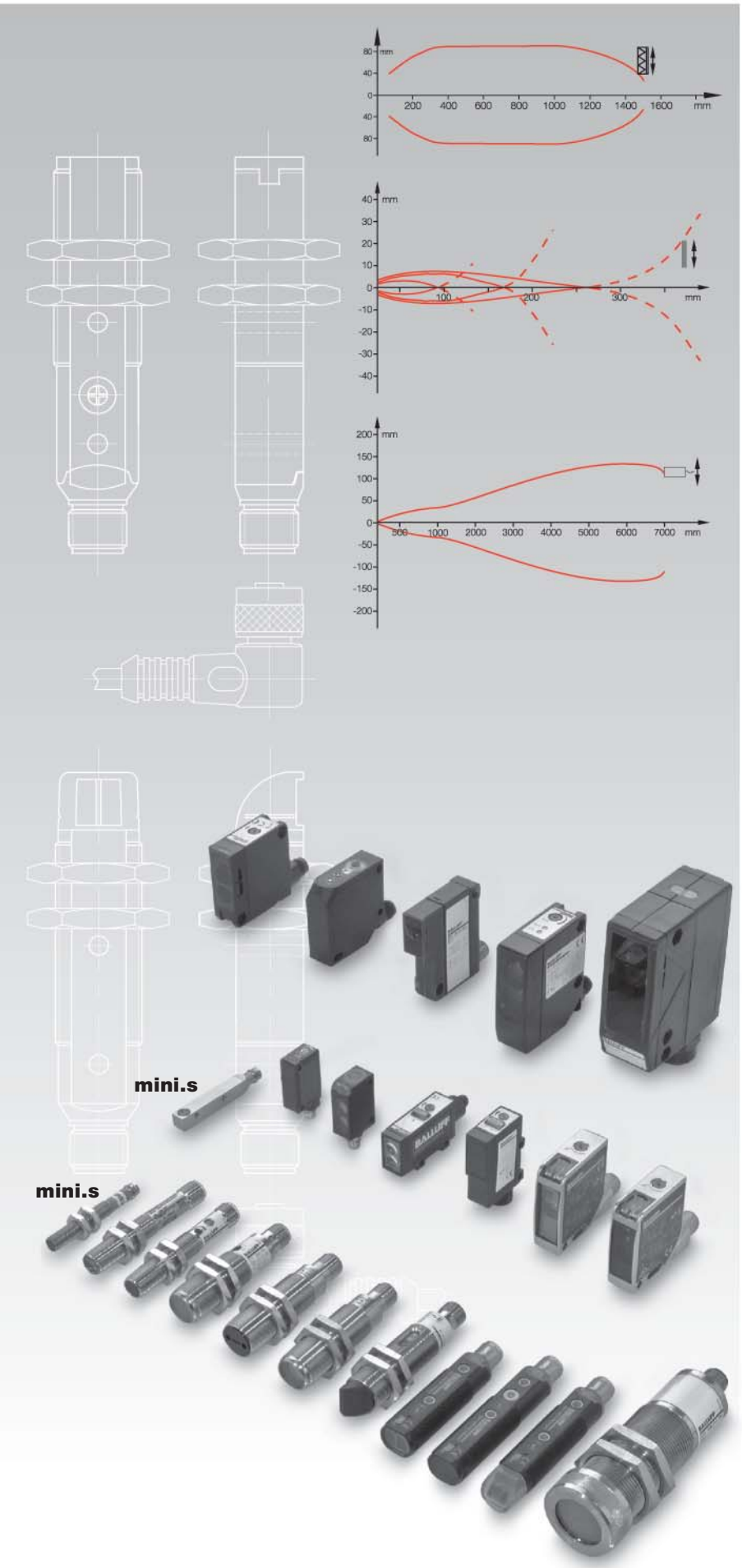



# Photoelectric Sensors – Standard

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

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

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

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

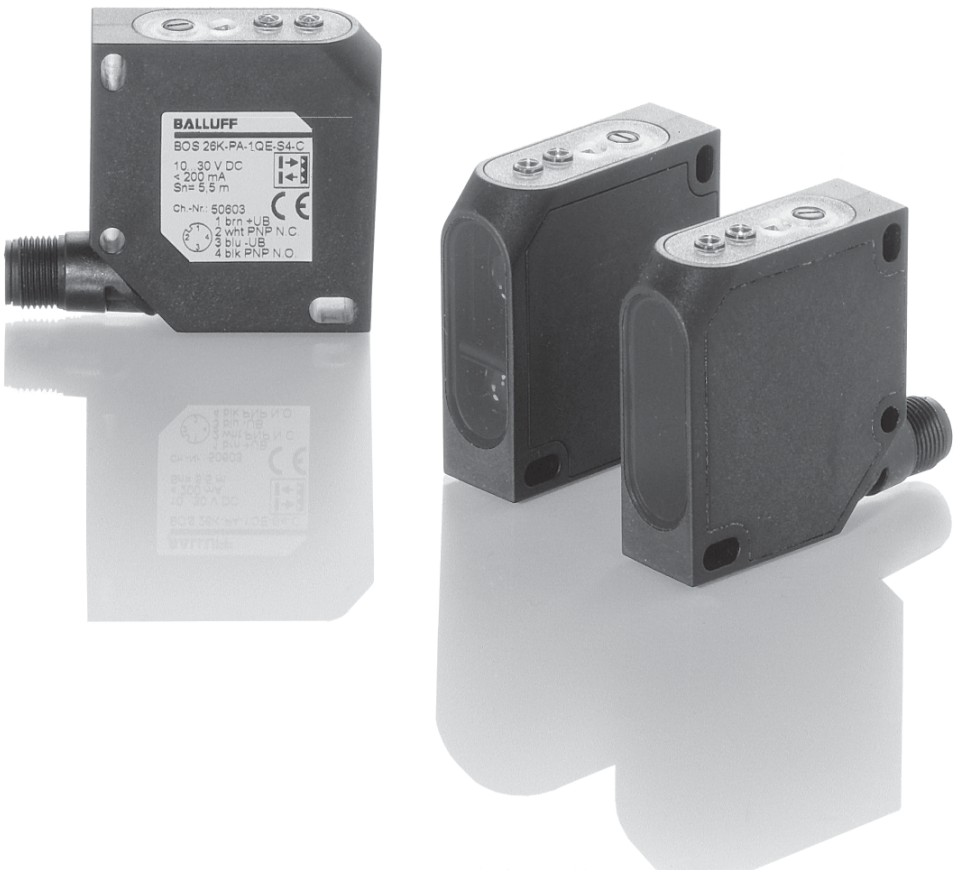
The diffuse model with background suppression **BOS 26K-..-1LHB,** with its focused light beam, can detect objects precisely in virtually any color between 30 and 150 mm. The focusing feature enables a spot size of just 0.1 mm at a distance of 80 mm.

**Features**

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

**Applications**

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

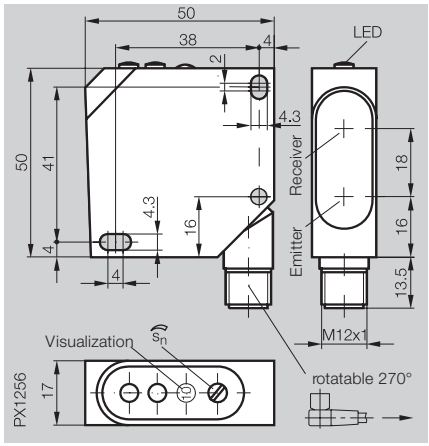


