BOS 18M-PA-LE10-02	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	≤ 30 mA	≤ 30 mA
≤ 35 mA	≤ 35 mA	Yes/Yes	Yes/Yes
Light and dark switching	Light and dark switching	Laser, red light	Laser, red light
Yes/Yes	Yes/Yes	650 Nm	650 Nm
Potentiometer, 270°	Potentiometer, 270°	1	1
Laser, red light	Laser, red light	333 μs	333 μs
650 Nm	650 Nm	1.5 kHz	1.5 kHz
1	1	IP 67	IP 67
333 μs	333 μs	-10...+55 °C	-10...+55 °C
1.5 kHz	1.5 kHz	5 klx	5 klx
IP 67	IP 67	Nickel-plated brass	Nickel-plated brass
-10...+55 °C	-10...+55 °C	PMMA	PMMA
5 klx	5 klx	M12 connector,	2 m PVC cable,
Nickel-plated brass	Nickel-plated brass	4-pin	4x0.14 mm
PMMA	PMMA		
M12 connector,	2 m PVC cable,		
4-pin	4x0.14 mm		

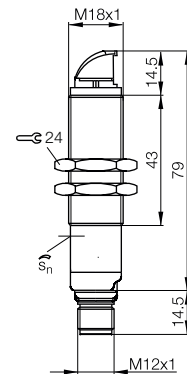
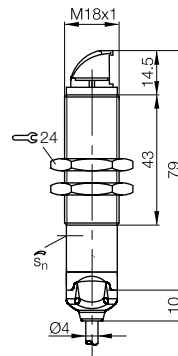




Type	Diffuse sensor		Diffuse sensor	
Detection range	0...250 mm		0...250 mm	
PNP NO/NC	BOS0141		BOS0142	
Ordering code	Part number		BOS 18MR-PA-LD10-02	BOS 18MR-PA-LD10-S4
Supply voltage U_S	10...30 V DC		10...30 V DC	
Output current	100 mA		100 mA	
No-load supply current I_0 max.	≤ 35 mA		≤ 35 mA	
Switching 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 μ s		333 μ s	
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, 4x0.14 mm ²		M12 connector, 4-pin	

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

For wiring diagrams see page 91.





Photoelectric Sensors

BOS 18M Laser

Range 9 m



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors
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Photoelectric
Sensors

**Retroreflective sensor
with polarizing filter
0.1...9 m**

BOS0145

BOS 18MR-PA-LR10-02

10...30 V DC

100 mA

≤ 35 mA

Light and dark switching

Yes/Yes

Potentiometer, 270°

Laser, red light

650 Nm

1

333 μs

1.5 kHz

IP 67

-10...+55 °C

5 klx

Nickel-plated brass

PMMA

2 m PVC cable,

4x0.14 mm²

**Retroreflective sensor
with polarizing filter
0.1...9 m**

BOS0146

BOS 18MR-PA-LR10-S4

10...30 V DC

100 mA

≤ 35 mA

Light and dark switching

Yes/Yes

Potentiometer, 270°

Laser, red light

650 Nm

1

333 μs

1.5 kHz

IP 67

-10...+55 °C

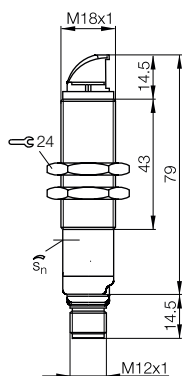
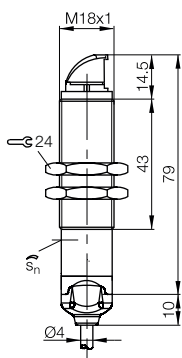
5 klx

Nickel-plated brass

PMMA

M12 connector,

4-pin



M18 Metal Laser with Angle Head



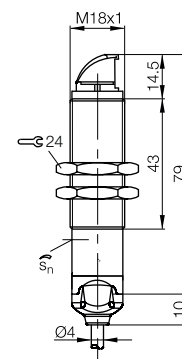
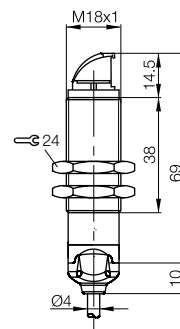
Emitter

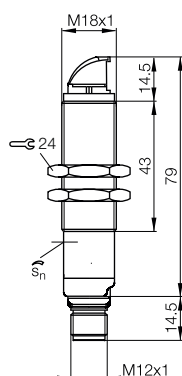
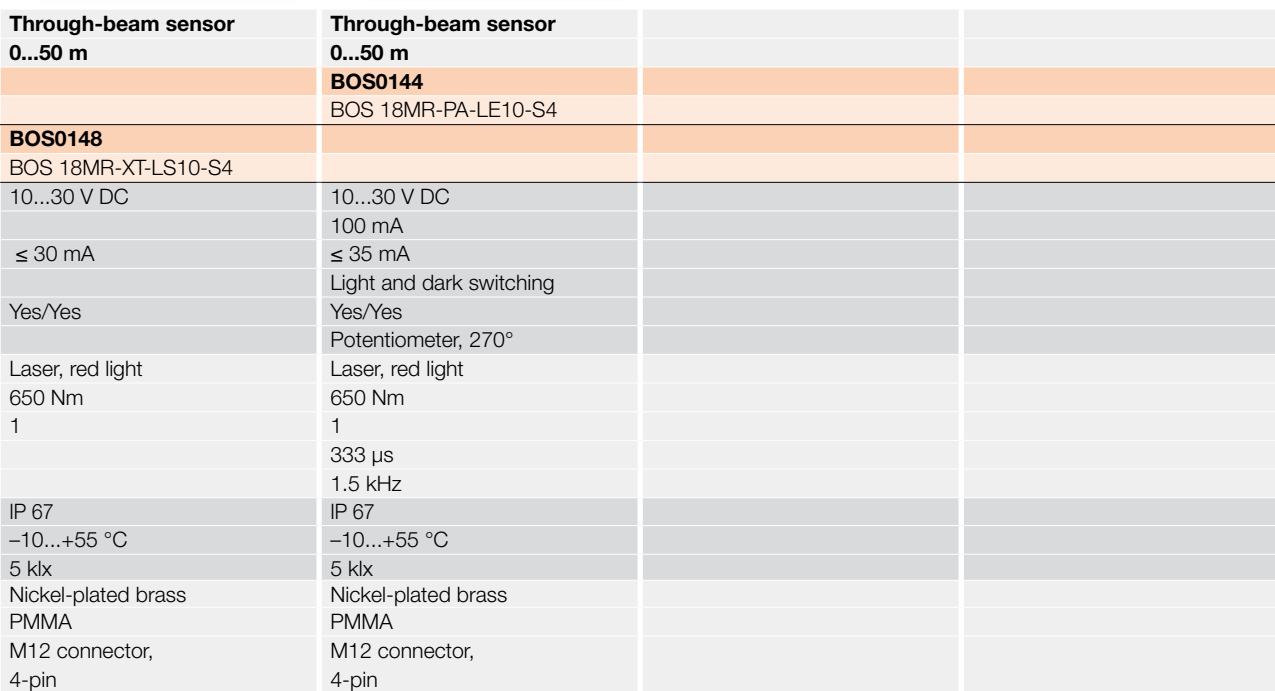
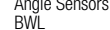
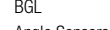
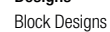


Receiver

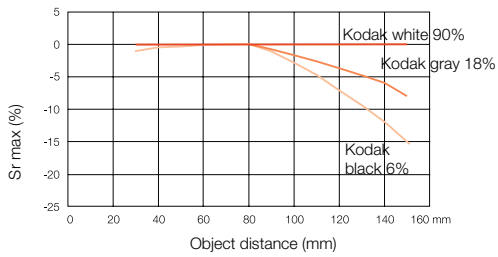
Type			Through-beam sensor	Through-beam sensor
Detection range			0...50 m	0...50 m
PNP	NC/NO	Ordering code		BOS0143
	Receiver	Part number		BOS 18MR-PA-LE10-02
	Emitter	Ordering code	BOS0147	
		Part number	BOS 18MR-XT-LS10-02	
Supply voltage U_s			10...30 V DC	10...30 V DC
Output current				100 mA
No-load 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 μ s
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, 4x0.14 mm ²	2 m PVC cable, 4x0.14 mm ²

For wiring diagrams see page 91.

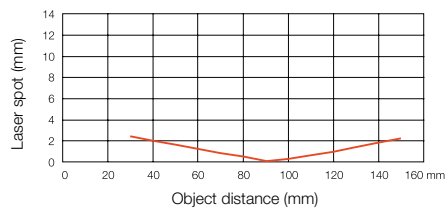




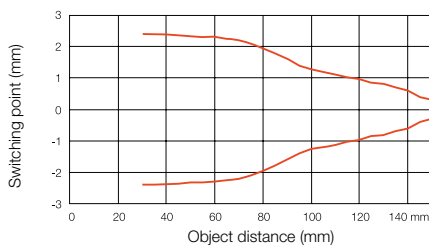
Diffuse sensor with background suppression BOS 18M-...LH
 Gray value shift



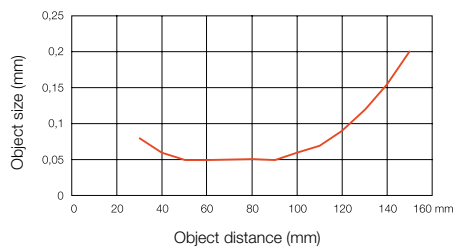
Diffuse sensor with background suppression BOS 18M-...LH
 Light spot diameter at distance



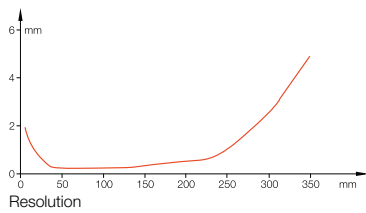
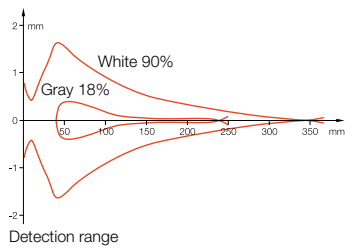
Diffuse sensor with background suppression BOS 18M-...LH
 Turn-on point for lateral approach



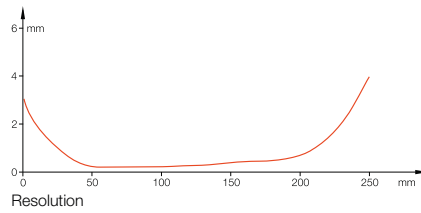
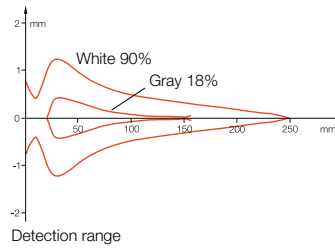
Diffuse sensor with background suppression BOS 18M-...LH
 Smallest detectable part



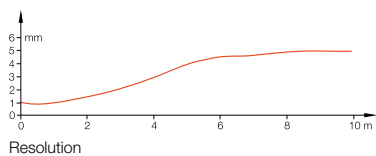
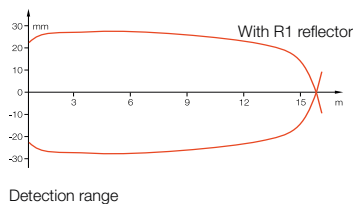
Diffuse sensor BOS 18M-...LD10-...



