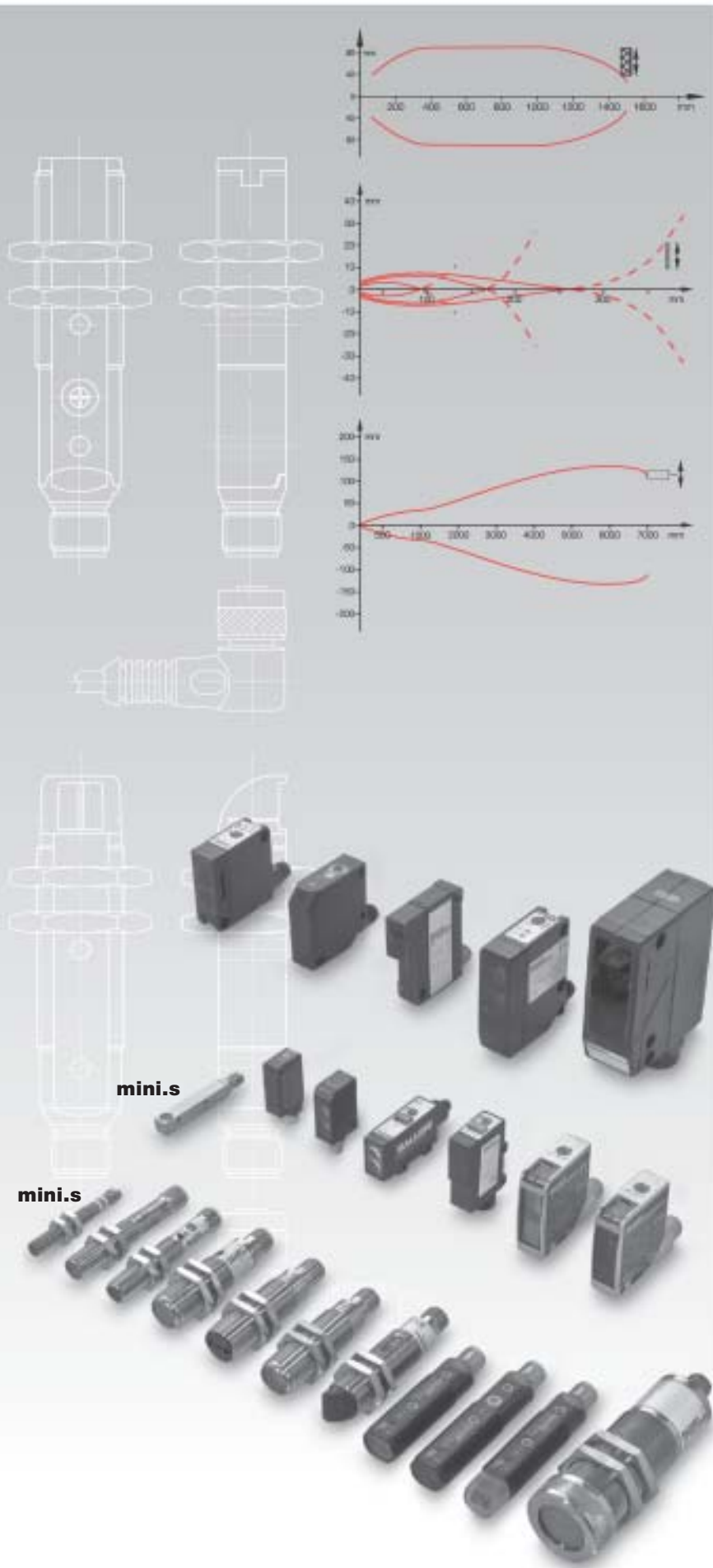


# Photoelectric Sensors - Standard



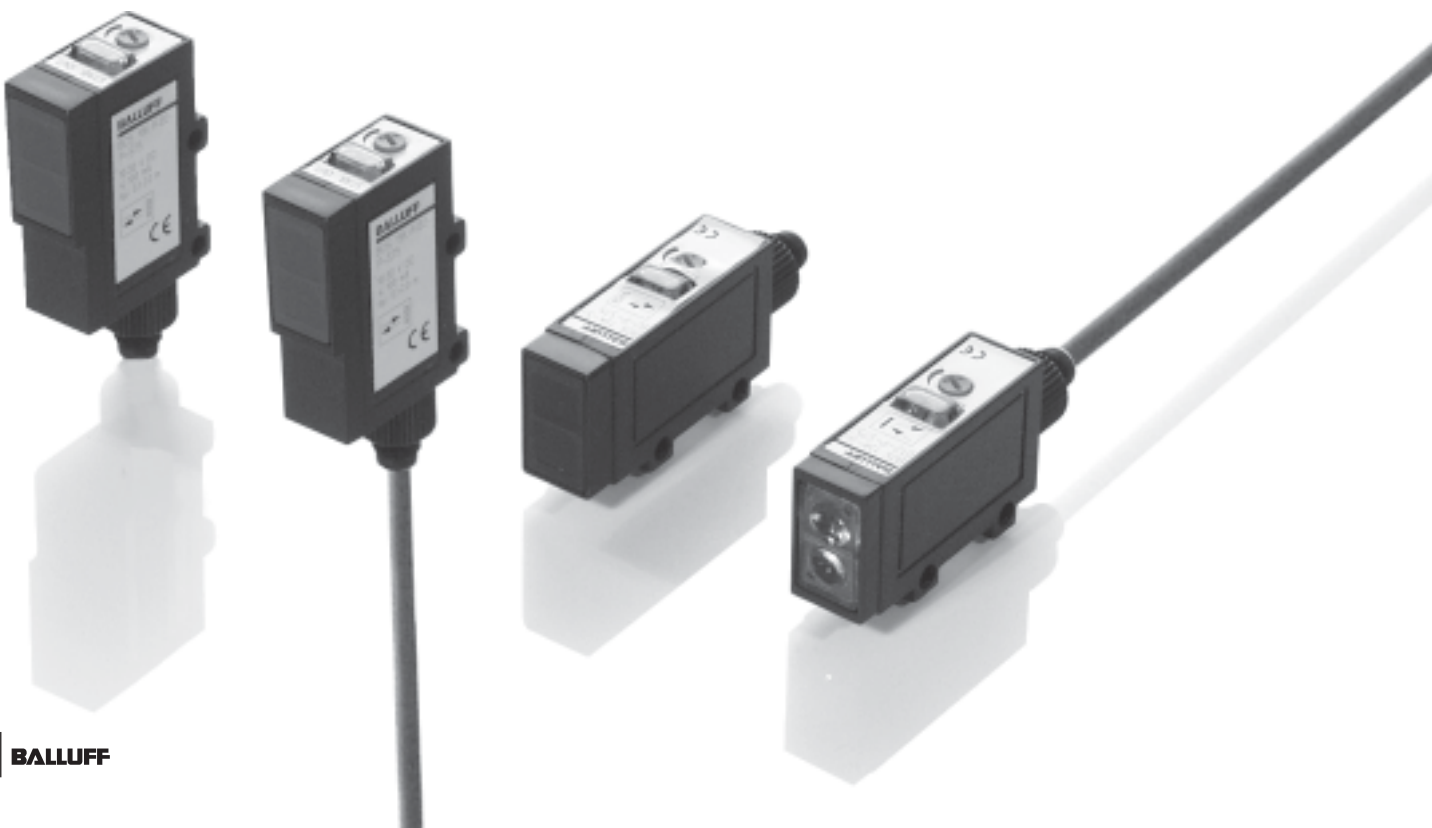
- 2.1.2 **Tubular BOS 08M**  
M8 metal
- 2.1.6 **BOS 12M**  
M12 metal
- 2.1.14 **BOS 18M**  
M18 metal  
with potentiometer  
Rugged  
with teach-in  
Laser  
with AC  
voltage  
with angle head
- 2.1.36 **BOS 18E**  
M18 stainless steel
- 2.1.42 **BOS 18KF**  
M18 plastic  
Laser
- 2.1.54 **BOS 18KW**  
M18 plastic  
with angle head  
Laser
- 2.1.66 **BOS 30M**  
M30 metal
  
- 2.1.70 **Block style BOS Q08M**  
mini.s
- 2.1.74 **BOS 5K**  
mini.s  
with potentiometer
- 2.1.82 **BOS 6K**  
mini.s  
with teach-in  
Laser
- 2.1.90 **BOS 15K**
- 2.1.96 **BOS 21M**  
Laser
- 2.1.108 **BOS 25K**
- 2.1.114 **BOS 26K**  
Laser
- 2.1.122 **BOS 35K**
- 2.1.128 **BOS 36K**
- 2.1.134 **BOS 65K**




### BOS 15K

Somewhat larger and available in two mechanical versions (straight and right-angle), the BOS 15K has 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 and the number of versions make this sensor ideal for installing in machines and systems of small and medium size.

