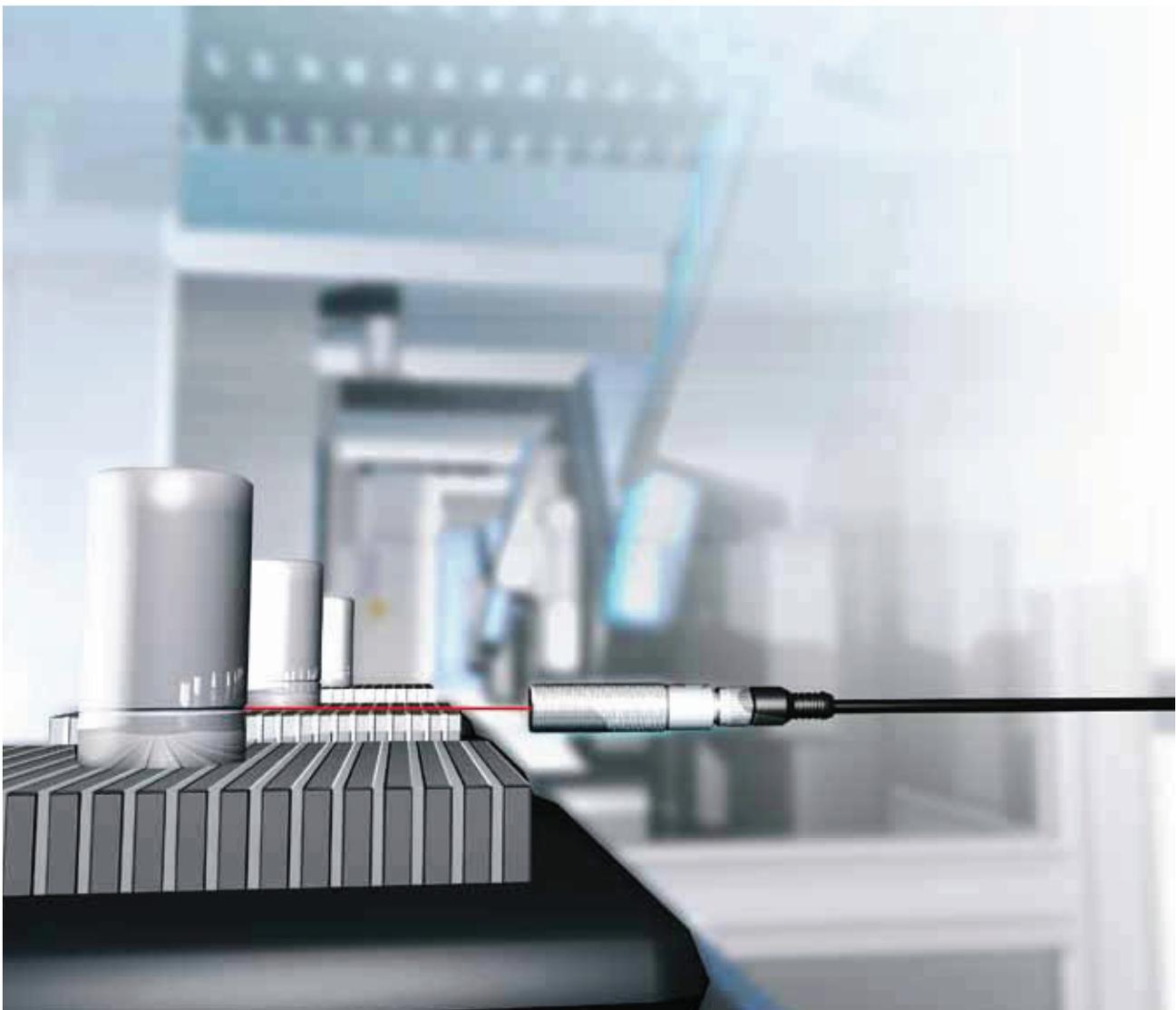


**Small size – big performance**

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.

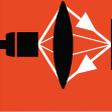
This is how the small photoelectric sensors open up possibilities in highly dynamic applications such as robot arms. This is precisely where components that have very low weight and small dimensions while retaining high switching precision are in demand.



# Photoelectric Sensors

## BOS 08M

### Product overview



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

Type	Sensing distance/Range	Material Housing		Light type		Output	Switching type		Switching frequency	U <sub>s</sub>	Connection		Page
		Nickel-plated CuZn	Stainless steel	Red light	Infrared		PNP transistor	Light switching			Dark switching	10...30 V DC	
<b>Diffuse sensor</b>													
<b>BOS0006</b>	BOS 08M-PS-RD11-S49	0...55 mm	■	■	■	■	■	■	400 Hz	■	■		38
<b>BOS0004</b>	BOS 08M-PO-RD11-S49	0...55 mm	■	■	■	■	■	■	400 Hz	■	■		38
<b>BOS0005</b>	BOS 08M-PS-RD11-02	0...55 mm	■	■	■	■	■	■	400 Hz	■	■	■	38
<b>BOS0003</b>	BOS 08M-PO-RD11-02	0...55 mm	■	■	■	■	■	■	400 Hz	■	■	■	38
<b>Retroreflective sensor with polarizing filter</b>													
<b>BOS00RC</b>	BOS 08M-PS-PR11-S49	25...550 mm	■	■	■	■	■	■	400 Hz	■	■		38
<b>BOS00R9</b>	BOS 08M-PO-PR11-S49	25...550 mm	■	■	■	■	■	■	400 Hz	■	■		38
<b>BOS00RA</b>	BOS 08M-PS-PR11-02	25...550 mm	■	■	■	■	■	■	400 Hz	■	■	■	39
<b>BOS00R8</b>	BOS 08M-PO-PR11-02	25...550 mm	■	■	■	■	■	■	400 Hz	■	■	■	39
<b>Through-beam sensor Receiver</b>													
<b>BOS00W9</b>	BOS 08M-PS-RE11-S49	0...1.1 m	■	■	■	■	■	■	400 Hz	■	■		39
<b>BOS0153</b>	BOS 08M-PO-RE11-S49	0...1.1 m	■	■	■	■	■	■	400 Hz	■	■		39
<b>BOS018F</b>	BOS 08M-PS-RE11-02	0...1.1 m	■	■	■	■	■	■	400 Hz	■	■	■	39
<b>BOS018E</b>	BOS 08M-PO-RE11-02	0...1.1 m	■	■	■	■	■	■	400 Hz	■	■	■	39
<b>BOS01F7</b>	BOS 08E-PS-IE11-02	0...1.5 m	■	■	■	■	■	■	400 Hz	■	■	■	40
<b>Through-beam sensor Emitter</b>													
<b>BOS0151</b>	BOS 08M-X-RS11-S49	0...1.1 m	■	■	■	■	■	■		■	■		39
<b>BOS018H</b>	BOS 08M-X-RS11-02	0...1.1 m	■	■	■	■	■	■		■	■	■	39
<b>BOS01F6</b>	BOS 08E-X-IS11-02	0...1.5 m	■	■	■	■	■	■		■	■	■	40

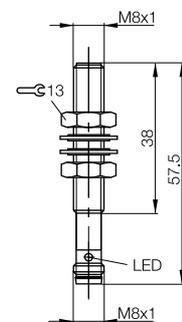
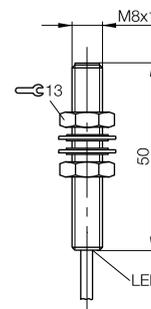
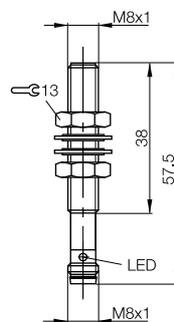
NPN on request



Type		Diffuse sensor	Diffuse sensor	Retroreflective sensor
Detection range		<b>0...55 mm</b>	<b>0...55 mm</b>	<b>25...550 mm</b>
PNP NO	<b>Ordering code</b>	<b>BOS0006</b>	<b>BOS0005</b>	
	Part number	BOS 08M-PS-RD11-S49	BOS 08M-PS-RD11-02	
PNP NC	<b>Ordering code</b>	<b>BOS0004</b>	<b>BOS0003</b>	
	Part number	BOS 08M-PO-RD11-S49	BOS 08M-PO-RD11-02	
PNP NO	Polarizing filter			<b>BOS00RC</b>
	Part number			BOS 08M-PS-PR11-S49
PNP NC	Polarizing filter			<b>BOS00R9</b>
	Part number			BOS 08M-PO-PR11-S49
PNP NO	Receiver			
	Part number			
PNP NC	Receiver			
	Part number			
	Emitter			
	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 <sup>2</sup>	M8 connector, 3-pin

Reference object: white, 90% reflection, 200x200 mm  
 Reference reflector: BOS R-9

For wiring diagrams see page 41.

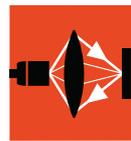


# Photoelectric Sensors

## BOS 08M



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
<b>BOS00RA</b> BOS 08M-PS-PR11-02				
<b>BOS00R8</b> BOS 08M-PO-PR11-02				
	<b>BOS00W9</b> BOS 08M-PS-RE11-S49		<b>BOS018F</b> BOS 08M-PS-RE11-02	
	<b>BOS0153</b> BOS 08M-PO-RE11-S49		<b>BOS018E</b> BOS 08M-PO-RE11-02	
		<b>BOS0151</b> BOS 08M-X-RS11-S49		<b>BOS018H</b> 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	LED, red light 640 Nm Yellow LED 1.25 ms 400 Hz	LED, red light 640 Nm Yellow LED 1.25 ms 400 Hz	LED, red light 640 Nm Yellow LED 1.25 ms 400 Hz	LED, red light 640 Nm Yellow LED 1.25 ms 400 Hz
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 mm <sup>2</sup>	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 mm <sup>2</sup>	Nickel-plated CuZn PMMA 2 m PUR cable, 2x0.14 mm <sup>2</sup>



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

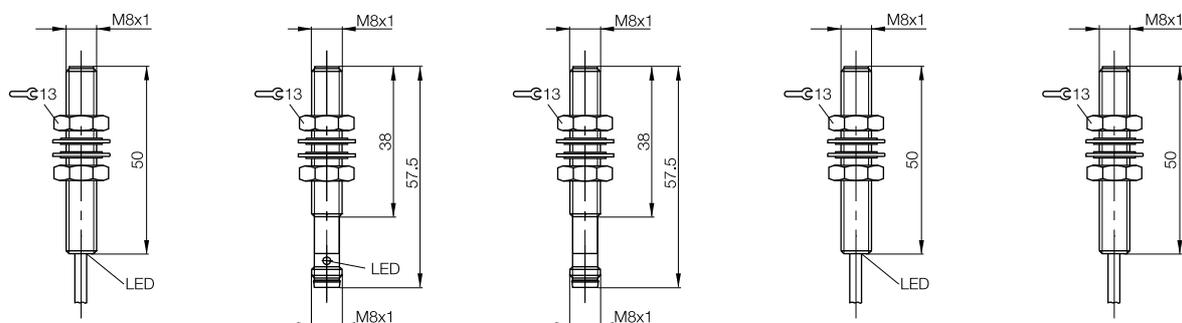
Fork Sensors BGL

Angle Sensors BWL

Photoelectric Sensors with Special Properties

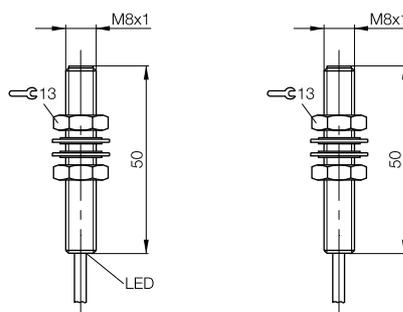
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors





Type		Through-beam sensor	Through-beam sensor
Detection range		<b>0...1.5 m</b>	<b>0...1.5 m</b>
PNP NO Receiver	<b>Ordering code</b>	<b>BOS01F7</b>	
	Part number	BOS 08E-PS-IE11-02	
Emitter	<b>Ordering code</b>		<b>BOS01F6</b>
	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 $T_a$		-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 m <sup>2</sup>	2 m PUR cable, 2×0.14 m <sup>2</sup>



# Photoelectric Sensors

## BOS 08M

### Connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors BGL

Angle Sensors BWL

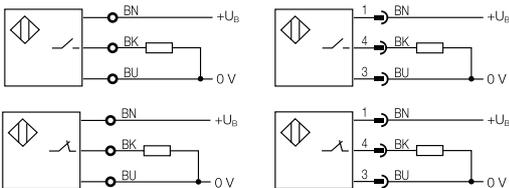
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

### 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	<b>BAM00WL</b>



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	<b>BCC02M8</b>
M8, 3-pin	Straight	PVC	Gray	2 m	<b>BCC02NU</b>
M8, 3-pin	Angled	PUR	Black	2 m	<b>BCC02ML</b>
M8, 3-pin	Angled	PVC	Gray	2 m	<b>BCC02P5</b>

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.

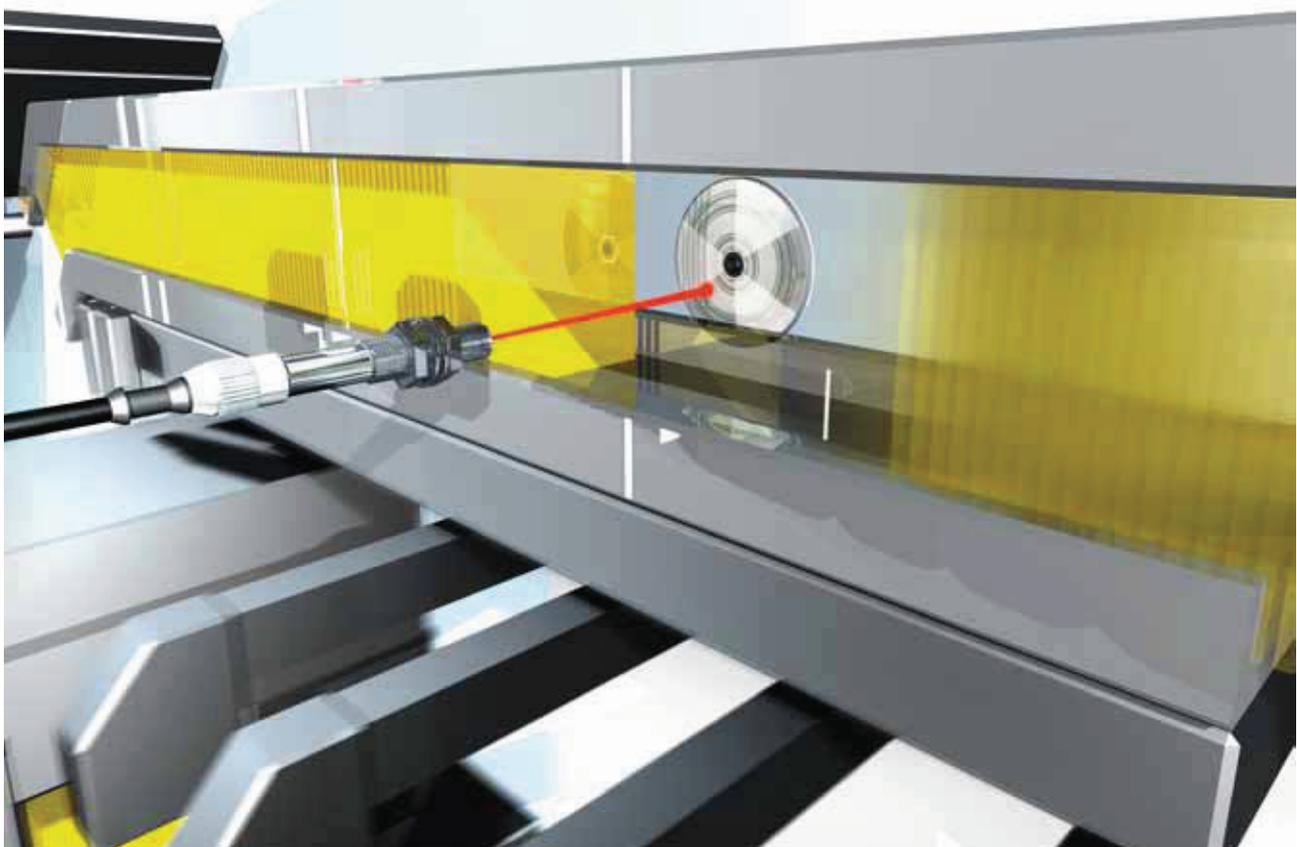
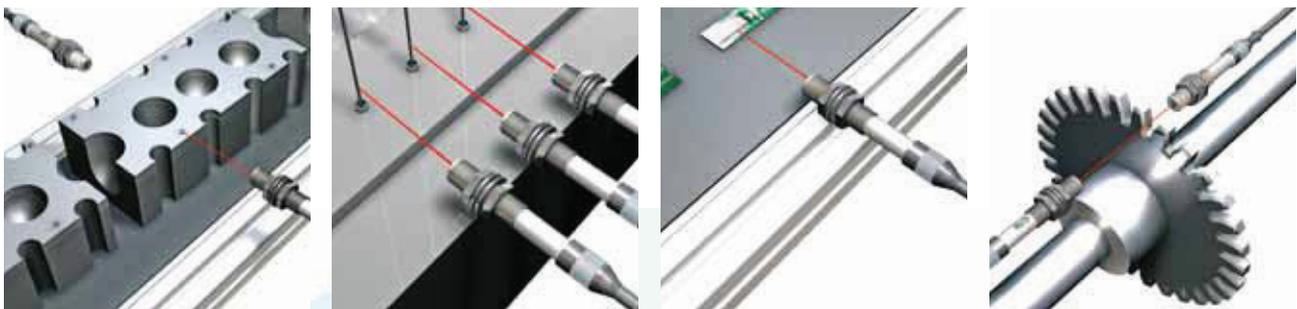
For long ranges or for detecting small parts, laser through-beam light sensors are available in two different designs.

### 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			Output	Switching type		Switching frequency	U <sub>s</sub>	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	
<b>Diffuse sensor with background suppression</b>														
<b>BOS007R</b> BOS 12M-PS-1N1I-S4-C	0...24 mm	■			■	■		1 kHz	■	■				44
<b>BOS007T</b> BOS 12M-PU-1HA-S4-C	10...60 mm	■			■	■	■	1 kHz	■	■		■	■	44
<b>Diffuse sensor</b>														
<b>BOS0012</b> BOS 12M-PS-1YA-S4-C	1...100 mm	■			■	■		200 Hz	■	■				44
<b>BOS000P</b> BOS 12M-PO-1YA-S4-C	1...100 mm	■			■		■	200 Hz	■	■				44
<b>BOS0010</b> BOS 12M-PS-1YA-BO-C-03	1...100 mm	■			■	■		200 Hz	■		■			45
<b>BOS000N</b> BOS 12M-PO-1YA-BO-C-03	1...100 mm	■			■		■	200 Hz	■		■			45
<b>BOS0043</b> BOS 12M-PS-1YB-S4-C	1...200 mm	■			■	■		200 Hz	■	■				45
<b>BOS000T</b> BOS 12M-PO-1YB-S4-C	1...200 mm	■			■		■	200 Hz	■	■				45
<b>BOS0013</b> BOS 12M-PS-1YB-BO-C-03	1...200 mm	■			■	■		200 Hz	■		■			45
<b>BOS000R</b> BOS 12M-PO-1YB-BO-C-03	1...200 mm	■			■		■	200 Hz	■		■			45
<b>BOS000W</b> BOS 12M-PS-1PB-S4-C	1...200 mm		■		■	■		200 Hz	■	■		■		45
<b>BOS000U</b> BOS 12M-PS-1PB-BO-C-03	1...200 mm		■		■	■		200 Hz	■		■	■		45
<b>BOS0045</b> BOS 12M-PS-1PD-S4-C	1...400 mm	■			■	■		200 Hz	■	■		■		46
<b>BOS0044</b> BOS 12M-PO-1PD-S4-C	1...400 mm	■			■		■	200 Hz	■	■		■		46
<b>BOS000Y</b> BOS 12M-PS-1PD-BO-C-03	1...400 mm	■			■	■		200 Hz	■		■	■		46
<b>BOS000L</b> BOS 12M-PO-1PD-BO-C-03	1...400 mm	■			■		■	200 Hz	■		■	■		46
<b>Retroreflective sensor with polarizing filter</b>														
<b>BOS00RE</b> BOS 12M-PS-1QA-S4-C	0...1.5 m	■			■		■	200 Hz	■	■		■		46
<b>BOS00RJ</b> BOS 12M-PO-1QA-S4-C	0...1.5 m	■			■	■		200 Hz	■	■		■		46
<b>BOS00RK</b> BOS 12M-PS-1QA-BO-C-03	0...1.5 m	■			■	■		200 Hz	■		■	■		47
<b>BOS00RH</b> BOS 12M-PO-1QA-BO-C-03	0...1.5 m	■			■	■		200 Hz	■		■	■		47
<b>Through-beam sensor Receiver</b>														
<b>BOS00UE</b> BLE 12M-PA-1PD-S4-C	0...5 m	■			■	■	■	500 Hz	■	■		■		47
<b>BOS00UC</b> BLE 12M-PA-1PD-BO-C-03	0...5 m	■			■	■	■	500 Hz	■		■	■		47
<b>Through-beam sensor Emitter</b>														
<b>BOS00W2</b> BLS 12M-XX-1RD-S4-L	0...5 m	■							■	■				47
<b>BOS00UW</b> BLS 12M-XX-1RD-BO-L-03	0...5 m	■							■		■			47
<b>Laser through-beam sensor Receiver</b>														
<b>BOS00WF</b> BOS 12M-PA-LE10-S4					■	■	■	1 kHz	■	■		■		51
<b>BOS00WE</b> BOS 12M-PA-LE10-03					■	■	■	1 kHz	■		■	■		51
<b>Laser through-beam sensor Emitter</b>														
<b>BOS00WH</b> BOS 12M-X-LS11-S4	0...3 m				■				■	■				51
<b>BOS00WL</b> BOS 12M-XT-LS11-S4	0...3 m				■				■	■				51
<b>BOS00WK</b> BOS 12M-XT-LS11-03	0...3 m				■				■		■			51
<b>BOS00WJ</b> BOS 12M-X-LS12-S4	0...30 m				■				■	■				51
<b>BOS00WN</b> BOS 12M-XT-LS12-S4	0...30 m				■				■	■				51
<b>BOS00WM</b> BOS 12M-XT-LS12-03	0...30 m				■				■		■			51

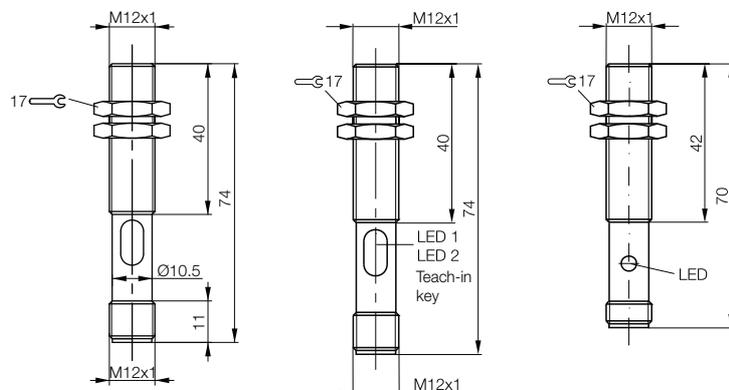
NPN on request



Type		Diffuse sensor with background suppression	Diffuse sensor with background suppression	Diffuse sensor
Detection range		<b>0...24 mm</b>	<b>10...60 mm</b>	<b>1...100 mm</b>
PNP NO Background suppression	<b>Ordering code</b>	<b>BOS007R</b>		
	Part number	BOS 12M-PS-1N1I-S4-C		
PNP NO/NC Background suppression, Teach-in	<b>Ordering code</b>		<b>BOS007T</b>	
	Part number		BOS 12M-PU-1HA-S4-C	
PNP NO	<b>Ordering code</b>			<b>BOS0012</b>
	Part number			BOS 12M-PS-1YA-S4-C
PNP NC	<b>Ordering code</b>			<b>BOS000P</b>
	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

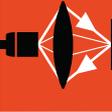
Reference object: white, 90% reflection, 200×200 mm