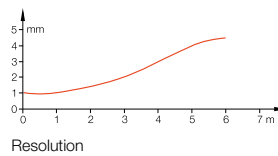
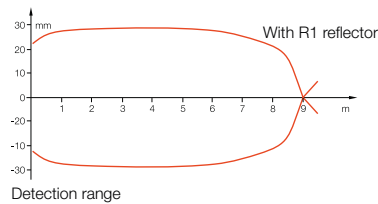
Diffuse sensor BOS 18MR-...LD10-...



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



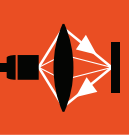
Retroreflective sensor BOS 18MR-...LR10-...



Photoelectric Sensors

BOS 18M Laser

Function diagrams, connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

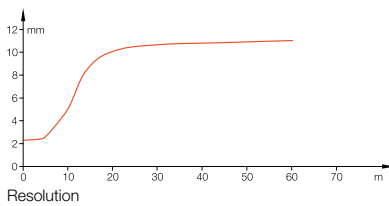
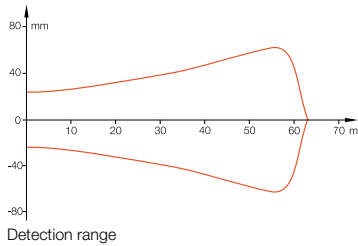
BWL

Photoelectric Sensors with Special Properties

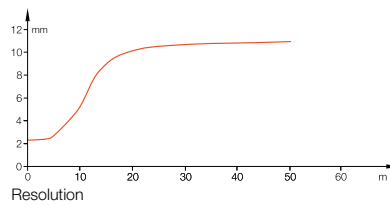
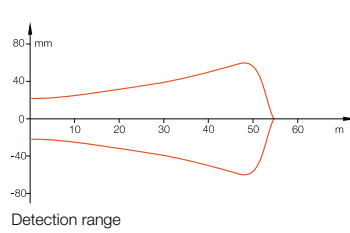
Photoelectric Distance Sensors for Analog Measurement

Accessories for Photoelectric Sensors

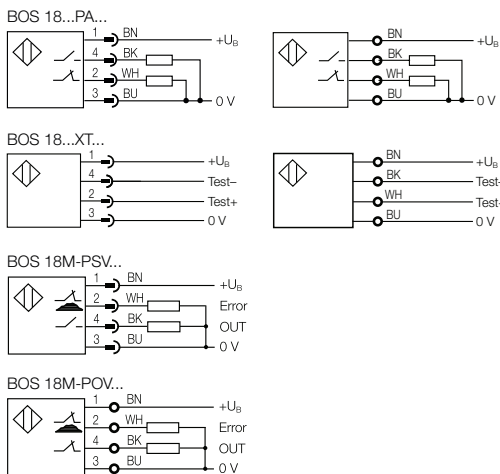
Through-beam sensor BOS 18M--LE/LS10-...



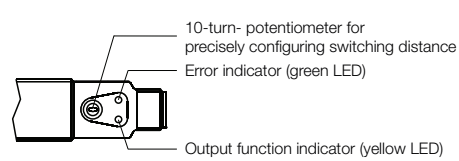
Through-beam sensor BOS 18MR--LE/LS10-...



Wiring diagrams



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



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.

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.

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**.

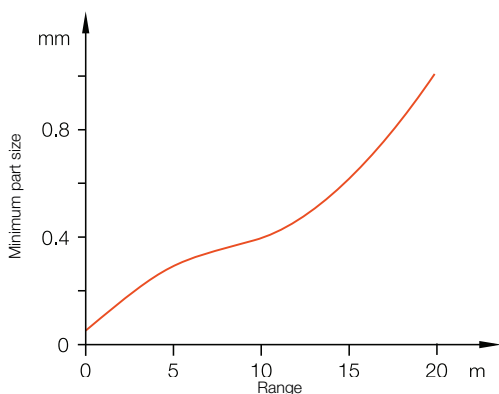
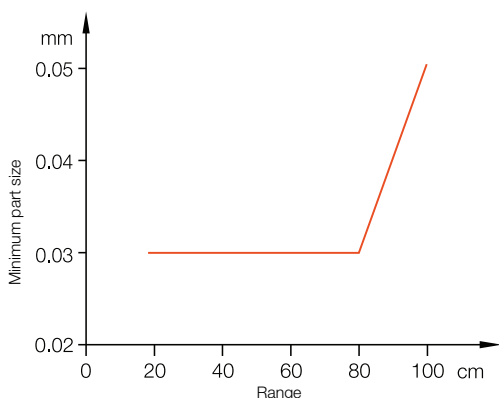
Photoelectric Sensors

BOS 18M

Laser through-beam sensor

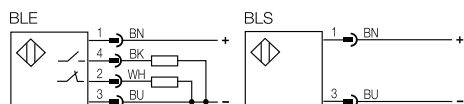
Accuracy diagram

Smallest detectable part size as a function of range.



Light spot perpendicular to transport direction of the object.

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.

M18 Metal Laser Through-beam sensor



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				

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	BCC036F
M12, 4-pin	Angled	PUR	Black	2 m	BCC032Y
M12, 4-pin	Angled	PVC	Gray	2 m	BCC036N

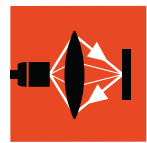
Connectors without LED are suitable for PNP and NPN sensors.



Photoelectric Sensors

BOS 18M

Laser through-beam sensor



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



Receiver



Receiver

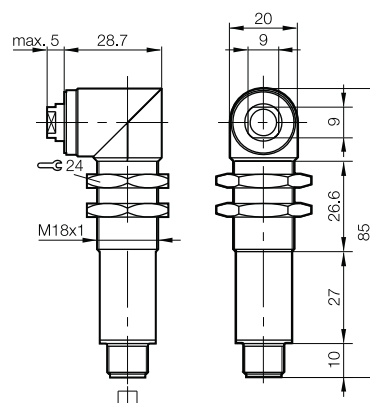
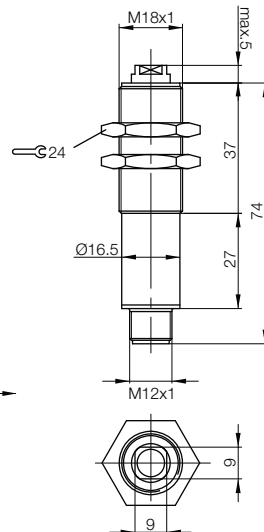
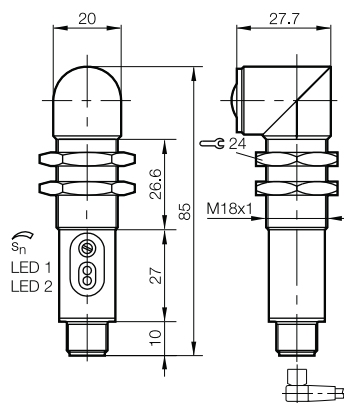
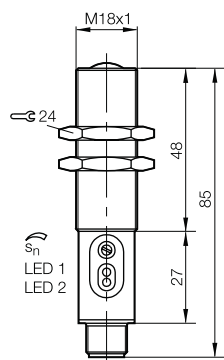


Emitter



Emitter

Through-beam sensor 0...50 m	Through-beam sensor 0...50 m	Through-beam sensor 0...50 m	Through-beam sensor 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 650 Nm 2	Laser, red light 650 Nm 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, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 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.



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

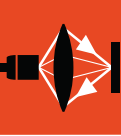
- Bottling equipment
- Food industry
- Packaging industry
- Laundry and dry-cleaning equipment
- Machine tools
- Heavy industry
- Wherever other sensors don't measure up



Photoelectric Sensors

BOS 18E

Product overview



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

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

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Accessories for Photoelectric Sensors

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Accessories for Photoelectric Sensors

Accessories for Photoelectric Sensors

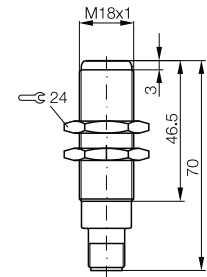
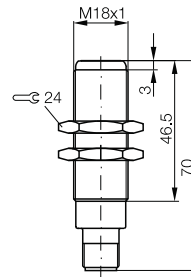
Type		Sensing distance/ Range	Light type		Out- put	Switching type		Switch- ing fre- quency	U _S	Connec- tion	Special features		Page
			Red light	Infrared	PNP transistor	Light switching	Dark switching		10...30 V DC	M12 plug, 4-pin	Cable	Polarizing filter	
	Diffuse sensor with background suppression												
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



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	

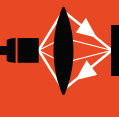
Reference object: white, 90% reflection, 200×200 mm

For wiring diagrams see page 101.



Photoelectric Sensors

BOS 18E



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

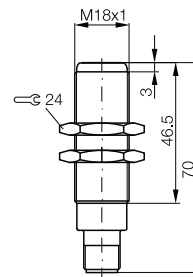
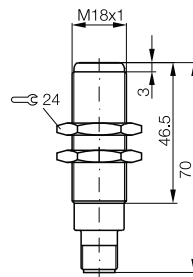
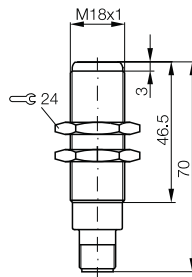
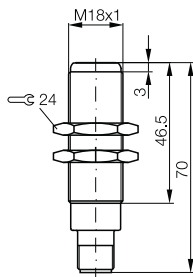
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Diffuse sensor 0...100 mm	Diffuse sensor 0...200 mm	Diffuse sensor 0...200 mm	Diffuse sensor 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

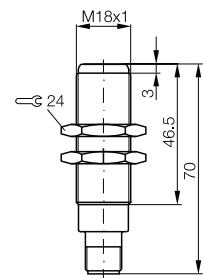
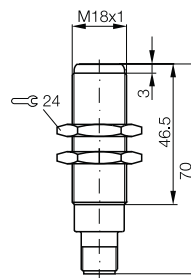




Type		Diffuse sensor	Retroreflective sensor
Detection range		0...400 mm	2 m with polarizing filter
PNP NO	Ordering code	BOS0019	BOS00RN
	Part number	BOS 18E-PS-1XD-SA1-S4	BOS 18E-PS-1UB-E5-D-S4
PNP NC	Ordering code		BOS00RL
	Part number		BOS 18E-PO-1UB-E5-D-S4
PNP NO Receiver	Ordering code		
	Part number		
PNP NC Receiver	Ordering code		
	Part number		
PNP NC Receiver Output special assignment	Ordering code		
	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

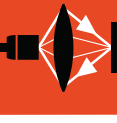
Reference object: white, 90% reflection, 200x200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 101.



