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

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.

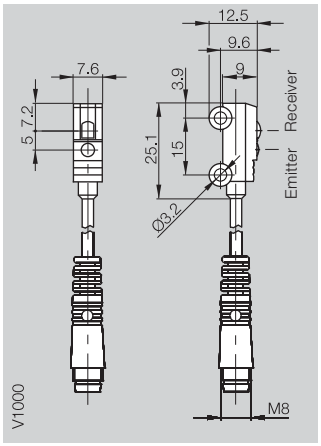
The BOS 2K series is a complete family with diffuse, retroreflective and through-beam models, as well as diffuse with background suppression. That means this series offers the complete functionality demanded of a modern sensor family.

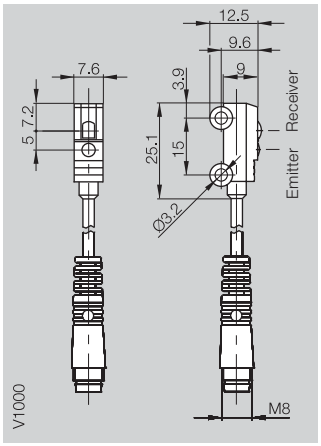


Type	Sensing/ scan range	Light type		Output		Output-function		Switching frequency	U_B	Connection				Special features		Page
		Red light		PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 3-pin	M8 connector, 4-pin	Cable		Polarizing filter		
Diffuse with HGA																
BOS 2K-PS-RH10-00,2-S49	1...15 mm	■		■		■		800 Hz	■	■						**2.1**.102
BOS 2K-PO-RH10-00,2-S49	1...15 mm	■		■			■	800 Hz	■	■						**2.1**.102
BOS 2K-PS-RH10-00,2-S75	1...15 mm	■		■		■		800 Hz	■		■					**2.1**.102
BOS 2K-PS-RH10-02	1...15 mm	■		■		■		800 Hz	■			■				**2.1**.103
BOS 2K-NS-RH10-02	1...15 mm	■			■	■		800 Hz	■			■				**2.1**.103
BOS 2K-NO-RH10-02	1...15 mm	■			■		■	800 Hz	■			■				**2.1**.103
BOS 2K-PS-RH11-00,2-S49	1...30 mm	■		■		■		800 Hz	■	■						**2.1**.103
BOS 2K-PS-RH11-00,2-S75	1...30 mm	■		■		■		800 Hz	■		■					**2.1**.103
BOS 2K-PS-RH11-02	1...30 mm	■		■		■		800 Hz	■			■				**2.1**.103
BOS 2K-PO-RH11-02	1...30 mm	■		■			■	800 Hz	■			■				**2.1**.103
BOS 2K-NS-RH11-02	1...30 mm	■			■	■		800 Hz	■			■				**2.1**.103
Diffuse																
BOS 2K-PS-RD10-00,2-S49	1...55 mm	■		■		■		800 Hz	■	■						**2.1**.104
BOS 2K-PS-RD10-00,2-S75	1...55 mm	■		■		■		800 Hz	■		■					**2.1**.104
BOS 2K-PS-RD10-02	1...55 mm	■		■		■		800 Hz	■			■				**2.1**.104
BOS 2K-NS-RD10-02	1...55 mm	■			■	■		800 Hz	■			■				**2.1**.104
Retroreflective																
BOS 2K-PS-PR10-00,2-S49	45...800 mm	■		■			■	800 Hz	■	■				■		**2.1**.105
BOS 2K-PO-PR10-00,2-S49	45...800 mm	■		■		■		800 Hz	■	■				■		**2.1**.105
BOS 2K-PS-PR10-00,2-S75	45...800 mm	■		■			■	800 Hz	■		■			■		**2.1**.105
BOS 2K-PS-PR10-02	45...800 mm	■		■			■	800 Hz	■			■		■		**2.1**.105
BOS 2K-PO-PR10-02	45...800 mm	■		■		■		800 Hz	■			■		■		**2.1**.105
BOS 2K-NS-PR10-02	45...800 mm	■			■		■	800 Hz	■			■		■		**2.1**.105
BOS 2K-NO-PR10-02	45...800 mm	■			■	■		800 Hz	■			■		■		**2.1**.105
Through-beam																
BOS 2K-PS-RE10-00,2-S49	0...1.2 m	■		■			■	200 Hz	■	■						**2.1**.106
BOS 2K-PS-RE10-00,2-S75	0...1.2 m	■		■			■	200 Hz	■		■					**2.1**.107
BOS 2K-PS-RE10-02	0...1.2 m	■		■			■	200 Hz	■			■				**2.1**.107
BOS 2K-PO-RE10-02	0...1.2 m	■		■		■		200 Hz	■			■				**2.1**.107
BOS 2K-NS-RE10-02	0...1.2 m	■			■		■	200 Hz	■			■				**2.1**.107
BOS 2K-X-RS10-00,2-S49	0...1.2 m	■							■	■						**2.1**.106
BOS 2K-X-RS10-00,2-S75	0...1.2 m	■							■		■					**2.1**.107
BOS 2K-X-RS10-02	0...1.2 m	■							■			■				**2.1**.107

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Photoelectric Sensors Accessories
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Diffuse with background suppression	maximum sensing distance	**1...15 mm**	**1...15 mm**	

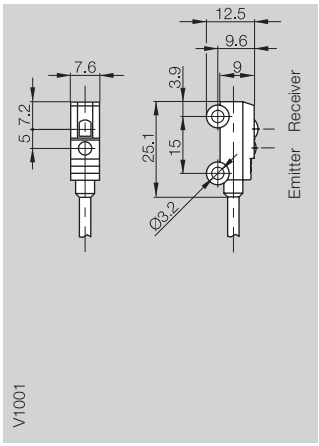
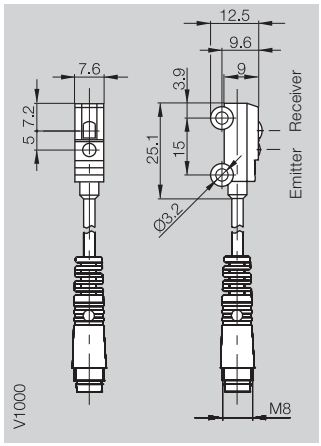
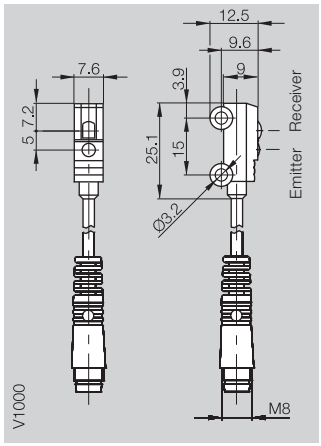
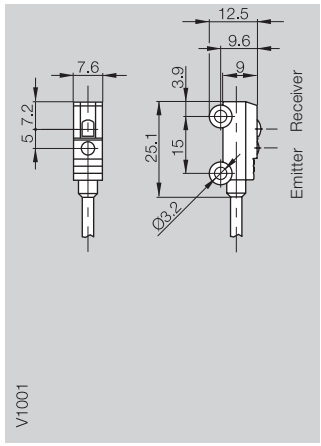




Diffuse with background suppression				
PNP NO	1...15 mm	BOS 2K-PS-RH10-00,2-S49	BOS 2K-PS-RH10-00,2-S75	
PNP NC	1...15 mm	BOS 2K-PO-RH10-00,2-S49		
NPN NO	1...15 mm			
NPN NC	1...15 mm			
PNP NO	1...30 mm			
PNP NC	1...30 mm			
NPN NO	1...30 mm			
Electrical data				
Supply voltage U_B		10...30 V DC	10...30 V DC	
Ripple		≤ 5 V pp	≤ 5 V pp	
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA	
Switching output		PNP- or NPN-Transistor	PNP-Transistor	
Output current		50 mA	50 mA	
Switching type		Light- or dark-on	Light-on	
Voltage drop U_d at I_e		≤ 2 V		
Settings		fixed	fixed	
Optical data				
Recommended range		1...15 mm	1...15 mm	
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	
Indicators				
Output function indicator		LED red	LED red	
Time data				
Response time		0.6 ms	0.6 ms	
Switching frequency f		800 Hz	800 Hz	
Mechanical data				
Dimensions		12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	
Connection		M8 connector, 3-pin	M8 connector, 4-pin	
No. of wires × cross-section				
Housing material		ABS	ABS	
Lens material		PMMA	PMMA	
Weight		20 g	20 g	
Ambient data				
Degree of protection per IEC 60529		IP 67	IP 67	
Polarity reversal protected		yes	yes	
Short circuit protected		yes	yes	
Ambient light rejection		EN 60947-5-2	EN 60947-5-2	
Ambient temperature range T_a		–20...+50 °C	–20...+50 °C	

Diffuse values referenced to Kodak gray card 90% Reflexion.

Wiring diagrams, characteristics and accessories see page **2.1.**108 and **2.1.**109.

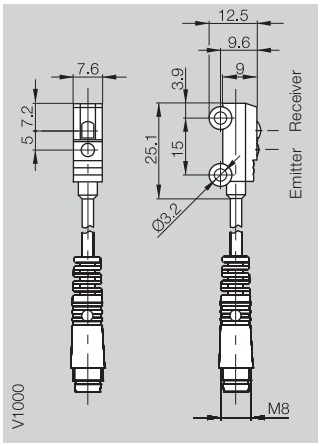
	1...15 mm	1...30 mm	1...30 mm	1...30 mm
				
	BOS 2K-PS-RH10-02 BOS 2K-NS-RH10-02 BOS 2K-NO-RH10-02	BOS 2K-PS-RH11-00,2-S49	BOS 2K-PS-RH11-00,2-S75	BOS 2K-PS-RH11-02 BOS 2K-PO-RH11-02 BOS 2K-NS-RH11-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 5 V pp	≤ 5 V pp	≤ 5 V pp	≤ 5 V pp
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	PNP- or NPN-Transistor	PNP-Transistor	PNP-Transistor	PNP- or NPN-Transistor
	50 mA	50 mA	50 mA	50 mA
	Light- or dark-on	Light-on	Light-on	Light- or dark-on
	≤ 2 V			
	fixed	fixed	fixed	fixed
	1...15 mm	1...30 mm	1...30 mm	1...30 mm
	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. 2.5 mm at 15 mm	approx. 1.0 mm at 15 mm approx. 4.5 mm at 30 mm	approx. 1.0 mm at 15 mm approx. 4.5 mm at 30 mm	approx. 1.0 mm at 15 mm approx. 4.5 mm at 30 mm
	LED red	LED red	LED red	LED red
	0.6 ms	0.6 ms	0.6 ms	0.6 ms
	800 Hz	800 Hz	800 Hz	800 Hz
	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm
	2 m cable, PVC	M8 connector, 3-pin	M8 connector, 4-pin	2 m cable, PVC
	3×0.09 mm²			3×0.09 mm²
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	18 g	20 g	20 g	18 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C

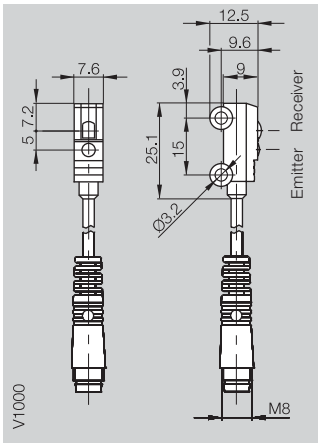
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Diffuse	maximum sensing distance	**1...55 mm**	**1...55 mm**
Retroreflective with polarizing filter	maximum range		

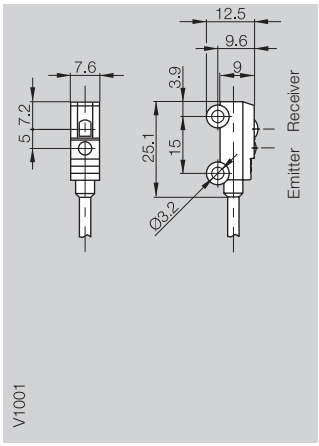
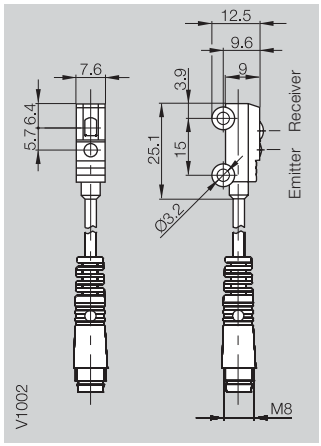
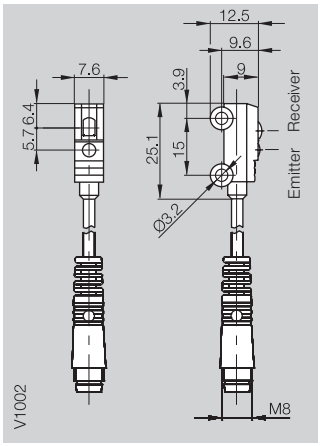
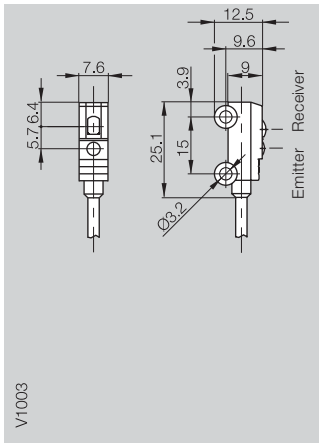




	Diffuse				
	PNP NO	1...55 mm		BOS 2K-PS-RD10-00,2-S49	BOS 2K-PS-RD10-00,2-S75
	NPN NO	1...55 mm			
	Retroreflective				
	PNP NO	45...800 mm	Polarizing filter		
	PNP NC	45...800 mm	Polarizing filter		
	NPN NO	45...800 mm	Polarizing filter		
	NPN NC	45...800 mm	Polarizing filter		
	Electrical data				
	Supply voltage U_B			10...30 V DC	10...30 V DC
	Ripple			≤ 5 V	≤ 5 V
	No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA
	Switching output			PNP-Transistor	PNP-Transistor
	Output current			50 mA	50 mA
	Switching type			Light-on	Light-on
	Voltage drop U_d at I_e			≤ 2 V	≤ 2 V
	Settings			fixed	fixed
	Optical data				
	Recommended sensing distance/range			1...55 mm	1...55 mm
	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
	Indicators				
	Output function indicator			LED red	LED red
	Time data				
	Response time			0.6 ms	0.6 ms
	Switching frequency f			800 Hz	800 Hz
	Mechanical data				
	Dimensions			12.5×20.6×7.6 mm	12.5×20.6×7.6 mm
	Connection			M8 connector, 3-pin	M8 connector, 4-pin
	No. of wires × cross-section				
	Housing material			ABS	ABS
	Lens material			PMMA	PMMA
	Weight			20 g	20 g
	Ambient data				
	Degree of protection per IEC 60529			IP 67	IP 67
	Polarity reversal protected			yes	yes
	Short circuit protected			yes	yes
	Ambient light rejection			EN 60947-5-2	EN 60947-5-2
	Ambient temperature range T_a			–20...+50 °C	–20...+50 °C

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R9 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**108 and **2.1.**109.

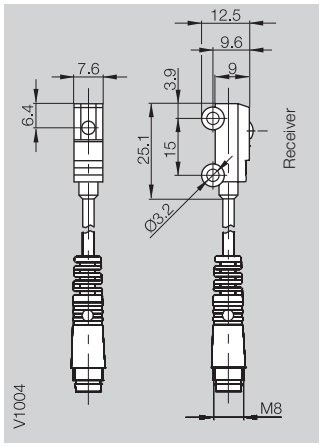
	1...55 mm	**45...800 mm**	**45...800 mm**	**45...800 mm**
				
	BOS 2K-PS-RD10-02 BOS 2K-NS-RD10-02			
		BOS 2K-PS-PR10-00,2-S49 BOS 2K-PO-PR10-00,2-S49	BOS 2K-PS-PR10-00,2-S75	BOS 2K-PS-PR10-02 BOS 2K-PO-PR10-02 BOS 2K-NS-PR10-02 BOS 2K-NO-PR10-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 5 V	≤ 5 V	≤ 5 V	≤ 5 V
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	PNP- or NPN-Transistor	PNP-Transistor	PNP-Transistor	PNP- or NPN-Transistor
	50 mA	50 mA	50 mA	50 mA
	Light-on	Light- or dark-on	Dark-on	Light- or dark-on
	≤ 2 V	≤ 2 V	≤ 2 V	≤ 2 V
	fixed	fixed	fixed	fixed
	1...55 mm	25...500 mm	25...500 mm	25...500 mm
	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
	LED red	LED red	LED red	LED red
	0.6 ms	0.6 ms	0.6 ms	0.6 ms
	800 Hz	800 Hz	800 Hz	800 Hz
	12,5×20,6×7,6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm
	2 m cable, PVC	M8 connector, 3-pin	M8 connector, 4-pin	2 m cable, PVC
	3×0.09 mm²			3×0.09 mm²
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	18 g	20 g	20 g	18 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C

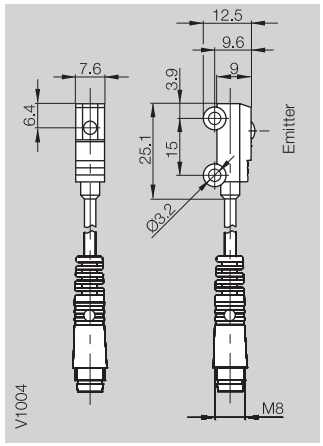
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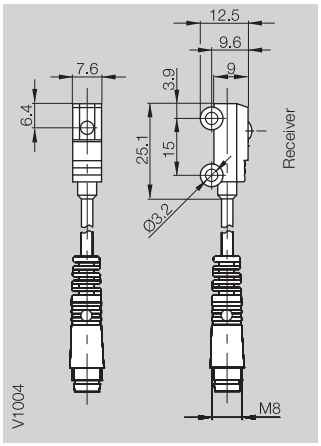
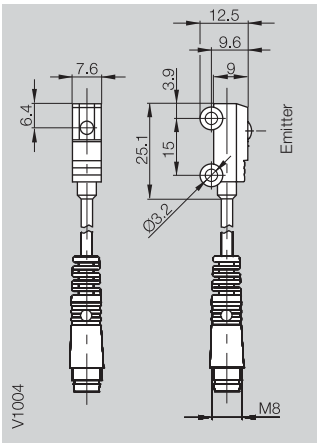
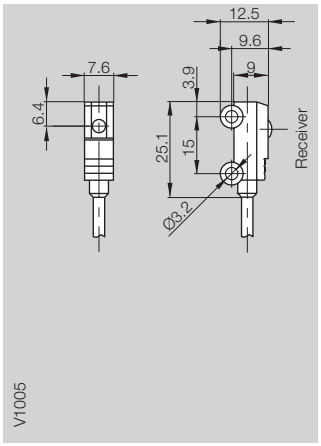
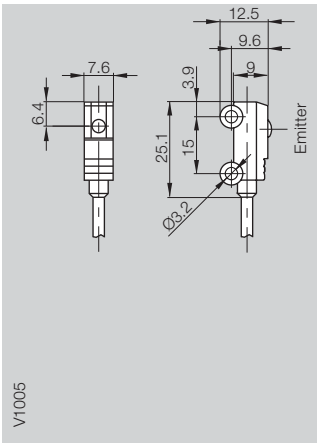
Through-beam	maximum range	**0...1,2 m**	**0...1,2 m**	





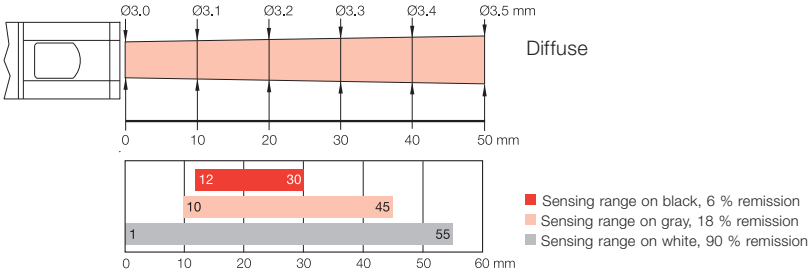
Through-beam				
PNP NO	1.2 m	Receiver	BOS 2K-PS-RE10-00,2-S49	
PNP NC	1.2 m	Receiver		
NPN NO	1.2 m	Receiver		
	1.2 m	Emitter		BOS 2K-X-RS10-00,2-S49
Electrical data				
Supply voltage U_B			10...30 V DC	10...30 V DC
Ripple			≤ 5 V	≤ 5 V
No-load supply current I_0 max.			≤ 10 mA	≤ 20 mA
Switching output			PNP-Transistor	
Output current			50 mA	
Switching type			Dark-on	
Voltage drop U_d at I_e			≤ 2 V	
Settings			fixed	
Optical data				
Recommended range			0...1 m	0...1 m
Emitter, light type			Red light	Pin-Point LED, red light
Wavelength			640 nm	640 nm
Light spot diameter				
Indicators				
Output function indicator			LED red	
Time data				
Response time			2.5 ms	
Switching frequency f			200 Hz	
Mechanical data				
Dimensions			12.5×20.6×7.6 mm	12.5×20.6×7.6 mm
Connection			M8 connector, 3-pin	M8 connector, 3-pin
No. of wires × cross-section				
Housing material			ABS	ABS
Lens material			PMMA	PMMA
Weight			20 g	20 g
Ambient data				
Degree of protection per IEC 60529			IP 67	IP 67
Polarity reversal protected			yes	yes
Short circuit protected			yes	yes
Ambient light rejection			EN 60947-5-2	EN 60947-5-2
Ambient temperature range T_a			–20...+50 °C	–20...+50 °C

Wiring diagrams, characteristics and accessories see page **2.1.**108 and **2.1.**109.

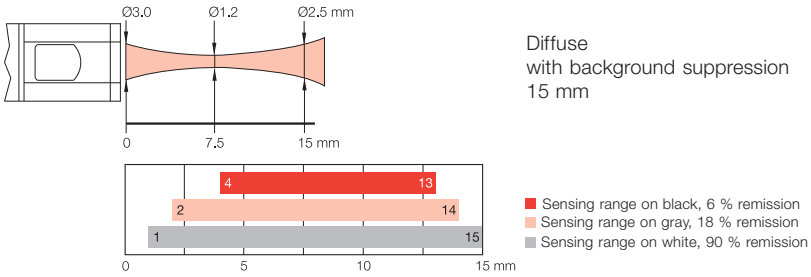
	0...1,2 m	**0...1,2 m**	**0...1,2 m**	**0...1,2 m**
				
	BOS 2K-PS-RE10-00,2-S75	BOS 2K-X-RS10-00,2-S75	BOS 2K-PS-RE10-02 BOS 2K-PO-RE10-02 BOS 2K-NS-RE10-02	BOS 2K-X-RS10-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 5 V	≤ 5 V	≤ 5 V	≤ 5 V
	≤ 10 mA	≤ 20 mA	≤ 10 mA	≤ 20 mA
	PNP-Transistor		PNP- or NPN-Transistor	
	50 mA		50 mA	
	Dark-on		Light- or dark-on	
	≤ 2 V		≤ 2 V	
	fixed		fixed	
	0...1 m	0...1 m	0...1 m	0...1 m
	Red light	Pin-Point LED, red light	Red light	Pin-Point LED, red light
	640 nm	640 nm	640 nm	640 nm
	LED red		LED red	
	2.5 ms		2.5 ms	
	200 Hz		200 Hz	
	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm	12.5×20.6×7.6 mm
	M8 connector, 4-pin	M8 connector, 4-pin	2 m cable, PVC	2 m cable, PVC
			3×0.09 mm²	3×0.09 mm²
	ABS	ABS	ABS	ABS
	PMMA	PMMA	PMMA	PMMA
	20 g	20 g	18 g	18 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
	–20...+50 °C	–20...+50 °C	–20...+50 °C	–20...+50 °C

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Photoelectric Sensors Accessories
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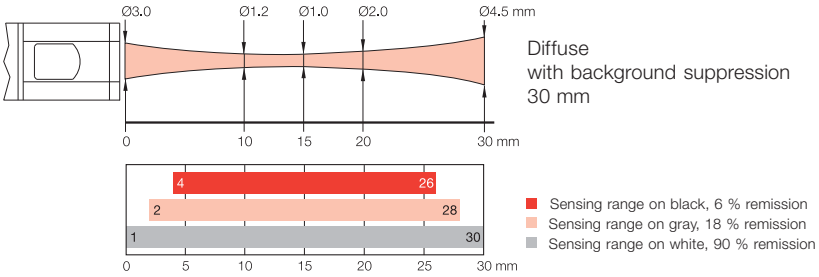
Light spot diameter Diffuse, 50 mm



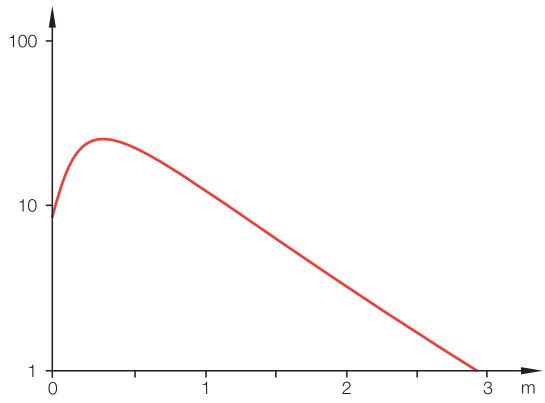
Light spot diameter Diffuse with background suppression, 15 mm



Light spot diameter Diffuse with background suppression, 30 mm

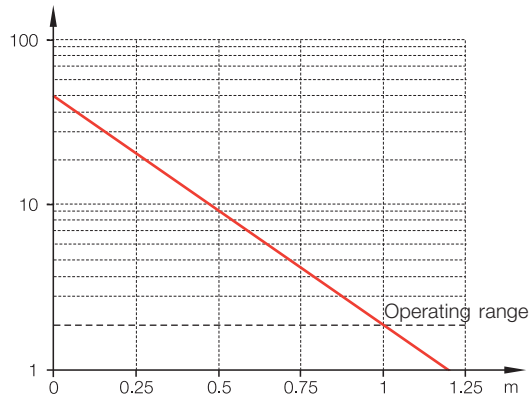


Retroreflective



Function reserve

Through-beam

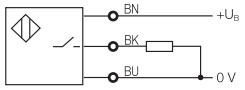


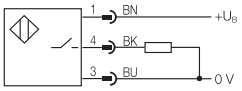
Function reserve

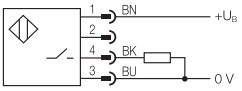
Wiring diagrams

Diffuse

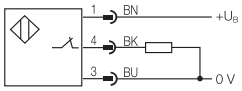
PNP light-on



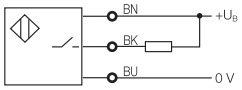




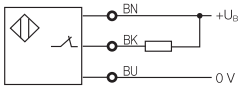
PNP dark-on



NPN light-on

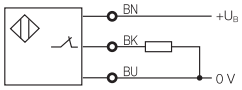


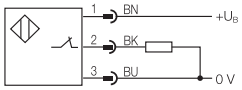
NPN dark-on



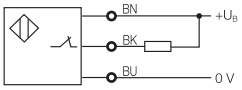
Retroreflective, through-beam receiver

PNP light-on

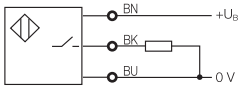


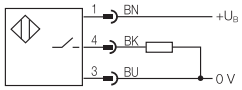


NPN light-on

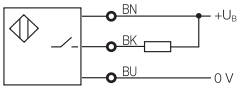


PNP dark-on

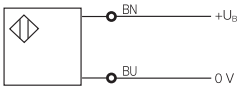


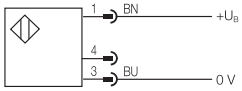


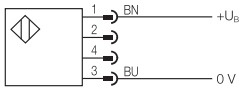
NPN dark-on



Through-beam emitter







Recommended accessories

please order separately

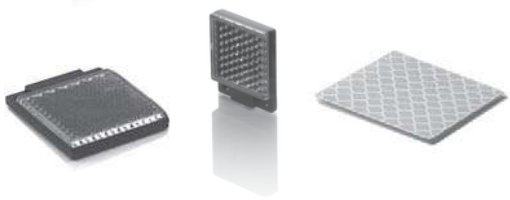
Mounting brackets

BOS 2-HW-1
BOS 2-HW-2
BOS 2-HW-3
(from left
to right)



Reflectors

BOS R-9
BOS R-26
BOS R-30
(from left
to right)



Connectors

BKS-S 74
BKS-S 48
(from left
to right)



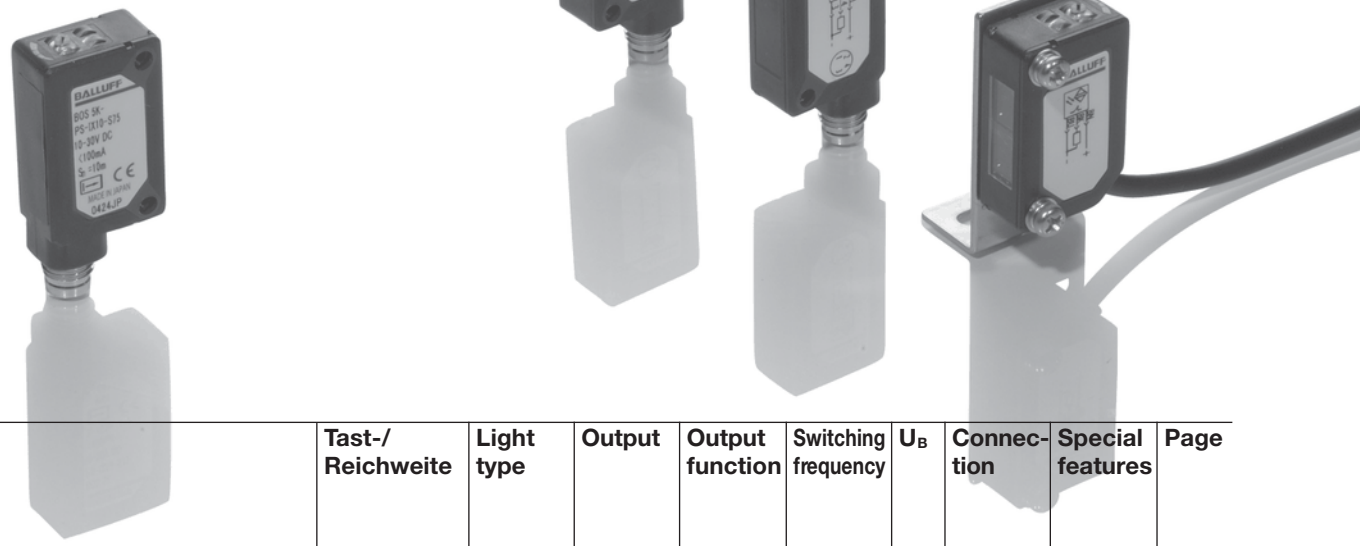
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Photoelectric Sensors Accessories
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Small sensors are easier to install and are even sometimes the only alternative. The optical performance of these miniature sensors is astounding. Choose between integrated cable or an M8 connector for connecting these sensors.