| Type | Sensing distance/ Range | Light type | | | Output | | Output function | | Switching frequency | $U_B$ | Connection | | Help functions | | | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Red light | Infrared | Laser | PNP-Transistor | NPN-Transistor | Light-on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

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

# BOS 26K
## Sensing distance 300 mm

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

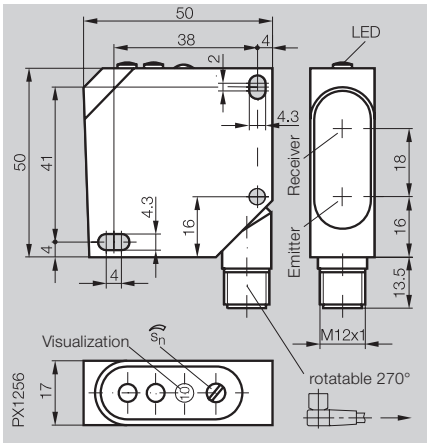
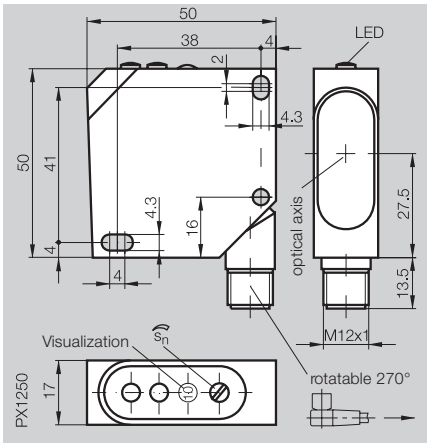
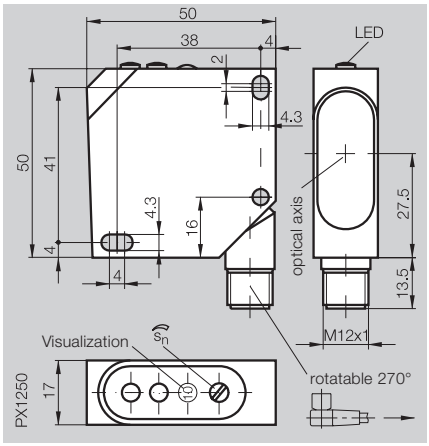



| | | | | |
|---|---|---|---|---|
| | **Diffuse** | | | |
| | PNP | 30...300 mm | HGA | BOS 26K-PA-1HC-S4-C |
| | NPN | 30...300 mm | HGA | BOS 26K-NA-1HC-S4-C |
| | PNP | 150...600 mm | HGA | |
| | NPN | 150...600 mm | HGA | |
| | **Retroreflective** | | | |
| | PNP | 5.5 m | Autocollimation | |
| |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

