

BALLUFF

Distance Sensors BOD 26K

... with optional Master-Slave-Mode



The Balluff **distance sensor BOD 26K** not only detects the presence of objects, but can also indicate their precise position or location. This means the distance of the target object from the optical surface of the sensor is directly proportional to a 0...10 V or 4...20 mA signal on the sensor output.

The BOD (Balluff Optical Distance sensor) is actually a diffuse sensor which employs triangulation (like in sensors having background suppression). The result is that the object color has virtually no effect on the distance measurement.

The use of a red laser beam makes it easier to position the object and enables even the smallest targets to be detected.

Balluff distance sensors are designed for industrial applications – they are rugged, reliable and easy to use. Their use requires no special knowledge. They are an ideal tool for sophisticated automation applications.

Characteristics

- Non-contacting, no mutual interference
- Visible light spot
- Optimum spot size
- Distance measurement virtually object-independent
- Capable of high dynamic operation
- Compact size
- Laser Class 2 (no special protection measures required)

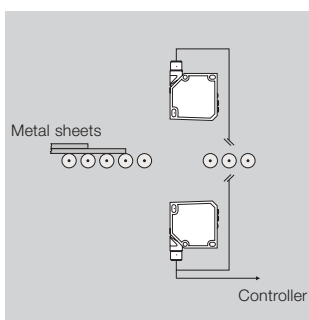
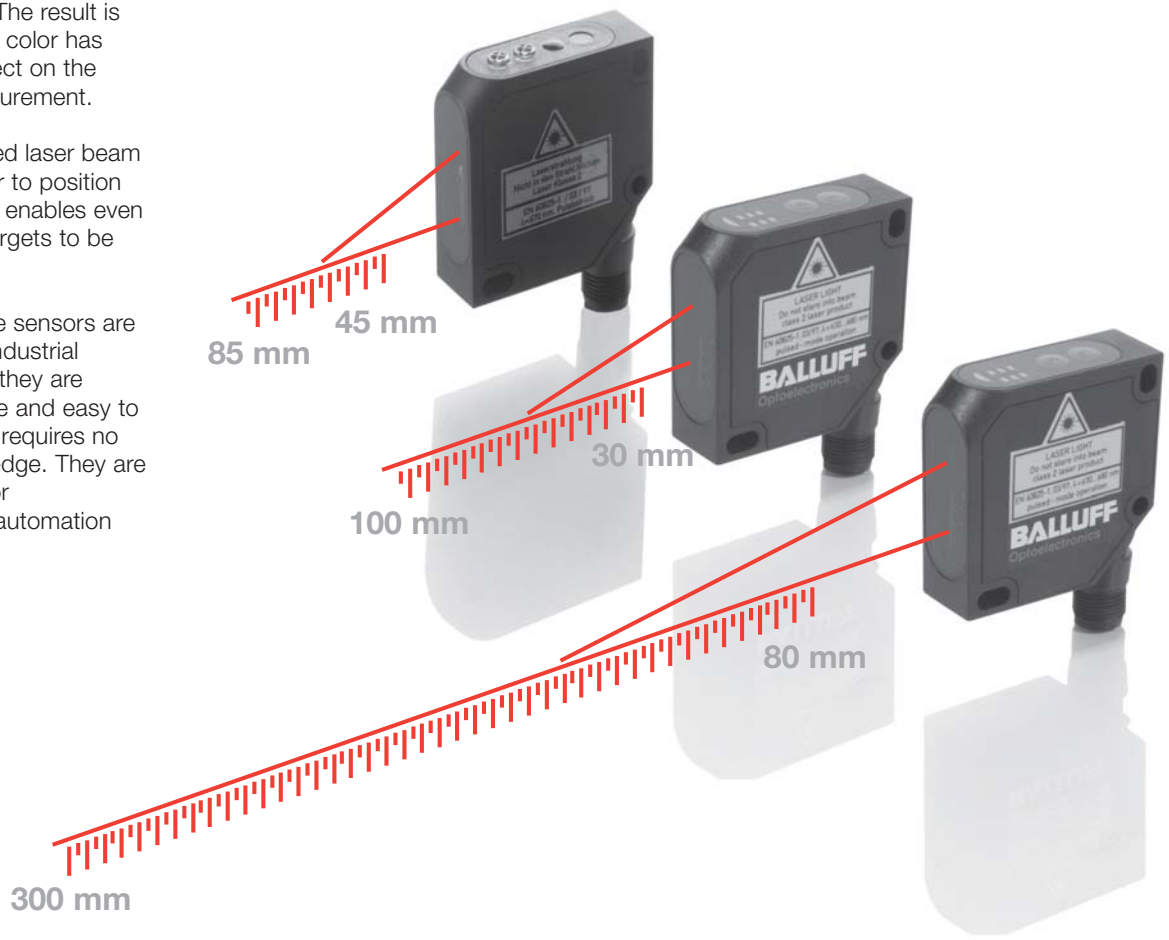
Applications

