

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
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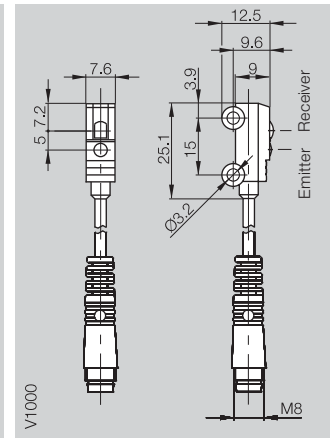
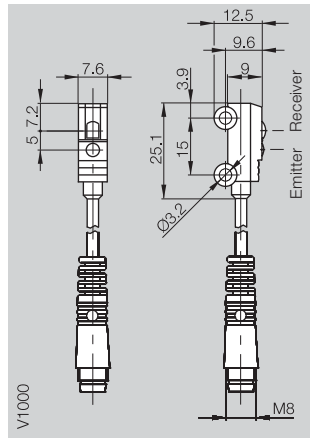
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Connectors ...
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Diffuse with background suppression maximum sensing distance

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_0	≤ 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
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Time data

Response time	0.6 ms	0.6 ms
Switching frequency f	800 Hz	800 Hz

Mechanical data

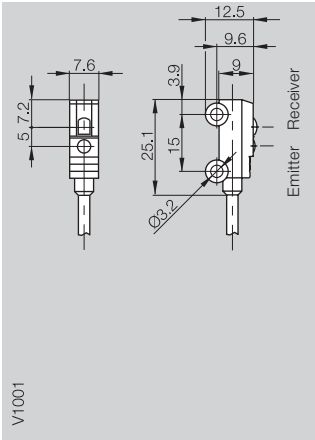
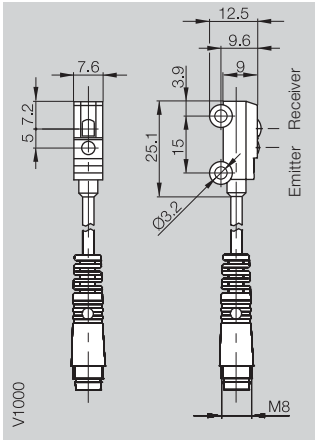
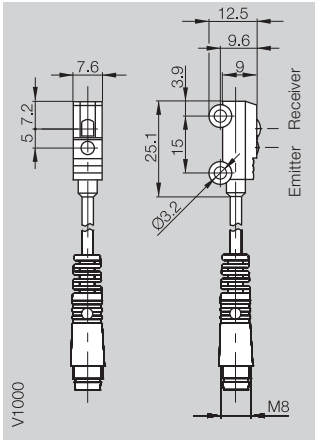
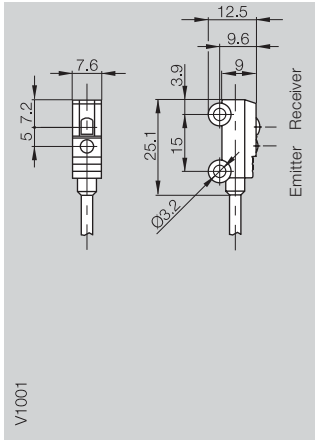
Dimensions	12.5x20.6x7.6 mm	12.5x20.6x7.6 mm
Connection	M8 connector, 3-pin	M8 connector, 4-pin
No. of wires x cross-section		
Housing material	ABS	ABS
Lens material	PMMA	PMMA
Weight	20 g	20 g

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 ≤ 5 V pp ≤ 20 mA	10...30 V DC ≤ 5 V pp ≤ 20 mA	10...30 V DC ≤ 5 V pp ≤ 20 mA	10...30 V DC ≤ 5 V pp ≤ 20 mA
PNP- or NPN-Transistor 50 mA	PNP-Transistor 50 mA	PNP-Transistor 50 mA	PNP- or NPN-Transistor 50 mA
Light- or dark-on ≤ 2 V fixed	Light-on fixed	Light-on fixed	Light- or dark-on fixed
1...15 mm Pin-Point LED, red light 640 nm approx. 1.2 mm at 8 mm approx. 2.5 mm at 15 mm	1...30 mm Pin-Point LED, red light 640 nm approx. 1.0 mm at 15 mm approx. 4.5 mm at 30 mm	1...30 mm Pin-Point LED, red light 640 nm approx. 1.0 mm at 15 mm approx. 4.5 mm at 30 mm	1...30 mm Pin-Point LED, red light 640 nm 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 800 Hz	0.6 ms 800 Hz	0.6 ms 800 Hz	0.6 ms 800 Hz
12.5x20.6x7.6 mm 2 m cable, PVC 3x0.09 mm ²	12.5x20.6x7.6 mm M8 connector, 3-pin	12.5x20.6x7.6 mm M8 connector, 4-pin	12.5x20.6x7.6 mm 2 m cable, PVC 3x0.09 mm ²
ABS PMMA 18 g	ABS PMMA 20 g	ABS PMMA 20 g	ABS PMMA 18 g
IP 67 yes yes	IP 67 yes yes	IP 67 yes yes	IP 67 yes yes
EN 60947-5-2 -20...+50 °C	EN 60947-5-2 -20...+50 °C	EN 60947-5-2 -20...+50 °C	EN 60947-5-2 -20...+50 °C

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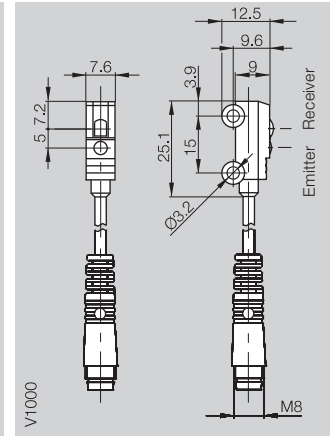
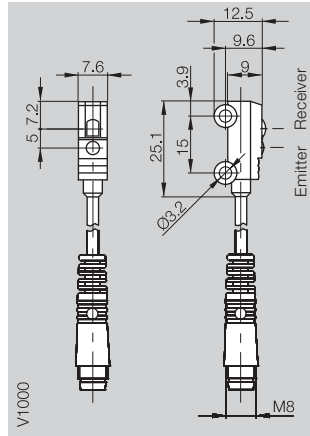
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Diffuse	maximum sensing distance
Retroreflective with polarizing filter	maximum range

1...55 mm

1...55 mm



Diffuse



PNP NO	1...55 mm
NPN NO	1...55 mm

BOS 2K-PS-RD10-00,2-S49

BOS 2K-PS-RD10-00,2-S75

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_0	≤ 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
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Time data

Response time	0.6 ms	0.6 ms
Switching frequency f	800 Hz	800 Hz

Mechanical data

Dimensions	12.5x20.6x7.6 mm	12.5x20.6x7.6 mm
Connection	M8 connector, 3-pin	M8 connector, 4-pin
No. of wires x 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.

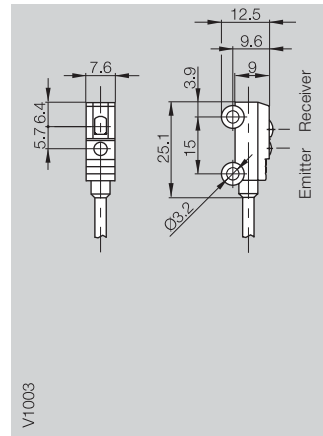
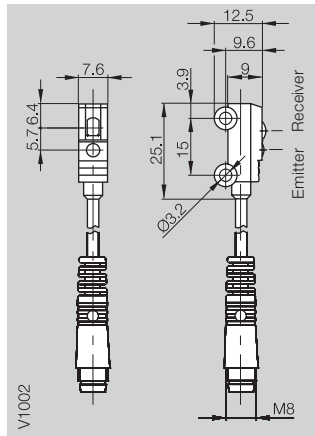
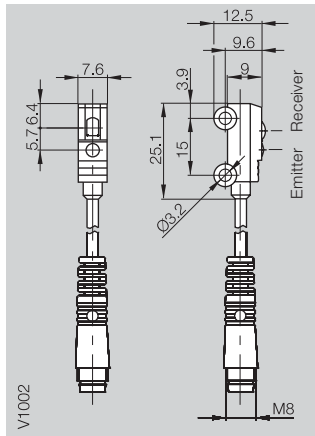
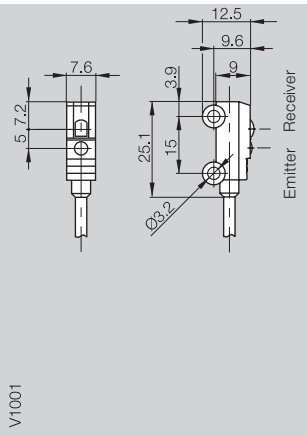
Wiring diagrams, characteristics and accessories see page **2.1.108** and **2.1.109**.

1...55 mm

45...800 mm

45...800 mm

45...800 mm



V1001

V1002

V1002

V1003

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
≤ 5 V
≤ 20 mA
PNP- or NPN-Transistor
50 mA
Light-on
≤ 2 V
fixed

10...30 V DC
≤ 5 V
≤ 20 mA
PNP-Transistor
50 mA
Light- or dark-on
≤ 2 V
fixed

10...30 V DC
≤ 5 V
≤ 20 mA
PNP-Transistor
50 mA
Dark-on
≤ 2 V
fixed

10...30 V DC
≤ 5 V
≤ 20 mA
PNP- or NPN-Transistor
50 mA
Light- or dark-on
≤ 2 V
fixed

1...55 mm
Pin-Point LED, red light
640 nm
approx. 3.5 mm at 50 mm

25...500 mm
Pin-Point LED, red light
640 nm
approx. 10 mm at 100 mm

25...500 mm
Pin-Point LED, red light
640 nm
approx. 10 mm at 100 mm

25...500 mm
Pin-Point LED, red light
640 nm
approx. 10 mm at 100 mm

LED red

LED red

LED red

LED red

0.6 ms
800 Hz

0.6 ms
800 Hz

0.6 ms
800 Hz

0.6 ms
800 Hz

12,5×20,6×7,6 mm
2 m cable, PVC
3×0.09 mm²

12,5×20,6×7,6 mm
M8 connector, 3-pin

12,5×20,6×7,6 mm
M8 connector, 4-pin

12,5×20,6×7,6 mm
2 m cable, PVC
3×0.09 mm²

ABS
PMMA
18 g

ABS
PMMA
20 g

ABS
PMMA
20 g

ABS
PMMA
18 g

IP 67
yes
yes

IP 67
yes
yes

IP 67
yes
yes

IP 67
yes
yes

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

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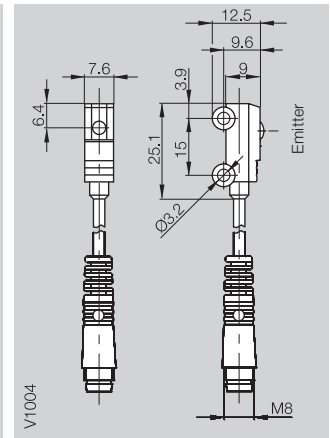
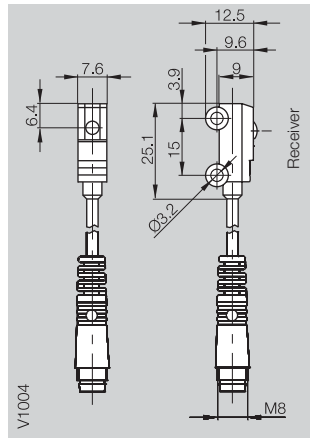
Connectors ...
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Through-beam

maximum range

0...1,2 m

0...1,2 m



Through-beam

PNP NO	1.2 m	Receiver
PNP NC	1.2 m	Receiver
NPN NO	1.2 m	Receiver
	1.2 m	Emitter

BOS 2K-PS-RE10-00,2-S49

BOS 2K-X-RS10-00,2-S49

Electrical data

Supply voltage U_B	10...30 V DC
Ripple	≤ 5 V
No-load supply current I_0 max.	≤ 10 mA
Switching output	PNP-Transistor
Output current	50 mA
Switching type	Dark-on
Voltage drop U_d at I_0	≤ 2 V
Settings	fixed

Supply voltage U_B	10...30 V DC
Ripple	≤ 5 V
No-load supply current I_0 max.	≤ 20 mA

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

Indicators

Output function indicator	LED red
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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

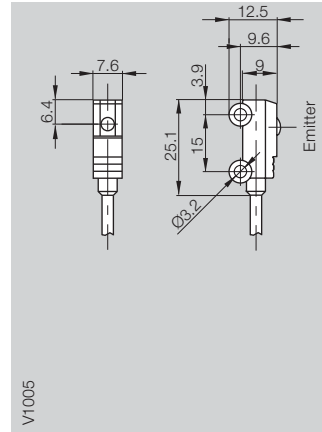
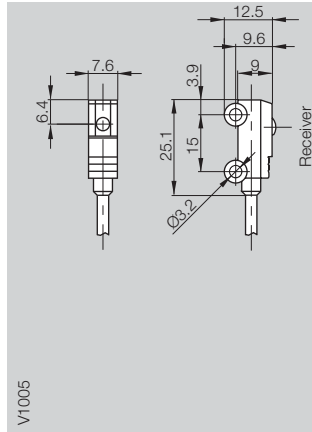
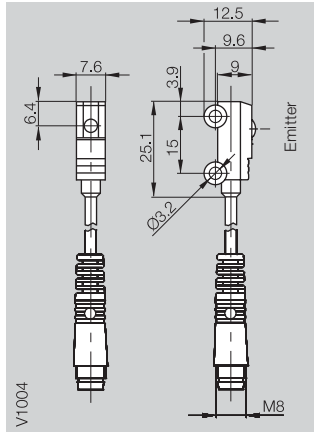
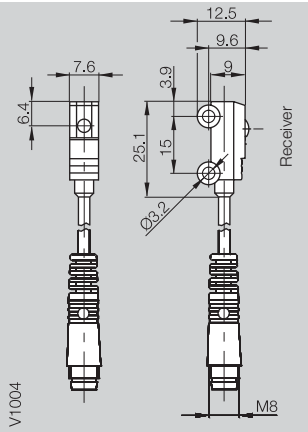
Wiring diagrams, characteristics and accessories see page 2.1.108 and 2.1.109.

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
≤ 5 V
≤ 10 mA

10...30 V DC
≤ 5 V
≤ 20 mA

10...30 V DC
≤ 5 V
≤ 10 mA

10...30 V DC
≤ 5 V
≤ 20 mA

PNP-Transistor
50 mA
Dark-on
≤ 2 V
fixed

PNP- or NPN-Transistor
50 mA
Light- or dark-on
≤ 2 V
fixed

0...1 m
Red light
640 nm

0...1 m
Pin-Point LED, red light
640 nm

0...1 m
Red light
640 nm

0...1 m
Pin-Point LED, red light
640 nm

LED red

LED red

2.5 ms
200 Hz

2.5 ms
200 Hz

12.5×20.6×7.6 mm
M8 connector, 4-pin

12.5×20.6×7.6 mm
M8 connector, 4-pin

12.5×20.6×7.6 mm
2 m cable, PVC
3×0.09 mm²

12.5×20.6×7.6 mm
2 m cable, PVC
3×0.09 mm²

ABS
PMMA
20 g

ABS
PMMA
20 g

ABS
PMMA
18 g

ABS
PMMA
18 g

IP 67
yes
yes

IP 67
yes
yes

IP 67
yes
yes

IP 67
yes
yes

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

EN 60947-5-2
-20...+50 °C

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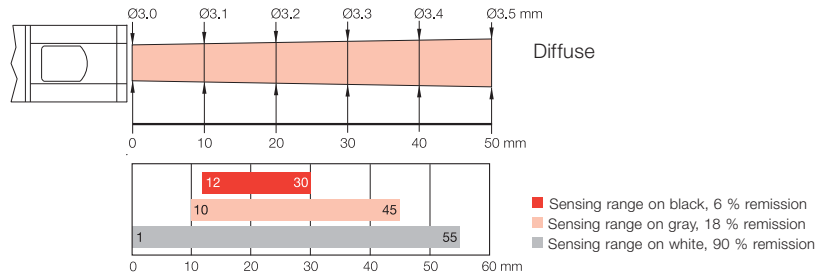
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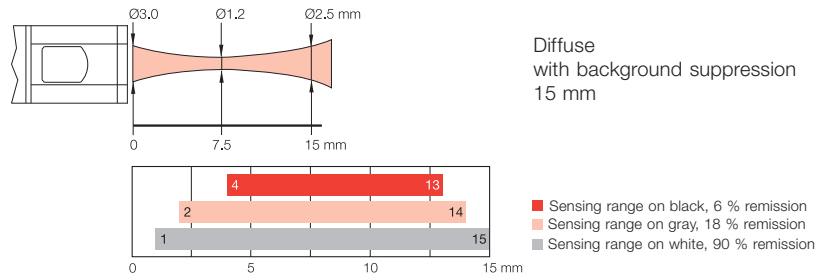
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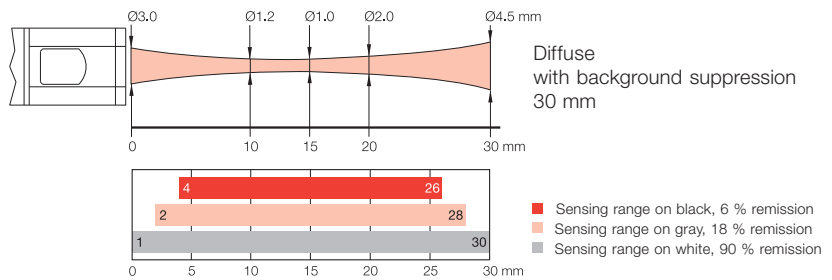
**Light spot diameter
Diffuse, 50 mm**