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

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

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

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

Connector orientation

2.1

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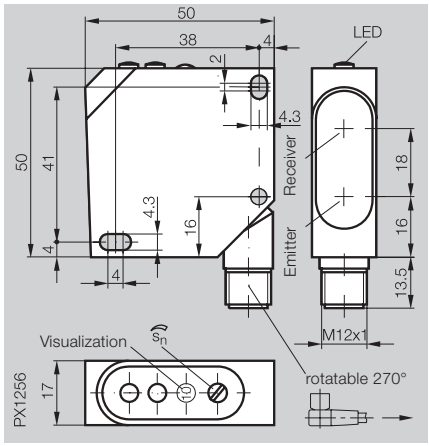
Photoelectric sensors accessories page 2.3.2 ...

5
Connectors ... page 5.2 ...

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




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

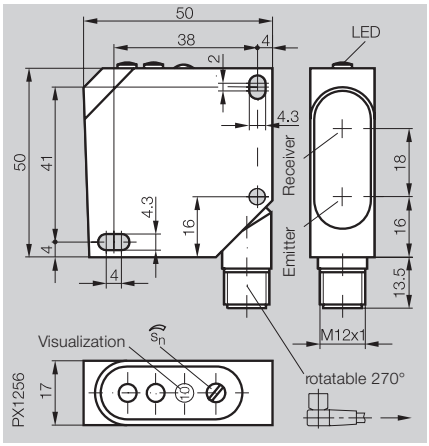
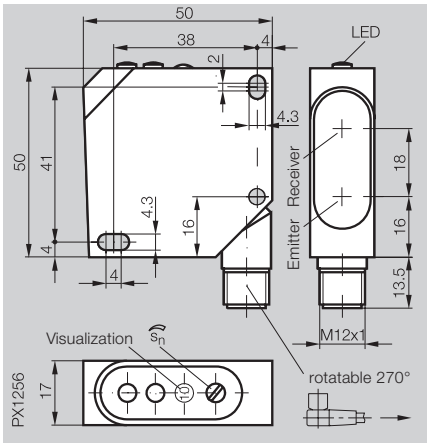
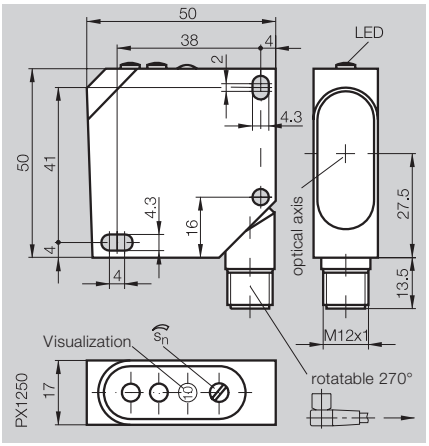
Diffuse sensor values referenced to Kodak gray card 90 % Reflexion. Retroreflective sensor values referenced to R22 reflector.

**Light spot diameter [mm]**

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

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

Connector orientation

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

**Light spot diameter [mm]**

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

**Light spot diameter [mm]**

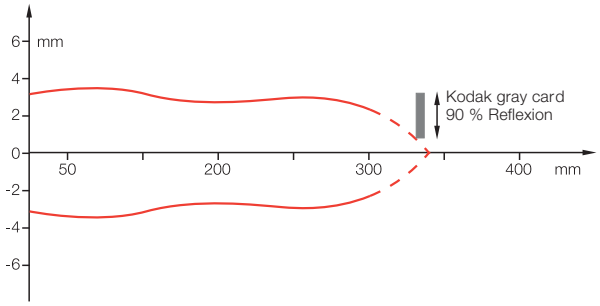
| Sensing distance | 50 | 100 | 200 |
|---|---|---|---|
| Light spot Ø | 5×1.8 | 4×1.5 | 3.8×1.2 |

**Light spot diameter [mm]**

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

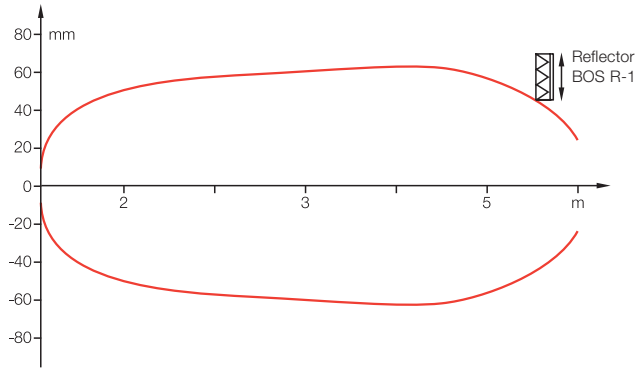
2.1
2.3 Photoelectric sensors accessories page 2.3.2 ...
5 Connectors ... page 5.2 ...

