

The advantage of miniature sensors is easy to see:

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

The new **BOS 5K** series features:

- Small, compact design
- Concentration on the most important basic functions
- Attractive price in the lower segment
- Wide-ranging accessories for increased functionality



Photoelectric Sensors

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

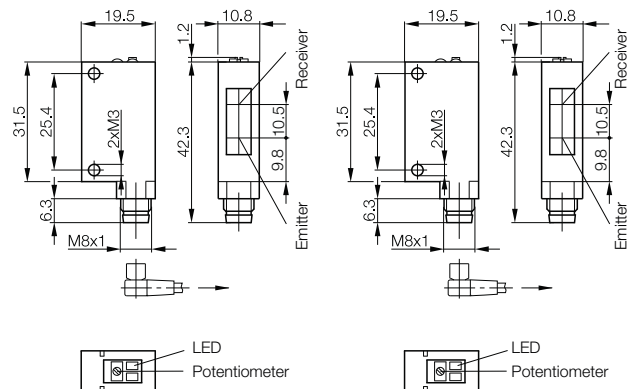
NPN on request



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

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

For wiring diagrams see page 167.



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Cylinder Designs

Block Designs

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BGL

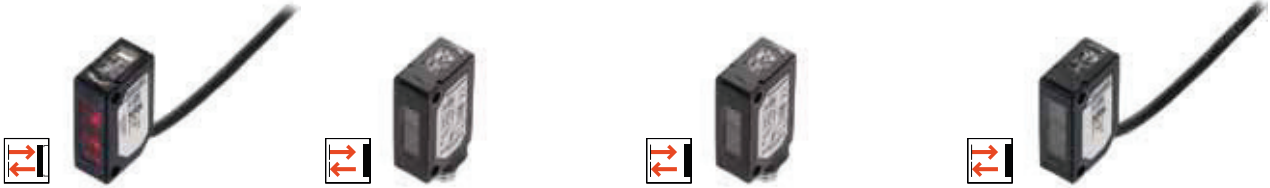
Angle Sensors

BWL

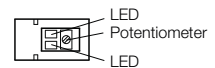
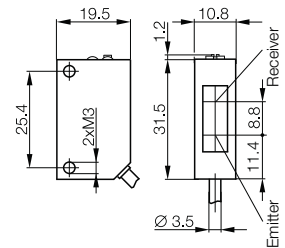
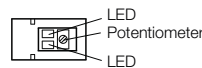
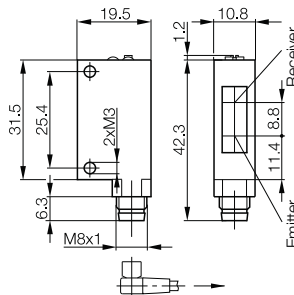
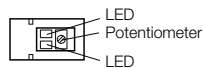
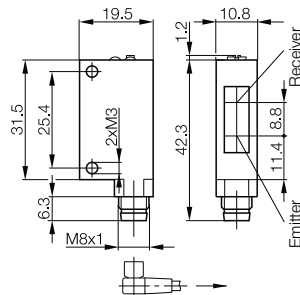
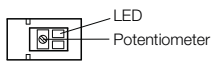
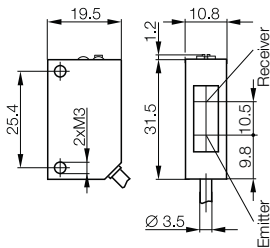
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