- Dimension checking (length, width, height)
- Flexible positioning
- Contour sensing
- Fill height sensing
- Controlling (grinding machines)
- Tool status checking on machine tools
- Surface inspection
- Object detection
- Differential measurement
- Thickness measurement

Features

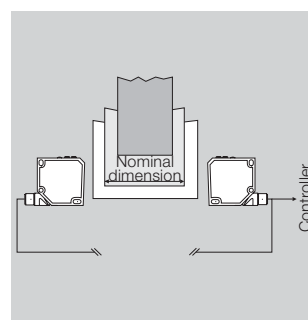
BOD 26K-LB...

- Optional RS485 mode (Master-Slave-Mode)
- 2 selectable switchpoints
- Adjustable range
- Teach-in
- Pulse stretching
- Adjustable averaging
- Trigger input
- Enable input
- Auto-zero input
- Auto-center input
- Min-/Max-Hold
- Signal-Hold
- Difference-Hold



Double layer measurement

The challenge is that the metal sheets are not precisely guided and the distance to the sensors varies. This means sensors with background suppression cannot be used. The solution: the analog output from the Master indicates the thickness. The switch thresholds can be set to the thickness of the object. Now the output switches when there is a thickness deviation from the nominal value, e.g. when there are two layers.

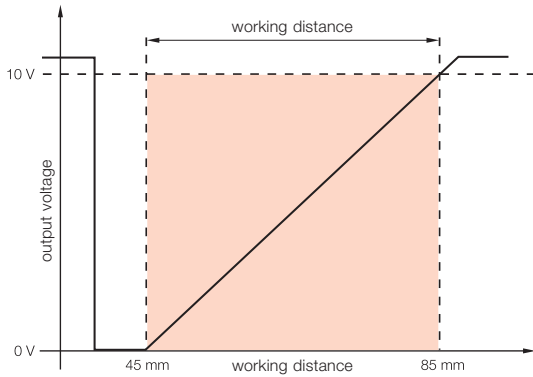


Thickness measurement on wide panels

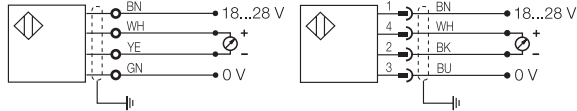
In the wood industry panels need to be checked for thickness. They may differ by only a few millimeters. The analog output from the Master provides the thickness information. The analog output from the Slave indicates the absolute distance.



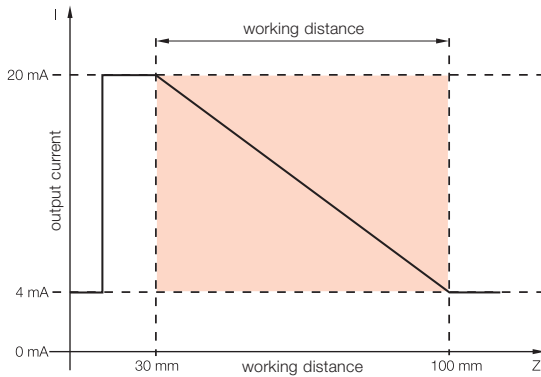
Analog output BOD 26K-LA01..., BOD 26K-LA02...