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



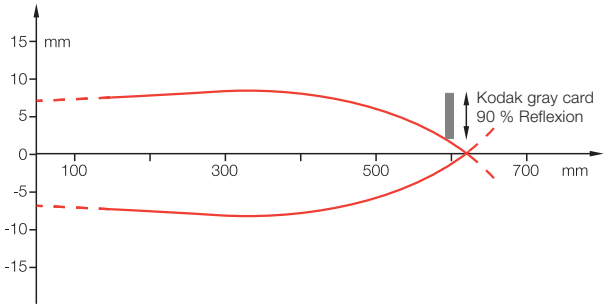

Sensing distance measured with side approach of Kodak gray card.

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



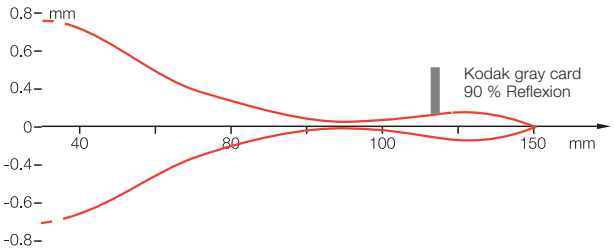

Range measured using side approach with reflector.

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




Sensing distance measured with side approach of Kodak gray card.

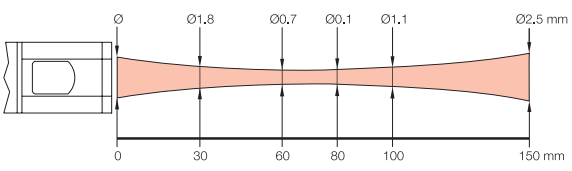
### Diffuse BOS 26K-..-1LHB-...



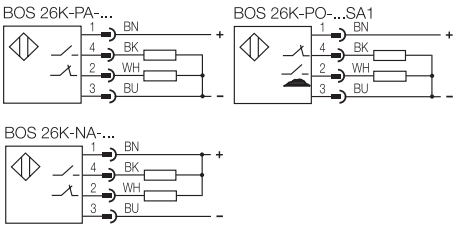

Sensing distance measured with side approach of Kodak gray card.

### Light beam geometry BOS 26K...1LHC


### Light beam geometry BOS 26K...1LHB



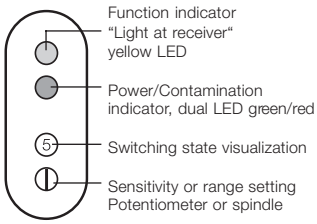
## Wiring diagrams




## Contamination indicator

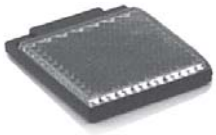
The BOS 26K has 2 display LED's: yellow for indicating function and green/red for indicating status and contamination. Should the received light drop below a certain level, this will be indicated by a red LED. This allows contamination or maladjustment to be detected early.

## Indicators and operating elements




## Recommended accessories

please order separately



Reflector
BOS R-9

Reflector
BOS R-1

Adapter plate
BOS 21-AD-1

Laser reflector
BOS R-22

Laser reflector
BOS R-12

Laser reflector
BOS R-13

Mounting bracket
BOS 26-HW-1

Connector
BKS-_ 19/BKS-_ 20

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

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

**Features**

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

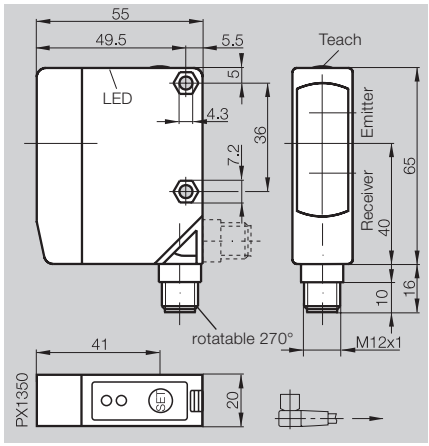
**Applications**

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

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

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

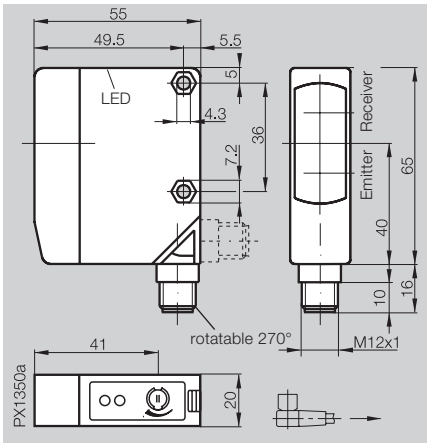
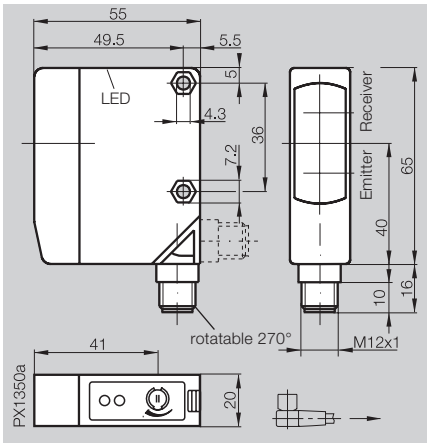
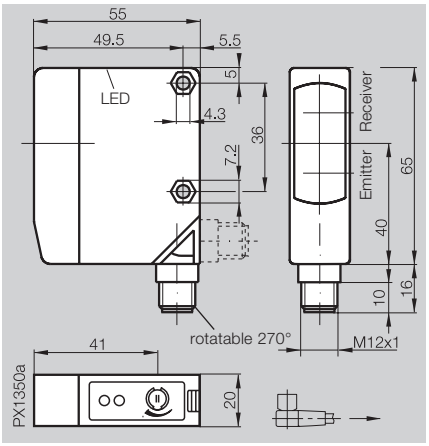
| | | |
|---|---|---|
| Diffuse with background suppression | Sensing distance | **100...500 mm** |
| Diffuse | Sensing distance | |
| Retroreflective with polarizing filter | Range | |
| Through-beam | Range | |

