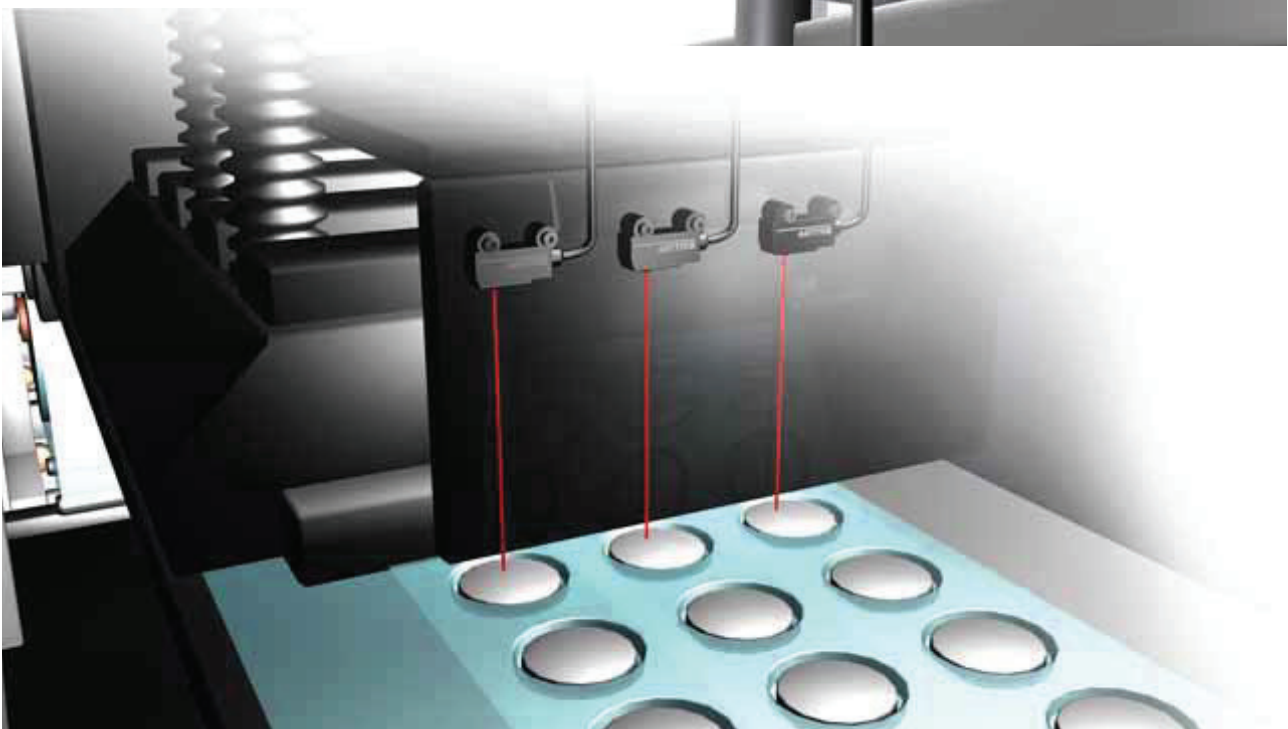


Requirements such as extremely tight mounting spaces under the most difficult of conditions are easily handled by the sub-mini **BOS 2K series**.

The electronic circuitry is housed in a plastic enclosure just 20.6×12.5×7.6 mm. Metal sleeves in the housing ensure secure and simple mounting.

The laser-like, visible light spot makes precise small-parts detection possible. Unmatched ranges up to 1.2 m and fast response times ensure compatibility with dynamic applications.

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



Photoelectric Sensors

BOS 2K

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

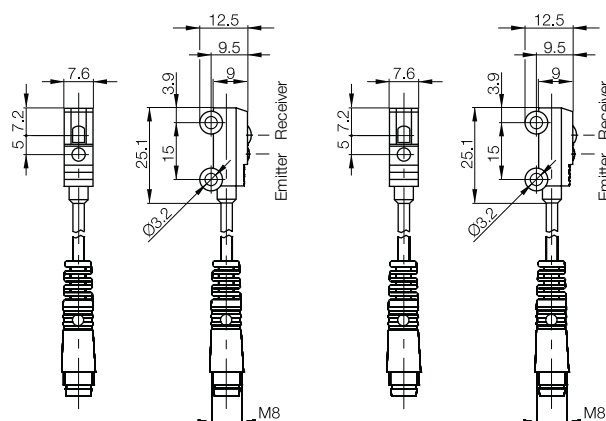
NPN on request



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

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

For wiring diagrams see page 157.



