

1) Display and control panel, 2) rotatable 270°, 3) Optical axis emitter, 4) Optical axis receiver



## Basic features

<b>Additional features</b>	Operating hours counter Count function Darkness measurement
<b>Approval/Conformity</b>	CE UKCA cULus IO-Link WEEE
<b>Basic standard</b>	IEC 60947-5-2, IEC 60947-5-7
<b>Operating mode</b>	SIO Mode IO-Link Mode
<b>Principle of operation</b>	Photoelectric distance sensor
<b>Series</b>	21M
<b>Style</b>	Square Connection can be rotated

## Display/Operation

<b>Adjuster</b>	button
<b>Display</b>	Run - LED green Communication - Green LED, flashing Output function- LED yellow Error - LED red
<b>Power indicator</b>	Green LED
<b>Setting</b>	Switching or analog

## Electrical connection

<b>Connection</b>	Connector, M12x1-Male, 4-pin
<b>Contact, surface protection</b>	Gold plated
<b>Polarity reversal protected</b>	yes
<b>Protection against device mix-ups</b>	yes
<b>Short-circuit protection</b>	yes

Photoelectric Sensors  
**BOD 21M-LBI05-S4**  
Order Code: BOD002L

**BALLUFF**

### Electrical data

Input frequency of count function max.	250 Hz
Input function	Reset counter
Load capacitance max. at Ue	0.11 µF
Load resistance RL max. (Analog I)	500 ohms
No-load current Io max. at Ue	40 mA
Operating voltage Ub	15...30 VDC
Protection class	II
Rated insulation voltage Ui	250 V AC
Rated operating current Ie	100 mA
Rated operating voltage Ue DC	24 V
Ready delay tv max.	50 ms
Ripple max. (% of Ue)	10 %
Start-up delay for counter	0...255 s
Switching frequency	250 Hz (SIO mode)
Turn-off delay toff max.	2 ms
Turn-on delay ton max.	2 ms
Utilization category	DC -13
Voltage drop Ud max. at Ie	1 V

### Environmental conditions

Ambient temperature	-10...70 °C
Contamination scale	3
EN 60068-2-27, Shock	Half-sinus, 30 gn, 11 ms, 3x6
EN 60068-2-6, Vibration	10...55 Hz, amplitude 0.5 mm, 3x30 min
IP rating	IP67

### Functional safety

MTTF (40 °C)	226 a
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### IO-Link

IO-Link Profil IDs	0x0001 SSP0
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### Interface

Analog output	Analog, current 4...20 mA
Baud rate	38.4 kBaud
Duration of time function	0...65535 ms
Function class, smart sensor	Identification Teach channel Switching signal channel Variable process data Diagnostics
Interface	IO-Link 1.1
Interface setting option	Operating mode Teach-In switchpoint/window Principle of background assessment Switching output Switching function Hysteresis Time function Count function Data retention active/inactive Dark measurement active/inactive Emitter on/off Key disable on/off Factory setting (Reset) for more information refer to user's guide
Output characteristic	linear rising/falling
Process data IN	1 byte
Process data OUT	5 bytes
Process data cycle min.	6.4 ms
Profile	Smart Sensor
Switching output	2x PNP/NPN NO/NC programmable
Time function	Single pulse Turn-on delay switch-off delay On/off delay

### Material

Housing material	Zinc, Die casting, Painted Aluminium, Glass, PMMA, black
Housing material, surface protection	Painted
Material sensing surface	Glass, anti-glare
Surface protection	Powder coated

### Mechanical data

Dimension	15 x 51 x 42.5 mm
Distance deviation 6 % max. (% of Sr)	4 %
Mounting part	Screw M4

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**Optical features**

<b>Ambient light max.</b>	10000 Lux
<b>Average power Po max.</b>	260 µW
<b>Beam characteristic</b>	Focus, typical at 400 mm
<b>Laser class per IEC 60825-1</b>	1
<b>Light spot size</b>	1.5 x 0.5 mm at 200 mm
<b>Light type</b>	Laser red light
<b>Principle of optical operation</b>	Triangulation
<b>Pulse duration t max.</b>	100 µs
<b>Pulse frequency</b>	0.5 kHz
<b>Pulse power Pp max.</b>	5.2 mW
<b>Special optical feature</b>	Background suppression CCD technology
<b>Switching function, optical</b>	Light/dark switching

**Wave length** 655 nm

**Range/Distance**

<b>Accuracy</b>	±1 mm max. (30...170 mm) ±3 mm max. (170...200 mm)
<b>Distance deviation 18 % max. (% of Sr)</b>	typ. 1 %
<b>Non-linearity max.</b>	±1.5 mm max. (30...170 mm) ± 3 mm max. (170...200 mm)
<b>Range</b>	30...200 mm, adjustable
<b>Rated operating distance Sn</b>	200 mm Adjustable
<b>Repeat accuracy</b>	≤ ± 0.25 mm
<b>Resolution</b>	≤ 10 µm typ. (30...170 mm) 100 µm typ. (170...200 mm)

**Remarks**

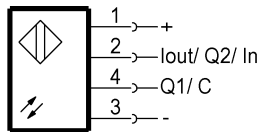
The sensor is functional again after the overload has been eliminated.  
 Order accessories separately.  
 For additional information, refer to user's guide.  
 Reference object (target) for diffuse sensor: gray card, 200 x 200, 90 % remission, axial approach.  
 For more information about MTTF and B10d see MTTF / B10d Certificate

Indication of the MTTF- / B10d value does not represent a binding composition and/or life expectancy assurance; these are simply experiential values with no warranty implications. These declared values also do not extend the expiration period for defect claims or affect it in any way.

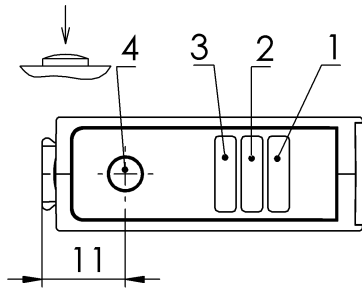
**Connector Drawings**



**Wiring Diagrams**



## Help Views

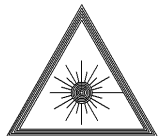


- 1) Output function
- 2) Power/short-circuit
- 3) Error, setup mode active.
- 4) Sn

## Opto Symbols



## Warning Symbols



LASER CLASS 1 per IEC 60825-1: 2014-05