

Safety advisories

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.



The CE-Marking means that our products conform to the requirements of the EC Guidelines 2004/108/EG (EMC) and the EMC Statute.

Testing in our EMC Laboratory, which is accredited by DATech for Testing of Electromagnetic Compatibility, has shown that these Balluff products satisfy the EMC requirements of the following Generic Standards:

- EN 61 000-6-4 (Emission) and
- EN 61 000-6-2 (Noise Immunity)

Application

Only for NFPA 79 applications (machines with a supply voltage of maximum 600 volts). Device shall be connected only by using any R/C (CYJV2) cord, having suitable ratings.

Principle of operation

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 an analog signal.

Measuring accuracy

The sensor attains its full accuracy under constant ambient conditions at min. 20 minutes after power-on. The duration of this warm-up phase depends on ambient conditions.

Measuring range

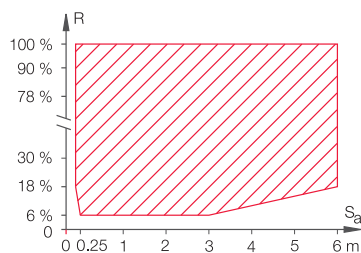
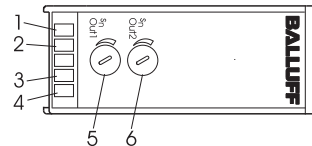


Fig. 1: Measuring range as a function of object reflection

Order Code	Distance Sensor with voltage output	
BOD000W	BOD 63M-LA04-S115	PNP
BOD000Y	BOD 63M-LA05-S115	NPN

	Distance Sensor with current output	
BOD0011	BOD 63M-LB04-S115	PNP
BOD0019	BOD 63M-LB05-S115	NPN

Display and operating elements



1. Power on indicator (green)
2. Output function indicator Out1 (yellow)
3. Output function indicator Out2 (yellow)
4. Error indicator (red)
5. 4-turn potentiometer for switching distance 1 (Out1)
6. 4-turn potentiometer for switching distance 2 (Out2)

Fig. 2: 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 received signal for reliable operation is not sufficient.

The **potentiometers** are used to set the switching distances of the sensor independently of each other.

Functions

Error output: The error output becomes active as soon as the object is detected.

Laser shut-off: The laser turns itself off as soon as a High signal is present on Pin 8 (see Technical Data).

Installation

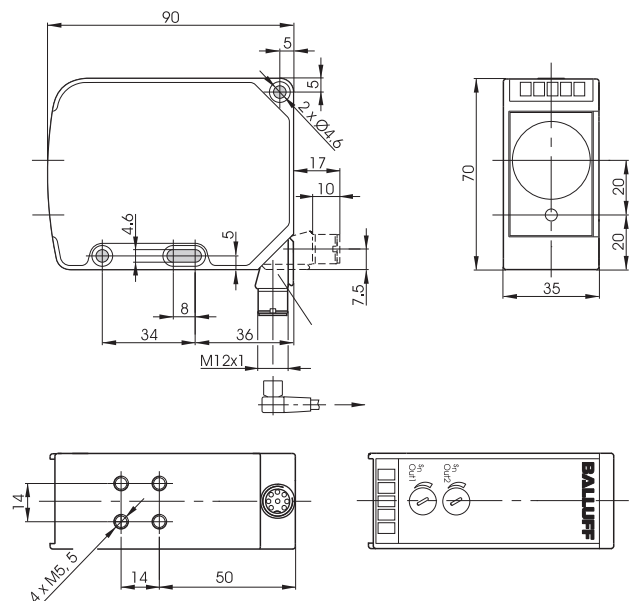
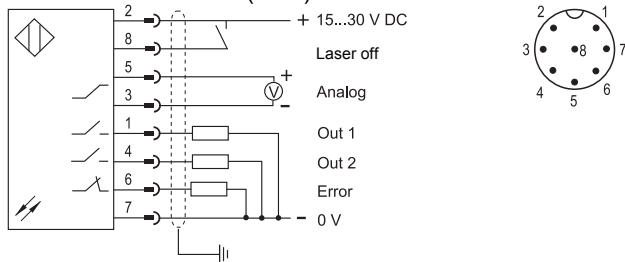


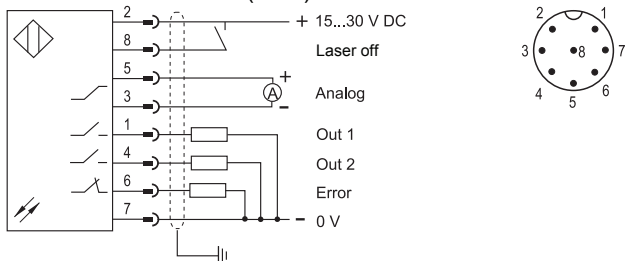
Fig. 3: Dimensions

Connections

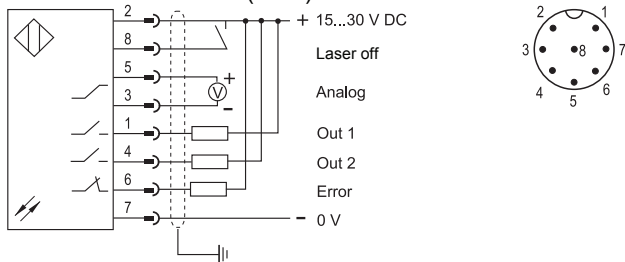
BOD 63M-LA04-S115 (PNP)