Photoelectric Sensors

BOS 18E



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

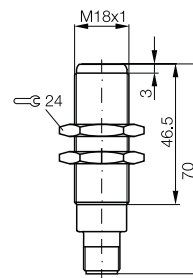
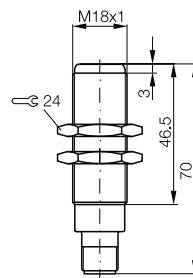
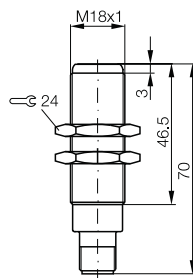
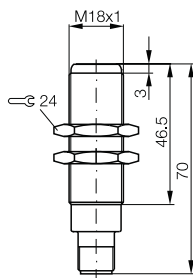
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

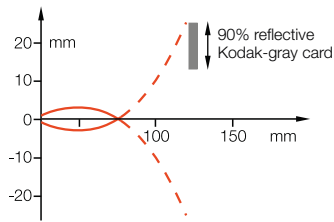
Accessories for Photoelectric Sensors



Retroreflective sensor 2 m with polarizing filter BOS00RP BOS 18E-PS-1UB-SA1-S4	Retroreflective sensor 4 m BOS0046 BOS 18E-PS-1WD-E5-D-S4	Through-beam sensor 16 m BOS00UJ BLE 18E-PS-1P-E5-D-S4 BOS00UF BLE 18E-PO-1P-E5-D-S4 BOS00UH BLE 18E-PO-1P-E5-D-S4S BOS00UY BLS 18E-XX-1P-E5-X-S4	Through-beam sensor 16 m BOS00UK BLE 18E-PS-1P-SA1-S4 BOS00UZ 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

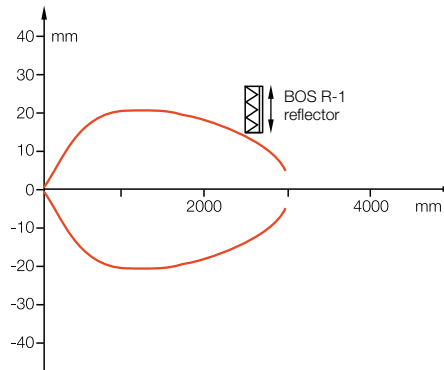


Diffuse sensor BOS 18E-...-1YA-...



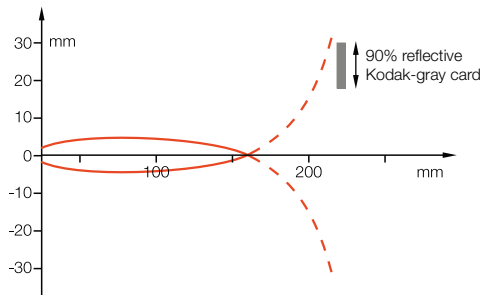
Sensing distance with side approach of Kodak-gray card.

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



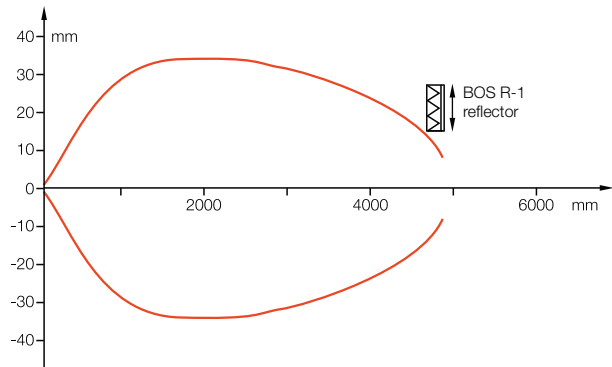
Range measured with side approach with reflector.

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



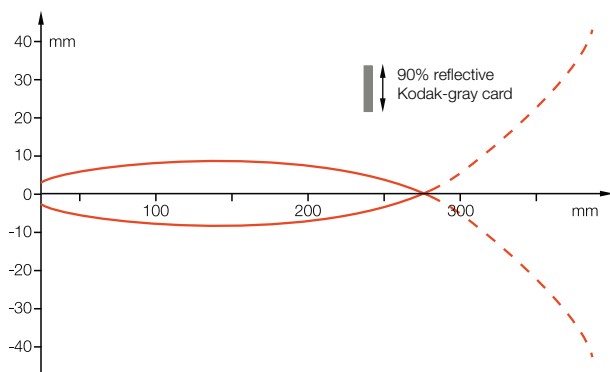
Sensing distance with side approach of Kodak-gray card.

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



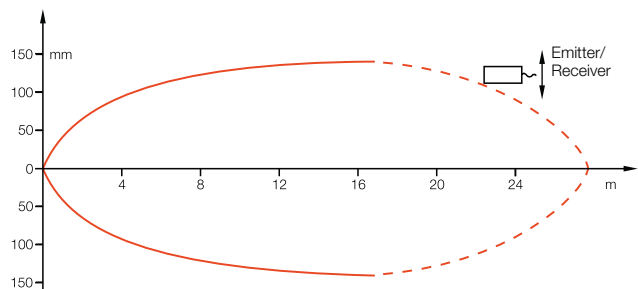
Range measured with side approach with reflector.

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



Sensing distance with side approach of Kodak-gray card.

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

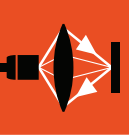


For a through-beam sensor, the maximum possible offset between the emitter and receiver is measured.

Photoelectric Sensors

BOS 18E

Connection, accessories



Photoelectric
Sensors

Photoelectric
Sensors

**Cylinder
Designs**

Block Designs

Fork Sensors

BGL

Angle Sensors

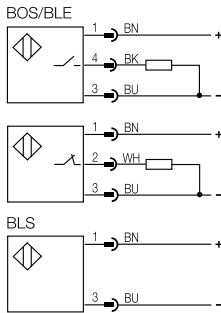
BWL

Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors

Wiring diagrams



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.

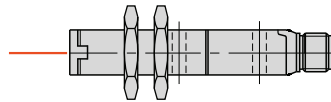
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.

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.



Photoelectric Sensors

BOS 18KF Global

Product overview



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 type			Out- put	Switching type		Switch- ing fre- quency	U _S	Conne- ction	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	Glass detection	
 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

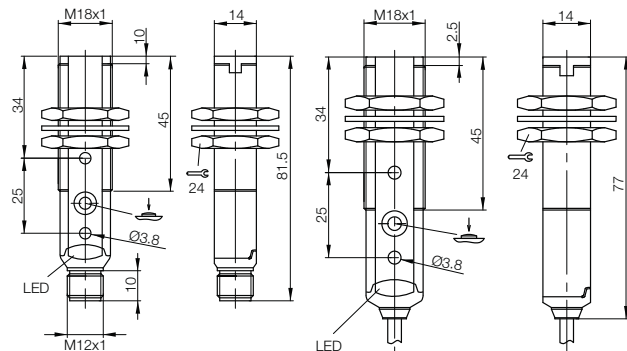
NPN on request



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 mm ³		

Reference object: white, 90% reflection, 200x200 mm

For wiring diagrams see page 119.



Photoelectric Sensors

BOS 18KF Global



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

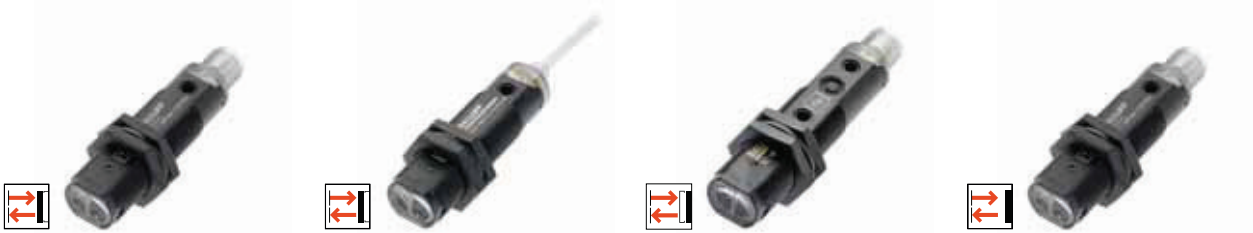
Angle Sensors

BWL

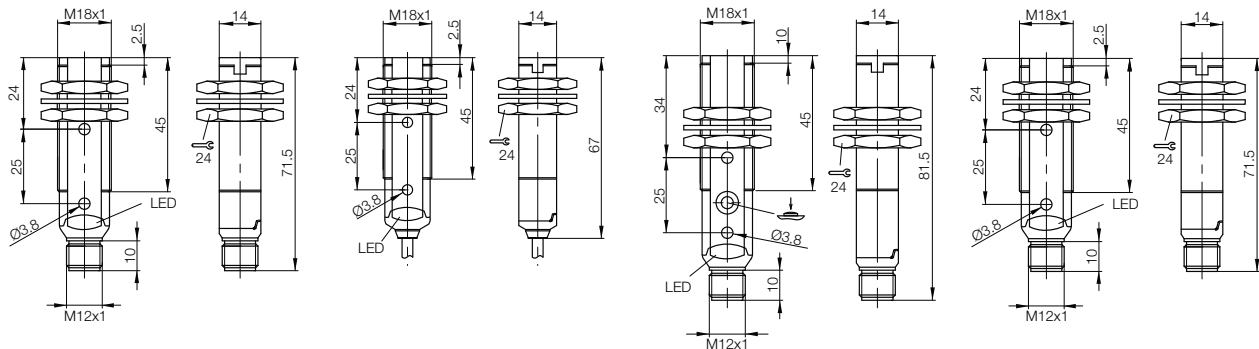
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



Diffuse sensor with background suppression 100 mm	Diffuse sensor with background suppression 100 mm	Diffuse sensor with background suppression 40...100 mm	Diffuse sensor 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 mm ³	M12 connector, 4-pin	M12 connector, 4-pin

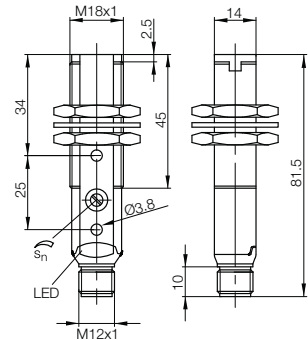
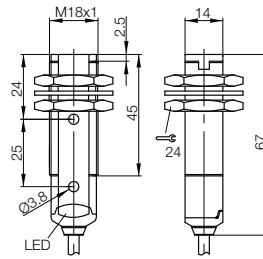




Type		Diffuse sensor	Diffuse sensor	
Detection range		0...100 mm	0...400 mm	
PNP NC/NO	Ordering code	BOS00K8	BOS00JZ	
	Part number	BOS 18KF-PA-1XA-C-02	BOS 18KF-PA-1PD-S4-C	
Supply voltage U_s		10...30 V DC	10...30 V DC	
Output current		100 mA	100 mA	
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA	
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, 4x0.14 mm ³	M12 connector, 4-pin	

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

For wiring diagrams see page 119.