This series includes various diffuse sensors with background suppression, diffuse with narrow spot geometry, energetic diffuse, retroreflective models with polarizing filter and through-beam sensors.

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

- A small, compact form factor
- Emphasis on essential, basic functions
- Attractive price position in the lower price segment
- Large range of accessories for increased functionality

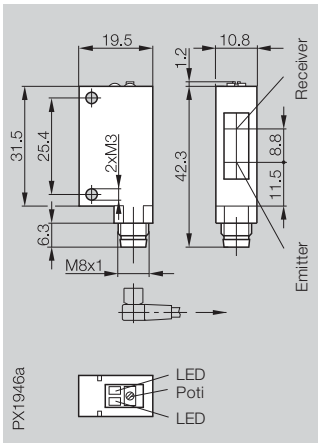


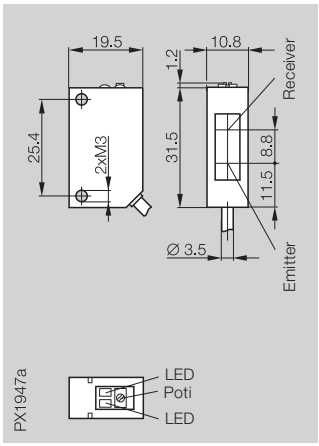
Type	Tast-/ Reichweite	Light type		Output		Output function		Switching frequency	U_B	Connection		Special features		Page
		Red light	Infrared	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 4-pin	Cable	Polarizing filter		
Diffuse with HGA														
BOS 5K-PS-RH12-S75	40...200 mm	■		■		■		500 Hz	■	■				**2.1.**112
BOS 5K-PO-RH12-S75	40...200 mm	■		■			■	500 Hz	■	■				**2.1.**112
BOS 5K-PS-RH12-02	40...200 mm	■		■		■		500 Hz	■		■			**2.1.**112
BOS 5K-PO-RH12-02	40...200 mm	■		■			■	500 Hz	■		■			**2.1.**112
BOS 5K-NS-RH12-S75	40...200 mm	■			■	■		500 Hz	■	■				**2.1.**112
BOS 5K-NO-RH12-S75	40...200 mm	■			■		■	500 Hz	■	■				**2.1.**112
BOS 5K-NS-RH12-02	40...200 mm	■			■	■		500 Hz	■		■			**2.1.**112
BOS 5K-NO-RH12-02	40...200 mm	■			■		■	500 Hz	■		■			**2.1.**112

Type	Tast-/ Reichweite	Light type		Output		Output function		Switching frequency	U_B	Connec-tion		Special features		Page
		Red light	Infrared	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 4-pin	Cable	Polarizing filter		
Diffuse														
BOS 5K-PS-ID10-S75	0...900 mm		■	■		■		500 Hz	■	■				**2.1**.113
BOS 5K-PO-ID10-S75	0...900 mm		■	■			■	500 Hz	■	■				**2.1**.113
BOS 5K-PS-ID10-02	0...900 mm		■	■		■		500 Hz	■		■			**2.1**.113
BOS 5K-PO-ID10-02	0...900 mm		■	■			■	500 Hz	■		■			**2.1**.113
BOS 5K-NS-ID10-S75	0...900 mm		■		■	■		500 Hz	■	■				**2.1**.113
BOS 5K-NO-ID10-S75	0...900 mm		■		■		■	500 Hz	■	■				**2.1**.113
BOS 5K-NS-ID10-02	0...900 mm		■		■	■		500 Hz	■		■			**2.1**.113
BOS 5K-NO-ID10-02	0...900 mm		■		■		■	500 Hz	■		■			**2.1**.113
Diffuse small beam														
BOS 5K-PS-RD11-S75	50...200 mm	■		■		■		500 Hz	■	■				**2.1**.113
BOS 5K-PO-RD11-S75	50...200 mm	■		■			■	500 Hz	■	■				**2.1**.113
BOS 5K-PS-RD11-02	50...200 mm	■		■		■		500 Hz	■		■			**2.1**.113
BOS 5K-PO-RD11-02	50...200 mm	■		■			■	500 Hz	■		■			**2.1**.113
BOS 5K-NS-RD11-S75	50...200 mm	■			■	■		500 Hz	■	■				**2.1**.113
BOS 5K-NO-RD11-S75	50...200 mm	■			■		■	500 Hz	■	■				**2.1**.113
BOS 5K-NS-RD11-02	50...200 mm	■			■	■		500 Hz	■		■			**2.1**.113
BOS 5K-NO-RD11-02	50...200 mm	■			■		■	500 Hz	■		■			**2.1**.113
Retroreflective														
BOS 5K-PS-RR10-S75	0,1...4 m	■		■			■	500 Hz	■	■		■		**2.1**.114
BOS 5K-PO-RR10-S75	0,1...4 m	■		■		■		500 Hz	■	■		■		**2.1**.114
BOS 5K-PO-RR10-S75-S	0,1...4 m	■		■		■		500 Hz	■	■		■		**2.1**.114
BOS 5K-PS-RR10-02	0,1...4 m	■		■			■	500 Hz	■		■	■		**2.1**.115
BOS 5K-PO-RR10-02	0,1...4 m	■		■		■		500 Hz	■		■	■		**2.1**.115
BOS 5K-NS-RR10-S75	0,1...4 m	■			■		■	500 Hz	■	■		■		**2.1**.114
BOS 5K-NO-RR10-S75	0,1...4 m	■			■	■		500 Hz	■	■		■		**2.1**.114
BOS 5K-NO-RR10-S75-S	0,1...4 m	■			■	■		500 Hz	■	■		■		**2.1**.114
BOS 5K-NS-RR10-02	0,1...4 m	■			■		■	500 Hz	■		■	■		**2.1**.115
BOS 5K-NO-RR10-02	0,1...4 m	■			■	■		500 Hz	■		■	■		**2.1**.115
Through-beam														
BOS 5K-PS-IX10-S75	0...10 m		■	■			■	500 Hz	■	■				**2.1**.115
BOS 5K-PO-IX10-S75	0...10 m		■	■		■		500 Hz	■	■				**2.1**.115
BOS 5K-PO-IX10-S75-S	0...10 m		■	■		■		500 Hz	■	■				**2.1**.115
BOS 5K-PS-IX10-02	0...10 m		■	■			■	500 Hz	■		■			**2.1**.115
BOS 5K-PO-IX10-02	0...10 m		■	■		■		500 Hz	■		■			**2.1**.115
BOS 5K-NS-IX10-S75	0...10 m		■		■		■	500 Hz	■	■				**2.1**.115
BOS 5K-NO-IX10-S75	0...10 m		■		■	■		500 Hz	■	■				**2.1**.115
BOS 5K-NO-IX10-S75-S	0...10 m		■		■	■		500 Hz	■	■				**2.1**.115
BOS 5K-NS-IX10-02	0...10 m		■		■		■	500 Hz	■		■			**2.1**.115
BOS 5K-NO-IX10-02	0...10 m		■		■	■		500 Hz	■		■			**2.1**.115

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Photoelectric Sensors Accessories
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Connectors ...
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Diffuse with background suppression	Sensing distance	**50...200 mm**	**50...200 mm**
Diffuse	Sensing distance		
Diffuse small beam	Sensing distance		

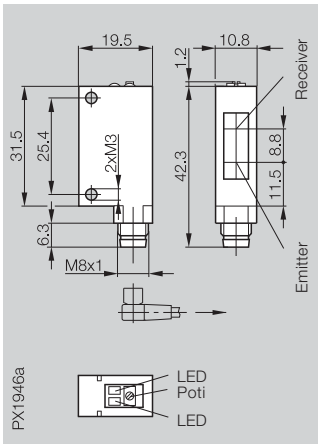
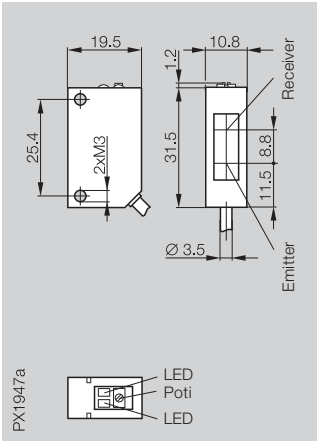
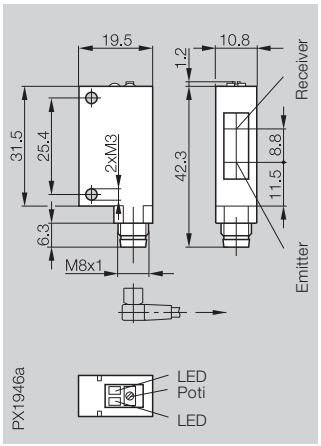
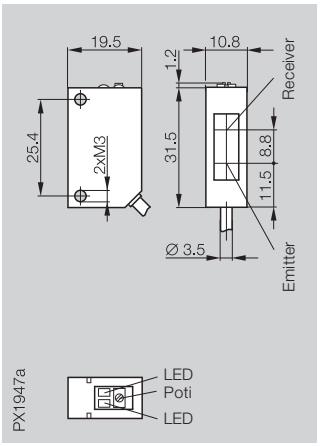




Diffuse with HGA			
PNP, NO	50...200 mm	BOS 5K-PS-RH12-S75	BOS 5K-PS-RH12-02
NPN, NO	50...200 mm	BOS 5K-NS-RH12-S75	BOS 5K-NS-RH12-02
PNP, NC	50...200 mm	BOS 5K-PO-RH12-S75	BOS 5K-PO-RH12-02
NPN, NC	50...200 mm	BOS 5K-NO-RH12-S75	BOS 5K-NO-RH12-02
Diffuse			
PNP, NO	900 mm		
NPN, NO	900 mm		
PNP, NC	900 mm		
NPN, NC	900 mm		
Diffuse small beam			
PNP, NO	50...200 mm		
NPN, NO	50...200 mm		
PNP, NC	50...200 mm		
NPN, NC	50...200 mm		
Electrical data			
Operating voltage U_B		10...30 V DC	10...30 V DC
Ripple		≤ 2 V DC	≤ 2 V DC
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA
Switching output		PNP- or NPN-Transistor	PNP- or NPN-Transistor
Output current		100 mA	100 mA
Switching type		Light- or dark-on	Light- or dark-on
Voltage drop U_d at I_e		≤ 1.2 V DC	≤ 1.2 V DC
Settings		Potentiometer 270°	Potentiometer 270°
Optical data			
Emitter, light type		LED, red light	LED, red light
Wavelength		660 nm	660 nm
Indicators			
Output function indicator		LED yellow	LED yellow
Stability indicator		LED green	LED green
Time data			
Response time		1 ms	1 ms
Switching frequency f		500 Hz	500 Hz
Mechanical data			
Dimensions		19.5×31.5×10.8 mm	19.5×31.5×10.8 mm
Connection		M8 connector, 4-pin	2 m cable, PVC
No. of wires × cross-section			3×0.2 mm²
Housing material		PC/PBT	PC/PBT
Optical surface		PC	PC
Weight		10 g	50 g
Ambient data			
Degree of protection per IEC 60529		IP 67	IP 67
Polarity reversal protected		yes	yes
Short circuit protected		yes	yes
Ambient temperature range T_a		–25...+55 °C	–25...+55 °C
Ambient light rejection		5 kLux (artificial light)/10 kLux (sunlight)	5 kLux (artificial light)/10 kLux (sunlight)

Diffuse values referenced to Kodak gray card 90% Reflexion.

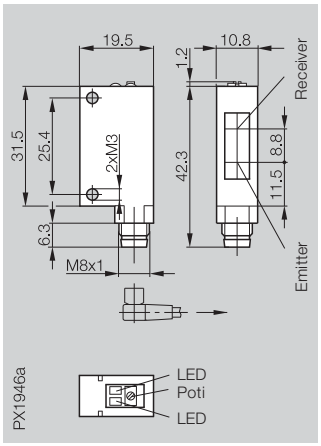
Wiring diagrams, characteristics and accessories see page **2.1.**116 and **2.1.**117.

	0...900 mm	**0...900 mm**	**50...200 mm**	**50...200 mm**
				
	BOS 5K-PS-ID10-S75 BOS 5K-NS-ID10-S75 BOS 5K-PO-ID10-S75 BOS 5K-NO-ID10-S75	BOS 5K-PS-ID10-02 BOS 5K-NS-ID10-02 BOS 5K-PO-ID10-02 BOS 5K-NO-ID10-02		
			BOS 5K-PS-RD11-S75 BOS 5K-NS-RD11-S75 BOS 5K-PO-RD11-S75 BOS 5K-NO-RD11-S75	BOS 5K-PS-RD11-02 BOS 5K-NS-RD11-02 BOS 5K-PO-RD11-02 BOS 5K-NO-RD11-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2 V DC	≤ 2 V DC	≤ 2 V DC	≤ 2 V DC
	≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA	100 mA
	Light- or dark-on	Light- or dark-on	Light- or dark-on	Light- or dark-on
	≤ 1.2 V DC	≤ 1.2 V DC	≤ 1.2 V DC	≤ 1.2 V DC
	Potentiometer 270°	Potentiometer 270°	Potentiometer 270°	Potentiometer 270°
	LED, infrared	LED, infrared	LED, red light	LED, red light
	880 nm	880 nm	660 nm	660 nm
	LED yellow	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green	LED green
	1 ms	1 ms	1 ms	1 ms
	500 Hz	500 Hz	500 Hz	500 Hz
	19.5×31.5×10.8 mm	19.5×31.5×10.8 mm	19.5×31.5×10.8 mm	19.5×31.5×10.8 mm
	M8 connector, 4-pin	2 m cable, PVC	M8 connector, 4-pin	2 m cable, PVC
		3×0.2 mm²		3×0.2 mm²
	PC/PBT	PC/PBT	PC/PBT	PC/PBT
	PC	PC	PC	PC
	10 g	50 g	10 g	50 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	–25...+55 °C	–25...+55 °C	–25...+55 °C	–25...+55 °C
	5 kLux (artificial light)/10 kLux (sunlight)	5 kLux (artificial light)/10 kLux (sunlight)	5 kLux (artificial light)/10 kLux (sunlight)	5 kLux (artificial light)/10 kLux (sunlight)

 Connector orientation

2.1
2.3 Photoelectric Sensors Accessories Page 2.3.2 ...
5 Connectors ... Page 5.2 ...

Retroreflective	Range	**0,1...4 m**
Through-beam	Range	

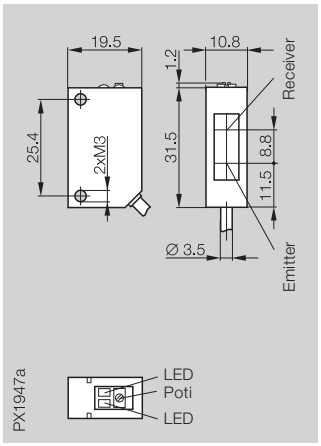
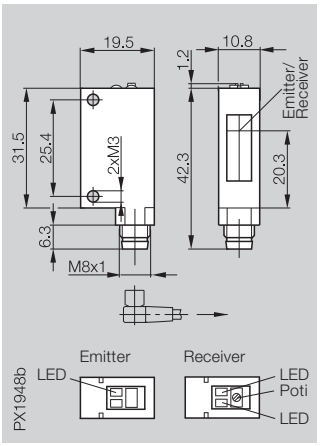
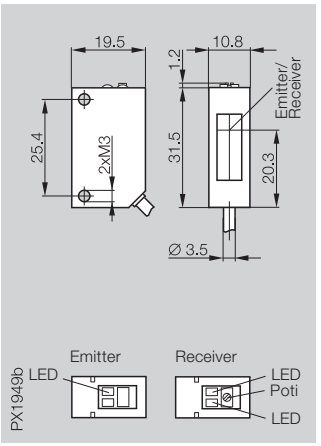


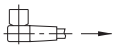
Retroreflective					
PNP, NO	0,1...4 m	Polarizing filter			BOS 5K-PS-RR10-S75
NPN, NO	0,1...4 m	Polarizing filter			BOS 5K-NS-RR10-S75
PNP, NC	0,1...4 m	Polarizing filter			BOS 5K-PO-RR10-S75
NPN, NC	0,1...4 m	Polarizing filter			BOS 5K-NO-RR10-S75
PNP, NC	0,1...4 m	Polarizing filter	Special output configuration		BOS 5K-PO-RR10-S75-S
NPN, NC	0,1...4 m	Polarizing filter	Special output configuration		BOS 5K-NO-RR10-S75-S
Through-beam					
PNP, NO	10 m	Emitter + Receiver			
NPN, NO	10 m	Emitter + Receiver			
PNP, NC	10 m	Emitter + Receiver			
NPN, NC	10 m	Emitter + Receiver			
PNP, NC	10 m	Emitter + Receiver	Special output configuration		
NPN, NC	10 m	Emitter + Receiver	Special output configuration		

Electrical data	
Operating voltage U_B	10...30 V DC
Ripple	≤ 2 V DC
No-load supply current I_0 max.	≤ 30 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light- or dark-on
Voltage drop U_d at I_e	≤ 1.2 V DC
Settings	Potentiometer 270°
Optical data	
Emitter, light type	LED, red light
Wavelength	660 nm
Indicators	
Power-on indicator	
Output function indicator	LED yellow
Stability indicator	LED green
Time data	
Response time	1 ms
Switching frequency f	500 Hz
Mechanical data	
Dimensions	19.5×31.5×10.8 mm
Connection	M8 connector, 4-pin
No. of wires × cross-section	
Housing material	PC/PBT
Optical surface	PMMA
Weight	10 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–25...+55 °C
Ambient light rejection	5 kLux (artificial light)/10 kLux (sunlight)

Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**116 and **2.1.**117.

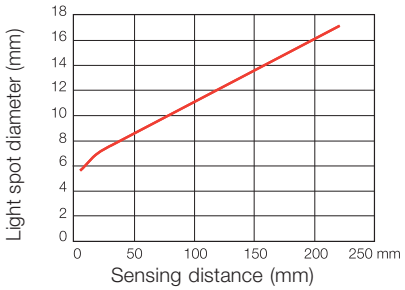
0,1...4 m	**0...10 m**	**0...10 m**
		
BOS 5K-PS-RR10-02 BOS 5K-NS-RR10-02 BOS 5K-PO-RR10-02 BOS 5K-NO-RR10-02		
	BOS 5K-PS-IX10-S75 BOS 5K-NS-IX10-S75 BOS 5K-PO-IX10-S75 BOS 5K-NO-IX10-S75 BOS 5K-PO-IX10-S75-S BOS 5K-NO-IX10-S75-S	BOS 5K-PS-IX10-02 BOS 5K-NS-IX10-02 BOS 5K-PO-IX10-02 BOS 5K-NO-IX10-02
10...30 V DC ≤ 2 V DC ≤ 30 mA PNP- or NPN-Transistor 100 mA Light- or dark-on ≤ 1.2 V DC Potentiometer 270°	10...30 V DC ≤ 2 V DC ≤ 20 mA (Receiver), ≤ 15 mA (Emitter) PNP- or NPN-Transistor 100 mA Light- or dark-on ≤ 1.2 V DC Potentiometer 270°	10...30 V DC ≤ 2 V DC ≤ 20 mA (Receiver), ≤ 15 mA (Emitter) PNP- or NPN-Transistor 100 mA Light- or dark-on ≤ 1.2 V DC Potentiometer 270°
LED, red light 660 nm	LED, infrared 880 nm	LED, infrared 880 nm
LED yellow LED green	LED green (emitter) LED yellow (receiver) LED green (receiver)	LED green (emitter) LED yellow (receiver) LED green (receiver)
1 ms 500 Hz	≤ 1 ms 500 Hz	≤ 1 ms 500 Hz
19.5×31.5×10.8 mm 2 m cable, PVC 3×0.2 mm² PC/PBT PMMA 50 g	19.5×31.5×10.8 mm M8 connector, 4-pin PC/PBT PC 10 g each	19.5×31.5×10.8 mm 2 m cable, PVC 3(2)×0,2 mm² (emitter) PC/PBT PC 50 g each
IP 67 yes yes –25...+55 °C 5 kLux (artificial light)/10 kLux (sunlight)	IP 67 yes yes –25...+55 °C 5 kLux (artificial light)/10 kLux (sunlight)	IP 67 yes yes –25...+55 °C 5 kLux (artificial light)/10 kLux (sunlight)

 Connector orientation

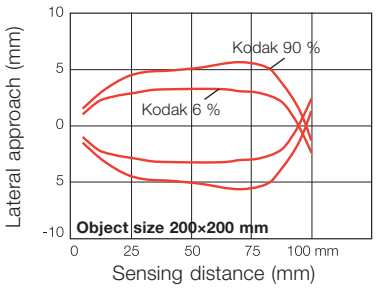
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Diffuse with background suppression BOS 5K-_ _-RH12-_ _

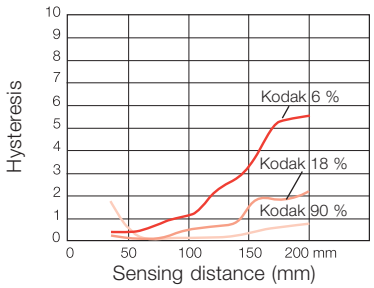
Light spot diameter



Characteristic response curve (HGA 100 mm)

