

1) Optical axis receiver, 2) Optical axis emitter, 3) Power/short-circuit, 4) Output function/Error, 5) Sn



### Basic features

|                        |                             |
|------------------------|-----------------------------|
| Approval/Conformity    | CE<br>UKCA<br>cULus<br>WEEE |
| Basic standard         | IEC 60947-5-2               |
| Principle of operation | Photoelectric sensor        |
| Series                 | 18M                         |
| Style                  | Cylinder<br>Straight optics |

### Display/Operation

|          |  |
|----------|--|
| Adjuster | 10-turn potentiometer  |
| Display  | Output function- LED yellow<br>LED green: Power<br>Error - LED yellow, flashing<br>Short circuit - LED green, flashing |
| Setting  | Rated switching distance (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 µF      |
| No-load current I <sub>o</sub> max. at Ue          | 30 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 µA       |
| Ripple max. (% of U <sub>e</sub> )                 | 15 %        |
| 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 |
| EN 60068-2-6, Vibration | 10...55 Hz, amplitude 1 mm, 3x30 min       |
| IP rating               | IP67                                       |

### Functional safety

|              |       |
|--------------|-------|
| MTTF (40 °C) | 455 a |
|--------------|-------|

Photoelectric Sensors  
**BOS 18M-NSV-LH22-S4**  
**Order Code: BOS001L**



**Interface**

|                                       |                              |
|---------------------------------------|------------------------------|
| Supplementary output                  | Error output PNP             |
| Switch function, supplementary output | Normally closed (NC)         |
| Switching output                      | NPN normally open (NO) Pin 4 |

**Material**

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

**Mechanical data**

|                                       |                |
|---------------------------------------|----------------|
| Dimension                             | Ø 18 x 75 mm   |
| Distance deviation 6 % max. (% of Sr) | 16.0 %         |
| Mounting part                         | Nut M18x1      |
| Tightening torque max.                | 15 Nm<br>30 Nm |

**Optical features**

|                                |                               |
|--------------------------------|-------------------------------|
| Ambient light max.             | 10000 Lux                     |
| Average power Po max.          | 1 mW                          |
| Beam characteristic            | Focus, typical at 100 mm      |
| Laser class per IEC 60825-1    | 2                             |
| Light spot size                | 0.05 x 0.1 mm at focal point  |
| Light type                     | Laser red light               |
| Principle of optical operation | Diffuse sensor, triangulation |
| Pulse duration t max.          | 10000 µs                      |
| Pulse frequency                | 7.1 kHz                       |
| Pulse power Pp max.            | 4.0 mW                        |
| Smallest part typ.             | 50 µm at focal point          |
| Special optical feature        | Background suppression        |
| Switching function, optical    | Light-on                      |
| Wave length                    | 660 nm                        |

**Range/Distance**

|  |                   |
|--|-------------------|
| Distance deviation 18 % max. (% of Sr) | 8 %               |
| Hysteresis H max. (% of Sr)            | 5.0 %             |
| Range                                  | 30...150 mm       |
| Rated operating distance Sn            | 150 mm Adjustable |
| Repeat accuracy max. (% of Sr)         | 1.0 %             |
| Temperature drift max. (% of Sr)       | 15 %              |

**Remarks**

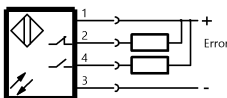
Order accessories separately.  
 For additional information, refer to user's guide.  
 The sensor is functional again after the overload has been eliminated.  
 Reference object (target): gray card, 200 x 200, 90 % remission, axial approach.  
 For more information about MTTF and B10d see MTTF / B10d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

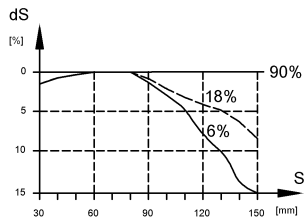
**Connector Drawings**



**Wiring Diagrams**



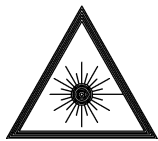
## Technical Drawings



## Opto Symbols



## Warning Symbols



LASER BEAM - DO NOT STARE INTO THE LIGHT BEAM!

LASER CLASS 2 per IEC60825-1: 2003-10