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

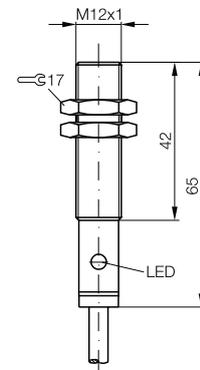
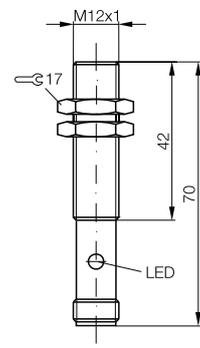
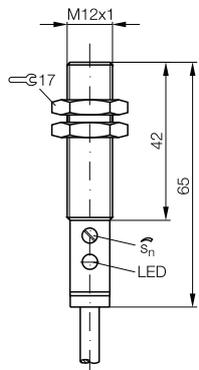
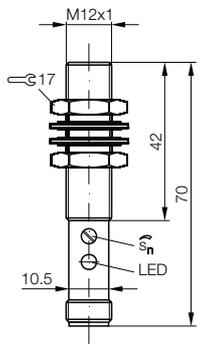
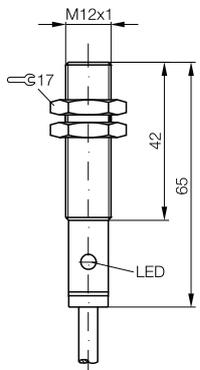
Photoelectric Sensors with Special Properties

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
	<b>BOS0010</b> BOS 12M-PS-1YA-B0-C-03	<b>BOS000W</b> BOS 12M-PS-1PB-S4-C	<b>BOS000U</b> BOS 12M-PS-1PB-B0-C-03	<b>BOS0043</b> BOS 12M-PS-1YB-S4-C	<b>BOS0013</b> BOS 12M-PS-1YB-B0-C-03
	<b>BOS000N</b> BOS 12M-PO-1YA-B0-C-03			<b>BOS000T</b> BOS 12M-PO-1YB-S4-C	<b>BOS000R</b> BOS 12M-PO-1YB-B0-C-03
	10...30 V DC ≤ 200 mA ≤ 20 mA Light or dark switching Yes/Yes Fixed LED, red light 660 Nm	10...30 V DC ≤ 200 mA ≤ 20 mA Light switching Yes/Yes Potentiometer, 270° LED, infrared light 880 Nm	10...30 V DC ≤ 200 mA ≤ 20 mA Light switching Yes/Yes Potentiometer, 270° LED, infrared light 880 Nm	10...30 V DC ≤ 200 mA ≤ 20 mA Light or dark switching Yes/Yes Fixed LED, red light 660 Nm	10...30 V DC ≤ 200 mA ≤ 20 mA Light or dark switching Yes/Yes Fixed LED, red light 660 Nm
	Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
	2.5 ms 200 Hz IP 67 -15...+55 °C 5 klx Nickel-plated CuZn PMMA 3 m PVC cable, 3×0.34 mm <sup>2</sup>	2.5 ms 200 Hz IP 67 -5...+55 °C 5 klx Nickel-plated CuZn PMMA M12 connector, 4-pin	2.5 ms 200 Hz IP 67 -5...+55 °C 5 klx Nickel-plated CuZn PMMA 3 m PVC cable, 3×0.34 mm <sup>2</sup>	2.5 ms 200 Hz IP 67 -15...+55 °C 5 klx Nickel-plated CuZn PMMA M12 connector, 4-pin	2.5 ms 200 Hz IP 67 -15...+55 °C 5 klx Nickel-plated CuZn PMMA 3 m PVC cable, 3×0.34 mm <sup>2</sup>

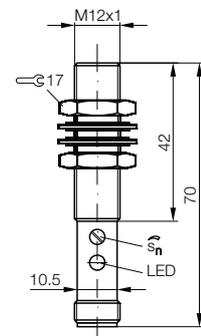
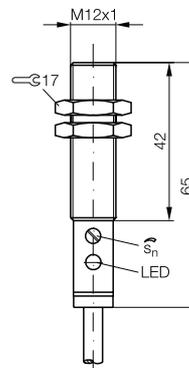
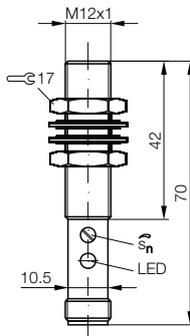




Type		Diffuse sensor	Diffuse sensor	Retroreflective sensor
Detection range		<b>1...400 mm</b>	<b>1...400 mm</b>	<b>0...1.5 m</b>
PNP NO	<b>Ordering code</b>	<b>BOS0045</b>	<b>BOS000Y</b>	
	Part number	BOS 12M-PS-1PD-S4-C	BOS 12M-PS-1PD-B0-C-03	
PNP NC	<b>Ordering code</b>	<b>BOS0044</b>	<b>BOS000L</b>	
	Part number	BOS 12M-PO-1PD-S4-C	BOS 12M-PO-1PD-B0-C-03	
PNP NO Polarizing filter	<b>Ordering code</b>			<b>BOS00RE</b>
	Part number			BOS 12M-PS-1QA-S4-C
PNP NC Polarizing filter	<b>Ordering code</b>			<b>BOS00RJ</b>
	Part number			BOS 12M-PO-1QA-S4-C
PNP complementary Receiver	<b>Ordering code</b>			
	Part number			
Emitter	<b>Ordering code</b>			
	Part number			
Supply voltage $U_S$		10...30 V DC	10...30 V DC	10...30 V DC
Output current		$\leq 200$ mA	$\leq 200$ mA	$\leq 200$ mA
No-load supply current $I_0$ max.		$\leq 20$ mA	$\leq 20$ mA	$\leq 20$ 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 <sup>2</sup>	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

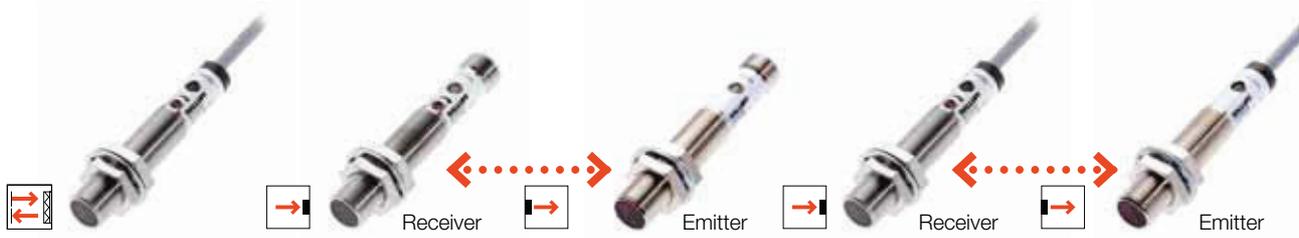
Angle Sensors

BWL

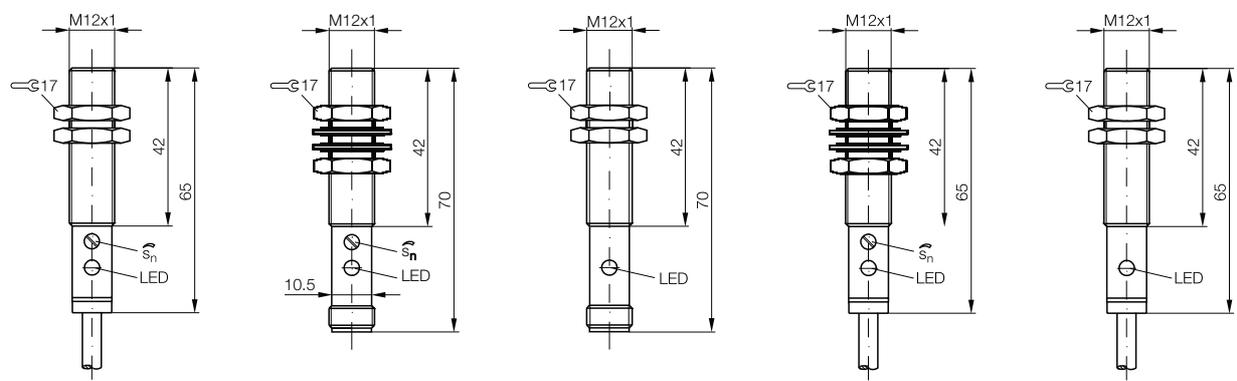
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

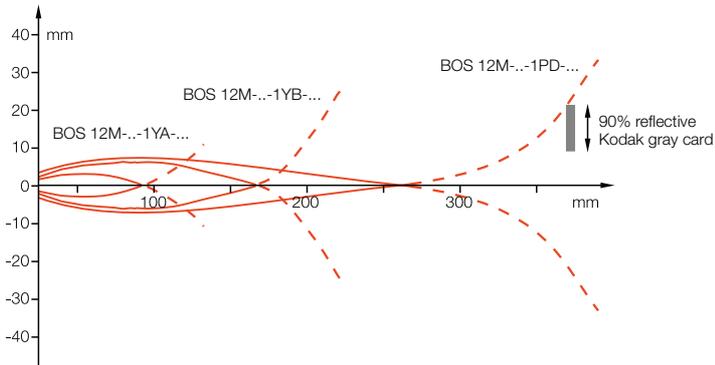
Accessories for Photoelectric Sensors



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
<b>BOS00RK</b> BOS 12M-PS-1QA-B0-C-03				
<b>BOS00RH</b> BOS 12M-PO-1QA-B0-C-03				
	<b>BOS00UE</b> BLE 12M-PA-1PD-S4-C		<b>BOS00UC</b> BLE 12M-PA-1PD-B0-C-03	
		<b>BOS00W2</b> BLS 12M-XX-1RD-S4-L		<b>BOS00UW</b> BLS 12M-XX-1RD-B0-L-03
10...30 V DC ≤ 200 mA ≤ 20 mA	10...30 V DC ≤ 200 mA ≤ 20 mA	10...30 V DC ≤ 20 mA	10...30 V DC ≤ 200 mA ≤ 20 mA	10...30 V DC ≤ 20 mA
Light or dark switching Yes/Yes	Light and dark switching Yes/Yes	Yes/Yes	Light and dark switching Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°		Potentiometer, 270°	
LED, red light 660 Nm	LED, red light 660 Nm	LED, red light 660 Nm Green LED	LED, red light 660 Nm	LED, red light 660 Nm Green LED
Yellow LED 2.5 ms 200 Hz	Yellow LED 1 ms 500 Hz		Yellow LED 1 ms 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 PMMA	Nickel-plated CuZn PMMA	Nickel-plated CuZn PMMA	Nickel-plated CuZn PMMA	Nickel-plated CuZn PMMA
3 m PVC cable 3x0.34 mm <sup>2</sup>	M12 connector, 4-pin	M12 connector, 4-pin	3 m PVC cable, 3x0.34 mm <sup>2</sup>	3 m PVC cable, 3x0.34 mm <sup>2</sup>

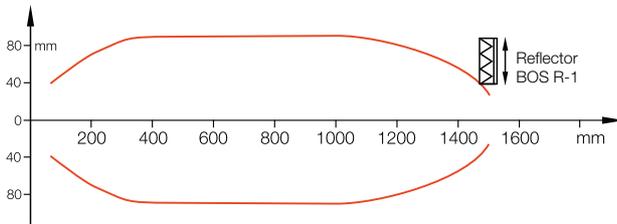


**Diffuse sensor BOS 12M--1YA/1YB/1PD--...**



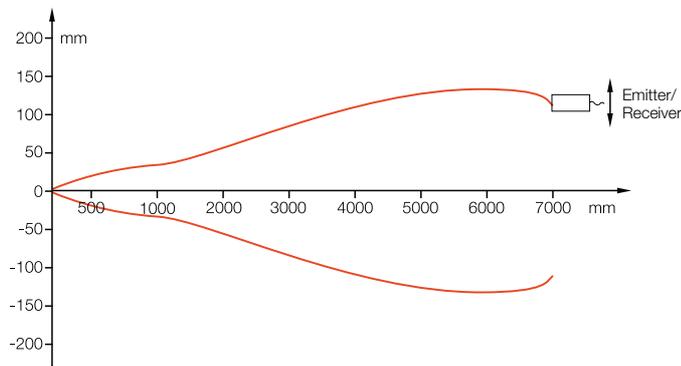
Sensing distance measured with side approach of Kodak gray card.

**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



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

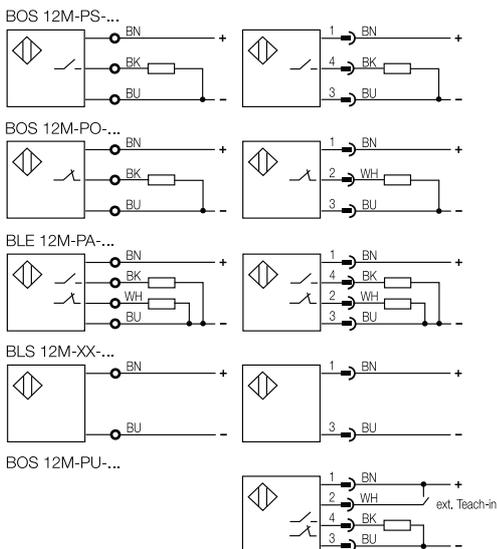
#### Orientation aid

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	<b>BAM00WL</b>
② Reflector	<b>BAM00UK</b>
③ Diagonal mirror	<b>BAM00R0</b>
④ Air shield	<b>BAM00PY</b>
⑤ Slit aperture	<b>BAM00PW</b>
⑥ Mounting cuff	<b>BAM01KM</b>
⑦ Cover nut	<b>BAM01Y6</b>



#### Suitable connectors (please order separately)

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

Connectors without LED are suitable for PNP and NPN sensors.



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.

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

The basis of the 12 laser through-beam sensor BOS is its two different emitters. Emitter version **LS11** is for small parts detection and offers a resolution of 50 µm at the focal point of 500 mm.

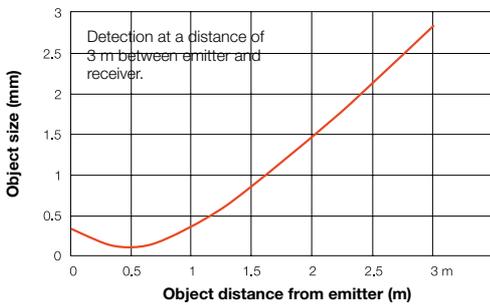
The **LS12** version is not focused and is used for long ranges up to 30 m. The receivers can be PNP or NPN, and any emitter can be combined with any receiver.

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

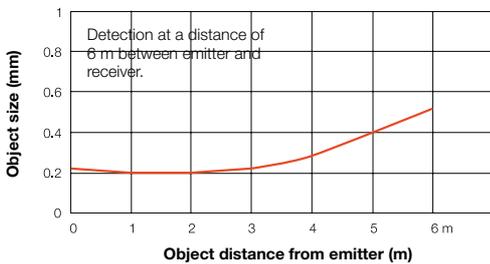


### Small parts detection

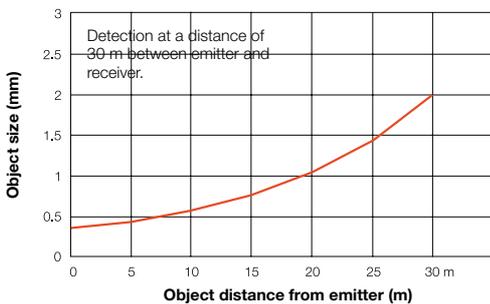
BOS 12M-XT-**LS11**-..



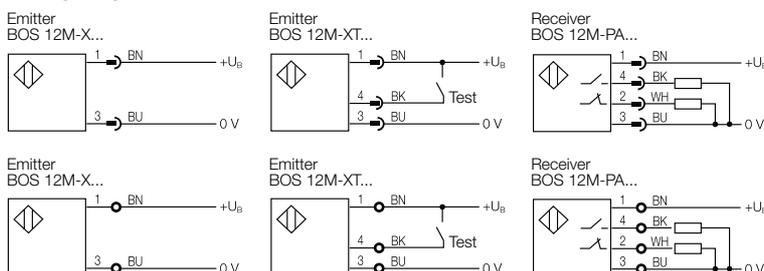
BOS 12M-XT-**LS12**-..



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



### Wiring diagrams



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



# Photoelectric Sensors

## BOS 12M



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs  
Block Designs  
Fork Sensors  
BGL  
Angle Sensors  
BWL

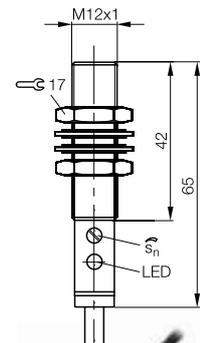
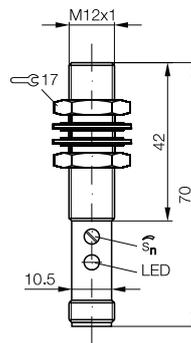
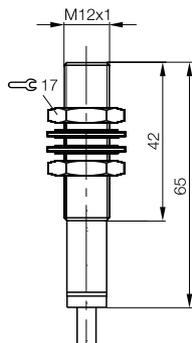
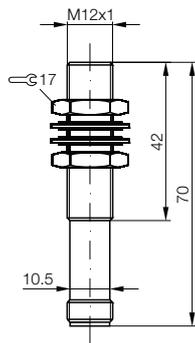
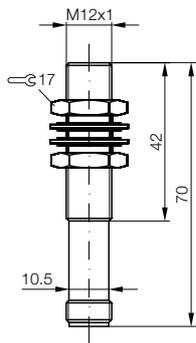
Photoelectric Sensors with Special Properties

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
<b>BOS00WH</b>	<b>BOS00WL</b>	<b>BOS00WK</b>		
BOS12M-X-LS11-S4	BOS 12M-XT-LS11-S4	BOS 12M-XT-LS11-03		
<b>BOS00WJ</b>	<b>BOS00WN</b>	<b>BOS00WM</b>		
BOS12M-X-LS12-S4	BOS 12M-XT-LS12-S4	BOS 12M-XT-LS12-03		
			<b>BOS00WF</b>	<b>BOS00WE</b>
			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 Glass	Nickel-plated brass Glass	Nickel-plated brass Glass	Nickel-plated brass PMMA	Nickel-plated brass PMMA
M12 connector, 4-pin	M12 connector, 4-pin	3 m PVC cable, 3x0.34 mm <sup>2</sup>	M12 connector, 4-pin	3 m PVC cable, 4x0.34 mm <sup>2</sup>



### Recommended accessories

(please order separately)

Description	Ordering code
Mounting cuff	<b>BAM00R2</b>



### Suitable connectors

(please order separately)

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



**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.

**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**

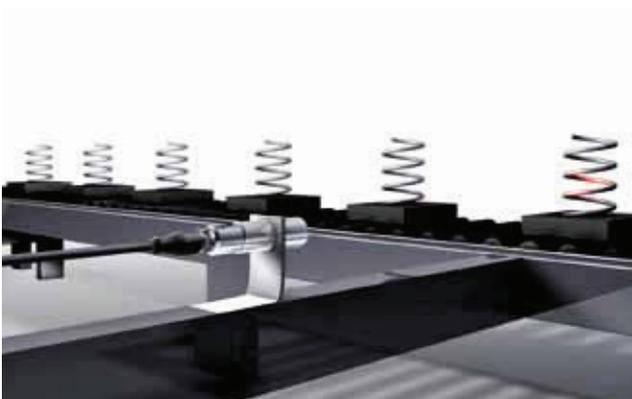


**Precise switching behavior – excellent repeat accuracy**

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 M18x1 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 <sub>s</sub>	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	
 Diffuse sensor with background suppression																			
<b>BOS0081</b>	BOS 18MR-PA-1HA-S4-C	40...120 mm	■	■			■		■	■	600 Hz	■	■					72	
<b>BOS010J</b>	BOS 18MR-PS-1HA-E5-C-S4	10...120 mm		■	■		■		■		500 Hz	■	■					72	
<b>BOS01J4</b>	BOS 18M-PA-RH23-S4	30...150 mm	■		■		■		■	■	500 Hz	■	■					62	
<b>BOS01J2</b>	BOS 18M-PSV-RH23-S4	30...150 mm	■		■		■		■		500 Hz	■	■			■		62	
<b>BOS002H</b>	BOS 18M-PS-LH22-S4	30...150 mm	■			■	■		■		500 Hz	■	■					82	
<b>BOS002K</b>	BOS 18M-PSV-LH22-S4	30...150 mm	■			■	■		■		500 Hz	■	■			■		82	
<b>BOS001Z</b>	BOS 18M-POV-LH22-S4	30...150 mm	■			■	■		■		500 Hz	■	■			■		82	
<b>BOS01C5</b>	BOS 18M-PA-LH23-S4	30...150 mm					■		■	■	500 Hz	■	■				■	83	
<b>BOS01C4</b>	BOS 18M-PSV-LH23-S4	30...150 mm	■			■	■		■		500 Hz	■	■			■	■	83	
<b>BOS014W</b>	BOS 18M-PA-RH22-S4	30...300 mm	■		■		■		■	■	500 Hz	■	■					63	
<b>BOS019P</b>	BOS 18M-PS-RH22-S4	30...300 mm	■		■		■		■		500 Hz	■	■					63	
<b>BOS019N</b>	BOS 18M-PSV-RH22-S4	30...300 mm	■		■		■		■		500 Hz	■	■			■		63	
<b>BOS019R</b>	BOS 18M-POV-RH22-S4	30...300 mm	■		■		■		■		500 Hz	■	■			■		63	
 Diffuse sensor																			
<b>BOS0141</b>	BOS 18MR-PA-LD10-02	250 mm		■			■		■	■	1.5 kHz	■	■				■	86	
<b>BOS0142</b>	BOS 18MR-PA-LD10-S4	250 mm		■			■		■	■	1.5 kHz	■	■				■	86	
<b>BOS01CA</b>	BOS 18M-PA-RD21-S4	300 mm	■		■		■		■	■	400 Hz	■	■					64	
<b>BOS01E7</b>	BOS 18M-PS-RD21-S4	300 mm	■		■		■		■		400 Hz	■	■					64	
<b>BOS01E8</b>	BOS 18M-PO-RD21-S4	300 mm	■		■		■		■		400 Hz	■	■					65	
<b>BOS013F</b>	BOS 18M-PA-LD10-02	350 mm	■			■	■		■	■	1.5 kHz	■	■				■	83	
<b>BOS013H</b>	BOS 18M-PA-LD10-S4	350 mm	■			■	■		■	■	1.5 kHz	■	■				■	83	
<b>BOS010K</b>	BOS 18MR-PS-10D-E5-C-S4	400 mm		■	■		■		■		1 kHz	■	■					73	
<b>BOS01FA</b>	BOS 18M-PS-RD23-S4	400 mm	■		■		■		■		400 Hz	■	■					56	
<b>BOS01FC</b>	BOS 18M-PO-RD23-S4	400 mm	■		■		■		■		400 Hz	■	■					56	
<b>BOS01HL</b>	BOS 18M-PS-ID23-S4	600 mm	■			■	■		■		400 Hz	■	■					56	
<b>BOS01J8</b>	BOS 18M-PUV-RD30-S4	500 mm	■		■		■		■	■	1 kHz	■	■			■	■	70	
<b>BOS01CU</b>	BOS 18M-PUD-RD30-S4	500 mm	■		■		■	■	■	■	200 Hz	■	■			■		70	
<b>BOS01CF</b>	BOS 18M-PA-RD20-S4	600 mm	■		■		■		■	■	400 Hz	■	■					65	
<b>BOS01C1</b>	BOS 18M-PS-RD20-S4	600 mm	■		■		■		■		400 Hz	■	■					65	
<b>BOS01E3</b>	BOS 18M-PO-RD20-S4	600 mm	■		■		■		■		400 Hz	■	■					65	
<b>BOS01J1</b>	BOS 18M-PS-ID24-S4	400 mm	■			■	■		■		200 Hz	■	■					76	
<b>BOS01EY</b>	BOS 18M-PA-ID20-S4	800 mm	■		■		■		■	■	400 Hz	■	■					76	
 Retroreflective sensor																			
<b>BOS010L</b>	BOS 18MR-PS-1QB-E5-C-S4	2 m		■	■		■		■		1 kHz	■	■			■		73	
<b>BOS01F8</b>	BOS 18M-PS-PR23-S4	4 m	■		■		■		■		400 Hz	■	■				■	57	
<b>BOS01F9</b>	BOS 18M-PO-PR23-S4	4 m	■		■		■		■		400 Hz	■	■				■	57	
<b>BOS01J9</b>	BOS 18M-PUV-PR30-S4	5 m	■		■		■		■	■	1 kHz	■	■			■	■	71	
<b>BOS01CT</b>	BOS 18M-PUD-PR30-S4	5 m	■		■		■	■	■	■	200 Hz	■	■			■		71	
<b>BOS01HK</b>	BOS 18M-PS-IR23-S4	6 m	■			■	■		■		400 Hz	■	■				■	57	
<b>BOS01CE</b>	BOS 18M-PA-PR20-S4	7 m	■		■		■		■		400 Hz	■	■					66	
<b>BOS01FJ</b>	BOS 18M-PA-PR20-S4S	7 m	■		■		■		■		400 Hz	■	■					66	
<b>BOS01C3</b>	BOS 18M-PS-PR20-S4	7 m	■		■		■		■		400 Hz	■	■					67	
<b>BOS01CZ</b>	BOS 18M-PO-PR20-S4	7 m	■		■		■		■		400 Hz	■	■					67	
<b>BOS01EM</b>	BOS 18M-PO-PR20-S4S	7 m	■		■		■		■		400 Hz	■	■					67	
<b>BOS01HR</b>	BOS 18M-PA-IR21-S4	7 m	■		■		■		■		400 Hz	■	■			■		77	
<b>BOS0145</b>	BOS 18MR-PA-LR10-02	9 m		■		■	■		■	■	1.5 kHz	■	■			■		87	
<b>BOS0146</b>	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 for Analog Distance Measurement