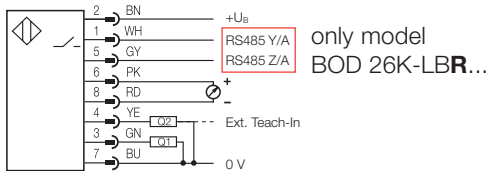
Wiring diagrams



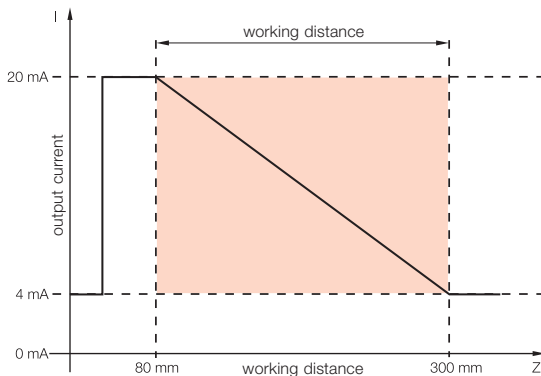
Analog output BOD 26K-LB(R)04...



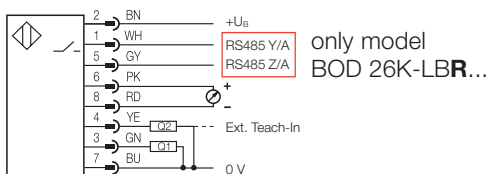
Wiring diagram



Analog output BOD 26K-LB(R)05...



Wiring diagram



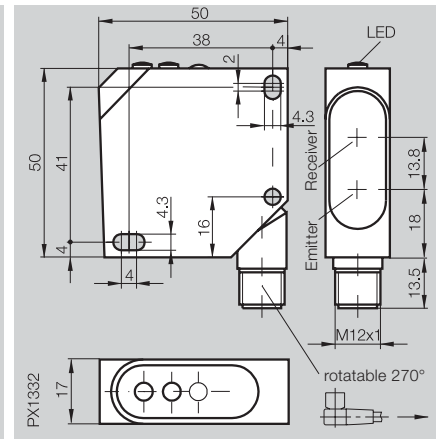
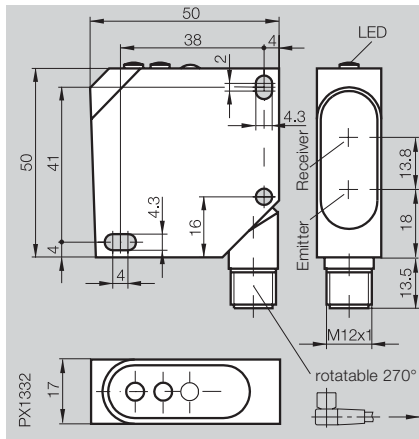
Laser safety regulation

The emitter corresponds to Laser safety class 2 per DIN EN 60825-03/97. Therefore, no additional safety measures are required.

The device must be mounted so that the laser warning label is easily visible.



Series	BOD 26K	BOD 26K
Working range	45...85 mm	45...85 mm
Measuring range	40 mm	40 mm