Photoelectric Sensors

BOS 18KF Global



Photoelectric
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Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

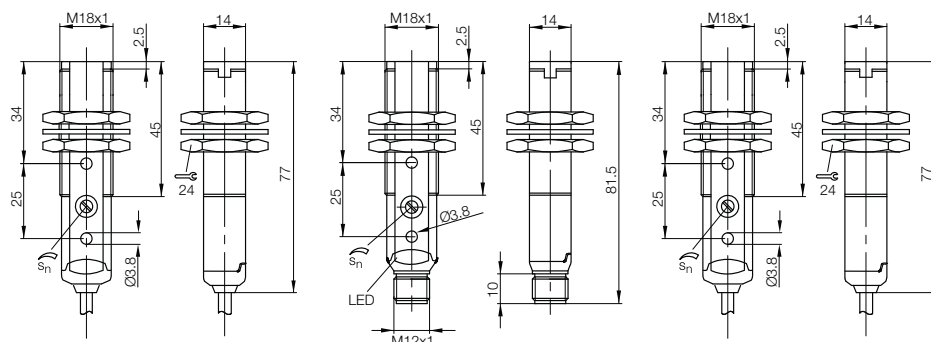
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



Diffuse sensor 0...400 mm	Diffuse sensor 0...700 mm	Diffuse sensor 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, 4x0.14 mm ³	M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm ³	

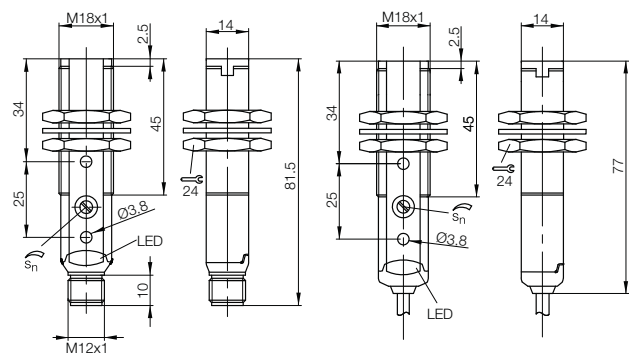




Type				Retroreflective sensor	Retroreflective sensor	
Detection range				0.1...1.7 m	0.1...1.7 m	
PNP	NC/NO	Polarizing filter, trans- parency detection	Ordering code	BOS00K7	BOS00K6	
			Part number	BOS 18KF-PA-1TB-S4-C	BOS 18KF-PA-1TB-C-02	
PNP	NC/NO	Polarizing filter	Ordering code			
			Part number			
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, 4x0.14 mm ³	

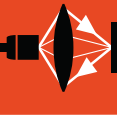
Reference reflector: BOS R-1

For wiring diagrams see page 119.



Photoelectric Sensors

BOS 18KF Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

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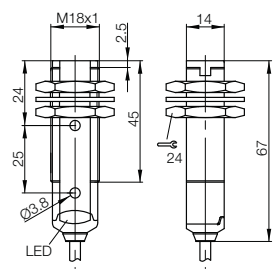
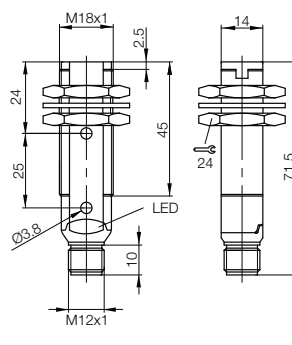
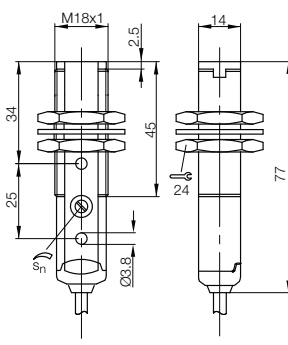
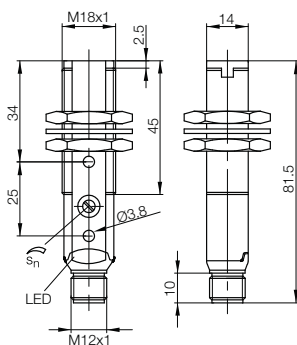
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



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 BOS 18KF-PA-1QD-S4-C	BOS00K2 BOS 18KF-PA-1QD-C-02	BOS00K5 BOS 18KF-PA-1RE-S4-C	BOS00K4 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, 4x0.14 mm ³	M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm ³





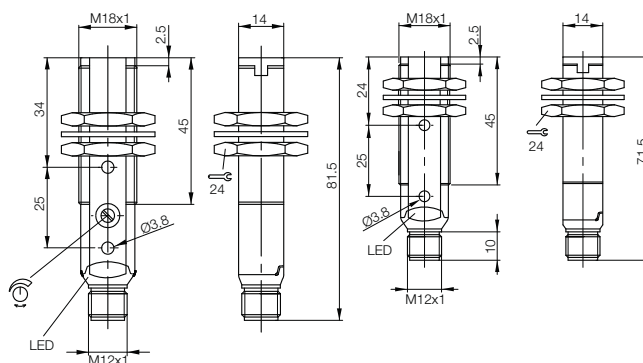
Receiver

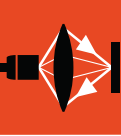


Emitter

Type	Through-beam sensor		
Detection range	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		
Output current	100 mA		
No-load supply current I_0 max.	≤ 30 mA		
Switching type	Light/dark (complementary)		
Polarity reversal/short-circuit protected	Yes/Yes		
Settings	Potentiometer, 270°		
Help functions			Test input
Emitter, light type			LED, infrared
Wavelength			880 nm
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		
Ambient temperature T_a	-25...+55 °C		
Reference standard	EN 60947-5-2		
Material	Housing	PBT	
	Optical surface	PMMA	
Connection	M12 connector, 4-pin		

For wiring diagrams see page 119.





BWL

Accessories for Photoelectric Sensors

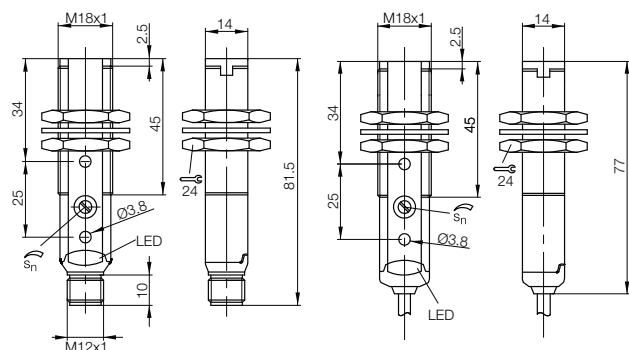
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Type			Diffuse sensor	Diffuse sensor	
Detection range			0...350 mm	0...350 mm	
PNP NC/NO			Ordering code	Ordering code	
			Part number	Part number	
PNP NC/NO	Polarizing filter				
			Ordering code	Ordering code	
			Part number	Part number	
Supply voltage 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 μ s	333 μ s	
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			PBT	PBT	
			PMMA	PMMA	
Connection			M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm ²	

Reference object: white, 90% reflection, 200x200 mm
Reference reflector: BOS R-1

For wiring diagrams see page 119.





Photoelectric Sensors

BOS 18KF Laser Global



Photoelectric
Sensors

Photoelectric
Sensors

Cylinder
Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

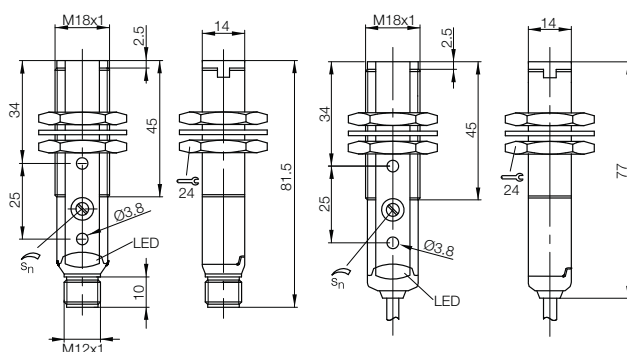
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



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. 0.9 mm at 1 m		
approx. 2 mm at 3 m	approx. 2 mm at 3 m		
Green LED	Green LED		
Yellow 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, 4x0.14 mm²		





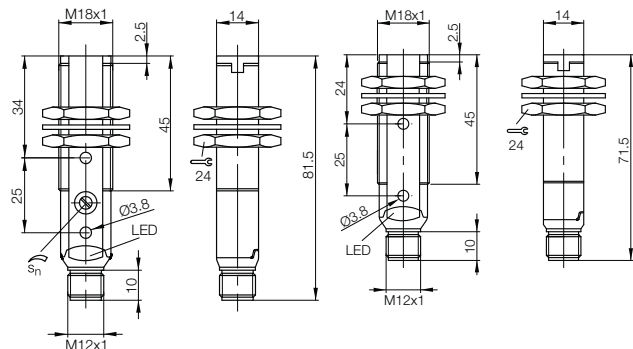
Receiver



Emitter

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.





Photoelectric Sensors

BOS 18KF Laser Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

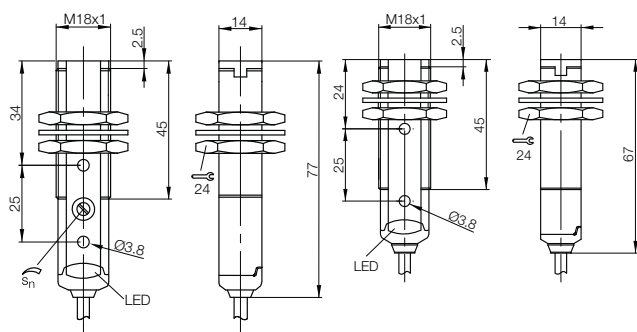
BWL

Photoelectric Sensors with Special Properties

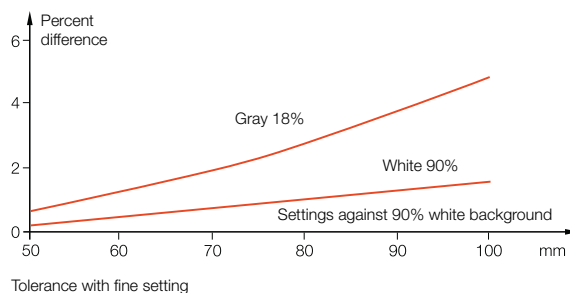
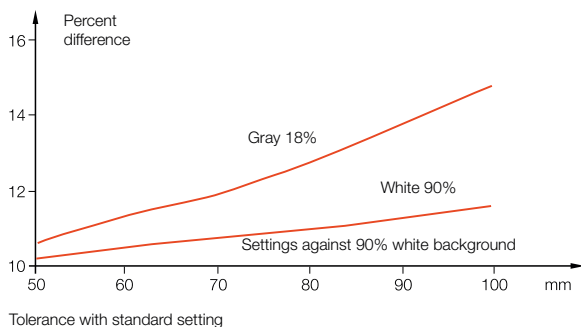
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