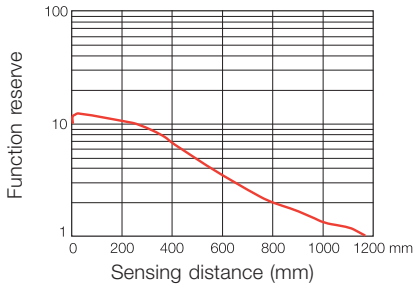


Sensing distance vs. hysteresis

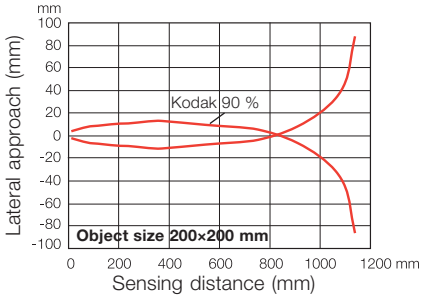


Diffuse BOS 5K-_ _-ID10-_ _

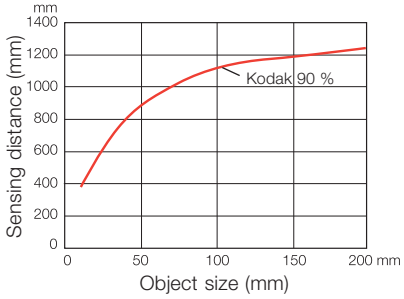
Receiving characteristics



Characteristic response curve

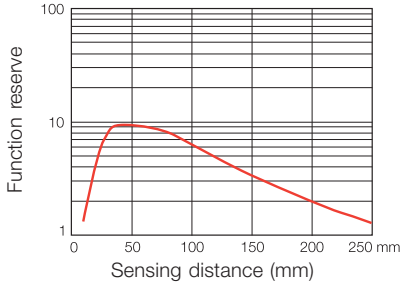


Object size vs. Sensing distance

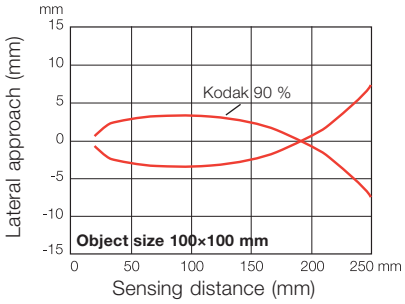


Diffuse small beam BOS 5K-_ _-RD11-_ _

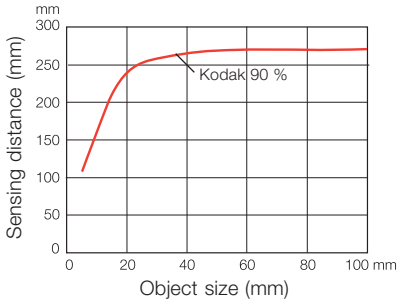
Receiving characteristics



Characteristic response curve

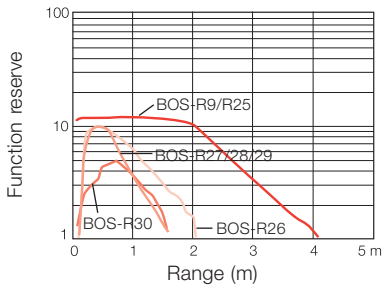


Object size vs. Sensing distance

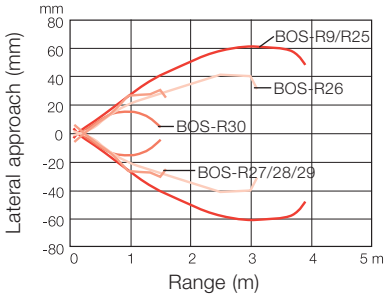


Reflexionslichtschranke BOS 5K-_ _-RR10-_ _

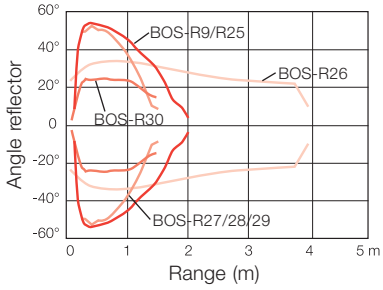
Receiving characteristics



Characteristic response curve

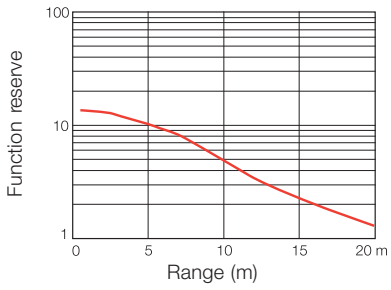


Angle offset

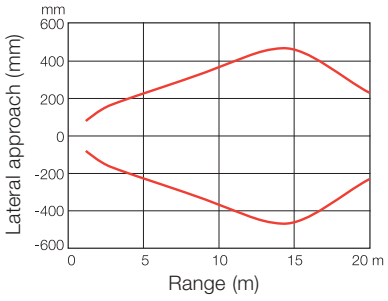


Einweglichtschranke BOS 5K-_ _-IX10-_ _

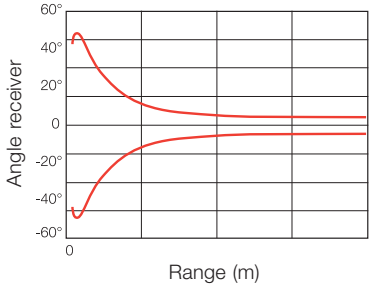
Receiving characteristics



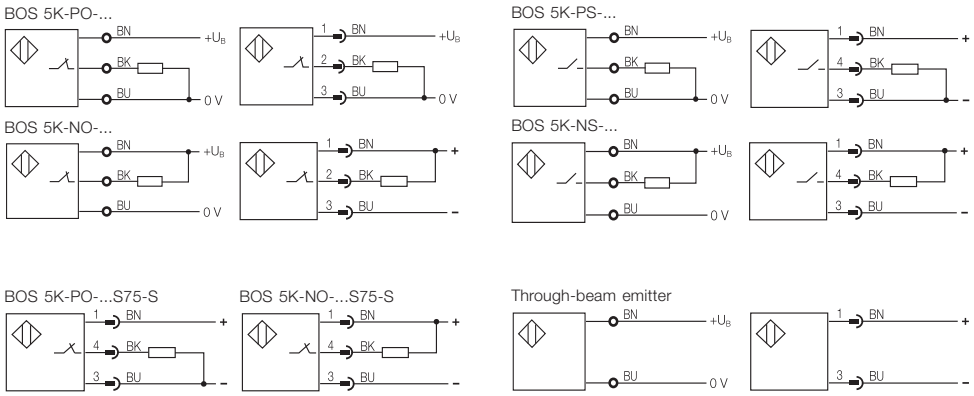
Characteristic response curve



Angle offset

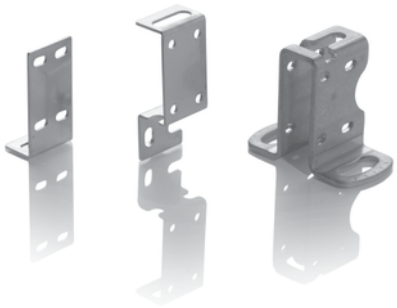


Wiring diagrams

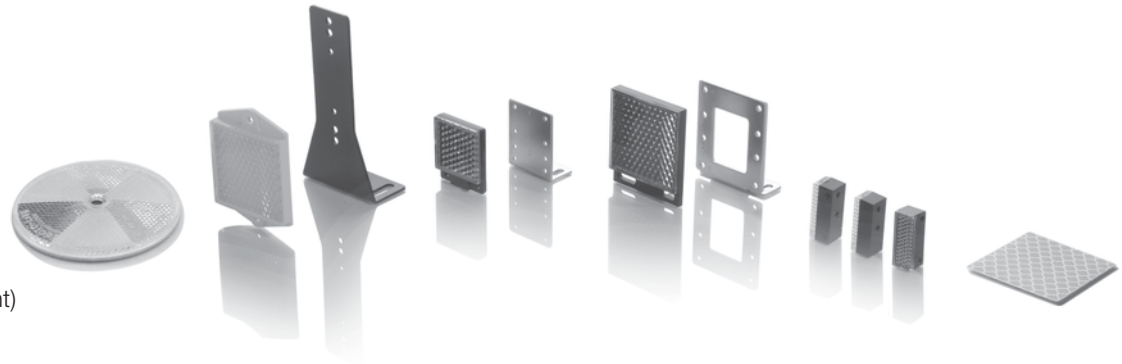


Recommended accessories
please order separately

Mounting brackets
BOS 5-HW-1
BOS 5-HW-2
BOS 5-HW-3
(from left to right)



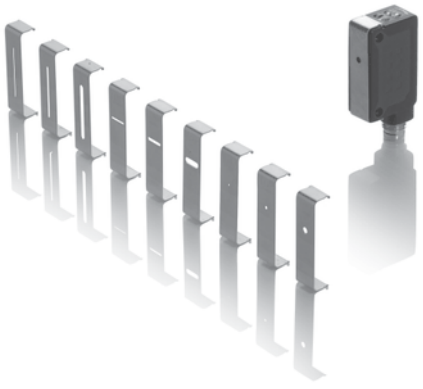
Reflectors,
Reflector mounting bracket
BOS R-1
BOS R-25
BOS 5-HW-4
BOS R-26
BOS 5-HW-5
BOS R-9
BOS 5-HW-6
BOS R-27
BOS R-28
BOS R-29
BOS R-30
(from left to right)



Slit apertures, vertical
BOS 5-BL-1
BOS 5-BL-2
BOS 5-BL-3

Slit apertures, horizontal
BOS 5-BL-4
BOS 5-BL-5
BOS 5-BL-6

Round apertures
BOS 5-BL-7
BOS 5-BL-8
BOS 5-BL-9
(from left to right)



Connector
BKS-S 74/BKS-S 75



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Its high performance specs allow the **BOS 6K** to be used virtually anywhere. These sensors are particularly useful for tight mounting spaces. The small size allows better integration into the machine.
Red light and background suppression make the sensor extremely user-friendly.

In addition, several laser versions are available for absolute small parts detection.
Automatic calibration using the control lines means the sensor can be installed at virtually inaccessible locations. Dynamic teach-in means less and less attention needs to be paid to the sensors.

Features

- Teach-in button plus control line
- Dynamic teach-in possible (i. e., without stopping the machine)
- Multi-function display visible from any direction
- Key disabling
- Versions with 3- or 4-pin M8 connector or with 2 m cable
- Solid construction with IP 67 rating
- Red light and laser versions

Applications

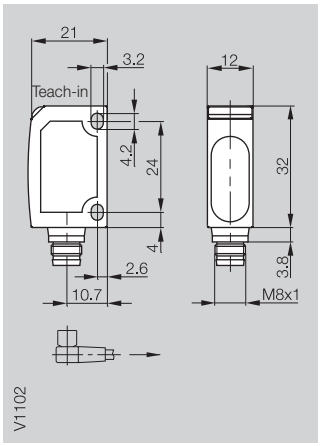
- Packaging machinery
- Handling and assembly
- Specialty machines
- Printing and paper machines

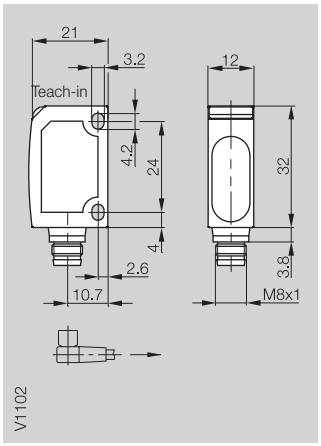
Type	Sensing/ Range	Light type		Output		Output function		Switching frequency	U_B	Connection			Special features		Page
		Red light	Laser	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 4-pin	M8 connector, 3-pin	Cable	Polarizing filter		
Diffuse with HGA															
BOS 6K-PU-1HA-S75-C	25...100 mm	■		■		■	■	1 kHz	■	■					**2.1.**120
BOS 6K-NU-1HA-S75-C	25...100 mm	■			■	■	■	1 kHz	■	■					**2.1.**120
BOS 6K-PU-1HA-S49-C	25...100 mm	■		■		■	■	1 kHz	■		■				**2.1.**120
BOS 6K-PU-1HA-C-02	25...100 mm	■		■		■	■	1 kHz	■			■			**2.1.**121
BOS 6K-NU-1HA-C-02	25...100 mm	■			■	■	■	1 kHz	■			■			**2.1.**121
BOS 6K-PU-1LHA-S75-C	20...60 mm		■	■		■	■	1 kHz	■	■					**2.1.**126
BOS 6K-NU-1LHA-S75-C	20...60 mm		■		■	■	■	1 kHz	■	■					**2.1.**126
BOS 6K-PU-1LHA-C-02	20...60 mm		■	■		■	■	1 kHz	■			■			**2.1.**126
BOS 6K-NU-1LHA-C-02	20...60 mm		■		■	■	■	1 kHz	■			■			**2.1.**126
BOS 6K-PU-1LHA-SA1-S75-C	30...110 mm		■	■		■	■	1 kHz	■	■					**2.1.**127
BOS 6K-NU-1LHA-SA1-S75-C	30...110 mm		■		■	■	■	1 kHz	■	■					**2.1.**127
BOS 6K-PU-1LHA-SA1-C-02	30...110 mm		■	■		■	■	1 kHz	■			■			**2.1.**127
BOS 6K-NU-1LHA-SA1-C-02	30...110 mm		■		■	■	■	1 kHz	■			■			**2.1.**127

Type	Sensing/ Range	Light type		Output		Output function		Switching frequency	U_B	Connection			Special features		Page
		Red light	Laser	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 4-pin	M8 connector, 3-pin	Cable	Polarizing filter	Glass sensing	
Diffuse															
BOS 6K-PU-1OC-S75-C	20...300 mm	■		■		■	■	1 kHz	■	■					**2.1**.121
BOS 6K-NU-1OC-S75-C	20...300 mm	■			■	■	■	1 kHz	■	■					**2.1**.121
BOS 6K-PU-1OC-S49-C	20...300 mm	■		■		■	■	1 kHz	■		■				**2.1**.121
BOS 6K-PU-1OC-C-02	20...300 mm	■		■		■	■	1 kHz	■			■			**2.1**.121
BOS 6K-NU-1OC-C-02	20...300 mm	■			■	■	■	1 kHz	■			■			**2.1**.121
Retroreflective															
BOS 6K-PU-1TA-S75-C	0...500 mm	■		■		■	■	1 kHz	■	■			■	■	**2.1**.122
BOS 6K-NU-1TA-S75-C	0...500 mm	■			■	■	■	1 kHz	■	■			■	■	**2.1**.122
BOS 6K-PU-1TA-C-02	0...500 mm	■		■		■	■	1 kHz	■			■	■	■	**2.1**.122
BOS 6K-NU-1TA-C-02	0...500 mm	■			■	■	■	1 kHz	■			■	■	■	**2.1**.122
BOS 6K-PU-1QA-S75-C	50...700 mm	■		■		■	■	1 kHz	■	■			■	■	**2.1**.123
BOS 6K-NU-1QA-S75-C	50...700 mm	■			■	■	■	1 kHz	■	■			■	■	**2.1**.123
BOS 6K-PU-1QA-S49-C	50...700 mm	■		■		■	■	1 kHz	■		■		■	■	**2.1**.123
BOS 6K-PU-1QA-C-02	50...700 mm	■		■		■	■	1 kHz	■			■	■	■	**2.1**.123
BOS 6K-NU-1QA-C-02	50...700 mm	■			■	■	■	1 kHz	■			■	■	■	**2.1**.123
BOS 6K-PU-1LQA-S75-C	0,05...1,5 m		■	■		■	■	4 kHz	■	■			■		**2.1**.127
BOS 6K-NU-1LQA-S75-C	0,05...1,5 m		■		■	■	■	4 kHz	■	■			■		**2.1**.127
BOS 6K-PU-1LQA-C-02	0,05...1,5 m		■	■		■	■	4 kHz	■			■	■		**2.1**.127
BOS 6K-NU-1LQA-C-02	0,05...1,5 m		■		■	■	■	4 kHz	■			■	■		**2.1**.127
BOS 6K-PU-1QC-S75-C	0,05...3 m	■		■		■	■	1 kHz	■	■			■		**2.1**.124
BOS 6K-NU-1QC-S75-C	0,05...3 m	■			■	■	■	1 kHz	■	■			■		**2.1**.124
BOS 6K-PU-1QC-S49-C	0,05...3 m	■		■		■	■	1 kHz	■		■		■		**2.1**.124
BOS 6K-PU-1QC-C-02	0,05...3 m	■		■		■	■	1 kHz	■			■	■		**2.1**.125
BOS 6K-NU-1QC-C-02	0,05...3 m	■			■	■	■	1 kHz	■			■	■		**2.1**.125
Through-beam															
BLE 6K-PU-1E-S75-C	0...6,5 m	■		■		■	■	500 Hz	■	■					**2.1**.125
BLE 6K-NU-1E-S75-C	0...6,5 m	■			■	■	■	500 Hz	■	■					**2.1**.125
BLE 6K-PU-1E-S49-C	0...6,5 m	■		■		■	■	500 Hz	■		■				**2.1**.125
BLE 6K-PU-1E-C-02	0...6,5 m	■		■		■	■	500 Hz	■			■			**2.1**.125
BLE 6K-NU-1E-C-02	0...6,5 m	■			■	■	■	500 Hz	■			■			**2.1**.125
BLS 6K-XX-1E-S75-C	0...6,5 m	■							■	■					**2.1**.125
BLS 6K-XX-1E-S49-C	0...6,5 m	■							■		■				**2.1**.125
BLS 6K-XX-1E-C-02	0...6,5 m	■							■			■			**2.1**.125

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Diffuse with background suppression	maximum sensing distance	**25...100 mm**	**25...100 mm**	
Diffuse	maximum sensing distance			



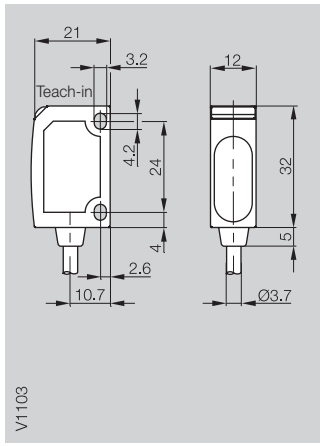
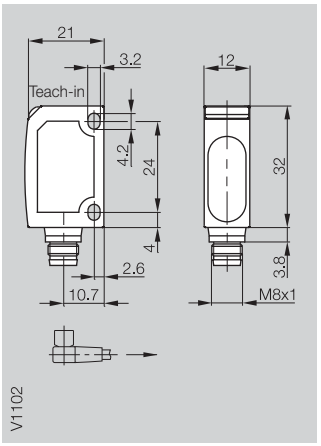
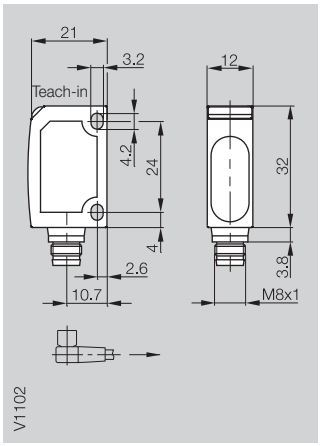
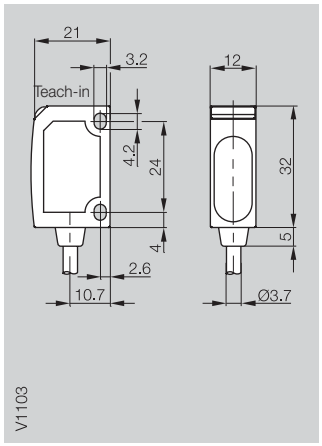


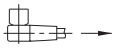
Diffuse				
PNP	25...100 mm	HGA	BOS 6K-PU-1HA-S75-C	BOS 6K-PU-1HA-S49-C
NPN	25...100 mm	HGA	BOS 6K-NU-1HA-S75-C	
PNP	20...300 mm			
NPN	20...300 mm			
Electrical data				
Supply voltage U_B			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 35 mA	≤ 35 mA
Switching output			PNP- or NPN-Transistor	PNP-Transistor
Output current			100 mA	100 mA
Switching type			Light-/dark-on (selectable)	Light-/dark-on (selectable)
Voltage drop U_d at I_e			≤ 2.4 V	≤ 2.4 V
Settings			teach-in	teach-in
Optical data				
Recommended sensing distance			25...100 mm	25...100 mm
Emitter, light type			LED, red light	LED, red light
Wavelength			660 nm	660 nm
Light spot diameter			ca. 5×5 mm at 60 mm	ca. 5×5 mm at 60 mm
Distance hysteresis (18 %/18 %)			≤ 5 %	≤ 5 %
Gray value shift (90 %/18 %)			≤ 10 %	≤ 10 %
Indicators				
Switching state indicator			LED yellow	LED yellow
Stability indicator			LED green	LED green
Time data				
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Mechanical data				
Dimensions			21×32×12 mm	21×32×12 mm
Connection			M8 connector, 4-pin	M8 connector, 3-pin
No. of wires × cross-section				
Housing material			impact-resistant ABS	impact-resistant ABS
Optical surface			PMMA	PMMA
Weight			40 g	40 g
Ambient data				
Degree of protection per IEC 60529			IP 67	IP 67
Polarity reversal protected			yes	yes
Short circuit protected			yes	yes
Ambient temperature range T_a			–20...+60 °C	–20...+60 °C
Ambient light rejection			5 kLux	5 kLux

Diffuse values referenced to Kodak gray card 90% Reflexion.

Wiring diagrams, characteristics and accessories see page **2.1.**128 and **2.1.**129.

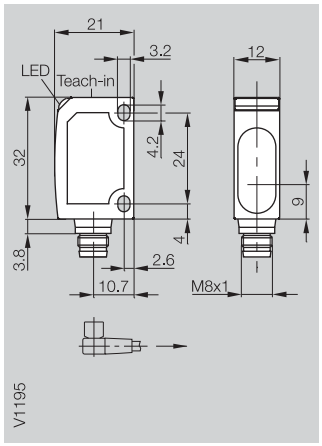
[1] U_{imp} = 500 V

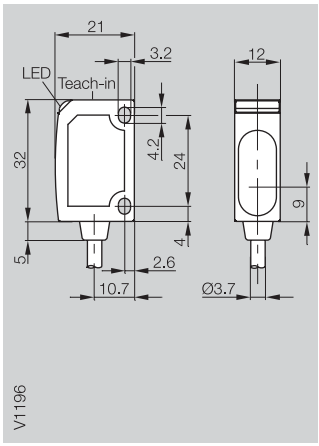
	25...100 mm	**20...300 mm**	**20...300 mm**	**20...300 mm**
				
	BOS 6K-PU-1HA-C-02 BOS 6K-NU-1HA-C-02	BOS 6K-PU-1OC-S75-C BOS 6K-NU-1OC-S75-C	BOS 6K-PU-1OC-S49-C	BOS 6K-PU-1OC-C-02 BOS 6K-NU-1OC-C-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA	≤ 35 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA	100 mA
	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)
	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V
	teach-in	teach-in	teach-in	teach-in
	25...100 mm	20...300 mm	20...300 mm	20...300 mm
	LED, red light	LED, red light	LED, red light	LED, red light
	660 nm	660 nm	660 nm	660 nm
	ca. 5×5 mm at 60 mm	ca. 12×12 mm at 160 mm	ca. 12×12 mm at 160 mm	ca. 12×12 mm at 160 mm
	≤ 5 %	≤ 10 %	≤ 10 %	≤ 10 %
	≤ 10 %			
	LED yellow	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green	LED green
	0.5 ms	0.5 ms	0.5 ms	0.5 ms
	1 kHz	1 kHz	1 kHz	1 kHz
	21×32×12 mm	21×32×12 mm	21×32×12 mm	21×32×12 mm
	2 m cable, PVC	M8 connector, 4-pin	M8 connector, 3-pin	2 m cable, PVC
	4×0.14 mm²			4×0.14 mm²
	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	120 g	40 g	40 g	120 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
	5 kLux	5 kLux	5 kLux	5 kLux

 Connector orientation

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Retroreflective with polarizing filter	maximum range	**0...500 mm**	**0...500 mm**



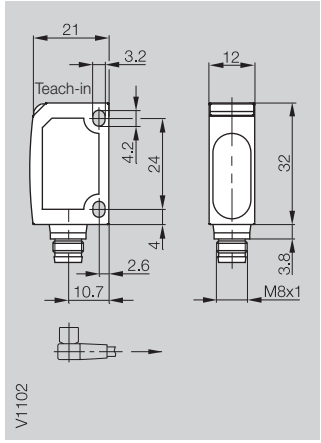
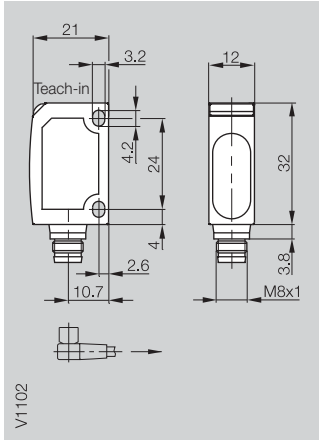
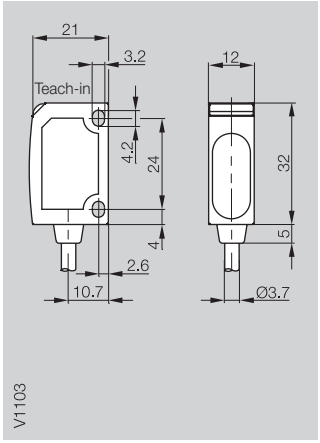


Retroreflective			
PNP	0...500 mm Polarizing filter, glass detection, autocollimation	BOS 6K-PU-1TA-S75-C	BOS 6K-PU-1TA-C-02
NPN	0...500 mm Polarizing filter, glass detection, autocollimation	BOS 6K-NU-1TA-S75-C	BOS 6K-NU-1TA-C-02
PNP	50...700 mm Polarizing filter, glass detection		
NPN	50...700 mm Polarizing filter, glass detection		
Electrical data			
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 25 mA	≤ 25 mA
Switching output		PNP- or NPN-Transistor	PNP- or NPN-Transistor
Output current		100 mA	100 mA
Switching type		Light-/dark-on (selectable)	Light-/dark-on (selectable)
Voltage drop U_d at I_e		≤ 2.4 V	≤ 2.4 V
Settings		teach-in	teach-in
Optical data			
Recommended range		0...500 mm	0...500 mm
Emitter, light type		LED, red light	LED, red light
Wavelength		660 nm	660 nm
Light spot diameter		20×20 mm up to 500 mm	20×20 mm up to 500 mm
Indicators			
Switching state indicator		LED yellow	LED yellow
Stability indicator		LED green	LED green
Time data			
Response time		0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz
Mechanical data			
Dimensions		21×32×12 mm	21×32×12 mm
Connection		M8 connector, 4-pin	2 m cable, PVC
No. of wires × cross-section			4×0.14 mm²
Housing material		impact-resistant ABS	impact-resistant ABS
Optical surface		PMMA	PMMA
Weight		40 g	120 g
Ambient data			
Degree of protection per IEC 60529		IP 67	IP 67
Polarity reversal protected		yes	yes
Short circuit protected		yes	yes
Ambient temperature range T_a		–20...+60 °C	–20...+60 °C
Ambient light rejection		5 kLux	5 kLux
		Only usable with R22 reflector	

Retroreflective values referenced to R9/R22 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**128 and **2.1.**129.