Photoelectric Sensors

BOS 2K



Photoelectric Sensors

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

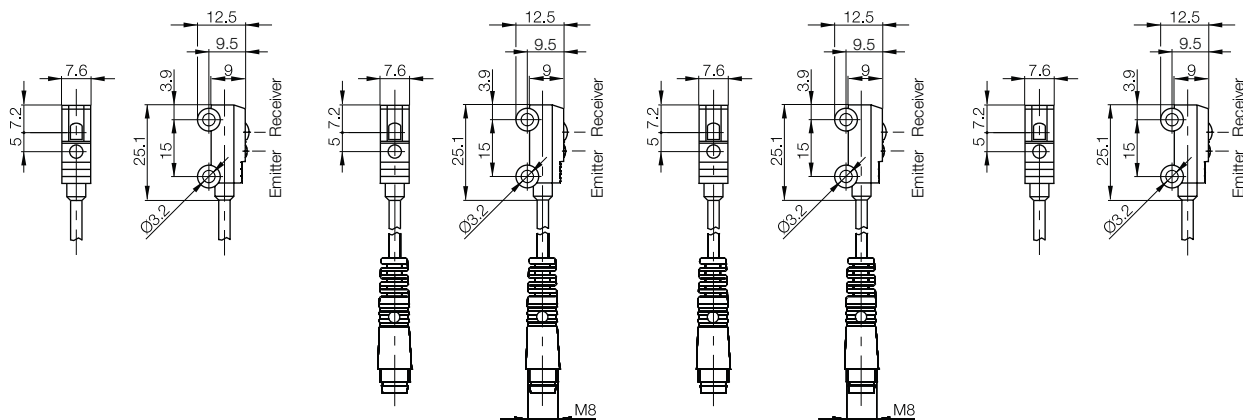
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



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

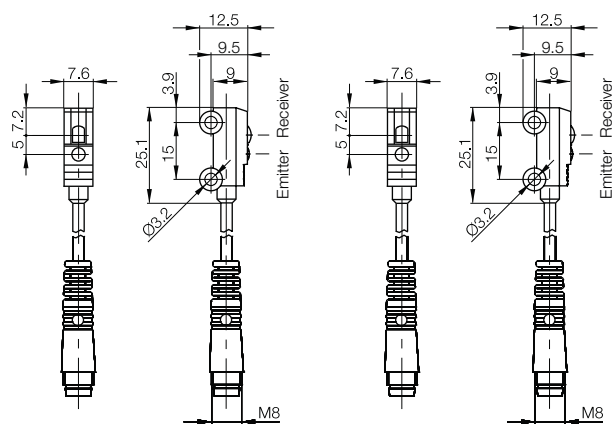




Type		Diffuse sensor	Diffuse sensor
Detection range		1...55 mm	1...55 mm
PNP NO	Ordering code	BOS00ZY	BOS00ZW
	Part number	BOS 2K-PS-RD10-00,2-S75	BOS 2K-PS-RD10-00,2-S49
PNP NO	Polarizing filter Ordering code		
	Part number		
PNP NC	Polarizing filter Ordering code		
	Part number		
Supply voltage U_S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

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

For wiring diagrams see page 157.



Photoelectric Sensors

BOS 2K



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

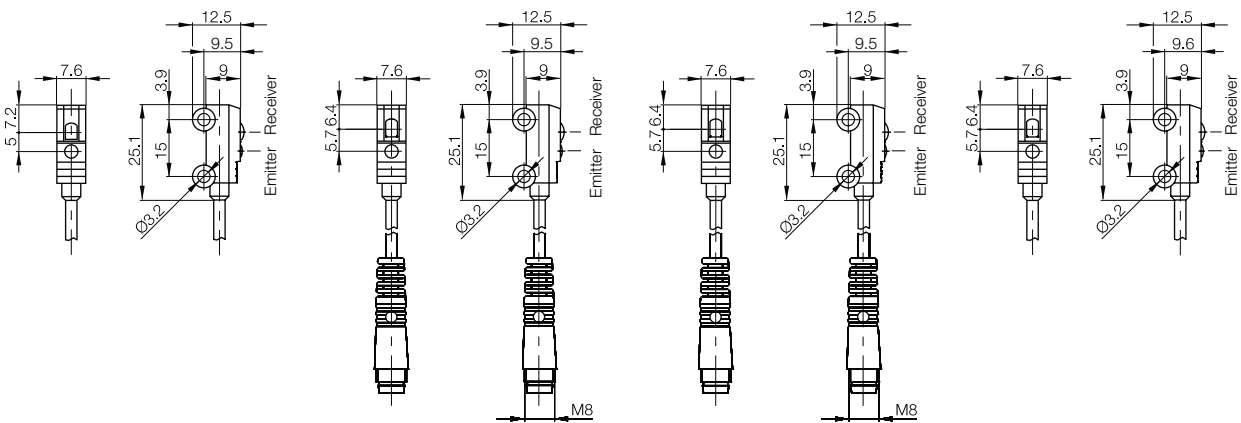
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