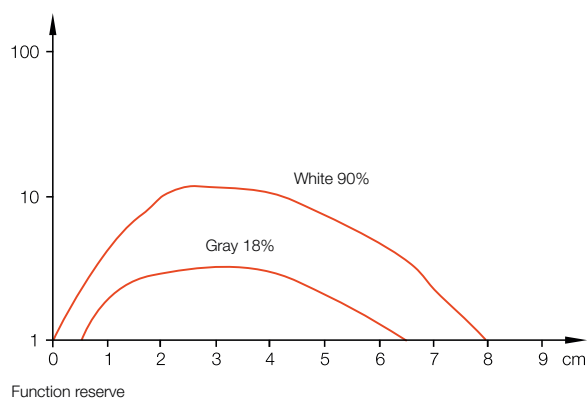
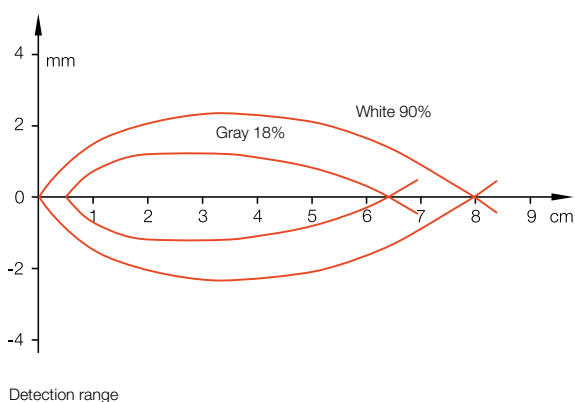
Through-beam sensor 0...60 m	Through-beam sensor 0...60 m		
BOS00CF			
BLE 18KF-PA-1LT-C-02			
	BOS00EL		
	BLS 18KF-XX-1LT-L-02		
10...30 V DC	10...30 V DC		
100 mA			
≤ 30 mA	≤ 35 mA		
Light and dark switching			
Yes/Yes	Yes/Yes		
Potentiometer, 270°			
	Laser, red light		
	650 Nm		
	1		
	approx. 2.5 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, 4x0.14 mm²	2 m PVC cable, 4x0.14 mm²		



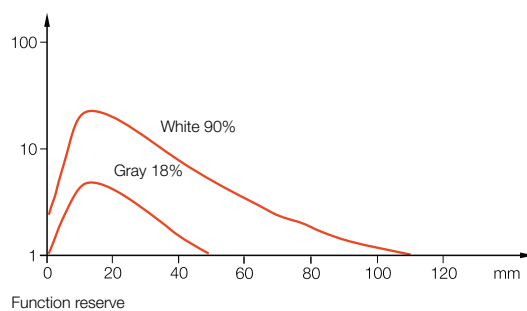
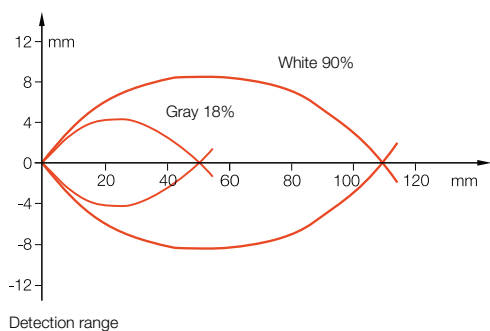
Diffuse sensor BOS 18KF-...-1HA-...



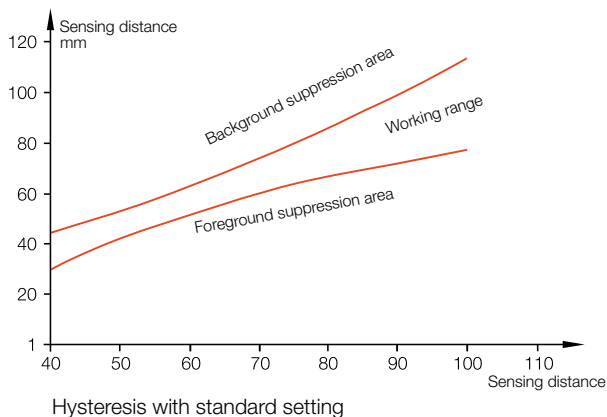
Diffuse sensor BOS 18KF-...-1N1R-...



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



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





Photoelectric Sensors

BOS 18KF Global

Function diagrams



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

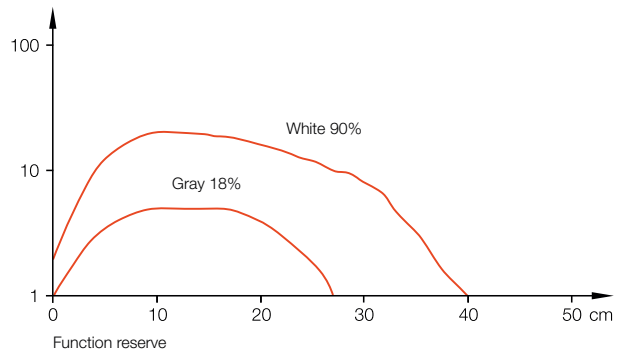
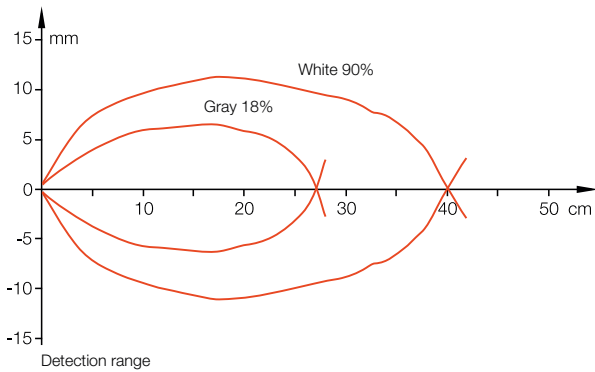
BWL

Photoelectric Sensors with Special Properties

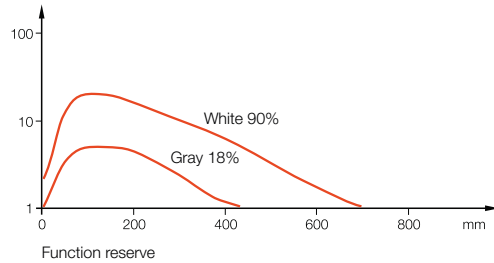
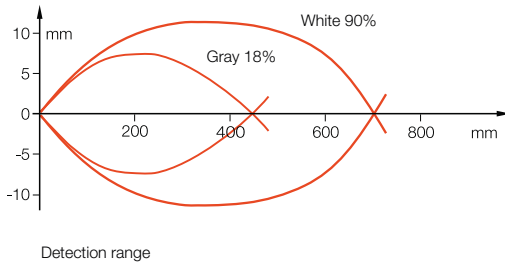
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

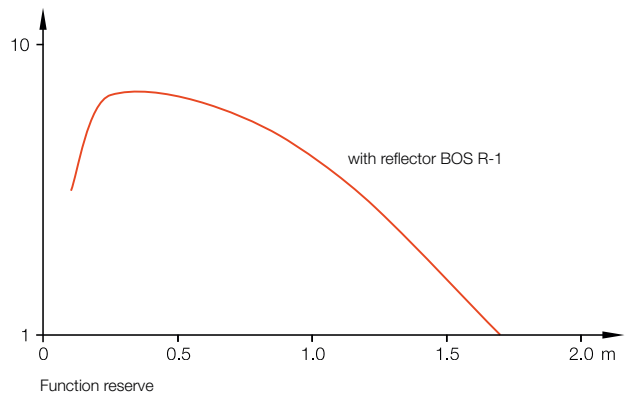
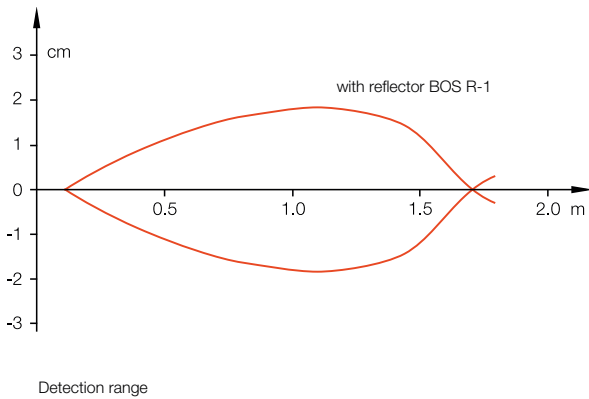
Diffuse sensor BOS 18KF-...-1PD-...



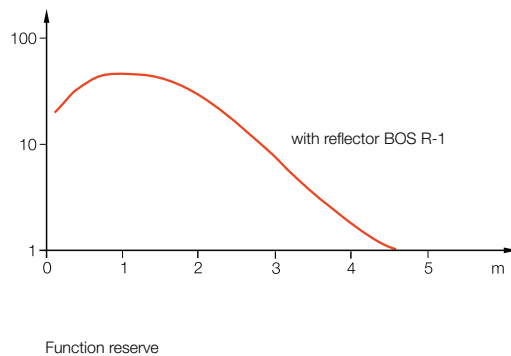
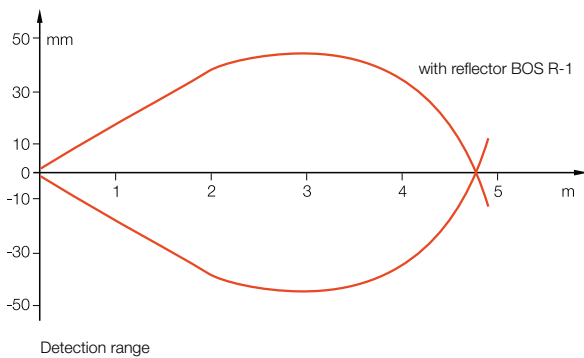
Diffuse sensor BOS 18KF-...-1PE-...



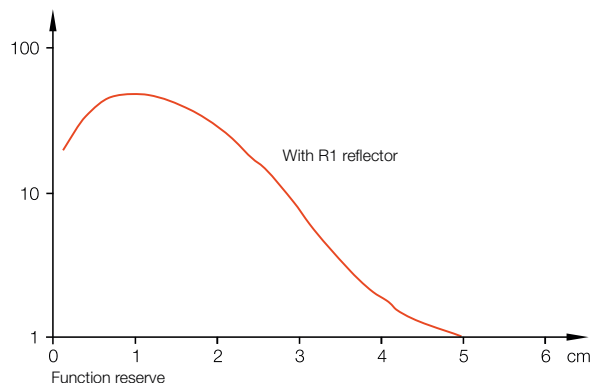
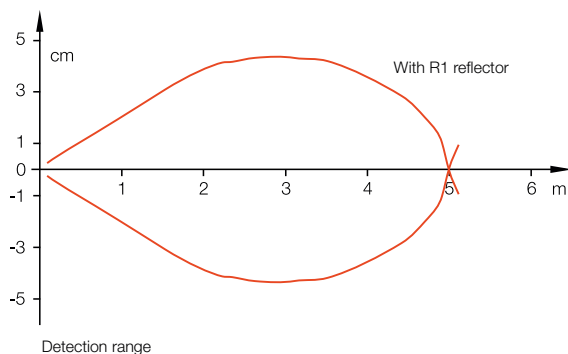
Retroreflective sensor BOS 18KF-...-1TB-...