Accessories for Photoelectric Sensors

Photoelectric Distance Sensors for Analog Distance Measurement

Type	Sensing distance/Range	Light exit	Light type	Output	Switching type	Switching frequency	U <sub>s</sub>	Connection	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	
<b>Retroreflective sensor</b>										
<b>BOS01F0</b> BOS 18M-PA-IR20-S4	10 m	■	■	■	■	400 Hz	■	■		77
<b>BOS01F1</b> BOS 18M-PS-IR20-S4	10 m	■	■	■	■	400 Hz	■	■		77
<b>BOS013M</b> BOS 18M-PA-LR10-S4	16 m	■	■	■	■	1.5 kHz	■	■	■	84
<b>BOS013L</b> BOS 18M-PA-LR10-02	16 m	■	■	■	■	1.5 kHz	■	■	■	84
<b>Through-beam sensor Receiver</b>										
<b>BOS010E</b> BLE 18MR-PA-1PP-E5-C-S4	0...16 m	■	■	■	■	1 kHz	■	■		73
<b>BOS01CC</b> BOS 18M-PA-RE20-S4	0...20 m	■	■	■	■	400 Hz	■	■		68
<b>BOS01FK</b> BOS 18M-PA-RE20-S4S	0...20 m	■	■	■	■	400 Hz	■	■		68
<b>BOS01EE</b> BOS 18M-PO-RE20-S4	0...20 m	■	■	■	■	400 Hz	■	■		69
<b>BOS01EF</b> BOS 18M-PO-RE20-S4S	0...20 m	■	■	■	■	400 Hz	■	■		69
<b>BOS01C2</b> BOS 18M-PS-RE20-S4	0...20 m	■	■	■	■	400 Hz	■	■		69
<b>BOS01FF</b> BOS 18M-PO-RE23-S4	0...20 m	■	■	■	■	400 Hz	■	■	■	58
<b>BOS01FE</b> BOS 18M-PS-RE23-S4	0...20 m	■	■	■	■	400 Hz	■	■	■	58
<b>BOS01J7</b> BOS 18M-PUV-RE30-S4	0...20 m	■	■	■	■	1 kHz	■	■	■	71
<b>BOS01CW</b> BOS 18M-PUD-RE30-S4	0...20 m	■	■	■	■	200 Hz	■	■	■	71
<b>BOS01HP</b> BOS 18M-PS-IE23-S4	0...50 m	■	■	■	■	400 Hz	■	■	■	59
<b>BOS0074</b> BLE 18M-BA-1LT-S4-C	0...50 m	■	■	■	■	6 kHz	■	■		92
<b>BOS0075</b> BLE 18M-BO-1LT-S4-C	0...50 m	■	■	■	■	6 kHz	■	■		92
<b>BOS0076</b> BLE 18MR-BA-1LT-S4-C	0...50 m	■	■	■	■	6 kHz	■	■		92
<b>BOS0143</b> BOS 18MR-PA-LE10-02	0...50 m	■	■	■	■	1.5 kHz	■	■		88
<b>BOS0144</b> BOS 18MR-PA-LE10-S4	0...50 m	■	■	■	■	1.5 kHz	■	■		89
<b>BOS013K</b> BOS 18M-PA-LE10-S4	0...60 m	■	■	■	■	1.5 kHz	■	■		85
<b>BOS013J</b> BOS 18M-PA-LE10-02	0...60 m	■	■	■	■	1.5 kHz	■	■		85
<b>BOS01F3</b> BOS 18M-PA-IE20-S4	0...100 m	■	■	■	■	400 Hz	■	■		79
<b>Through-beam sensor Emitter</b>										
<b>BOS010F</b> BLS 18MR-XX-1P-E5-L-S4	0...16 m	■	■				■	■		73
<b>BOS01C0</b> BOS 18M-X-RS20-S4	0...20 m	■	■				■	■		69
<b>BOS01EP</b> BOS 18M-XT-RS20-S4	0...20 m	■	■				■	■		69
<b>BOS01FH</b> BOS 18M-X-RS23-S4	0...20 m	■	■				■	■		58
<b>BOS01CY</b> BOS 18M-X-RS30-S4	0...20 m	■	■				■	■		71
<b>BOS01HM</b> BOS 18M-X-IS23-S4	0...50 m	■	■				■	■		59
<b>BOS01F5</b> BOS 18M-X-IS20-S4	0...50 m	■	■				■	■		78
<b>BOS01HN</b> BOS 18M-XT-IS20-S4	0...50 m	■	■				■	■		78
<b>BOS00AW</b> BLS 18M-XX-1LT-S4-C	0...50 m	■	■				■	■		93
<b>BOS00AU</b> BLS 18MR-XX-1LT-S4-C	0...50 m	■	■				■	■		93
<b>BOS0147</b> BOS 18MR-XT-LS10-02	0...50 m	■	■				■	■		88
<b>BOS0148</b> BOS 18MR-XT-LS10-S4	0...50 m	■	■				■	■		89
<b>BOS013R</b> BOS 18M-XT-LS10-S4	0...60 m	■	■				■	■		85
<b>BOS013P</b> BOS 18M-XT-LS10-02	0...60 m	■	■				■	■		85
<b>BOS01HT</b> BOS 18M-X-IS24-S4	0...100 m	■	■				■	■		78
<b>BOS01HU</b> BOS 18M-XT-IS24-S4	0...100 m	■	■				■	■		78

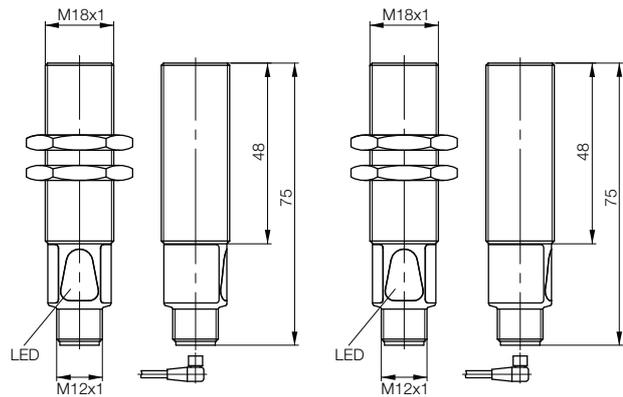
NPN on request



Type		Diffuse sensor	Diffuse sensor
Detection range		<b>1...400 mm</b>	<b>1...600 mm</b>
PNP NO	<b>Ordering code</b>	<b>BOS01FA</b>	<b>BOS01HL</b>
	Part number	BOS 18M-PS-RD23-S4	BOS 18M-PS-ID23-S4
PNP NC	<b>Ordering code</b>	<b>BOS01FC</b>	
	Part number	BOS 18M-PO-RD23-S4	
PNP NO	Polarizing filter	<b>Ordering code</b>	
		Part number	
PNP NC	Polarizing filter	<b>Ordering code</b>	
		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.		$\leq 50$ mA	$\leq 30$ 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 Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

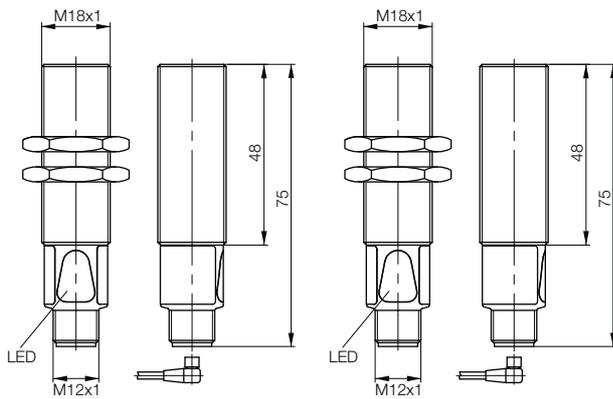
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



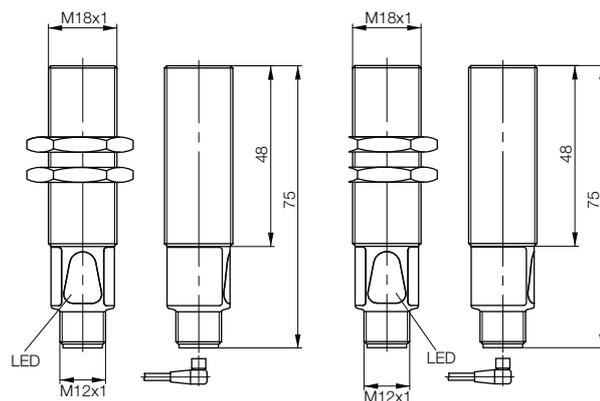
	<b>Retroreflective sensor</b> <b>4 m</b>	<b>Retroreflective sensor</b> <b>6 m</b>		
		<b>BOS01HK</b>		
		BOS 18M-PS-IR23-S4		
	<b>BOS01F8</b>			
	BOS 18M-PS-PR23-S4			
	<b>BOS01F9</b>			
	BOS 18M-PO-PR23-S4			
	10...30 V DC	10...30 V DC		
	100 mA	100 mA		
	≤ 50 mA	≤ 30 mA		
	Light or dark switching	Dark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





Type			Through-beam sensor	Through-beam sensor
Detection range			<b>0...20 m</b>	<b>0...20 m</b>
PNP NO	Receiver	<b>Ordering code</b>	<b>BOS01FE</b>	
		Part number	BOS 18M-PS-RE23-S4	
PNP NC	Receiver	<b>Ordering code</b>	<b>BOS01FF</b>	
		Part number	BOS 18M-PO-RE23-S4	
	Emitter	<b>Ordering code</b>		<b>BOS01FH</b>
		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.			$\leq 35$ mA	$\leq 50$ 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

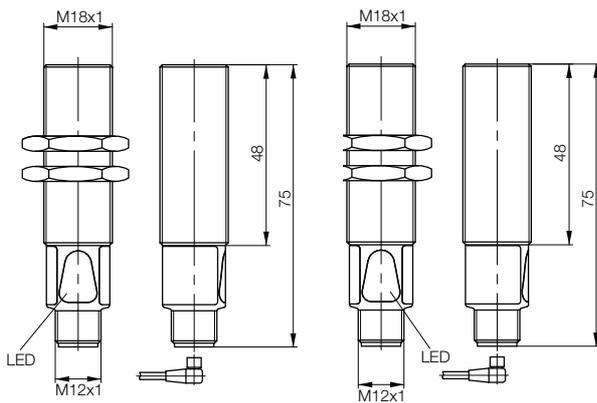
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

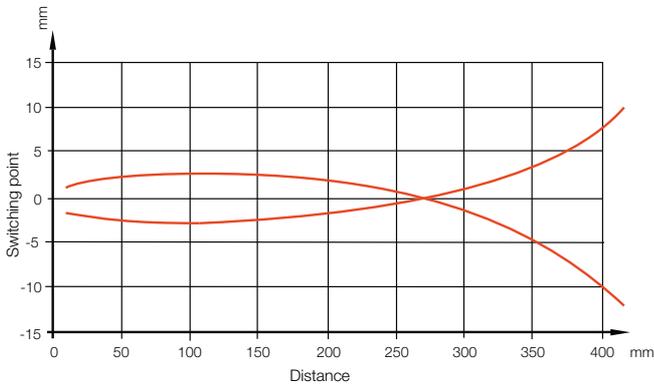
Accessories for Photoelectric Sensors



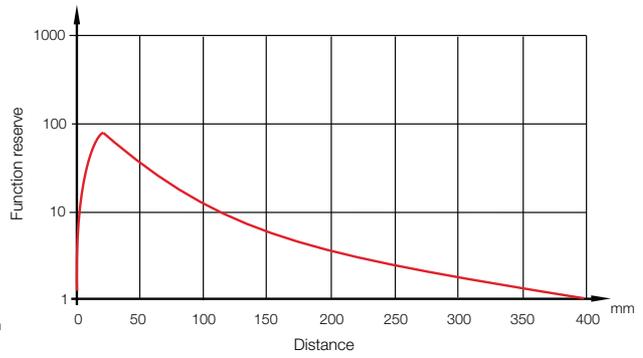
Through-beam sensor 0...50 m	Through-beam sensor 0...50 m		
<b>BOS01HP</b>			
BOS 18M-PS-IE23-S4			
	<b>BOS01HM</b>		
	BOS 18M-X-IS23-S4		
10...30 V DC	10...30 V DC		
100 mA			
≤ 30 mA	≤ 20 mA		
Dark switching			
Yes/Yes	Yes/Yes		
Fixed	Fixed		
LED, infrared	LED, infrared		
850 Nm	850 Nm		
Yellow LED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



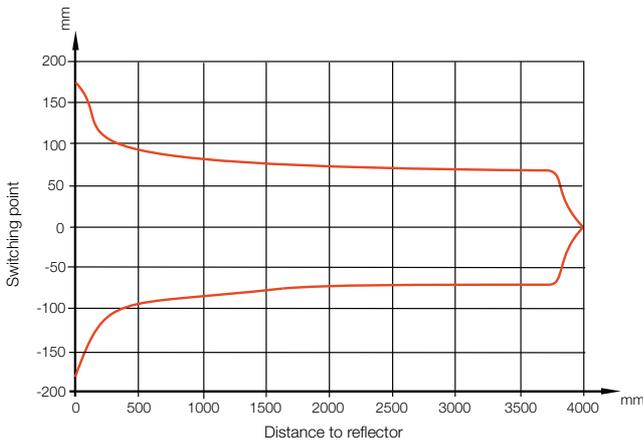
**Diffuse sensor BOS 18M...RD23**  
 response curve



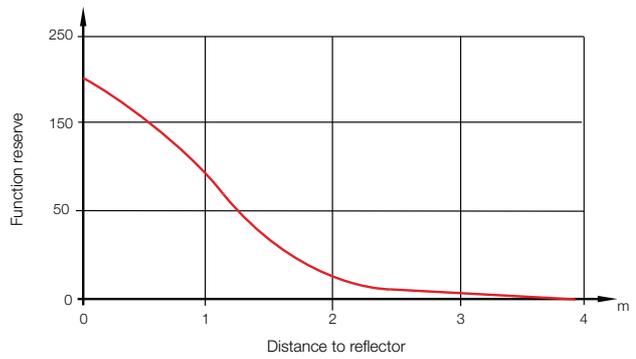
**Diffuse sensor BOS 18M...RD23**  
 function reserve



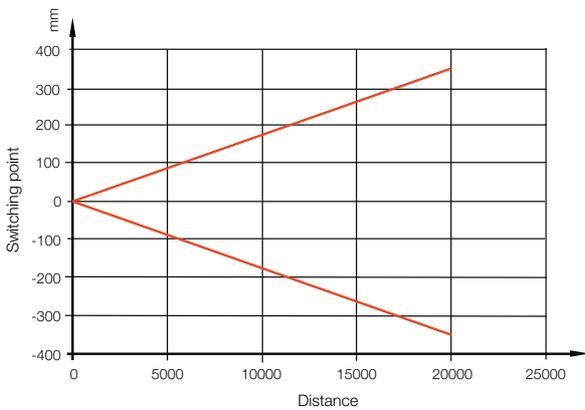
**Retroreflective sensor BOS 18M...PR23**  
 response curve



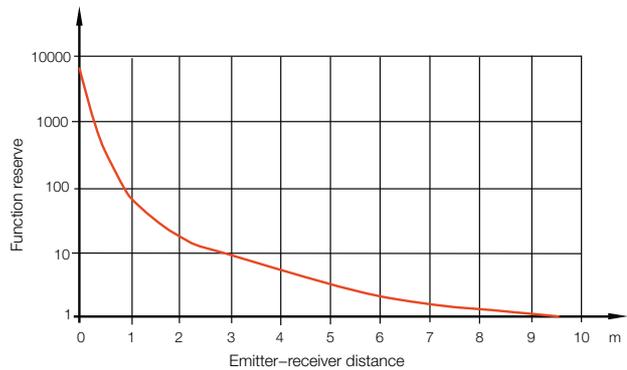
**Retroreflective sensor BOS 18M...PR23**  
 Function reserve



**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

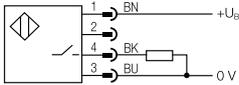
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

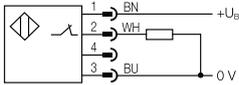
Accessories for Photoelectric Sensors

#### Wiring diagrams

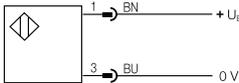
##### BOS 18M-PS...



##### BOS 18M-PO...



##### BOS 18M-X...



#### Recommended accessories (please order separately)

Description	Ordering code
① Mounting clamp	<b>BAM00T3</b>
② Mounting bracket	<b>BAM00RY</b>
③ Reflector	<b>BAM00UK</b>



#### Suitable connectors (please order separately)

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



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.

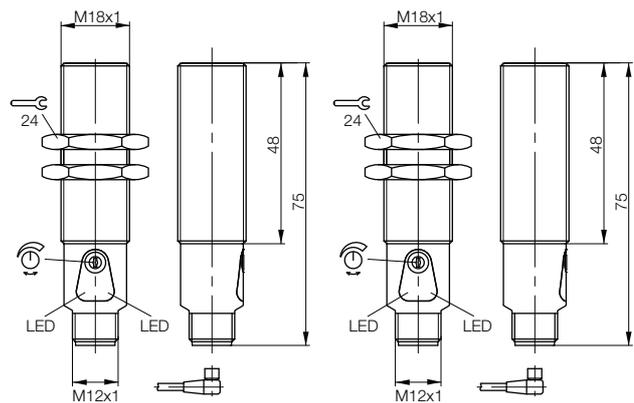
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.



Type		Diffuse sensor with background suppression	Diffuse sensor with background suppression
Detection range		<b>30...150 mm</b>	<b>30...150 mm</b>
PNP NC/NO	<b>Ordering code</b>	<b>BOS01J4</b>	
	Part number	BOS 18M-PA-RH23-S4	
PNP NO	<b>Ordering code</b>		
	Part number		
PNP NC	<b>Ordering code</b>		
	Part number		
PNP NO	<b>Ordering code</b>		<b>BOS01J2</b>
	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.		$\leq 40$ mA	$\leq 40$ 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, 200x200 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

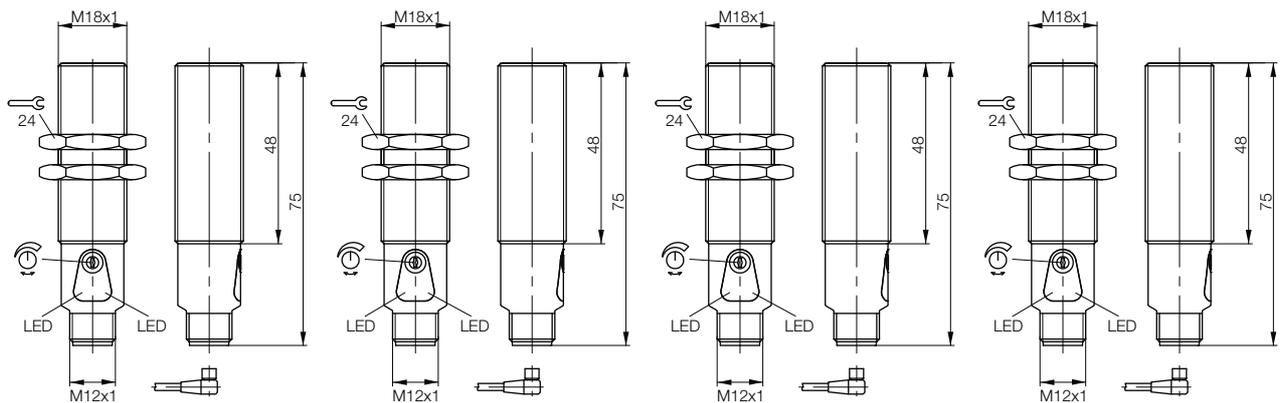
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

Photoelectric Distance Sensors for Analog Distance Measurement



| Diffuse sensor with background suppression<br>30...300 mm |
|---|---|---|---|
| <b>BOS014W</b>  | <b>BOS019P</b>  | <b>BOS019N</b>  | <b>BOS019R</b>  |
| BOS 18M-PA-RH22-S4  | BOS 18M-PS-RH22-S4  | BOS 18M-PSV-RH22-S4                                       | 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,<br>4-pin                                   | M12 connector,<br>4-pin                                   | M12 connector,<br>4-pin                                   | M12 connector,<br>4-pin                                   |

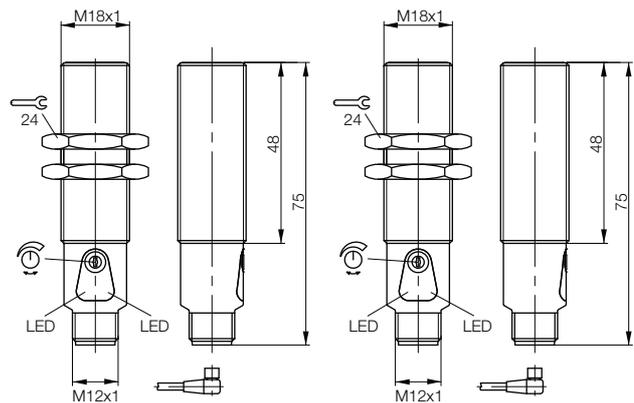




Type	Diffuse sensor		Diffuse sensor
Detection range	1...300 mm		1...300 mm
PNP	NC/NO	<b>Ordering code</b> Part number	<b>BOS01CA</b> BOS 18M-PA-RD21-S4
PNP	NO	<b>Ordering code</b> Part number	<b>BOS01E7</b> BOS 18M-PS-RD21-S4
PNP	NC	<b>Ordering code</b> Part number	
Supply voltage $U_s$	10...30 V DC		10...30 V DC
Output current	100 mA		100 mA
No-load supply current $I_0$ max.	$\leq 50$ mA		$\leq 50$ 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

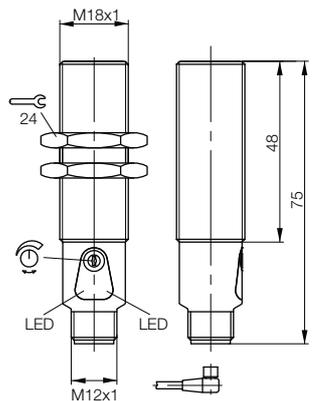
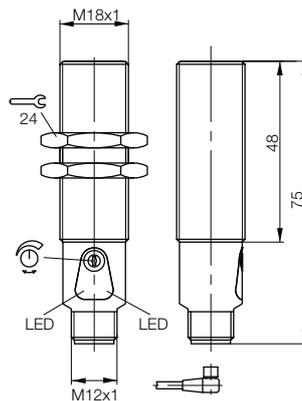
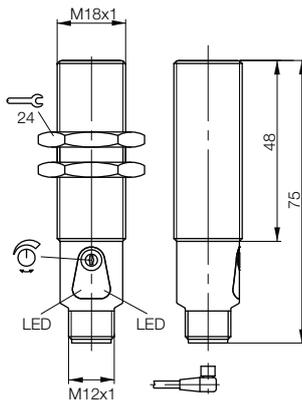
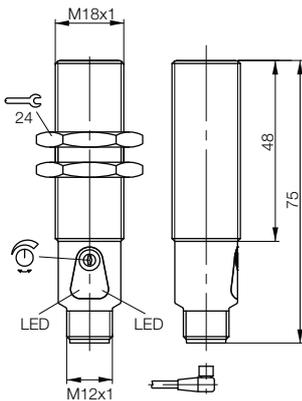
Photoelectric Sensors with Special Properties

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
	<b>BOS01CF</b>		
	BOS 18M-PA-RD20-S4		
		<b>BOS01C1</b>	
		BOS 18M-PS-RD20-S4	
<b>BOS01E8</b>			<b>BOS01E3</b>
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

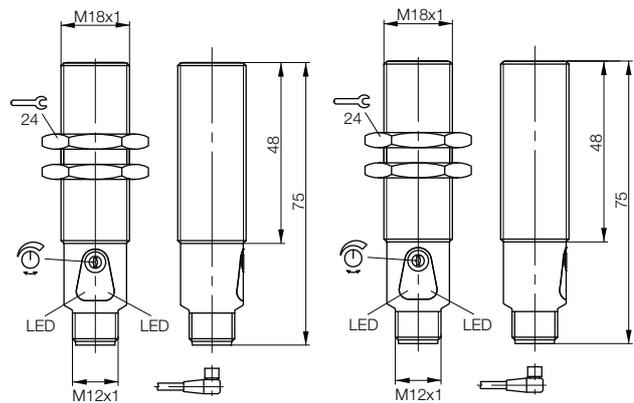




Type			Retroreflective sensor	Retroreflective sensor
Detection range			<b>7 m</b>	<b>7 m</b>
PNP NC/NO	<b>Ordering code</b>		<b>BOS01CE</b>	
	Part number		BOS 18M-PA-PR20-S4	
PNP NC/NO	<b>Ordering code</b>			<b>BOS01FJ</b>
Output special assignment	Part number			BOS 18M-PA-PR20-S4S
PNP NO	<b>Ordering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

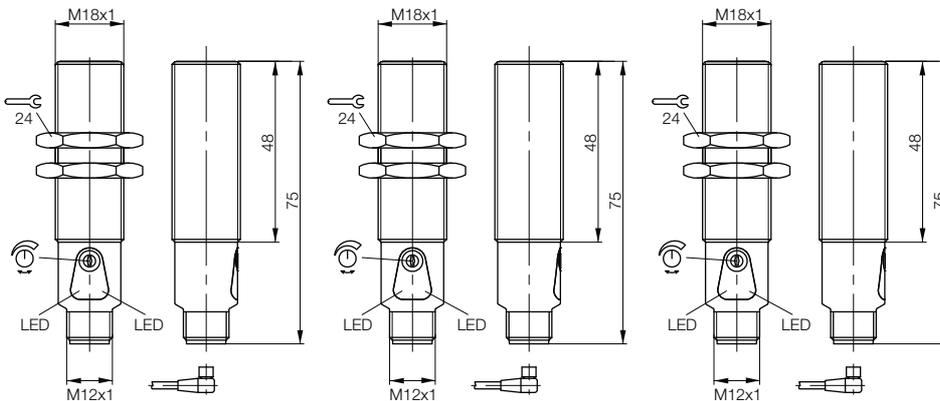
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 7 m	Retroreflective sensor 7 m	Retroreflective sensor 7 m	
<b>BOS01C3</b> BOS 18M-PS-PR20-S4	<b>BOS01CZ</b> BOS 18M-PO-PR20-S4	<b>BOS01EM</b> 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	





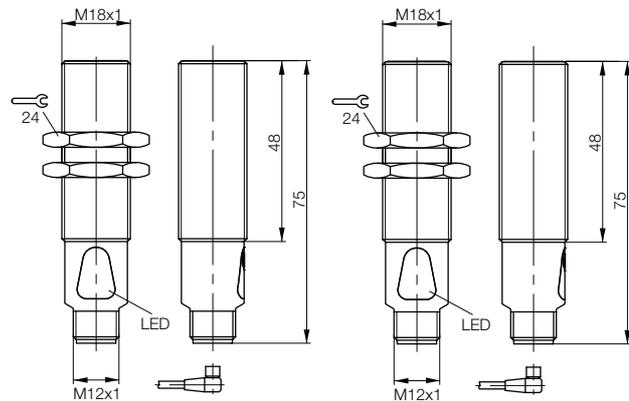
Receiver



Receiver

Type	Through-beam sensor		Through-beam sensor	Through-beam sensor
Detection range	0...20 m		0...20 m	0...20 m
PNP NC/NO Receiver	<b>Ordering code</b>	<b>BOS01CC</b>	<b>BOS01FK</b>	
	Part number	BOS 18M-PA-RE20-S4	BOS 18M-PA-RE20-S4S	
PNP NO Receiver	<b>Ordering code</b>			
	Part number			
PNP NC Receiver	<b>Ordering code</b>			
	Part number			
	Emitter	<b>Ordering code</b>		
		Part number		
	Emitter Test input	<b>Ordering code</b>		
		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.	$\leq 35$ mA		$\leq 35$ 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.

