

1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area



**Basic features**

Approval/Conformity	CE WEEE
Basic standard	IEC 60947-5-2
Principle of operation	Photoelectric sensor
Series	12M
Style	Cylinder Straight optics

**Display/Operation**

Adjuster	no
Display	LED green: Power Error - LED green, flashing Limit range - LED yellow, flashing LED yellow: Light received

**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

**Electrical data**

Load capacitance max. at Ue	0.1 µF
No-load current I <sub>o</sub> max. at Ue	40 mA
Operating voltage U <sub>b</sub>	10...30 VDC
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.	100 ms
Ripple max. (% of U <sub>e</sub> )	10 %
Switching frequency	500 Hz
Turn-off delay t <sub>off</sub> max.	1 ms
Turn-on delay t <sub>on</sub> max.	1 ms
Utilization category	DC -13
Voltage drop U <sub>d</sub> max. at I <sub>e</sub>	2.5 V

**Environmental conditions**

Ambient temperature	-5...55 °C
Contamination scale	3
EN 60068-2-27, Shock	Half-sinus, 30 g <sub>n</sub> , 11 ms, 3x6 Half-sinus, 100 g <sub>n</sub> , 2 ms, 3x8000
EN 60068-2-6, Vibration	10...55 Hz, amplitude 1 mm, 3x30 min 10...2000 Hz, amplitude 1 mm, 30 g <sub>n</sub> , 3x5 h
IP rating	IP67

**Functional safety**

MTTF (40 °C)	631 a
--------------	-------

Photoelectric Sensors  
**BOS 12M-PA-RF11-S4**  
**Order Code: BOS01ZT**



**Interface**

<b>Switching output</b>	PNP normally closed (NC) PNP normally open (NO) Pins 4-2
-------------------------	---

**Material**

<b>Housing material</b>	Brass, nickel-plated
<b>Material sensing surface</b>	PMMA
<b>Surface protection</b>	nickel-plated

**Mechanical data**

<b>Dimension</b>	Ø 12 x 60 mm
<b>Mounting part</b>	Nut M12x1
<b>Tightening torque max.</b>	7 Nm 15 Nm

**Optical features**

<b>Ambient light max.</b>	10000 Lux
<b>Beam characteristic</b>	Divergent
<b>LED group per IEC 62471</b>	Exempt Group
<b>Light spot size</b>	Ø 4 mm at 50 mm
<b>Light type</b>	LED, red light
<b>Principle of optical operation</b>	Diffuse sensor, triangulation
<b>Special optical feature</b>	Fixed background suppression
<b>Switching function, optical</b>	Light-on dark-on
<b>Wave length</b>	650 nm

**Range/Distance**

<b>Distance deviation 18 % max. (% of Sr)</b>	5 % on 90 % rem.
<b>Hysteresis H typ. (% of Sr)</b>	5.0 %
<b>Range</b>	0...50 mm
<b>Rated operating distance Sn</b>	50 mm

**Remarks**

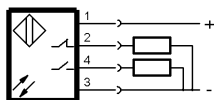
Order accessories separately.  
 For additional information, refer to user's guide.  
 Only for applications per NFPA 79 (machines with a supply voltage of maximum 600 V). Use an R/C (CYJV2) cable with suitable properties for attaching the device.  
 Reference object (target): gray card, 100 x 100, 90 % remission, axial approach.  
 The sensor is functional again after the overload has been eliminated.  
 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**



## Opto Symbols