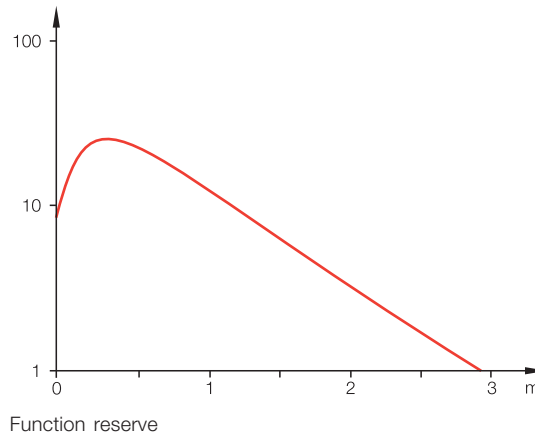
**Light spot diameter
Diffuse with
background suppression,
15 mm**



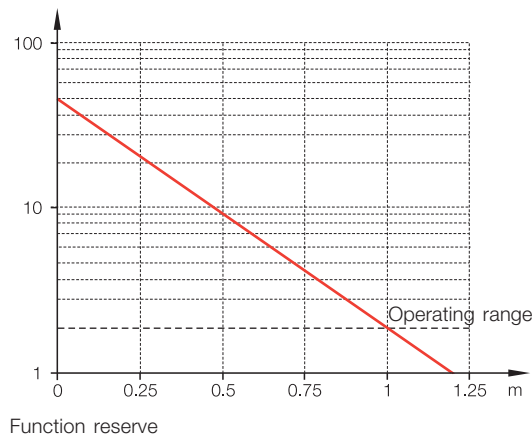
**Light spot diameter
Diffuse with
background suppression,
30 mm**



Retroreflective

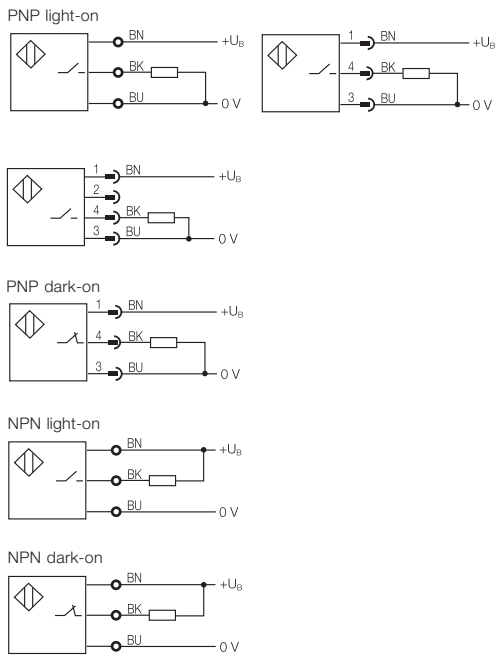


Through-beam

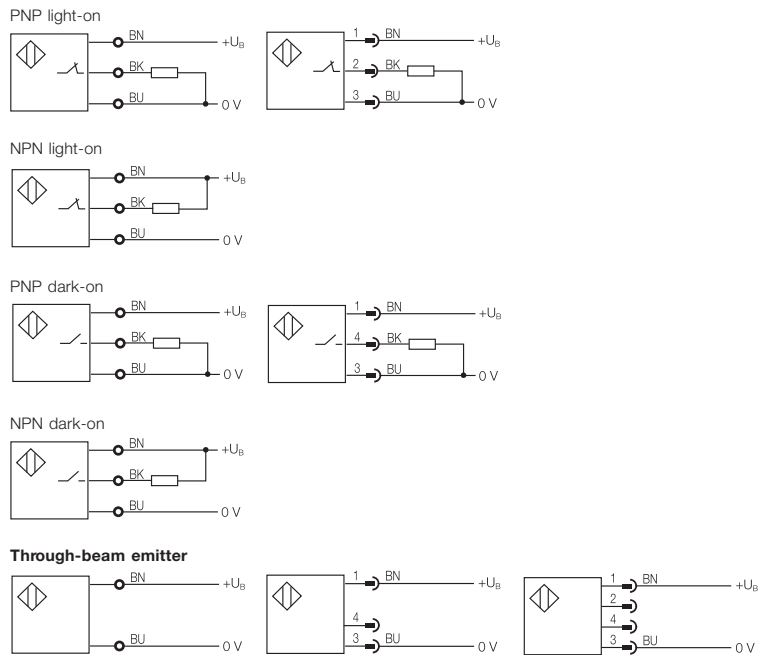


Wiring diagrams

Diffuse



Retroreflective, through-beam receiver



Recommended accessories

please order separately

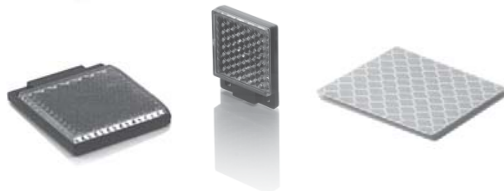
Mounting brackets

- 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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Connectors ...
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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		
 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

2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

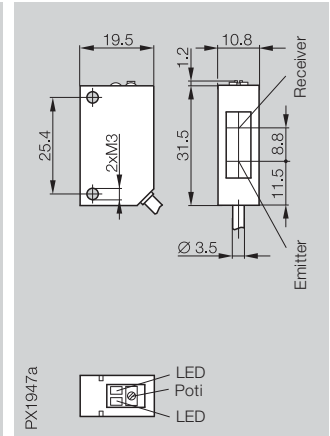
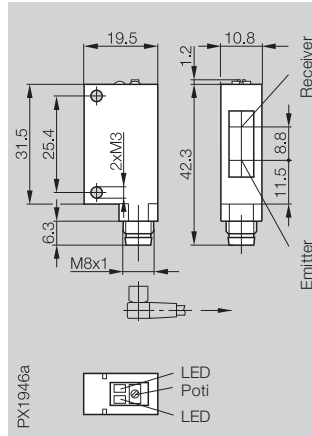
5

Connectors ...
Page 5.2 ...

Diffuse with background suppression	Sensing distance
Diffuse	Sensing distance
Diffuse small beam	Sensing distance

50...200 mm

50...200 mm



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_0	≤ 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	19.5x31.5x10.8 mm	19.5x31.5x10.8 mm
Connection	M8 connector, 4-pin	2 m cable, PVC
No. of wires x cross-section		3x0.2 mm ²
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.

mini.s with potentiometer

Photoelectric Sensors

BOS 5K
Sensing distance 200 mm,
900 mm

0...900 mm	0...900 mm	50...200 mm	50...200 mm
PX1946a	PX1947a	PX1946a	PX1947a
BOS 5K-PS-ID10-S75	BOS 5K-PS-ID10-02		
BOS 5K-NS-ID10-S75	BOS 5K-NS-ID10-02		
BOS 5K-PO-ID10-S75	BOS 5K-PO-ID10-02		
BOS 5K-NO-ID10-S75	BOS 5K-NO-ID10-02		
		BOS 5K-PS-RD11-S75	BOS 5K-PS-RD11-02
		BOS 5K-NS-RD11-S75	BOS 5K-NS-RD11-02
		BOS 5K-PO-RD11-S75	BOS 5K-PO-RD11-02
		BOS 5K-NO-RD11-S75	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 mm ²		3×0.2 mm ²
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)



2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

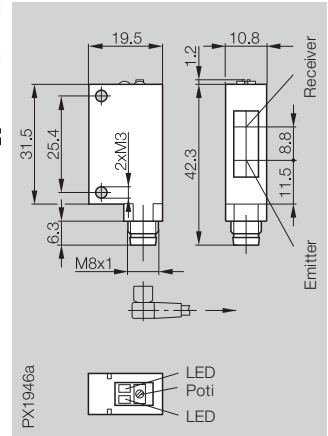
5

Connectors ...
Page 5.2 ...

Retroreflective
Through-beam

Range
Range

0,1...4 m



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_a	≤ 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	19.5x31.5x10.8 mm
Connection	M8 connector, 4-pin
No. of wires x 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.

mini.s with potentiometer

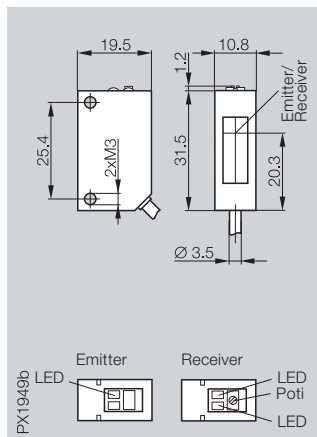
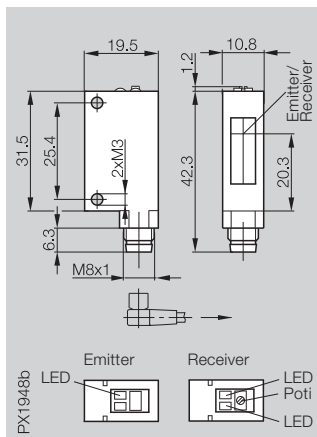
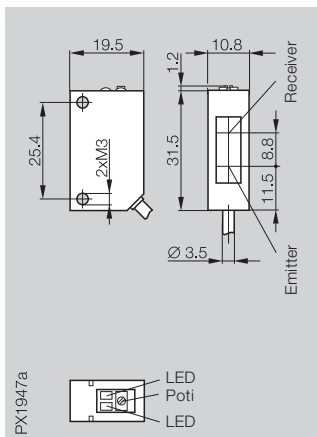
Photoelectric Sensors

BOS 5K
Range 4 m, 10 m

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°

LED, red light

660 nm

LED yellow

LED green

1 ms

500 Hz

19.5×31.5×10.8 mm

2 m cable, PVC

3×0.2 mm²

PC/PBT

PMMA

50 g

IP 67

yes

yes

-25...+55 °C

5 kLux (artificial light)/10 kLux (sunlight)

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, infrared

880 nm

LED green (emitter)

LED yellow (receiver)

LED green (receiver)

≤ 1 ms

500 Hz

19.5×31.5×10.8 mm

M8 connector, 4-pin

PC/PBT

PC

10 g each

IP 67

yes

yes

-25...+55 °C

5 kLux (artificial light)/10 kLux (sunlight)

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, infrared

880 nm

LED green (emitter)

LED yellow (receiver)

LED green (receiver)

≤ 1 ms

500 Hz

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)



Connector orientation

2.1

2.3

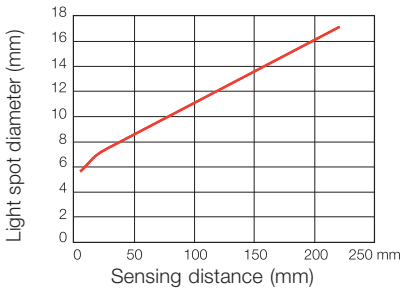
Photoelectric
Sensors
Accessories
Page 2.3.2 ...

5

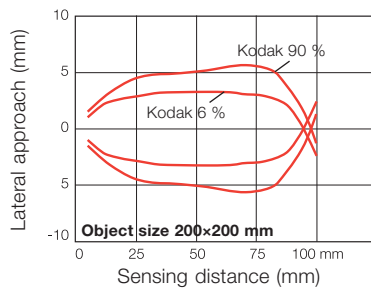
Connectors ...
Page 5.2 ...

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

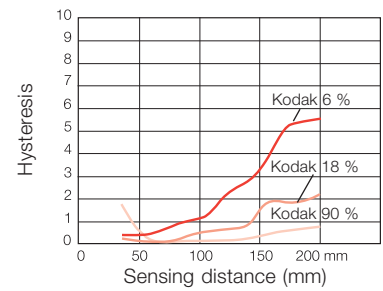
Light spot diameter



Characteristic response curve (HGA 100 mm)

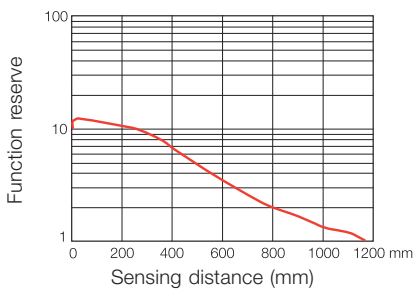


Sensing distance vs. hysteresis

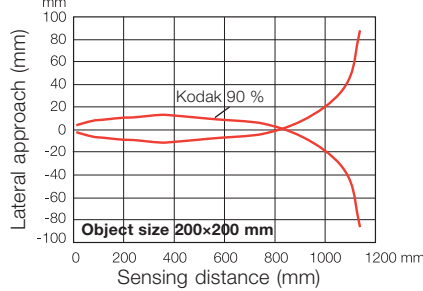


Diffuse BOS 5K-__-ID10-__

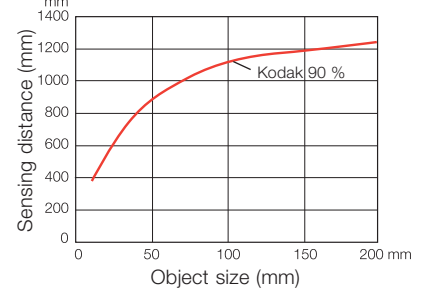
Receiving characteristics



Characteristic response curve

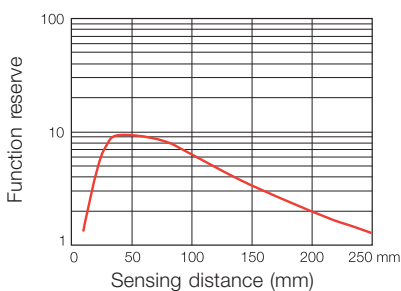


Object size vs. Sensing distance

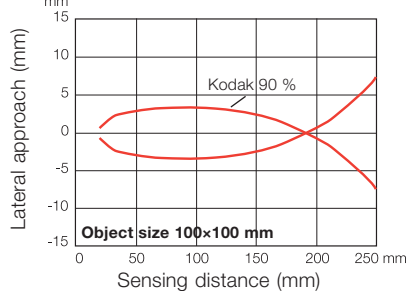


Diffuse small beam BOS 5K-__-RD11-__

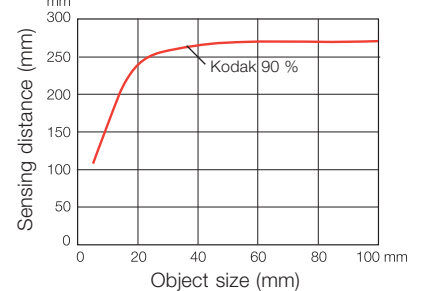
Receiving characteristics



Characteristic response curve

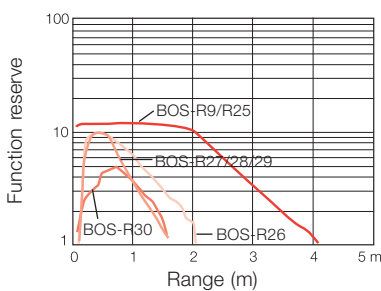


Object size vs. Sensing distance

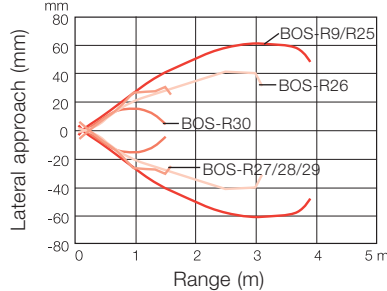


Reflexionslichtschranke BOS 5K-__-RR10-__

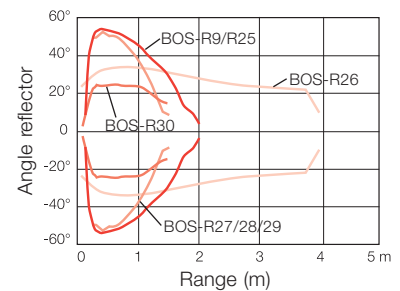
Receiving characteristics



Characteristic response curve

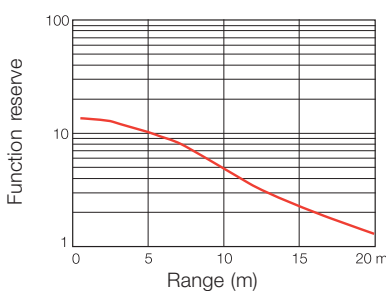


Angle offset

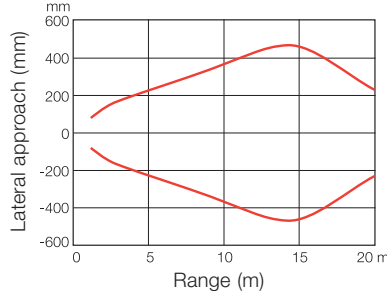


Einweglichtschranke BOS 5K-__-IX10-__

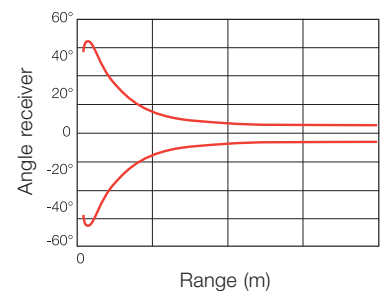
Receiving characteristics



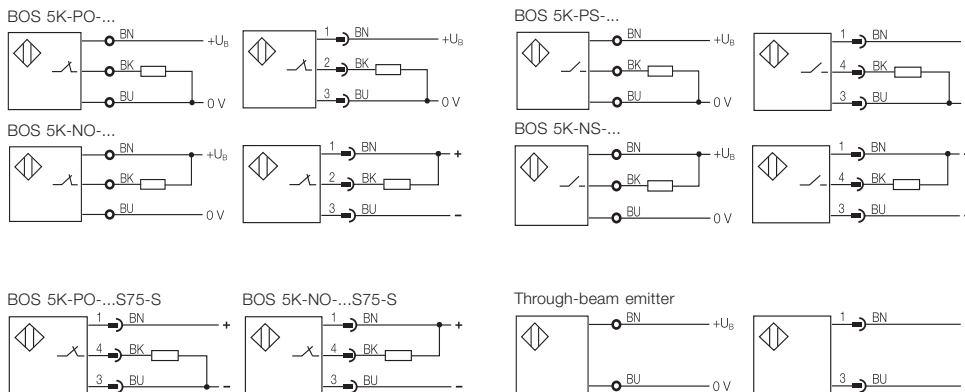
Characteristic response curve



Angle offset



Wiring diagrams

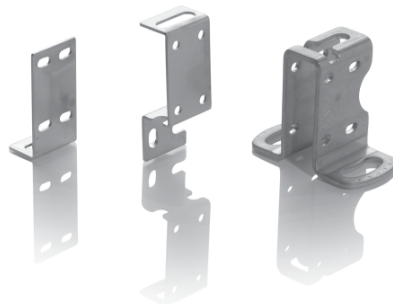


Recommended accessories

please order separately

Mounting brackets

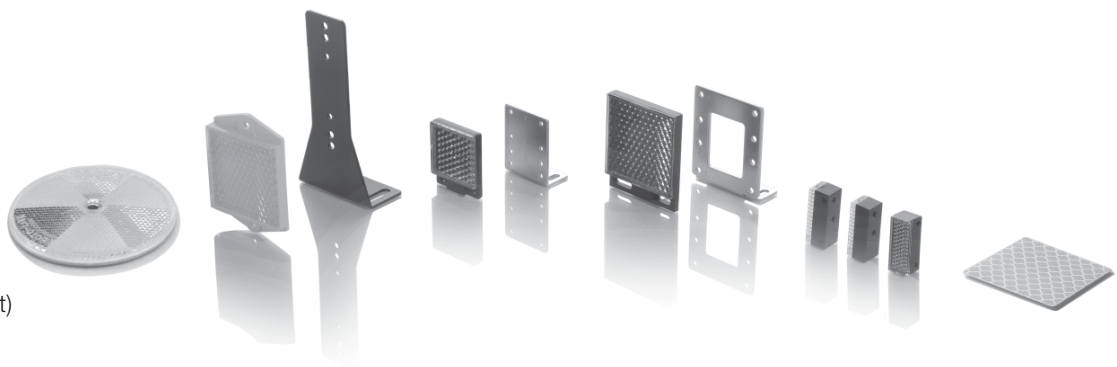
- BOS 5-HW-1
- BOS 5-HW-2
- BOS 5-HW-3
- (from left to right)