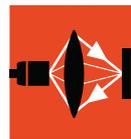
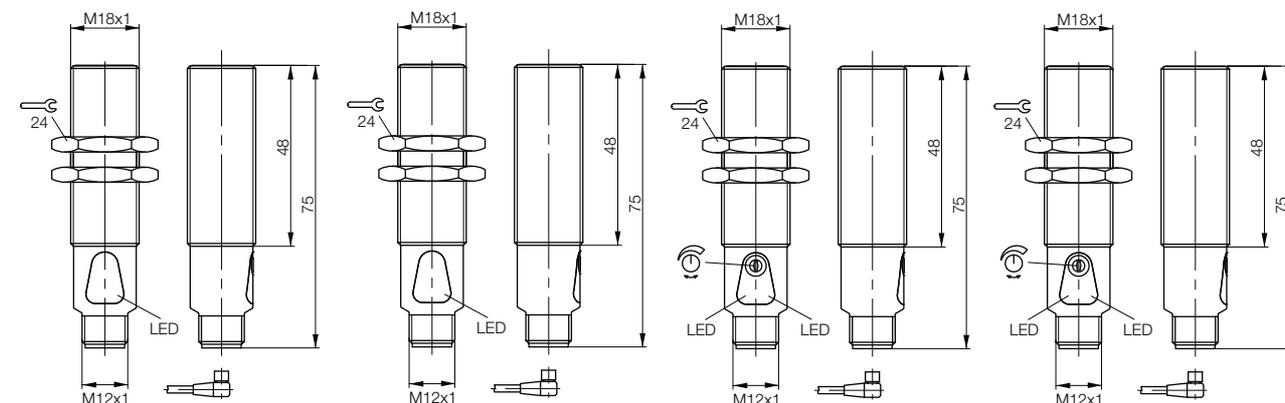


# Photoelectric Sensors

## BOS 18M red light



Through-beam sensor 0...20 m	Through-beam sensor 0...20 m	Through-beam sensor 0...20 m	Through-beam sensor 0...20 m
<b>BOS01C2</b> BOS 18M-PS-RE20-S4	<b>BOS01EE</b> BOS 18M-PO-RE20-S4	<b>BOS01EF</b> BOS 18M-PO-RE20-S4S	<b>BOS01C0</b> BOS 18M-X-RS20-S4
			<b>BOS01EP</b> 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°	10...30 V DC ≤ 50 mA Yes/Yes Potentiometer, 270°
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	LED, red light 620...670 nm IP 67 -5...+55 °C 10 klx Nickel-plated brass Glass M12 connector, 4-pin	LED, red light 620...670 nm IP 67 -5...+55 °C 10 klx Nickel-plated brass Glass M12 connector, 4-pin



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

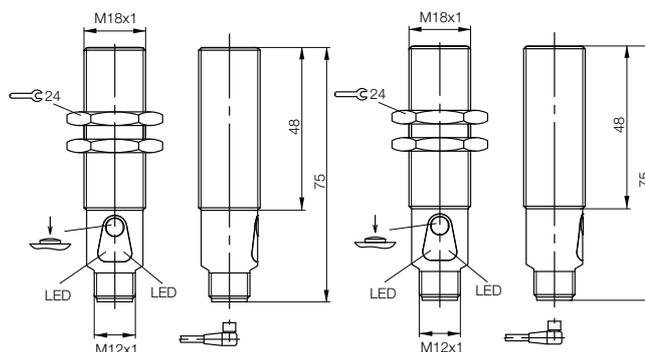
Accessories for Photoelectric Sensors



Type	Diffuse sensor		Diffuse sensor	
Detection range	1...500 mm		1...500 mm	
PNP NC/NO	Error output	<b>Ordering code</b>	<b>BOS01J8</b>	
		Part number	BOS 18M-PUV-RD30-S4	
PNP NC/NO	Dynamic Sensor Control	<b>Ordering code</b>		<b>BOS01CU</b>
		Part number		BOS 18M-PUD-RD30-S4
PNP NC/NO	Polarizing filter, Error output	<b>Ordering code</b>		
		Part number		
PNP NC/NO	Polarizing filter, Dynamic Sensor Control	<b>Ordering code</b>		
		Part number		
Emitter		<b>Ordering code</b>		
		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.	$\leq 40$ mA		$\leq 40$ 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

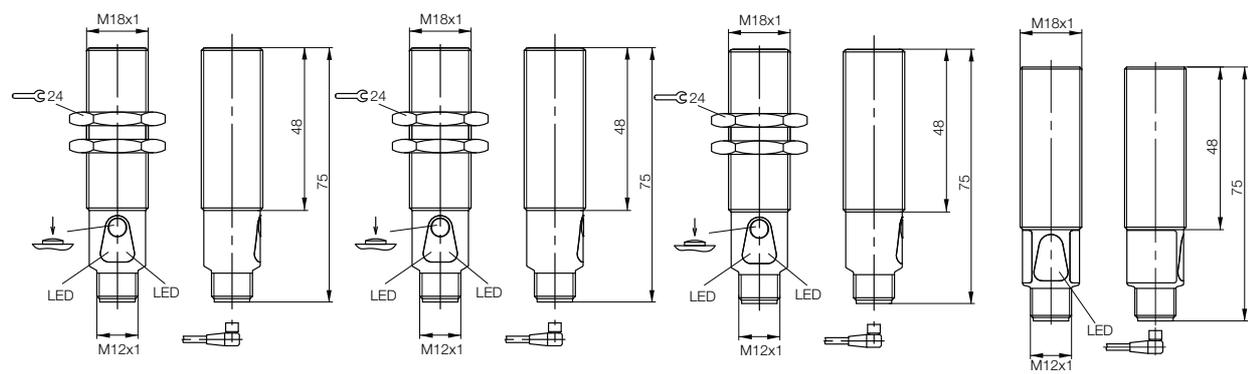
BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement



Retroreflective sensor 5 m	Retroreflective sensor 5 m	Through-beam sensor 0...20 m	Through-beam sensor 0...20 m
		<b>BOS01J7</b>	
		BOS 18M-PUV-RE30-S4	
		<b>BOS01CW</b>	
		BOS 18M-PUD-RE30-S4	
<b>BOS01J9</b>			
BOS 18M-PUV-PR30-S4			
	<b>BOS01CT</b>		
	BOS 18M-PUD-PR30-S4		
			<b>BOS01CY</b>
			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	100 mA
≤ 40 mA	≤ 40 mA	≤ 25 mA	≤ 25 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
Teach-in	Teach-in	Teach-in	Teach-in
LED, red light	LED, red light	LED, red light	LED, red light
626 Nm	626 Nm	626 Nm	626 Nm
2.5 ms	2.5 ms	2.5 ms	2.5 ms
1 kHz	200 Hz	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	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

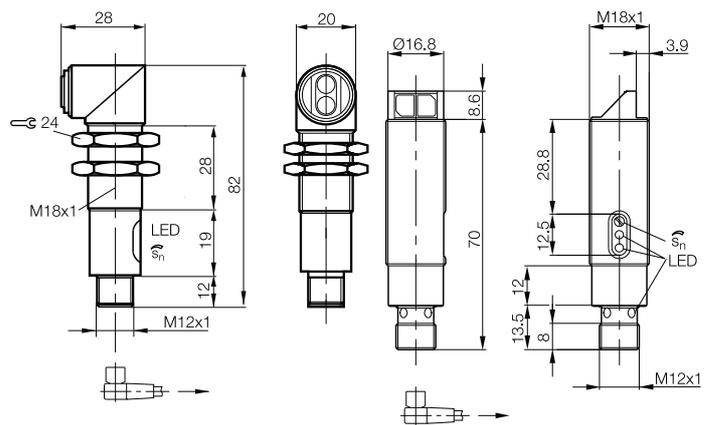




Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression
Detection range	40...120 mm		10...120 mm
PNP NC/NO	<b>Ordering code</b>	<b>BOS0081</b>	
	Part number	BOS 18MR-PA-1HA-S4-C	
PNP NO	<b>Ordering code</b>		<b>BOS010J</b>
	Part number		BOS 18MR-PS-1HA-E5-C-S4
PNP NC/NO Receiver	<b>Ordering code</b>		
	Part number		
Emitter	<b>Ordering code</b>		
	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.	$\leq 30$ mA		$\leq 20$ 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		$\leq 1$ ms
Switching frequency $f$	600 Hz		500 Hz
Degree of protection as per IEC 60529	IP 67		IP 67
Ambient temperature $T_a$	-15...+55 °C		-25...+55 °C
Permissible ambient light	2 klx		10 klx
Material	Housing	Nickel-plated brass	Nickel-plated brass
	Optical surface	Glass	Glass
Connection	M12 connector, 4-pin		M12 connector, 4-pin

Reference object: white, 90% reflection, 200x200 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

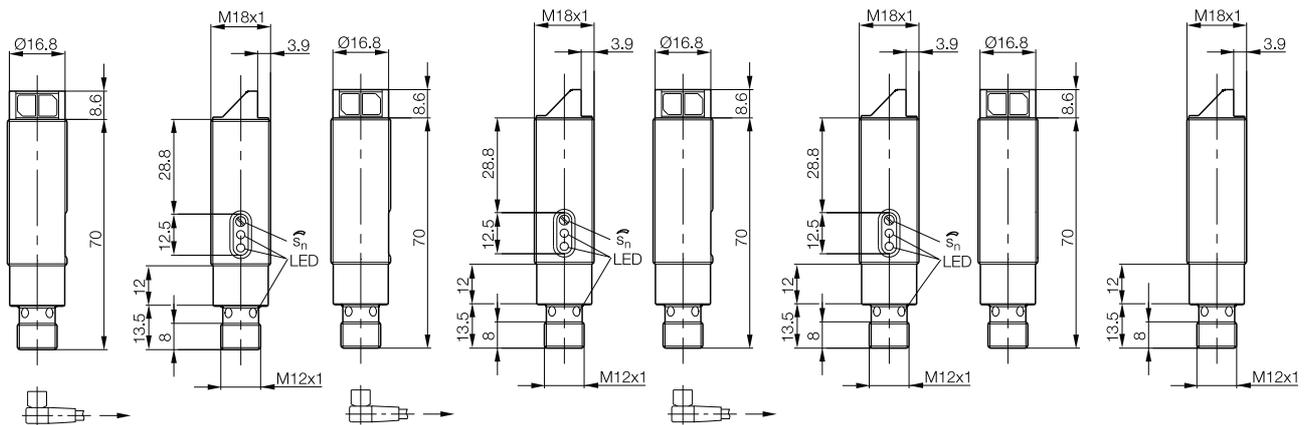
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

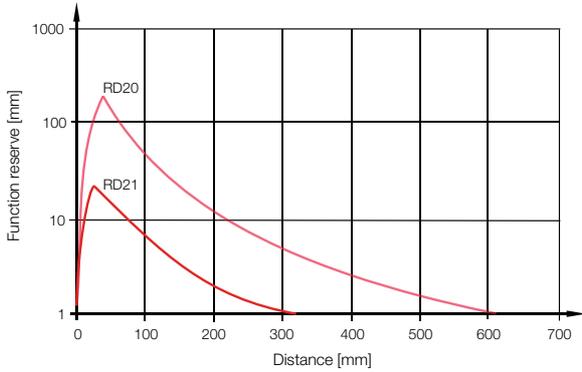
Accessories for Photoelectric Sensors



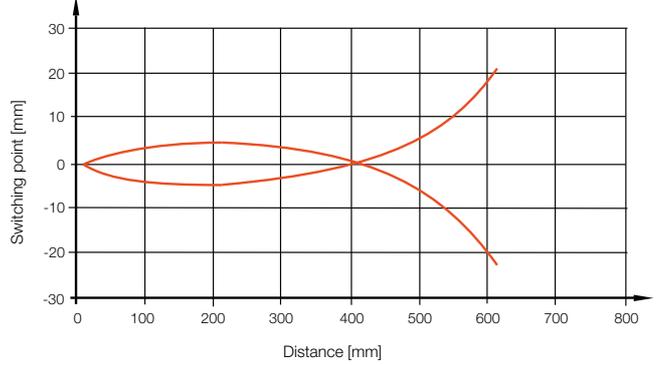
Diffuse sensor 0...400 mm	Retroreflective sensor 2 m	Through-beam sensor 0...16 m	Through-beam sensor 0...16 m
<b>BOS010K</b> BOS 18MR-PS-1OD-E5-C-S4	<b>BOS010L</b> BOS 18MR-PS-1QB-E5-C-S4	<b>BOS010E</b> BLE 18MR-PA-1PP-E5-C-S4	<b>BOS010F</b> BLS 18MR-XX-1P-E5-L-S4
10...36 V DC 200 mA ≤ 20 mA Light switching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



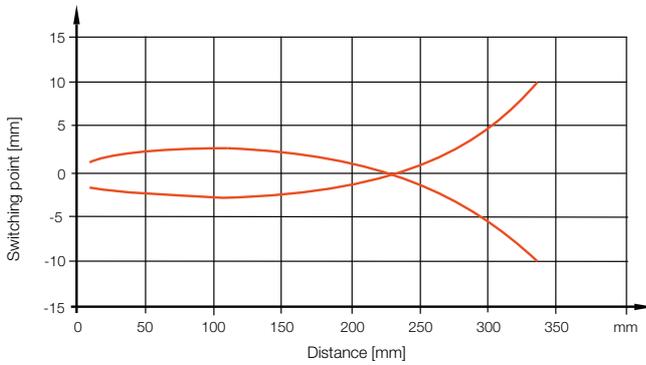
**Diffuse sensor BOS 18M...RD**  
**function reserve**



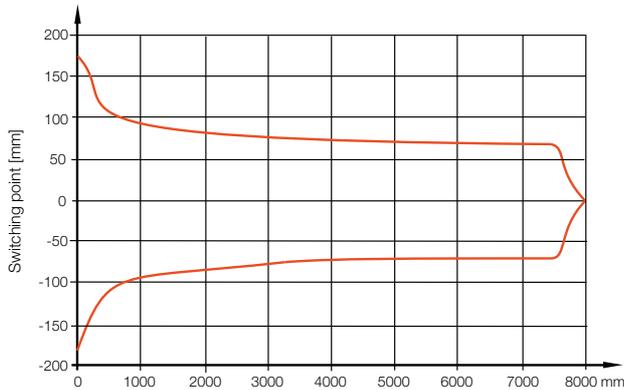
**Diffuse sensor BOS 18M...RD20**  
**Response curve**



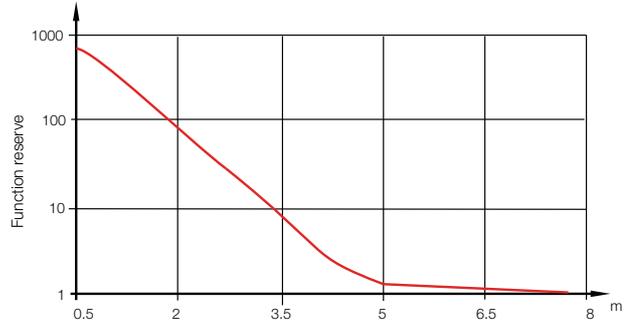
**Diffuse sensor BOS 18M...RD21..**  
**Response curve**



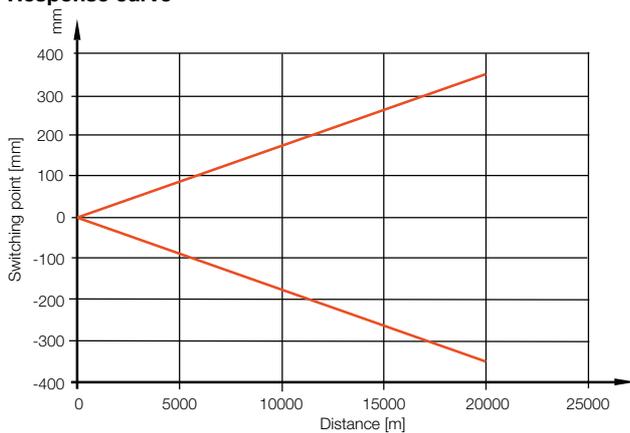
**Retroreflective sensor BOS 18M...PR20...**  
**Response curve**



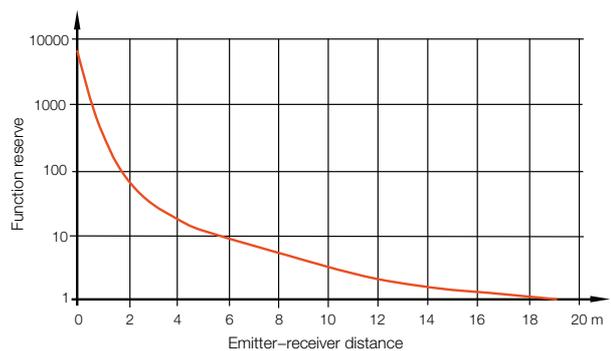
**Retroreflective sensor BOS 18M...PR20...**  
**Function reserve**



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



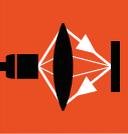
**Through-beam sensor BOS 18M...RE/RS20**  
**Function reserve**



# 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
30 mm	9 mm
100 mm	11×11 mm
300 mm	24×24 mm
600 mm	48×48 mm

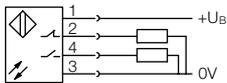
Distance	Light spot Ø
30 mm	9 mm
100 mm	11×11 mm
300 mm	24×24 mm

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

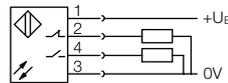
Distance	Light spot Ø
3 cm	14 mm
10 cm	17 mm
30 cm	25 mm
60 cm	32×32 mm
1 m	45×45 mm
2 m	80×80 mm
3 m	118×118 mm

#### Wiring diagrams Red light

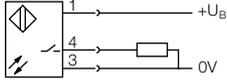
BOS 18M-PA-...S4S



BOS 18M-PA-...S4S



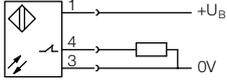
BOS 18M-PS-...S4S



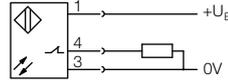
BOS 18M-PO-...S4S



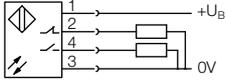
BOS 18M-PO-...S4S



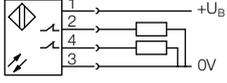
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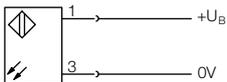
BOS 18M-PSV



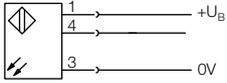
BOS 18M-POV



BOS 18M-X

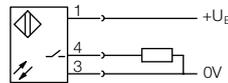


BOS 18M-XT

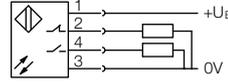


#### Wiring diagrams Angled

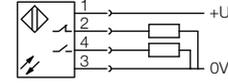
BOS 18MR-PS-...



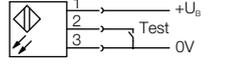
BOS 18MR-PA-...



BLE 18MR-PA-...S4S

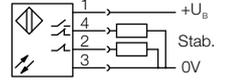


BLS 18MR-XX

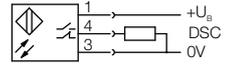


#### Wiring diagrams Teach-in

BOS 18M-PUV



BOS 18M-PUD



#### Recommended accessories (please order separately)

Description	Ordering code
① Mounting clamp	<b>BAM00T3</b>
② Mounting bracket	<b>BAM00RY</b>
③ Reflector	<b>BAM00UK</b>



#### Suitable connectors (please order separately)

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



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.

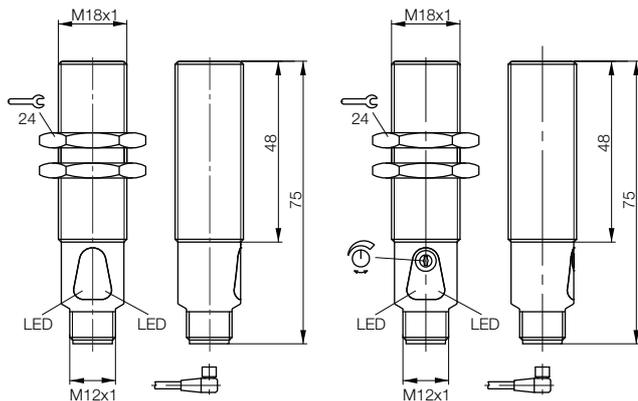
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.