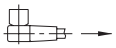



| | | | | |
|---|---|---|---|---|
| **Diffuse** | | | | |
| PNP | 100...500 | mm | HGA, Teach-in | BOS 36K-PA-1HD-S4-C |
| PNP | 0.01...2 | m | | |
| **Retroreflective** | | | | |
| PNP | 0.1...8 | m | Polarizing filter | |
| **Through-beam** | | | | |
| PNP | 50 | m | Receiver | |
| | 50 | m | Emitter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

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

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

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

 Connector orientation

2.1

2.3
Photoelectric sensors accessories
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Connectors ...
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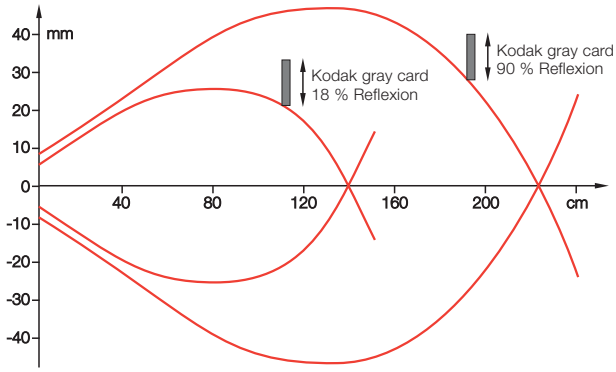
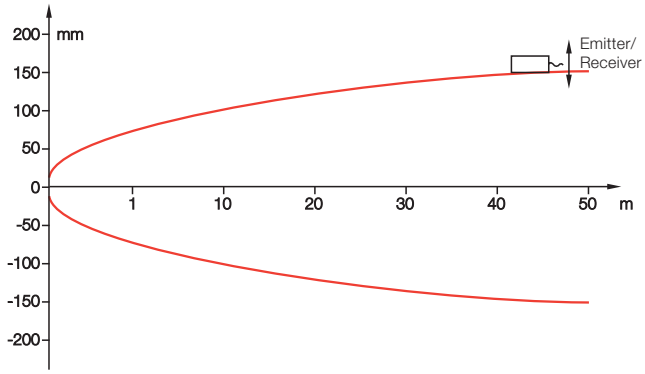
### Diffuse BOS 36K-PA-1PH-S 4-C



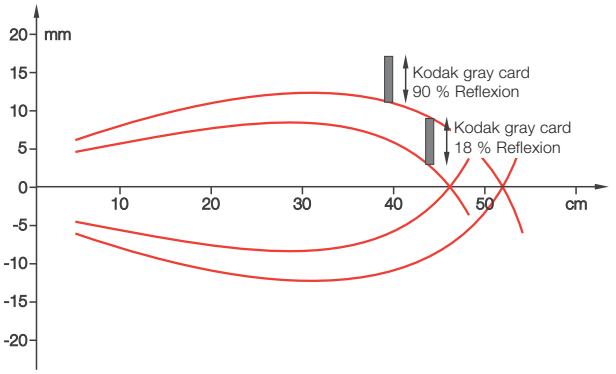

Sensing distance measured with side approach of Kodak gray card.

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



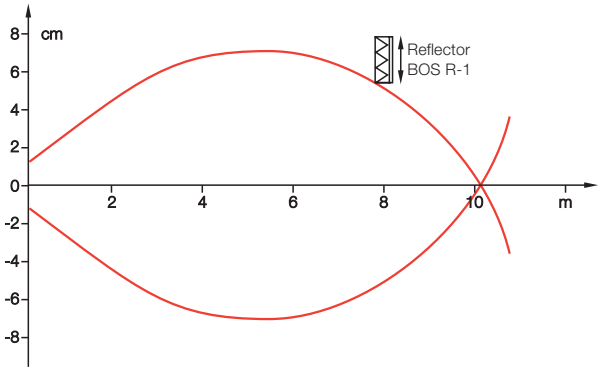

For the through-beam the maximum possible offset between emitter and receiver is measured.