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

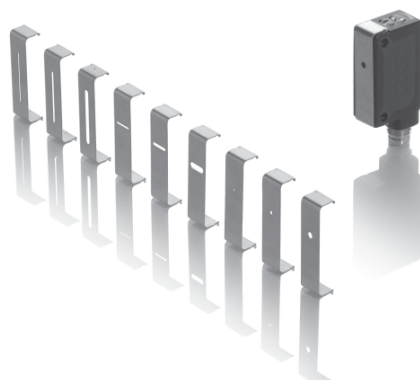
- BOS 5-BL-1
- BOS 5-BL-2
- BOS 5-BL-3

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



2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

5

Connectors ...
Page 5.2 ...

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			M8 connector, 4-pin	M8 connector, 3-pin	Cable		
 Diffuse with HGA									10...30 V DC					
BOS 6K-PU-1HA-S75-C	25...100 mm	■		■		■	■	1 kHz	■	■				21.120
BOS 6K-NU-1HA-S75-C	25...100 mm	■			■	■	■	1 kHz	■	■				21.120
BOS 6K-PU-1HA-S49-C	25...100 mm	■		■		■	■	1 kHz	■		■			21.120
BOS 6K-PU-1HA-C-02	25...100 mm	■		■		■	■	1 kHz	■			■		21.121
BOS 6K-NU-1HA-C-02	25...100 mm	■			■	■	■	1 kHz	■			■		21.121
BOS 6K-PU-1LHA-S75-C	20...60 mm		■	■		■	■	1 kHz	■	■				21.126
BOS 6K-NU-1LHA-S75-C	20...60 mm		■		■	■	■	1 kHz	■	■				21.126
BOS 6K-PU-1LHA-C-02	20...60 mm		■	■		■	■	1 kHz	■			■		21.126
BOS 6K-NU-1LHA-C-02	20...60 mm		■		■	■	■	1 kHz	■			■		21.126
BOS 6K-PU-1LHA-SA1-S75-C	30...110 mm		■	■		■	■	1 kHz	■	■				21.127
BOS 6K-NU-1LHA-SA1-S75-C	30...110 mm		■		■	■	■	1 kHz	■	■				21.127
BOS 6K-PU-1LHA-SA1-C-02	30...110 mm		■	■		■	■	1 kHz	■			■		21.127
BOS 6K-NU-1LHA-SA1-C-02	30...110 mm		■		■	■	■	1 kHz	■			■		21.127

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

2.1

2.3

Photoelectric Sensors
Accessories
Page 2.3.2 ...

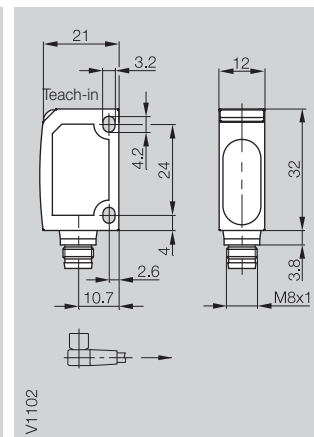
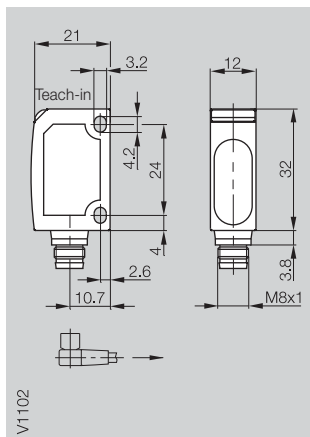
5

Connectors ...
Page 5.2 ...

Diffuse with background suppression	maximum sensing distance
Diffuse	maximum sensing distance

25...100 mm

25...100 mm



Diffuse



PNP 25...100 mm HGA



NPN 25...100 mm HGA

PNP 20...300 mm

NPN 20...300 mm

BOS 6K-PU-1HA-S75-C
BOS 6K-NU-1HA-S75-C

BOS 6K-PU-1HA-S49-C

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_0

≤ 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. 5x5 mm at 60 mm

ca. 5x5 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

21x32x12 mm

21x32x12 mm

Connection

M8 connector, 4-pin

M8 connector, 3-pin

No. of wires x 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⁾ $U_{imp} = 500 V$

mini.s with teach-in

Photoelectric Sensors

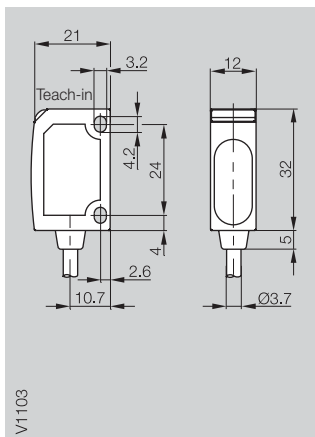
BOS 6K
Sensing distance 100 mm,
300 mm

25...100 mm

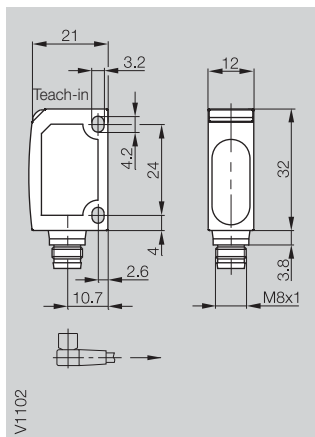
20...300 mm

20...300 mm

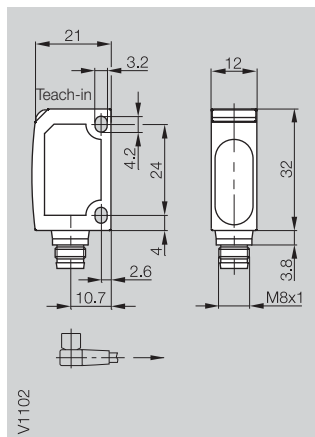
20...300 mm



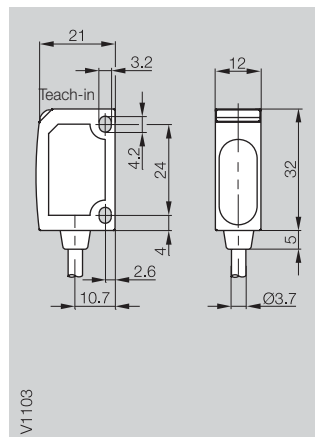
V1103



V1102



V1102



V1103

BOS 6K-PU-1HA-C-02
BOS 6K-NU-1HA-C-02

BOS 6K-PU-10C-S75-C
BOS 6K-NU-10C-S75-C

BOS 6K-PU-10C-S49-C

BOS 6K-PU-10C-C-02
BOS 6K-NU-10C-C-02

10...30 V DC
≤ 35 mA

PNP- or NPN-Transistor
100 mA

Light-/dark-on (selectable)
≤ 2.4 V
teach-in

25...100 mm
LED, red light
660 nm

ca. 5x5 mm at 60 mm
≤ 5 %
≤ 10 %

LED yellow
LED green

0.5 ms
1 kHz

21x32x12 mm
2 m cable, PVC
4x0.14 mm²

impact-resistant ABS
PMMA
120 g

IP 67
yes
yes
-20...+60 °C
5 kLux

10...30 V DC
≤ 35 mA

PNP- or NPN-Transistor
100 mA

Light-/dark-on (selectable)
≤ 2.4 V
teach-in

20...300 mm
LED, red light
660 nm

ca. 12x12 mm at 160 mm
≤ 10 %

LED yellow
LED green

0.5 ms
1 kHz

21x32x12 mm
M8 connector, 4-pin

impact-resistant ABS
PMMA
40 g

IP 67
yes
yes
-20...+60 °C
5 kLux

10...30 V DC
≤ 35 mA

PNP-Transistor
100 mA

Light-/dark-on (selectable)
≤ 2.4 V
teach-in

20...300 mm
LED, red light
660 nm

ca. 12x12 mm at 160 mm
≤ 10 %

LED yellow
LED green

0.5 ms
1 kHz

21x32x12 mm
M8 connector, 3-pin

impact-resistant ABS
PMMA
40 g

IP 67
yes
yes
-20...+60 °C
5 kLux

10...30 V DC
≤ 35 mA

PNP- or NPN-Transistor
100 mA

Light-/dark-on (selectable)
≤ 2.4 V
teach-in

20...300 mm
LED, red light
660 nm

ca. 12x12 mm at 160 mm
≤ 10 %

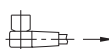
LED yellow
LED green

0.5 ms
1 kHz

21x32x12 mm
2 m cable, PVC
4x0.14 mm²

impact-resistant ABS
PMMA
120 g

IP 67
yes
yes
-20...+60 °C
5 kLux



Connector orientation

2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

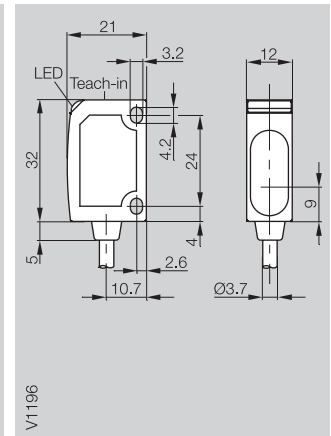
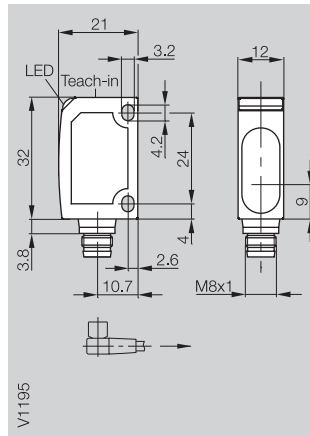
5

Connectors ...
Page 5.2 ...

Retroreflective with polarizing filter maximum range

0...500 mm

0...500 mm



Retroreflective

PNP	0...500 mm	Polarizing filter, glass detection, autocollimation
NPN	0...500 mm	Polarizing filter, glass detection, autocollimation
PNP	50...700 mm	Polarizing filter, glass detection
NPN	50...700 mm	Polarizing filter, glass detection

BOS 6K-PU-1TA-S75-C
BOS 6K-NU-1TA-S75-C

BOS 6K-PU-1TA-C-02
BOS 6K-NU-1TA-C-02

Electrical data

Supply voltage U_B	10...30 V DC
No-load supply current I_0 max.	≤ 25 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_0	≤ 2.4 V
Settings	teach-in

Supply voltage U_B	10...30 V DC
No-load supply current I_0 max.	≤ 25 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_0	≤ 2.4 V
Settings	teach-in

Optical data

Recommended range	0...500 mm
Emitter, light type	LED, red light
Wavelength	660 nm
Light spot diameter	20x20 mm up to 500 mm

Recommended range	0...500 mm
Emitter, light type	LED, red light
Wavelength	660 nm
Light spot diameter	20x20 mm up to 500 mm

Indicators

Switching state indicator	LED yellow
Stability indicator	LED green

Switching state indicator	LED yellow
Stability indicator	LED green

Time data

Response time	0.5 ms
Switching frequency f	1 kHz

Response time	0.5 ms
Switching frequency f	1 kHz

Mechanical data

Dimensions	21x32x12 mm
Connection	M8 connector, 4-pin
No. of wires × cross-section	4x0.14 mm ²
Housing material	impact-resistant ABS
Optical surface	PMMA
Weight	40 g

Dimensions	21x32x12 mm
Connection	2 m cable, PVC
No. of wires × cross-section	4x0.14 mm ²
Housing material	impact-resistant ABS
Optical surface	PMMA
Weight	120 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	5 kLux

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	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⁾ $U_{imp} = 500 V$

mini.s with teach-in

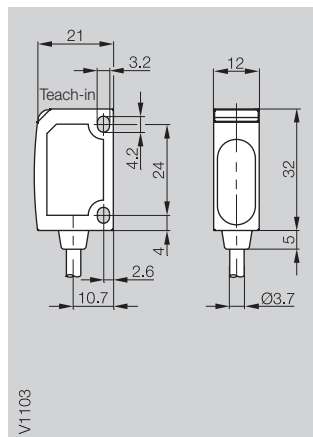
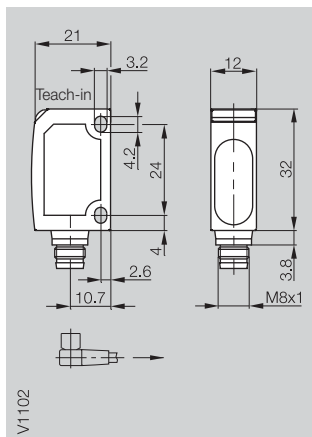
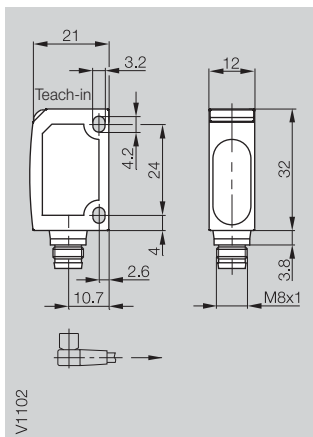
Photoelectric Sensors

BOS 6K
Range 700 mm

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
≤ 35 mA

PNP- or NPN-Transistor

100 mA

Light-/dark-on (selectable)

≤ 2.4 V

teach-in

10...30 V DC
≤ 35 mA

PNP-Transistor

100 mA

Light-/dark-on (selectable)

≤ 2.4 V

teach-in

10...30 V DC
≤ 35 mA

PNP- or NPN-Transistor

100 mA

Light-/dark-on (selectable)

≤ 2.4 V

teach-in

0...500 mm
LED, red light

660 nm

20×20 mm up to 500 mm

0...500 mm
LED, red light

660 nm

20×20 mm up to 500 mm

0...500 mm
LED, red light

660 nm

20×20 mm up to 500 mm

LED yellow
LED green

LED yellow
LED green

LED yellow
LED green

0.5 ms

1 kHz

0.5 ms

1 kHz

0.5 ms

1 kHz

21×32×12 mm
M8 connector, 4-pin

21×32×12 mm
M8 connector, 3-pin

21×32×12 mm
2 m cable, PVC

4×0.14 mm²

impact-resistant ABS

PMMA

40 g

impact-resistant ABS

PMMA

40 g

impact-resistant ABS

PMMA

120 g

IP 67

yes

yes

-20...+60 °C

5 kLux

IP 67

yes

yes

-20...+60 °C

5 kLux

IP 67

yes

yes

-20...+60 °C

5 kLux



→ Connector orientation

2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

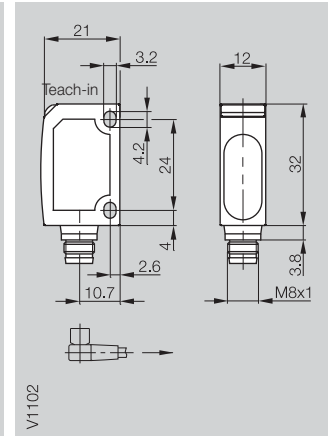
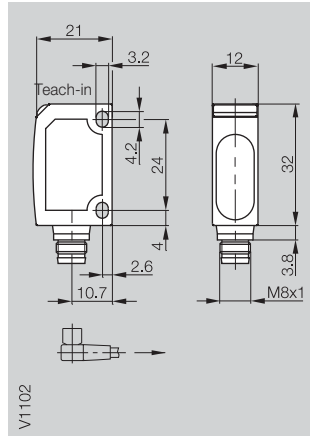
5

Connectors ...
Page 5.2 ...

