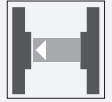




Thru-beam sensor

ML4.2-P-20m-LAS/40b/76a/95/110



- Miniature design
- Small light beam diameter for detection of small parts
- Very short response time
- Red laser as the light emitter
- Test input
- Not sensitive to ambient light, even with switched energy saving lamps
- Protected against mutual interference (no cross-talk)
- Metal-reinforced fastening holes

Thru-beam sensor for complex applications, miniature design, 20,000 mm detection range, laser, push-pull output, test input, M8 plug



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.

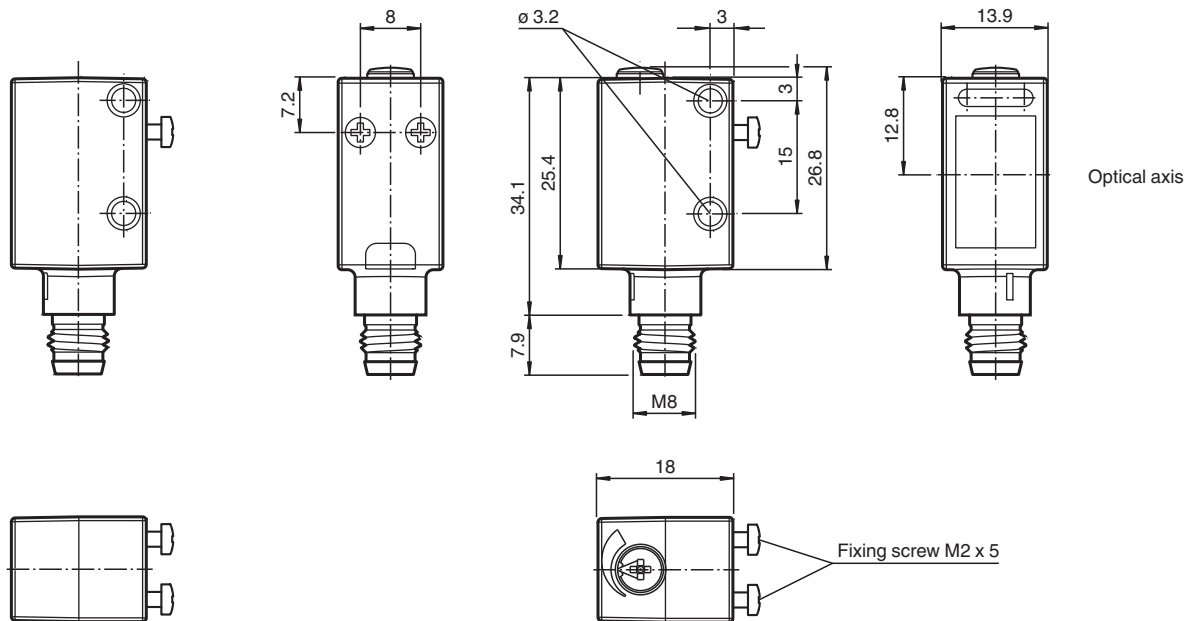
The warning accompanies the device and should be attached in immediate proximity to the device.

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Dimensions

Transmitter

Receiver



Technical Data

| | |
|-------------------------------|--------------------------------------|
| System components | |
| Emitter | ML4.2-T-20m-LAS/76a/95 |
| Receiver | ML4.2-R-LAS/40b/95/110 |
| General specifications | |
| Effective detection range | 0 ... 20 m |
| Threshold detection range | 30 m |
| Light source | Laser |
| Light type | modulated visible red light |
| Laser nominal ratings | |
| Note | LASER LIGHT , DO NOT STARE INTO BEAM |
| Laser class | 1 |
| Wave length | 680 nm |
| Beam divergence | 1.5 mrad |
| Pulse length | 1 µs |
| Repetition rate | approx. 33 kHz |
| max. pulse energy | < 8.3 nJ |
| Target size | min. 7 mm |
| Diameter of the light spot | 40 mm at detection range 20 m |
| Angle of divergence | approx. 0.1 ° |
| Ambient light limit | |
| Continuous light | 40000 Lux |
| Modulated light | 5000 Lux |