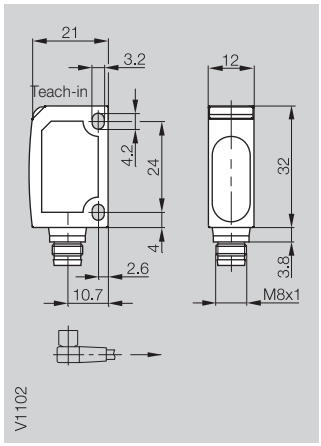
[1] U_{imp} = 500 V

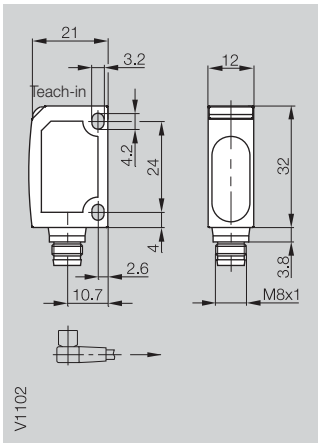
50...700 mm	**50...700 mm**	**50...700 mm**	
			
BOS 6K-PU-1QA-S75-C BOS 6K-NU-1QA-S75-C	BOS 6K-PU-1QA-S49-C	BOS 6K-PU-1QA-C-02 BOS 6K-NU-1QA-C-02	
10...30 V DC	10...30 V DC	10...30 V DC	
≤ 35 mA	≤ 35 mA	≤ 35 mA	
PNP- or NPN-Transistor	PNP-Transistor	PNP- or NPN-Transistor	
100 mA	100 mA	100 mA	
Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)	
≤ 2.4 V	≤ 2.4 V	≤ 2.4 V	
teach-in	teach-in	teach-in	
0...500 mm	0...500 mm	0...500 mm	
LED, red light	LED, red light	LED, red light	
660 nm	660 nm	660 nm	
20×20 mm up to 500 mm	20×20 mm up to 500 mm	20×20 mm up to 500 mm	
LED yellow	LED yellow	LED yellow	
LED green	LED green	LED green	
0.5 ms	0.5 ms	0.5 ms	
1 kHz	1 kHz	1 kHz	
21×32×12 mm	21×32×12 mm	21×32×12 mm	
M8 connector, 4-pin	M8 connector, 3-pin	2 m cable, PVC	
		4×0.14 mm²	
impact-resistant ABS	impact-resistant ABS	impact-resistant ABS	
PMMA	PMMA	PMMA	
40 g	40 g	120 g	
IP 67	IP 67	IP 67	
yes	yes	yes	
yes	yes	yes	
–20...+60 °C	–20...+60 °C	–20...+60 °C	
5 kLux	5 kLux	5 kLux	

 Connector orientation

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Retroreflective with polarizing filter		maximum range	**0,05...3 m**	**0,05...3 m**
Through-beam		maximum range		



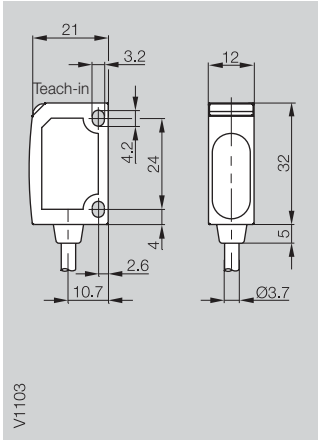
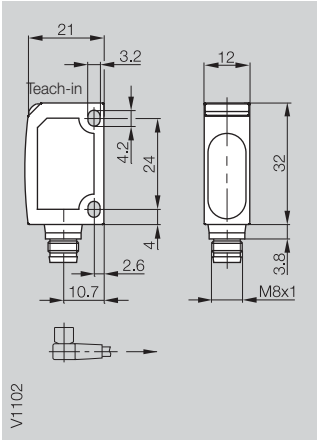
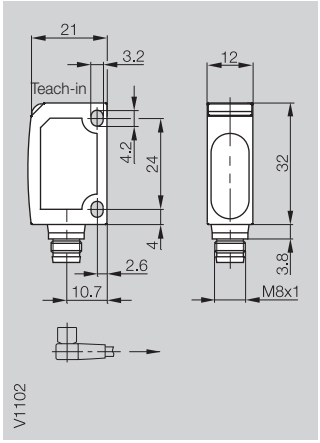
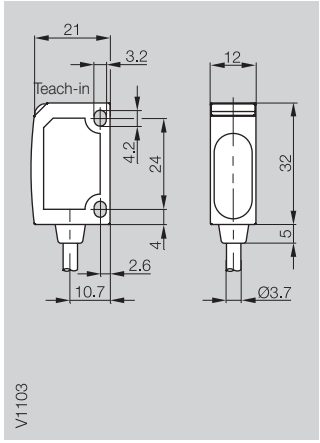


Retroreflective				
PNP	0,05...3 m	Polarizing filter	BOS 6K-PU-1QC-S75-C	BOS 6K-PU-1QC-S49-C
NPN	0,05...3 m	Polarizing filter	BOS 6K-NU-1QC-S75-C	
Through-beam				
PNP	6,5 m	Receiver		
NPN	6,5 m	Receiver		
	6,5 m	Emitter		
Electrical data				
Supply voltage U_B			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Switching output			PNP- or NPN-Transistor	PNP-Transistor
Output current			100 mA	100 mA
Switching type			Light-/dark-on (selectable)	Light-/dark-on (selectable)
Voltage drop U_d at I_e			≤ 2.4 V	≤ 2.4 V
Settings			teach-in	teach-in
Optical data				
Recommended range			0.05...2.5 m	0.05...2.5 m
Emitter, light type			LED, red light	LED, red light
Wavelength			660 nm	660 nm
Light spot diameter			ca. 75×75 mm at 1.5 m	ca. 75×75 mm at 1.5 m
Indicators				
Switching state indicator			LED yellow	LED yellow
Stability indicator			LED green	LED green
Time data				
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Mechanical data				
Dimensions			21×32×12 mm	21×32×12 mm
Connection			M8 connector, 4-pin	M8 connector, 3-pin
No. of wires × cross-section				
Housing material			impact-resistant ABS	impact-resistant ABS
Optical surface			PMMA	PMMA
Weight			10 g	10 g
Ambient data				
Degree of protection per IEC 60529			IP 67	IP 67
Polarity reversal protected			yes	yes
Short circuit protected			yes	yes
Ambient temperature range T_a			–20...+60 °C	–20...+60 °C
Ambient light rejection			EN 60947-5-2	EN 60947-5-2

Retroreflective values referenced to R9 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**128 and **2.1.**129.

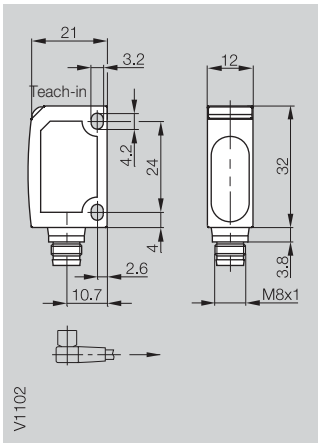
[1] U_{imp} = 500 V

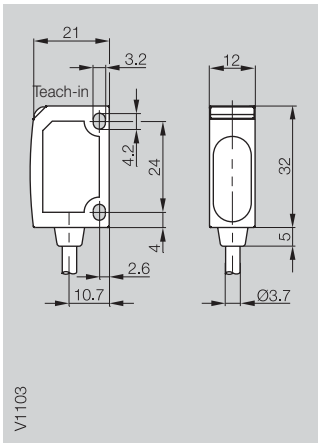
	0,05...3 m	**0...6,5 m**	**0...6,5 m**	**0...6,5 m**
				
	BOS 6K-PU-1QC-C-02 BOS 6K-NU-1QC-C-02			
		BLE 6K-PU-1E-S75-C BLE 6K-NU-1E-S75-C BLS 6K-XX-1E-S75-C	BLE 6K-PU-1E-S49-C BLS 6K-XX-1E-S49-C	BLE 6K-PU-1E-C-02 BLE 6K-NU-1E-C-02 BLS 6K-XX-1E-C-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA	100 mA
	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)
	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V
	teach-in	teach-in	teach-in	teach-in
	0.05...2.5 m	0...6 m	0...6 m	0...6 m
	LED, red light	LED, red light	LED, red light	LED, red light
	660 nm	660 nm	660 nm	660 nm
	ca. 75×75 mm at 1.5 m			
	LED yellow	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green	LED green
	0.5 ms	1 ms	1 ms	1 ms
	1 kHz	500 Hz	500 Hz	500 Hz
	21×32×12 mm	21×32×12 mm	21×32×12 mm	21×32×12 mm
	2 m cable, PVC	M8 connector, 4-pin	M8 connector, 3-pin	2 m cable, PVC
	4×0.14 mm²			4×0.14 mm²
	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	40 g	10 g	10 g	40 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2

Connector orientation

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Diffuse with background suppression	maximum sensing distance	**20...60 mm**	**20...60 mm**
Retroreflective with polarizing filter	maximum range		



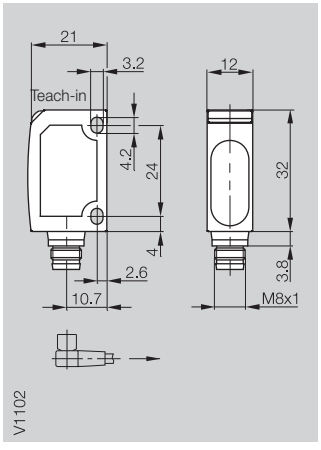
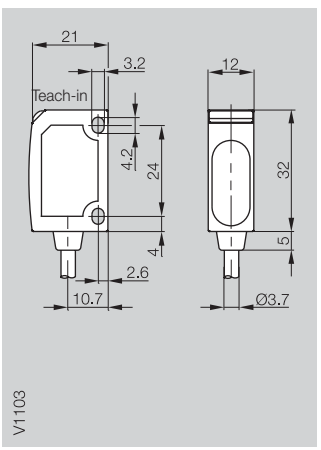
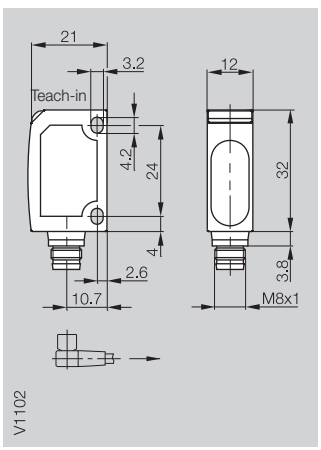
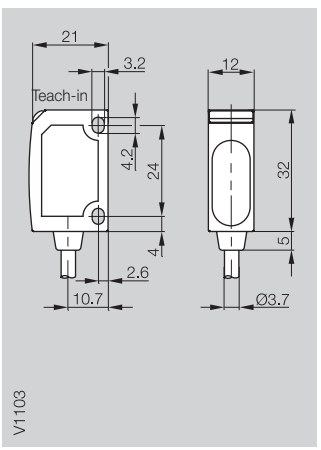


Diffuse				
PNP	20...60 mm	HGA	BOS 6K-PU-1LHA-S75-C	BOS 6K-PU-1LHA-C-02
NPN	20...60 mm	HGA	BOS 6K-NU-1LHA-S75-C	BOS 6K-NU-1LHA-C-02
PNP	30...110 mm	HGA		
NPN	30...110 mm	HGA		
Reflexionslichtschranke				
PNP	0.05...1.5 m	Polarizing filter		
NPN	0.05...1.5 m	Polarizing filter		
Electrical data				
Supply voltage U_B			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 25 mA	≤ 25 mA
Switching output			PNP- or NPN-Transistor	PNP- or NPN-Transistor
Output current			100 mA	100 mA
Switching type			Light-/dark-on (selectable)	Light-/dark-on (selectable)
Voltage drop U_d at I_e			≤ 2.4 V	≤ 2.4 V
Settings			teach-in	teach-in
Optical data				
Recommended sensing distance/range			20...60 mm	20...60 mm
Emitter, light type			Laser, red light	Laser, red light
Wavelength			650 nm	650 nm
Laser class			1	1
Light spot diameter			0.5 mm at focus (35 mm)	0.5 mm at focus (35 mm)
Distance hysteresis (18 %/18 %)			≤ 2 % up to focal point, ≤ 6 % up to end	≤ 2 % up to focal point, ≤ 6 % up to end
Gray value shift (90 %/18 %)			≤ 7 %	≤ 7 %
Indicators				
Switching state indicator			LED yellow	LED yellow
Stability indicator			LED green	LED green
Time data				
Response time			0.5 ms	0.5 ms
Switching frequency f			1 kHz	1 kHz
Mechanical data				
Dimensions			21×32×12 mm	21×32×12 mm
Connection			M8 connector, 4-pin	2 m cable, PVC
No. of wires × cross-section				4×0.14 mm²
Housing material			impact-resistant ABS	impact-resistant ABS
Optical surface			PMMA	PMMA
Weight			10 g	40 g
Ambient data				
Degree of protection per IEC 60529			IP 67	IP 67
Polarity reversal protected			yes	yes
Short circuit protected			yes	yes
Ambient temperature range T_a			–20...+60 °C	–20...+60 °C
Ambient light limit			EN 60947-5-2	EN 60947-5-2

Diffuse values referenced to Kodak gray card 18% Reflexion.
Retroreflective values referenced to R22 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**128 and **2.1.**129.

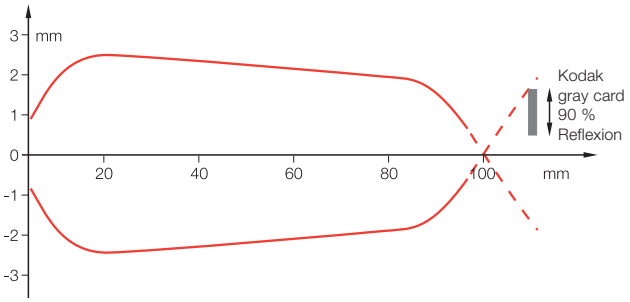
[1] U_{imp} = 500 V

	30...110 mm	**30...110 mm**		
			0,05...1,5 m	**0,05...1,5 m**
				
	BOS 6K-PU-1LHA-SA1-S75-C BOS 6K-NU-1LHA-SA1-S75-C	BOS 6K-PU-1LHA-SA1-C-02 BOS 6K-NU-1LHA-SA1-C-02		
			BOS 6K-PU-1LQA-S75-C BOS 6K-NU-1LQA-S75-C	BOS 6K-PU-1LQA-C-02 BOS 6K-NU-1LQA-C-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA	100 mA
	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)	Light-/dark-on (selectable)
	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V
	teach-in	teach-in	teach-in	teach-in
	30...110 mm	30...110 mm	0.05...1 m	0.05...1 m
	Laser, red light	Laser, red light	Laser, red light	Laser, red light
	650 nm	650 nm	650 nm	650 nm
	2	2	1	1
	0,7 mm at focus (85 mm ± 15 mm)	0,7 mm at focus (85 mm ± 15 mm)	1 mm in 300 mm	1 mm in 300 mm
	≤ 5 % up to focal point, ≤ 7 % up to end	≤ 5 % up to focal point, ≤ 7 % up to end		
	≤ 7 %	≤ 7 %		
	LED yellow	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green	LED green
	0.5 ms	0.5 ms	0.5 ms	0.5 ms
	1 kHz	1 kHz	4 kHz	4 kHz
	21×32×12 mm	21×32×12 mm	21×32×12 mm	21×32×12 mm
	M8 connector, 4-pin	2 m cable, PVC	M8 connector, 4-pin	2 m cable, PVC
		4×0.14 mm²		4×0.14 mm²
	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS
	PMMA	PMMA	PMMA	PMMA
	10 g	40 g	10 g	40 g
	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes
	yes	yes	yes	yes
	–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2

Connector orientation

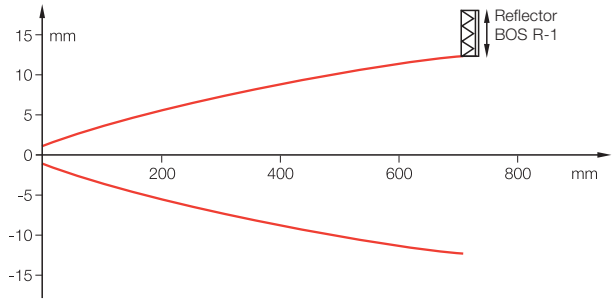
2.1
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Connectors ...
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Diffuse BOS 6K-..-1HA-...



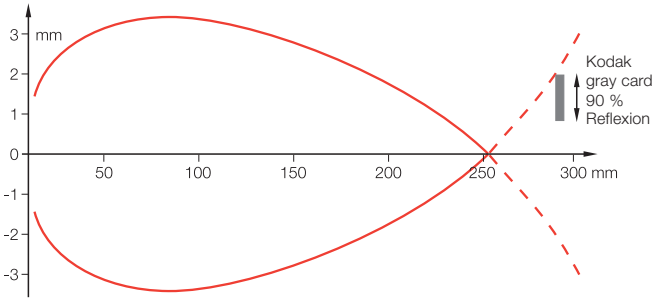
Range measured with side approach of Kodak gray card.

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



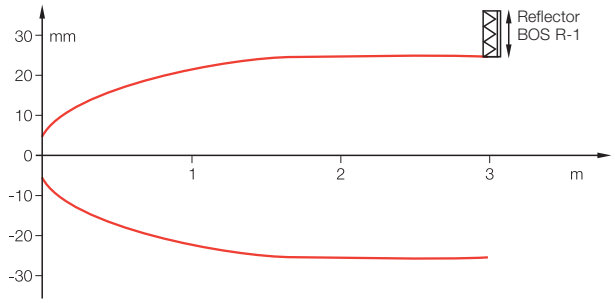
Range measured with side approach of reflector.

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



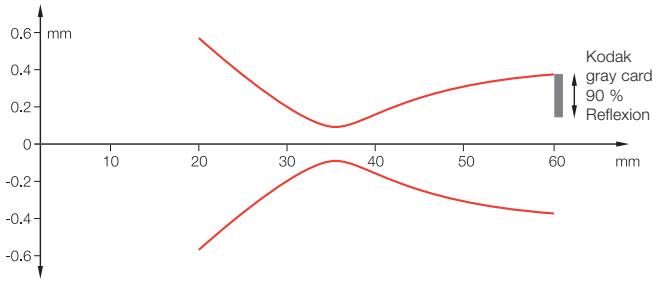
Range measured with side approach of Kodak gray card.

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



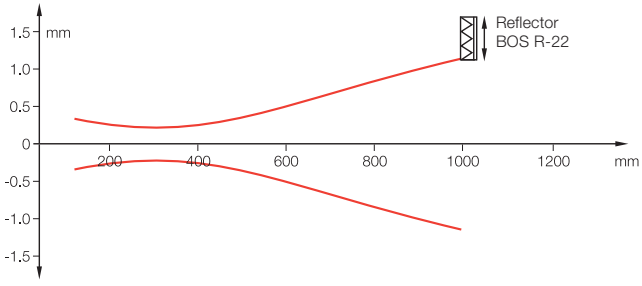
Range measured with side approach of reflector.

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



Range measured with side approach of Kodak gray card.

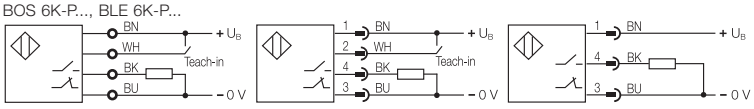
Retroreflective BOS 6K-...-1LQA-...



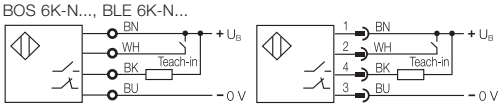
Range measured with side approach of reflector.

Wiring diagrams

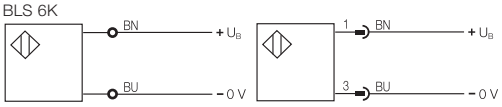
BOS 6K-P..., BLE 6K-P...



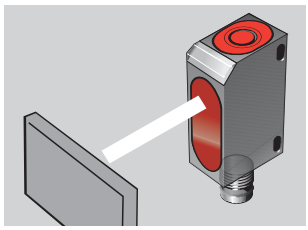
BOS 6K-N..., BLE 6K-N...



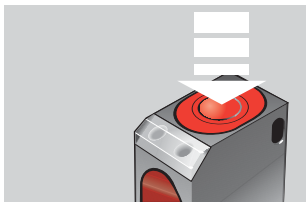
BLS 6K



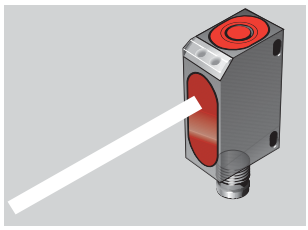
Diffuse



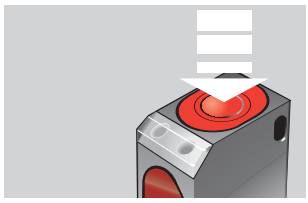
Align sensor with the object.



Press button for approx. 3 sec. until both LED's blink together.

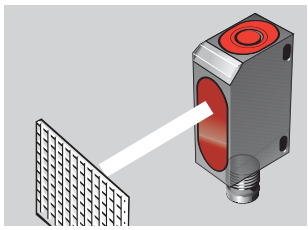


Remove object from beam path.

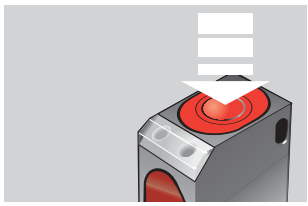


Hold down button for 1 sec. Green LED blinks briefly and then comes full on. The sensor is ready.
If both LEDs blink together, repeat your settings.

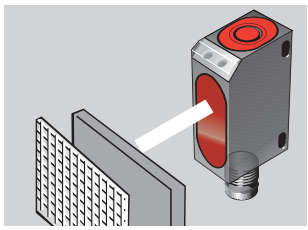
Retroreflective/through-beam



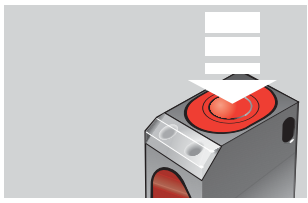
Direct sensor at reflector/ receiver.



Press button for approx. 3 sec. until both LED's blink together.



Bring objects into detection range.



Hold down button for 1 sec. Green LED blinks briefly and then comes full on. The sensor is ready.
If both LEDs blink together, repeat your settings.

2.1

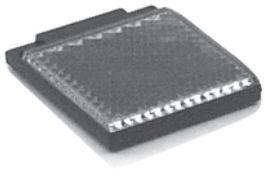
2.3
Photoelectric
Sensors
Accessories
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Recommended accessories
please order separately



Reflector
BOS R-1



Reflector
BOS R-9



Reflector
BOS R-22



Mounting
bracket
BOS 6-HW-1



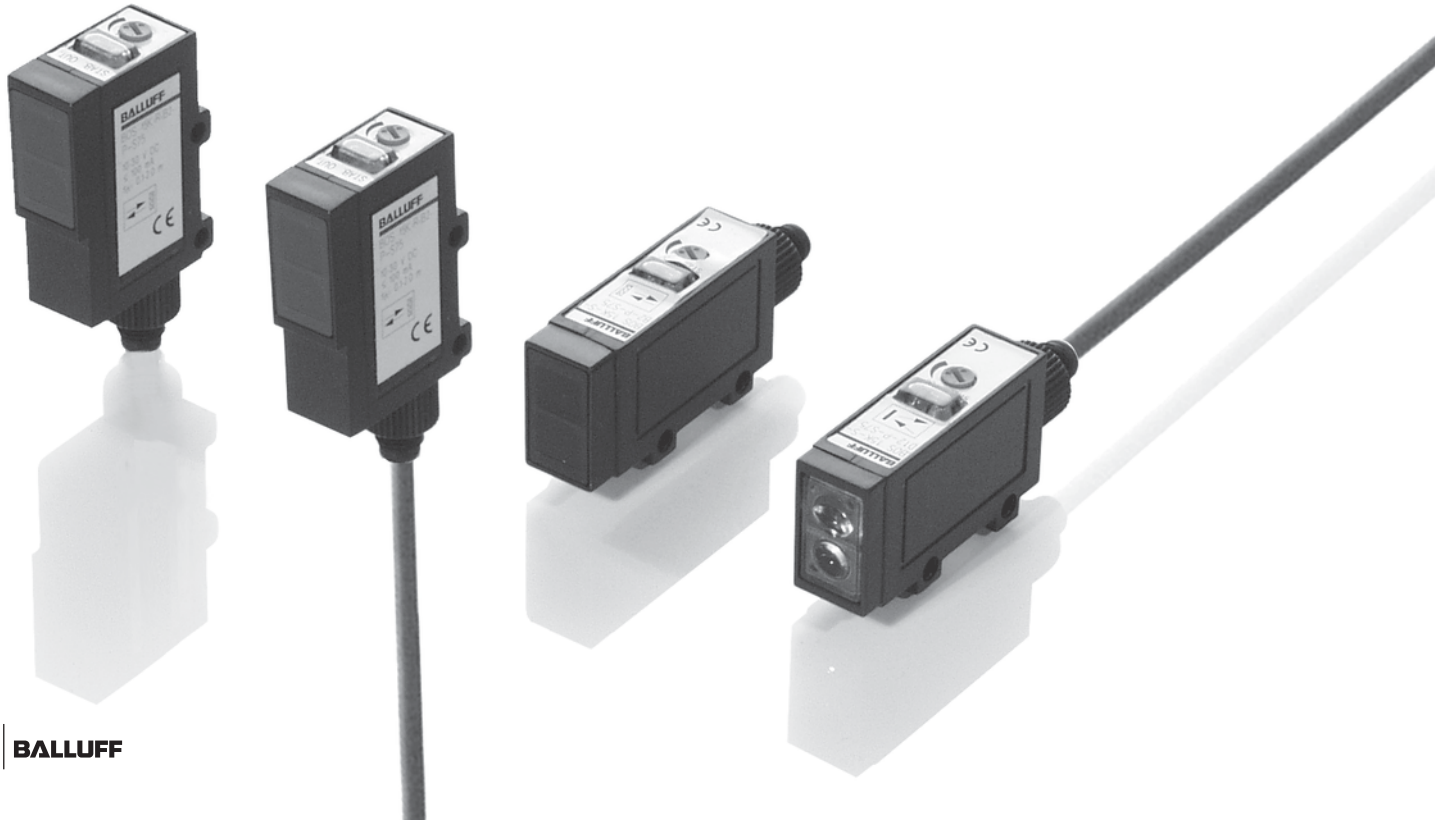
Connector
BKS-S 74/BKS-S 75

BOS 15K

Somewhat larger and available in two mechanical versions (straight and right-angle), the BOS 15K is the ideal size for the most common applications in packaging machines and handling and assembly systems.
The familiar sensitivity setting using an easily accessible potentiometer, along with the number of versions, make this sensor ideal for installation in machines and systems of small and medium size.

