# Thru-beam sensor

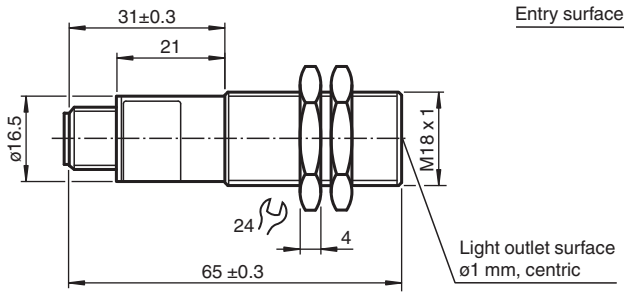
# E18-LAS/EV18-LAS/25/32/76a/92

- Laser thru-beam sensor in the M18 housing
- Metal design
- Automatic threshold value adaptation
- Very high switching accuracy
- Light beam diameter < 1.5 mm
- Test input

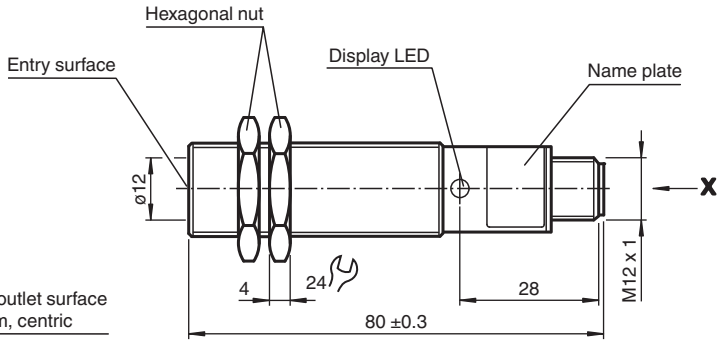
Laser thru-beam sensor, M18 threaded housing design, metal housing, front optical face, 10 m detection range, red light, light on, DC version, PNP output, test input, M12 plug

## Dimensions

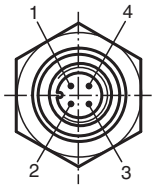
Emitter




Receiver




View X

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## Technical Data

| | | |
|---|---|---|
| **System components** | | |
| Emitter | | E18-LAS/92 |
| Receiver | | EV18-LAS/32/92 |
| **General specifications** | | |
| Effective detection range | | 0 ... 10 m |
| Threshold detection range | | 18 m |
| Light source | | laser diode |
| Light type | | modulated visible red light |
| Laser nominal ratings | | |
| Note | | LASER LIGHT , DO NOT STARE INTO BEAM |
| Laser class | | 1 |
| Wave length | | 650 nm |
| Beam divergence | | 1 mrad |
| Pulse length | | 15 µs |
| Repetition rate | | 10 kHz |
| max. pulse energy | | < 10.2 nJ |
| Target size | | 1.2 mm |
| Light receiver | | photo diode |
| Diameter of the light spot | | approx. 2 mm at detection range 1.5 m |
| Opening angle | | Receiver +/-2° |
| Optical face | | frontal |
| Ambient light limit | | |
| Continuous light | | 5000 Lux |
| Hysteresis | H | 25 % |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 208.3 a |
| Mission Time ($T_M$) | | 7 a |
| Diagnostic Coverage (DC) | | 60 % |
| **Indicators/operating means** | | |
| Function indicator | | LED yellow, lights up when light beam is free, flashes when falling short of the operating reserve |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | $I_0$ | emitter ≤ 25 mA , receiver ≤ 60 mA |
| **Input** | | |
| Test input | | Emitter deactivation<br>emitter on: 0 ... +3V<br>emitter off: +5V ... $+U_B$ |
| **Output** | | |
| Stability alarm output | | PNP, open collector , short-circuit protected<br>inactive: signal strength > approx. 30 % of the strength with clean optic<br>active: signal strength < approx. 30 % of the strength with clean optic |
| Switching type | | light-on |
| Signal output | | 1 PNP, short-circuit protected, open collector |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 mA |
| Switching frequency | f | 1000 Hz |
| Response time | | 0.5 ms |
| **Conformity** | | |
| Product standard | | EN 60947-5-2 |
| Laser safety | | IEC 60825-1:2007 |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| Shock and impact resistance | | IEC / EN 60068, half-sine, 30 g in X, Y and Z direction |

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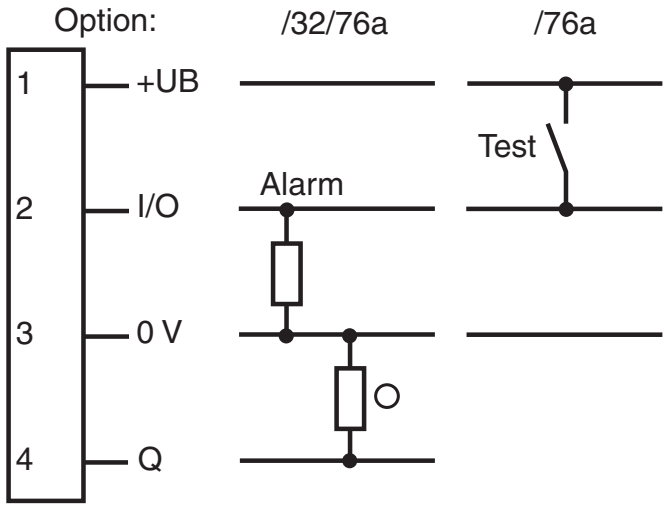
## Technical Data

