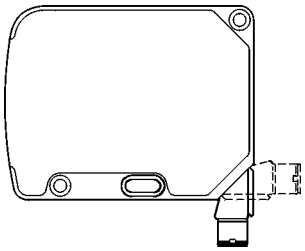


Product Part Number
BOD 63M-LI06-S4

Safety Advisory

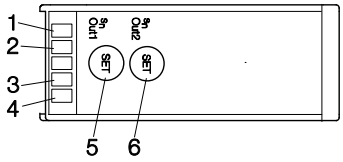
Laser Protection Regulations

The emitter corresponds to Laser Class 2 according to EN 60825-1:2003-10. This means that no additional precautions need to be taken for operation. The device should be installed so that the laser warning label is easily visible. These devices may not be used in applications where the safety of persons depends on device function.

Principle of operation

The BOD 63M measures distances which are output over the IO-Link interface. The sensor also has one adjustable switching output.
The BOD 63M works according to the principle of time of flight. A light pulse is sent out, reflected from the object and received again. The time of flight of this light pulse is measured and converted into a digital distance signal.

Display and operating elements



1. Power on indicator (green)
2. Output function indicator OUT1 (yellow)
3. Output function indicator OUT2 (yellow)
4. Stability indicator (red)
5. SET-button for switching distance 1 (OUT1)
6. SET-button for switching distance 2 (OUT2)

Fig. 1: Display and operating elements

The **green LED** indicates the ready state of the sensor.
The **yellow LED** “OUT 1” indicates the „active“ state of switching output 1.
The **yellow LED** “OUT 2” indicates the „active“ state of switching output 2.
The **red LED** indicates that the intensity of the signal for reliable operation is not sufficient.
The **SET** buttons are used to set the switching distances of the sensor independently of each other.

Setting the switching distances

1. Install and align the sensor.
2. Open the menu: Hold down both buttons simultaneously for 3 s. The green LED flashes.
3. Position the object in the beam path.
4. Store the current object position:
   Press SET "Out 1" for 2 s. During this time the output function indicator OUT1 flashes.
   Note! This switching output is immediately active!
5. Optional: To store the second object position, reposition the object.
6. Saving the current object position:
   Press SET "Out 2" for 2 s. During this time the output function indicator OUT2 flashes.
   Note! This switching output is immediately active!
7. To exit the menu: Hold down both buttons simultaneously for 3 s. The sensor is ready.
   The sensor will also exit teach-in mode automatically after 2 min. without pressing any buttons.

Connections

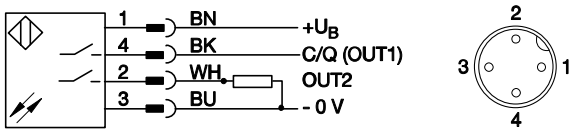
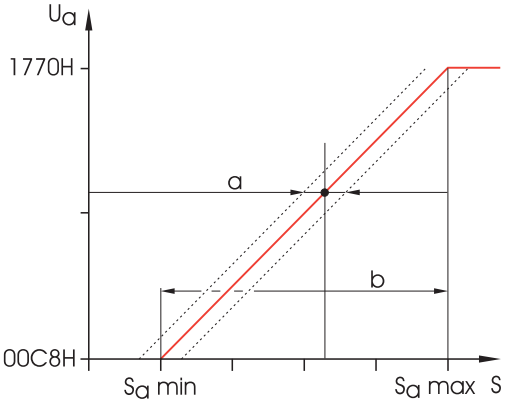


Fig. 2: Wiring diagram, connector pins

Digital signal

A digital signal is output depending on the position of the object.



a = max. non-linearity
b = Measuring range

Fig. 3: IO-Link data (hexadecimal)

Process data

Output data
The sensor sends 3 bytes to the Master.

Byte 0								Byte 1								Byte 2							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
			Error	Switchpoint 4	Switchpoint 3	Switchpoint 2	Switchpoint 1	Distance value MSB								Distance value LSB							

Distance value		Distance in mm from the active surface of the sensor to the target
Switchpoints 1…4	"1"	Switching distance not reached
	"0"	Switching distance exceeded
Fehler	"1"	Receiving power too low, the distance value is not reliable. Distance value FFFF
	"0"	Distance value is reliable.

Input data
The sensor receives 1 byte from the Master.

Byte 0							
7	6	5	4	3	2	1	0
						Button disable	Laser ON

Laser ON	"1"	Laser turned on
	"0"	Laser turned off
Tastensperre	"1"	Teach-In buttons disabled/deactivated
	"0"	Teach-In buttons active, switchpoints can be set.