Retroreflective with polarizing filter maximum range
Through-beam maximum range

0,05...3 m

0,05...3 m



Retroreflective

PNP 0,05...3 m Polarizing filter
NPN 0,05...3 m Polarizing filter

BOS 6K-PU-1QC-S75-C
BOS 6K-NU-1QC-S75-C

BOS 6K-PU-1QC-S49-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.

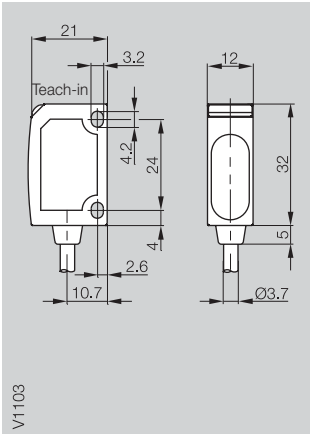
¹⁾ $U_{imp} = 500$ V

0,05...3 m

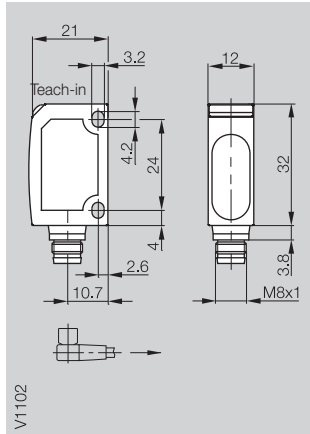
0...6,5 m

0...6,5 m

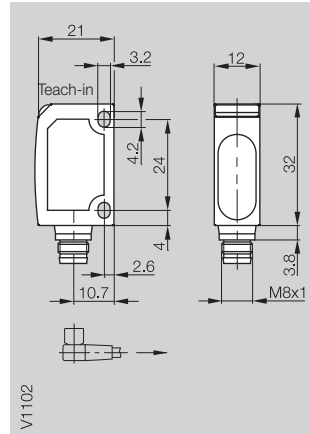
0...6,5 m



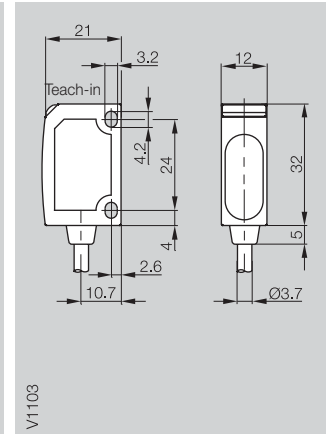
V1103



V1102



V1102



V1103

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
≤ 25 mA

PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

0.05...2.5 m
LED, red light
660 nm
ca. 75×75 mm at 1.5 m

LED yellow
LED green

0.5 ms
1 kHz

21×32×12 mm
2 m cable, PVC
4×0.14 mm²
impact-resistant ABS
PMMA
40 g

IP 67
yes
yes
-20...+60 °C
EN 60947-5-2

10...30 V DC
≤ 25 mA

PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

0...6 m
LED, red light
660 nm

LED yellow
LED green

1 ms
500 Hz

21×32×12 mm
M8 connector, 4-pin
impact-resistant ABS
PMMA
10 g

IP 67
yes
yes
-20...+60 °C
EN 60947-5-2

10...30 V DC
≤ 25 mA

PNP-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

0...6 m
LED, red light
660 nm

LED yellow
LED green

1 ms
500 Hz

21×32×12 mm
M8 connector, 3-pin
impact-resistant ABS
PMMA
10 g

IP 67
yes
yes
-20...+60 °C
EN 60947-5-2

10...30 V DC
≤ 25 mA

PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

0...6 m
LED, red light
660 nm

LED yellow
LED green

1 ms
500 Hz

21×32×12 mm
2 m cable, PVC
4×0.14 mm²
impact-resistant ABS
PMMA
40 g

IP 67
yes
yes
-20...+60 °C
EN 60947-5-2



Connector orientation

2.1

2.3

Photoelectric
Sensors
Accessories
Page 2.3.2 ...

5

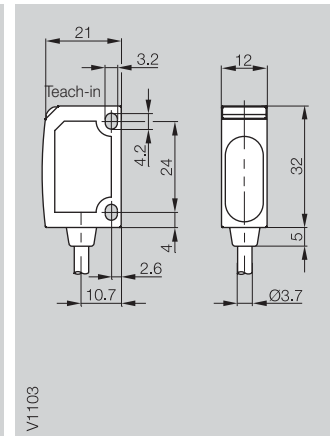
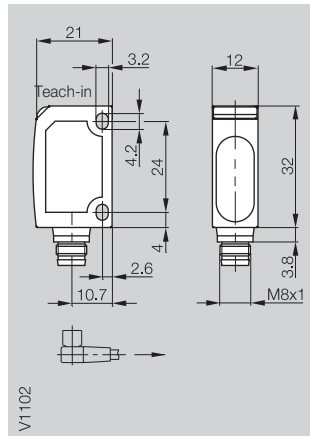
Connectors ...
Page 5.2 ...

Diffuse with background suppression maximum sensing distance

Retroreflective with polarizing filter maximum range

20...60 mm

20...60 mm



Diffuse



PNP	20...60 mm	HGA
NPN	20...60 mm	HGA
PNP	30...110 mm	HGA
NPN	30...110 mm	HGA

BOS 6K-PU-1LHA-S75-C
BOS 6K-NU-1LHA-S75-C

BOS 6K-PU-1LHA-C-02
BOS 6K-NU-1LHA-C-02

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
No-load supply current I_0 max.	≤ 25 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (selectable)
Voltage drop U_d at I_e	≤ 2.4 V
Settings	teach-in

10...30 V DC
≤ 25 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

10...30 V DC
≤ 25 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
≤ 2.4 V
teach-in

Optical data

Recommended sensing distance/range	20...60 mm
Emitter, light type	Laser, red light
Wavelength	650 nm
Laser class	1
Light spot diameter	0.5 mm at focus (35 mm)
Distance hysteresis (18 %/18 %)	≤ 2 % up to focal point, ≤ 6 % up to end
Gray value shift (90 %/18 %)	≤ 7 %

20...60 mm
Laser, red light
650 nm
1
0.5 mm at focus (35 mm)
≤ 2 % up to focal point, ≤ 6 % up to end
≤ 7 %

20...60 mm
Laser, red light
650 nm
1
0.5 mm at focus (35 mm)
≤ 2 % up to focal point, ≤ 6 % up to end
≤ 7 %

Indicators

Switching state indicator	LED yellow
Stability indicator	LED green

LED yellow
LED green

LED yellow
LED green

Time data

Response time	0.5 ms
Switching frequency f	1 kHz

0.5 ms
1 kHz

0.5 ms
1 kHz

Mechanical data

Dimensions	21×32×12 mm
Connection	M8 connector, 4-pin
No. of wires × cross-section	4×0.14 mm ²
Housing material	impact-resistant ABS
Optical surface	PMMA
Weight	10 g

21×32×12 mm
M8 connector, 4-pin
4×0.14 mm ²
impact-resistant ABS
PMMA
10 g

21×32×12 mm
2 m cable, PVC
4×0.14 mm ²
impact-resistant ABS
PMMA
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...+60 °C
Ambient light limit	EN 60947-5-2

IP 67
yes
yes
-20...+60 °C
EN 60947-5-2

IP 67
yes
yes
-20...+60 °C
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⁾ $U_{imp} = 500 V$

mini.s Laser with teach-in



Photoelectric Sensors

BOS 6K Laser
Sensing distance 110 mm
Range 1,5 m

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

Connector orientation

2.1

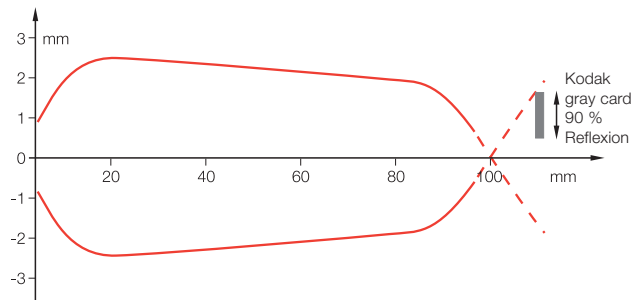
2.3

Photoelectric
Sensors
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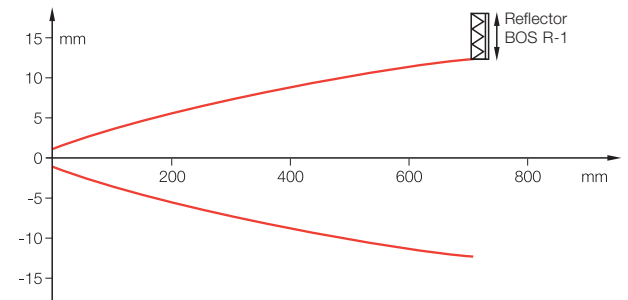
Connectors ...
Page 5.2 ...

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



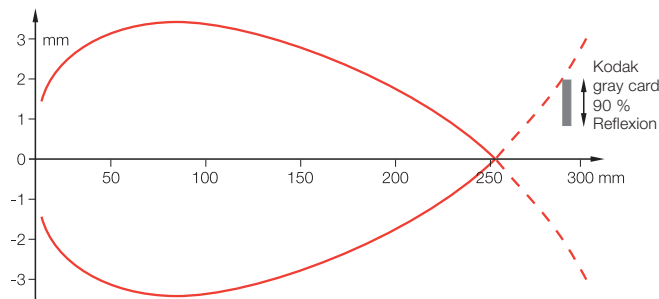
Range measured with side approach of Kodak gray card.

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



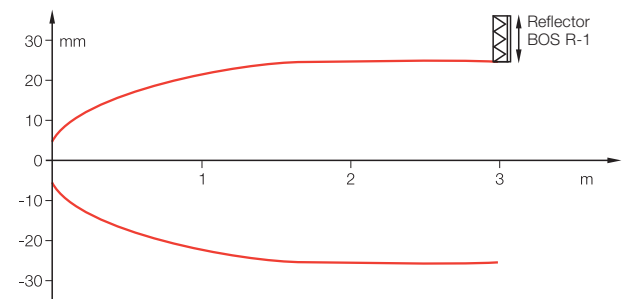
Range measured with side approach of reflector.

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



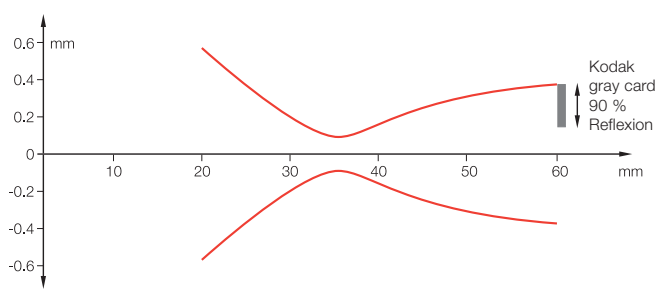
Range measured with side approach of Kodak gray card.

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



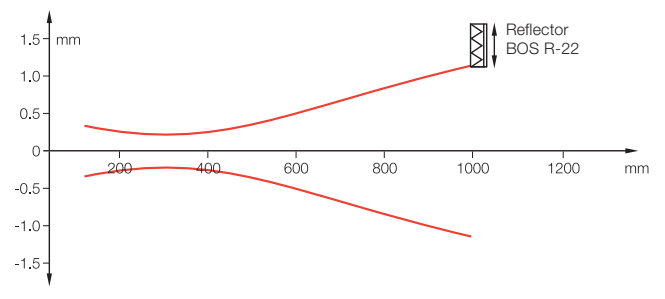
Range measured with side approach of reflector.

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



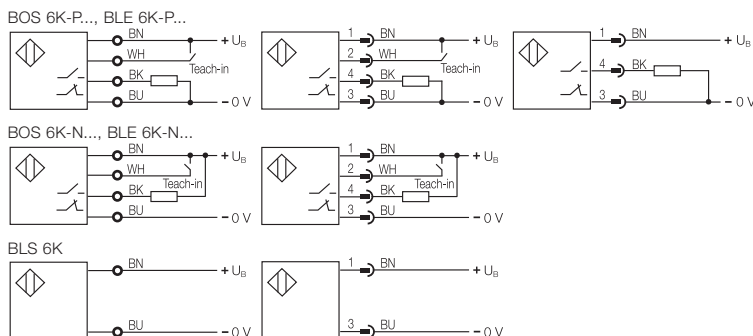
Range measured with side approach of Kodak gray card.

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

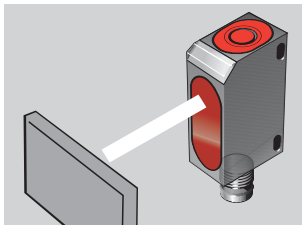


Range measured with side approach of reflector.

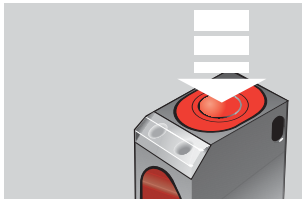
Wiring diagrams



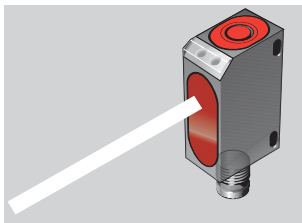
Diffuse



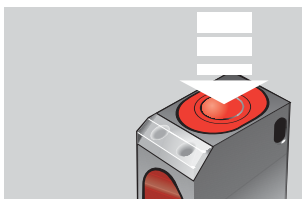
Align sensor with the object.



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

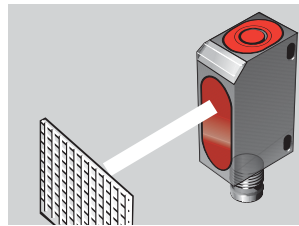


Remove object from beam path.

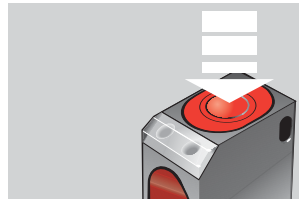


Hold down button for 1 sec. Green LED blinks briefly and then comes full on. The sensor is ready. If both LEDs blink together, repeat your settings.

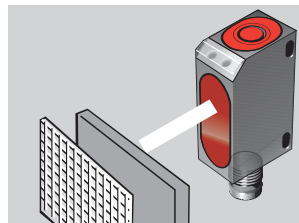
Retroreflective/through-beam



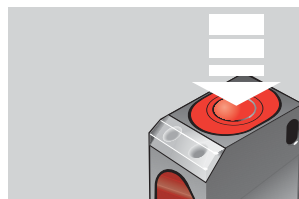
Direct sensor at reflector/receiver.



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
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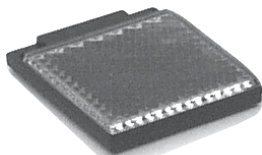
Connectors ...
Page 5.2 ...

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

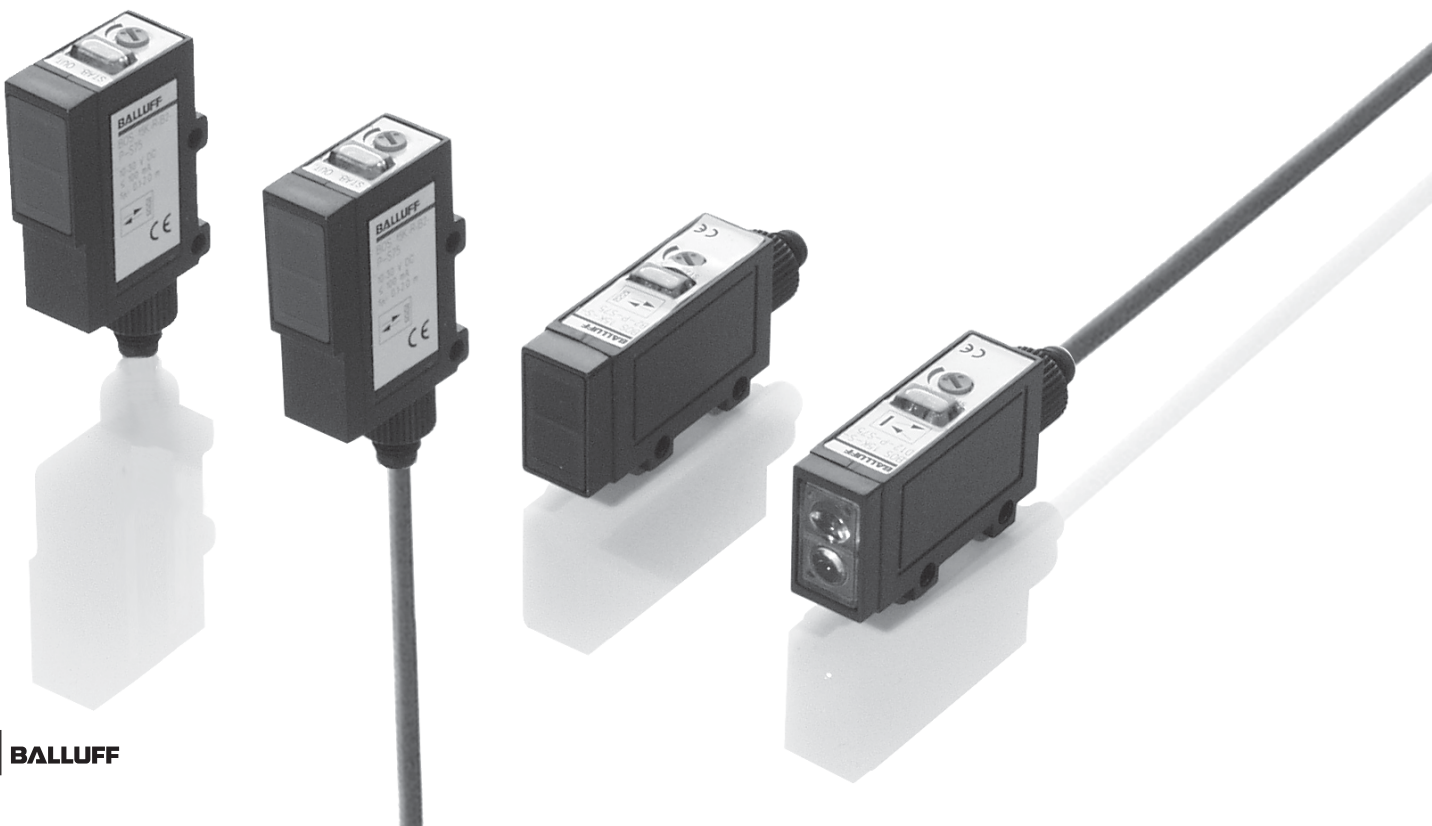
BOS 15K




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	Con- nection	Special features		Page
		Straight	Right-angle	Red light	Infrared	PNP- Transistor	NPN- Transistor	Alarm output	Light-on				Dark-on	10...30 V DC	
 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

2.1

2.3

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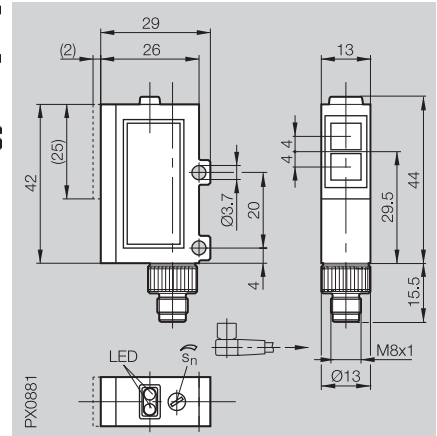
5

Connectors ...
Page 5.2 ...

