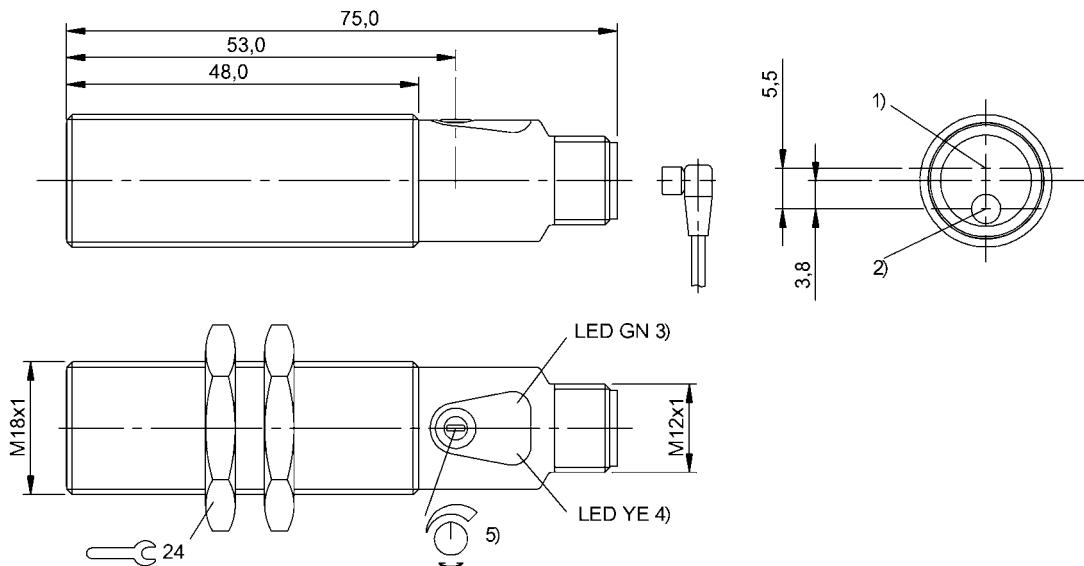


Photoelectric Sensors  
BOS 18M-NA-LR20-S4  
Order Code: BOS01R5

**BALLUFF**



1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage/Error, 4) Light reception/limit area, 5) Sn



#### Basic features

Approval/Conformity	cULus CE UKCA WEEE
Basic standard	IEC 60947-5-2
Principle of operation	Photoelectric sensor
Reference reflector	BOS R-22
Series	18M
Style	Cylinder Straight optics

#### Display/Operation

Adjuster	Potentiometer 270°
Display	LED green: Power Error - LED green, flashing Limit range - LED yellow, flashing LED yellow: Light received
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

#### Electrical data

Load capacitance max. at Ue	0.1 $\mu$ F
No-load current I <sub>0</sub> max. at Ue	15 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 DC</sub>	24 V
Ready delay t <sub>v</sub> max.	20 ms
Ripple max. (% of U <sub>e</sub> )	15 %
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>	1.5 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
EN 60068-2-6, Vibration	10...55 Hz, amplitude 1 mm, 3x30 min
IP rating	IP67

#### Functional safety

MTTF (40 °C)	575 a
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Interface

Switching output	NPN normally closed (NC) NPN normally open (NO) Pins 4-2
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Material

Housing material	Brass, nickel-plated
Material sensing surface	Glass
Surface protection	nickel-plated

Mechanical data

Dimension	Ø 18 x 75 mm
Mounting part	Nut M18x1
Tightening torque max.	15 Nm 30 Nm

Optical features

Ambient light max.	10000 Lux
Average power Po max.	390 µW
Beam characteristic	Collimated
Blind zone	30 mm
Laser class per IEC 60825-1	1
Light spot size	Ø 10 mm at 16 m
Light type	Laser red light
Polarizing filter	yes
Principle of optical operation	Retroreflective sensor
Pulse duration t max.	4400 µs
Pulse frequency	10 kHz
Pulse power Pp max.	2.5 mW
Smallest part typ.	Ø 0.4 mm at 1 m. R0 = 3 m
Switching function, optical	Light-on dark-on
Wave length	655 nm