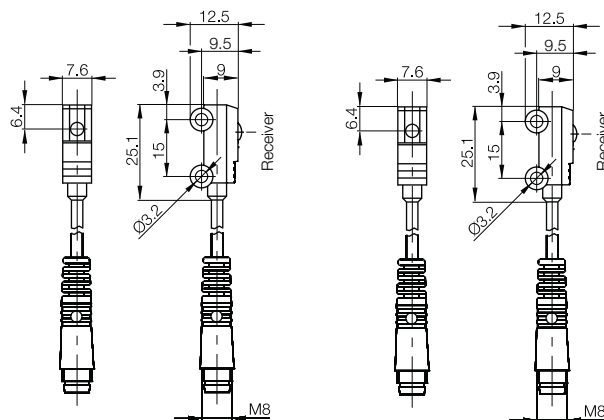
Diffuse sensor 1...55 mm BOS00ZZ BOS 2K-PS-RD10-02	Retroreflective sensor 45...800 mm BOS00ZT BOS 2K-PS-PR10-00,2-S75	Retroreflective sensor 45...800 mm BOS00ZR BOS 2K-PS-PR10-00,2-S49 BOS00ZK BOS 2K-PO-PR10-00,2-S49	Retroreflective sensor 45...800 mm BOS00ZU BOS 2K-PS-PR10-02 BOS00ZL BOS 2K-PO-PR10-02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





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

For wiring diagrams see page 157.



Photoelectric Sensors

BOS 2K



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

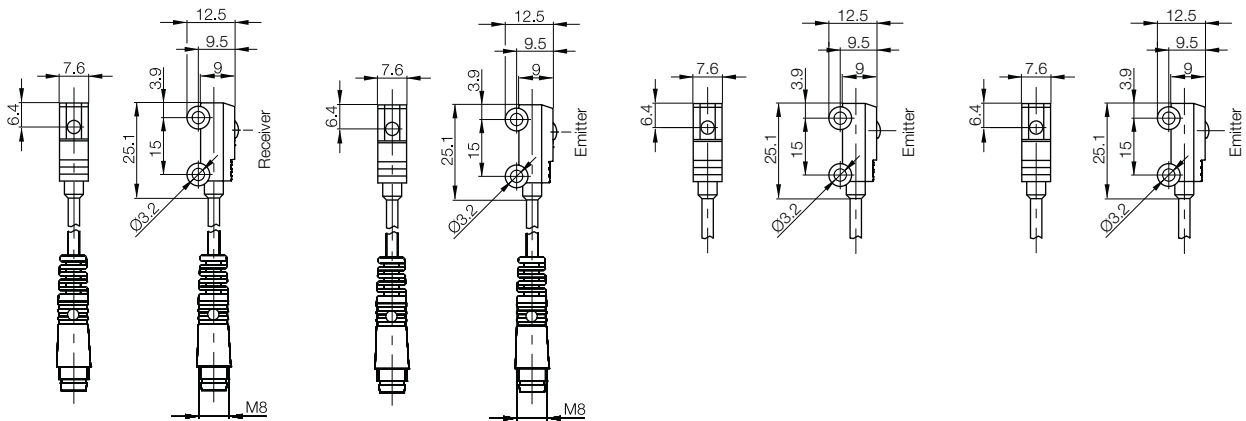
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

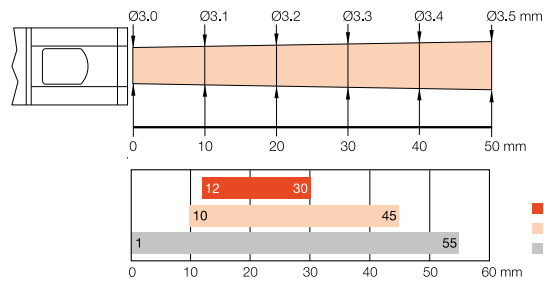


Through-beam sensor 0...1.2 m BOS0100 BOS 2K-PS-RE10-00,2-S49	Through-beam sensor 0...1.2 m BOS0109 BOS 2K-X-RS10-00,2-S49	Through-beam sensor 0...1.2 m BOS0102 BOS 2K-PS-RE10-02 BOS00ZM BOS 2K-PO-RE10-02	Through-beam sensor 0...1.2 m BOS010C BOS 2K-X-RS10-02
10...30 V DC 50 mA ≤ 10 mA Dark switching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