Features

- Two housing versions (straight and angled)
- Potentiometer for sensitivity setting
- Cross-talk protection
- NO/NC switching using an input line
- Through-beam with test input and alarm output

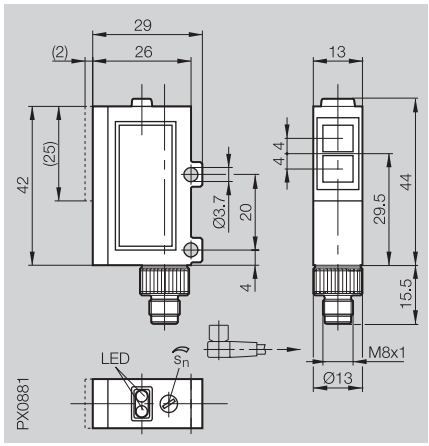


Type	Sensing/ Range	Light exit		Light type		Output			Output function		Switching frequency	U_B	Connec-tion		Special features		Page
		Straight	Right-angle	Red light	Infrared	PNP-Transistor	NPN-Transistor	Alarm output	Light-on	Dark-on		10...30 V DC	M8 connector, 4-pin	Cable , 2 m	Polarizing filter	Test input	
Diffuse																	
BOS 15K-R-C10-P-S75	0...100 mm		■		■	■			■	■	500 Hz	■	■				**2.1**.132
BOS 15K-S-C10-P-S75	0...100 mm	■			■	■			■	■	500 Hz	■	■				**2.1**.133
BOS 15K-R-C10-02	0...100 mm		■		■	■	■		■	■	500 Hz	■		■			**2.1**.133
BOS 15K-S-C10-02	0...100 mm	■			■	■	■		■	■	500 Hz	■		■			**2.1**.133
BOS 15K-R-C50-P-S75	0...500 mm		■			■			■	■	500 Hz	■	■				**2.1**.132
BOS 15K-S-C50-P-S75	0...500 mm	■				■			■	■	500 Hz	■	■				**2.1**.133
BOS 15K-R-C50-02	0...500 mm		■			■	■		■	■	500 Hz	■		■			**2.1**.133
BOS 15K-S-C50-02	0...500 mm	■				■	■		■	■	500 Hz	■		■			**2.1**.133
BOS 15K-R-D12-P-S75	12 mm		■	■		■			■	■	800 Hz	■	■				**2.1**.132
BOS 15K-S-D12-P-S75	12 mm	■		■		■			■	■	800 Hz	■	■				**2.1**.133
BOS 15K-R-D12-02	12 mm		■	■		■	■		■	■	800 Hz	■		■			**2.1**.133
BOS 15K-S-D12-02	12 mm	■		■		■	■		■	■	800 Hz	■		■			**2.1**.133
Retroreflective																	
BOS 15K-R-B2-P-S75	0,1...2 m		■	■		■			■	■	500 Hz	■	■		■		**2.1**.132
BOS 15K-S-B2-P-S75	0,1...2 m	■		■		■			■	■	500 Hz	■	■		■		**2.1**.133
BOS 15K-R-B2-02	0,1...2 m		■	■		■	■		■	■	500 Hz	■		■	■		**2.1**.133
BOS 15K-S-B2-02	0,1...2 m	■		■		■	■		■	■	500 Hz	■		■	■		**2.1**.133
Through-beam																	
BLE 15K-R-F5-P-S75	0...5 m		■		■	■			■	■	250 Hz	■	■				**2.1**.132
BLE 15K-S-F5-P-S75	0...5 m	■			■	■			■	■	250 Hz	■	■				**2.1**.133
BLE 15K-R-F5-02	0...5 m		■		■	■	■	■	■	■	250 Hz	■		■			**2.1**.133
BLE 15K-S-F5-02	0...5 m	■			■	■	■	■	■	■	250 Hz	■		■			**2.1**.133
BLS 15K-R-G5-S75	0...5 m		■		■							■	■			■	**2.1**.132
BLS 15K-S-G5-S75	0...5 m	■			■							■	■			■	**2.1**.133
BLS 15K-R-G5-02	0...5 m		■		■							■		■		■	**2.1**.133
BLS 15K-S-G5-02	0...5 m	■			■							■		■		■	**2.1**.133

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BOS 15K
Sensing distance 12 mm, 100 mm, 500 mm
Range 2 m, 5 m

Diffuse	Sensing distance	**12 mm/0...100 mm/0...500 mm**
Retroreflective	Range	**0,1...2 m**
Through-beam	Range	**0...5 m**



Diffuse					
PNP/NPN, PNP	100 mm			Infrared light	BOS 15K-R-C10-P-S75
PNP/NPN, PNP	500 mm			Infrared light	BOS 15K-R-C50-P-S75
PNP/NPN, PNP	12 mm			Red light, focused	BOS 15K-R-D12-P-S75
Retroreflective					
PNP/NPN, PNP	0,1...2 m			Red light, polarizing filter	BOS 15K-R-B2-P-S75
Through-beam					
PNP/NPN, PNP	5 m		Receiver	Infrared light	BLE 15K-R-F5-P-S75
	5 m		Emitter	Infrared light	BLS 15K-R-G5-S75

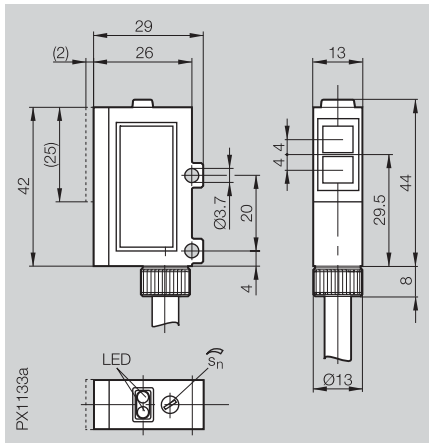
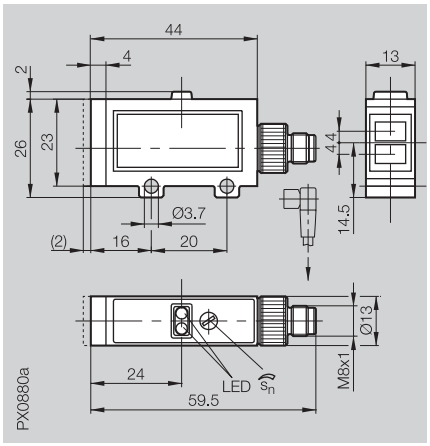
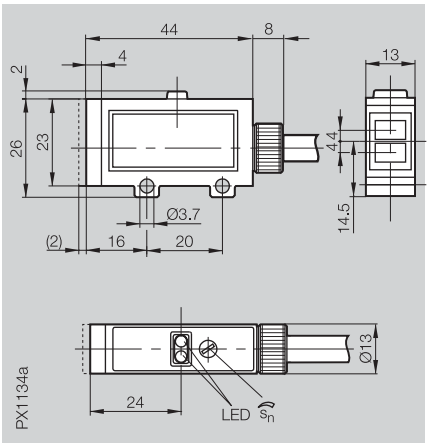
Electrical	
Supply voltage U_B	10...30 V DC
Ripple	2 V DC
No-load current I_0 max.	≤ 30 mA
Switching output	PNP-Transistor
Output current	≤ 100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_e	≤ 1.5 V
Settings	Potentiometer 270°
Help function	Test input for BLS
Indicators	
Power-on indicator	LED red (BLS)
Output function indicator	LED red
Stability indicator	LED green
Time data	
Response time	≤ 1 ms (BLE ≤ 2ms)
Switching frequency f	500 Hz (BLE 250 Hz)
Mechanical data	
Dimensions	29×42×13 mm
Connection	M8 connector, 4-pin
No. of wires × cross-section	
Housing material	ABS
Optical surface	PMMA
Weight	20 g
Ambient data	
Degree of protection per IEC 60529	IP 66
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–15...+55 °C
Ambient light rejection	3 kLux/10 kLux sunlight

For through-beam types the emitter and receiver are located in the lower optics.

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**134 und **2.1.**135.

Connector orientation

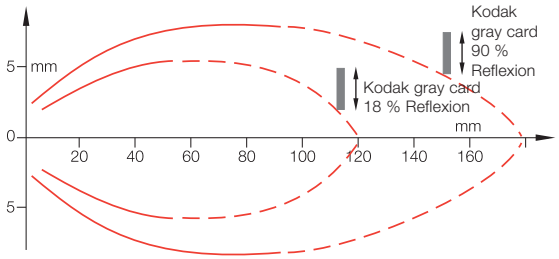
	12 mm/0...100 mm/0...500 mm **0,1...2 m** **0...5 m**	**12 mm/0...100 mm/0...500 mm** **0,1...2 m** **0...5 m**	**12 mm/0...100 mm/0...500 mm** **0,1...2 m** **0...5 m**
			
	BOS 15K-R-C10-02 BOS 15K-R-C50-02 BOS 15K-R-D12-02	BOS 15K-S-C10-P-S75 BOS 15K-S-C50-P-S75 BOS 15K-S-D12-P-S75	BOS 15K-S-C10-02 BOS 15K-S-C50-02 BOS 15K-S-D12-02
	BOS 15K-R-B2-02	BOS 15K-S-B2-P-S75	BOS 15K-S-B2-02
	BLE 15K-R-F5-02 BLS 15K-R-G5-02	BLE 15K-S-F5-P-S75 BLS 15K-S-G5-S75	BLE 15K-S-F5-02 BLS 15K-S-G5-02
	10...30 V DC 2 V DC ≤ 30 mA PNP- and NPN-Transistor selectable ≤ 100 mA Light-/dark-on (selectable) ≤ 1.5 V Potentiometer 270° Test input for BLS	10...30 V DC 2 V DC ≤ 30 mA PNP-Transistor ≤ 100 mA Light-/dark-on (selectable) ≤ 1.5 V Potentiometer 270° Test input for BLS	10...30 V DC 2 V DC ≤ 30 mA PNP- and NPN-Transistor selectable ≤ 100 mA Light-/dark-on (selectable) ≤ 1.5 V Potentiometer 270° Test input for BLS
	LED red (BLS) LED red LED green	LED red (BLS) LED red LED green	LED red (BLS) LED red LED green
	≤ 1 ms (BLE ≤ 2ms) 500 Hz (BLE 250 Hz)	≤ 1 ms (BLE ≤ 2ms) 500 Hz (BLE 250 Hz)	≤ 1 ms (BLE ≤ 2ms) 500 Hz (BLE 250 Hz)
	29×42×13 mm 2 m cable, PVC 4/5/6×0.34 mm² ABS PMMA 90 g	44×26×13 mm M8 connector, 4-pin ABS PMMA 20 g	44×26×13 mm 2 m cable, PVC 4/5/6×0.34 mm² ABS PMMA 90 g
	IP 66 yes yes –15...+55 °C 3 kLux/10 kLux sunlight	IP 66 yes yes –15...+55 °C 3 kLux/10 kLux sunlight	IP 66 yes yes –15...+55 °C 3 kLux/10 kLux sunlight

2.1

2.3
Photoelectric Sensors Accessories
Page 2.3.2 ...

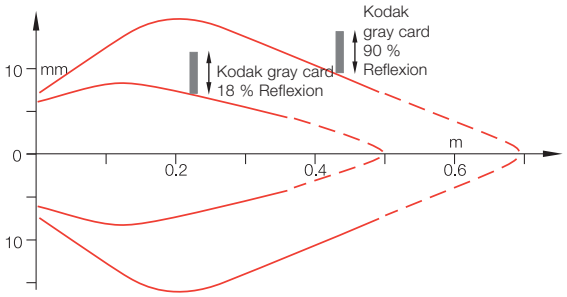
5
Connectors ...
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Diffuse BOS 15K-..-C10-...



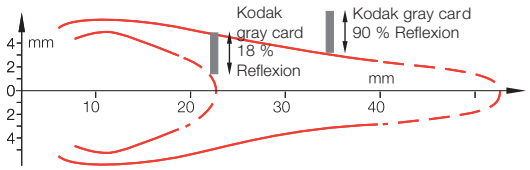
Range measured with side approach of Kodak gray card.

Diffuse BOS 15K-..-C50-...



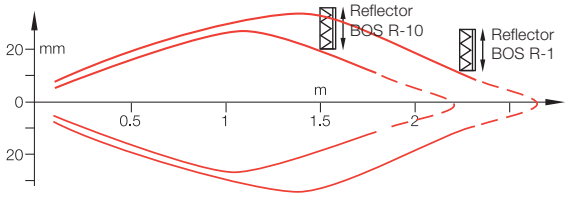
Range measured with side approach of Kodak gray card.

Diffuse with focused beam BOS 15K-..-D12-...



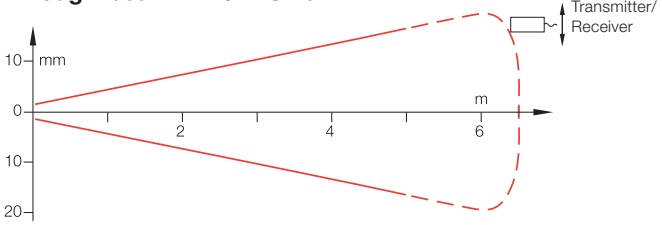
Range measured with side approach of Kodak gray card.

Retroreflective BOS 15K-..-B2-...



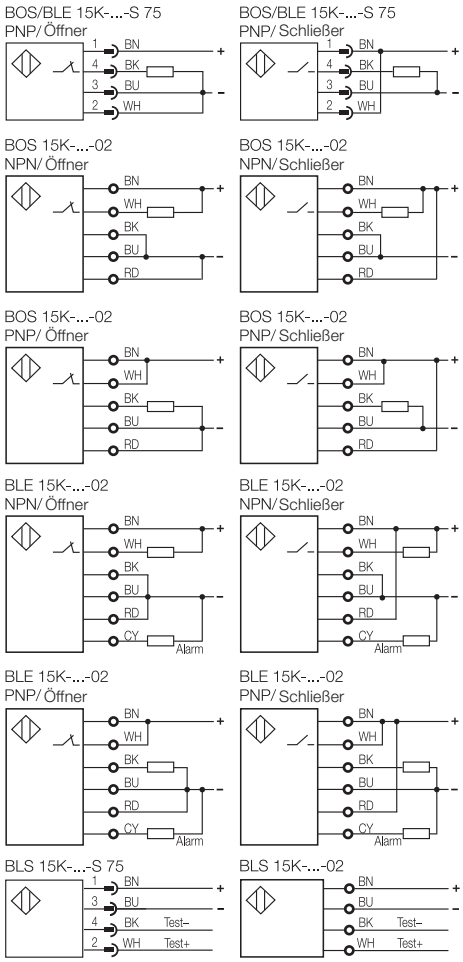
Range measured with side approach of reflector.

Through-beam BLE/BLS 15K-...



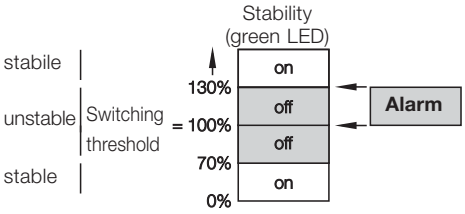
For the through-beam sensor the maximum possible offset between emitter and receiver is measured.

Wiring diagrams



Alarm output for receiver (cable version only)

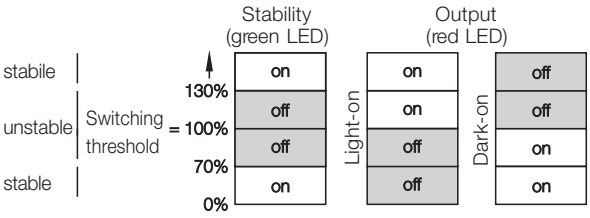
The receiver is equipped with an alarm output.
This signal output (PNP open collector 30 mA) is used to trigger a warning signal when there are function disturbances which can be caused by contamination or mechanical maladjustment.
The alarm output is activated if the receive signal remains in the alarm range for at least 3 sec.



Green Stability indicator

The "threshold energy" at which a signal change on the output is effected is defined as 100 %.
The switching state is considered stable when the input energy exceeds or falls below the "threshold energy" by 30 %. The green LED then comes on.
This results in the "safe" range,

- when the input signal exceeds a minimum of 130 % of the threshold energy
- when the input signal falls below a minimum of 70 % of the threshold energy.



Test input for emitter

The test input interrupts the light pulses from the emitter and thereby enables a function check of the sensor.
The receiver output must switch each time when the test input shows a voltage of 10...30 V DC (Test+) or 0 V DC (Test–) .
Contamination or maladjustment on the optical axis causes the emitter signal to reach the receiver only weakly, if at all.
Therefore the output will not switch, even though the test input is activated.
The test function is a kind of remote monitoring of the sensor, thereby providing preventive system checking.

Recommended accessories

please order separately



Connector
BKS-S 74/BKS-S 75

Slit apertures

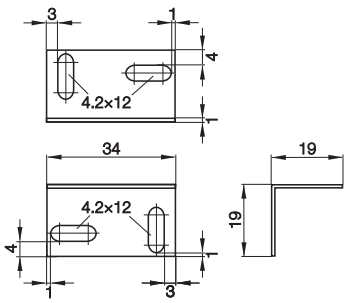
(supplied with through-beam sensors)



Slit width	0.5 mm	1 mm	2 mm
Range	0.5 m	1 m	2 m
Object size	> 0.5 mm	> 1 mm	> 2 mm

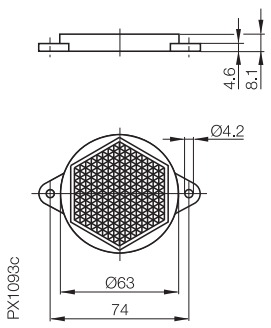
Mounting bracket

(supplied)



Reflector BOS R-10

(supplied with retroreflective sensors)



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Photoelectric Sensors Accessories
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Connectors ...
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BOS 21M – a complete family in a compact, tough metal housing. Comprehensive functionality, use of the most modern sensor technologies and innovative manufacturing technology leave nothing to be desired for versatile application in robotics and automation, packaging, assembly and handling.

Teach-in switches and potentiometers assure fast startup as well as simple and economical operation of the sensor.

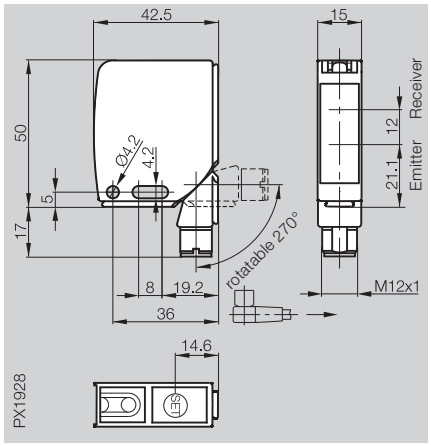
A wide range of accessories such as mounting brackets, stands, dovetail clamps etc. enable variable attachment of the products in any position.



Type	Sensing distance/ range	Light type			Output		Output function		Switching frequency	U_B	Connec-tion	Special features				Page
		Red light	Infrared	Laser light	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M12 connector, 4-pin	Teach-in	Polarizing filter	Autocollimation	Glass sensing	
Diffuse with HGA																
BOS 21M-PUS-LH12-S4	50...100 mm			■	■		■	■	1 kHz	■	■	■				**2.1**.142
BOS 21M-NUS-LH12-S4	50...100 mm			■		■	■	■	1 kHz	■	■	■				**2.1**.142
BOS 21M-PUS-RH12-S4	70...200 mm	■			■		■	■	1 kHz	■	■	■				**2.1**.138
BOS 21M-NUS-RH12-S4	70...200 mm	■				■	■	■	1 kHz	■	■	■				**2.1**.138
BOS 21M-PUS-RV13-S4	70...200 mm	■			■		■	■	1 kHz	■	■	■				**2.1**.139
BOS 21M-NUS-RV13-S4	70...200 mm	■				■	■	■	1 kHz	■	■	■				**2.1**.139
Diffuse																
BOS 21M-PA-RD10-S4	0.01...1 m	■			■		■	■	500 Hz	■	■					**2.1**.139
BOS 21M-NA-RD10-S4	0.01...1 m	■				■	■	■	500 Hz	■	■					**2.1**.139
BOS 21M-PA-ID10-S4	0.05...2 m		■		■		■	■	500 Hz	■	■					**2.1**.139
BOS 21M-NA-ID10-S4	0.05...2 m		■			■	■	■	500 Hz	■	■					**2.1**.139
BOS 21M-PA-LD10-S4	0...600 mm			■	■		■	■	2 kHz	■	■					**2.1**.143
BOS 21M-NA-LD10-S4	0...600 mm			■		■	■	■	2 kHz	■	■					**2.1**.143
Retroreflective																
BOS 21M-PA-PR10-S4	0.1...8 m	■			■		■	■	1 kHz	■	■		■			**2.1**.140
BOS 21M-NA-PR10-S4	0.1...8 m	■				■	■	■	1 kHz	■	■		■			**2.1**.140
BOS 21M-PA-LR10-S4	0.1...20 m			■	■		■	■	2 kHz	■	■		■			**2.1**.143
BOS 21M-NA-LR10-S4	0.1...20 m			■		■	■	■	2 kHz	■	■		■			**2.1**.143
BOS 21M-PA-PK10-S4	0...4 m	■			■		■	■	1 kHz	■	■		■	■		**2.1**.141
BOS 21M-NA-PK10-S4	0...4 m	■				■	■	■	1 kHz	■	■		■	■		**2.1**.141
BOS 21M-PA-PT10-S4	0...2 m	■			■		■	■	1 kHz	■	■		■	■	■	**2.1**.141
BOS 21M-NA-PT10-S4	0...2 m	■				■	■	■	1 kHz	■	■		■	■	■	**2.1**.141
Through-beam																
BOS 21M-PA-IE10-S4	0...20 m		■		■		■	■	500 Hz	■	■					**2.1**.141
BOS 21M-NA-IE10-S4	0...20 m		■			■	■	■	500 Hz	■	■					**2.1**.141
BOS 21M-PA-LE10-S4	0...60 m			■	■		■	■	1.5 kHz	■	■					**2.1**.143
BOS 21M-NA-LE10-S4	0...60 m			■		■	■	■	1.5 kHz	■	■					**2.1**.143
BOS 21M-XT-IS11-S4	0...20 m		■							■	■					**2.1**.141
BOS 21M-XT-LS11-S4	0...60 m			■						■	■					**2.1**.143

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Photoelectric sensors accessories page 2.3.2 ...
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Connectors ... page 5.2 ...

Diffuse with background suppression	Sensing distance	**70...200 mm**
Diffuse with foreground suppression	Sensing distance	
Diffuse	Sensing distance	



Diffuse

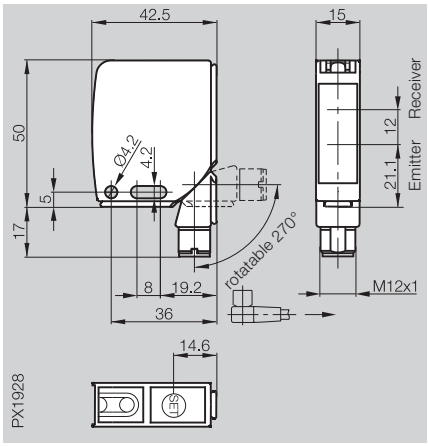
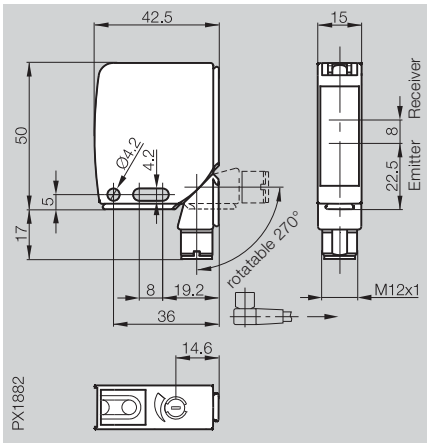
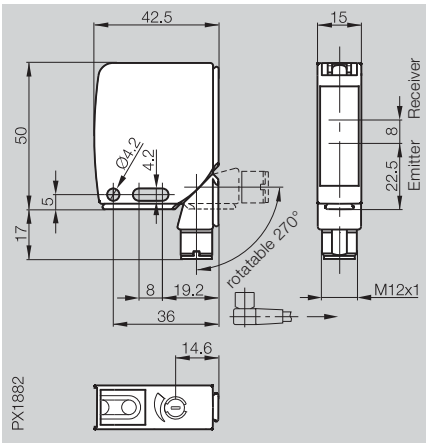
PNP	70...200 mm	HGA	BOS 21M-PUS-RH12-S4
NPN	70...200 mm	HGA	BOS 21M-NUS-RH12-S4
PNP	70...200 mm	VGA + HGA	
NPN	70...200 mm	VGA + HGA	
PNP	0.01...1 m		
NPN	0.01...1 m		
PNP	0.05...2 m		
NPN	0.05...2 m		

Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	≤ 2 V DC
No-load supply current I_0 max.	≤ 50 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_e	2 V
Settings	Teach-in
Optical data	
Recommended sensing distance	70...200 mm
Emitter, light type	LED, red light
Wavelength	670 nm
Indicators	
Output function indicator	LED yellow
Stability indicator	LED green/red
Time data	
Response time	0.5 ms
Switching frequency f	1 kHz
Mechanical data	
Dimensions	42.5×50×15 mm
Connection	M12 connector, 4-pin
Housing material	GD-Zn/Al
Optical surface	PMMA
Weight	76 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–10...+50 °C
Ambient light rejection	10 kLux

Diffuse values referenced to Kodak gray card 90% Reflexion.

Wiring diagrams, characteristics and accessories see page **2.1.**144 to **2.1.**147.

Connector orientation

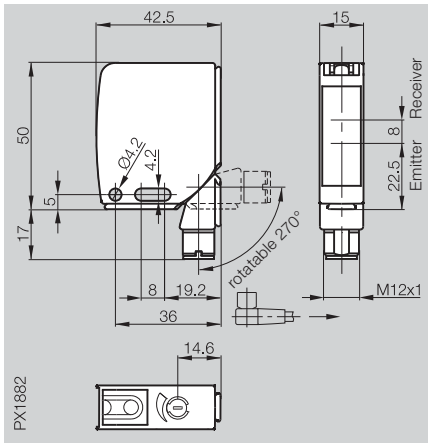
	70...200 mm	**0.01...1 m**	**0.05...2 m**
			
	BOS 21M-PUS-RV13-S4 BOS 21M-NUS-RV13-S4	BOS 21M-PA-RD10-S4 BOS 21M-NA-RD10-S4	BOS 21M-PA-ID10-S4 BOS 21M-NA-ID10-S4
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2 V DC	≤ 2 V DC	≤ 2 V DC
	≤ 50 mA	≤ 35 mA	≤ 35 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA
	Light-/dark-on (selectable)	Light-/dark-on (push-pull)	Light-/dark-on (push-pull)
	2 V	2 V	2 V
	Teach-in	Potentiometer 270°	Potentiometer 270°
	70...200 mm	0.01...1 m	0.05...2 m
	LED, red light	LED, red light	LED, infrared
	670 nm	650 nm	880 nm
	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green
	0.5 ms	1 ms	1 ms
	1 kHz	500 Hz	500 Hz
	42.5×50×15 mm	42.5×50×15 mm	42.5×50×15 mm
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
	PMMA	PMMA	PMMA
	76 g	76 g	76 g
	IP 67	IP 67	IP 67
	yes	yes	yes
	yes	yes	yes
	–10...+50 °C	–25...+55 °C	–25...+55 °C
	10 kLux	10 kLux	10 kLux

2.1

2.3
Photoelectric sensors accessories page 2.3.2 ...

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Connectors ... page 5.2 ...

Retroreflective with polarizing filter	Range	**0.1...8 m**
Retroreflective Autocollimation	Range	
Retroreflective for glass sensing	Range	
Through-beam	Range	



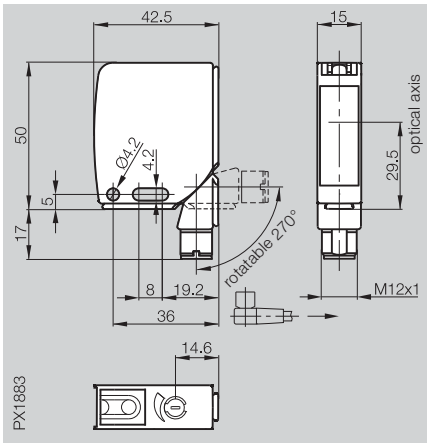
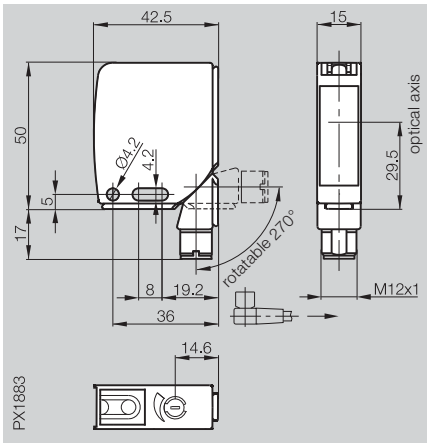
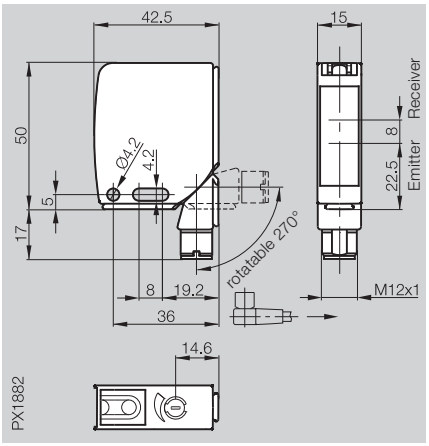
Retroreflective				
PNP	0.1...8 m	Polarizing filter	BOS 21M-PA-PR10-S4	
NPN	0.1...8 m	Polarizing filter	BOS 21M-NA-PR10-S4	
PNP	4 m	Polarizing filter, autocollimation		
NPN	4 m	Polarizing filter, autocollimation		
PNP	2 m	Polarizing filter, autocollimation, glass sensing		
NPN	2 m	Polarizing filter, autocollimation, glass sensing		
Through-beam				
PNP	20 m	Receiver		
NPN	20 m	Receiver		
	20 m	Emitter		

Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	≤ 2 V DC
No-load supply current I_0 max.	≤ 35 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (push-pull)
Voltage drop U_d at I_e	2 V
Settings	Potentiometer 270°
Help functions	
Optical data	
Recommended range	0.1...8 m
Emitter, light type	LED, red light
Wavelength	650 nm
Indicators	
Power-on indicator	
Output function indicator	LED yellow
Stability indicator	LED green
Time data	
Response time	0.5 ms
Switching frequency f	1 kHz
Mechanical data	
Dimensions	42.5×50×15 mm
Connection	M12 connector, 4-pin
Housing material	GD-Zn/Al
Optical surface	PMMA
Weight	76 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–25...+55 °C
Ambient light rejection	10 kLux

Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**144 to **2.1.**147.