BOD 63M-LB04-S115 (PNP)



BOD 63M-LA05-S115 (NPN)



BOD 63M-LB05-S115 (NPN)

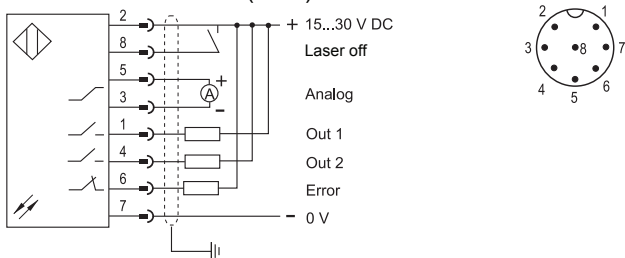


Fig. 4: Wiring diagrams, pinouts

When using the connector with cable BCC M418-0000-1A-046-PS0825-050, the pin assignments are as follows:

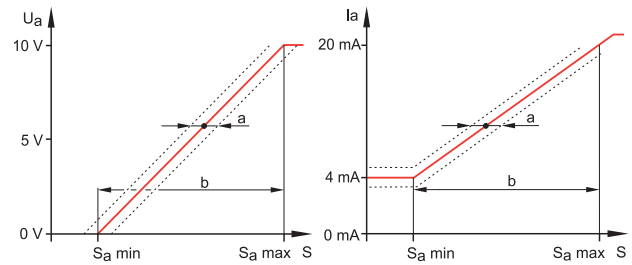
Pin assignment	Wire color
1	WH
2	BN
3	GN
4	YE
5	GY
6	PK
7	BU
8	RD
Knurled ring on connector	Braided shield

Setting the switching distance

1. Install and align the sensor.
2. Position the object in the beam path and turn the potentiometer Out1 until the yellow LED comes on (output active).
3. Remove the object. The LED should go out (output inactive). This sets the switching distance.
4. Optional: To store the second object position, reposition the object.
The procedure with potentiometer Out 2 is the same as described in steps 2 and 3.

Analog output

An analog output signal varies in proportion to the distance of the object.



a = linearity
b = Measuring range

Fig. 5: Analog outputs voltage and current

Photoelectric Sensors

Laser Distance Sensor BOD 63M-L_04/05-S115

No. 832 764 E • Edition 1009

Technical Data

Optical data

Working range	200...6000 mm
Emitter light type	Laser red light, pulsed
Laser Class	2 per EN 60825
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 size typical	
at range 200 mm	10 mm
at range 6000 mm	10 mm
Resolution	≤ 1 mm
Laser active	0...3 V DC/open
Laser inactive	7...30 V DC
Gray value shift	≤ ±1.5 %

Electrical data

Rated operating voltage V_e	24 V DC
Supply voltage U_s	15...30 V DC
No-load current I_0 max.	≤ 75 mA
Utilization category	DC 13
Laser shut-off	Yes
Error signal	Yes

Electrical data switching output

Rated operating current	200 mA
Switching outputs	2; PNP/NPN normally open
Voltage drop U_d at I_e	≤ 2 V
Switchpoint setting	4-turn potentiometer
Repeat accuracy	≤ ±4 mm
Temperature drift	≤ 1.5 mm/K
Switching hysteresis	≤ 15 mm

Electrical data analog output

Output voltage U_a / -current I_a	-LA...	-LB...
at s_a min	0 V	4 mA
at s_a max	10 V	20 mA
Linearity	≤ ±1%	
Repeat accuracy R_{BWN}	≤ ±2 mm	
max. load resistance -LB04-	500 Ω	
Temperature drift	≤ 1.5 mm/K	

Mechanical data

Connection typ	8-pin, M12x1 connector
Housing material	Aluminum alloy
Sensing face material	Glass
Weight (incl. bracket)	260 g
Contamination class	3

Technical Data

Time

Ready delay	≤ 20 ms
Switching frequency	≥ 250 Hz
Turn-on delay	≤ 2 ms
Turn-off delay	≤ 2 ms

Displays

Supply voltage	Green LED
Output function	2 x Yellow LED
Error	Red LED

Environmental

Enclosure rating	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

Accessories

Connecting cable:

Part number: BCC M418-0000-1A-046-PS0825-050

Order Code: BCC0995

Mounting bracket:

Part number: BOD 63-HW-1

Order Code: BAM00P6

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