### Features

- Two housing types (straight and right-angle)
- Potentiometer for sensitivity setting
- Cross-talk protection
- NO-/NC-selectable
- Through-beam with test input and alarm output



Type	Range	Light exit		Light type		Output		Output function		Switching frequency	U <sub>B</sub>	Connection	Features		Page
		Straight	Right angle	Red light	Infrared	PNP-Transistor	NPN-Transistor	Alarm output	Light-on				Dark-on	10...30 V DC	
 <b>Diffuse</b>															
BOS 15K-R-C10-P-S75	0...100 mm		■		■	■			■	■	500 Hz	■	■		<b>2.1.92</b>
BOS 15K-S-C10-P-S75	0...100 mm	■			■	■			■	■	500 Hz	■	■		<b>2.1.93</b>
BOS 15K-R-C10-02	0...100 mm		■		■	■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
BOS 15K-S-C10-02	0...100 mm	■			■	■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
BOS 15K-R-C50-P-S75	0...500 mm		■			■			■	■	500 Hz	■	■		<b>2.1.92</b>
BOS 15K-S-C50-P-S75	0...500 mm	■				■			■	■	500 Hz	■	■		<b>2.1.93</b>
BOS 15K-R-C50-02	0...500 mm		■			■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
BOS 15K-S-C50-02	0...500 mm	■				■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
BOS 15K-R-D12-P-S75	12 mm		■	■		■			■	■	800 Hz	■	■		<b>2.1.92</b>
BOS 15K-S-D12-P-S75	12 mm	■		■		■			■	■	800 Hz	■	■		<b>2.1.93</b>
BOS 15K-R-D12-02	12 mm		■	■		■	■		■	■	800 Hz	■		■	<b>2.1.93</b>
BOS 15K-S-D12-02	12 mm	■		■		■	■		■	■	800 Hz	■		■	<b>2.1.93</b>
 <b>Retroreflective</b>															
BOS 15K-R-B2-P-S75	0.1...2 m		■	■		■			■	■	500 Hz	■	■	■	<b>2.1.92</b>
BOS 15K-S-B2-P-S75	0.1...2 m	■		■		■			■	■	500 Hz	■	■	■	<b>2.1.93</b>
BOS 15K-R-B2-02	0.1...2 m		■	■		■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
BOS 15K-S-B2-02	0.1...2 m	■		■		■	■		■	■	500 Hz	■		■	<b>2.1.93</b>
 <b>Through-beam</b>															
BLE 15K-R-F5-P-S75	0...5 m		■		■	■			■	■	250 Hz	■	■		<b>2.1.92</b>
BLE 15K-S-F5-P-S75	0...5 m	■			■	■			■	■	250 Hz	■	■		<b>2.1.93</b>
BLE 15K-R-F5-02	0...5 m		■		■	■	■		■	■	250 Hz	■		■	<b>2.1.93</b>
BLE 15K-S-F5-02	0...5 m	■			■	■	■		■	■	250 Hz	■		■	<b>2.1.93</b>
BLS 15K-R-G5-S75	0...5 m		■		■							■	■		<b>2.1.92</b>
BLS 15K-S-G5-S75	0...5 m	■			■							■	■		<b>2.1.93</b>
BLS 15K-R-G5-02	0...5 m		■		■							■		■	<b>2.1.93</b>
BLS 15K-S-G5-02	0...5 m	■			■							■		■	<b>2.1.93</b>

2.1

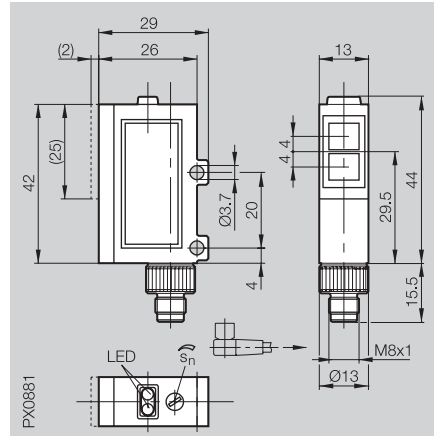
2.3

Photoelectric sensors accessories page 2.3.2 ...