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



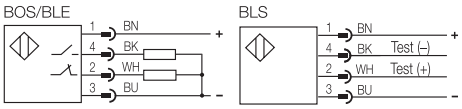

Sensing distance measured with side approach of Kodak gray card.

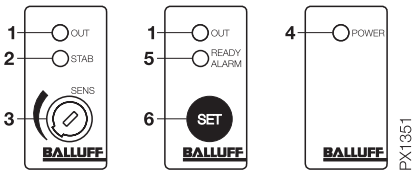
### Retroreflective BOS 36K-PA-1QH-S 4-C




Range measured using side approach with reflector.

## Wiring diagrams



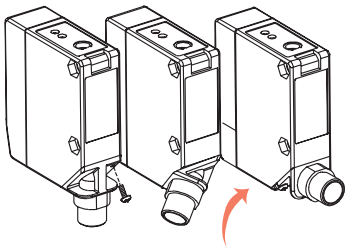

BOS 36K...PH/QH
BLE 36K

BOS 36K...HD

BLS 36K

### Indicators and operating elements

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



Connector 270° rotatable

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Photoelectric sensors accessories page 2.3.2 ...
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## Recommended accessories
please order separately

Reflector
BOS R-1

Mounting bracket
BOS 36-HW-1

Connector
BKS-_ 19/BKS-_ 20

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

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

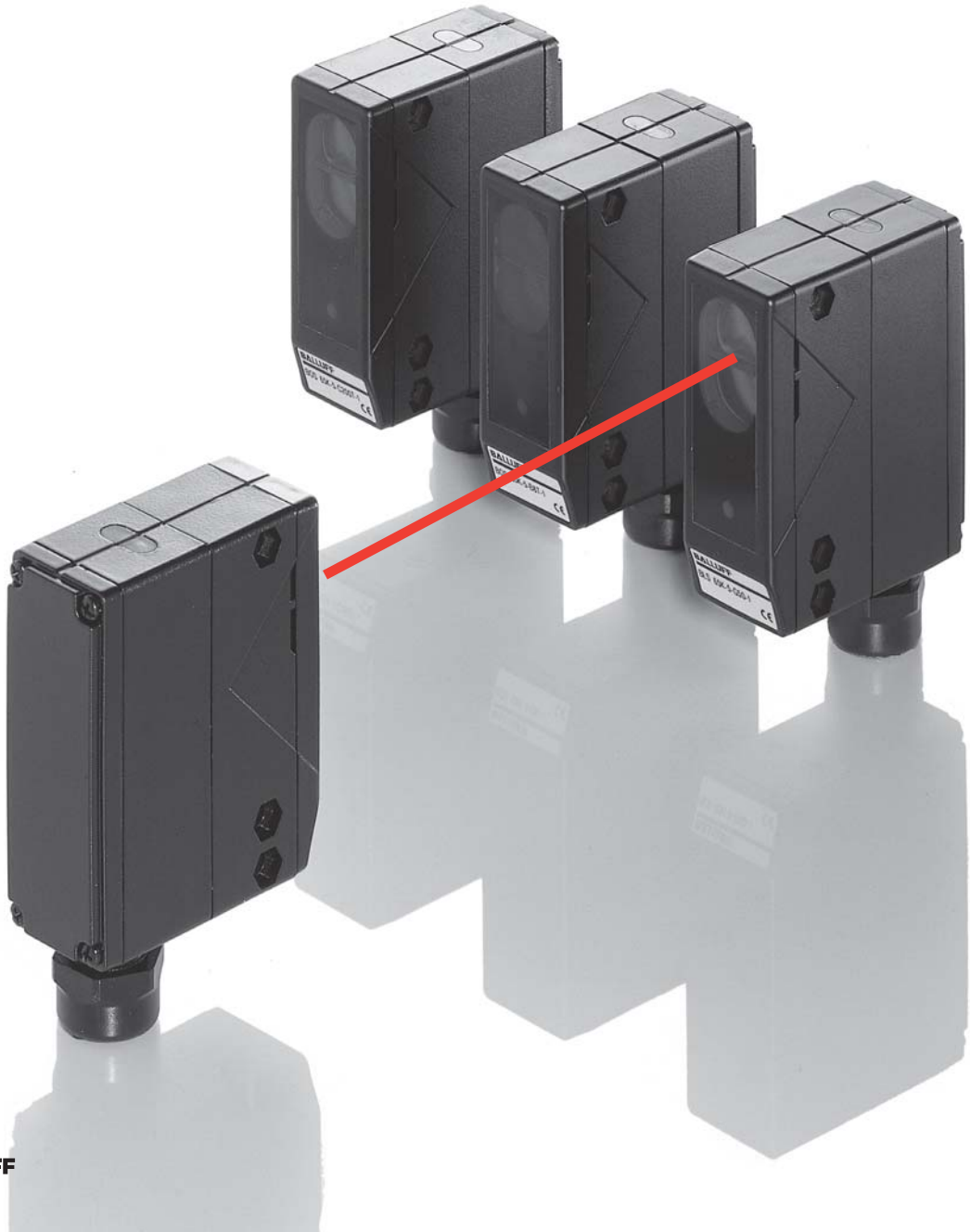
The supply voltage can be 10...30 V DC or 17...264 V AC/DC in the universal version.
All DC versions come standard with PNP and NPN transistor outputs, and have an alarm output and test input. The universal voltage versions have a relay output. The retro- and through-beam versions use both visible red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