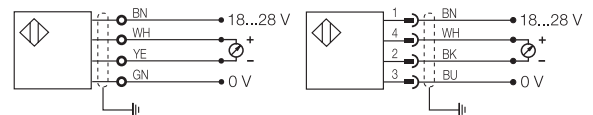
Diffuse

PNP	BOD 26K-LA01-S4-C	BOD 26K-LA02-S4-C
Electrical data		
Supply voltage U_B	18...28 V DC	18...28 V DC
No-load supply current I_0 max.	≤ 35 mA	≤ 35 mA
Analog output	0...10 V (max. 3 mA)	0...10 V (max. 3 mA)
Settings	fixed	fixed
Optical data		
Emitter, light type	laser, red light	laser, red light
Wavelength	670 nm	670 nm
Laser protection class	2	2
Light spot diameter	≤ 0.8 mm at 65 mm	≤ 0.8 mm at 65 mm
Temperature drift	18 μ m/ $^{\circ}$ C	18 μ m/ $^{\circ}$ C
Resolution	80 μm	20 μm
Linearity	≤ 1 %	≤ 1 %
Time data		
Limit frequency of operating cycles	400 Hz	40 Hz
Display		
Supply voltage indication	LED green	LED green
Stability indication	LED red	LED red
Mechanical data		
Dimensions	50x50x17 mm	50x50x17 mm
Connection	M12 connector, 4-pin	M12 connector, 4-pin
No. of wires x conductor cross section		
Recommended connector	only with BKS-S 19-14-PU-05	only with BKS-S 19-14-PU-05
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
Protected against polarity reversal	yes	yes
Short circuit protected	yes	yes
Permissible ambient light	EN 60947-5-2	EN 60947-5-2
Ambient temperature range T_a	0...+45 $^{\circ}$ C	0...+45 $^{\circ}$ C

Diffuse values referenced to Kodak gray card with 90% reflection.



Wiring diagrams



Laser Analog Sensors

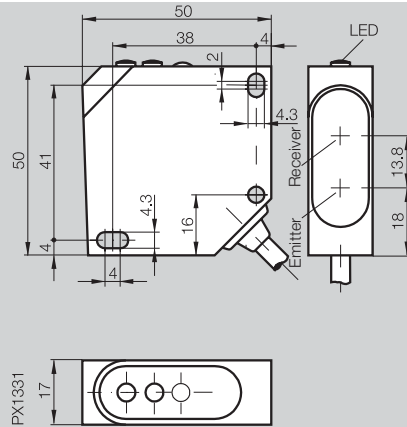
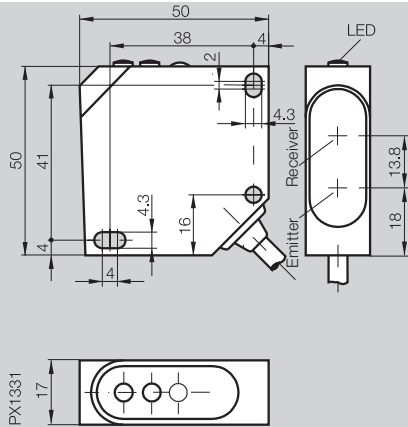


**Opto-
electronic
Sensors**

BOD 26K
Laser Distance Sensors

BOD 26K
45...85 mm
40 mm

BOD 26K
45...85 mm
40 mm



BOD 26K-LA01-C-06

BOD 26K-LA02-C-06

18...28 V DC
≤ 35 mA
0...10 V (max. 3 mA)
fixed

18...28 V DC
≤ 35 mA
0...10 V (max. 3 mA)
fixed

laser, red light
670 nm
2
≤ 0.8 mm at 65 mm
18 μm/°C
80 μm
≤ 1 %

laser, red light
670 nm
2
≤ 0.8 mm at 65 mm
18 μm/°C
20 μm
≤ 1 %

400 Hz

40 Hz

LED green
LED red

LED green
LED red

50×50×17 mm
6 m cable, PVC
4×0.25 mm²

50×50×17 mm
6 m cable, PVC
4×0.25 mm²

impact resistant ABS
PMMA
600 g

impact resistant ABS
PMMA
600 g

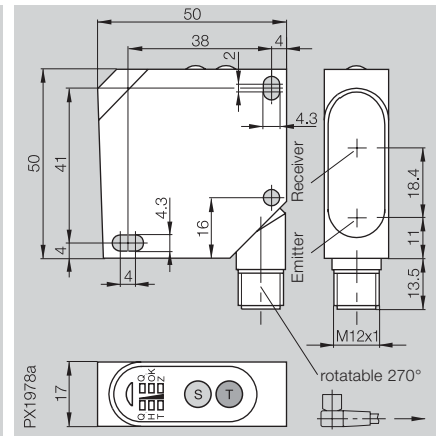
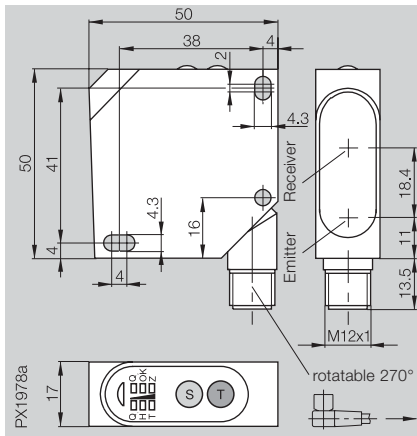
IP 67
yes
yes
EN 60947-5-2
0...+45 °C