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

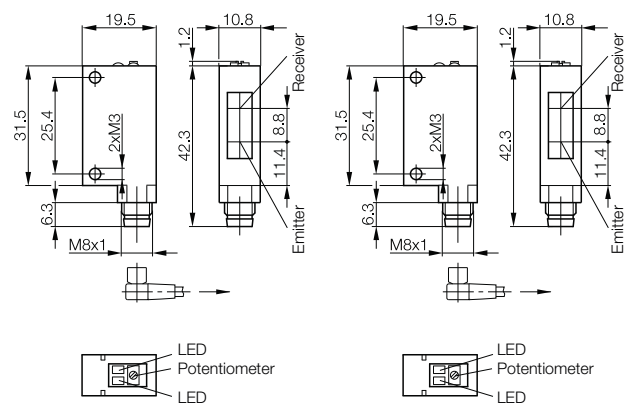




Type	Small beam diffuse sensor		Small beam diffuse sensor
Detection range	50...200 mm		50...200 mm
PNP NO	Ordering code	BOS0128	BOS015N
	Part number	BOS 5K-PS-RD11-S75	BOS 5K-PS-RD11-S49
PNP NC	Ordering code	BOS011W	BOS015P
	Part number	BOS 5K-PO-RD11-S75	BOS 5K-PO-RD11-S49
PNP NC	Special assignment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

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

For wiring diagrams see page 167.

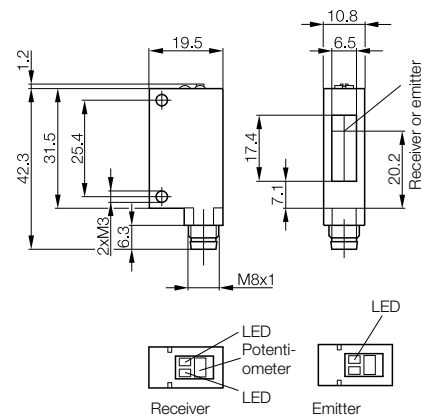




Type	Through-beam sensor		
Detection range	0...10 m		
PNP NO	Ordering code	BOS0126	
	Part number	BOS 5K-PS-IX10-S75	
PNP NC	Ordering code	BOS011R	
	Part number	BOS 5K-PO-IX10-S75	
PNP NC	Special assignment	Ordering code	BOS011T
	Output	Part number	BOS 5K-PO-IX10-S75-S
Supply voltage U_s	10...30 V DC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

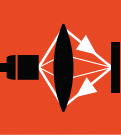
For wiring diagrams see page 167.

Ordering code includes emitter and receiver.



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Cylinder Designs

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BGL

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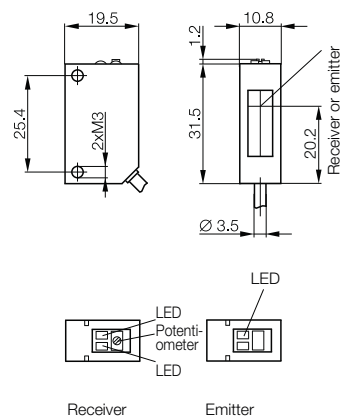
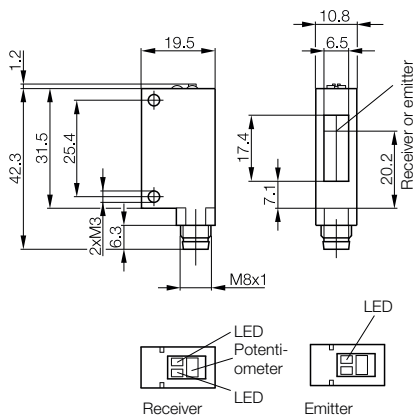
Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

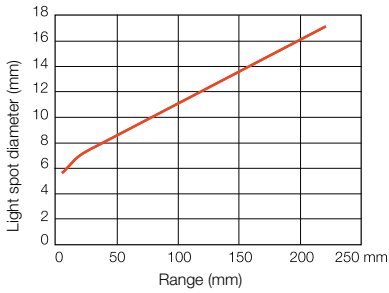


Through-beam sensor 0...10 m	Through-beam sensor 0...10 m
BOS0158	BOS0125
BOS 5K-PS-IX10-S49	BOS 5K-PS-IX10-02
BOS0157	BOS011N
BOS 5K-PO-IX10-S49	BOS 5K-PO-IX10-02
10...30 V DC	10...30 V DC
100 mA	100 mA
≤ 20 mA (receiver), ≤ 15 mA (emitter)	≤ 20 mA (receiver), ≤ 15 mA (emitter)
Light or dark switching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