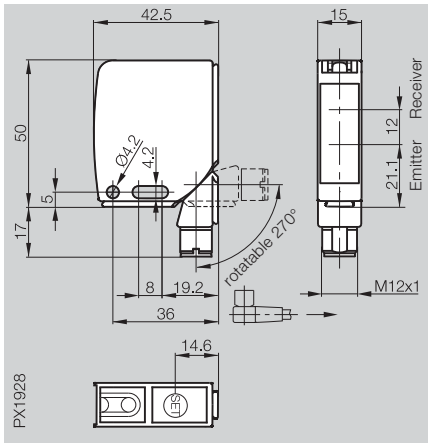
Connector orientation

	0...4 m	0...2 m	0...20 m
			
	BOS 21M-PA-PK10-S4 BOS 21M-NA-PK10-S4	BOS 21M-PA-PT10-S4 BOS 21M-NA-PT10-S4	BOS 21M-PA-IE10-S4 BOS 21M-NA-IE10-S4 BOS 21M-XT-IS11-S4
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2 V DC	≤ 2 V DC	≤ 2 V DC
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
	100 mA	100 mA	100 mA
	Light-/dark-on (push-pull)	Light-/dark-on (push-pull)	Light-/dark-on (push-pull)
	2 V	2 V	2 V
	Potentiometer 270°	Potentiometer 270°	Potentiometer 270°
			Test input (emitter)
	0...4 m	0...2 m	0...20 m
	LED, red light	LED, red light	LED, infrared
	650 nm	650 nm	880 nm
			LED green (emitter)
	LED yellow	LED yellow	LED yellow (receiver)
	LED green		LED green (receiver)
	0.5 ms	0.5 ms	1 ms
	1 kHz	1 kHz	500 Hz
	42.5×50×15 mm	42.5×50×15 mm	42.5×50×15 mm
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
	Glass	Glass*	PMMA
	78 g	78 g	75 g
	IP 67	IP 67	IP 67
	yes	yes	yes
	yes	yes	yes
	–25...+55 °C	–25...+55 °C	–25...+55 °C
	10 kLux	10 kLux	10 kLux

*also available with PMMA

2.1
2.3 Photoelectric sensors accessories page 2.3.2 ...
5 Connectors ... page 5.2 ...

Diffuse with background suppression	Sensing distance	**50...100 mm**
Diffuse	Sensing distance	
Retroreflective with polarizing filter	Range	
Through-beam	Range	

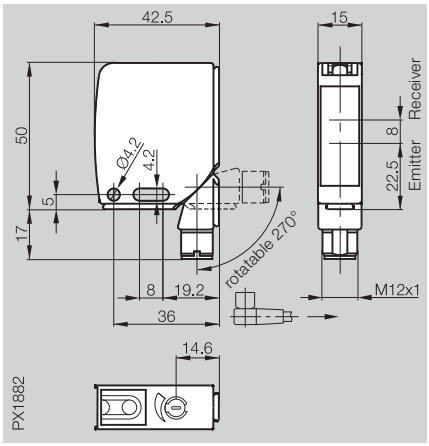
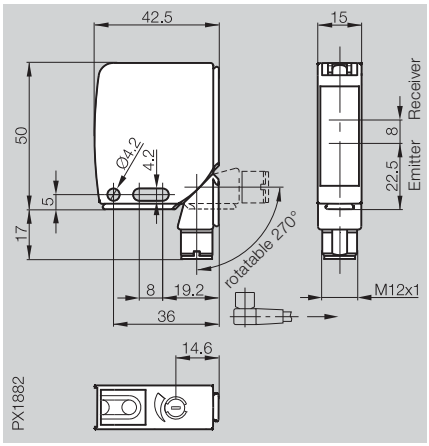
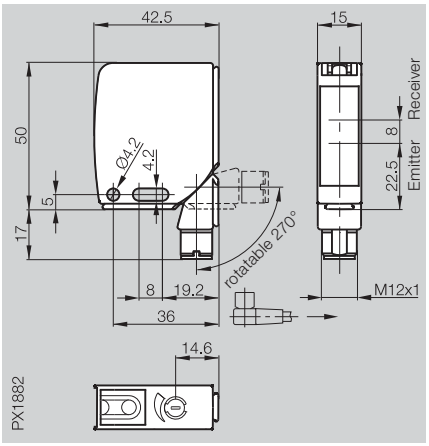


	Diffuse			
	PNP	50...100 mm	HGA	BOS 21M-PUS-LH12-S4
	NPN	50...100 mm	HGA	BOS 21M-NUS-LH12-S4
	PNP	600 mm		
	NPN	600 mm		
	Retroreflective			
	PNP	0.1...20 m	Polarizing filter	
	NPN	0.1...20 m	Polarizing filter	
	Through-beam			
	PNP	60 m	Receiver	
	NPN	60 m	Receiver	
		60 m	Emitter	

Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	≤ 2 V DC
No-load supply current I_0 max.	60 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_e	2 V
Settings	Teach-in
Help functions	
Optical data	
Recommended sensing distance/range	50...100 mm
Emitter, light type	Laser, red light
Wavelength	650 nm
Laser class	1
Indicators	
Power-on indicator	
Output function indicator	LED yellow
Stability indicator	LED green/red
Time data	
Response time	0.5 ms
Switching frequency f	1 kHz
Mechanical data	
Dimensions	42.5×50×15 mm
Connection	M12 connector, 4-pin
Housing material	GD-Zn/Al
Optical surface	PMMA
Weight	77 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–10...+50 °C
Ambient light rejection	5 kLux

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

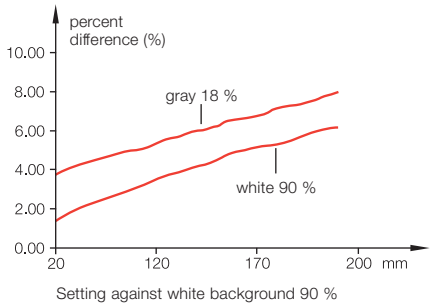
Connector orientation

0...600 mm	**0.1...20 m**	**0...60 m**
		
BOS 21M-PA-LD10-S4 BOS 21M-NA-LD10-S4	BOS 21M-PA-LR10-S4 BOS 21M-NA-LR10-S4	BOS 21M-PA-LE10-S4 BOS 21M-NA-LE10-S4 BOS 21M-XT-LS11-S4
10...30 V DC	10...30 V DC	10...30 V DC
≤ 2 V DC	≤ 2 V DC	≤ 2 V DC
35 mA	35 mA	35 mA
PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
100 mA	100 mA	100 mA
Light-/dark-on (push-pull)	Light-/dark-on (push-pull)	Light-/dark-on (push-pull)
2 V	2 V	2 V
Potentiometer 270°	Potentiometer 270°	Potentiometer 270°
		Test input (emitter)
0...600 mm	0.1...20 m	0...60 mm
Laser, red light	Laser, red light	Laser, red light
650 nm	650 nm	650 nm
1	1	1
LED green	LED green	LED green
LED yellow	LED yellow	LED yellow
0.25 ms	0.25 ms	0.33 ms
2 kHz	2 kHz	1.5 kHz
42.5×50×15 mm	42.5×50×15 mm	42.5×50×15 mm
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
GD-Zn/Al	GD-Zn/Al	GD-Zn/Al
PMMA	PMMA	PMMA
77 g	77 g	76 g
IP 67	IP 67	IP 67
yes	yes	yes
yes	yes	yes
–10...+50 °C	–10...+50 °C	–10...+50 °C
5 kLux	5 kLux	5 kLux

Wiring diagrams, characteristics and accessories see page **2.1.**144 to **2.1.**147.

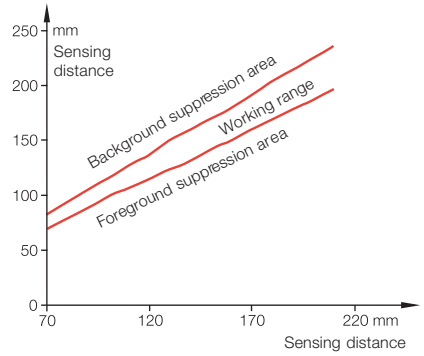
2.1
2.3
Photoelectric sensors accessories page 2.3.2 ...
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Connectors ... page 5.2 ...

Diffuse with background suppression
BOS 21M-_US-RH12-S4



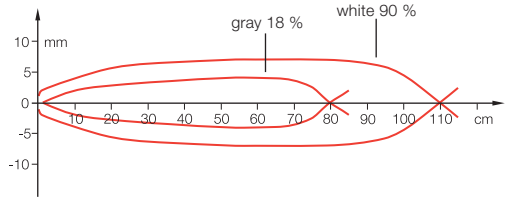
Detection range

Diffuse with fore- and background suppression
BOS 21M-_US-RV13-S4

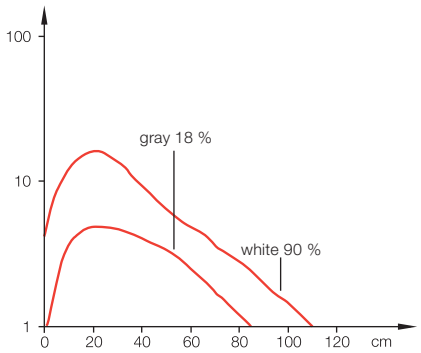


Detection range

Diffuse
BOS 21M-_A-RD10-S4

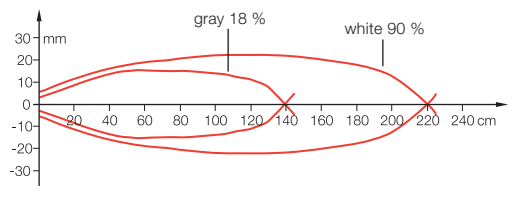


Detection range

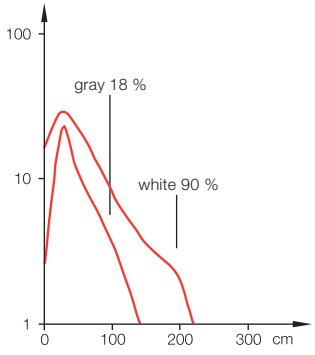


Function reserve

Diffuse long range
BOS 21M-_A-ID10-S4

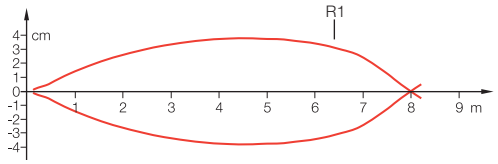


Detection range

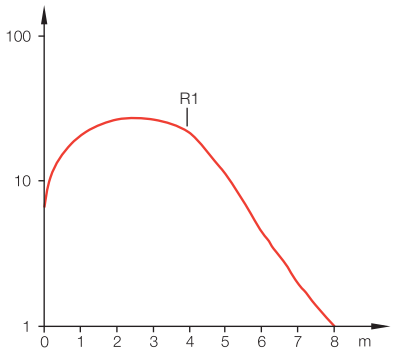


Function reserve

Retroreflective polarized
BOS 21M-_A-PR10-S4

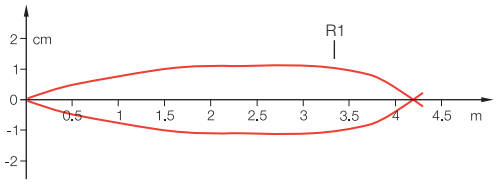


Detection range

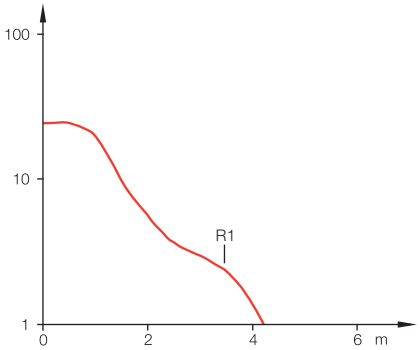


Function reserve

Retroreflective autocollimation
BOS 21M-_A-PK10-S4

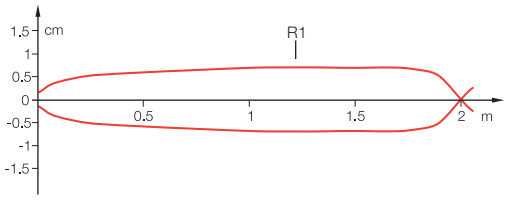


Detection range

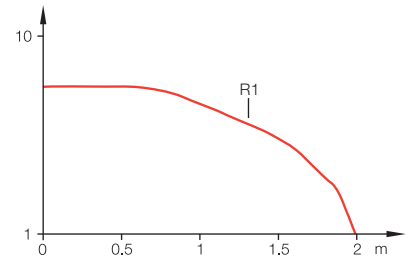


Function reserve

Retroreflective glass sensing
BOS 21M-_A-PT10-S4

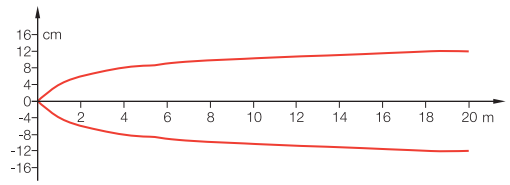


Detection range

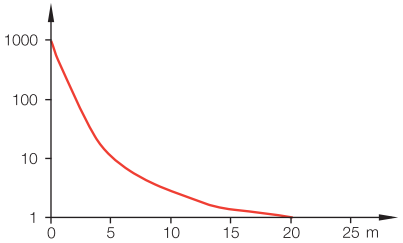


Resolution

Through-beam
BOS 21M-_A-IE10-S4



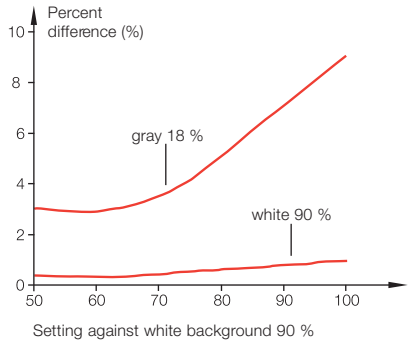
Detection range



Function reserve

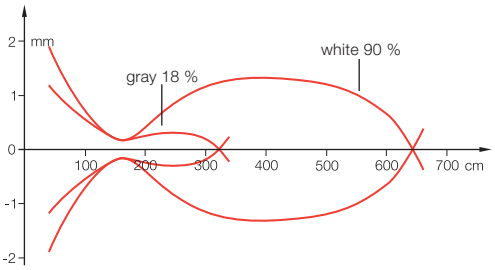
2.1
2.3
Photoelectric sensors accessories page 2.3.2 ...
5
Connectors ... page 5.2 ...

Laser diffuse with background suppression
BOS 21M-_US-LH12-S4

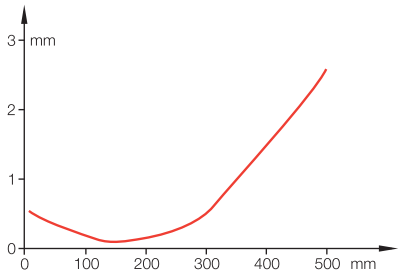


Tolerance with standard setting

Laser diffuse
BOS 21M-_A-LD10-S4

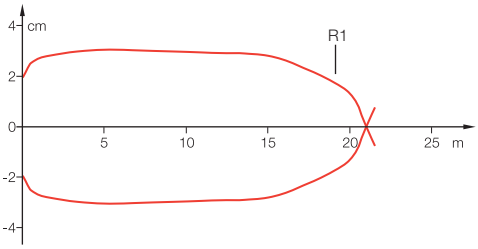


Detection range

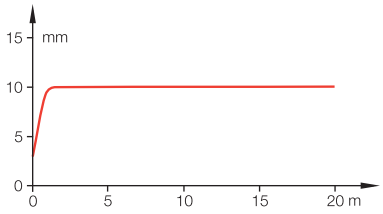


Resolution

Laser retroreflective polarized
BOS 21M-_A-LR10-S4

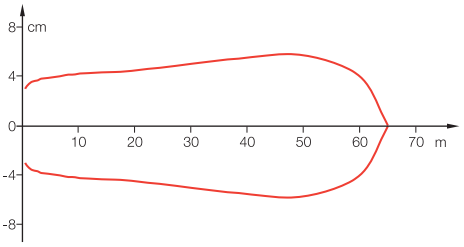


Detection range

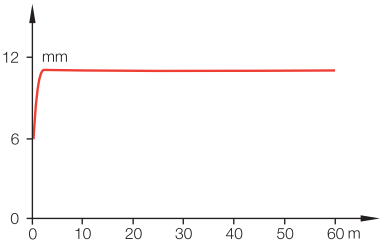


Resolution

Laser through-beam
BOS 21M-_A-LE10-S4



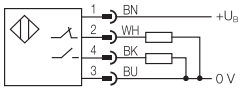
Detection range



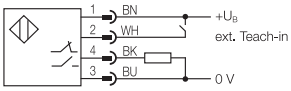
Resolution

Wiring diagrams

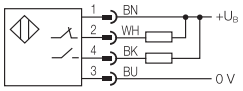
BOS 21M-PA-...



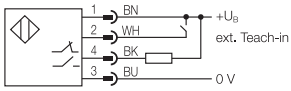
BOS 21M-PUS-...



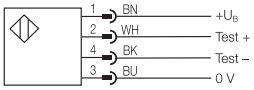
BOS 21M-NA-...



BOS 21M-NUS-...



BOS 21M-XT-...



Recommended accessories

please order separately



Mounting clamp
BOS 21-KH-1



Mounting clamp
BOS 21-KH-2



Mounting bracket
BOS 21-HW-1



Mounting bracket
BOS 21-HW-2



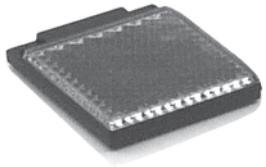
Adapter plate
BOS 21-AD-1



Holding system
BOS 21-HS-1



Reflector
BOS R-1



Reflector
BOS R-9



Connector
BKS-_ 19/BKS-_ 20

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2.3 Photoelectric sensors accessories page 2.3.2 ...
5 Connectors ... page 5.2 ...

The **BOS 26K** series represents the logical development of an already successful design: a uniform housing for all sensor types used. This makes the BOS 26K series compatible with series BOS 25K and complements it with new kinds of sensors with particular specifications and features:

- Laser sensors
- New, high-performance red light and infrared sensors
- Additional optical and mechanical functions.

The BOS 26K series is ideally suited wherever greater demands are made in terms of precision, handling, high sensing distance or range, as well as small-parts detection.

The retroreflective models feature autocollimation, i.e., the emitter and receiver beams coincide geometrically.
Advantage: Exact switching points for any desired side-approaching object in the entire beam path

The diffuse model with background suppression **BOS 26K-..-1LHB,** with its focused light beam, can detect objects precisely in virtually any color between 30 and 150 mm. The focusing feature enables a spot size of just 0.1 mm at a distance of 80 mm.

Features

- Rotatable M12 connector
- Precise setting mechanism with two revolutions (720°)
- Clear character display for sensitivity setting
- Switching state and contamination display visible any direction
- Complementary PNP or NPN output
- High switching frequency for laser version

Applications

- Precise small part detection
- Positioning tasks
- Detail checking
- Conveyor inspection (background suppression)
- Conveying
- Automation
- Handling equipment, Robotics
- Machine tool building
- Specialty machines

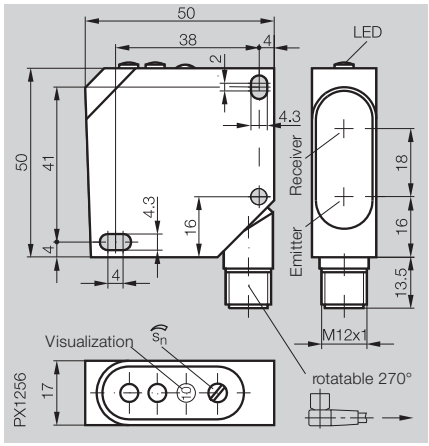


Type	Sensing distance/ Range	Light type			Output		Output function		Switching frequency	U_B	Connection		Help functions			Page
		Red light	Infrared	Laser	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M12 connector, 4-pin		Polarizing filter	Autocollimation	Alarm output	
Diffuse with HGA																
BOS 26K-PA-1LHA-SA1-S4-C	40...60 mm			■	■		■	■	2.5 kHz	■	■					**2.1.**152
BOS 26K-NA-1LHA-SA1-S4-C	40...60 mm			■		■	■	■	2.5 kHz	■	■					**2.1.**152
BOS 26K-PA-1LHB-S4-C	30...150 mm			■	■		■	■	2.5 kHz	■	■					**2.1.**153
BOS 26K-NA-1LHB-S4-C	30...150 mm			■		■	■	■	2.5 kHz	■	■					**2.1.**153
BOS 26K-PA-1HC-S4-C	30...300 mm	■			■		■	■	1 kHz	■	■					**2.1.**150
BOS 26K-NA-1HC-S4-C	30...300 mm	■				■	■	■	1 kHz	■	■					**2.1.**150
BOS 26K-PA-1LHC-S4-C	50...300 mm			■	■		■	■	2.5 kHz	■	■					**2.1.**153
BOS 26K-NA-1LHC-S4-C	50...300 mm			■		■	■	■	2.5 kHz	■	■					**2.1.**153
BOS 26K-PA-1IE-S4-C	150...600 mm		■		■		■	■	800 Hz	■	■					**2.1.**151
BOS 26K-NA-1IE-S4-C	150...600 mm		■			■	■	■	800 Hz	■	■					**2.1.**151
Retroreflective																
BOS 26K-PA-1QE-S4-C	0...5.5 m	■			■		■	■	1 kHz	■	■		■	■		**2.1.**151
BOS 26K-NA-1QE-S4-C	0...5.5 m	■				■	■	■	1 kHz	■	■		■	■		**2.1.**151
BOS 26K-PO-1QE-SA1-C	0...5.5 m	■			■		■		1 kHz	■	■		■	■	■	**2.1.**151
BOS 26K-PA-1LQP-S4-C	0...20 m			■	■		■	■	2.5 kHz	■	■		■	■		**2.1.**153
BOS 26K-NA-1LQP-S4-C	0...20 m			■		■	■	■	2.5 kHz	■	■		■	■		**2.1.**153

2.1
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Photoelectric sensors accessories page 2.3.2 ...
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Connectors ... page 5.2 ...

BOS 26K
Sensing distance 300 mm

Diffuse with background suppression	Sensing distance	**30...300 mm**
Retroreflective with polarizing filter	Range	

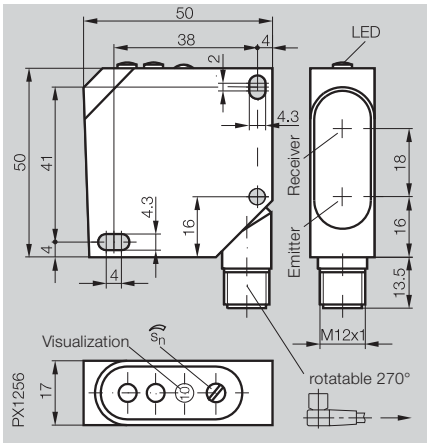
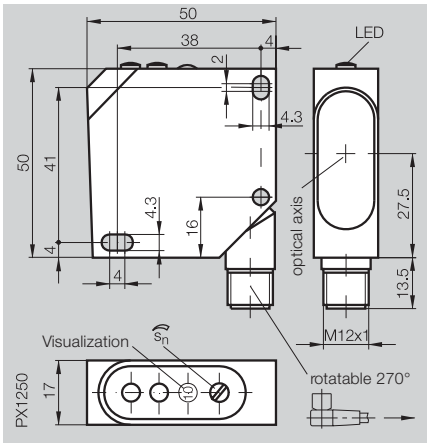
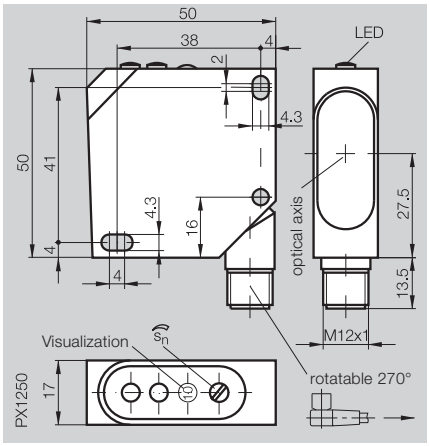


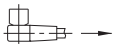
	Diffuse			
	PNP	30...300 mm	HGA	BOS 26K-PA-1HC-S4-C
	NPN	30...300 mm	HGA	BOS 26K-NA-1HC-S4-C
	PNP	150...600 mm	HGA	
	NPN	150...600 mm	HGA	
	Retroreflective			
	PNP	5.5 m	Autocollimation	
	NPN	5.5 m	Autocollimation	

Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	10 %
No-load supply current I_0 max.	≤ 35 mA
Switching output	PNP- or NPN-Transistor
Output current	200 mA
Switching type	Light-/dark-on (complementary)
Voltage drop U_d at I_e	≤ 2.4 V
Settings	2-turn potentiometer with indicator
Help functions	
Optical data	
Emitter, light type	LED, red light, pulsed
Wavelength	660 nm
Light spot diameter	approx. 8 mm at 200 mm
Distance hysteresis (18 %/18 %)	5 %
Gray value shift (90 %/18 %)	8 %
Indicators	
Power-on indicator	LED green
Output function indicator	LED yellow
Stability indicator	LED red
Time data	
Response time	0.5 ms
Switching frequency f	1 kHz
Mechanical data	
Dimensions	50×50×17 mm
Connection	M12 connector, 4-pin
Housing material	Impact-resistant ABS
Optical surface	PMMA
Weight	35 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient temperature range T_a	–20...+60 °C
Ambient light rejection per	EN 60947-5-2

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**154 and **2.1.**155.

150...600 mm	**0...5.5 m**	**0...5.5 m**
		
BOS 26K-PA-1IE-S4-C BOS 26K-NA-1IE-S4-C	BOS 26K-PA-1QE-S4-C BOS 26K-NA-1QE-S4-C	BOS 26K-PO-1QE-SA1-C
10...30 V DC	10...30 V DC	10...30 V DC
10 %	10 %	10 %
≤ 70 mA	≤ 30 mA	≤ 30 mA
PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP-Transistor
200 mA	200 mA	200 mA
Light-/dark-on (complementary)	Light-/dark-on (complementary)	Light-on
≤ 2.4 V	≤ 2.4 V	≤ 2.4 V
2-turn potentiometer with indicators	2-turn potentiometer with indicator	2-turn potentiometer with indicator
		Contamination output
LED, infrared, pulsed	LED, red light, pulsed	LED, red light, pulsed
880 nm	660 nm	660 nm
approx. 20 mm at 400 mm		
5 %		
12 %		
LED green	LED green	LED green
LED yellow	LED yellow	LED yellow
LED red	LED red	LED red
0.625 ms	0.5 ms	0.5 ms
800 Hz	1 kHz	1 kHz
50×50×17 mm	50×50×17 mm	50×50×17 mm
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
PMMA	PMMA	PMMA
35 g	35 g	35 g
IP 67	IP 67	IP 67
yes	yes	yes
yes	yes	yes
–20...+60 °C	–20...+60 °C	–20...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2

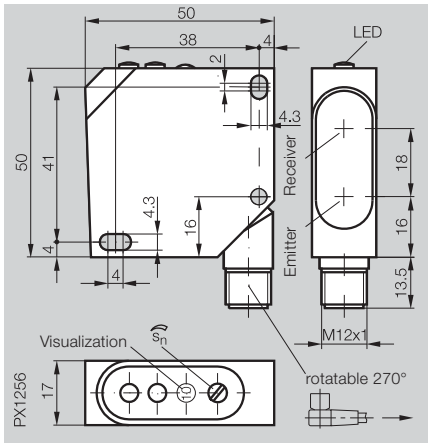
 Connector orientation

2.1

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Photoelectric sensors accessories
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Connectors ...
page 5.2 ...