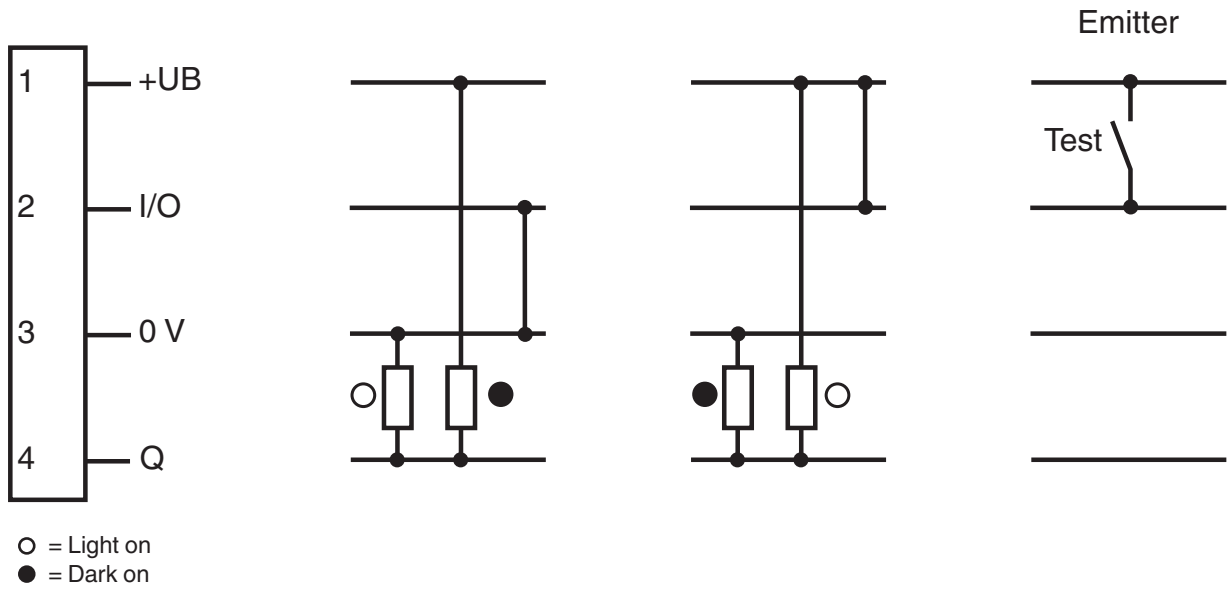
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Technical Data

| Functional safety related parameters | | |
|--|----------------|--|
| MTTF _d | | 550 a |
| Mission Time (T _M) | | 20 a |
| Diagnostic Coverage (DC) | | 60 % |
| Indicators/operating means | | |
| Operation indicator | | LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz) |
| Function indicator | | LED yellow, lights up with receiver lit flashes when falling short of the stability control |
| Control elements | | sensitivity adjustment |
| Electrical specifications | | |
| Operating voltage | U _B | 10 ... 30 V DC |
| Ripple | | < 10 % |
| No-load supply current | I ₀ | < 15 mA at 24 V DC |
| Input | | |
| Test input | | emitter deactivation at +U _B |
| Output | | |
| Switching type | | light/dark on electrically switchable |
| Signal output | | Push-pull output, short-circuit protected, reverse polarity protected |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 mA |
| Voltage drop | U _d | ≤ 2.5 V DC |
| Switching frequency | f | 4000 Hz |
| Response time | | 125 μs |
| Conformity | | |
| Product standard | | EN 60947-5-2 |
| Compliance with standards and directives | | |
| Standard conformity | | |
| Shock and impact resistance | | IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions |
| Vibration resistance | | IEC / EN 60068-2-6. Sinus. 10 -2000 Hz, 10 g in each X, Y and Z directions |
| Laser class | | IEC 60825-1:2007 EN 60825-1:2007 |
| Approvals and certificates | | |
| CE conformity | | yes |
| UL approval | | cULus Listed |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |
| Ambient conditions | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | | -20 ... 75 °C (-4 ... 167 °F) |
| Mechanical specifications | | |
| Housing width | | 13.9 mm |
| Housing height | | 31.4 mm |
| Housing depth | | 18 mm |
| Degree of protection | | IP67 / IP69K |
| Connection | | M8 x 1 connector, 4-pin |
| Material | | |
| Housing | | ABS |
| Optical face | | glass pane |
| Mass | | 15 g (device) |

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Connection Assignment



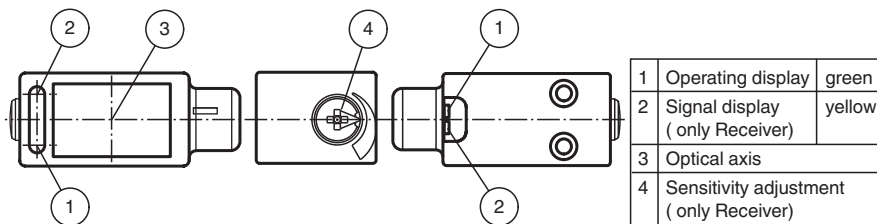
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