Photoelectric Sensors

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



Retroreflective



Through-beam



Electrical

Supply voltage U_B

Ripple

No-load current I_0 max.

Switching output

Output current

Switching type

Voltage drop U_d at I_o

Settings

Help function

Indicators

Power-on indicator

Output function indicator

Stability indicator

Time data

Response time

Switching frequency f

Mechanical data

Dimensions

Connection

No. of wires × 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

BOS 15K-R-C10-P-S75

BOS 15K-R-C50-P-S75

BOS 15K-R-D12-P-S75

BOS 15K-R-B2-P-S75

BLE 15K-R-F5-P-S75

BLS 15K-R-G5-S75

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

LED red (BLS)

LED red

LED green

≤ 1 ms (BLE ≤ 2ms)

500 Hz (BLE 250 Hz)

29×42×13 mm

M8 connector, 4-pin

ABS

PMMA

20 g

IP 66

yes

yes

-15...+55 °C

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.

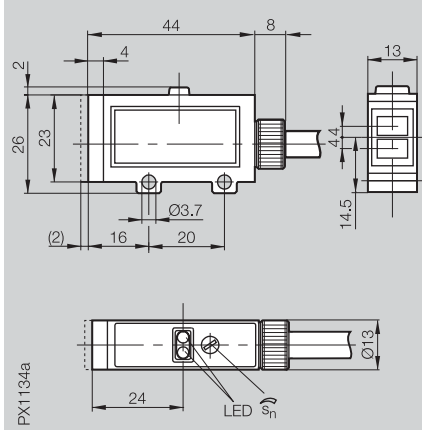
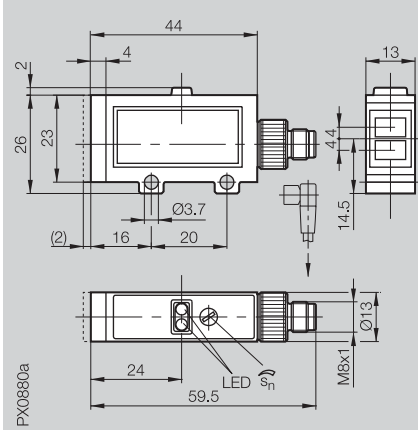
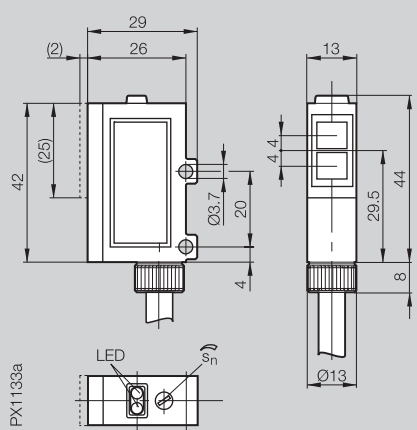


Connector orientation

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

10...30 V DC

10...30 V DC

2 V DC

2 V DC

2 V DC

≤ 30 mA

≤ 30 mA

≤ 30 mA

PNP- and NPN-Transistor selectable

PNP-Transistor

PNP- and NPN-Transistor selectable

≤ 100 mA

Light-/dark-on (selectable)

Light-/dark-on (selectable)

≤ 1.5 V

Potentiometer 270°

Potentiometer 270°

Potentiometer 270°

Test input for BLS

Test input for BLS

Test input for BLS

LED red (BLS)

LED red (BLS)

LED red (BLS)

LED red

LED red

LED red

LED green

LED green

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

44×26×13 mm

44×26×13 mm

2 m cable, PVC

M8 connector, 4-pin

2 m cable, PVC

4/5/6×0.34 mm²

ABS

ABS

PMMA

PMMA

PMMA

90 g

20 g

90 g

IP 66

IP 66

IP 66

yes

yes

yes

yes

yes

yes

-15...+55 °C

-15...+55 °C

-15...+55 °C

3 kLux/10 kLux sunlight

3 kLux/10 kLux sunlight

3 kLux/10 kLux sunlight

2.1

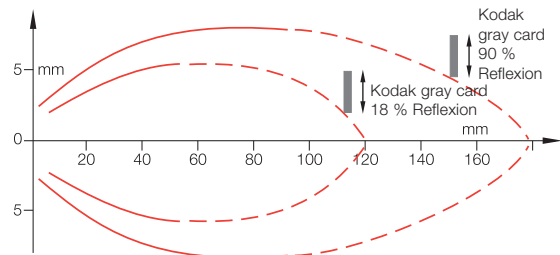
2.3

Photoelectric Sensors
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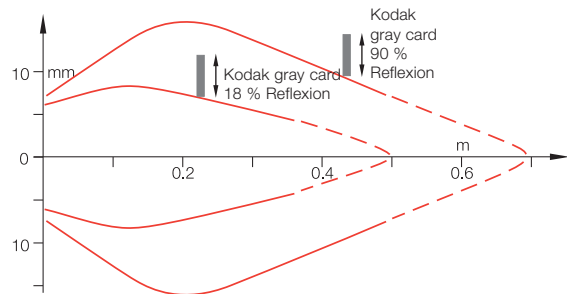
Connectors ...
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Diffuse BOS 15K...-C10-...



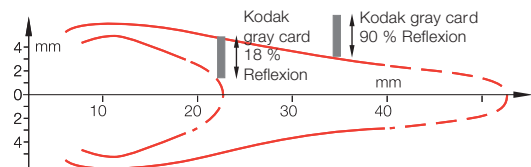
Range measured with side approach of Kodak gray card.

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



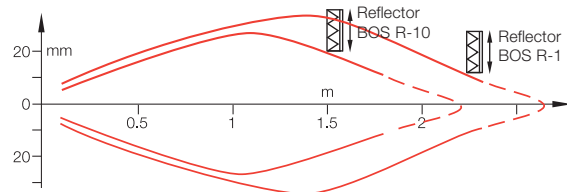
Range measured with side approach of Kodak gray card.

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



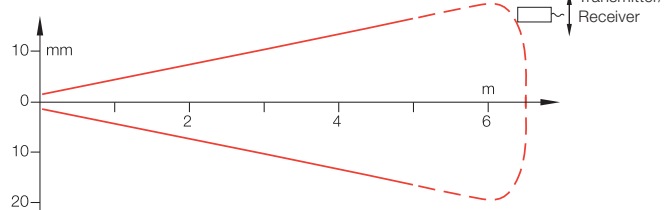
Range measured with side approach of Kodak gray card.

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



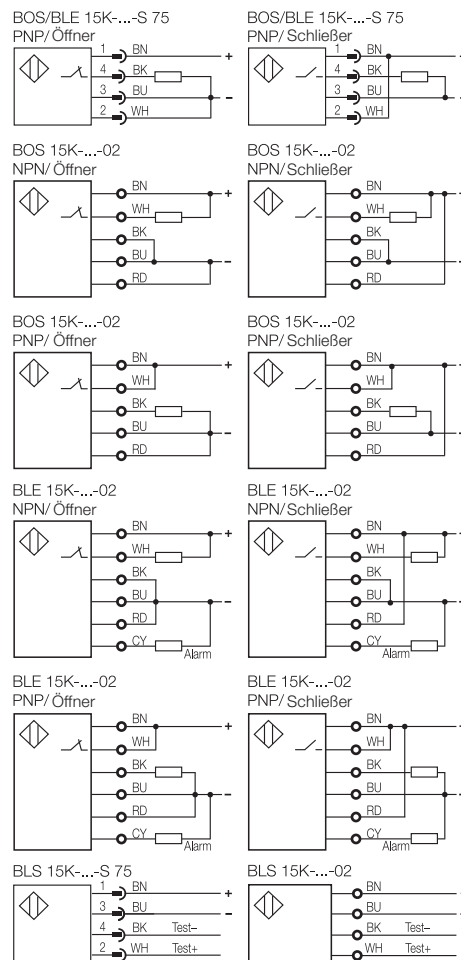
Range measured with side approach of reflector.

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



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

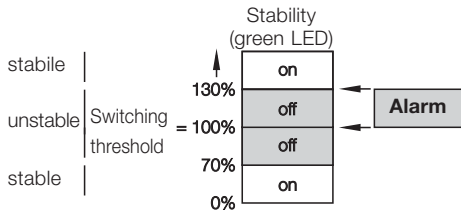
Wiring diagrams



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.

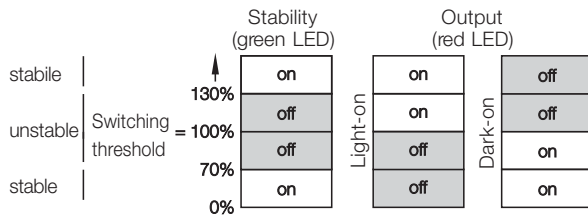


Green Stability indicator

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

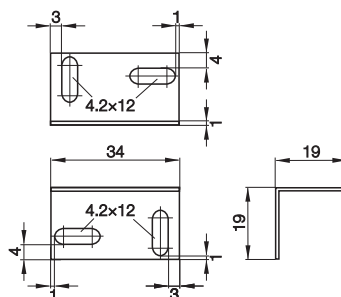
(supplied with through-beam sensors)



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

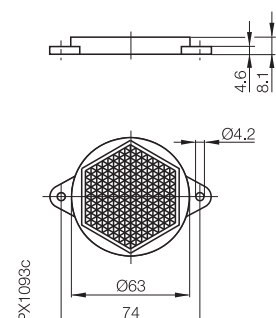
Mounting bracket

(supplied)



Reflector BOS R-10

(supplied with retroreflective sensors)







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
 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

2.1

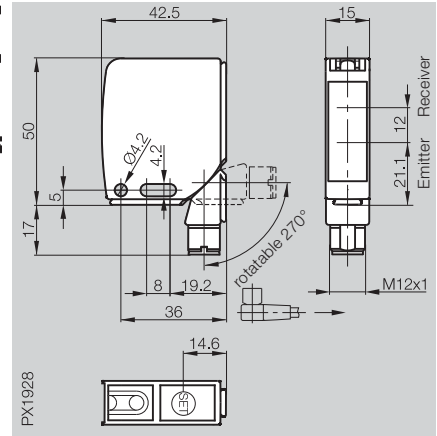
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

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
NPN	70...200 mm	HGA
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	

BOS 21M-PUS-RH12-S4
BOS 21M-NUS-RH12-S4

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_0	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.

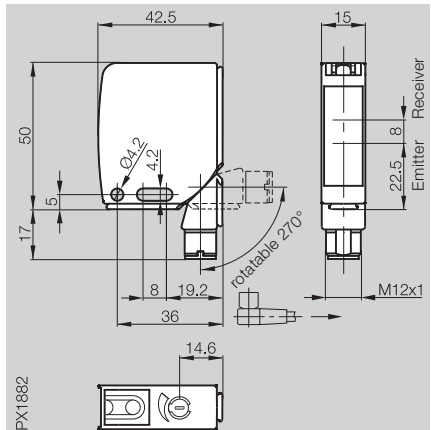
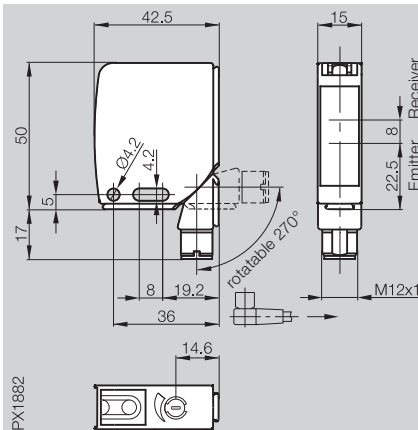
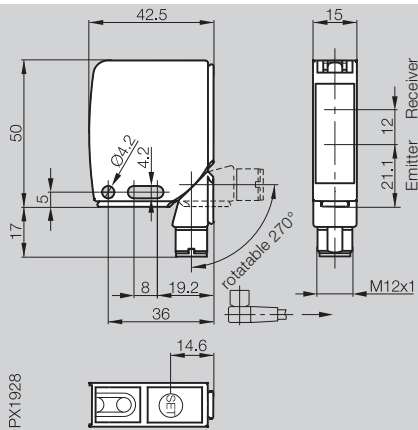
Wiring diagrams, characteristics and accessories see page 2.1.144 to 2.1.147.



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
≤ 2 V DC
≤ 50 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (selectable)
2 V
Teach-in

10...30 V DC
≤ 2 V DC
≤ 35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

10...30 V DC
≤ 2 V DC
≤ 35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

70...200 mm
LED, red light
670 nm

0.01...1 m
LED, red light
650 nm

0.05...2 m
LED, infrared
880 nm

LED yellow
LED green

LED yellow
LED green

LED yellow
LED green

0.5 ms
1 kHz

1 ms
500 Hz

1 ms
500 Hz

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
76 g

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
76 g

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
76 g

IP 67
yes
yes
-10...+50 °C
10 kLux

IP 67
yes
yes
-25...+55 °C
10 kLux

IP 67
yes
yes
-25...+55 °C
10 kLux

2.1

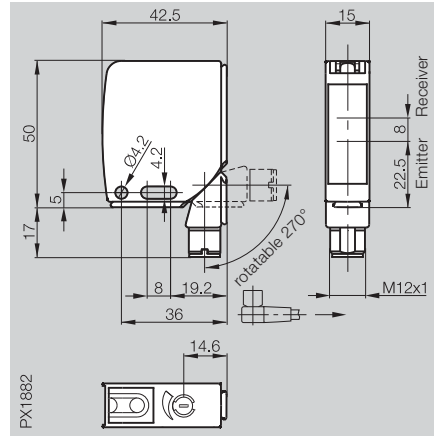
2.3

Photoelectric sensors
accessories
page 2.3.2 ...

5

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_0	2 V
Settings	Potentiometer 270°

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	42.5x50x15 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.

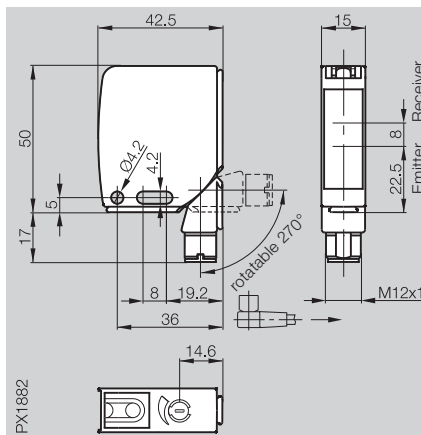
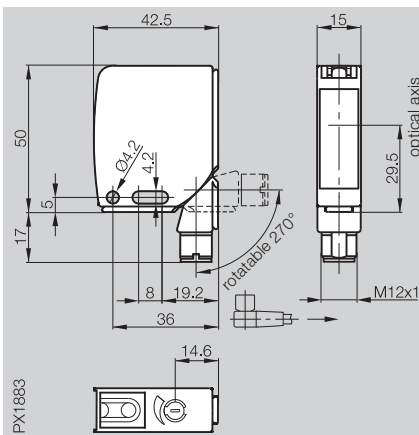
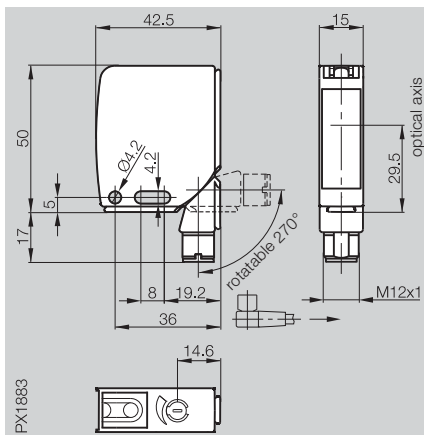
Wiring diagrams, characteristics and accessories see page 2.1.144 to 2.1.147.