Type		<b>Diffuse sensor</b>	<b>Diffuse sensor</b>
Detection range		<b>2...40 mm (glass)</b>	<b>1...800 mm</b>
PNP NC/NO	<b>Ordering code</b>		<b>BOS01EY</b>
	Part number		BOS 18M-PA-ID20-S4
PNP NO	<b>Ordering code</b>		
	Part number		
PNP NO Glass detection	<b>Ordering code</b>	<b>BOS01J1</b>	
	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.		$\leq 30$ mA	$\leq 30$ 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

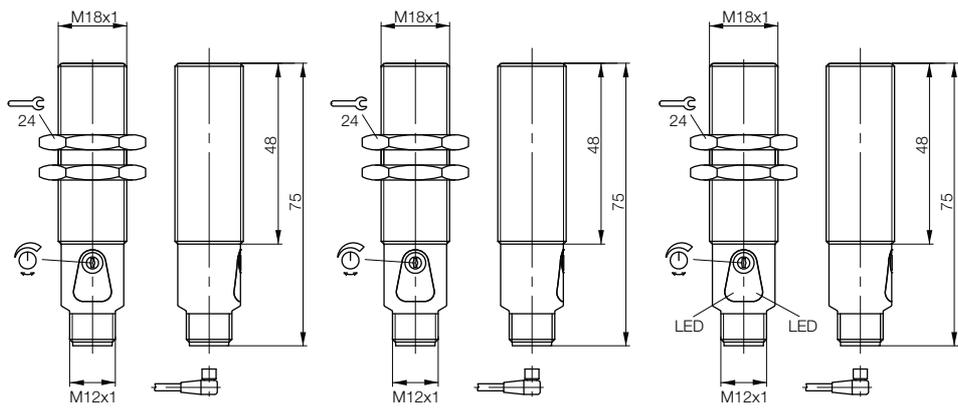
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 7 m Polarizing filter <b>BOS01HR</b> BOS 18M-PA-IR21-S4	Retroreflective sensor 10 m <b>BOS01F0</b> BOS 18M-PA-IR20-S4	Retroreflective sensor 10 m <b>BOS01F1</b> 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

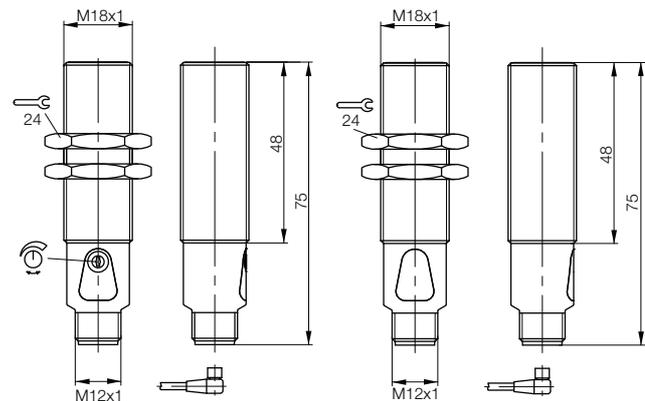


Emitter

Type	Through-beam sensor		Through-beam sensor
Detection range	0...50 m		0...100 m high power
PNP NC/NO	<b>Ordering code</b>		
	Part number		
PNP NO	<b>Ordering code</b>		
	Part number		
PNP NC/NO Receiver	<b>Ordering code</b>		
	Part number		
	Emitter	<b>Ordering code</b>	<b>BOS01F5</b>
		Part number	BOS 18M -X-IS20-S4
	Emitter Test input	<b>Ordering code</b>	<b>BOS01HN</b>
		Part number	BOS 18M-XT-IS20-S4
Supply voltage $U_s$		10...30 V DC	10...30 V DC
Output current		$\leq 30$ mA	$\leq 30$ mA
No-load supply current $I_0$ max.			
Switching type		Yes/Yes	Yes/Yes
Polarity reversal/short-circuit protected		Potentiometer, 270°	
Settings			
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

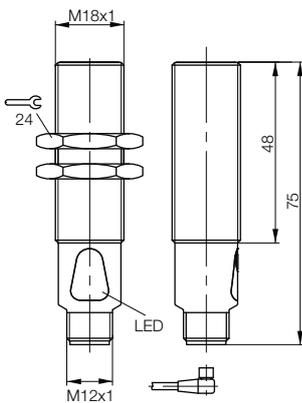
**Through-beam sensor**  
**0...50 m/0...100 m**

**BOS01F3**

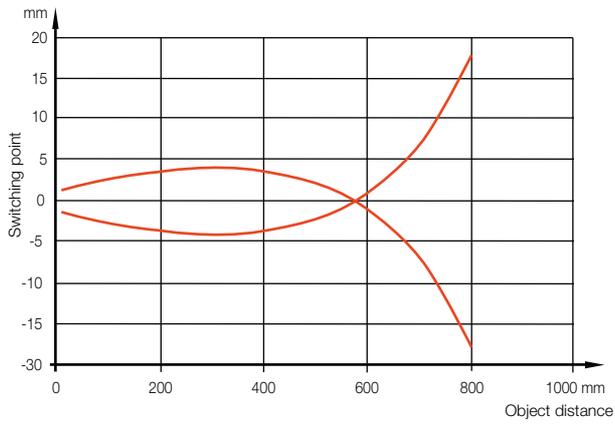
BOS 18M-PA-IE20-S4

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

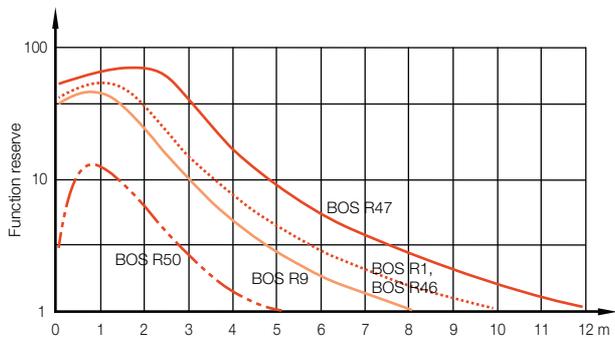
LED, infrared  
850 Nm  
1.25 ms  
400 Hz  
IP 67  
-5...+55 °C  
5 klx  
Nickel-plated brass  
Glass  
M12 connector,  
4-pin



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



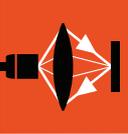
**Retroreflective sensor BOS 18M...IR20/IR21-S4**



# Photoelectric Sensors

## BOS 18M infrared

### Connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors BGL

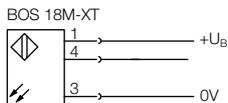
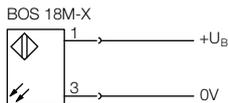
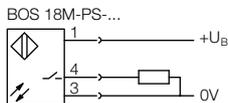
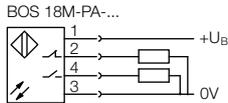
Angle Sensors BWL

Photoelectric Sensors with Special Properties

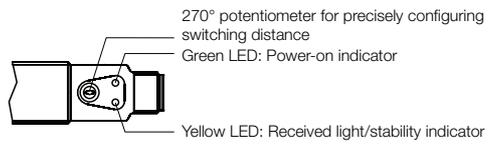
Photoelectric Distance Sensors for Analog Distance Measurement

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	<b>BAM00T3</b>
② Mounting bracket	<b>BAM00RY</b>
③ Reflector	<b>BAM00UK</b>



#### Suitable connectors (please order separately)

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



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.

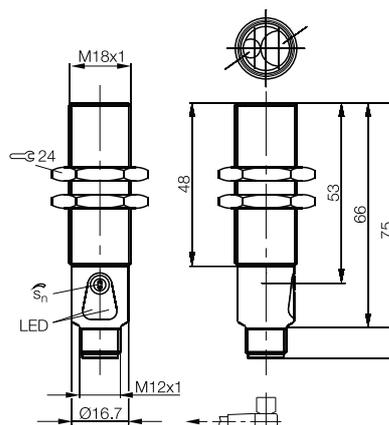
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.



Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression	
Detection range	30...150 mm		30...150 mm	
PNP NO	<b>Ordering code</b>	<b>BOS002H</b>		
	Part number	BOS 18M-PS-LH22-S4		
PNP NO Error output	<b>Ordering code</b>	<b>BOS002K</b>		
	Part number	BOS 18M-PSV-LH22-S4		
PNP NC Error output	<b>Ordering code</b>		<b>BOS001Z</b>	
	Part number		BOS 18M-POV-LH22-S4	
PNP NC/NO	<b>Ordering code</b>			
	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.	$\leq 30$ mA		$\leq 30$ 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.

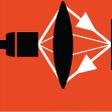




# Photoelectric Sensors

## BOS 18M Laser

Sensing distance 150 mm, 350 mm



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

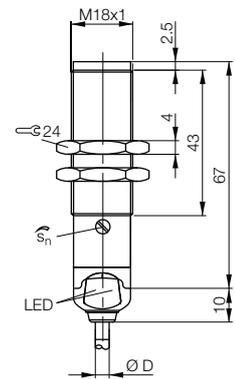
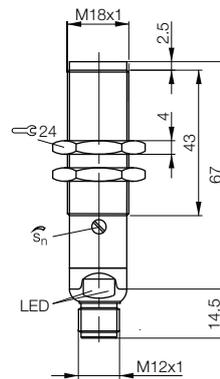
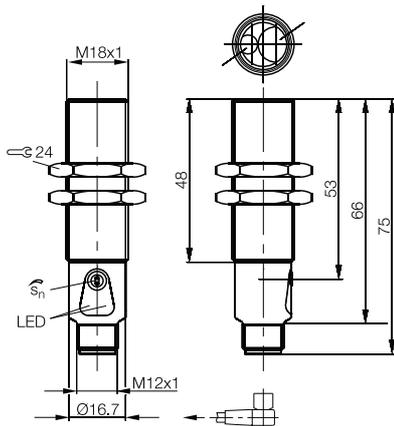
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Diffuse sensor with background suppression 30...150 mm	Diffuse sensor with background suppression 30...150 mm	Diffuse sensor 0...350 mm	Diffuse sensor 0...350 mm
	<b>BOS01C4</b> BOS 18M-PSV-LH23-S4		
<b>BOS01C5</b> BOS 18M-PA-LH23-S4		<b>BOS013H</b> BOS 18M-PA-LD10-S4	<b>BOS013F</b> 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 mm <sup>2</sup>

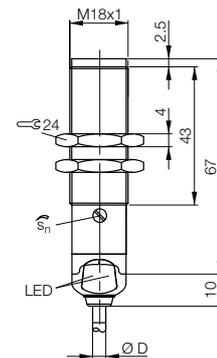
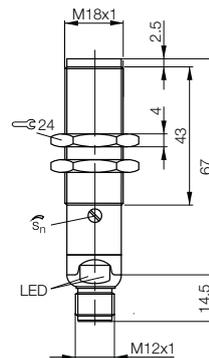




Type	Retroreflective sensor with polarizing filter		Retroreflective sensor with polarizing filter	
Detection range	0.1...16 m		0.1...16 m	
PNP	NC/NO	<b>Ordering code</b>	<b>BOS013M</b>	<b>BOS013L</b>
		Part number	BOS 18M-PA-LR10-S4	BOS 18M-PA-LR10-02
Emitter		<b>Ordering code</b>		
		Part number		
Supply voltage $U_s$	10...30 V DC		10...30 V DC	
Output current	100 mA		100 mA	
No-load supply current $I_0$ max.	$\leq 35$ mA		$\leq 35$ 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 $\mu$ s		333 $\mu$ 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.

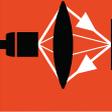




# Photoelectric Sensors

## 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



Receiver



Receiver

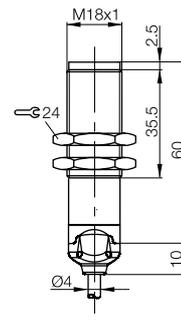
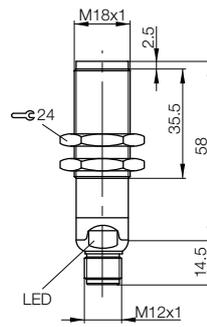
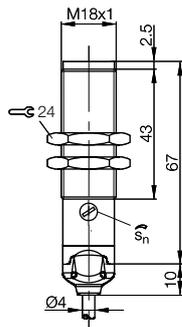
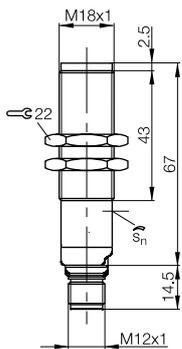


Emitter



Emitter

Through-beam sensor	Through-beam sensor	Through-beam sensor	Through-beam sensor
<b>0...60 m</b>	<b>0...60 m</b>	<b>0...60 m</b>	<b>0...60 m</b>
<b>BOS013K</b>	<b>BOS013J</b>		<b>BOS013P</b>
BOS 18M-PA-LE10-S4	BOS 18M-PA-LE10-02		BOS 18M-XT-LS10-02
		<b>BOS013R</b>	
		BOS 18M-XT-LS10-S4	
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		
Light and dark switching	Light and dark switching	Yes/Yes	Yes/Yes
Yes/Yes	Yes/Yes		
Potentiometer, 270°	Potentiometer, 270°		
Laser, red light	Laser, red light	Laser, red light	Laser, red light
650 Nm	650 Nm	650 Nm	650 Nm
1	1	1	1
333 μs	333 μs		
1.5 kHz	1.5 kHz		
IP 67	IP 67	IP 67	IP 67
-10...+55 °C	-10...+55 °C	-10...+55 °C	-10...+55 °C
5 klx	5 klx	5 klx	5 klx
Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
PMMA	PMMA	PMMA	PMMA
M12 connector,	2 m PVC cable,	M12 connector,	2 m PVC cable,
4-pin	4x0.14 mm	4-pin	4x0.14 mm

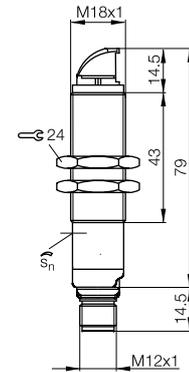
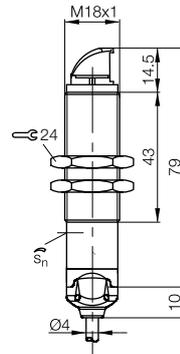




Type	Diffuse sensor		Diffuse sensor
Detection range	0...250 mm		0...250 mm
PNP NO/NC	<b>Ordering code</b> <b>BOS0141</b>		<b>BOS0142</b>
	Part number	BOS 18MR-PA-LD10-02	BOS 18MR-PA-LD10-S4
Supply voltage $U_S$	10...30 V DC		10...30 V DC
Output current	100 mA		100 mA
No-load supply current $I_0$ max.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

BWL

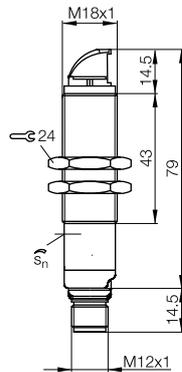
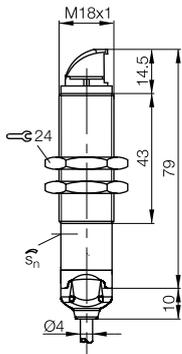
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



	<b>Retroreflective sensor with polarizing filter</b>	<b>Retroreflective sensor with polarizing filter</b>		
	<b>0.1...9 m</b>	<b>0.1...9 m</b>		
	<b>BOS0145</b>	<b>BOS0146</b>		
	BOS 18MR-PA-LR10-02	BOS 18MR-PA-LR10-S4		
	10...30 V DC	10...30 V DC		
	100 mA	100 mA		
	≤ 35 mA	≤ 35 mA		
	Light and dark switching	Light and dark switching		
	Yes/Yes	Yes/Yes		
	Potentiometer, 270°	Potentiometer, 270°		
	Laser, red light	Laser, red light		
	650 Nm	650 Nm		
	1	1		
	333 μs	333 μs		
	1.5 kHz	1.5 kHz		
	IP 67	IP 67		
	-10...+55 °C	-10...+55 °C		
	5 klx	5 klx		
	Nickel-plated brass	Nickel-plated brass		
	PMMA	PMMA		
	2 m PVC cable, 4x0.14 mm <sup>2</sup>	M12 connector, 4-pin		





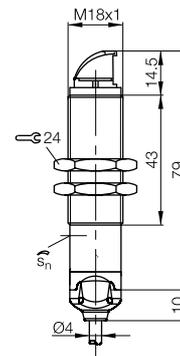
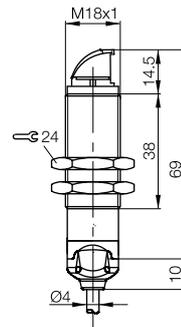
Emitter



Receiver

Type	Through-beam sensor		Through-beam sensor
Detection range	0...50 m		0...50 m
PNP	NC/NO	<b>Ordering code</b>	<b>BOS0143</b>
	Receiver	Part number	BOS 18MR-PA-LE10-02
	Emitter	<b>Ordering code</b>	<b>BOS0147</b>
		Part number	BOS 18MR-XT-LS10-02
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.	$\leq 30$ mA		$\leq 35$ 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 $\mu$ s		333 $\mu$ 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 <sup>2</sup>		2 m PVC cable, 4x0.14 mm <sup>2</sup>

For wiring diagrams see page 91.





# Photoelectric Sensors

## BOS 18M Laser



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

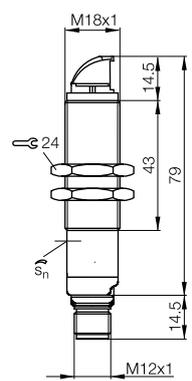
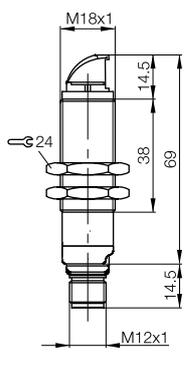
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

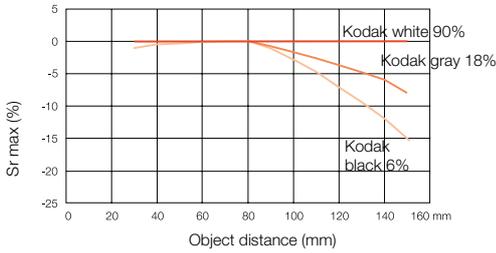
Accessories for Photoelectric Sensors



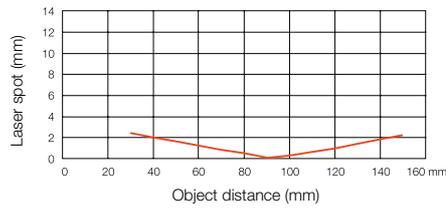
Through-beam sensor 0...50 m	Through-beam sensor 0...50 m		
	<b>BOS0144</b>		
	BOS 18MR-PA-LE10-S4		
<b>BOS0148</b>			
BOS 18MR-XT-LS10-S4			
10...30 V DC	10...30 V DC		
≤ 30 mA	100 mA		
	≤ 35 mA		
Yes/Yes	Light and dark switching		
	Yes/Yes		
Laser, red light	Potentiometer, 270°		
650 Nm	Laser, red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



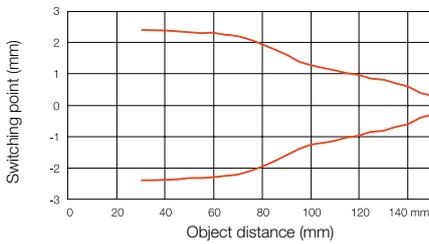
**Diffuse sensor with background suppression BOS 18M-...LH**  
 Gray value shift



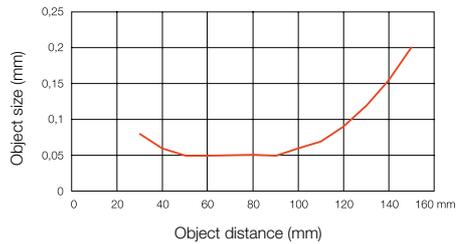
**Diffuse sensor with background suppression BOS 18M-...LH**  
 Light spot diameter at distance



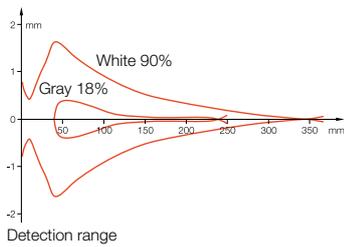
**Diffuse sensor with background suppression BOS 18M-...LH**  
 Turn-on point for lateral approach



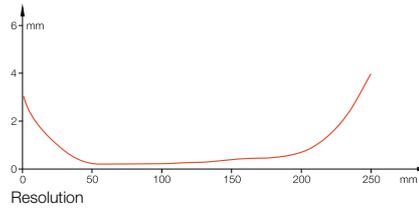
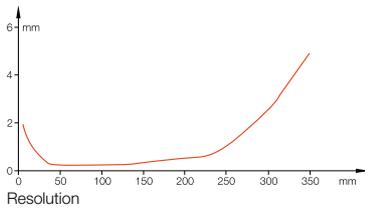
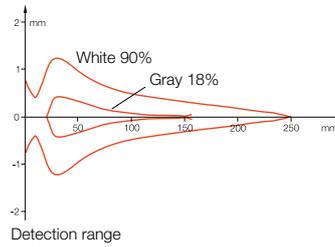
**Diffuse sensor with background suppression BOS 18M-...LH**  
 Smallest detectable part



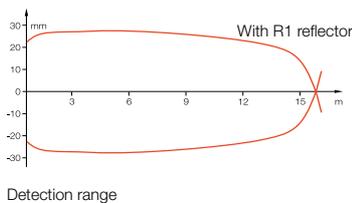
**Diffuse sensor BOS 18M-...LD10-...**



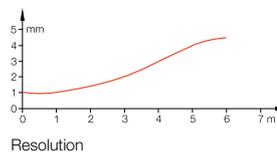
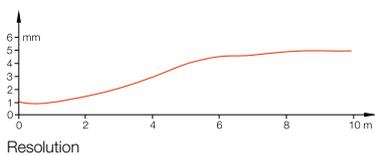
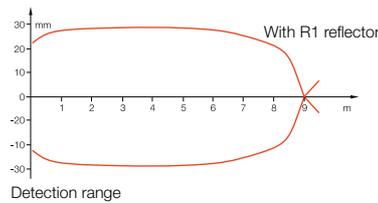
**Diffuse sensor BOS 18MR-...LD10-...**



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



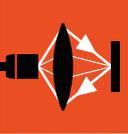
**Retroreflective sensor BOS 18MR-...LR10-...**



# Photoelectric Sensors

## BOS 18M Laser

### Function diagrams, connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

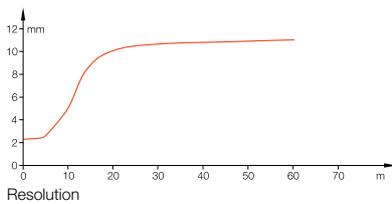
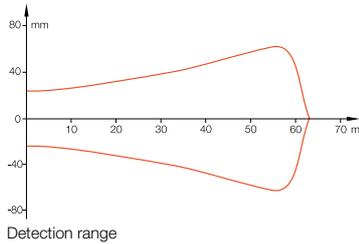
BWL

Photoelectric Sensors with Special Properties

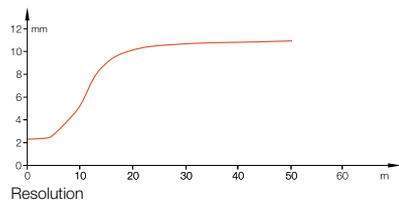
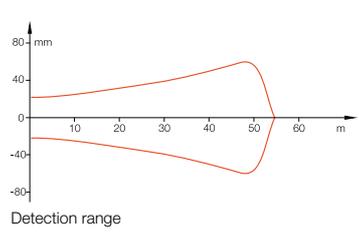
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

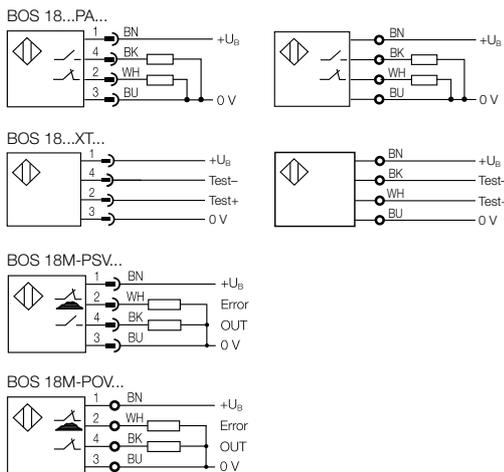
#### Through-beam sensor BOS 18M--LE/LS10...



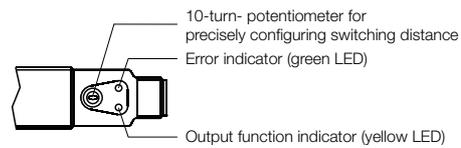
#### Through-beam sensor BOS 18MR--LE/LS10...



#### 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	<b>BAM00T3</b>
② Mounting bracket	<b>BAM00RY</b>
③ Reflector	<b>BAM00UK</b>



#### Suitable connectors (please order separately)

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



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.

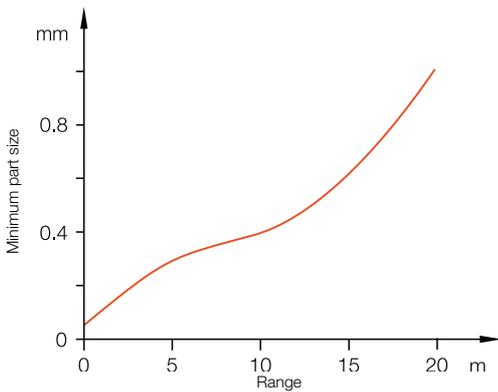
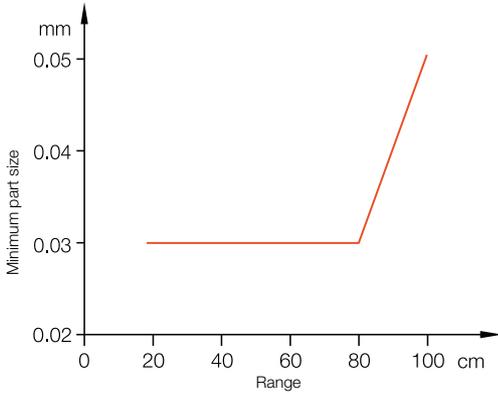
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.