Diffuse with background suppression	Sensing distance	**40...60 mm**
Retroreflective with polarizing filter	Range	



	Diffuse		
	PNP 40...60 mm	HGA	BOS 26K-PA-1LHA-SA1-S4-C
	NPN 40...60 mm	HGA	BOS 26K-NA-1LHA-SA1-S4-C
	PNP 30...150 mm	HGA	
	NPN 30...150 mm	HGA	
	PNP 50...300 mm	HGA	
	NPN 50...300 mm	HGA	
	Retroreflective		
	PNP 20 m	Autocollimation	
	NPN 20 m	Autocollimation	
	Electrical data		
	Supply voltage U_B		10...30 V DC
	Ripple		10 %
	No-load supply current I_0 max.		≤ 50 mA
	Switching output		PNP- or NPN-Transistor
	Output current		200 mA
	Switching type		Light-/dark-on (complementary)
	Voltage drop U_d at I_e		≤ 2.4 V
	Settings		2-turn potentiometer with indicators
	Optical data		
	Emitter, light type		Laser, red light
	Wavelength		670 nm
	Laser class		2
	Light spot diameter		see table
	Distance hysteresis (18 %/18 %)		**≤ 50 µm**
	Gray value shift (90 %/18 %)		1 %
	Indicators		
	Power-on indicator		LED green
	Output function indicator		LED yellow
	Stability indicator		LED red
	Time data		
	Response time		0.2 ms
	Switching frequency f		2.5 kHz
	Mechanical data		
	Dimensions		50×50×17 mm
	Connection		M12 connector, 4-pin
	Housing material		Impact-resistant ABS
	Optical surface		PMMA
	Weight		40 g
	Ambient data		
	Degree of protection per IEC 60529		IP 67
	Polarity reversal protected		yes
	Short circuit protected		yes
	Ambient temperature range T_a		–20...+45 °C
	Ambient light rejection		EN 60947-5-2

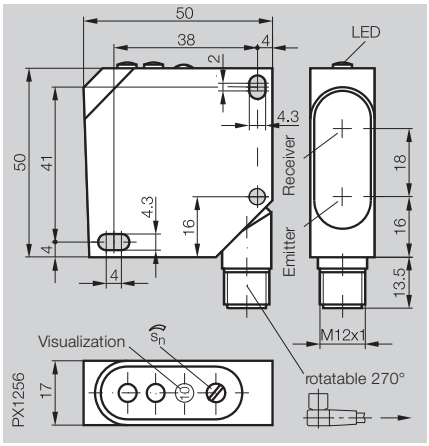
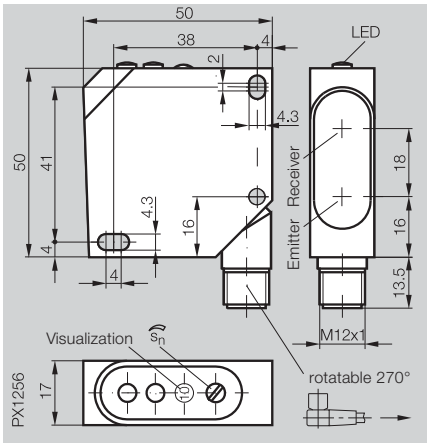
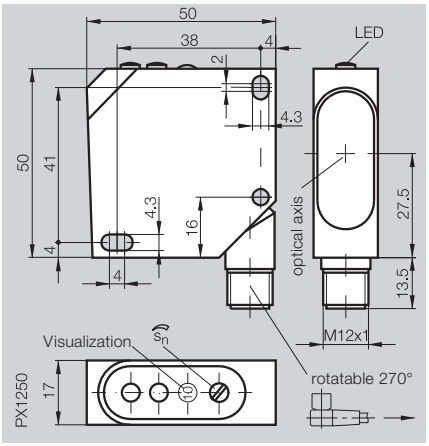
Diffuse sensor values referenced to Kodak gray card 90 % Reflexion. Retroreflective sensor values referenced to R22 reflector.

Light spot diameter [mm]

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

Wiring diagrams, characteristics and accessories see page **2.1.**154 and **2.1.**155.

Connector orientation

	30...150 mm	50...300 mm	0...20 m
			
	BOS 26K-PA-1LHB-S4-C BOS 26K-NA-1LHB-S4-C	BOS 26K-PA-1LHC-S4-C BOS 26K-NA-1LHC-S4-C	BOS 26K-PA-1LQP-S4-C BOS 26K-NA-1LQP-S4-C
	10...30 V DC	10...30 V DC	10...30 V DC
	10 %	10 %	10 %
	≤ 50 mA	≤ 50 mA	≤ 40 mA
	PNP- or NPN-Transistor	PNP- or NPN-Transistor	PNP- or NPN-Transistor
	200 mA	200 mA	200 mA
	Light-/dark-on (complementary)	Light-/dark-on (complementary)	Light-/dark-on (complementary)
	≤ 2.5 V	≤ 2.4 V	≤ 2.4 V
	2-turn potentiometer with indicator	2-turn potentiometer with indicator	2-turn potentiometer with indicator
	Laser, red light	Laser, red light	Laser, red light
	670 nm	670 nm	670 nm
	2	2	1
	see table	3×1 mm at 300 mm	15 mm in 12 m
	5 %	2 %	
	8 %	5 %	
	LED green	LED green	LED green
	LED yellow	LED yellow	LED yellow
	LED red	LED red	LED red
	0.2 ms	0.2 ms	0.2 ms
	2.5 kHz	2.5 kHz	2.5 kHz
	50×50×17 mm	50×50×17 mm	50×50×17 mm
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	Impact-resistant ABS	Impact-resistant ABS	Impact-resistant ABS
	PMMA	PMMA	PMMA
	40 g	40 g	40 g
	IP 67	IP 67	IP 67
	yes	yes	yes
	yes	yes	yes
	–15...+45 °C	–20...+45 °C	–20...+45 °C
	5 kLux	5 kLux	5 kLux

Light spot diameter [mm]

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

Light spot diameter [mm]

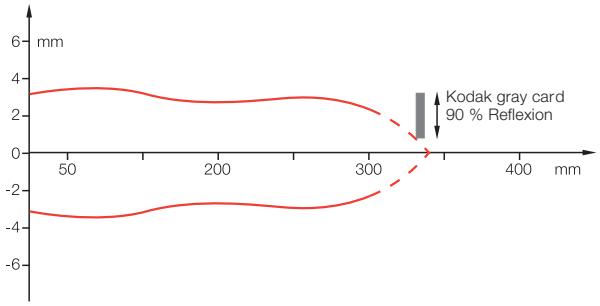
Sensing distance	50	100	200
Light spot Ø	5×1.8	4×1.5	3.8×1.2

Light spot diameter [mm]

Range (m)	4	12	20
Light spot-Ø	5	15	24

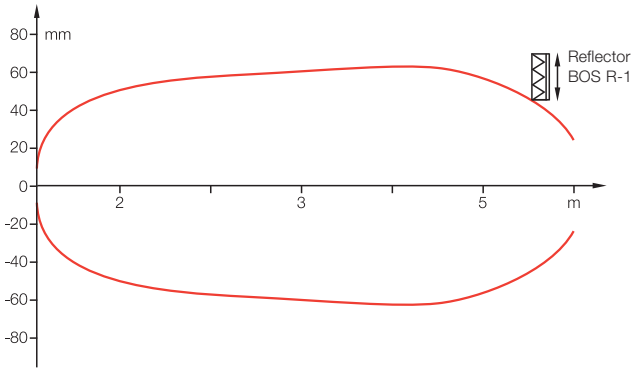
2.1
2.3 Photoelectric sensors accessories page 2.3.2 ...
5 Connectors ... page 5.2 ...

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



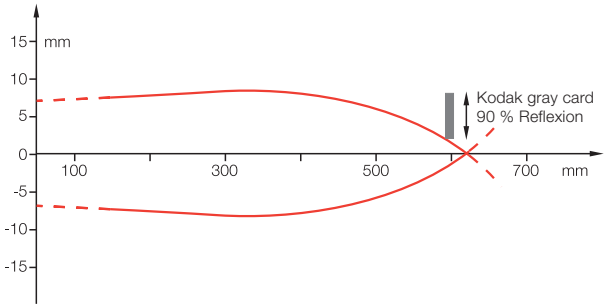
Sensing distance measured with side approach of Kodak gray card.

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



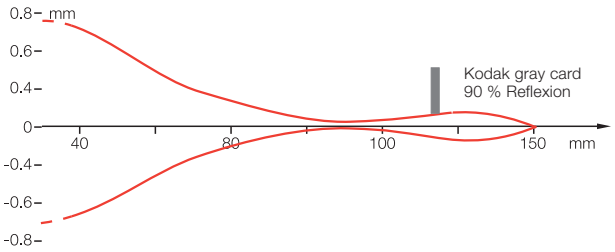
Range measured using side approach with reflector.

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



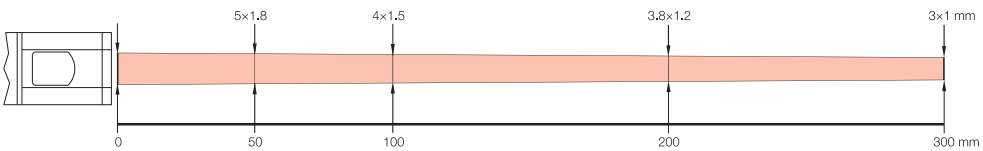
Sensing distance measured with side approach of Kodak gray card.

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

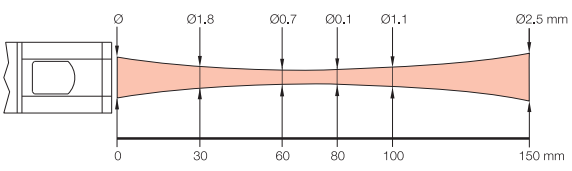


Sensing distance measured with side approach of Kodak gray card.

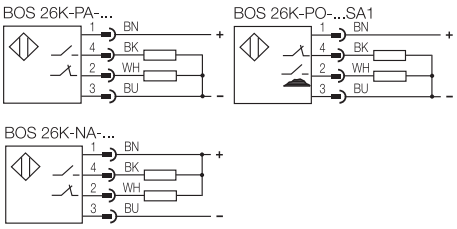
Light beam geometry BOS 26K...1LHC



Light beam geometry BOS 26K...1LHB



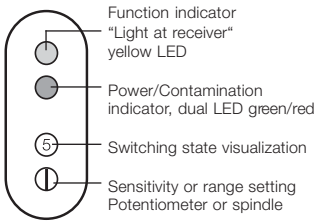
Wiring diagrams



Contamination indicator

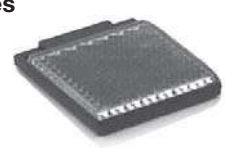
The BOS 26K has 2 display LED's: yellow for indicating function and green/red for indicating status and contamination. Should the received light drop below a certain level, this will be indicated by a red LED. This allows contamination or maladjustment to be detected early.

Indicators and operating elements



Recommended accessories

please order separately



Reflector
BOS R-9



Reflector
BOS R-1



Adapter plate
BOS 21-AD-1



Laser reflector
BOS R-22



Laser reflector
BOS R-12



Laser reflector
BOS R-13



Mounting bracket
BOS 26-HW-1



Connector
BKS-_ 19/BKS-_ 20

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Photoelectric sensors accessories page 2.3.2 ...
5
Connectors ... page 5.2 ...

The **BOS 36K** series is ergonomic, compact (55×65×20 mm), and the connector is rotatable.
The performance data are outstanding for a sensor this size.
An easily accessible potentiometer is used for setting the sensitivity. The diffuse model with background suppression uses teach-in setting and visible red light. This virtually precludes any incorrect setting.

Features

- Push-pull output 200 mA, short circuit protected
- Function and stability indicators
- Degree of protection IP 66
- Compact plastic housing (ABS)
- Red light (background suppression and retroreflective)
- Teach-in (button background suppression)
- M12 connector, rotatable

Applications

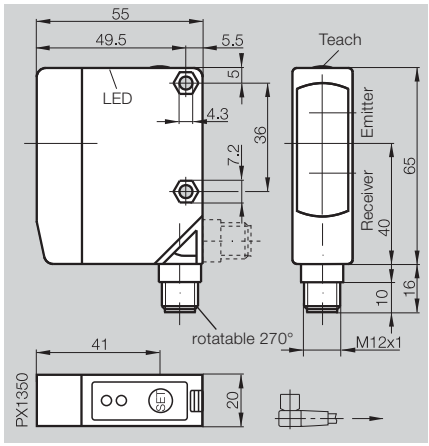
- Wherever a higher performance is needed
- Conveying and warehousing
- Packaging machinery
- Access control
- Lift-type vehicles (not for safety applications)
- Wood industry
- Ceramics industry
- Automobile industry
- Gate and door control



Type	Sensing distance/ range	Light type		Output		Output function		Switching frequency	U_B	Connec-tion		Special features			Page
		Red light	Infrared	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M12 connector, 4-pin	Cable	Polarizing filter	Teach-in	Test input	
Diffuse with HGA															
BOS 36K-PA-1HD-S4-C	100...500 mm	■		■		■	■	500 Hz	■	■			■		**2.1**.158
Diffuse															
BOS 36K-PA-1PH-S4-C	0,01...2 m		■	■		■	■	500 Hz	■	■					**2.1**.159
Retroreflective															
BOS 36K-PA-1QH-S4-C	0,1...8 m	■		■		■	■	500 Hz	■	■		■			**2.1**.159
Through-beam															
BLE 36K-PA-1PT-S4-C	0...50 m		■	■		■	■	500 Hz	■	■					**2.1**.159
BLS 36K-XX-1T-S4-C	0...50 m		■						■	■				■	**2.1**.159

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Photoelectric sensors accessories page 2.3.2 ...
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Connectors ... page 5.2 ...

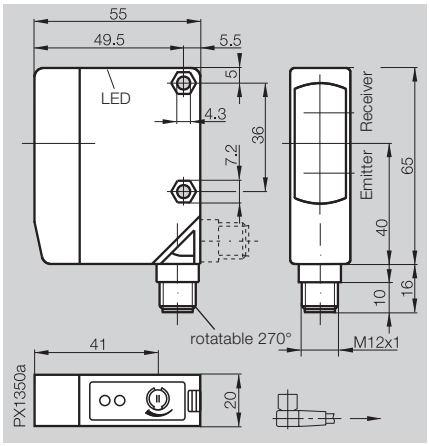
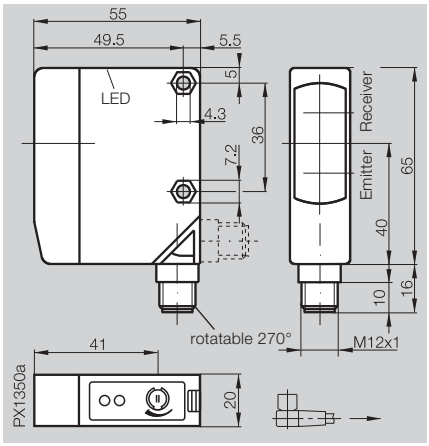
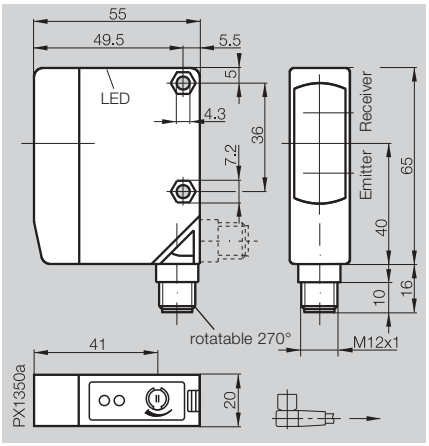
Diffuse with background suppression	Sensing distance	**100...500 mm**
Diffuse	Sensing distance	
Retroreflective with polarizing filter	Range	
Through-beam	Range	

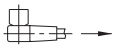


Diffuse				
PNP	100...500	mm	HGA, Teach-in	BOS 36K-PA-1HD-S4-C
PNP	0.01...2	m		
Retroreflective				
PNP	0.1...8	m	Polarizing filter	
Through-beam				
PNP	50	m	Receiver	
	50	m	Emitter	
Electrical data				
Supply voltage U_B				10...30 V DC
Ripple				2 V DC
No-load supply current I_0 max.				≤ 50 mA
Switching output				PNP-Transistor
Output current				200 mA
Switching type				Light/Dark (push-pull)
Voltage drop U_d at I_e				≤ 2 V
Settings				Teach-in
Help function				
Optical data				
Emitter, light type				LED, red light
Wavelength				660 nm
Light spot diameter				approx. 15 mm at 250 mm
Distance hysteresis (18 %/18 %)				20 %
Gray value shift (90 %/18 %)				8 %
Indicators				
Power-on indicator				
Output function indicator				LED yellow
Stability indicator				LED green/red
Time data				
Response time				1 ms
Switching frequency f				500 Hz
Mechanical data				
Dimensions				55×65×20 mm
Connection				M12 connector, 4-pin
Housing material				impact-resistant ABS
Optical surface				PMMA
Weight				50 g
Ambient data				
Degree of protection per IEC 60529				IP 66
Polarity reversal protected				yes
Short circuit protected				yes
Ambient temperature range T_a				–10...+55 °C
Ambient light rejection				5 kLux

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**160 and **2.1.**161.

	0.01...2 m	0.1...8 m	0...50 m
			
	BOS 36K-PA-1PH-S4-C	BOS 36K-PA-1QH-S4-C	BLE 36K-PA-1PT-S4-C BLS 36K-XX-1T-S4-C
	10...30 V DC	10...30 V DC	10...30 V DC
	2 V DC	2 V DC	2 V DC
	≤ 40 mA	≤ 40 mA	≤ 40 mA
	PNP-Transistor	PNP-Transistor	PNP-Transistor
	200 mA	200 mA	200 mA
	Light/Dark (push-pull)	Light/Dark (push-pull)	Light/Dark (push-pull)
	≤ 2 V	≤ 2 V	≤ 2 V
	Potentiometer 270°	Potentiometer 270°	Potentiometer 270°
			Test input (BLS)
	LED, infrared	LED, red light	LED, infrared
	880 nm	660 nm	880 nm
			LED green (BLS)
	LED yellow	LED yellow	LED yellow (BLE)
	LED green	LED green	LED green (BLE)
	1 ms	1 ms	1 ms
	500 Hz	500 Hz	500 Hz
	55×65×20 mm	55×65×20 mm	55×65×20 mm
	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
	impact-resistant ABS	impact-resistant ABS	impact-resistant ABS
	PMMA	PMMA	PMMA
	50 g	50 g	50 g
	IP 66	IP 66	IP 66
	yes	yes	yes
	yes	yes	yes
	–25...+55 °C	–25...+55 °C	–25...+55 °C
	5 kLux	5 kLux	5 kLux

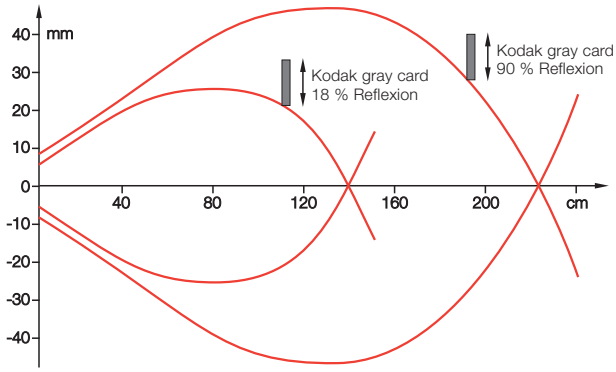
 Connector orientation

2.1

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Photoelectric sensors accessories
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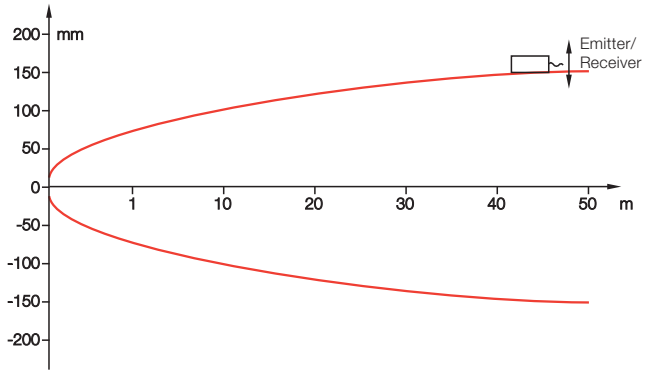
5
Connectors ...
page 5.2 ...

Diffuse BOS 36K-PA-1PH-S 4-C



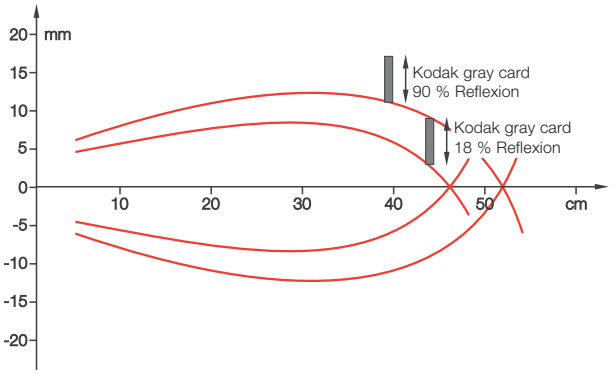
Sensing distance measured with side approach of Kodak gray card.

Through-beam BLE/BLS 36K-...



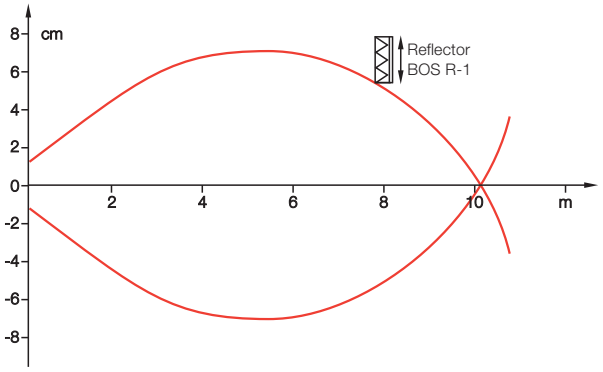
For the through-beam the maximum possible offset between emitter and receiver is measured.

Diffuse BOS 36K-PA-1HD-S 4-C



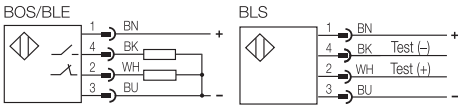
Sensing distance measured with side approach of Kodak gray card.

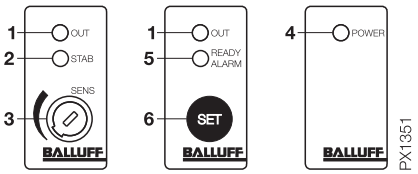
Retroreflective BOS 36K-PA-1QH-S 4-C



Range measured using side approach with reflector.

Wiring diagrams





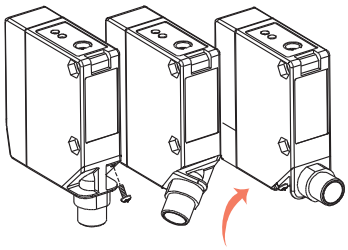
BOS 36K...PH/QH
BLE 36K

BOS 36K...HD

BLS 36K

Indicators and operating elements

1 **Output** (yellow LED)
Yellow LED indicates output function.
2 **Contamination display** (green LED)
The green LED indicates when the received signal is 30 % above the switching threshold needed for switching.
3 **Potentiometer for sensitivity setting**
4 **Power indicator** (green LED)
5 **READY/ALARM** (2-color green/red LED)
6 **SET** (setting button)



Connector 270° rotatable

2.1
2.3
Photoelectric sensors accessories page 2.3.2 ...
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Connectors ... page 5.2 ...

Recommended accessories
please order separately



Reflector
BOS R-1



Mounting bracket
BOS 36-HW-1



Connector
BKS-_ 19/BKS-_ 20

Only power helps in the long run! This is especially true under harsh conditions. This is why our **BOS 65K** has a 3 A output at 264 V AC/DC and a very long sensing range. It also comes with setup help, test input, alarm output and time functions. The same tough plastic housing series, with large wiring chamber, is offered with each of the following optical types:

- Diffuse
- Diffuse with background suppression
- Retroreflective with polarizing filter
- Through-beam

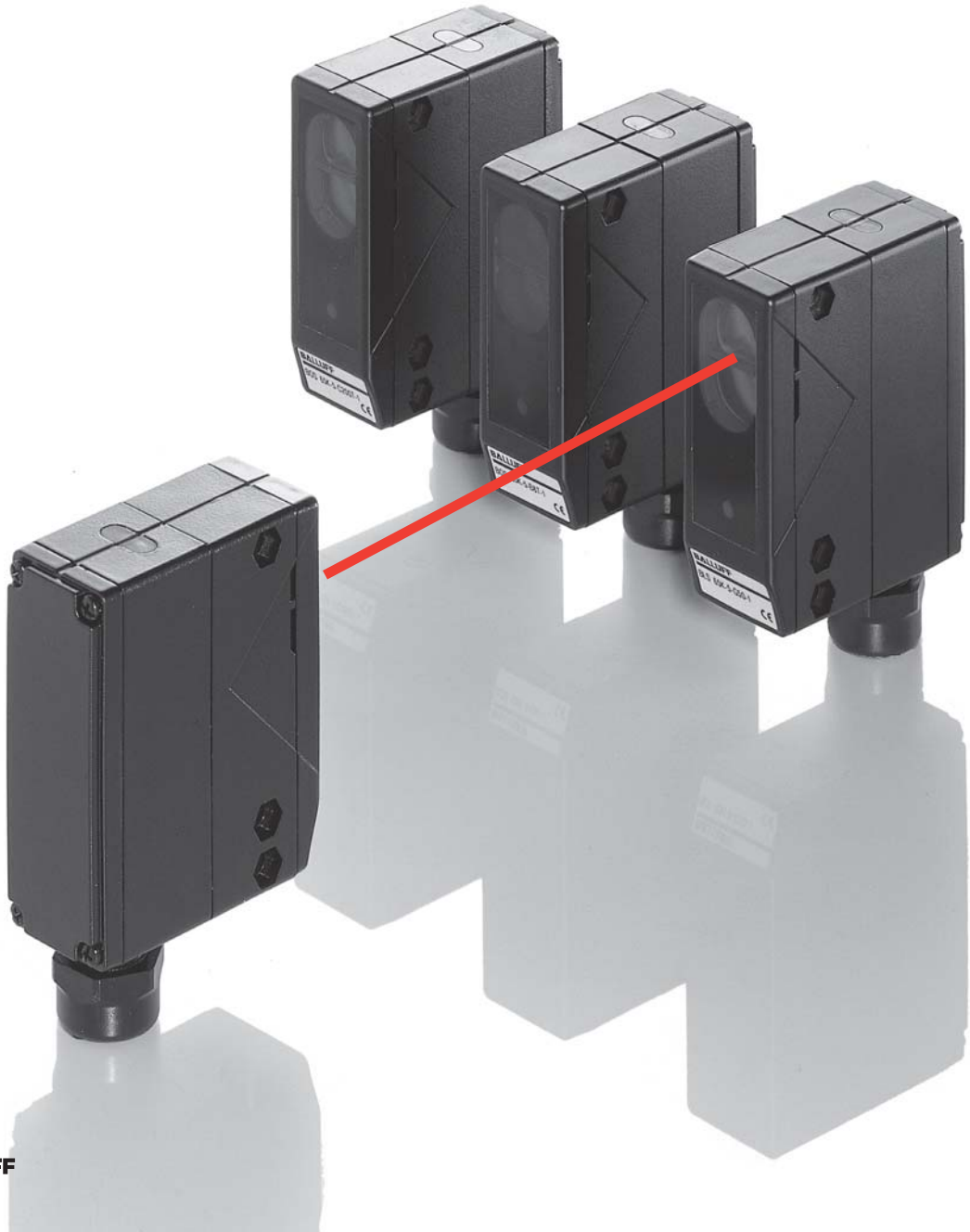
The supply voltage can be 10...30 V DC or 17...264 V AC/DC in the universal version.
All DC versions come standard with PNP and NPN transistor outputs, and have an alarm output and test input. The universal voltage versions have a relay output. The retro- and through-beam versions use both visible red and infrared light.