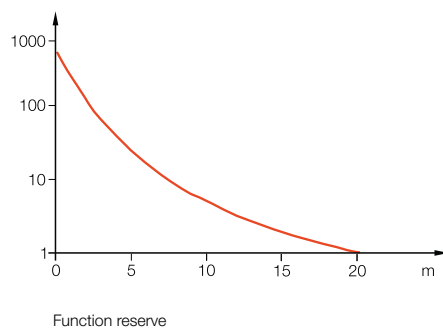
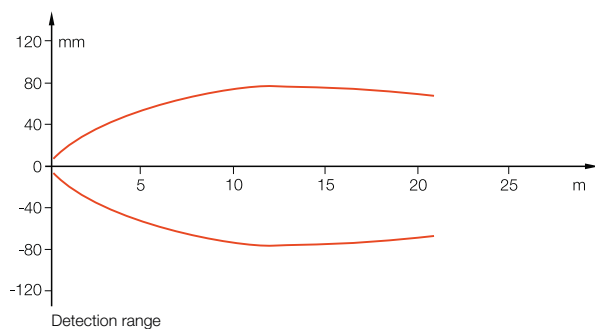
Retroreflective sensor BOS 18KF-...-1QD-...



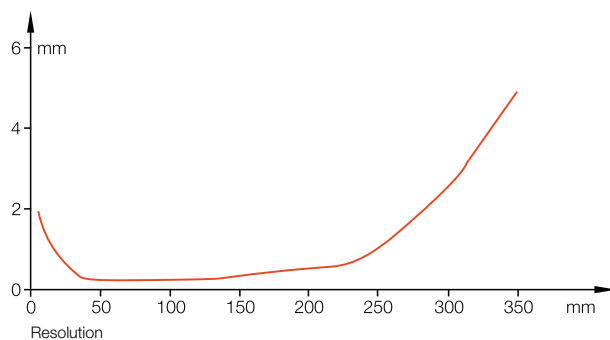
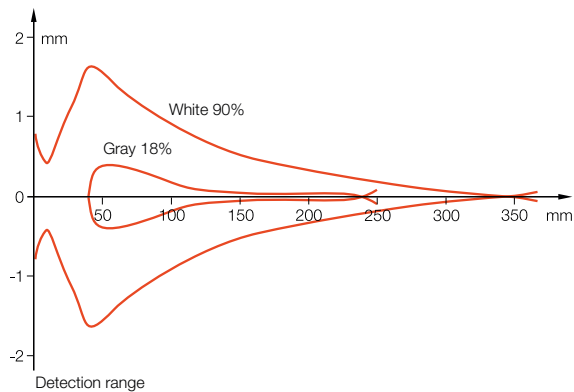
Retroreflective sensor BOS 18KF-...-1RE-...



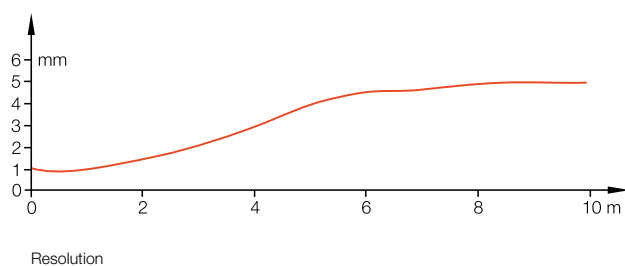
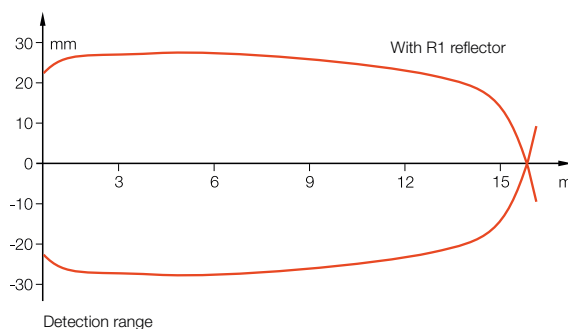
Through-beam sensor BLE/BLS 18KF-...-1PP/1P-...



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



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

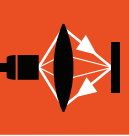




Photoelectric Sensors

BOS 18KF Global

Function diagrams, connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

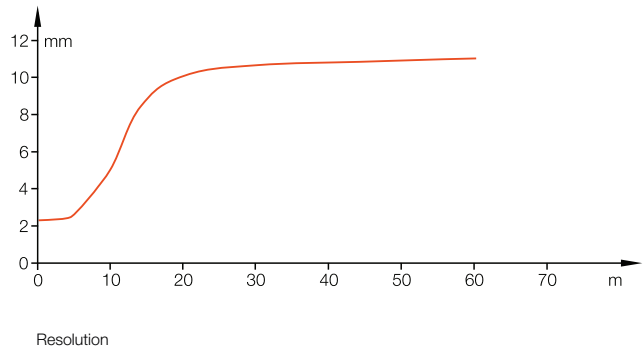
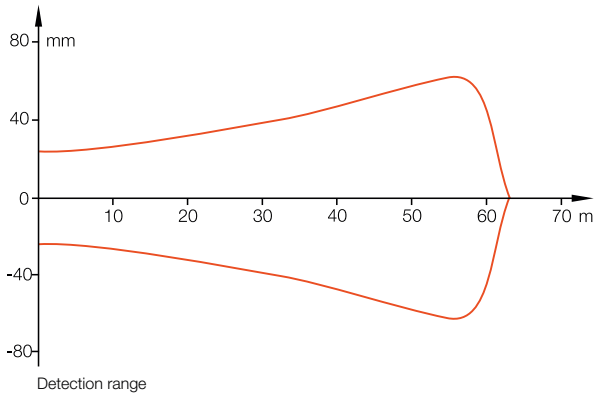
BWL

Photoelectric Sensors with Special Properties

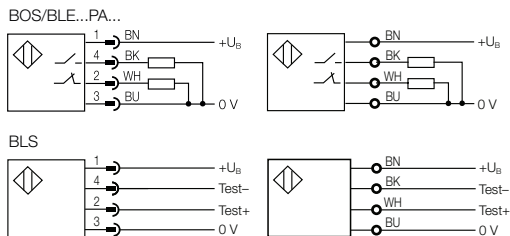
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

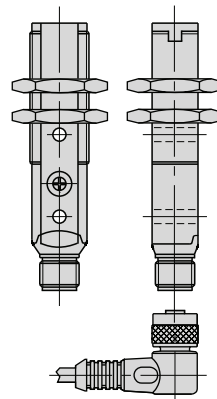
Through-beam sensor BLE/BLS 18KF...-1LT...



Wiring diagrams



Connector orientation



BOS 18KF

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.

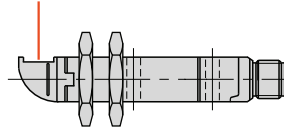
More electrical accessories: You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.

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.



Photoelectric Sensors

BOS 18KW Global

Product overview



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

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BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

Type

Sensing distance/
Range

Light type

Out-
put

Switching
type

Switch-
ing fre-
quency

U_s


Connec-
tion

Special
features

Page

Ordering code

Part number

 Diffuse sensor with background suppression

BOS00LH BOS 18KW-PA-1HA-S4-C

50...100 mm

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BOS00LF BOS 18KW-PA-1HA-C-02

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 Diffuse sensor

BOS00M1 BOS 18KW-PA-1XA-S4-C

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BOS00M0 BOS 18KW-PA-1XA-C-02

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BOS00LK BOS 18KW-PA-1LOB-S4-C

0...250 mm

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BOS00LJ BOS 18KW-PA-1LOB-C-02

0...250 mm

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BOS00LT BOS 18KW-PA-1PD-S4-C

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BOS00LR BOS 18KW-PA-1PD-C-02

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 Retroreflective sensor

BOS00LZ BOS 18KW-PA-1TB-S4-C

0.1...1.7 m

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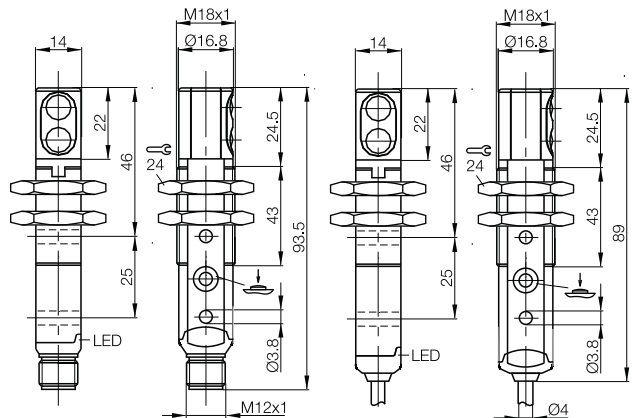
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Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression	
Detection range	50...100 mm		50...100 mm	
PNP NC/NO	Ordering code			
	Part number			
PNP NC/NO Teach-in	Ordering code		BOS00LH	
	Part number		BOS 18KW-PA-1HA-S4-C	
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.	≤ 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	Housing	PBT
	Optical surface	PMMA	Optical surface	PMMA
Connection	M12 connector, 4-pin		2 m PVC cable, 4x0.14 mm ²	

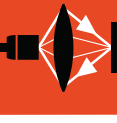
Reference object: white, 90% reflection, 200x200 mm

For wiring diagrams see page 133.



Photoelectric Sensors

BOS 18KW Global



Photoelectric
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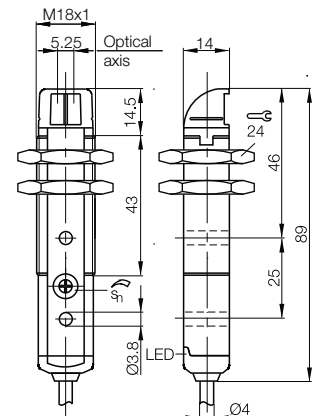
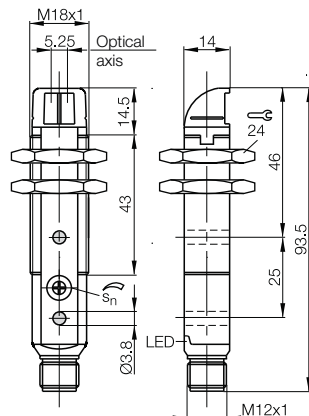
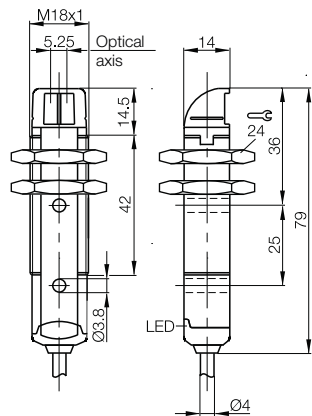
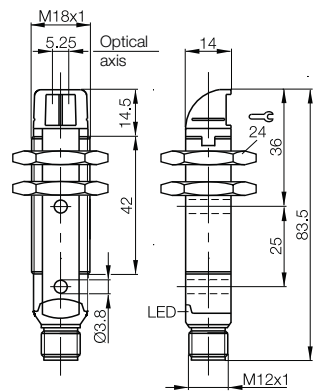
Photoelectric
Sensors with
Special Proper-
ties