Photoelectric Sensors  
**BOS 18M**  
 Laser through-beam sensor

**M18 Metal Laser**  
 Through-beam sensor

**Accuracy diagram**

Smallest detectable part size as a function of range.

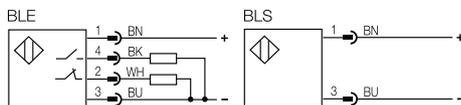


Light spot perpendicular to transport direction of the object.



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

**Wiring diagrams**



**Recommended accessories**  
 (please order separately)

Description	Ordering code
Mounting cuff	<b>BAM00T3</b>



**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	<b>BCC032F</b>
M12, 4-pin	Straight	PVC	Gray	2 m	<b>BCC0367</b>
M12, 4-pin	Angled	PUR	Black	2 m	<b>BCC032Y</b>
M12, 4-pin	Angled	PVC	Gray	2 m	<b>BCC036N</b>

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 Measurement

Measurement

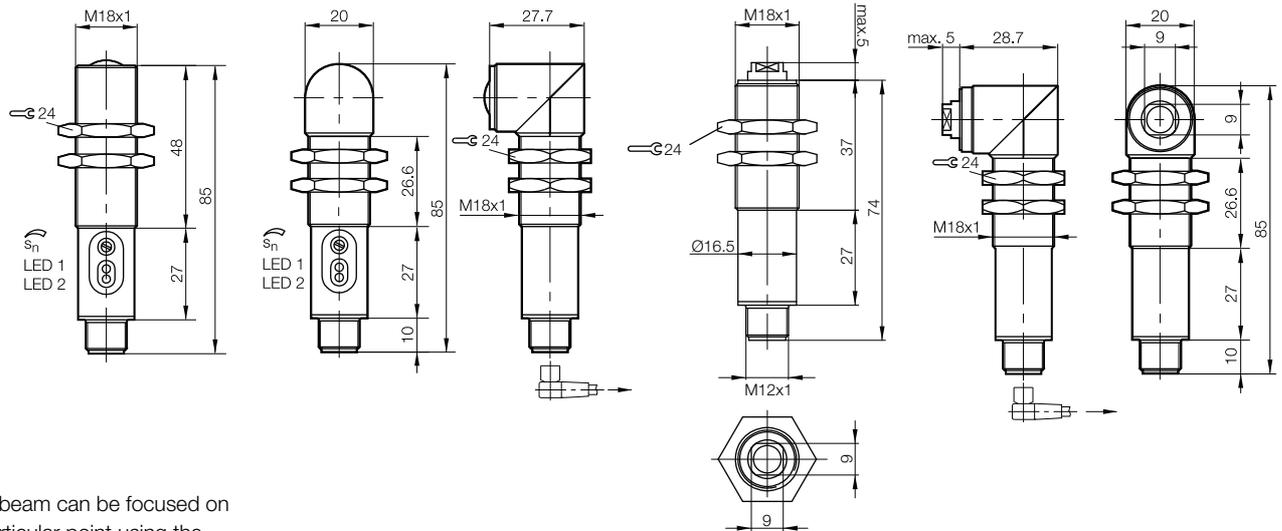
Photoelectric Distance Sensors for Analog Measurement

Measurement

Accessories for Photoelectric Sensors



Through-beam sensor 0...50 m	Through-beam sensor 0...50 m	Through-beam sensor 0...50 m	Through-beam sensor 0...50 m
<b>BOS0074</b>	<b>BOS0076</b>		
BLE 18M-BA-1LT-S4-C	BLE 18MR-BA-1LT-S4-C		
<b>BOS0075</b>			
BLE 18M-BO-1LT-S4-C			
		<b>BOS00AW</b>	<b>BOS00AU</b>
		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

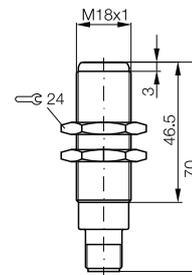
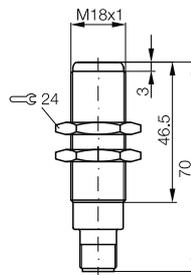
Type	Sensing distance/Range	Light type		Output	Switching type		Switching frequency	U <sub>S</sub>	Connection		Special features		Page
		Red light	Infrared		PNP transistor	Light switching			Dark switching	10...30 V DC	M12 plug, 4-pin	Cable	
Diffuse sensor with background suppression													
<b>BOS0016</b> BOS 18E-PS-1N2M-S4-D	0...40 mm	■		■	■		100 Hz	■	■				96
Diffuse sensor													
<b>BOS0047</b> BOS 18E-PS-1YA-E5-D-S4	0...100 mm	■		■	■		100 Hz	■	■				96
<b>BOS0015</b> BOS 18E-PO-1YA-E5-D-S4	0...100 mm	■		■		■	100 Hz	■	■				96
<b>BOS0017</b> BOS 18E-PS-1XA-SA1-S4	0...100 mm		■	■	■		100 Hz	■	■				97
<b>BOS001A</b> BOS 18E-PS-1YB-E5-D-S4	0...200 mm	■		■	■		100 Hz	■	■				97
<b>BOS0018</b> BOS 18E-PS-1XB-SA1-S4	0...200 mm		■	■	■		100 Hz	■	■				97
<b>BOS001C</b> BOS 18E-PS-1YD-E5-D-S4	0...400 mm	■		■	■		100 Hz	■	■				97
<b>BOS0019</b> BOS 18E-PS-1XD-SA1-S4	0...400 mm		■	■	■		100 Hz	■	■				98
Retroreflective sensor													
<b>BOS00RN</b> BOS 18E-PS-1UB-E5-D-S4	2 m	■		■		■	100 Hz	■	■		■		98
<b>BOS00RL</b> BOS 18E-PO-1UB-E5-D-S4	2 m	■		■	■		100 Hz	■	■		■		98
<b>BOS00RP</b> BOS 18E-PS-1UB-SA1-S4	2 m	■		■		■	100 Hz	■	■		■		99
<b>BOS0046</b> BOS 18E-PS-1WD-E5-D-S4	4 m	■		■		■	100 Hz	■	■				99
Through-beam sensor Receiver													
<b>BOS00UJ</b> BLE 18E-PS-1P-E5-D-S4	16 m		■	■		■	100 Hz	■	■				99
<b>BOS00UF</b> BLE 18E-PO-1P-E5-D-S4	16 m		■	■	■		100 Hz	■	■				99
<b>BOS00UH</b> BLE 18E-PO-1P-E5-D-S4S	16 m		■	■	■		100 Hz	■	■				99
<b>BOS00UK</b> BLE 18E-PS-1P-SA1-S4	16 m		■	■		■	100 Hz	■	■				99
Through-beam sensor Emitter													
<b>BOS00UY</b> BLS 18E-XX-1P-E5-X-S4	16 m		■					■	■				99
<b>BOS00UZ</b> 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	<b>Ordering code</b>	<b>BOS0016</b>	<b>BOS0047</b>
	Part number	BOS 18E-PS-1N2M-S4-D	BOS 18E-PS-1YA-E5-D-S4
PNP NC	<b>Ordering code</b>		<b>BOS0015</b>
	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.	$\leq 20$ mA		$\leq 20$ 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	<b>Stainless steel 1.4571</b>	<b>Stainless steel 1.4571</b>
	Optical surface	Glass	Glass
Connection	M12 connector, 4-pin		M12 connector, 4-pin

Reference object: white, 90% reflection, 200x200 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

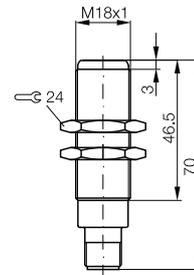
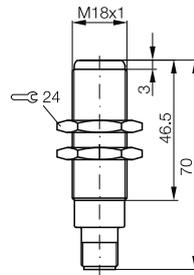
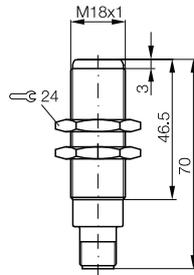
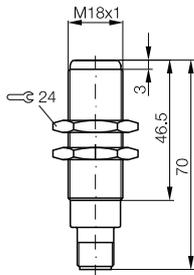
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



	<b>Diffuse sensor</b> <b>0...100 mm</b>	<b>Diffuse sensor</b> <b>0...200 mm</b>	<b>Diffuse sensor</b> <b>0...200 mm</b>	<b>Diffuse sensor</b> <b>0...400 mm</b>
	<b>BOS0017</b>	<b>BOS001A</b>	<b>BOS0018</b>	<b>BOS001C</b>
	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			
	-5...+75 °C	-20...+75 °C	-5...+75 °C	-20...+75 °C
	2 klx	2 klx	2 klx	2 klx
	<b>Stainless steel 1.4571</b>	<b>Stainless steel 1.4571</b>	<b>Stainless steel 1.4571</b>	<b>Stainless steel 1.4571</b>
	PMMA scratch-resistant	Glass	PMMA scratch-resistant	Glass
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

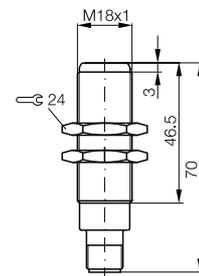
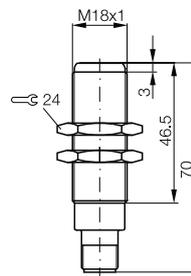




Type		Diffuse sensor	Retroreflective sensor
Detection range		0...400 mm	2 m with polarizing filter
PNP NO	<b>Ordering code</b>	<b>BOS0019</b>	<b>BOS00RN</b>
	Part number	BOS 18E-PS-1XD-SA1-S4	BOS 18E-PS-1UB-E5-D-S4
PNP NC	<b>Ordering code</b>		<b>BOS00RL</b>
	Part number		BOS 18E-PO-1UB-E5-D-S4
PNP NO Receiver	<b>Ordering code</b>		
	Part number		
PNP NC Receiver	<b>Ordering code</b>		
	Part number		
PNP NC Receiver Output special assignment	<b>Ordering code</b>		
	Part number		
	<b>Ordering code</b>		
	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.		$\leq 20$ mA	$\leq 20$ 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	<b>Stainless steel 1.4571</b>	<b>Stainless steel 1.4571</b>
	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

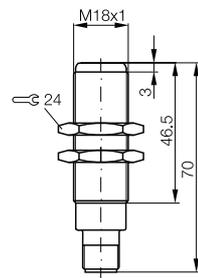
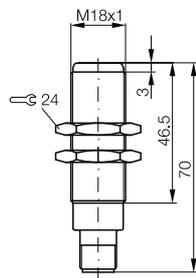
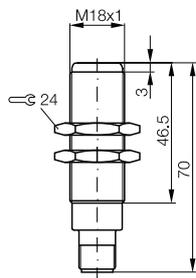
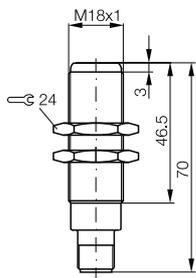
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

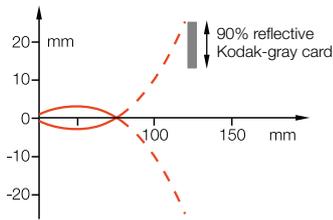
Accessories for Photoelectric Sensors



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

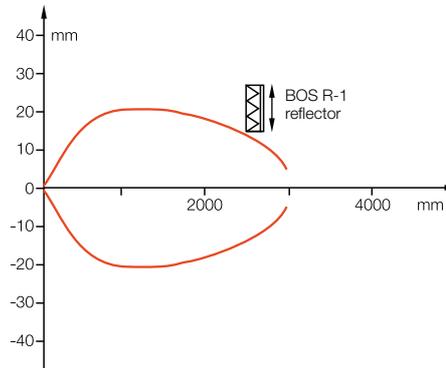


**Diffuse sensor BOS 18E-...-1YA-...**



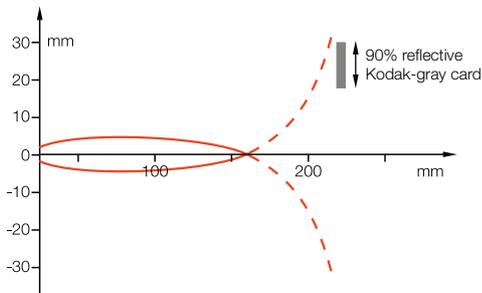
Sensing distance with side approach of Kodak-gray card.

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



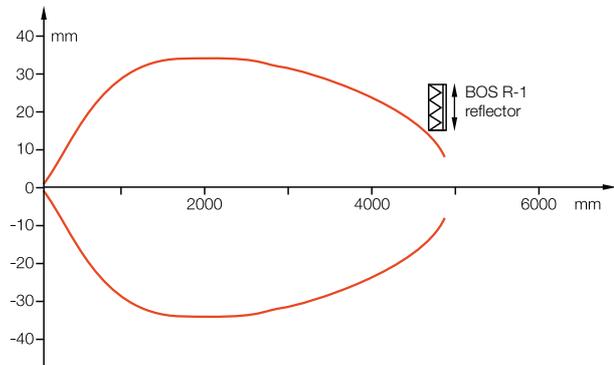
Range measured with side approach with reflector.

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



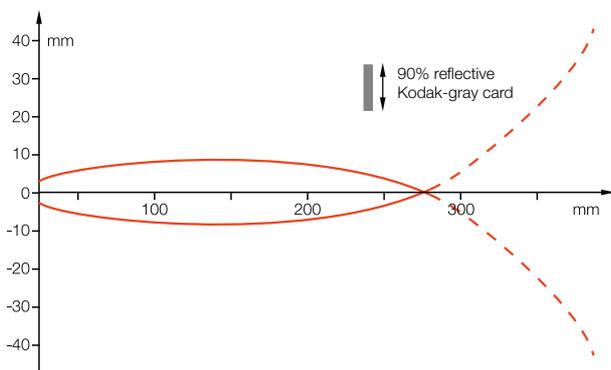
Sensing distance with side approach of Kodak-gray card.

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



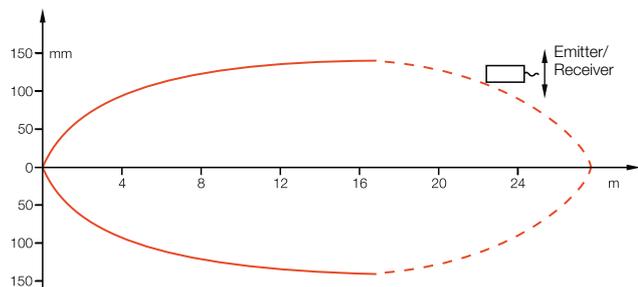
Range measured with side approach with reflector.

**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

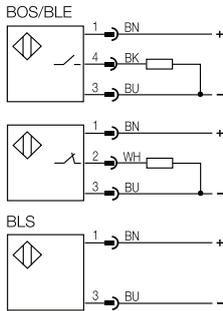
Angle Sensors  
BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

#### Wiring diagrams



#### Recommended accessories (please order separately)

Description	Ordering code
① Mounting clamp	<b>BAM00T3</b>
② Reflector	<b>BAM00UK</b>
③ Round aperture	<b>BAM00R6</b>
④ Air shield	<b>BAM00R9</b>



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	<b>BCC0EZ9</b>
M12, 4-pin	Straight	PVC	Gray	5 m	<b>BCC0EZF</b>
M12, 4-pin	Angled	PUR	Black	5 m	<b>BCC0EZC</b>
M12, 4-pin	Angled	PVC	Gray	5 m	<b>BCC0EZH</b>



Connectors without LED are suitable for PNP and NPN sensors.

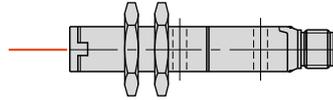
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.

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

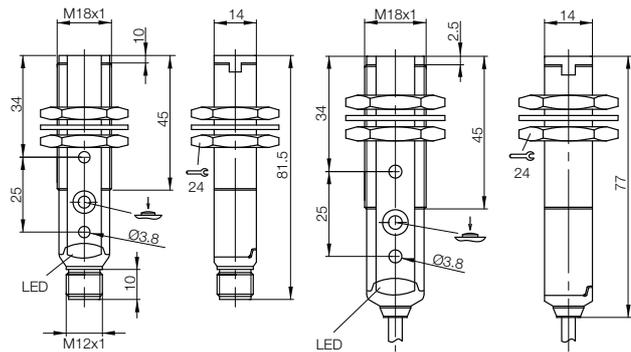
NPN on request



Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression	
Detection range	50...100 mm		50...100 mm	
PNP NC/NO	<b>Ordering code</b>			
	Part number			
PNP NC/NO Teach-in	<b>Ordering code</b>	<b>BOS00JM</b>	<b>BOS00JL</b>	
	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, 4x0.14 mm <sup>2</sup>	

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

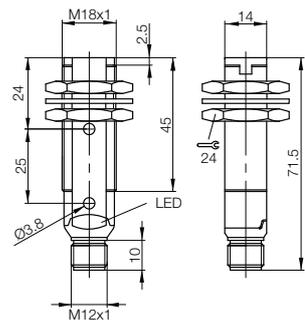
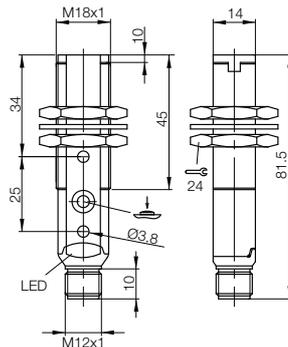
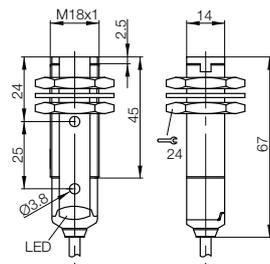
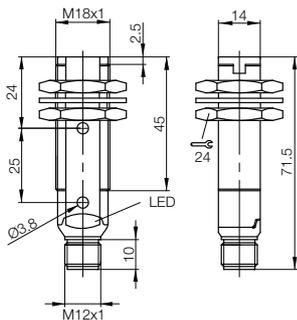
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Diffuse sensor with background suppression 100 mm <b>BOS00JW</b> BOS 18KF-PA-1N1R-S4-C	Diffuse sensor with background suppression 100 mm <b>BOS00JU</b> BOS 18KF-PA-1N1R-C-02	Diffuse sensor with background suppression 40...100 mm <b>BOS00JK</b> BOS 18KF-PA-1GA-S4-C	Diffuse sensor 0...100 mm <b>BOS00K9</b> BOS 18KF-PA-1XA-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, 4x0.14 mm <sup>3</sup>	M12 connector, 4-pin	M12 connector, 4-pin

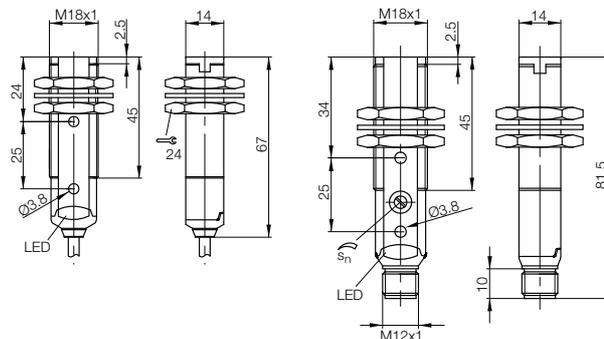




Type		Diffuse sensor	Diffuse sensor
Detection range		<b>0...100 mm</b>	<b>0...400 mm</b>
PNP NC/NO	<b>Ordering code</b>	<b>BOS00K8</b>	<b>BOS00JZ</b>
	Part number	BOS 18KF-PA-1XA-C-02	BOS 18KF-PA-1PD-S4-C
Supply voltage $U_s$		10...30 V DC	10...30 V DC
Output current		100 mA	100 mA
No-load supply current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

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

For wiring diagrams see page 119.



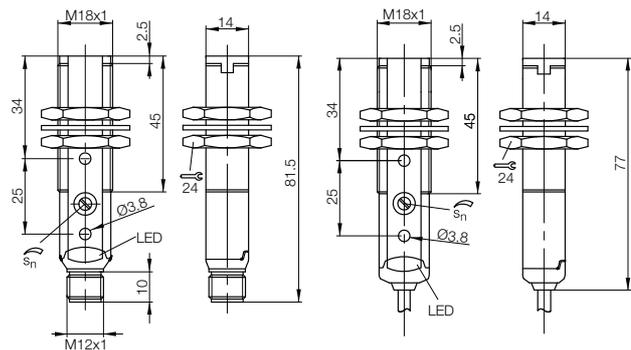




Type	<b>Retroreflective sensor</b>		<b>Retroreflective sensor</b>	
Detection range	<b>0.1...1.7 m</b>		<b>0.1...1.7 m</b>	
PNP NC/NO	Polarizing filter, transparency detection	<b>Ordering code</b> Part number	<b>BOS00K7</b> BOS 18KF-PA-1TB-S4-C	<b>BOS00K6</b> BOS 18KF-PA-1TB-C-02
PNP NC/NO	Polarizing filter	<b>Ordering code</b> Part number		
PNP NC/NO		<b>Ordering code</b> 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.	$\leq 35$ mA		$\leq 35$ 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 <sup>3</sup>	

Reference reflector: BOS R-1

For wiring diagrams see page 119.







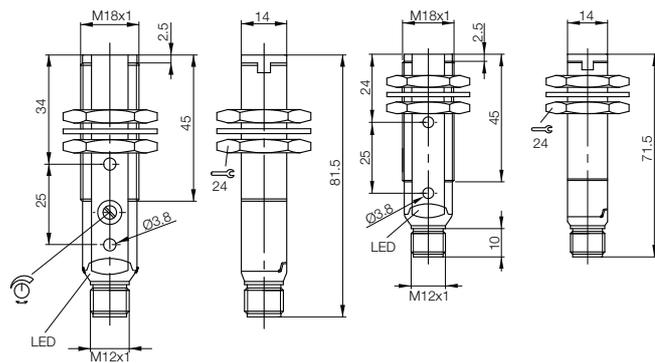
Receiver



Emitter

Type	Through-beam sensor		Through-beam sensor
Detection range	0...20 m		0...20 m
PNP NC/NO	Receiver	<b>Ordering code</b> BOS00CK	
		Part number BLE 18KF-PA-1PP-S4-C	
	Emitter	<b>Ordering code</b> BOS00EP	
		Part number BLS 18KF-XX-1P-S4-L	
Supply voltage $U_S$	10...30 V DC		10...30 V DC
Output current	100 mA		
No-load supply current $I_0$ max.	$\leq 30$ mA		$\leq 35$ mA
Switching type	Light/dark (complementary)		
Polarity reversal/short-circuit protected	Yes/Yes		Yes/Yes
Settings	Potentiometer, 270°		
Help functions			Test input
Emitter, light type			LED, infrared
Wavelength			880 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		IP 67
Ambient temperature $T_a$	-25...+55 °C		-25...+55 °C
Reference standard	EN 60947-5-2		EN 60947-5-2
Material	Housing	PBT	PBT
	Optical surface	PMMA	PMMA
Connection	M12 connector, 4-pin		M12 connector, 4-pin

For wiring diagrams see page 119.



