

1) Optical axis emitter, 2) Optical axis receiver, 3) Display and control panel, 4) 240° rotatable



#### Basic features

Approval/Conformity	CE UKCA cULus WEEE Ecolab
Basic standard	IEC 60947-5-2
Operating mode	SIO Mode IO-Link Mode
Principle of operation	Photoelectric sensor
Reference reflector	BOS R-1
Series	21M
Style	Square Connection can be rotated

#### Display/Operation

Adjuster	Potentiometer 240°
Display	Run - LED green Communication - Green LED, flashing (10:1) LED yellow: Light received Limit range - LED yellow, flashing Error - LED green, flashing
Setting	Sensitivity (Sn)

#### Electrical connection

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

Photoelectric Sensors  
**BOS 21M-PAI-PR30-S4**  
Order Code: BOS027M

**BALLUFF**

**Electrical data**

Load capacitance max. at Ue	0.2 $\mu$ F
No-load current I <sub>0</sub> max. at Ue	35 mA
Operating voltage U <sub>b</sub>	10...30 VDC
Protection class	II
Rated insulation voltage U <sub>i</sub>	75 V DC
Rated operating current I <sub>e</sub>	100 mA
Rated operating voltage U <sub>e</sub> DC	24 V
Ready delay t <sub>V</sub> max.	200 ms
Residual current I <sub>r</sub> max.	10 $\mu$ A
Ripple max. (% of U <sub>e</sub> )	8 %
Switching frequency	1000 Hz
Turn-off delay t <sub>OFF</sub> max.	0.5 ms
Turn-on delay t <sub>ON</sub> max.	0.5 ms
Utilization category	DC-13
Voltage drop U <sub>d</sub> max. at I <sub>e</sub>	2 V

**Environmental conditions**

Ambient temperature	-25...60 °C
Ambient temperature UL max.	55 °C
Contamination scale	3
EN 60068-2-27, Shock	Half-sinus, 30 g <sub>n</sub> , 11 ms, 3x6
EN 60068-2-6, Vibration	10...55 Hz, amplitude 1 mm, 3x30 min
IP rating	IP67, IP69K

**Functional safety**

MTTF (40 °C)	889 a
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**IO-Link**

IO-Link Profil IDs	N/A
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**Interface**

Baud rate	38.4 kBaud
Interface	IO-Link 1.1
Interface setting option	Display limit range Display temperature Display setting switching range
Process data IN	0 bytes
Process data OUT	1 byte
Process data cycle min.	4 ms
Switching output	PNP normally closed (NC) PNP normally open (NO) Pins 4-2

**Material**

Housing material	Zinc, Die casting, Powder coated Die-cast zinc
Material sensing surface	PMMA
Surface protection	Powder coated

**Mechanical data**

Dimension	15.4 x 51.1 x 42.7 mm
Mounting part	Screw M4

**Optical features**

Ambient light max.	5000 Lux
Beam characteristic	Divergent
Blind zone	100 mm
LED group per IEC 62471	Exempt Group
Light type	LED, red light
Polarizing filter	yes
Principle of optical operation	Retroreflective sensor
Switching function, optical	Light-on dark-on
Wave length	650 nm

**Range/Distance**

Range	0...10 m
Rated operating distance S <sub>n</sub>	8 m Adjustable

**Remarks**

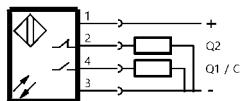
Order accessories separately.  
For additional information, refer to user's guide.  
Polarizing filters prevent spurious switching due to reflecting and shiny parts.  
Only for applications per NFPA 79 (machines with a supply voltage of maximum 600 V). Use an R/C (CYJV2) cable with suitable properties for attaching the device.  
The sensor is functional again after the overload has been eliminated.  
Actuation object (target): gray card, 200 x 200, 90 % remission, lateral approach, approach direction vertical to lens axis plane.  
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.

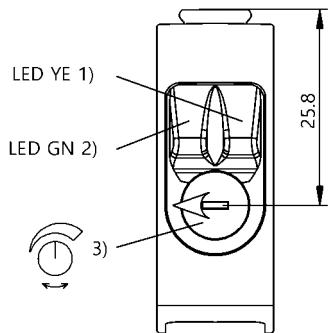
### Connector Drawings



### Wiring Diagrams



### Help Views



- 1) Light reception/Limit range
- 2) Oper. voltage/Error/IO-Link
- 3) Sn

### Opto Symbols