Photoelectric Sensors BOS 2K Function diagrams

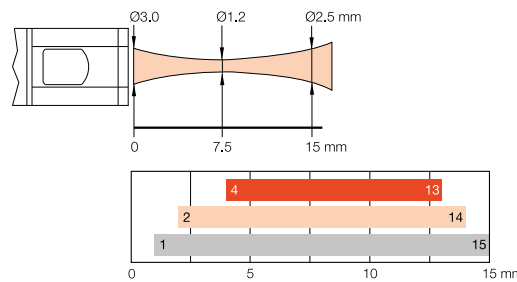
Light spot diameter Diffuse, 50 mm



Diffuse sensor

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

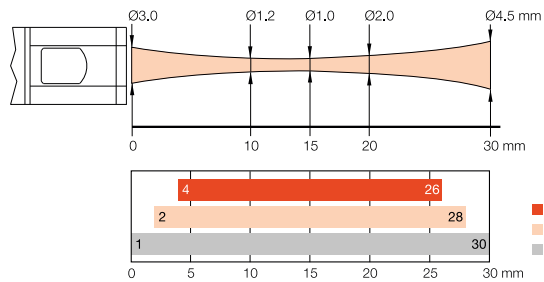
Light spot diameter Diffuse sensor with background suppression, 15 mm



Diffuse sensor
with background suppression
15 mm

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

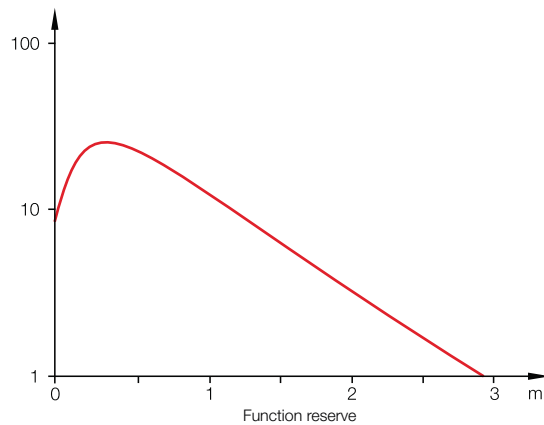
Light spot diameter Diffuse sensor with background suppression, 30 mm



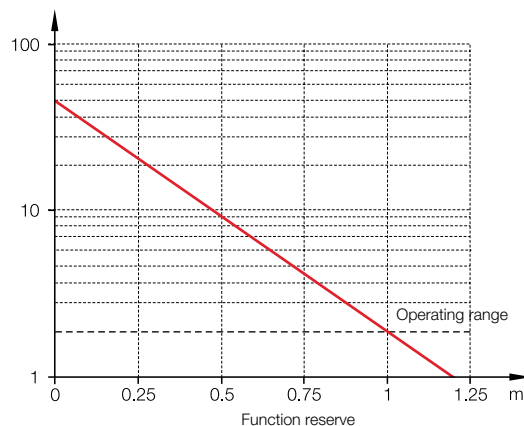
Diffuse sensor
with background suppression
30 mm

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

Retroreflective sensor



Through-beam sensor



Photoelectric Sensors

BOS 2K

Connection, accessories



Photoelectric Sensors

Photoelectric Sensors

Cylinder Designs

Block Designs

Fork Sensors

BGL

Angle Sensors

BWL

Photoelectric Sensors with Special Properties

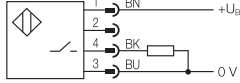
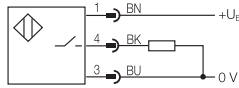
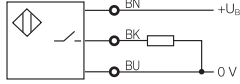
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

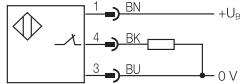
Wiring diagrams

Diffuse sensor

PNP light switching

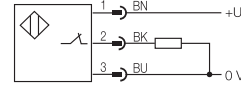
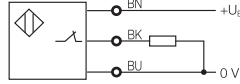


PNP dark switching

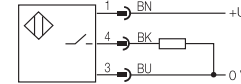
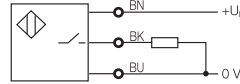


Retroreflective, through-beam receiver

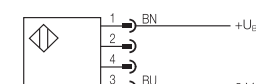
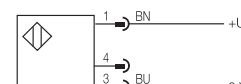
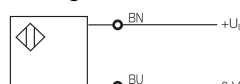
PNP light switching



PNP dark switching



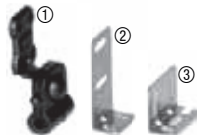
Through-beam sensor emitters



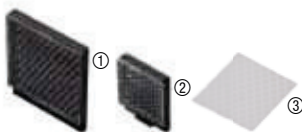
Recommended accessories

(please order separately)

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



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



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

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

Suitable connectors

(please order separately)



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

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

Connectors without LED are suitable for PNP and NPN sensors.

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