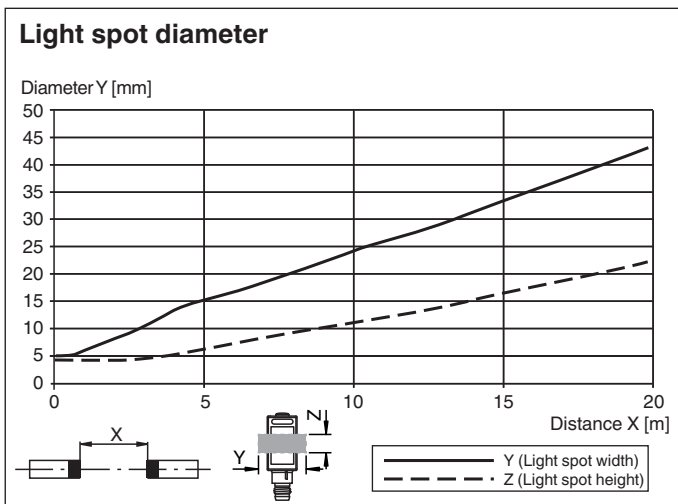
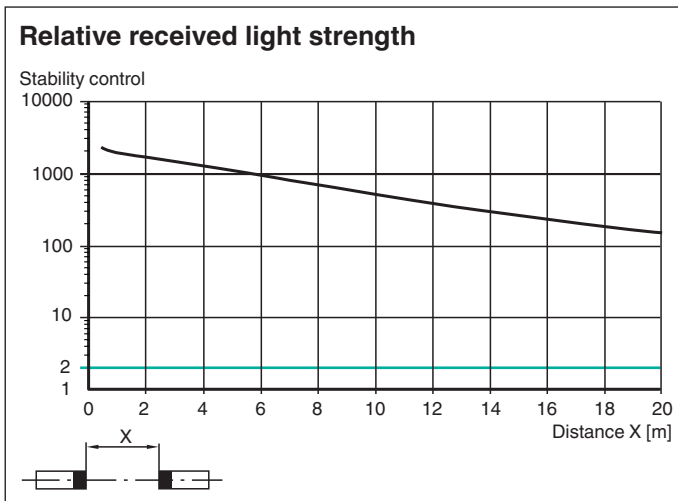
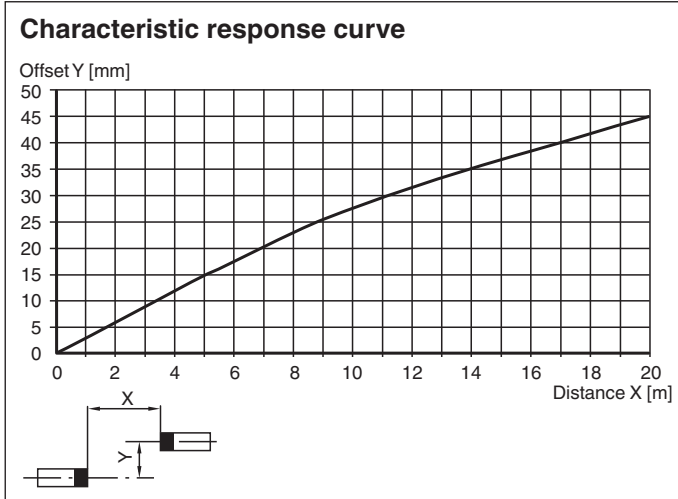
Assembly






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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Characteristic Curve



Accessories

| | | |
|---|------------------|------------------|
|  | OMH-4.1 | Mounting Clamp |
|  | OMH-ML6 | Mounting bracket |
|  | OMH-ML6-U | Mounting bracket |

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Accessories

| | | |
|---|--------------------------------------|--|
|  | OMH-ML6-Z | Mounting bracket |
|  | OMH-11-02 Aperture-V-H 0.5 mm | Slit diaphragm can be affixed for detecting very small parts |
|  | OMH-11-04 Aperture-V-H 1.0 mm | Slit diaphragm can be affixed for detecting very small parts |
|  | OMH-11-06 Aperture-V-H 1.5 mm | Slit diaphragm can be affixed for detecting very small parts |
|  | OMH-11-08 Aperture-V-H 2.0 mm | Slit diaphragm can be affixed for detecting very small parts |
|  | V31-GM-2M-PVC | Female cordset single-ended, M8, 4-pin, PVC cable |
|  | V31-WM-2M-PVC | Female cordset single-ended, M8, 4-pin, PVC cable |
|  | V31-GM-5M-PUR | Female cordset single-ended, M8, 4-pin, PUR cable |
|  | V31-WM-5M-PUR | Female cordset single-ended, M8, 4-pin, PUR cable |

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Mounting

Aperture alignment

When attaching the aperture, make sure that the sensor lens is aligned exactly with the black aperture.