Features

- Universal voltage model 17...264 V AC/DC with relay output
- DC 10...30 V with transistor output (PNP/NPN)
- Light switching/dark switching
- DC version standard with alarm output and test input
- Version with various time functions (2 times settable)
- Wiring chamber with PG 11 cord seal

Applications

- Conveying
- Machine tool building
- Packaging
- Assembly and handling automation
- Gate controls
- Inventory control



Type	Sensing distance/ range	Light type		Output			Output function		Switching frequency	U_B		Connection		Help functions			Page
		Red light	Infrared	PNP-Transistor	NPN-Transistor	Relay	Light-on	Dark-on		10...30 V DC	17...264 V AC	M12 connector, 4-pin	Wiring chamber	Polarizing filter	Alarm output	Test input	
Diffuse with HGA																	
BOS 65K-5-M110T-1	0.2...1.1 m		■	■	■		■	■	500 Hz	■			■		■	■	**2.1**.165
BOS 65K-5-M110T-2P-S4	0.2...1.1 m		■	■			■	■	500 Hz	■		■			■		**2.1**.165
BOS 65K-1-M110T-1	0.2...1.1 m		■			■	■	■	10 Hz		■		■				**2.1**.165
Diffuse																	
BOS 65K-5-C200T-1	0.05...2 m		■	■	■		■	■	500 Hz	■			■		■	■	**2.1**.165
BOS 65K-5-C200T-2P-S4	0.05...2 m		■	■			■	■	500 Hz	■		■			■		**2.1**.165
BOS 65K-1-C200T-1	0.05...2 m		■			■	■	■	10 Hz		■		■				**2.1**.165
Retroreflective																	
BOS 65K-5-B8T-1	0.3...8 m	■		■	■		■	■	500 Hz	■			■	■	■	■	**2.1**.165
BOS 65K-5-B8T-2P-S4	0.3...8 m	■		■			■	■	500 Hz	■		■		■	■		**2.1**.165
BOS 65K-1-B8T-1	0.3...8 m	■				■	■	■	10 Hz		■		■	■			**2.1**.165
Through-beam																	
BLE 65K-5-F50T-1	0...50 m		■	■	■		■	■	500 Hz	■			■		■		**2.1**.165
BLE 65K-5-F50T-2P-S4	0...50 m		■	■	■		■	■	500 Hz	■		■			■		**2.1**.165
BLE 65K-1-F50T-1	0...50 m		■			■	■	■	10 Hz		■		■				**2.1**.165
BLS 65K-5-G50-1	0...50 m		■							■			■			■	**2.1**.165
BLS 65K-5-G50-2-S4	0...50 m		■							■		■				■	**2.1**.165
BLS 65K-1-G50-1	0...50 m		■								■		■				**2.1**.165

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Connectors ... page 5.2 ...

Diffuse with background suppression	maximum sensing distance
Diffuse	maximum sensing distance
Retroreflective	maximum range
Through-beam	maximum range

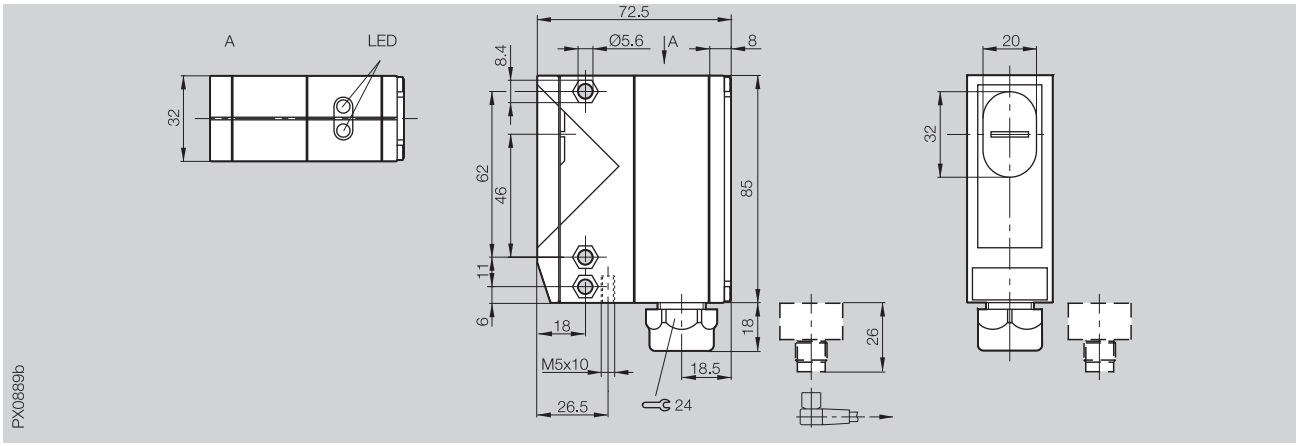
CE

Diffuse			
PNP/NPN	0.2...1.1 m	HGA, time function	
	0.05...2 m	Time function	
Relay	0.2...1.1 m	HGA, time function	
	0.05...2 m	Time function	
Retroreflective			
PNP/NPN	0.3...8 m	Polarizing filter, red light, time function	
Relay	0.3...8 m	Polarizing filter, red light, time function	
Through-beam			
PNP/NPN	50 m	Receiver, time function	
	50 m	Emitter	
Relay	50 m	Receiver, time function	
	50 m	Emitter	
Electrical data			
Supply voltage U_B			
No-load supply current I_0 max.			
Switching output			
Output current			
Switching type			
Voltage drop U_d at I_e			
Alarm output			
Settings			
Help function			
Indicators			
Power-on indicator			
Output function indicator			
Stability indicator			
Time data			
Response time			
Switching frequency f			
Time function			
Mechanical data			
Dimensions			
Connection			
max. conductor cross-section			
Housing material			
Optical surface			
Weight			
Ambient data			
Degree of protection per IEC 60529			
Polarity reversal protected			
Short circuit protected			
Ambient temperature range T_a			
Ambient light rejection			

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

Wiring diagrams, characteristics and accessories see page **2.1.**166 and **2.1.**167.

	0.2...1.1 m	**0.2...1.1 m**	**0.2...1.1 m**
	0.05...2 m	**0.05...2 m**	**0.05...2 m**
	0.3...8 m	**0.3...8 m**	**0.3...8 m**
	0...50 m	**0...50 m**	**0...50 m**

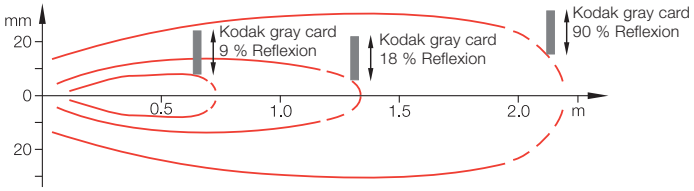


	BOS 65K-5-M110T-1	BOS 65K-5-M110T-2P-S4	
	BOS 65K-5-C200T-1	BOS 65K-5-C200T-2P-S4	
			BOS 65K-1-M110T-1
			BOS 65K-1-C200T-1
	BOS 65K-5-B8T-1	BOS 65K-5-B8T-2P-S4	
			BOS 65K-1-B8T-1
	BLE 65K-5-F50T-1	BLE 65K-5-F50T-2P-S4	
	BLS 65K-5-G50-1	BLS 65K-5-G50-2-S4	
			BLE 65K-1-F50T-1
			BLS 65K-1-G50-1
	10...30 V DC	10...30 V DC	17...264 V AC/DC
	≤ 40 mA	≤ 40 mA	
	PNP and NPN Transistor	PNP-Transistor	Relay 3A, 250 V AC/24 V DC
	200 mA	200 mA	
	Light and dark (reversible)	Light and dark (reversible)	Light and dark (reversible)
	≤ 2 V	≤ 1.5 V	0 V
	PNP-Transistor, 200 mA	PNP-Transistor, 200 mA	
	Potentiometer 270°	Potentiometer 270°	Potentiometer 270°
	Test input (except BLE)	Test input (for BLS)	
	LED green (only for BLS)	LED green (only for BLS)	LED green (only for BLS)
	LED red	LED red	LED red
	LED green	LED green	LED green
	1 ms	1 ms	20 ms
	500 Hz	500 Hz	10 Hz
	selectable 0.02…12 sec.	selectable 0.02…12 sec.	selectable 0.02…12 sec.
	72.5×85×32 mm	72.5×85×32 mm	72.5×85×32 mm
	Wiring chamber	M12 connector, 4-pin	Wiring chamber
	0.75 mm²		0.75 mm²
	PC	PC	PC
	PMMA	PMMA	PMMA
	160 g	180 g	160 g
	IP 67	IP 67	IP 67
	yes	yes	yes
	yes	yes	no
	–20...+55 °C	–20...+55 °C	–20...+55 °C
	3 kLux	3 kLux	3 kLux

Connector orientation

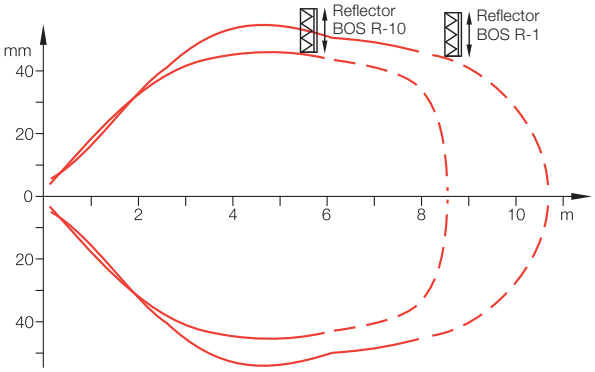
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Diffuse BOS 65K-.-C200T-...



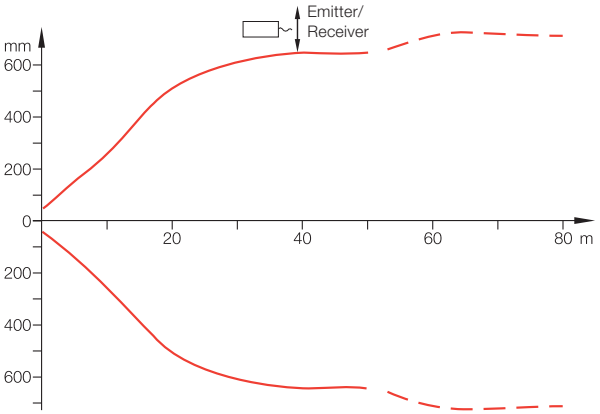
Sensing distance measured with side approach of Kodak gray card.

Retroreflective with polarizing filter BOS 65K-.-B8T-...



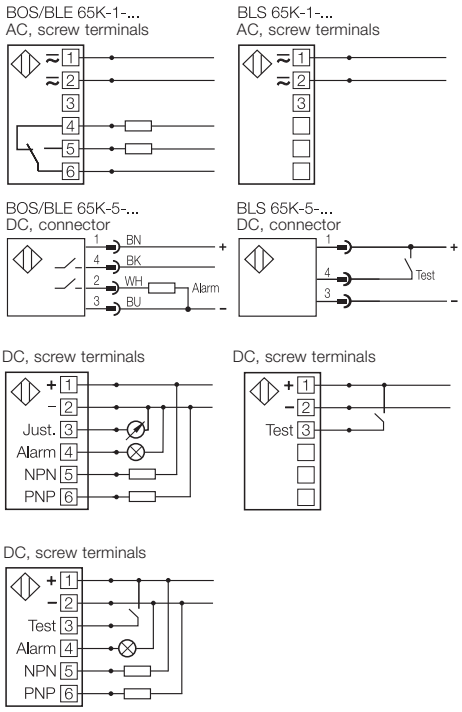
Range measured using side approach with reflector.

Through-beam BLE/BLS 65K-...



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

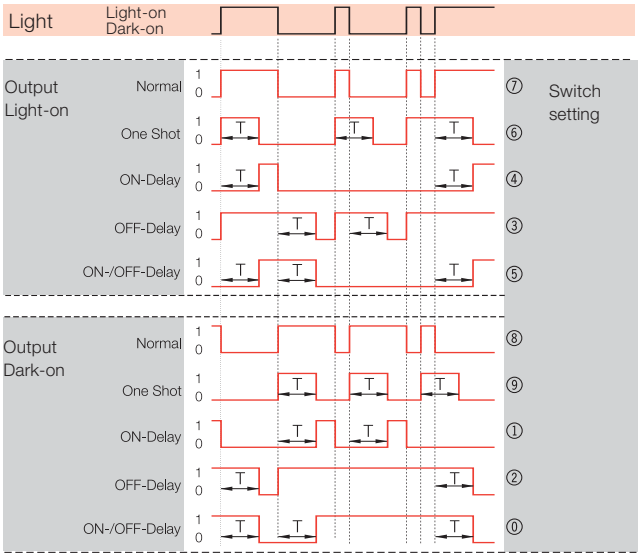
Wiring diagrams





Access to the operating elements by removing the cover (rear).

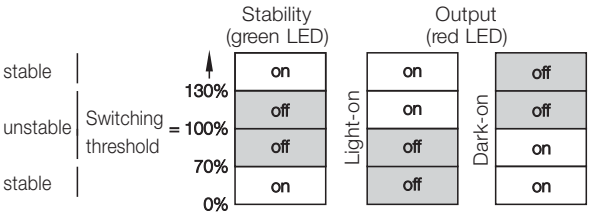
Programmable time functions



Green stability display

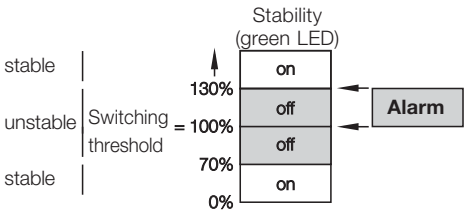
The “threshold energy”, which results in a signal change on output, is defined as 100 %.
The switching state is considered stable when the input energy exceeds or falls below the “threshold energy” by 30 %. The green LED illuminates.

The “safe” range is therefore reached when
- the input signal exceeds at least 130% of the threshold energy
- the input signal falls below at least 70 % of the threshold energy.



Alarm output for receiver, diffuse and retroreflective (DC)

The alarm output (PNP 200 ma) for DC versions generates a warning signal for malfunctions due to contamination or mechanical maladjustment.
The alarm output is activated if the signal received remains in the alarm range for at least 3 s.



Test input for emitter, diffuse and retroreflective (DC)

The test input interrupts the light pulses from the emitter and thereby allows it to be tested for function.
When using the test input the input must be set to 10...30 V.
The output must change every time there is 10...30 V DC on the test input.

Contamination or maladjustment on the optical axis causes the emitter signal to reach the receiver only weakly, if at all.
Therefore the output will not change even though the test input is activated. The test function provides a remote check of the through-beam type and serves as a preventive system check.

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Recommended accessories
please order separately



Reflector
BOS R-1



Mounting bracket
BOS 65-HW-1



Connector
BKS-_ 19/BKS-_ 20

Miniaturization in the Balluff line continues at full pace. The new Opto-mini.s **BOS Q08M** sensors stand out with their ease of handling and fixed sensing distances and ranges.

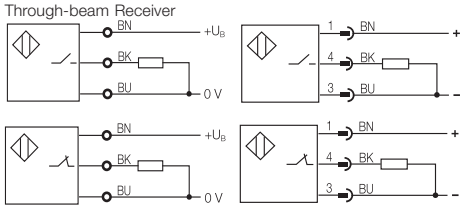
The sensor family includes diffuse types in block style housing with 8 mm side length, retroreflective and through-beam types.

These small photoelectric sensors open up possibilities in high-dynamic applications such as on robot gripper arms. Here is where components with the lightest weight, a small footprint and yet the greatest switching precision are demanded.

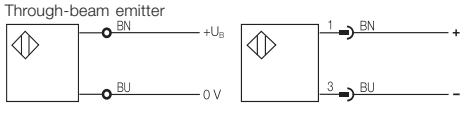


Wiring diagrams

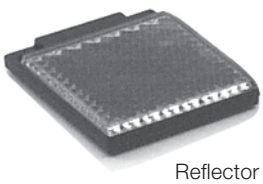
Diffuse, Retroreflective, Through-beam Receiver



Through-beam emitter



Recommended accessories
please order separately



Reflector
BOS R-9

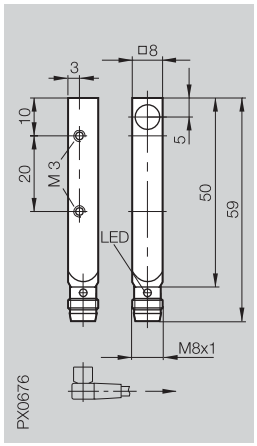


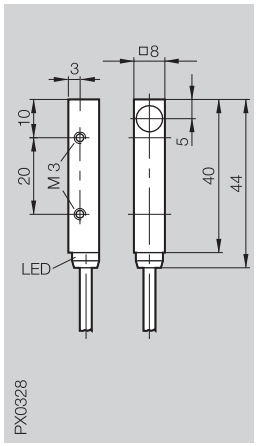
Connector
BKS-_ 48/BKS-_ 49

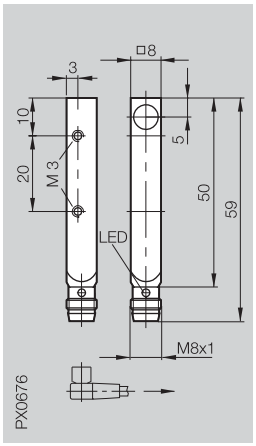
Type	Sensing distance/ range	Light type		Output		Output function		Switching frequency	U_B	Connec-tion		Special features		Page
		Red light	Infrared	PNP-Transistor	NPN-Transistor	Light-on	Dark-on		10...30 V DC	M8 connector, 3-pin	Cable, 3 m	Polarizing filter		
Diffuse														
BOS Q08M-PS-RD10-S49	0...55 mm	■		■		■		500 Hz	■	■				**2.1**.98
BOS Q08M-PO-RD10-S49	0...55 mm	■		■			■	500 Hz	■	■				**2.1**.98
BOS Q08M-PS-RD10-03	0...55 mm	■		■		■		500 Hz	■		■			**2.1**.98
BOS Q08M-PO-RD10-03	0...55 mm	■		■			■	500 Hz	■		■			**2.1**.98
Retroreflective														
BOS Q08M-PS-PR10-S49	25...550 mm	■		■			■	500 Hz	■	■		■		**2.1**.98
BOS Q08M-PO-PR10-S49	25...550 mm	■		■		■		500 Hz	■	■		■		**2.1**.98
BOS Q08M-PS-PR10-03	25...550 mm	■		■			■	500 Hz	■		■	■		**2.1**.99
BOS Q08M-PO-PR10-03	25...550 mm	■		■		■		500 Hz	■		■	■		**2.1**.99
Through-beam														
BOS Q08M-PS-RE10-S49	0...1.1 m	■		■			■	500 Hz	■	■				**2.1**.99
BOS Q08M-PO-RE10-S49	0...1.1 m	■		■		■		500 Hz	■	■				**2.1**.99
BOS Q08M-PS-RE10-03	0...1.1 m	■		■			■	500 Hz	■		■			**2.1**.99
BOS Q08M-PO-RE10-03	0...1.1 m	■		■		■		500 Hz	■		■			**2.1**.99
BOS Q08M-X-RS10-S49	0...1.1 m	■							■	■				**2.1**.99
BOS Q08M-X-RS10-03	0...1.1 m	■							■		■			**2.1**.99

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Diffuse	maximum sensing distance	**0...55 mm**	**0...55 mm**	
Retroreflective	maximum range			**25...550 mm**
Through-beam	maximum range			



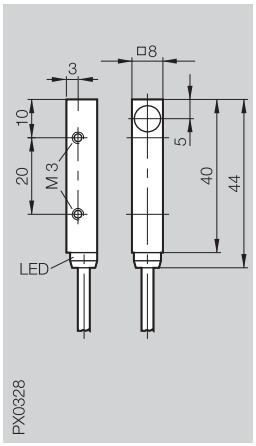
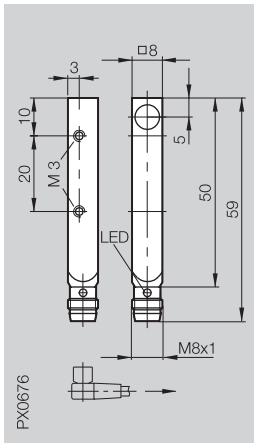
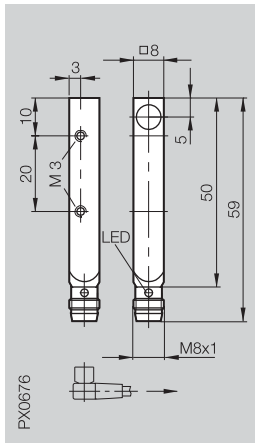
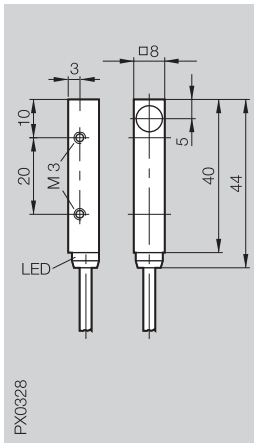
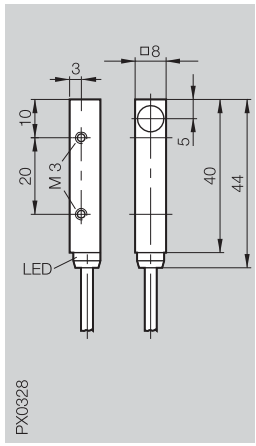




Diffuse					
PNP, NO	55 mm		BOS Q08M-PS-RD10-S49	BOS Q08M-PS-RD10-03	
PNP, NC	55 mm		BOS Q08M-PO-RD10-S49	BOS Q08M-PO-RD10-03	
Retroreflective					
PNP, NO	25...550 mm	Polarizing filter			BOS Q08M-PS-PR10-S49
PNP, NC	25...550 mm	Polarizing filter			BOS Q08M-PO-PR10-S49
Through-beam					
PNP, NO	1.1 m	Receiver			
PNP, NC	1.1 m	Receiver			
	1.1 m	Emitter			
Electrical data					
Supply voltage U_B			10...30 V DC	10...30 V DC	10...30 V DC
Ripple			10 %	10 %	10 %
No-load supply current I_0 max.			≤ 20 mA	≤ 20 mA	≤ 20 mA
Switching output			PNP-Transistor	PNP-Transistor	PNP-Transistor
Output current			100 mA	100 mA	100 mA
Switching type			Light- or dark-on	Light- or dark-on	Light- or dark-on
Voltage drop U_d at I_e			≤ 2 V	≤ 2 V	≤ 2 V
Settings			fixed	fixed	fixed
Optical data					
Recommended sensing distance/range			0...50 mm	0...50 mm	25...500 mm
Emitter, light type			LED, red light	LED, red light	LED, red light
Wavelength			640 nm	640 nm	640 nm
Indicators					
Output function indicator			LED red	LED red	LED red
Time data					
Response time			1 ms	1 ms	1 ms
Switching frequency f			500 Hz	500 Hz	500 Hz
Mechanical data					
Dimensions			8×59×8 mm	8×44×8 mm	8×59×8 mm
Connection			M8 connector, 3-pin	3 m Cable PUR	M8 connector, 3-pin
No. of wires × cross-section				3×0.14 mm²	
Housing material			Nickel plated Gd-Zn	Nickel plated Gd-Zn	Nickel plated Gd-Zn
Optical surface			PMMA	PMMA	PMMA
Weight			13 g	47 g	13 g
Ambient data					
Degree of protection per IEC 60529			IP 67	IP 67	IP 67
Polarity reversal protected			yes	yes	yes
Short circuit protected			yes	yes	yes
Ambient temperature range T_a			–10...+60 °C	–10...+60 °C	–10...+60 °C
Ambient light rejection per			EN 60947-5-2	EN 60947-5-2	EN 60947-5-2

Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R9 reflector.

Connector orientation

	25...550 mm	**0...1.1 m**	**0...1.1 m**	**0...1.1 m**	**0...1.1 m**
					
	BOS Q08M-PS-PR10-03 BOS Q08M-PO-PR10-03				
		BOS Q08M-PS-RE10-S49 BOS Q08M-PO-RE10-S49	BOS Q08M-X-RS10-S49	BOS Q08M-PS-RE10-03 BOS Q08M-PO-RE10-03	BOS Q08M-X-RS10-03
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	10 %	10 %	10 %	10 %	10 %
	≤ 20 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA
	PNP-Transistor	PNP-Transistor		PNP-Transistor	
	100 mA	100 mA		100 mA	
	Light- or dark-on	Light- or dark-on		Light- or dark-on	
	≤ 2 V	≤ 2 V		≤ 2 V	
	fixed	fixed	fixed	fixed	fixed
	25...500 mm	0...1 m	0...1 m	0...1 m	0...1 m
	LED, red light		LED, red light		LED, red light
	640 nm		640 nm		640 nm
	LED red	LED red		LED red	
	1 ms	1 ms		1 ms	
	500 Hz	500 Hz		500 Hz	
	8×44×8 mm	8×59×8 mm	8×59×8 mm	8×44×8 mm	8×44×8 mm
	3 m Cable PUR	M8 connector, 3-pin	M8 connector, 3-pin	3 m Cable PUR	3 m Cable PUR
	3×0.14 mm²			3×0.14 mm²	2×0.14 mm²
	Nickel plated Gd-Zn	Nickel plated Gd-Zn	Nickel plated Gd-Zn	Nickel plated Gd-Zn	Nickel plated Gd-Zn
	PMMA	PMMA	PMMA	PMMA	PMMA
	47 g	13 g	13 g	47 g	47 g
	IP 67	IP 67	IP 67	IP 67	IP 67
	yes	yes	yes	yes	yes
	yes	yes	yes	yes	yes
	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2

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