6

Connectors page 6.2 ...

Diffuse	Range	<b>12 mm/0...100 mm/0...500 mm</b>
Retroreflective	Range	<b>0...2 m</b>
Through-beam	Range	<b>0...5 m</b>



**Diffuse**



**Retroreflective**



**Through-beam**



**Electrical data**

Supply voltage  $U_B$

Ripple

No-load supply current  $I_0$  max.

Switching output

Output current

Switching type

Voltage drop  $U_d$  at  $I_o$

Settings

Help function

**Indicator**

Power-on indicator

Output function indicator

Stability indicator

**Time data**

Response time

Frequency of operating cycles  $f$

**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-S 75

BOS 15K-R-C50-P-S 75

BOS 15K-R-D12-P-S 75

BOS 15K-R-B2-P-S 75

BLE 15K-R-F5-P-S 75

BLS 15K-R-G5-S 75

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% reflective.

Retroreflective values referenced to R1 reflector.

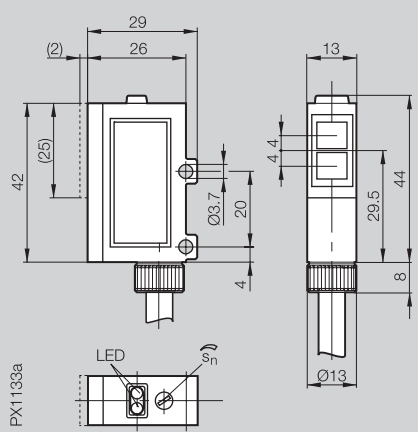
Wiring diagrams, characteristics and accessories see page **2.1.94** and **2.1.95**.



→ Connector orientation

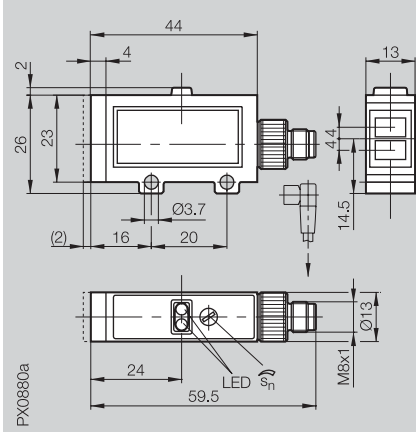
12 mm/0...100 mm/0...500 mm

0...2 m  
0...5 m



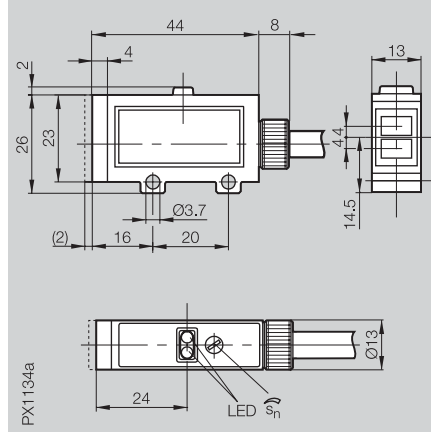
12 mm/0...100 mm/0...500 mm

0...2 m  
0...5 m



12 mm/0...100 mm/0...500 mm

0...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-S 75  
BOS 15K-S-C50-P-S 75  
BOS 15K-S-D12-P-S 75