IP 67
yes
yes
EN 60947-5-2
0...+45 °C

Connector
BKS-S 19-14-PU-05



Series	BOD 26K	BOD 26K with Master-Slave-Mode
Working range	30...100 mm	30...100 mm
Measuring range	70 mm	70 mm



Diffuse

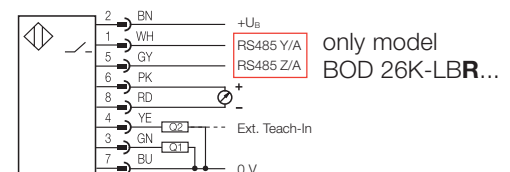
PNP	BOD 26K-LB04-S115-C	BOD 26K-LBR04-S115-C
Electrical data		
Supply voltage U_B	18...30 V DC	18...30 V DC
No-load supply current I_0 max.	≤ 40 mA	≤ 40 mA
Analog output	4...20 mA	4...20 mA
Interface		RS 485
Switching output	2 × PNP-Transistor	2 × PNP-Transistor
Switching type	light-on or dark-on	light-on or dark-on
Output current	100 mA	100 mA
Settings	Teach-in	Teach-in
Optical data		
Emitter, light type	laser, red light	laser, red light
Wavelength	650 nm	650 nm
Laser protection class	2	2
Light spot diameter	1.5 mm×3.25 mm	1.5 mm×3.25 mm
Resolution	≤ 0.1 % of full scale	≤ 0.1 % of full scale
Linearity	≤ 0.25 % of full scale	≤ 0.25 % of full scale
Time data		
Frequency of operating cycles f	1 kHz	1 kHz
Time functions	50 ms pulse stretching	50 ms pulse stretching
Display		
Supply voltage indication	LED green	LED green
Output function indication	LED yellow	LED yellow
Mechanical data		
Connection	M12 connector, 8-pin	M12 connector, 8-pin
Recommended connector	BKS-S 139	BKS-S 139
Housing material	impact resistant ABS	impact resistant ABS
Optical surface	PMMA	PMMA
Weight	43 g	43 g
Ambient		
Degree of protection per IEC 60529	IP 67	IP 67
Protected against polarity reversal	yes	yes
Short circuit protected	yes	yes
Permissible ambient light	EN 60947-5-2	EN 60947-5-2
Ambient temperature range T_a	-10...+60 °C	-10...+60 °C

Diffuse values referenced to Kodak gray card with 90% reflection.



Connector orientation

Wiring diagram



Laser Analog Sensors

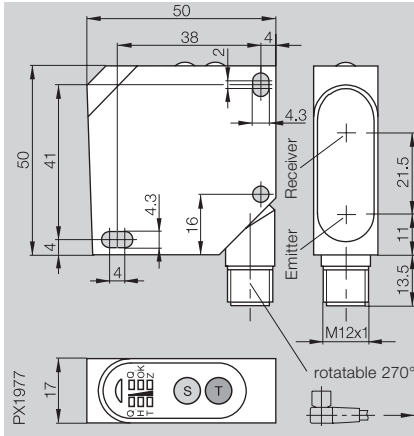
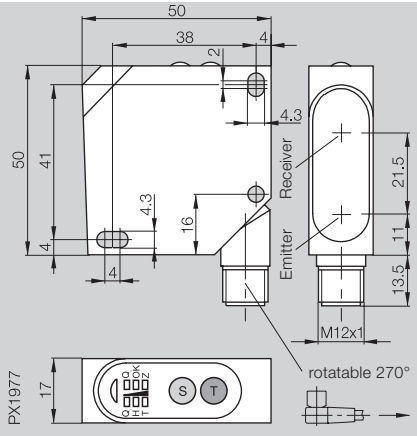