**Features**

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

**Applications**

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



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

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2.3
Photoelectric sensors accessories page 2.3.2 ...
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| | |
|---|---|
| Diffuse with background suppression | maximum sensing distance |
| Diffuse | maximum sensing distance |
| Retroreflective | maximum range |
| Through-beam | maximum range |

CE

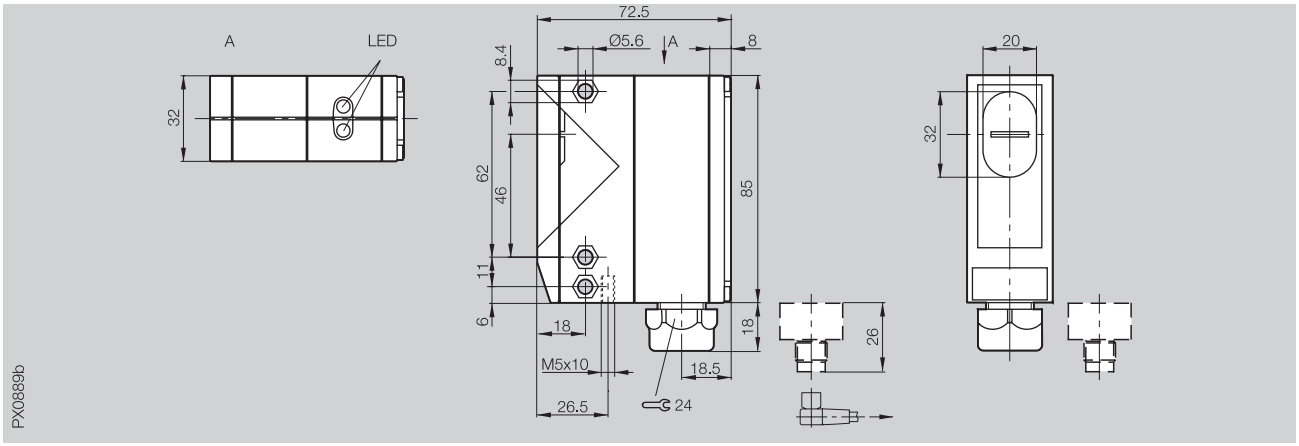
| | | | |
|---|---|---|---|
| **Diffuse** | | | |
| PNP/NPN | 0.2...1.1 | m | HGA, time function |
| | 0.05...2 | m | Time function |
| Relay | 0.2...1.1 | m | HGA, time function |
| | 0.05...2 | m | Time function |
| **Retroreflective** | | | |
| PNP/NPN | 0.3...8 | m | Polarizing filter, red light, time function |
| Relay | 0.3...8 | m | Polarizing filter, red light, time function |
| **Through-beam** | | | |
| PNP/NPN | 50 | m | Receiver, time function |
| | 50 | m | Emitter |
| Relay | 50 | m | Receiver, time function |
| | 50 | m | Emitter |

| | |
|---|---|
| **Electrical data** | |
| Supply voltage $U_B$ | |
| No-load supply current $I_0$ max. | |
| Switching output | |
| Output current | |
| Switching type | |
| Voltage drop $U_d$ at $I_e$ | |
| Alarm output | |
| Settings | |
| Help function | |
| **Indicators** | |
| Power-on indicator | |
| Output function indicator | |
| Stability indicator | |
| **Time data** | |
| Response time | |
| Switching frequency f | |
| Time function | |
| **Mechanical data** | |
| Dimensions | |
| Connection | |
| max. conductor cross-section | |
| Housing material | |
| Optical surface | |
| Weight | |
| **Ambient data** | |
| Degree of protection per IEC 60529 | |
| Polarity reversal protected | |
| Short circuit protected | |
| Ambient temperature range $T_a$ | |
| Ambient light rejection | |

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

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

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




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

Connector orientation

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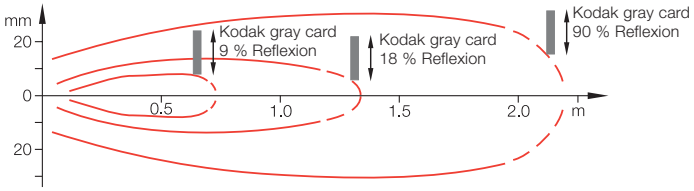
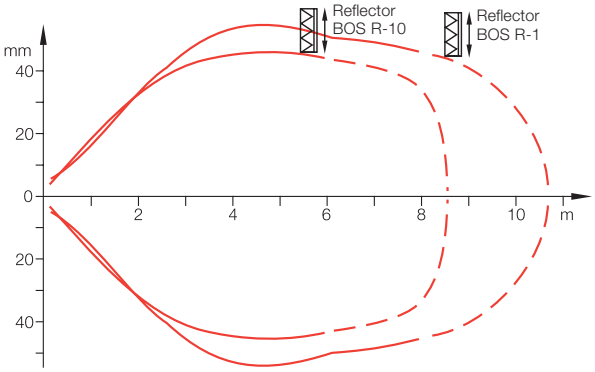
### Diffuse BOS 65K-.-C200T-...