Photoelectric
Distance
Sensors for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



Diffuse sensor 0...80 mm	Diffuse sensor 0...80 mm	Diffuse sensor 0...400 mm	Diffuse sensor 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, 4x0.14 mm ²	M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm ²

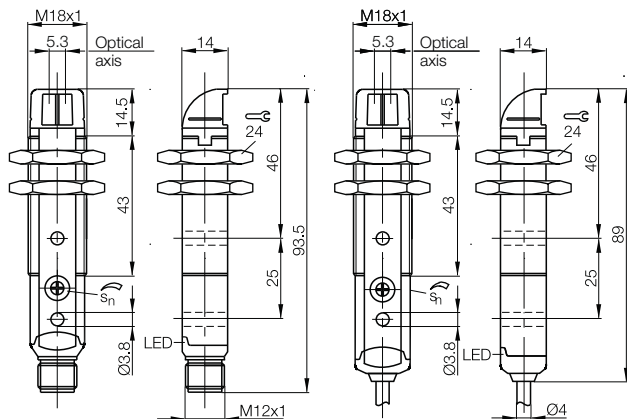




Type				Retroreflective sensor	Retroreflective sensor	
Detection range				0.1...1.7 m	0.1...1.7 m	
PNP	NC/	Polarizing filter, Transparency detection	Ordering code	BOS00LZ	BOS00LY	
	NO		Part number	BOS 18KW-PA-1TB-S4-C	BOS 18KW-PA-1TB-C-02	
PNP	NC/	Polarizing filter	Ordering code			
	NO		Part number			
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.



Photoelectric Sensors

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Angle Sensors

BWL

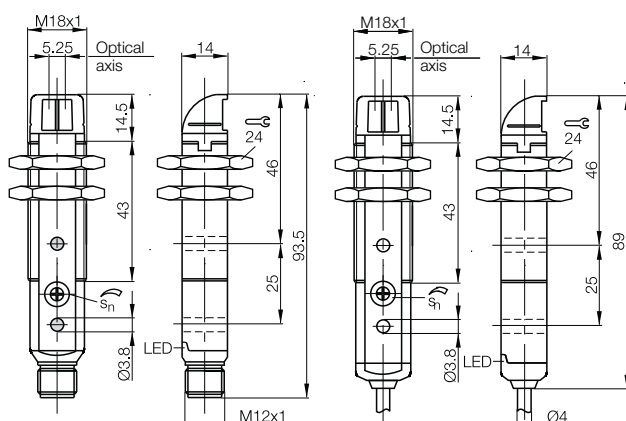
Photoelectric
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Photoelectric
Distance
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Retroreflective sensor 0.1...3 m	Retroreflective sensor 0.1...3 m		
BOS00LW	BOS00LU		
BOS 18KW-PA-1QC-S4-C	BOS 18KW-PA-1QC-C-02		
10...30 V DC	10...30 V DC		
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, 4x0.14 mm ²		





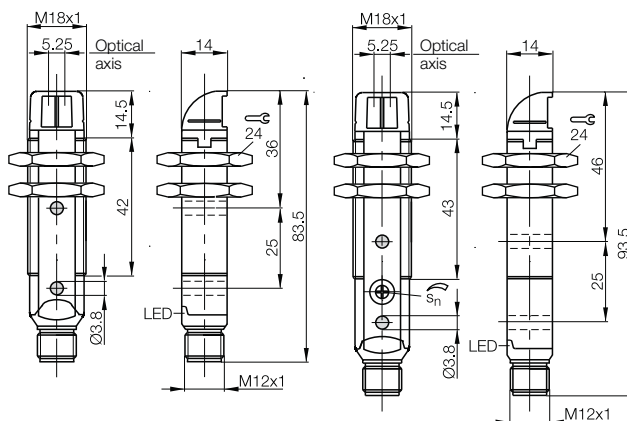
Emitter



Receiver

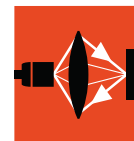
Type	Through-beam sensor			0...15 m	Through-beam sensor	0...15 m
Detection range					BOS00CW	
PNP NC/NO	Receiver	Ordering code			BLE 18KW-PA-1PP-S4-C	
		Part number				
PNP NC/NO	Emitter	Ordering code		BOS00EW		
		Part number		BLS 18KW-XX-1P-S4-L		
Supply voltage U_s				10...30 V DC	10...30 V DC	
Output 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				PBT	PBT	
	Housing	Optical surface		PMMA	PMMA	
Connection				M12 connector, 4-pin	M12 connector, 4-pin	

For wiring diagrams see page 133.



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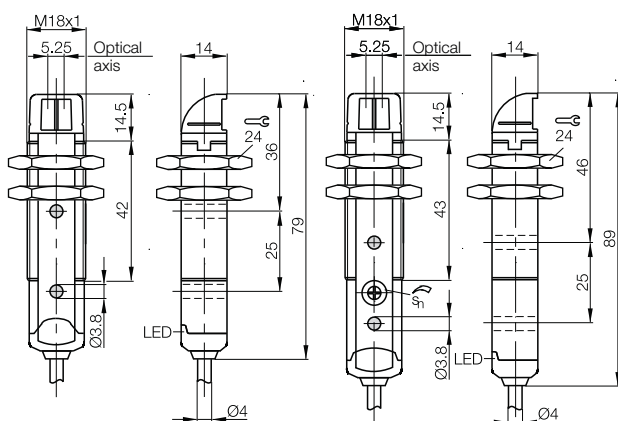
Photoelectric
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Accessories for
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Through-beam sensor 0...15 m	Through-beam sensor 0...15 m		
	BOS00CU		
	BLE 18KW-PA-1PP-C-02		
BOS00EU			
BLS 18KW-XX-1P-L-02			
10...30 V DC	10...30 V DC		
≤ 35 mA	100 mA		
Yes/Yes	≤ 30 mA		
	Light and dark switching		
	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,	2 m PVC cable,		
4x0.14 mm ²	4x0.14 mm ²		

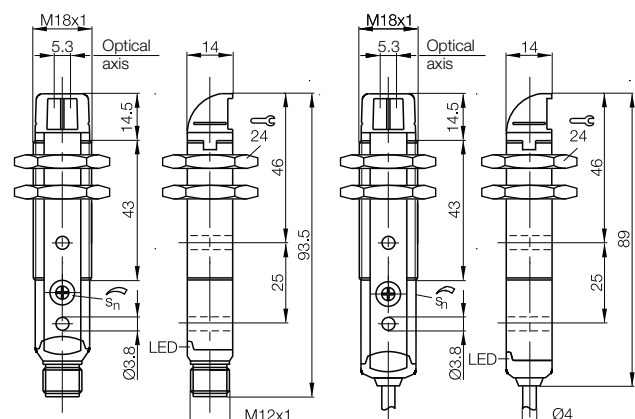




Type				Diffuse sensor	Diffuse sensor	
Detection range				0...250 mm	0...250 mm	
PNP	NC/NO		Ordering code	BOS00LK	BOS00LJ	
			Part number	BOS 18KW-PA-1LOB-S4-C	BOS 18KW-PA-1LOB-C-02	
PNP	NC/NO	Polarizing filter	Ordering code			
			Part number			
Supply voltage U _S				10...30 V DC	10...30 V DC	
Output 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 50 mm	
				approx. 0.3 mm at 100 mm	approx. 0.3 mm at 100 mm	
				approx. 0.5 mm at 150 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, 200x200 mm
Reference reflector: BOS R-1

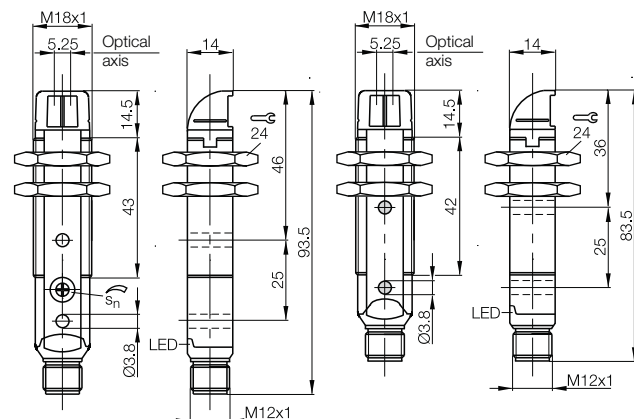
For wiring diagrams see page 133.





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.



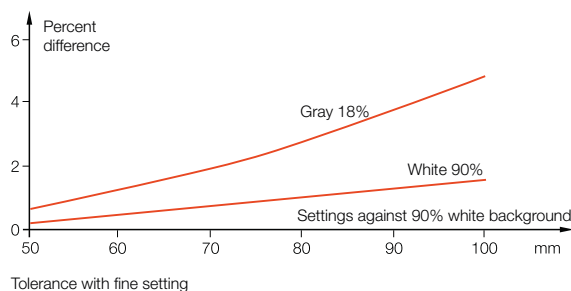
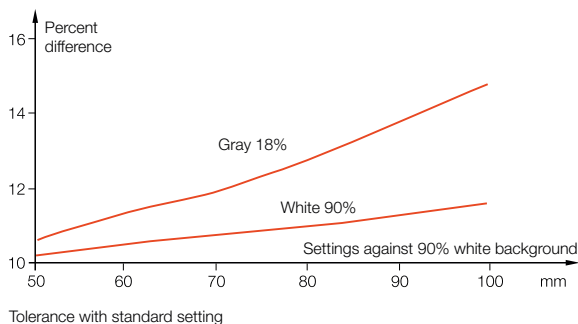


Photoelectric Sensors

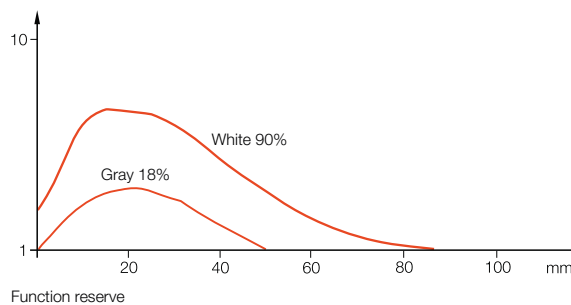
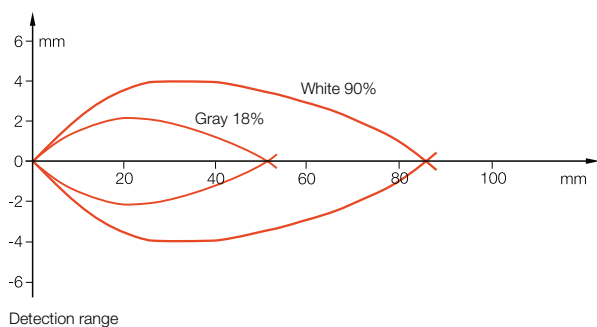
BOS 18KW Laser Global

Function diagrams

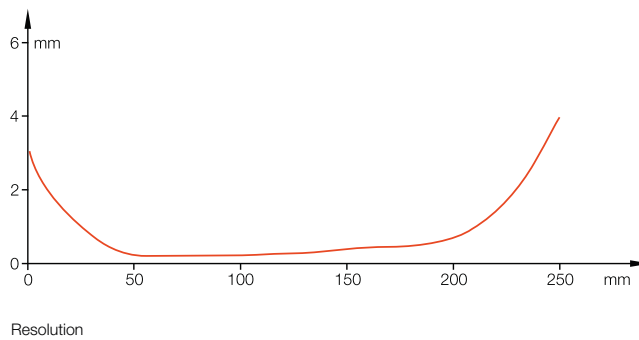
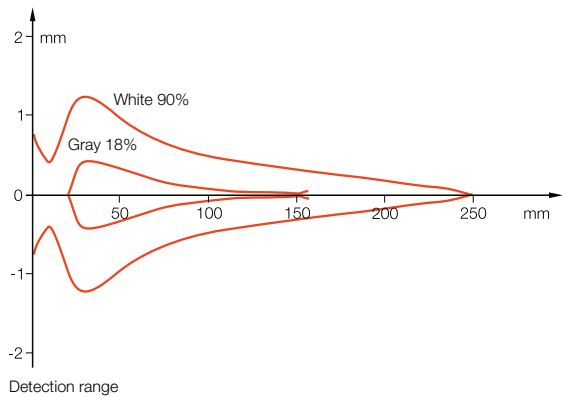
Diffuse sensor BOS 18KW-..-1HA-...