# Photoelectric Sensors

## BOS 18KF Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

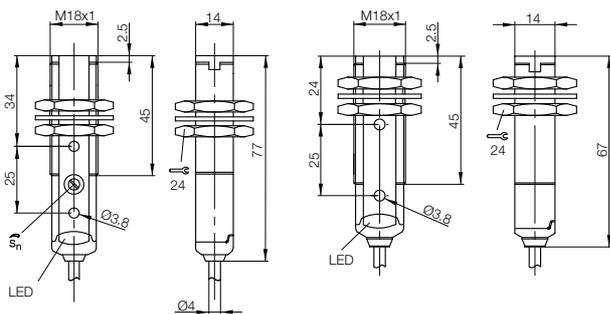
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Through-beam sensor 0...20 m <b>BOS00CJ</b> BLE 18KF-PA-1PP-C-02	Through-beam sensor 0...20 m <b>BOS00EN</b> BLS 18KF-XX-1P-L-02		
10...30 V DC	10...30 V DC		
100 mA	≤ 35 mA		
≤ 30 mA			
Light/dark (complementary)			
Yes/Yes	Yes/Yes		
Potentiometer, 270°			
	Test input		
	LED, infrared		
	880 ms		
	approx. 500 mm at 15 m		
	Green LED		
Green LED			
Yellow LED			
2 ms			
250 Hz			
IP 67	IP 67		
-25...+55 °C	-25...+55 °C		
EN 60947-5-2	EN 60947-5-2		
PBT	PBT		
PMMA	PMMA		
2 m PVC cable, 4x0.14 mm <sup>2</sup>	2 m PVC cable, 4x0.14 mm <sup>2</sup>		

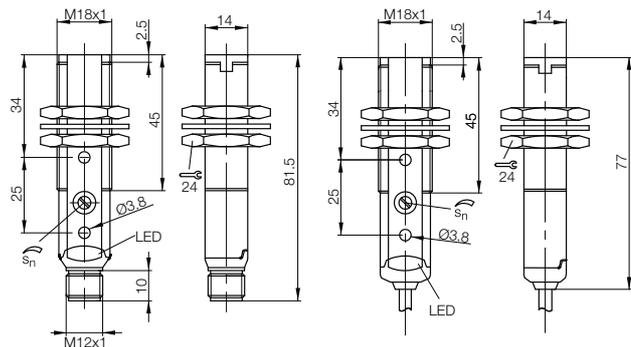




Type	Diffuse sensor		Diffuse sensor	
Detection range	0...350 mm		0...350 mm	
PNP NC/NO	<b>Ordering code</b>	<b>BOS00JP</b>	<b>Ordering code</b>	<b>BOS00JN</b>
	Part number	BOS 18KF-PA-1LOC-S4-C	Part number	BOS 18KF-PA-1LOC-C-02
PNP NC/NO	Polarizing filter	<b>Ordering code</b>		
		Part number		
Supply voltage $U_s$	10...30 V DC		10...30 V DC	
Output current	100 mA		100 mA	
No-load supply current $I_0$ max.	$\leq 35$ mA		$\leq 35$ 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 $\mu$ s		333 $\mu$ 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	Housing	PBT	Housing	PBT
	Optical surface	PMMA	Optical surface	PMMA
Connection	M12 connector, 4-pin		2 m PVC cable, 4x0.14 mm <sup>2</sup>	

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

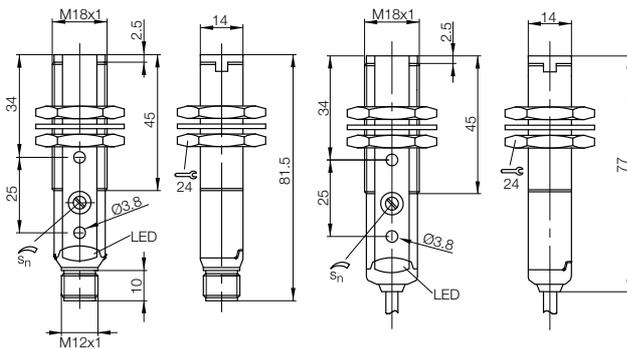
Photoelectric Sensors with Special Properties

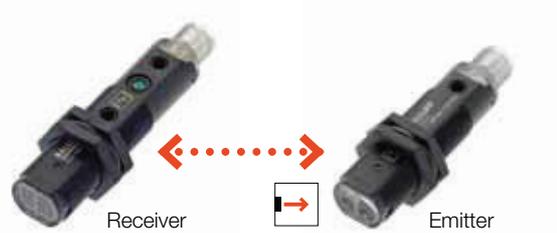
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 0.1...16 m	Retroreflective sensor 0.1...16 m		
<b>BOS00JT</b>	<b>BOS00JR</b>		
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 mm <sup>2</sup>		



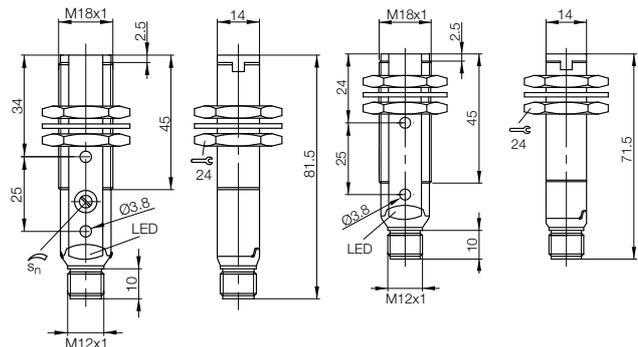


Receiver

Emitter

Type	Through-beam sensor		Through-beam sensor
Detection range	0...60 m		0...60 m
PNP NC/NO	Receiver	<b>Ordering code</b> BOS00CH	
		Part number BLE 18KF-PA-1LT-S4-C	
	Emitter	<b>Ordering code</b> 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.	$\leq 30$ mA		$\leq 35$ 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		
Output function indicator	Yellow LED		
Response time	333 $\mu$ s		
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

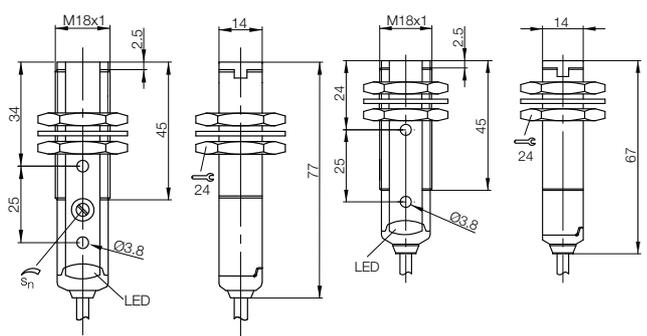
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

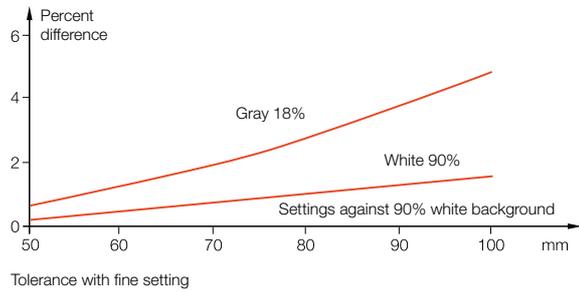
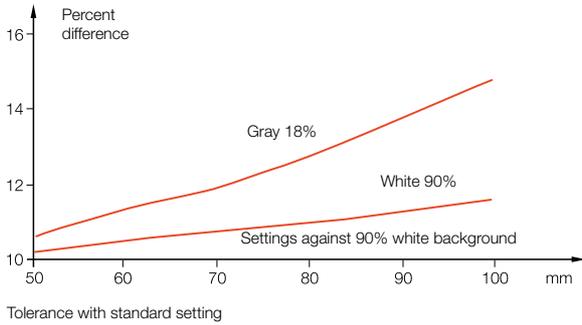
Accessories for Photoelectric Sensors



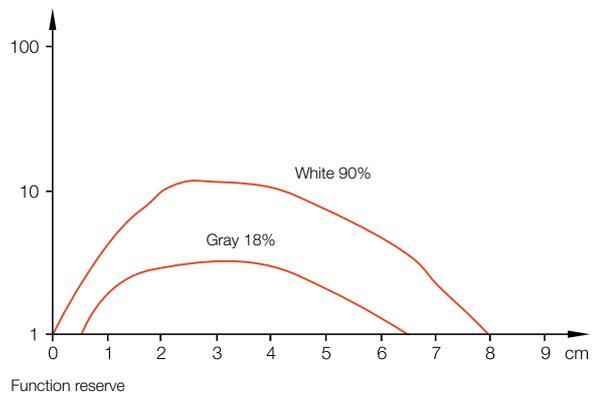
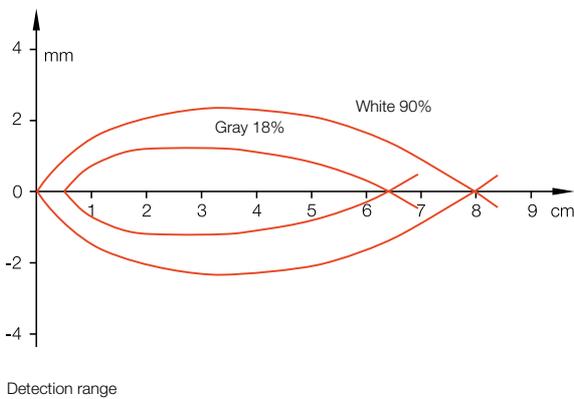
Through-beam sensor 0...60 m <b>BOS00CF</b> BLE 18KF-PA-1LT-C-02	Through-beam sensor 0...60 m <b>BOS00EL</b> BLS 18KF-XX-1LT-L-02		
10...30 V DC 100 mA ≤ 30 mA Light and dark switching Yes/Yes Potentiometer, 270°	10...30 V DC ≤ 35 mA Yes/Yes Laser, red light 650 Nm 1 approx. 2.5 mm at 5 m approx. 5 mm at 10 m approx. 10 mm at 20 m Green LED		
Green LED Yellow LED 333 μs 1.5 kHz			
IP 67 -10...+50 °C EN 60947-5-2 PBT PMMA 2 m PVC cable, 4x0.14 mm <sup>2</sup>	IP 67 -10...+50 °C EN 60947-5-2 PBT PMMA 2 m PVC cable, 4x0.14 mm <sup>2</sup>		



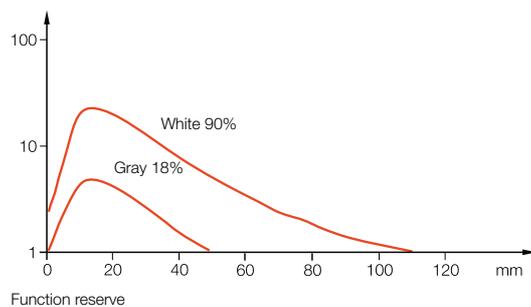
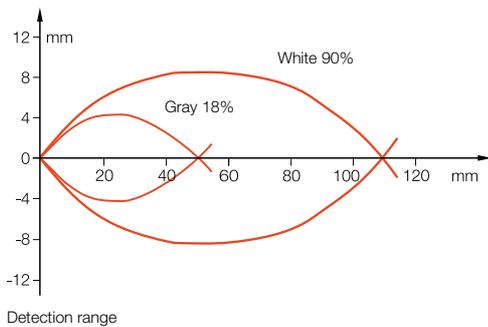
**Diffuse sensor BOS 18KF-...-1HA-...**



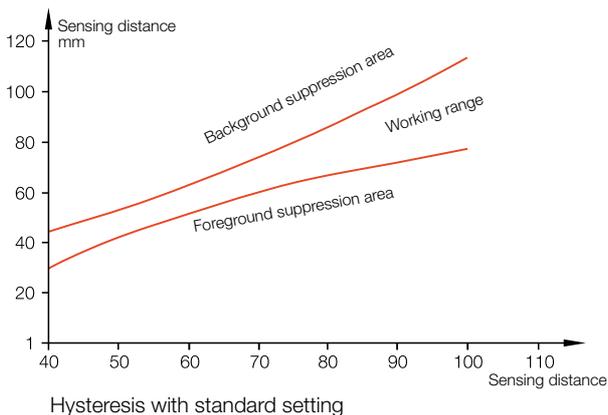
**Diffuse sensor BOS 18KF-...-1N1R-...**



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



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





Photoelectric Sensors

Photoelectric Sensors

**Cylinder Designs**

Block Designs

Fork Sensors

BGL

Angle Sensors

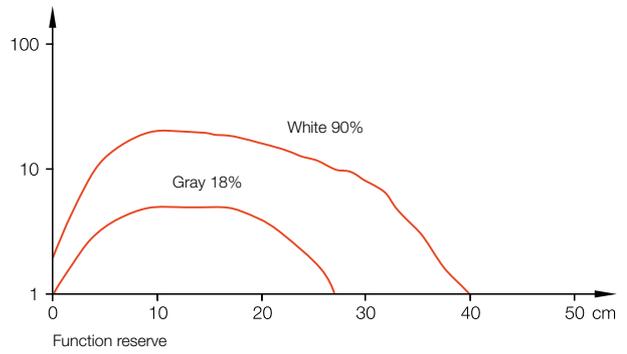
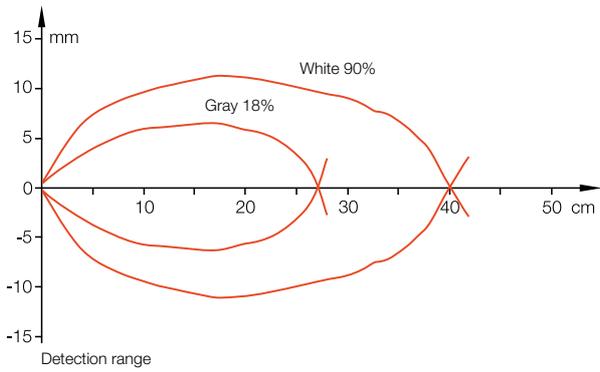
BWL

Photoelectric Sensors with Special Properties

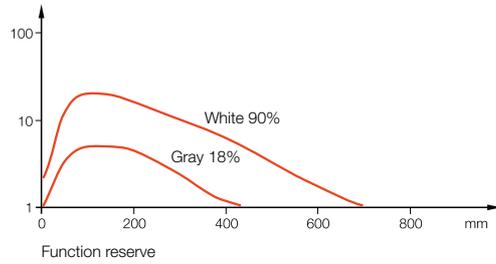
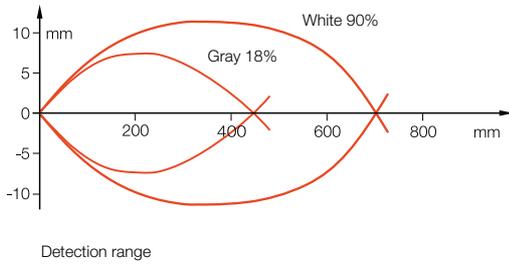
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

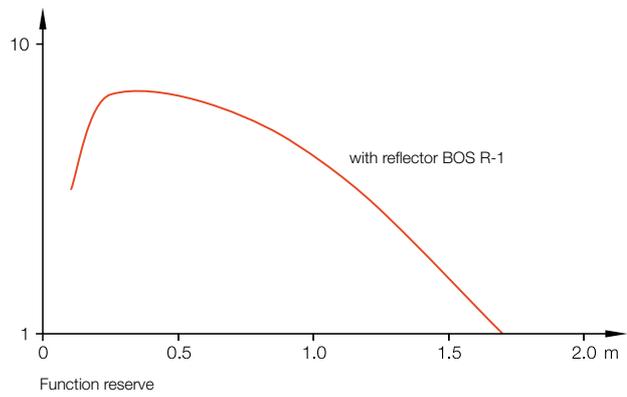
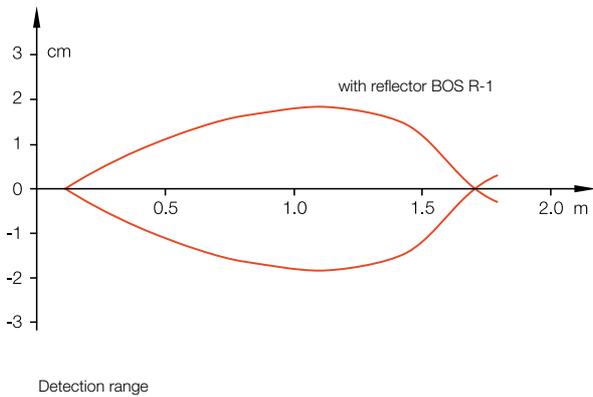
**Diffuse sensor BOS 18KF-...-1PD-...**



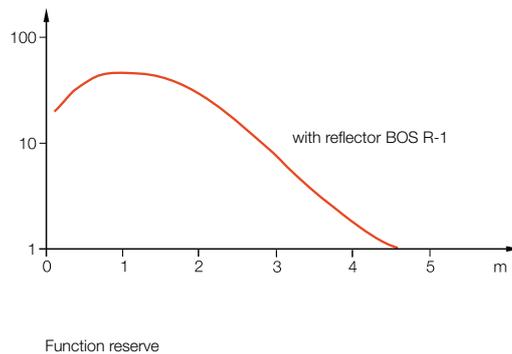
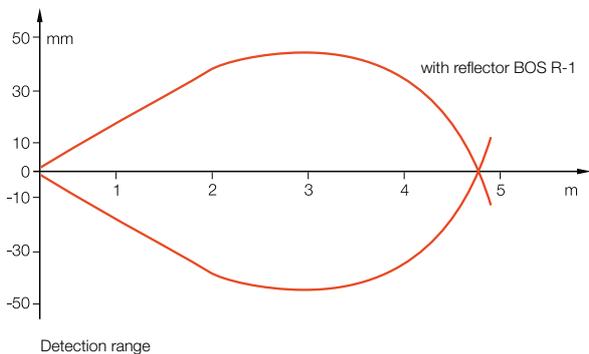
**Diffuse sensor BOS 18KF-...-1PE-...**



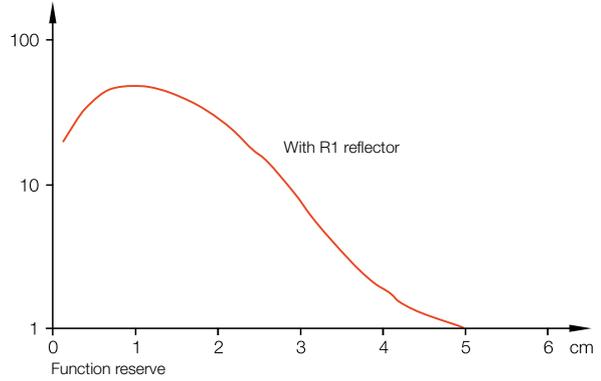
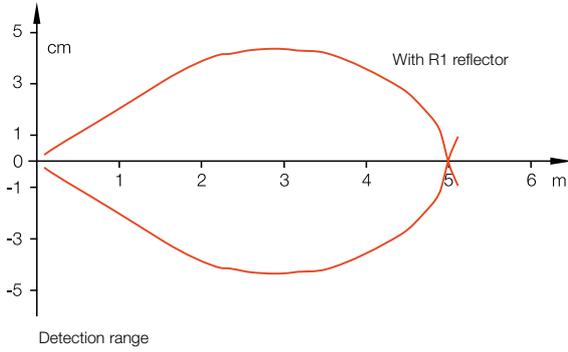
**Retroreflective sensor BOS 18KF-...-1TB-...**



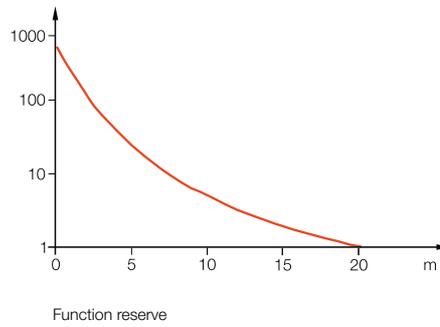
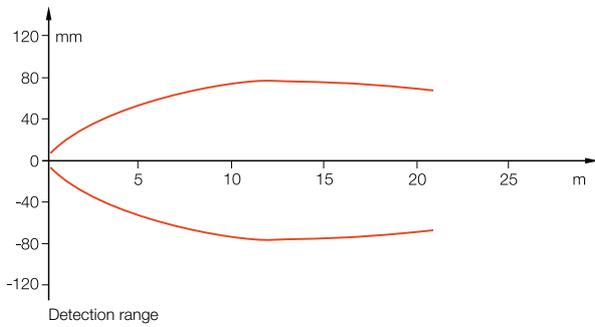
**Retroreflective sensor BOS 18KF-...-1QD-...**



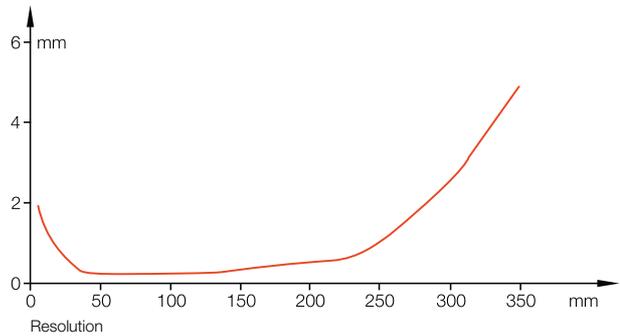
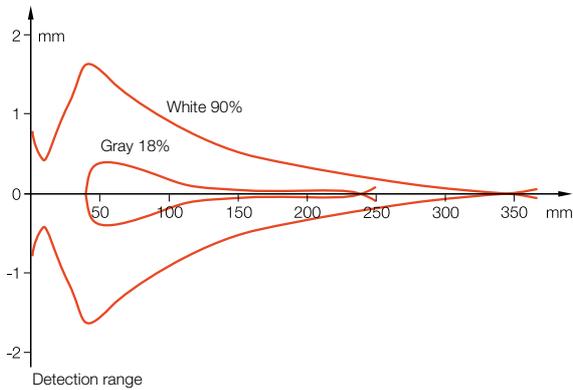
**Retroreflective sensor BOS 18KF...-1RE-...**



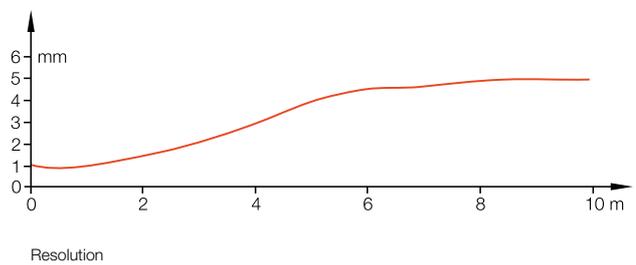
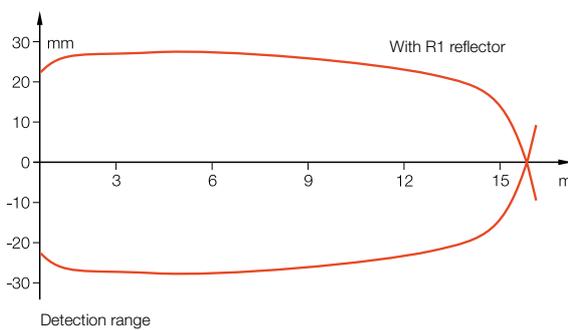
**Through-beam sensor BLE/BLS 18KF...-1PP/1P-...**



**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

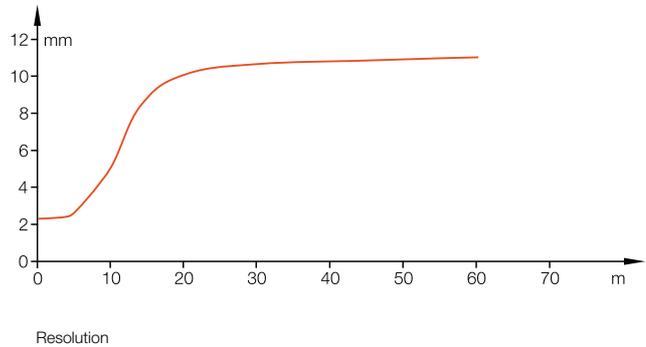
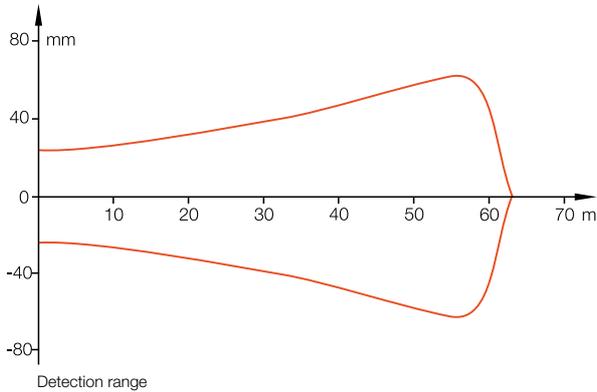
Angle Sensors BWL

Photoelectric Sensors with Special Properties

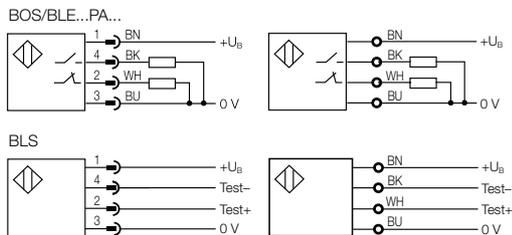
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

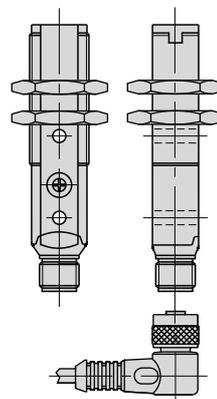
#### Through-beam sensor BLE/BLS 18KF...-1LT...



#### Wiring diagrams



#### Connector orientation



BOS 18KF

#### Recommended accessories (please order separately)

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



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	<b>BCC032F</b>
M12, 4-pin	Straight	PVC	Gray	2 m	<b>BCC0367</b>
M12, 4-pin	Angled	PUR	Black	2 m	<b>BCC032Y</b>
M12, 4-pin	Angled	PVC	Gray	2 m	<b>BCC036N</b>

Connectors without LED are suitable for PNP and NPN sensors.



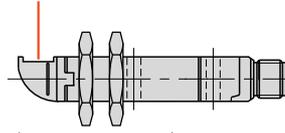
**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our **Industrial Networking and Connectivity** catalog.