**Opto-
electronic
Sensors**

BOD 26K
Laser Distance Sensors

BOD 26K
80...300 mm
220 mm

BOD 26K with Master-Slave-Mode
80...300 mm
220 mm



BOD 26K-LB05-S115-C

BOD 26K-LBR05-S115-C

18...30 V DC
≤ 40 mA
4...20 mA

18...30 V DC
≤ 40 mA
4...20 mA

2 × PNP-Transistor
light-on or dark-on
100 mA
Teach-in

RS 485
2 × PNP-Transistor
light-on or dark-on
100 mA
Teach-in

laser, red light
650 nm
2
2 mm×4.5 mm
≤ 0.1 % of full scale
≤ 0.25 % of full scale

laser, red light
650 nm
2
2 mm×4.5 mm
≤ 0.1 % of full scale
≤ 0.25 % of full scale

1 kHz
50 ms pulse stretching

1 kHz
50 ms pulse stretching

LED green
LED yellow

LED green
LED yellow

M12 connector, 8-pin
BKS-S 139
impact resistant ABS

M12 connector, 8-pin
BKS-S 139
impact resistant ABS

PMMA
43 g

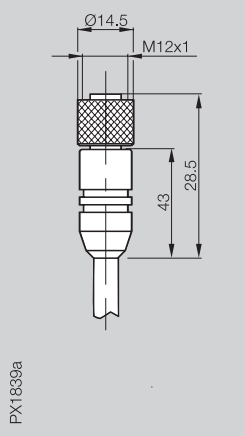
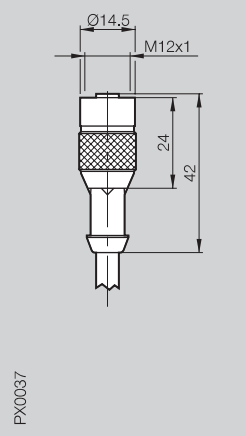
PMMA
43 g

IP 67
yes
yes
EN 60947-5-2
-10...+60 °C

IP 67
yes
yes
EN 60947-5-2
-10...+60 °C

Connector
BKS-S139-PU-05



Connectors	BKS-S139	BKS-S 19
Type	Straight female	Straight female
Use	Plug sensors S115	Plug sensors S 4
		
No LED, normally-open shielded	BKS-S139-PU-05	BKS-S 19-14-PU-05
Manufacturer	Lumberg	Lumberg
Supply voltage U_B	10...36 V DC	10...30 V DC
Cable	5 m integral, PUR	5 m integral, PUR
No. of wires × conductor cross-section	8×0.25 mm ²	3×0.34 mm ² /4×0.25 mm ²
Enclosure rating to IEC 60529	IP 67	IP 68 per BWN Pr. 20
Ambient temperature T_a	-25...+ 85 °C	-25...+70 °C



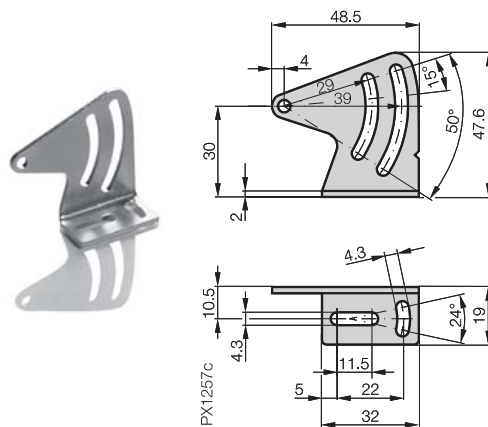
BKS-S139-PU-05



BKS-S 19-14-PU-05

**Mounting Bracket
BOS 26-HW-1**

Please order separately



For more sensors see main catalog "The Sensor Line" on CD-ROM or online!



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