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
≤ 2 V DC
≤ 35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

10...30 V DC
≤ 2 V DC
≤ 35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

10...30 V DC
≤ 2 V DC
≤ 35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°
Test input (emitter)

0...4 m
LED, red light
650 nm

0...2 m
LED, red light
650 nm

0...20 m
LED, infrared
880 nm

LED yellow
LED green

LED yellow

LED green (emitter)
LED yellow (receiver)
LED green (receiver)

0.5 ms
1 kHz

0.5 ms
1 kHz

1 ms
500 Hz

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al

42.5x50x15 mm
M12 connector, 4-pin
GD-Zn/Al

Glass
78 g

Glass*
78 g

PMMA
75 g

IP 67
yes
yes

IP 67
yes
yes

IP 67
yes
yes

-25...+55 °C
10 kLux

-25...+55 °C
10 kLux

-25...+55 °C
10 kLux

*also available with PMMA

2.1

2.3

Photoelectric
sensors
accessories
page 2.3.2 ...

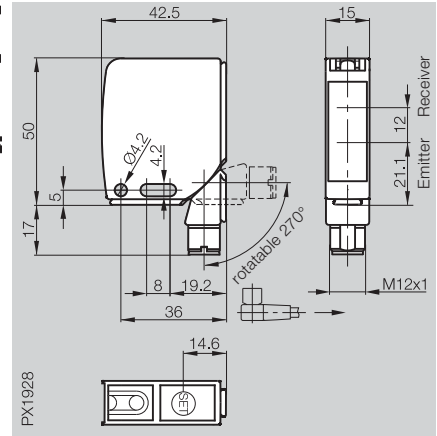
5

Connectors ...
page 5.2 ...

Photoelectric Sensors

BOS 21M
Sensing distance 100 mm

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
NPN	50...100 mm	HGA



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_0	2 V
Settings	Teach-in

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	42.5x50x15 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.



Laser



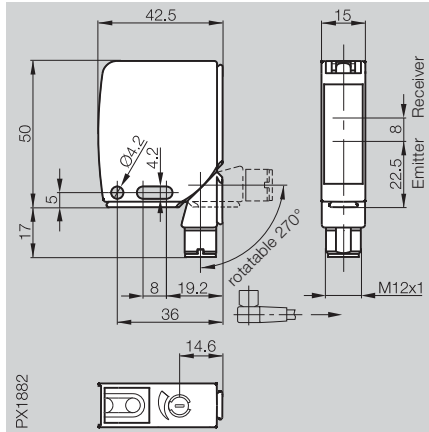
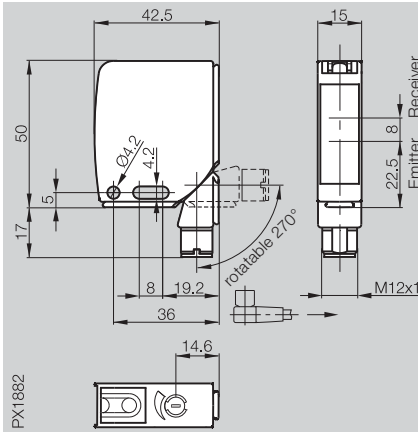
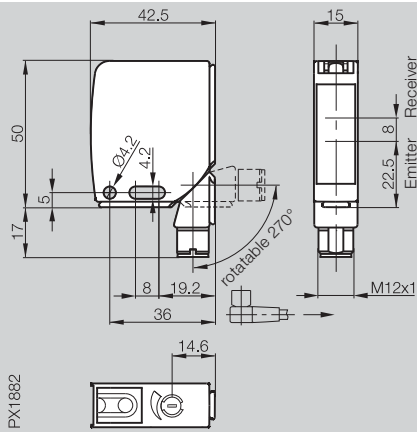
Photoelectric Sensors

BOS 21M
Sensing distance 600 mm
Range 20 m, 60 m

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
≤ 2 V DC
35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

10...30 V DC
≤ 2 V DC
35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°

10...30 V DC
≤ 2 V DC
35 mA
PNP- or NPN-Transistor
100 mA
Light-/dark-on (push-pull)
2 V
Potentiometer 270°
Test input (emitter)

0...600 mm
Laser, red light
650 nm
1

0.1...20 m
Laser, red light
650 nm
1

0...60 m
Laser, red light
650 nm
1

LED green
LED yellow

LED green
LED yellow

LED green
LED yellow

0.25 ms
2 kHz

0.25 ms
2 kHz

0.33 ms
1.5 kHz

42.5×50×15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
77 g

42.5×50×15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
77 g

42.5×50×15 mm
M12 connector, 4-pin
GD-Zn/Al
PMMA
76 g

IP 67
yes
yes
-10...+50 °C
5 kLux

IP 67
yes
yes
-10...+50 °C
5 kLux

IP 67
yes
yes
-10...+50 °C
5 kLux

2.1

2.3

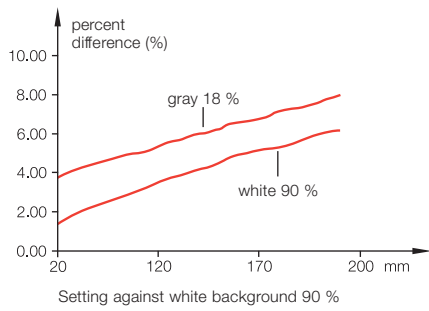
Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

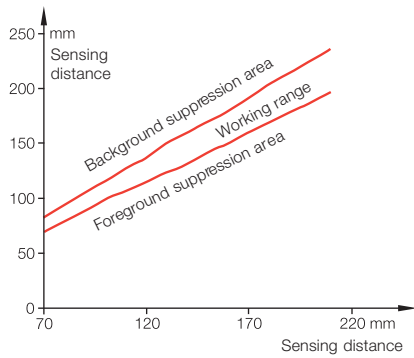
Wiring diagrams, characteristics and accessories see page 2.1.144 to 2.1.147.

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



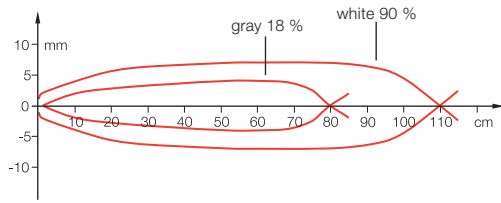
Detection range

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

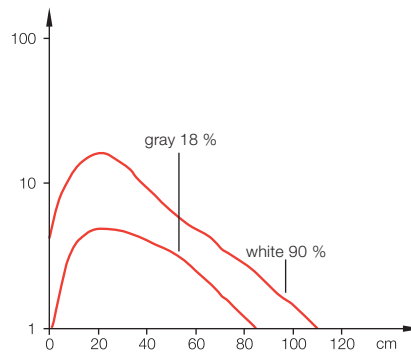


Detection range

Diffuse
BOS 21M-_A-RD10-S4

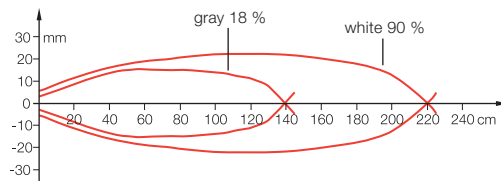


Detection range

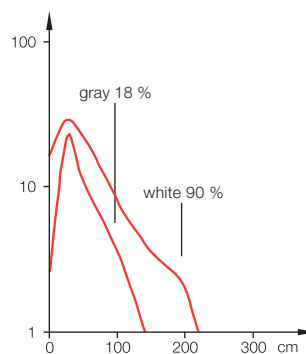


Function reserve

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

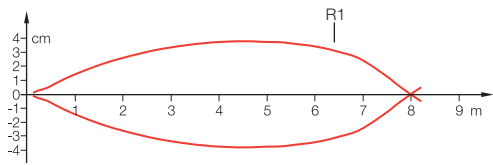


Detection range

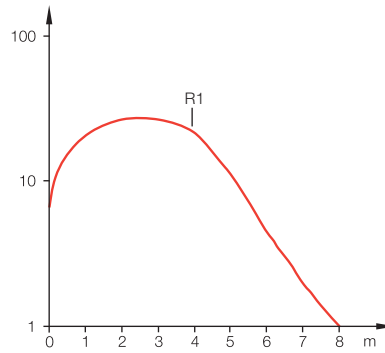


Function reserve

**Retroreflective polarized
BOS 21M- A-PR10-S4**

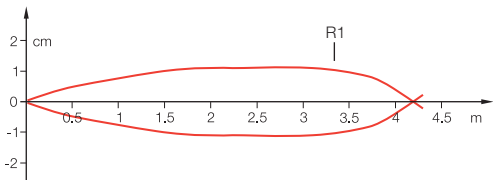


Detection range

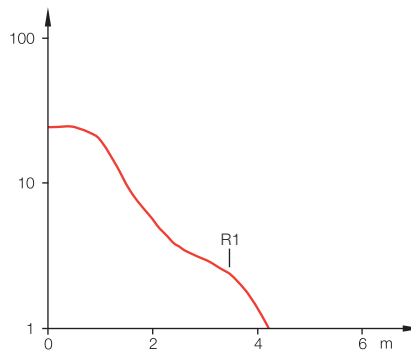


Function reserve

**Retroreflective autocollimation
BOS 21M- A-PK10-S4**

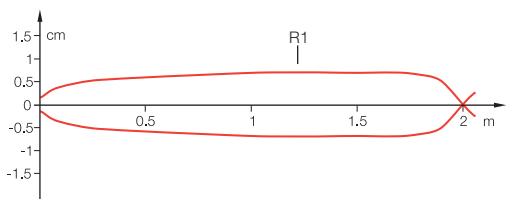


Detection range

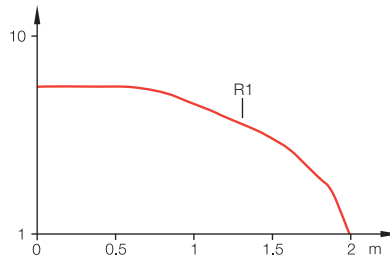


Function reserve

**Retroreflective glass sensing
BOS 21M- A-PT10-S4**

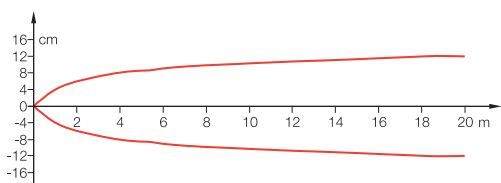


Detection range

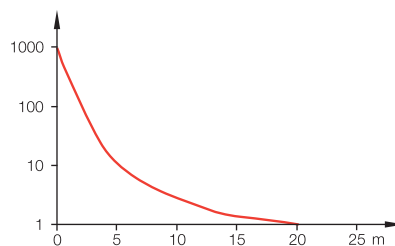


Resolution

**Through-beam
BOS 21M- A-IE10-S4**



Detection range



Function reserve

2.1

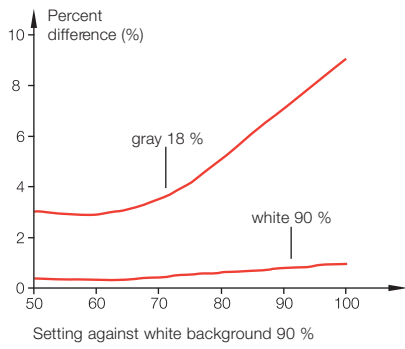
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

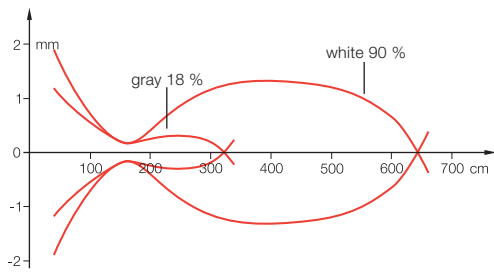
Connectors ... page 5.2 ...

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

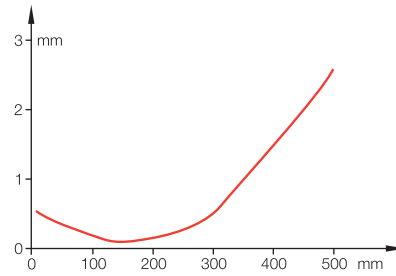


Tolerance with standard setting

Laser diffuse
BOS 21M-_A-LD10-S4

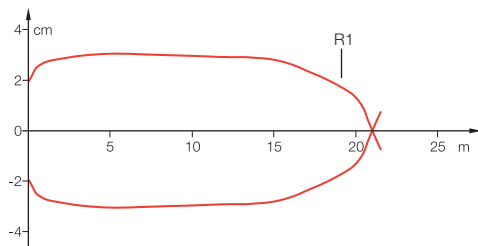


Detection range

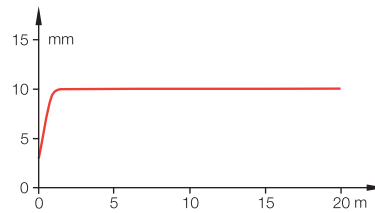


Resolution

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

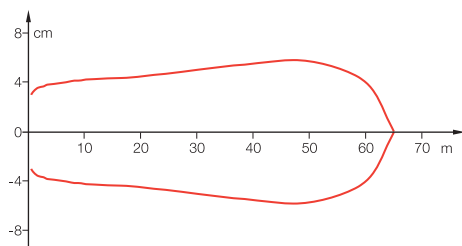


Detection range

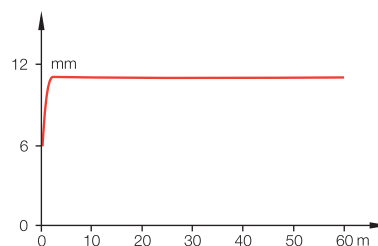


Resolution

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

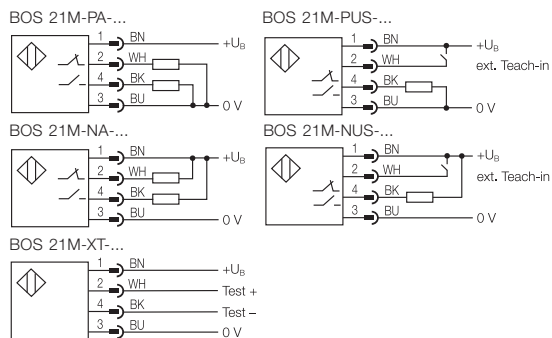


Detection range



Resolution

Wiring diagrams



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



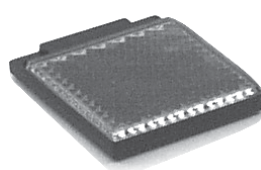
Adapter plate
BOS 21-AD-1



Holding system
BOS 21-HS-1



Reflector
BOS R-1



Reflector
BOS R-9



Connector
BKS-_19/BKS-_20

2.1

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

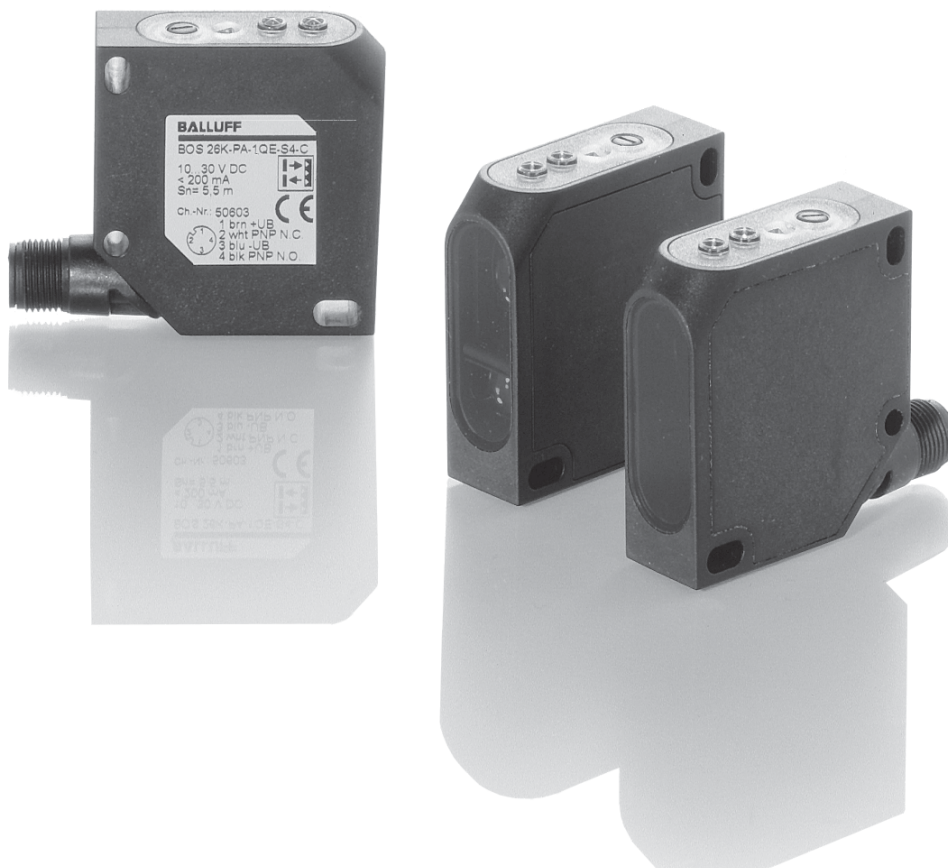
The diffuse model with background suppression **BOS 26K-..-1LHB**, with its focused light beam, can detect objects precisely in virtually any color between 30 and 150 mm. The focusing feature enables a spot size of just 0.1 mm at a distance of 80 mm.