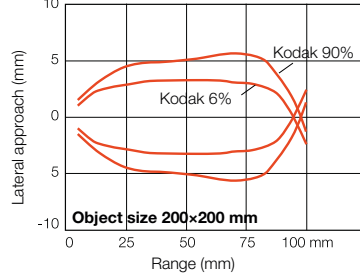


Diffuse sensor with background suppression BOS 5K-__-RH12-__

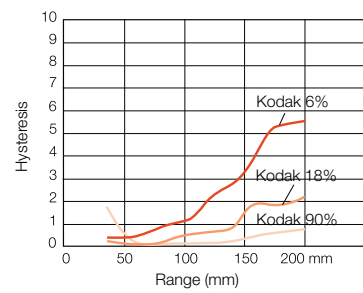
Light spot diameter



Characteristic response curve (background suppression 100 mm)

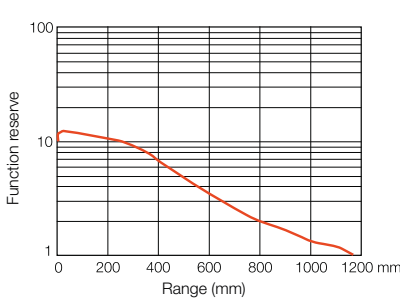


Range vs. hysteresis

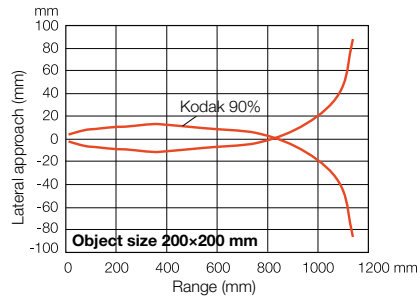


Diffuse sensor BOS 5K-__-ID10-__

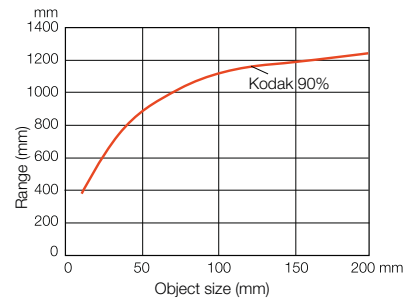
Receiving characteristics



Characteristic response curve

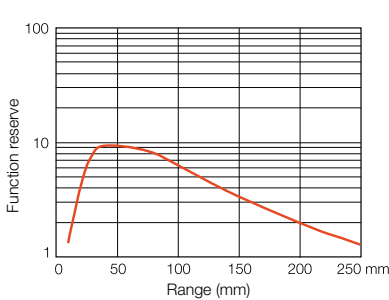


Object size vs. hysteresis

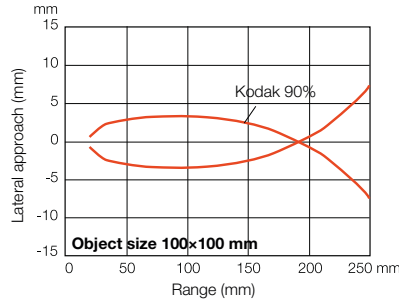


Diffuse sensor, small beam BOS 5K-__-RD11-__

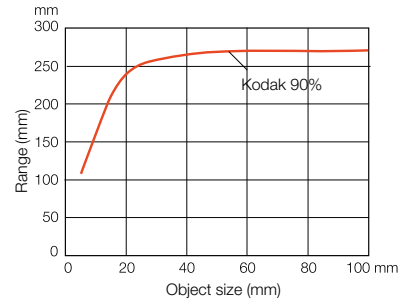
Receiving characteristics



Characteristic response curve

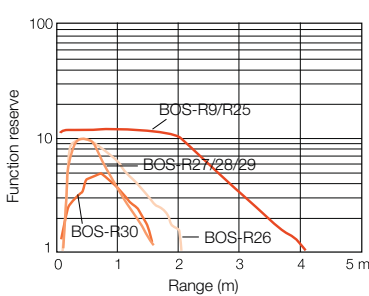


Object size vs. hysteresis

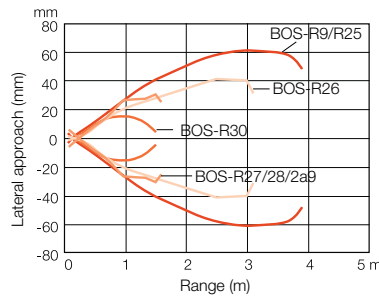


Retroreflective sensor BOS 5K-__-RR10-__

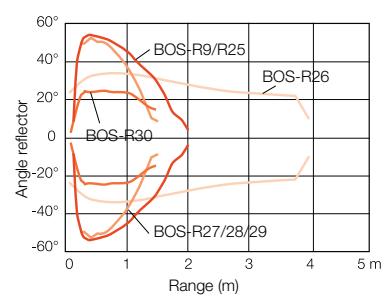
Receiving characteristics



Characteristic response curve

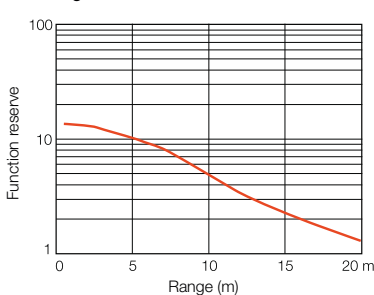


Angular offset

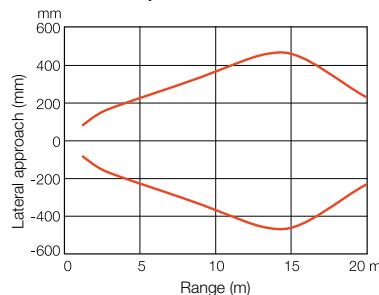


Through-beam sensor BOS 5K-__-IX10-__