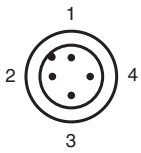
| | | |
|---|---|---|
| Vibration resistance | | IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions |
| **Approvals and certificates** | | |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |
| **Ambient conditions** | | |
| Ambient temperature | | 0 ... 50 °C (32 ... 122 °F) |
| Storage temperature | | -40 ... 85 °C (-40 ... 185 °F) |
| **Mechanical specifications** | | |
| Degree of protection | | IP65 |
| Connection | | 4-pin, M12 x 1 connector |
| Material | | |
| Housing | | brass, nickel-plated |
| Optical face | | glass |
| Connector | | metal |
| Mass | | per 45 g |

## Connection Assignment




○ = Light on
● = Dark on

## Connection Assignment




Wire colors in accordance with EN 60947-5-2

| | | |
|---|---|---|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

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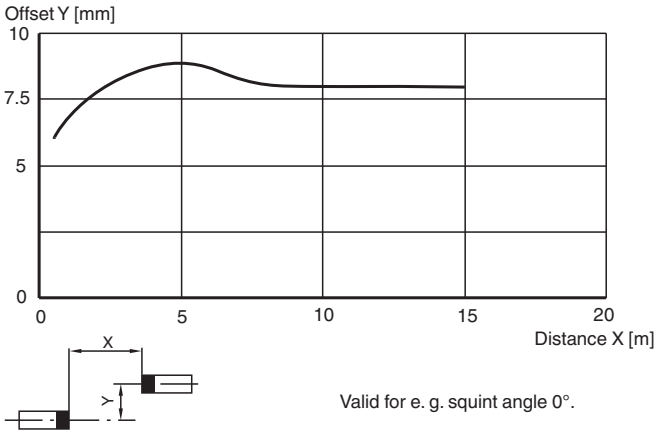
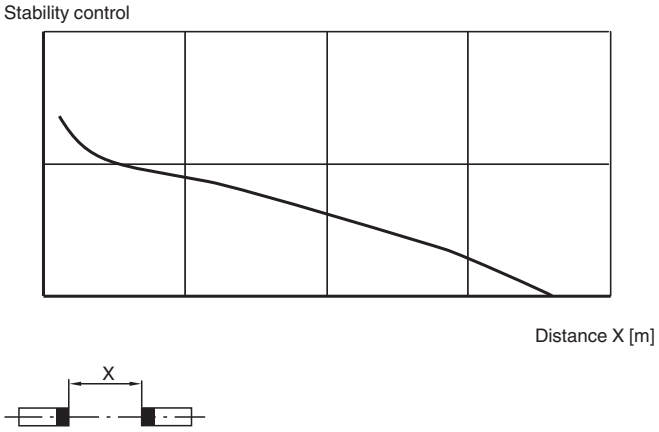
## Characteristic Curve

### Characteristic response curve

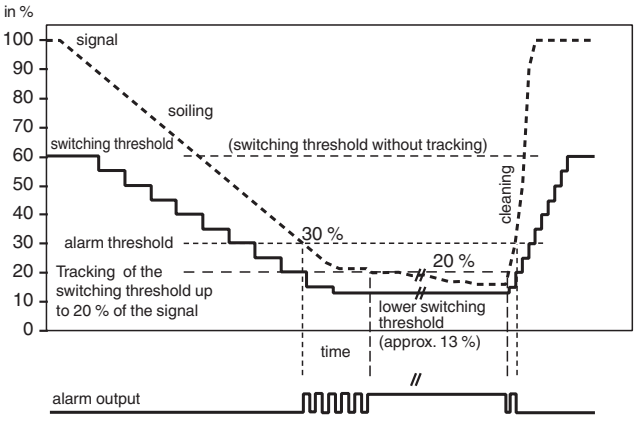



Valid for e. g. squint angle 0°.

### Relative received light strength




### Dynamic tracking of the switching treshold




## Safety Information

**Laser Class 1 Information**
The irradiation can lead to irritation especially in a dark environment. Do not point at people!
Maintenance and repairs should only be carried out by authorized service personnel!
Attach the device so that the warning is clearly visible and readable.
The warning accompanies the device and should be attached in immediate proximity to the device.
Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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## Technical Features

The optical barrier is equipped with an automatic adjustment of the limit value with non-volatile memory to compensate for contamination by dust particles in the optical path. The adjustment of the limit value for the switching point extends to < 20 % of the signal level that is present for the unattenuated optical path
The control constant is < 3 sec for a reduction in intensity of 2 %, or < 0.6 s (typically 0.2 sec) for an increase in intensity of 2 %.

## Accessories

| | | |
|---|---|---|
|  | **CPZ18B03** | Mounting Bracket with swivel nut |
|  | **OMH-VL18** | Mounting Bracket with swivel nut |
|  | **BF 18** | Mounting flange, 18 mm |
|  | **BF 18-F** | Plastic mounting adapter, 18 mm |
|  | **BF 5-30** | Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm |
|  | **V1-G-2M-PVC** | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
|  | **V1-G-2M-PUR** | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey |
|  | **V1-W-2M-PUR** | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey |
|  | **V1-G-5M-PVC** | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
|  | **V1-G-5M-PUR** | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey |
|  | **V1-W-5M-PUR** | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey |

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