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	Conne- ction	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
 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-11E-S4-C	150...600 mm		■		■		■	■	800 Hz	■	■					2.1.151
BOS 26K-NA-11E-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

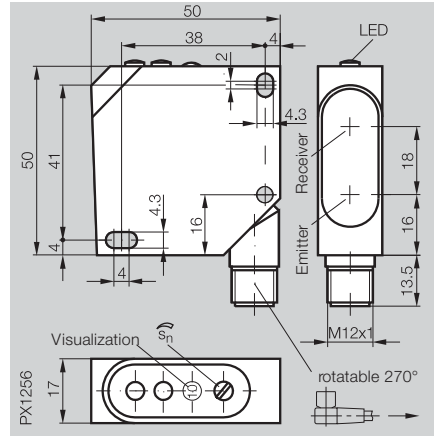
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

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_0	≤ 2.4 V
Settings	2-turn potentiometer with indicator

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

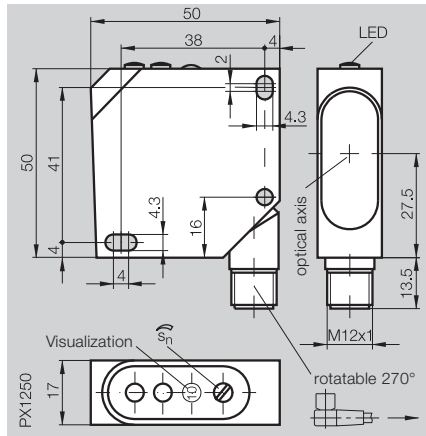
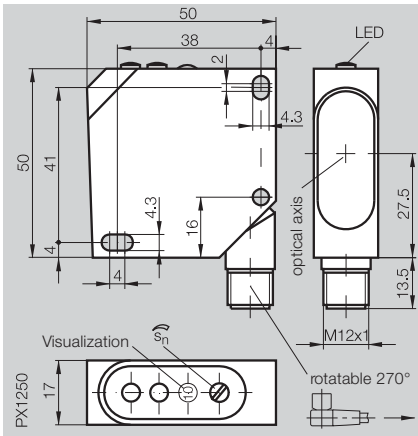
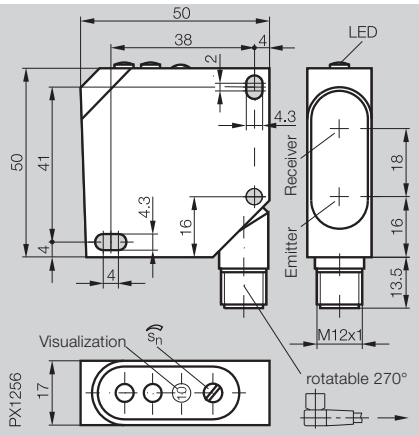
Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

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

2.1

2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

10...30 V DC

10 %

≤ 70 mA

PNP- or NPN-Transistor

200 mA

Light/dark-on (complementary)

≤ 2.4 V

2-turn potentiometer with indicators

LED, infrared, pulsed

880 nm

approx. 20 mm at 400 mm

5 %

12 %

LED green

LED yellow

LED red

0.625 ms

800 Hz

50×50×17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

35 g

IP 67

yes

yes

-20...+60 °C

EN 60947-5-2

10...30 V DC

10 %

≤ 30 mA

PNP- or NPN-Transistor

200 mA

Light/dark-on (complementary)

≤ 2.4 V

2-turn potentiometer with indicator

LED, red light, pulsed

660 nm

LED green

LED yellow

LED red

0.5 ms

1 kHz

50×50×17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

35 g

IP 67

yes

yes

-20...+60 °C

EN 60947-5-2

10...30 V DC

10 %

≤ 30 mA

PNP-Transistor

200 mA

Light-on

≤ 2.4 V

2-turn potentiometer with indicator

Contamination output

LED, red light, pulsed

660 nm

LED green

LED yellow

LED red

0.5 ms

1 kHz

50×50×17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

35 g

IP 67

yes

yes

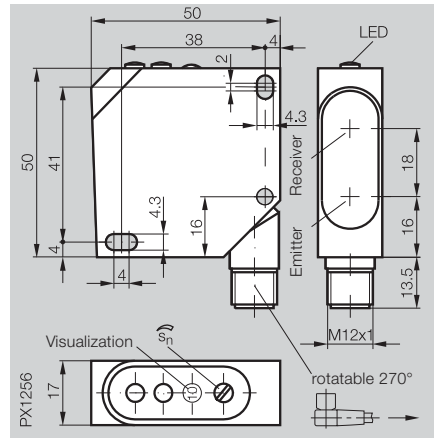
-20...+60 °C

EN 60947-5-2



Connector orientation

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



Diffuse



PNP	40...60 mm	HGA
NPN	40...60 mm	HGA
PNP	30...150 mm	HGA
NPN	30...150 mm	HGA
PNP	50...300 mm	HGA
NPN	50...300 mm	HGA

BOS 26K-PA-1LHA-SA1-S4-C
BOS 26K-NA-1LHA-SA1-S4-C

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_0	≤ 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	50x50x17 mm
Connection	M12 connector, 4-pin
Housing material	Impact-resistant ABS
Optical surface	PMMA
Weight	40 g

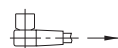
Ambient data

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



Connector orientation

Laser



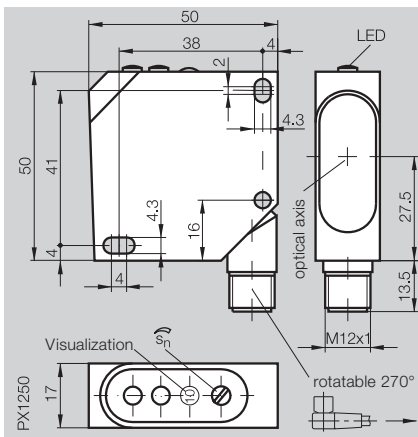
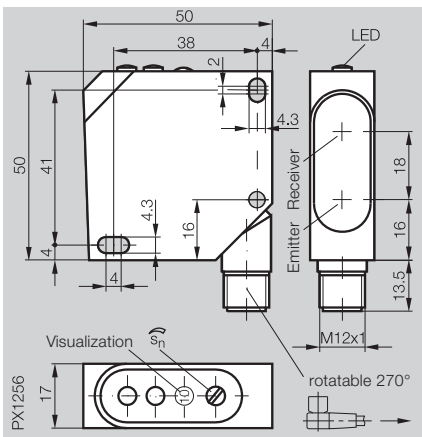
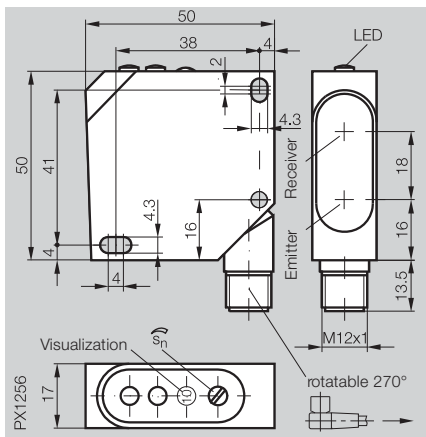
Photoelectric Sensors

BOS 26K Laser
Sensing distance 150 mm,
300 mm, Range 20 m

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 %
≤ 50 mA

PNP- or NPN-Transistor

200 mA

Light-/dark-on (complementary)

≤ 2.5 V

2-turn potentiometer with indicator

10...30 V DC

10 %
≤ 50 mA

PNP- or NPN-Transistor

200 mA

Light-/dark-on (complementary)

≤ 2.4 V

2-turn potentiometer with indicator

10...30 V DC

10 %
≤ 40 mA

PNP- or NPN-Transistor

200 mA

Light-/dark-on (complementary)

≤ 2.4 V

2-turn potentiometer with indicator

Laser, red light

670 nm

2

see table

5 %

8 %

LED green

LED yellow

LED red

0.2 ms

2.5 kHz

50x50x17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

40 g

IP 67

yes

yes

-15...+45 °C

5 kLux

Laser, red light

670 nm

2

3x1 mm at 300 mm

2 %

5 %

LED green

LED yellow

LED red

0.2 ms

2.5 kHz

50x50x17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

40 g

IP 67

yes

yes

-20...+45 °C

5 kLux

Laser, red light

670 nm

1

15 mm in 12 m

LED green

LED yellow

LED red

LED green

LED yellow

LED red

0.2 ms

2.5 kHz

50x50x17 mm

M12 connector, 4-pin

Impact-resistant ABS

PMMA

40 g

IP 67

yes

yes

-20...+45 °C

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 5x1.8 4x1.5 3.8x1.2

Light spot diameter [mm]

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

2.1

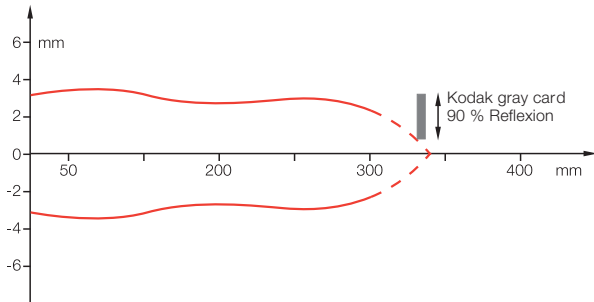
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

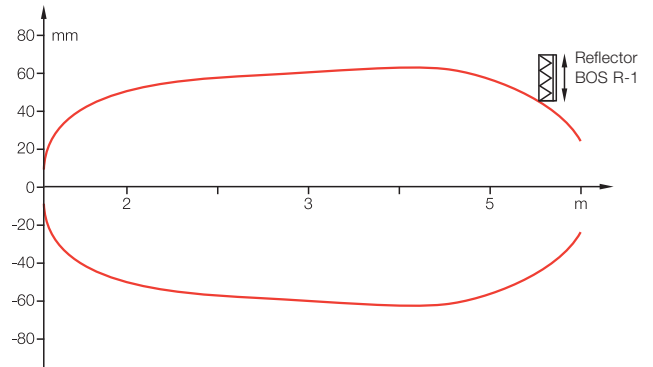
Connectors ... page 5.2 ...

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



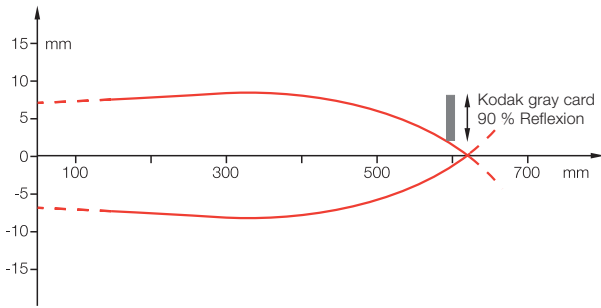
Sensing distance measured with side approach of Kodak gray card.

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



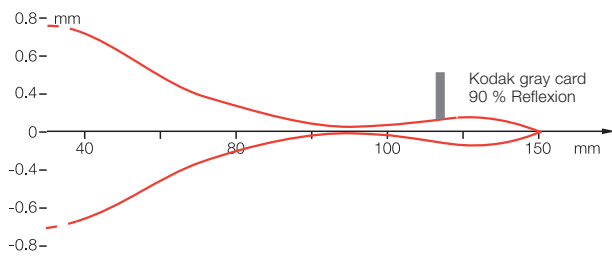
Range measured using side approach with reflector.

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



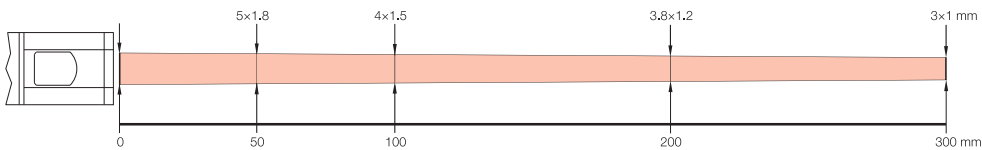
Sensing distance measured with side approach of Kodak gray card.

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

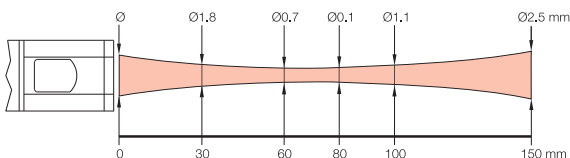


Sensing distance measured with side approach of Kodak gray card.

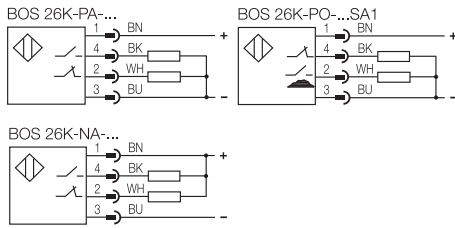
Light beam geometry BOS 26K...1LHC



Light beam geometry BOS 26K...1LHB



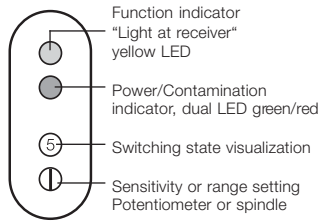
Wiring diagrams



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

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				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

2.1

2.3

Photoelectric sensors accessories page 2.3.2 ...

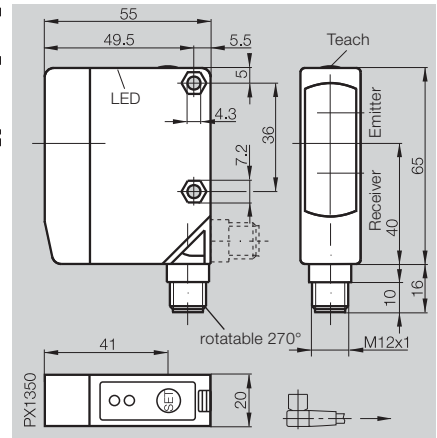
5

Connectors ... page 5.2 ...

Photoelectric Sensors

BOS 36K
Sensing distance 500 mm

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
PNP 0.01...2 m

BOS 36K-PA-1HD-S4-C

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_o

≤ 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

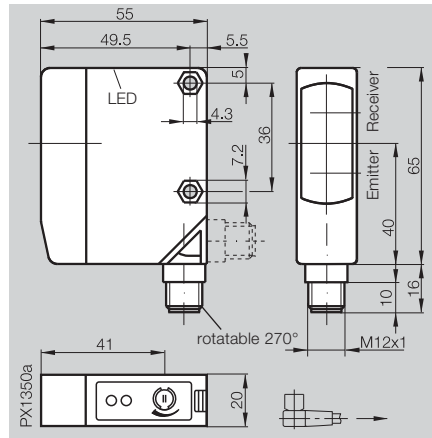
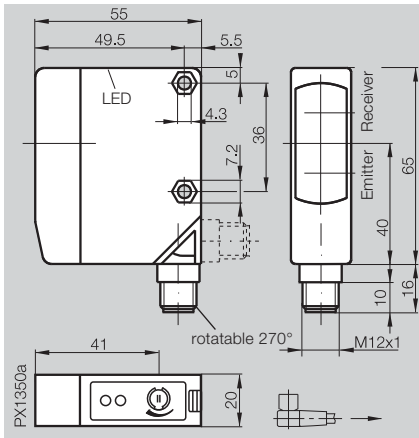
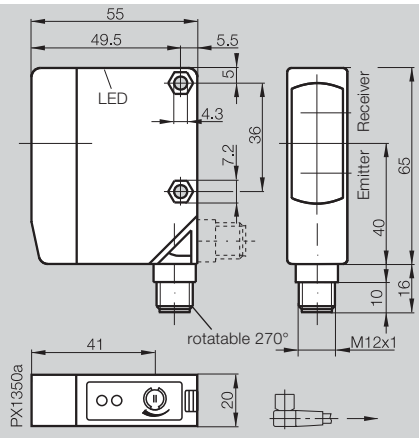
Diffuse values referenced to Kodak gray card 90% Reflexion.
Retroreflective values referenced to R1 reflector.

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
2 V DC
≤ 40 mA
PNP-Transistor
200 mA
Light/Dark (push-pull)
≤ 2 V
Potentiometer 270°

10...30 V DC
2 V DC
≤ 40 mA
PNP-Transistor
200 mA
Light/Dark (push-pull)
≤ 2 V
Potentiometer 270°

10...30 V DC
2 V DC
≤ 40 mA
PNP-Transistor
200 mA
Light/Dark (push-pull)
≤ 2 V
Potentiometer 270°
Test input (BLS)

LED, infrared
880 nm

LED, red light
660 nm

LED, infrared
880 nm

LED yellow
LED green

LED yellow
LED green

LED green (BLS)
LED yellow (BLE)
LED green (BLE)

1 ms
500 Hz

1 ms
500 Hz

1 ms
500 Hz

55×65×20 mm
M12 connector, 4-pin
impact-resistant ABS

55×65×20 mm
M12 connector, 4-pin
impact-resistant ABS

55×65×20 mm
M12 connector, 4-pin
impact-resistant ABS

PMMA
50 g

PMMA
50 g

PMMA
50 g

IP 66
yes
yes

IP 66
yes
yes

IP 66
yes
yes

-25...+55 °C
5 kLux

-25...+55 °C
5 kLux

-25...+55 °C
5 kLux



Connector orientation

2.1

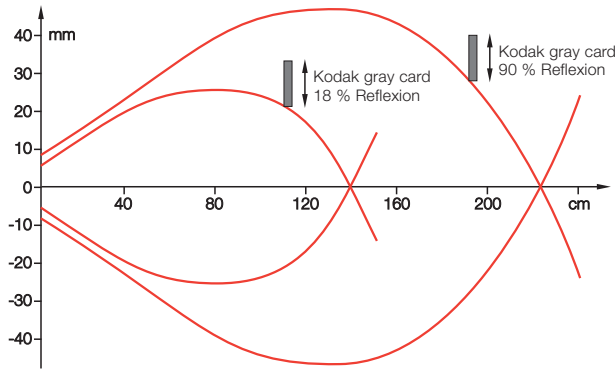
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

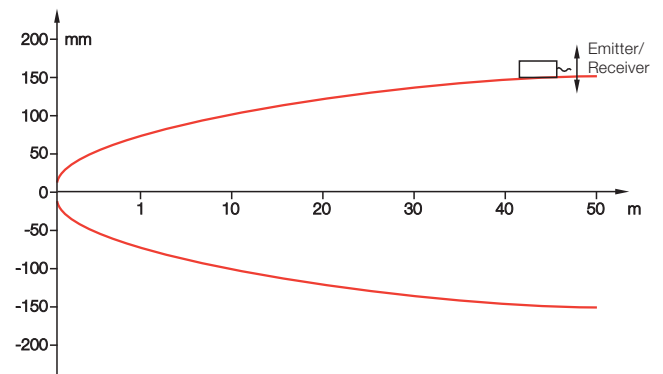
Connectors ... page 5.2 ...