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-S 75

BOS 15K-S-B2-02

BLE 15K-R-F5-02  
BLS 15K-R-G5-02

BLE 15K-S-F5-P-S 75  
BLS 15K-S-G5-S 75

BLE 15K-S-F5-02  
BLS 15K-S-G5-02

10...30 V DC  
2 V DC  
≤ 30 mA

10...30 V DC  
2 V DC  
≤ 30 mA

10...30 V DC  
2 V DC  
≤ 30 mA

PNP- and NPN-Transistor selectable  
≤ 100 mA

PNP-Transistor  
≤ 100 mA

PNP- and NPN-Transistor selectable  
≤ 100 mA

Light-/dark-on (selectable)  
≤ 1.5 V

Light-/dark-on (selectable)  
≤ 1.5 V

Light-/dark-on (selectable)  
≤ 1.5 V

Potentiometer 270°  
Test input for BLS

Potentiometer 270°  
Test input for BLS

Potentiometer 270°  
Test input for BLS

LED red (BLS)  
LED red  
LED green

LED red (BLS)  
LED red  
LED green

LED red (BLS)  
LED red  
LED green

≤ 1 ms (BLE ≤ 2ms)  
500 Hz (BLE 250 Hz)

≤ 1 ms (BLE ≤ 2ms)  
500 Hz (BLE 250 Hz)

≤ 1 ms (BLE ≤ 2ms)  
500 Hz (BLE 250 Hz)

29×42×13 mm  
2 m cable, PVC  
4/5/6×0.34 mm<sup>2</sup>

44×26×13 mm  
M8 connector, 4-pin

44×26×13 mm  
2 m cable, PVC  
4/5/6×0.34 mm<sup>2</sup>

ABS  
PMMA  
90 g

ABS  
PMMA  
20 g

ABS  
PMMA  
90 g

IP 66  
yes  
yes

IP 66  
yes  
yes

IP 66  
yes  
yes

-15...+55 °C  
3 kLux/10 kLux sunlight

-15...+55 °C  
3 kLux/10 kLux sunlight

-15...+55 °C  
3 kLux/10 kLux sunlight

**2.1**

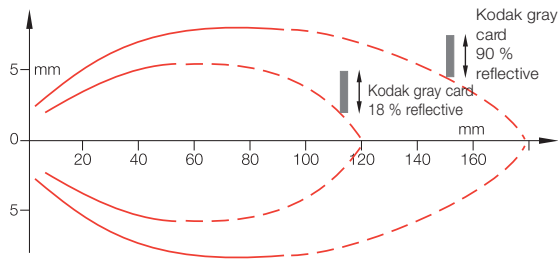
**2.3**

Photoelectric sensors accessories page 2.3.2 ...

**6**

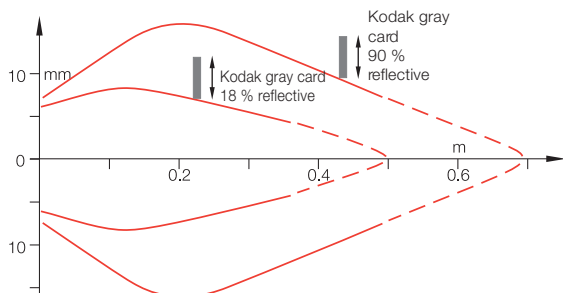
Connectors page 6.2 ...

**Diffuse BOS 15K-...-C10-...**



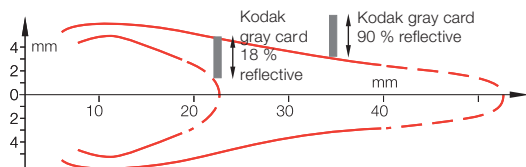
Range measured with side approach of Kodak gray card.

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



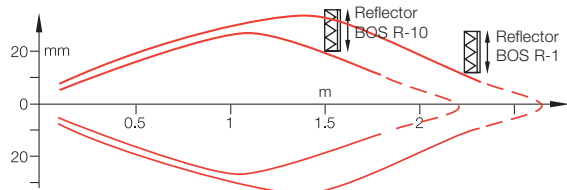
Range measured with side approach of Kodak gray card.

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



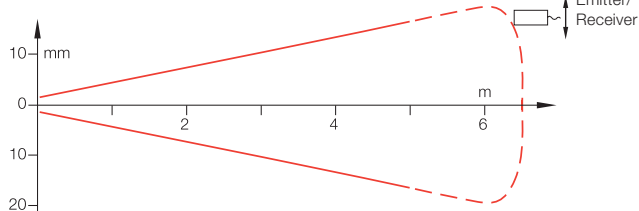
Range measured with side approach of Kodak gray card.