Range/Distance

Range	0...16 m
Rated operating distance Sn	16 m Adjustable

Remarks

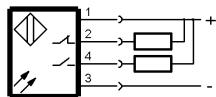
The sensor is functional again after the overload has been eliminated.  
Polarizing filters prevent spurious switching due to reflecting and shiny parts.  
For additional information, refer to user's guide.  
Order accessories separately.  
For more information about MTTF and B10d see MTTF / B10d Certificate

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

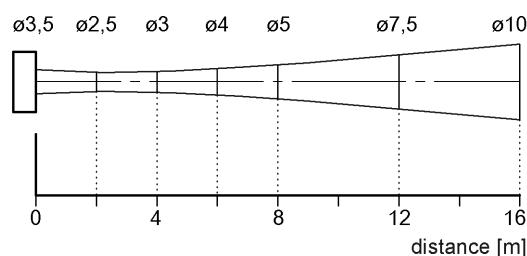


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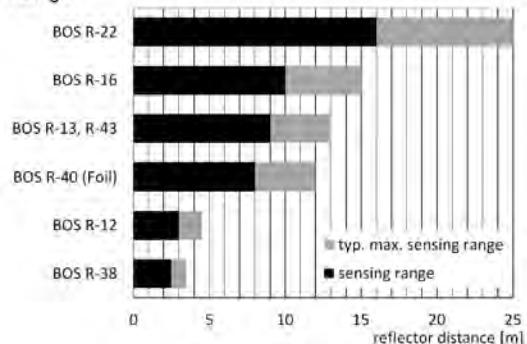
**BALLUFF**

## Technical Drawings

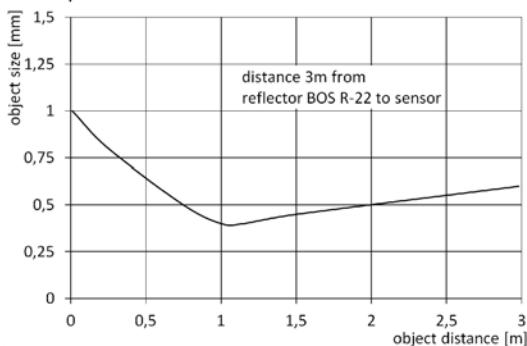
Spot size typ. [mm]



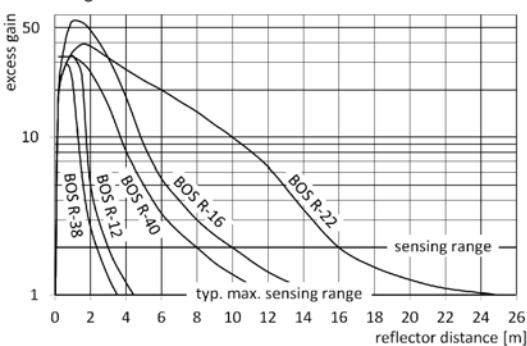
Range



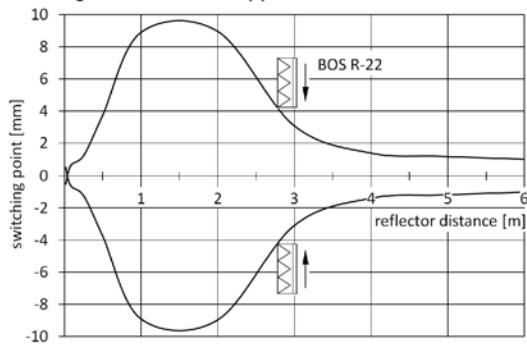
Small part detection



Excess gain



Sensing area for lateral approach



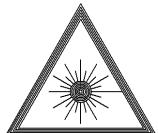
## Opto Symbols



Photoelectric Sensors  
BOS 18M-NA-LR20-S4  
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### Warning Symbols



LASER CLASS 1 per IEC 60825-1