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



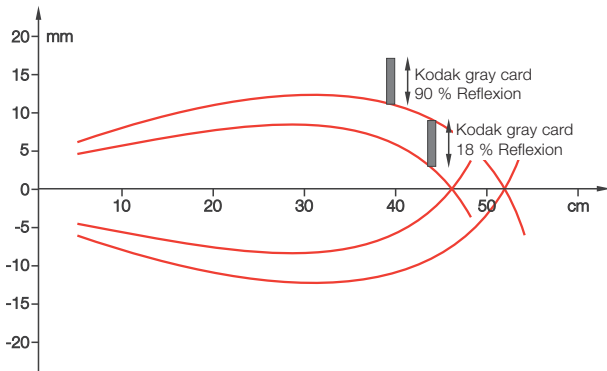
Sensing distance measured with side approach of Kodak gray card.

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



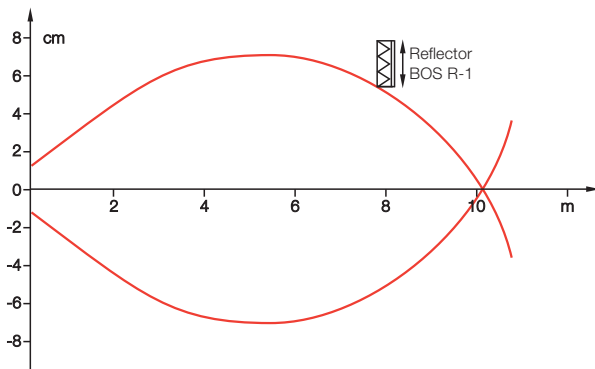
For the through-beam the maximum possible offset between emitter and receiver is measured.

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



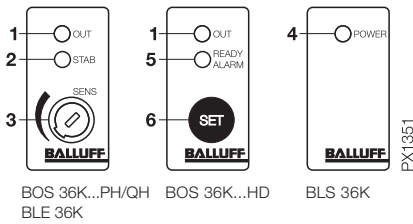
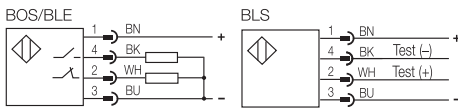
Sensing distance measured with side approach of Kodak gray card.

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



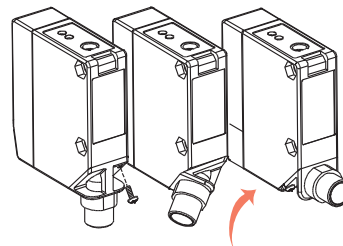
Range measured using side approach with reflector.

Wiring diagrams



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

Recommended accessories

please order separately



Reflector
BOS R-1



Mounting bracket
BOS 36-HW-1



Connector
BKS-_ 19/BKS-_ 20

2.1

2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

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		Conne- ction	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
 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

2.1

2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

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



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
	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_a at I_0

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.

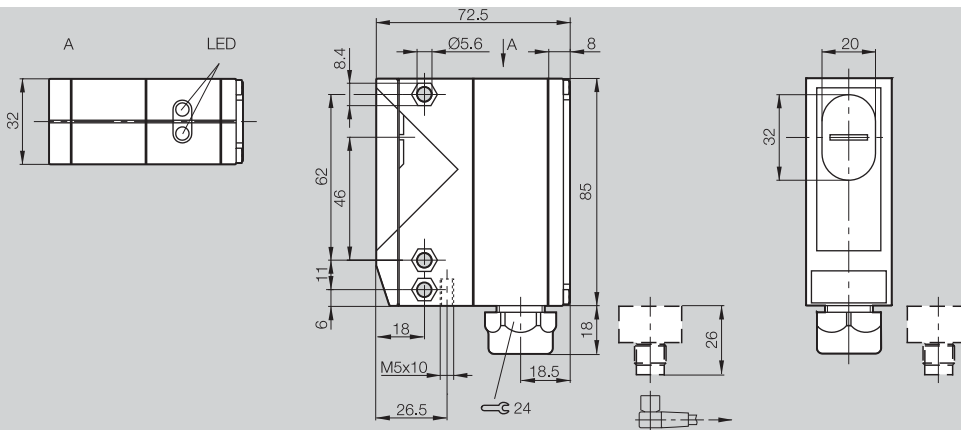
Photoelectric Sensors

BOS 65K
Sensing distance 1.1 m, 2 m
Range 8 m, 50 m

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

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

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



PX0689b

BOS 65K-5-M110T-1
BOS 65K-5-C200T-1

BOS 65K-5-M110T-2P-S4
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
BLS 65K-5-G50-1

BLE 65K-5-F50T-2P-S4
BLS 65K-5-G50-2-S4

BLE 65K-1-F50T-1
BLS 65K-1-G50-1

10...30 V DC

≤ 40 mA

PNP and NPN Transistor
200 mA

Light and dark (reversible)
≤ 2 V

PNP-Transistor, 200 mA
Potentiometer 270°
Test input (except BLE)

LED green (only for BLS)
LED red
LED green

1 ms

500 Hz

selectable 0.02...12 sec.

72.5×85×32 mm

Wiring chamber
0.75 mm²

PC

PMMA

160 g

IP 67

yes

yes

-20...+55 °C

3 kLux

10...30 V DC

≤ 40 mA

PNP-Transistor
200 mA

Light and dark (reversible)
≤ 1.5 V

PNP-Transistor, 200 mA
Potentiometer 270°
Test input (for BLS)

LED green (only for BLS)
LED red
LED green

1 ms

500 Hz

selectable 0.02...12 sec.

72.5×85×32 mm

M12 connector, 4-pin

PC

PMMA

180 g

IP 67

yes

yes

-20...+55 °C

3 kLux

17...264 V AC/DC

Relay 3A, 250 V AC/24 V DC

Light and dark (reversible)
0 V

Potentiometer 270°

LED green (only for BLS)
LED red
LED green

20 ms

10 Hz

selectable 0.02...12 sec.

72.5×85×32 mm

Wiring chamber
0.75 mm²

PC

PMMA

160 g

IP 67

yes

no

-20...+55 °C

3 kLux

2.1

2.3

Photoelectric sensors
accessories
page 2.3.2 ...

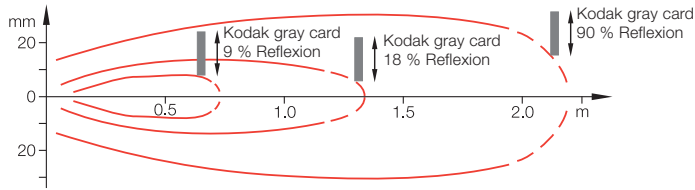
5

Connectors ...
page 5.2 ...



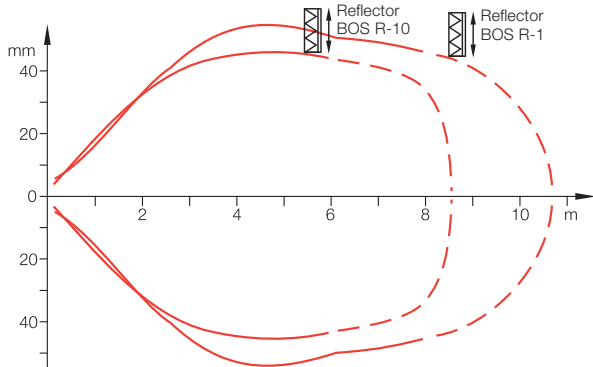
Connector orientation

Diffuse BOS 65K--C200T-...



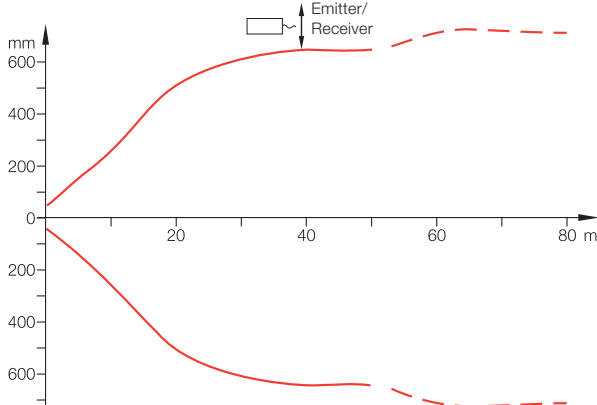
Sensing distance measured with side approach of Kodak gray card.

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



Range measured using side approach with reflector.

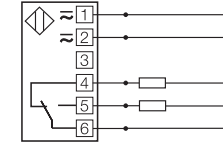
Through-beam BLE/BLS 65K-...



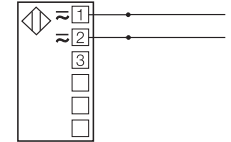
For the through-beam the maximum possible offset between emitter and receiver is measured.

Wiring diagrams

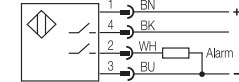
BOS/BLE 65K-1-...
AC, screw terminals



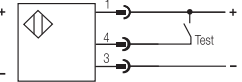
BLS 65K-1-...
AC, screw terminals



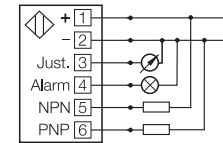
BOS/BLE 65K-5-...
DC, connector



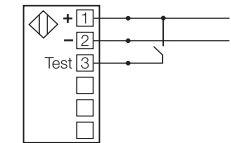
BLS 65K-5-...
DC, connector



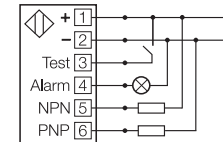
DC, screw terminals



DC, screw terminals

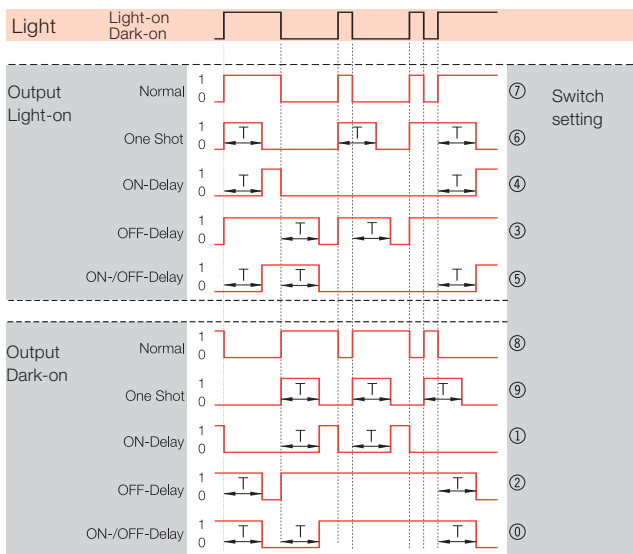


DC, screw terminals



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

Programmable time functions

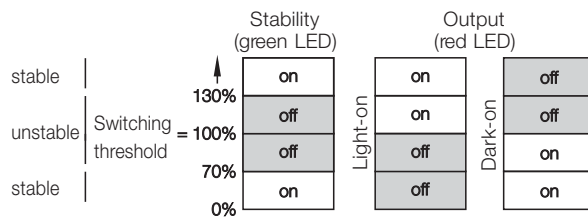


Green stability display

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

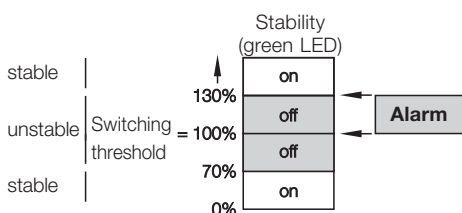
- the input signal exceeds at least 130% of the threshold energy
- the input signal falls below at least 70 % of the threshold energy.



Alarm output for receiver, diffuse and retroreflective (DC)

contamination or mechanical maladjustment.
The alarm output is activated if the signal received remains in the alarm range for at least 3 s.

The alarm output (PNP 200 ma) for DC versions generates a warning signal for malfunctions due to



Test input for emitter, diffuse and retroreflective (DC)

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.

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.

Recommended accessories

please order separately



Reflector BOS R-1



Mounting bracket BOS 65-HW-1



Connector BKS-_ 19/BKS-_ 20

2.1

2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

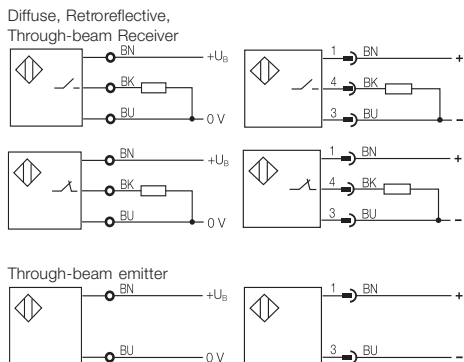
Miniaturization in the Balluff line continues at full pace. The new Opto-mini.s **BOS Q08M** sensors stand out with their ease of handling and fixed sensing distances and ranges.

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

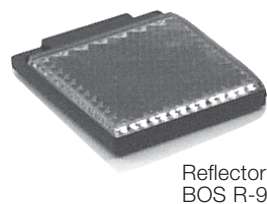
These small photoelectric sensors open up possibilities in high-dynamic applications such as on robot gripper arms. Here is where components with the lightest weight, a small footprint and yet the greatest switching precision are demanded.






Wiring diagrams



Recommended accessories
please order separately



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		
 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

2.1

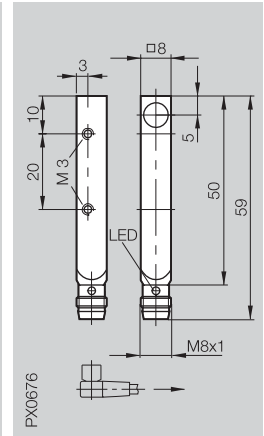
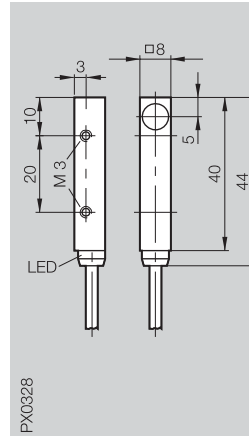
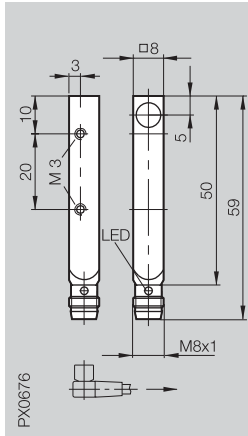
2.3

Photoelectric sensors accessories page 2.3.2 ...

5

Connectors ... page 5.2 ...

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



	0...55 mm	0...55 mm	25...550 mm
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 mm ²	
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.



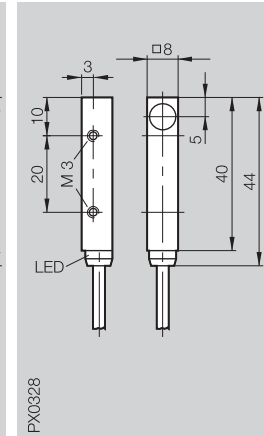
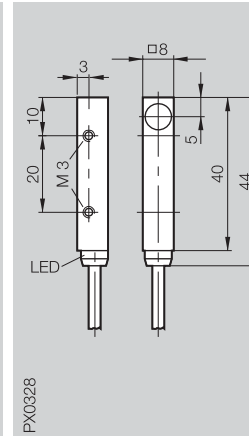
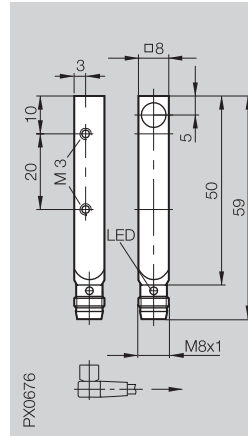
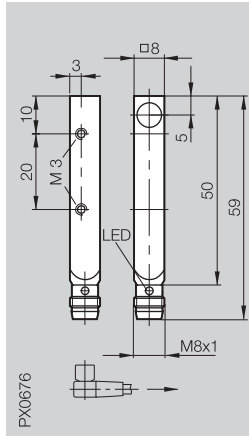
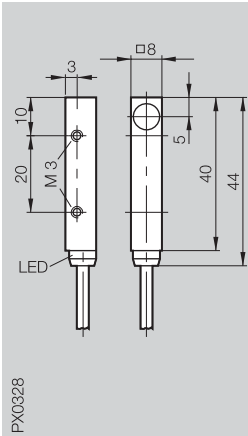
25...550 mm

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

100 mA

100 mA

Light- or dark-on

Light- or dark-on

≤ 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
640 nm

LED, red light
640 nm

LED, red light
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

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

2.1

2.3

Photoelectric sensors
accessories
page 2.3.2 ...

5

Connectors ...
page 5.2 ...