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



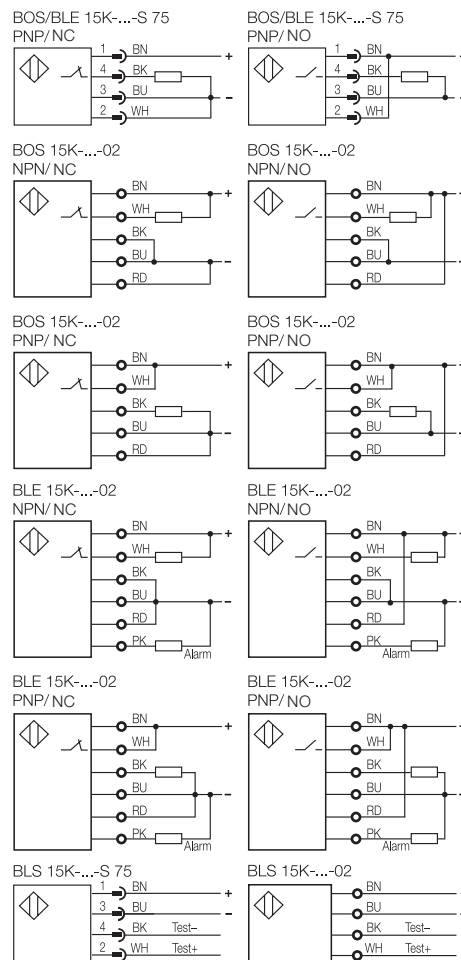
Range measured with side approach of reflector.

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



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

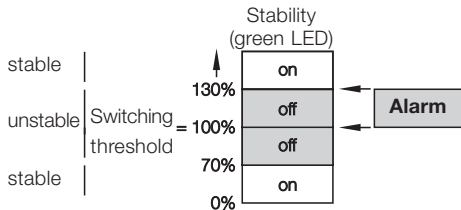
**Wiring diagrams**



**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 generate a warning signal when malfunctions due to

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



**Test input for emitter**

The test input for the emitter interrupts the light pulses from the emitter and allows the function of emitter and receiver to be checked. The receiver output must switch each time when a voltage of 10...30 V DC (Test+) or 0 V (Test-) is present on the test input. Contamination or mal-

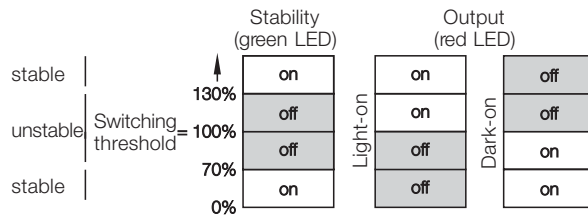
adjustment on the optical axis causes the emitter signal to reach the receiver only weakly, if at all. Therefore the output will not switch even though the test input is activated. The test function provides a remote check of the thru-beam type and serves as a preventative measure.

**Green stability display**

The green stability display illuminates in the "safe" range, where the input energy is at least 30 % over or under the "threshold energy". The "threshold energy" at which a signal change is effected, is defined as 100 %.

The "safe" range is therefore reached when

- the input signal is at 130 % or more of the threshold energy
- the input signal is at 70 % or less than the threshold energy.



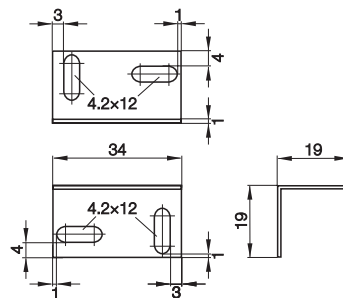
**Slit apertures**

(supplied with through-beam models)



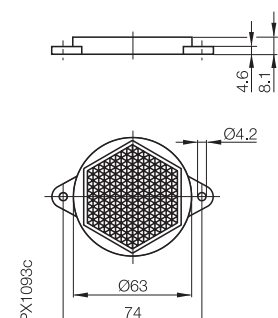
Slit width	0.5 mm	1 mm	2 mm
Range	0.5 m	1 m	2 m
Object size	> 0.5 mm	> 1 mm	> 2 mm

**Mounting bracket (included)**



**Reflector BOS R-10 (included with retroreflective model)**

(included with retroreflective model)



**Recommended accessories**

please order separately



Connector BKS-S 74/BKS-S 75