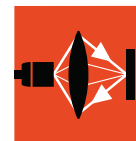
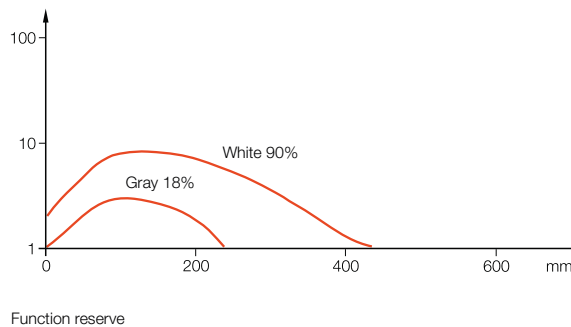
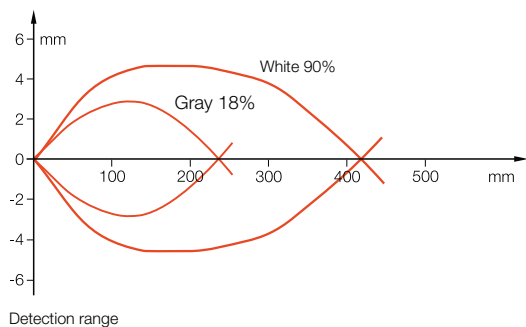
Diffuse sensor BOS 18KW-..-1XA-...



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



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



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

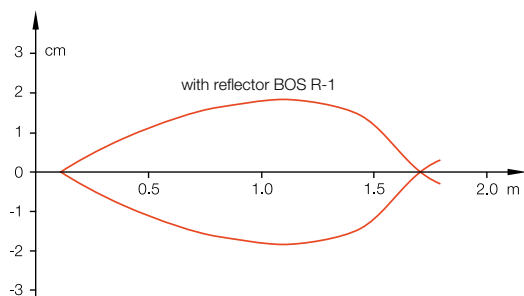
BWL

Photoelectric Sensors with Special Properties

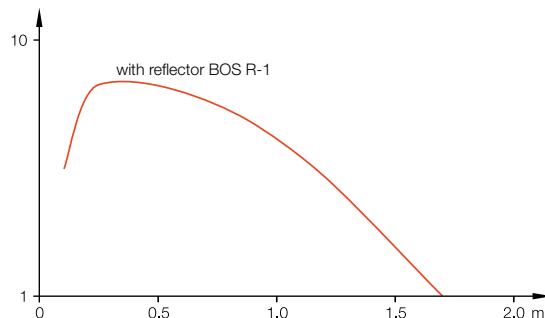
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

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

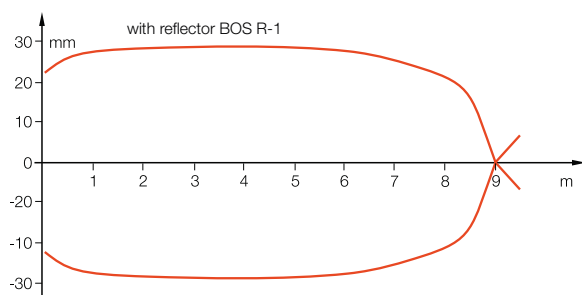


Detection range

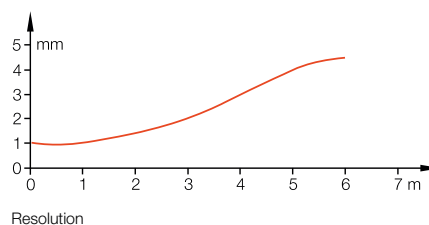


Function reserve

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

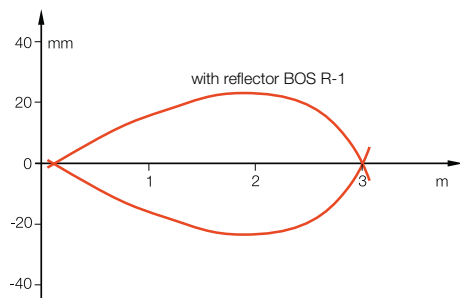


Detection range

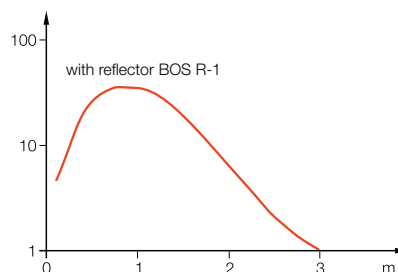


Resolution

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



Detection range



Function reserve

Photoelectric Sensors

BOS 18KW Global

Connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

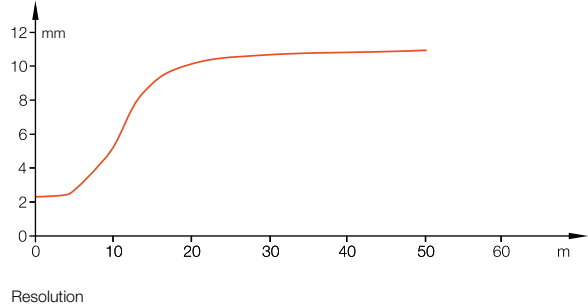
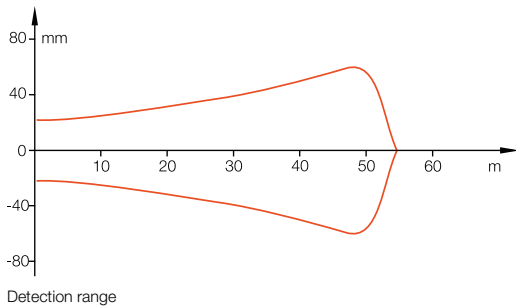
BWL

Photoelectric Sensors with Special Properties

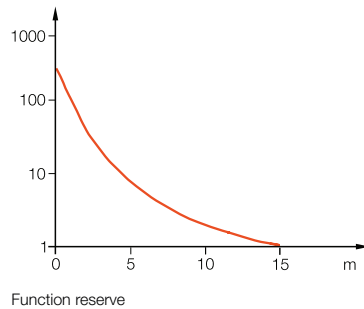
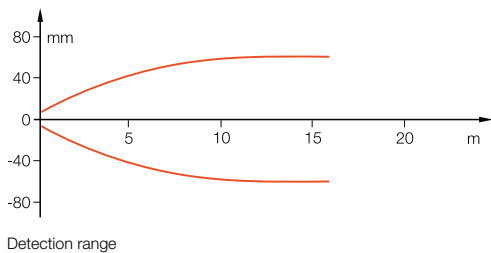
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

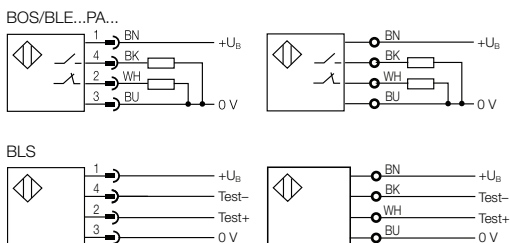
Through-beam sensor BLE/BLS 18KW-...-1LT-...



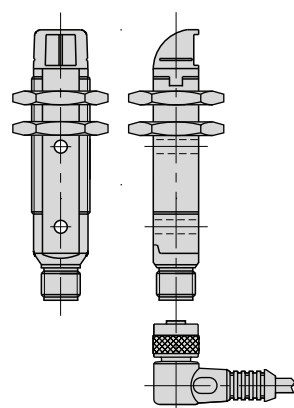
Through-beam BLE/BLS 18KW-...-1PP/1P-...



Wiring diagrams



Connector orientation



Recommended accessories (please order separately)

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



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



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.

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



Photoelectric Sensors

BOS 30M

Product overview



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

Ordering code

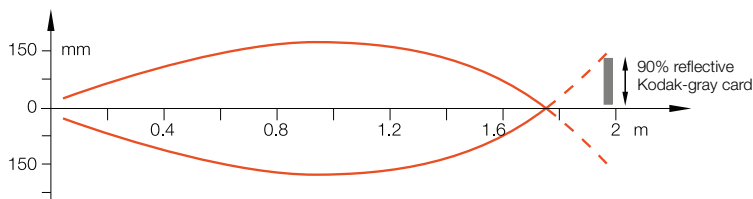
Part number



Diffuse sensor

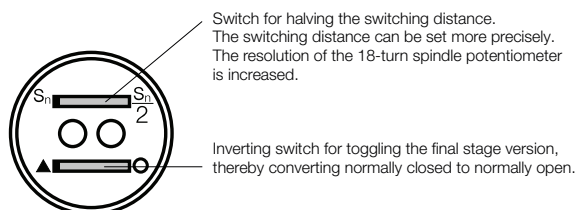
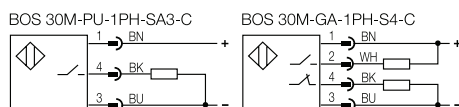
Sensing distance/Range	Light type	Output	Switching type	Switching frequency	U _s	Connection	Page
	Infrared	PNP transistor NPN transistor	Light switching Dark switching		10...30 V DC	M12 plug, 4-pin	
BOS0134 BOS 30M-GA-1PH-S4-C	0...2 m	■	■	■	100 Hz	■	137
BOS008T BOS 30M-PU-1PH-SA3-C	0...2 m	■	■	■	100 Hz	■	137

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



Sensing distance with side approach of Kodak-gray card.

Wiring diagrams



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

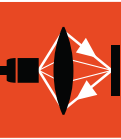


Connectors without LED are suitable for PNP and NPN sensors.

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Photoelectric Sensors

BOS 30M



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	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