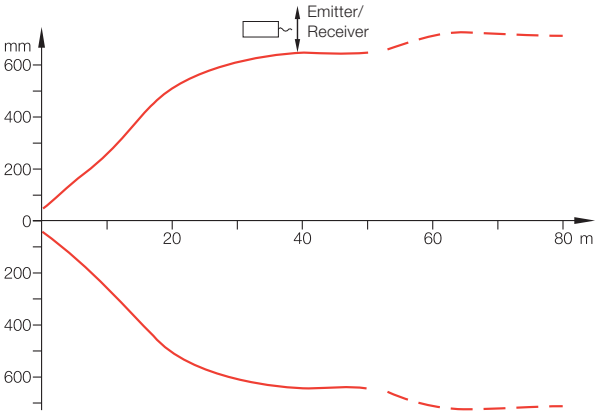

Sensing distance measured with side approach of Kodak gray card.

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



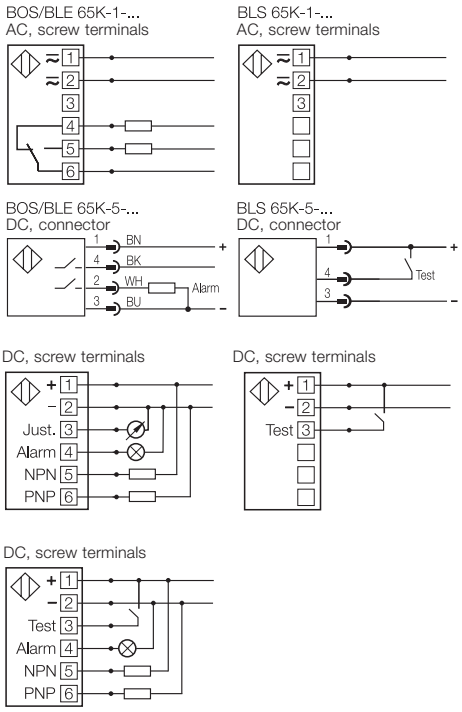

Range measured using side approach with reflector.

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



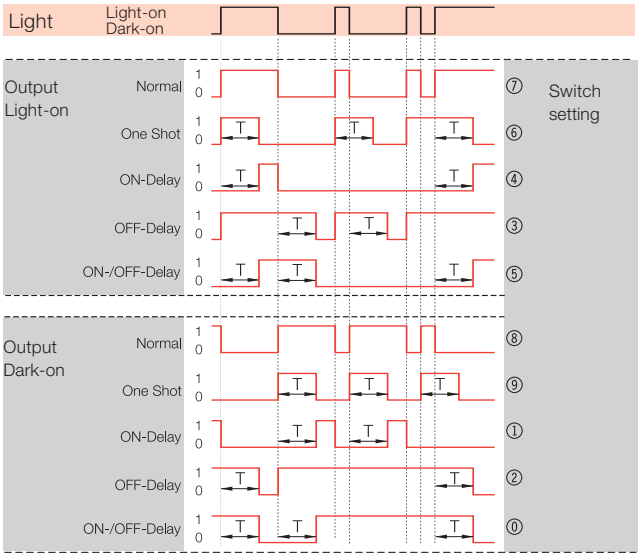

For the through-beam the maximum possible offset between emitter and receiver is measured.

### Wiring diagrams




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

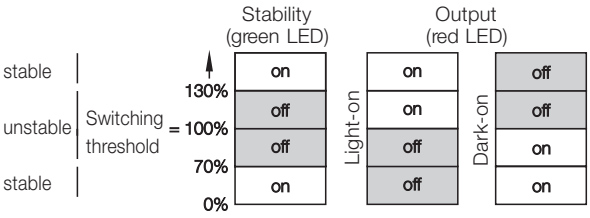
### Programmable time functions




### Green stability display

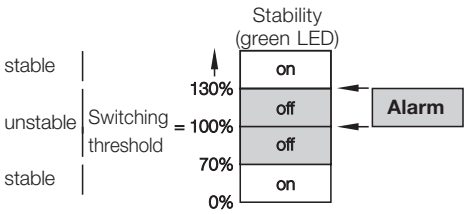
The “threshold energy”, which results in a signal change on output, is defined as 100 %.
The switching state is considered stable when the input energy exceeds or falls below the “threshold energy” by 30 %. The green LED illuminates.

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




### Alarm output for receiver, diffuse and retroreflective (DC)

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




### Test input for emitter, diffuse and retroreflective (DC)

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

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

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

### Recommended accessories
please order separately

Reflector
BOS R-1

Mounting bracket
BOS 65-HW-1

Connector
BKS-_ 19/BKS-_ 20