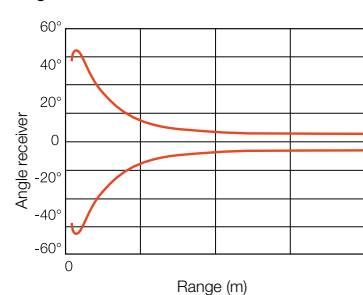
Receiving characteristics



Characteristic response curve



Angular offset



Photoelectric Sensors

BOS 5K Global

Connection, accessories



Photoelectric Sensors

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Cylinder Designs

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Angle Sensors

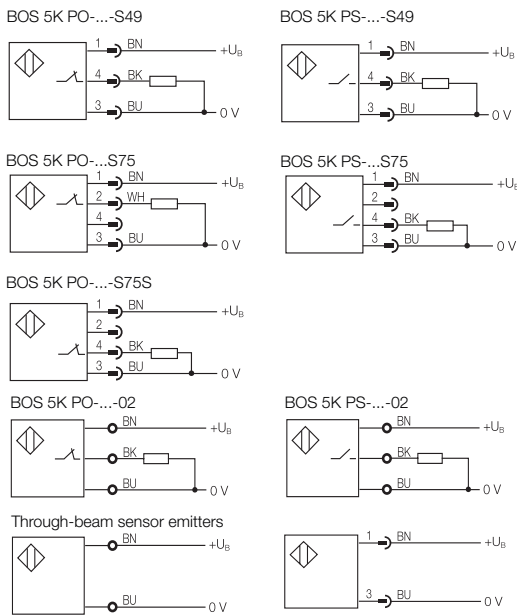
BWL

Photoelectric Sensors with Special Properties

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

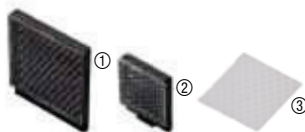
Wiring diagrams



Recommended accessories (please order separately)

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

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



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

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

Suitable connectors (please order separately)



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

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

Connectors without LED are suitable for PNP and NPN sensors.

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