Parameter data

The sensor parameters are configured over the SPDU channel. The following addresses can be read:

Index (Hex)	Description	Data width	Content
0010	Manufacturer name	7 bytes	Balluff
0011	Manufacturer text	15 bytes	www.balluff.de
0012	Product name	15 bytes	BOD 63M-LI06-S4

The following addresses can be parameterized:

Index (Hex)	Description	Data width	Value range	Default values
0040	Switchpoint 1	2 bytes	200-6000	EEPROM
0041	Switchpoint 2	2 bytes	200-6000	EEPROM
0042	Switchpoint 3	2 bytes	200-6000	3000
0043	Switchpoint 4	2 bytes	200-6000	3000

Installation

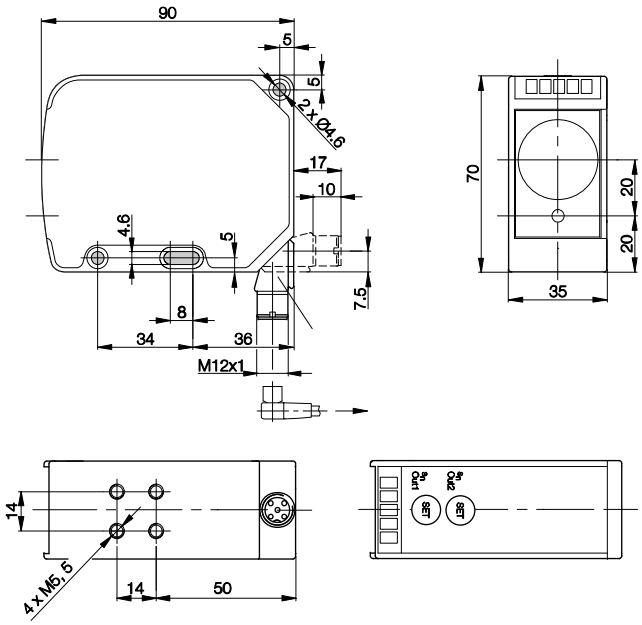


Fig. 5: Dimensions

Measuring range

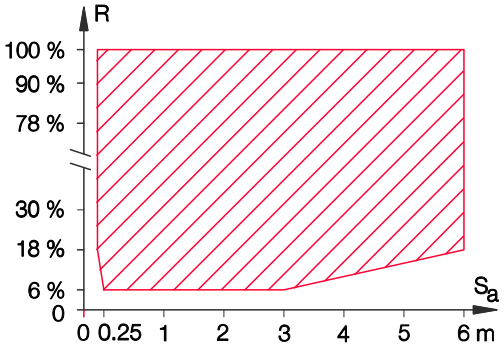


Fig. 6: Measuring range as a function of object reflection

Accessories

Connecting cable:	BKS-B 19-1/GS4-PU-… for operating in IO-Link mode BKS-B 19-3… for operating in SIO mode For high-noise environments a shielded cable is recommended: BKS-S 19-14-PU-05 with RSC 4/7 connector
Mounting bracket:	BOD 63-HW-1

Measuring accuracy

The sensor does not attain its full accuracy until operating temperature is reached, i.e. some time after power-on. The duration of this warm-up phase depends on ambient conditions.

Technical data

Optical

Working distance	200...6000 mm
Emitter light type	Laser red light, pulsed, can be turned off (only in IO-Link mode)
Laser Class	2 per EN 60825-1
Pulse power P_p	< 70 mW
Average power P	< 1 mW
Wavelength	660 nm
Pulse width t	7 ns
Pulse repetition frequency f	2 MHz
Light spot diameter	
at range 200 mm	10 mm
at range 6000 mm	10 mm
Resolution	≤ 1 mm
Gray value shift	≤ 1.5 %
Repeat accuracy	≤ ±4 mm
Temperature drift	≤ 1.5 mm/K
Switching hysteresis	≤ 15 mm
Utilization category	DC 13

Electrical

Supply voltage V_s	18...30 V DC
No-load current I_0 max.	≤ 90 mA
Rated operating current	200 mA
Switching outputs	2, PNP/N.O. (only in SIO mode)
Error signal	Yes (only in IO-Link mode)
Button lock	Yes (only in IO-Link mode)
Voltage drop V_d at I_e	≤ 2.5 V
Switchpoint settings	Teach-In/IO-Link

IO-Link data

Baud rate	38.4 kbaud
Linearity	≤ ±1%
Repeat accuracy	≤ ±4 mm
Temperature drift	≤ 1.5 mm/K
Measuring range	200…6000 mm → 00C8H – 1770H
Min. process data cycle	≤ 16.5 ms

Mechanical

Connection type	Connector, M12x1 4-pin
Housing material	Al alloy
Lens material	Glass
Weight (incl. holder)	260 g
Contamination class	3

Time (SIO-mode)

Ready delay	≤ 20 ms
Switching frequency	≥ 150 Hz
On-delay	≤ 3.4 ms
Off-delay	≤ 3.4 ms

Indicators

Power	Green LED
Output function	2x yellow LED
Error	Red LED

Ambient

Degree of protection	IP 67
Protection class	II
Reverse polarity protected	Yes
Short circuit protected	Yes
Permissible ambient light	≤ 10 kLux
Ambient temperature T_a	-10...+60 °C

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