**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.

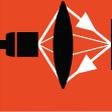
The sensors are available as cable- or M12- connector styles with PNP- or NPN- output.



# Photoelectric Sensors

## BOS 18KW Global

### Product overview



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors BGL

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

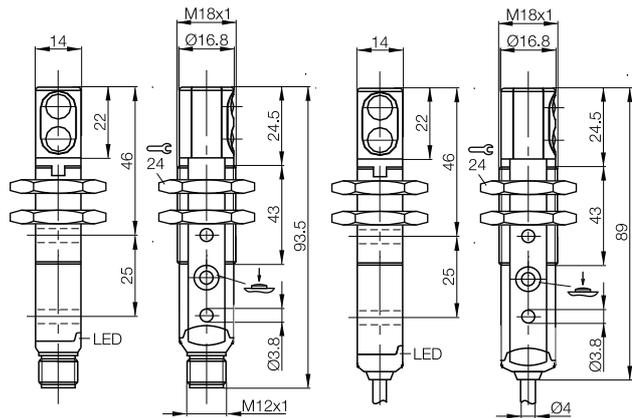
NPN on request



Type	Diffuse sensor with background suppression		Diffuse sensor with background suppression	
Detection range	50...100 mm		50...100 mm	
PNP NC/NO	<b>Ordering code</b>			
	Part number			
PNP NC/NO Teach-in	<b>Ordering code</b>	<b>BOS00LH</b>	<b>BOS00LF</b>	
	Part number	BOS 18KW-PA-1HA-S4-C	BOS 18KW-PA-1HA-C-02	
Supply voltage $U_s$		10...30 V DC	10...30 V DC	
Output current		100 mA	100 mA	
No-load supply current $I_0$ max.		≤ 30 mA	≤ 35 mA	
Switching type		Light and dark switching	Light and dark switching	
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes	
Settings		Teach-in	Teach-in	
Emitter, light type		LED, red light	LED, red light	
Wavelength		630 Nm	660 Nm	
Light spot diameter		approx. 10 mm at 100 mm	approx. 10 mm at 100 mm	
Output function indicator		Yellow LED	Yellow LED	
Stability indicator		Green/red LED	Green/red LED	
Response time		1 ms	0.5 ms	
Switching frequency $f$		500 Hz	1 kHz	
Degree of protection as per IEC 60529		IP 67	IP 67	
Ambient temperature $T_a$		-25...+55 °C	-25...+55 °C	
Permissible ambient light		EN 60947-5-2	EN 60947-5-2	
Material	Housing	PBT	PBT	
	Optical surface	PMMA	PMMA	
Connection		M12 connector, 4-pin	2 m PVC cable, 4x0.14 mm <sup>2</sup>	

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

For wiring diagrams see page 133.



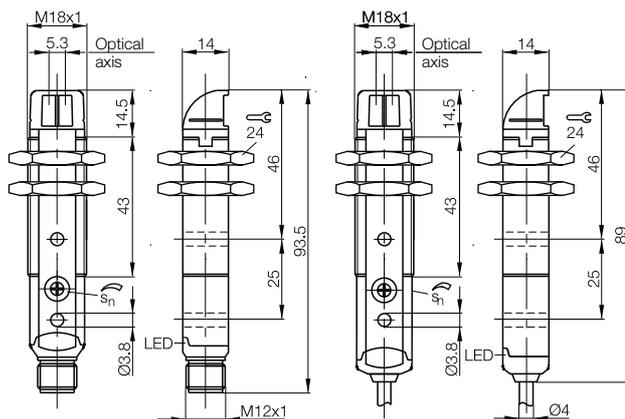




Type	Retroreflective sensor		Retroreflective sensor	
Detection range	0.1...1.7 m		0.1...1.7 m	
PNP NC/NO	Polarizing filter, Transparency detection	<b>Ordering code</b> Part number	<b>BOS00LZ</b> BOS 18KW-PA-1TB-S4-C	<b>BOS00LY</b> BOS 18KW-PA-1TB-C-02
PNP NC/NO	Polarizing filter	<b>Ordering code</b> 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.	$\leq 35$ mA		$\leq 35$ 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	Housing	PBT
	Optical surface	PMMA	Optical surface	PMMA
Connection	M12 connector, 4-pin		2 m PVC cable, 4x0.14 mm <sup>2</sup>	

Reference reflector: BOS R-1

For wiring diagrams see page 133.



# Photoelectric Sensors

## BOS 18KW Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

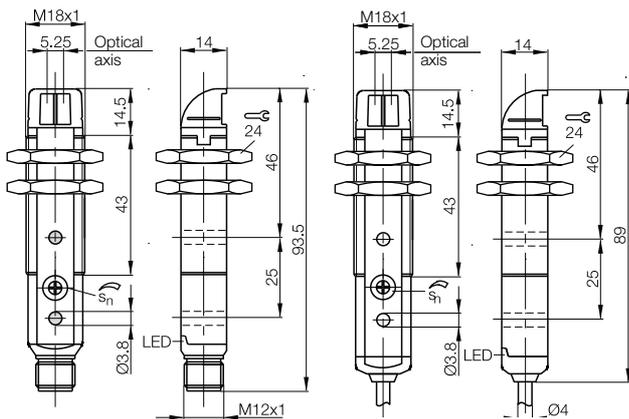
Photoelectric Sensors with Special Properties

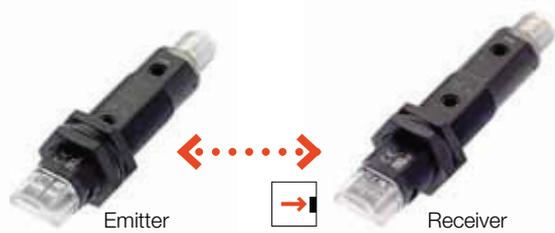
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



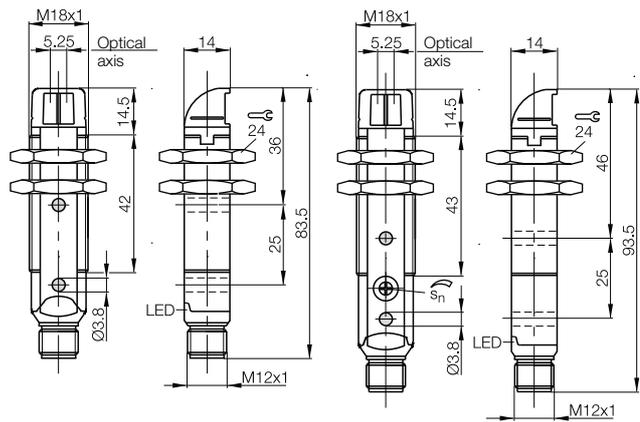
Retroreflective sensor 0.1...3 m	Retroreflective sensor 0.1...3 m		
<b>BOS00LW</b>	<b>BOS00LU</b>		
BOS 18KW-PA-1QC-S4-C	BOS 18KW-PA-1QC-C-02		
10...30 V DC	10...30 V DC		
100 mA	100 mA		
≤ 35 mA	≤ 35 mA		
Light and dark switching	Light and dark switching		
Yes/Yes	Yes/Yes		
Potentiometer, 270°	Potentiometer, 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 <sup>2</sup>		





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

For wiring diagrams see page 133.



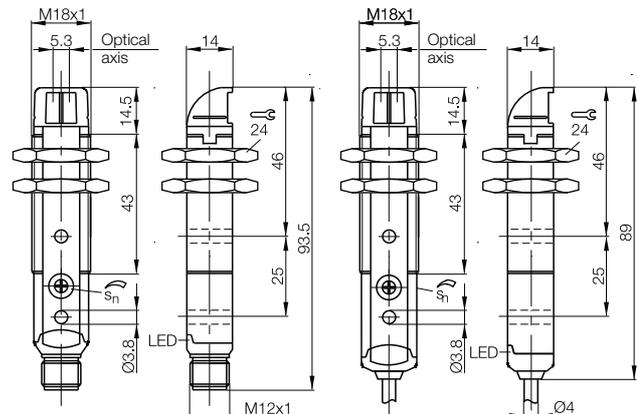




Type	Diffuse sensor		Diffuse sensor
Detection range	0...250 mm		0...250 mm
PNP NC/NO	<b>Ordering code</b>	<b>BOS00LK</b>	<b>BOS00LJ</b>
	Part number	BOS 18KW-PA-1LOB-S4-C	BOS 18KW-PA-1LOB-C-02
PNP NC/NO	Polarizing filter	<b>Ordering code</b>	
		Part number	
Supply voltage $U_s$	10...30 V DC		10...30 V DC
Output current	100 mA		100 mA
No-load supply current $I_0$ max.	$\leq 35$ mA		$\leq 35$ 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 $\mu$ s		333 $\mu$ 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	Housing	PBT	PBT
	Optical surface	PMMA	PMMA
Connection	M12 connector, 4-pin		2 m PVC cable, 4x0.14 mm <sup>2</sup>

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

For wiring diagrams see page 133.





# Photoelectric Sensors

## BOS 18KW Laser Global



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors BGL

Angle Sensors BWL

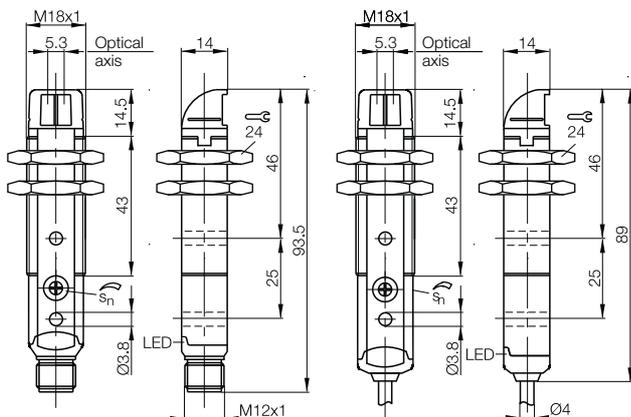
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



Retroreflective sensor 0.1...9 m	Retroreflective sensor 0.1...9 m		
<b>BOS00LM</b>	<b>BOS00LL</b>		
BOS 18KW-PA-1LQH-S4-C	BOS 18KW-PA-1LQH-C-02		
10...30 V DC	10...30 V DC		
100 mA	100 mA		
≤ 35 mA	≤ 35 mA		
Light and dark switching	Light and dark switching		
Yes/Yes	Yes/Yes		
Potentiometer, 270°	Potentiometer, 270°		
Laser, red light	Laser, red light		
650 Nm	650 Nm		
1	1		
approx. 0.9 mm at 1 m	approx. 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 mm <sup>2</sup>		



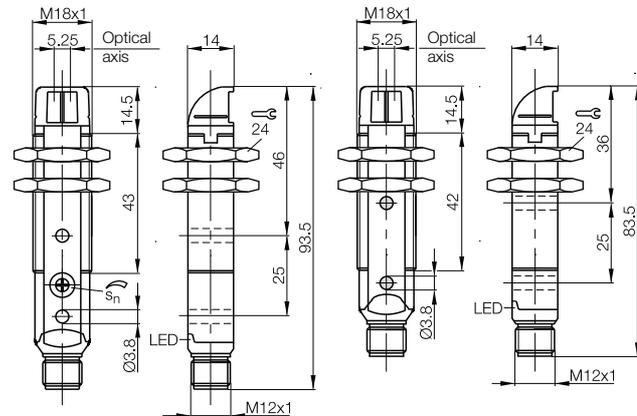
# M18 Plastic Laser with Angle Head

**Global**



Type	Through-beam sensor		Through-beam sensor
Detection range	0...50 m		0...50 m
PNP NC/NO	Emitter	<b>Ordering code</b>	<b>BOS00ET</b>
		Part number	BLS 18KW-XX-1LT-S4-L
PNP NC/NO	Receiver	<b>Ordering code</b>	<b>BOS00CT</b>
		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.	$\leq 30$ mA		$\leq 35$ 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		
Output function indicator	Yellow LED		
Response time	333 $\mu$ s		
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



Photoelectric Sensors

Photoelectric Sensors

**Cylinder Designs**

Block Designs

Fork Sensors BGL

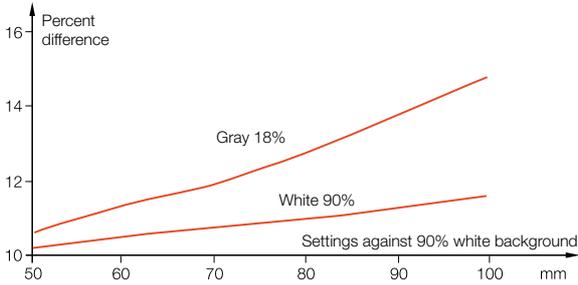
Angle Sensors BWL

Photoelectric Sensors with Special Properties

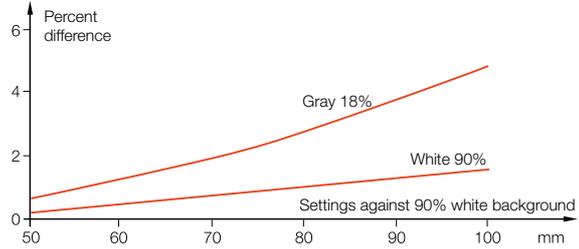
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

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

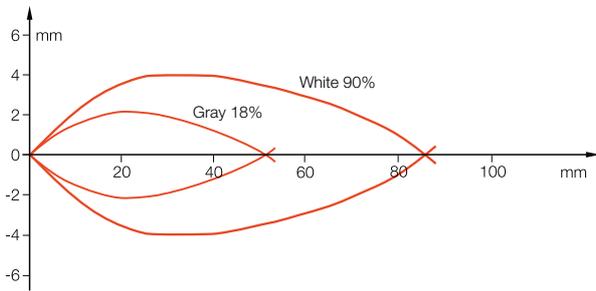


Tolerance with standard setting

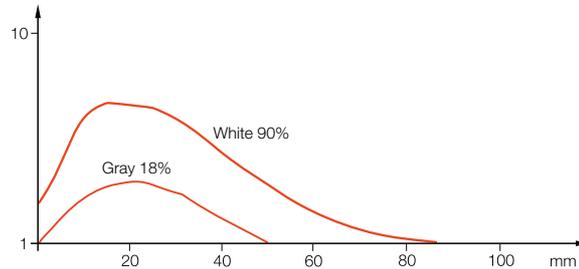


Tolerance with fine setting

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

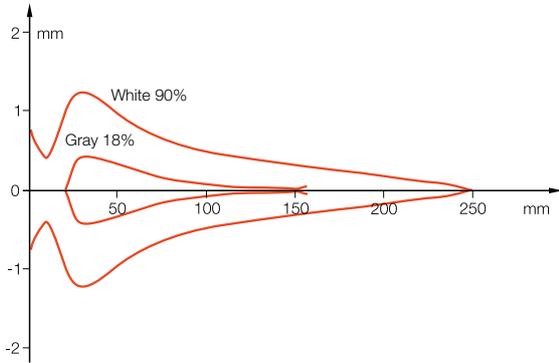


Detection range

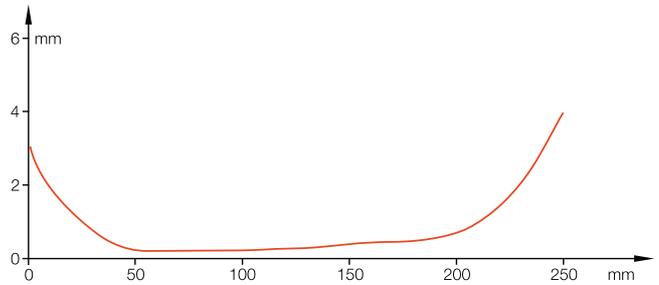


Function reserve

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

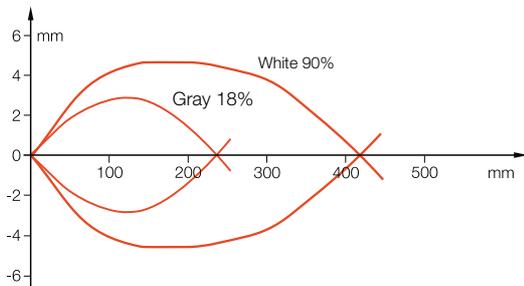


Detection range

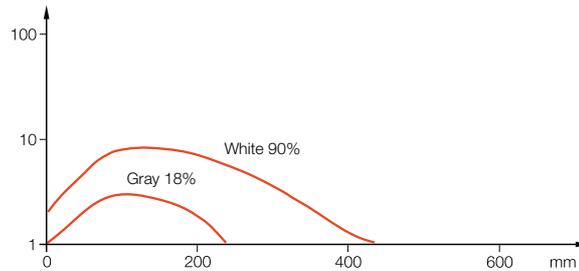


Resolution

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

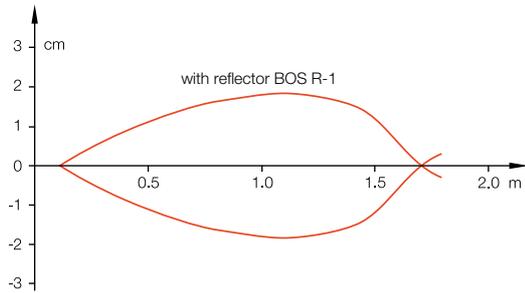


Detection range

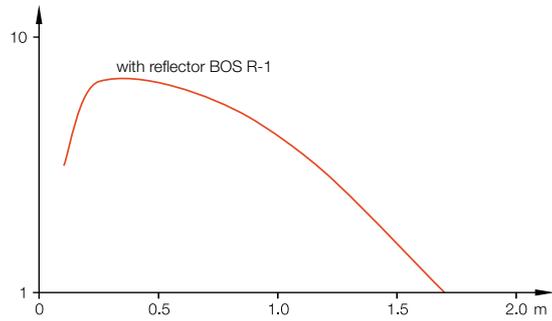


Function reserve

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

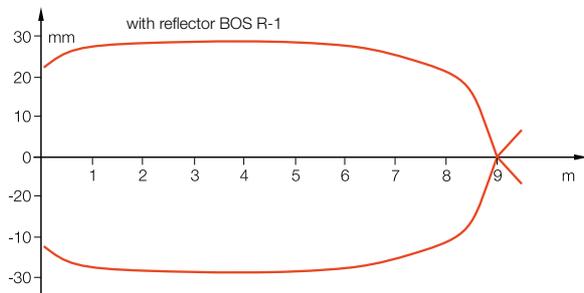


Detection range

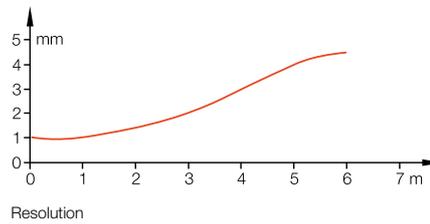


Function reserve

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

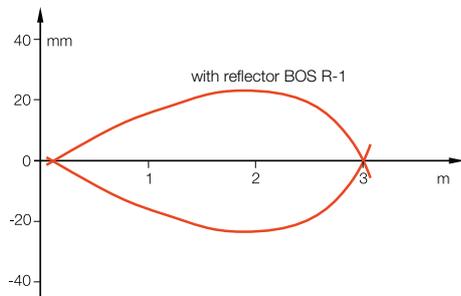


Detection range

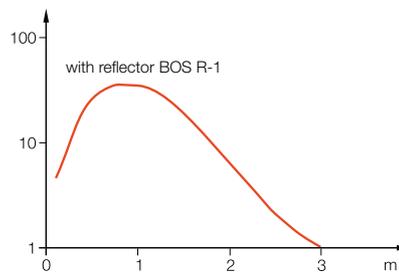


Resolution

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



Detection range



Function reserve

# Photoelectric Sensors

## BOS 18KW Global

### Connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors BGL

Angle Sensors

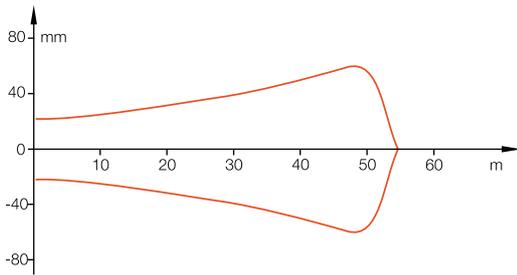
BWL

Photoelectric Sensors with Special Properties

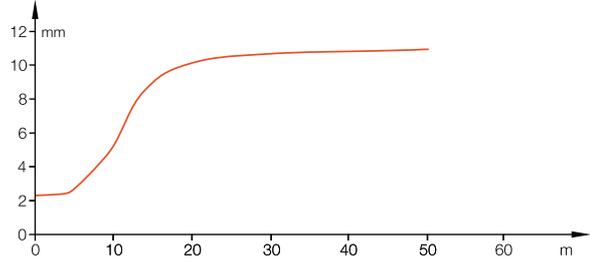
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

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

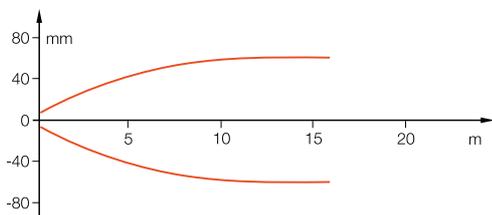


Detection range

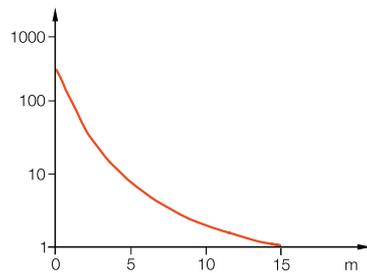


Resolution

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

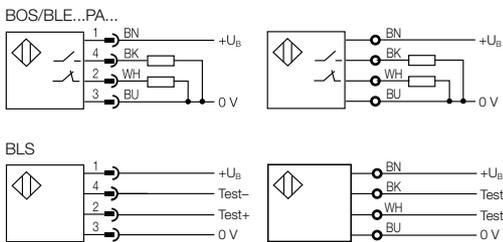


Detection range

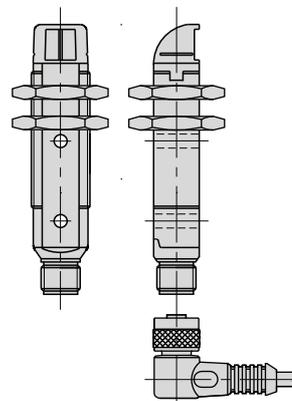


Function reserve

#### Wiring diagrams



#### Connector orientation



#### Recommended accessories (please order separately)

Description	Ordering code
① Mounting clamp	<b>BAM00T3</b>
② Mounting bracket	<b>BAM00RY</b>
③ Reflector	<b>BAM00UK</b>



#### Suitable connectors (please order separately)

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



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

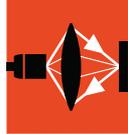




# Photoelectric Sensors

## 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

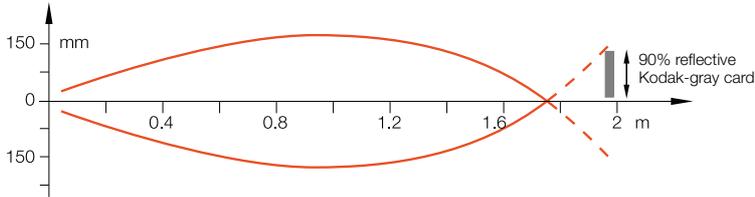
■ Part number



Diffuse sensor

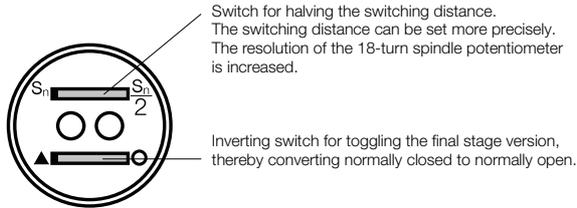
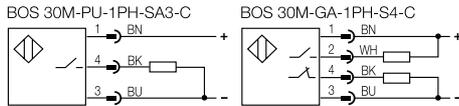
Type	Sensing distance/Range	Light type		Output		Switching type		Switching frequency	U <sub>s</sub>	Connection		Page
		Infrared		PNP transistor	NPN transistor	Light switching	Dark switching			M12 plug, 4-pin		
<b>BOS0134</b>	BOS 30M-GA-1PH-S4-C	0...2 m	■	■		■	■	100 Hz	■	■		137
<b>BOS008T</b>	BOS 30M-PU-1PH-SA3-C	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	<b>BAM00TN</b>



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	<b>BCC032F</b>
M12, 4-pin	Straight	PVC	Gray	2 m	<b>BCC0367</b>
M12, 4-pin	Angled	PUR	Black	2 m	<b>BCC032Y</b>
M12, 4-pin	Angled	PVC	Gray	2 m	<b>BCC036N</b>

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 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	<b>Ordering code</b>	<b>BOS008T</b>
		Part number	BOS 30M-PU-1PH-SA3-C
PNP/NPN	Daylight filter	<b>Ordering code</b>	<b>BOS0134</b>
		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.		$\leq 40$ mA	$\leq 40$ 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

