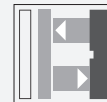




## Background suppression sensor ML4.2-8-H-21-22-IR/40b/95/110



- Precise background suppression
- Very small black-white difference
- Small, sharp light spot
- Highly visible LEDs for Power-On, switching status, short-circuit, and undervoltage
- Metal-reinforced fastening holes
- Tamper-proof version with no adjustments
- Push-pull output

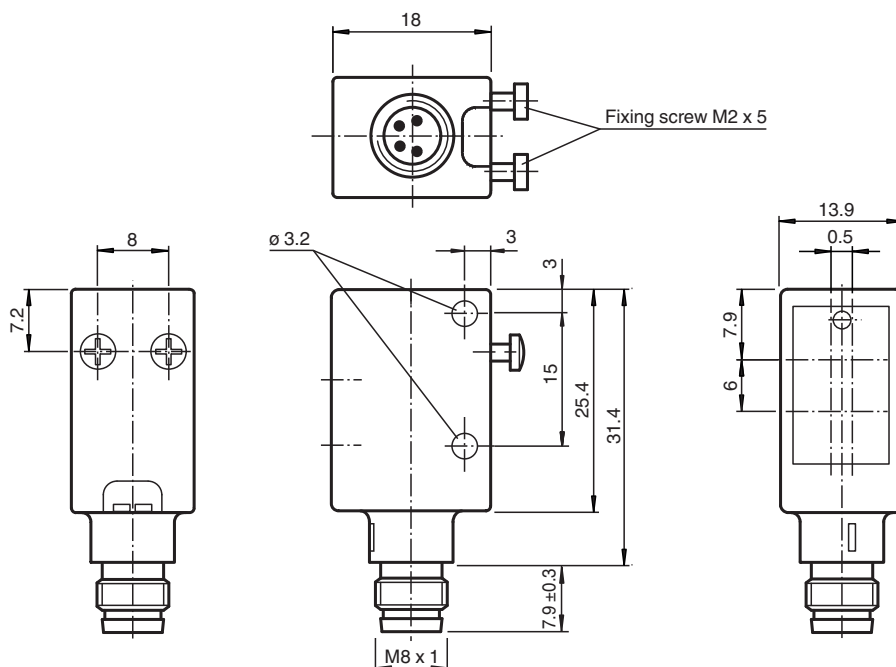
Background suppression sensor



### Function

The ML100 series is characterized by its miniature housing with integral, all-metal threaded bushings. All versions are equipped with a visible red transmitter LED. This greatly simplifies installation and commissioning. The switching states are easily visible from all directions thanks to the highly visible LEDs.

### Dimensions



## Technical Data

### General specifications

|                                   |  |
|-----------------------------------|--|
| Detection range                   | on white (90 %): : 10 ... 21 mm , on black (6 %): 10 ... 20 mm |
| Detection range max.              | 5 ... 22 mm  |
| Background suppression            | starts from 22 mm  |
| Light source                      | IREd   |
| Light type                        | modulated infrared light , 880 nm                              |
| Black-white difference (6 %/90 %) | approx. 1 mm   |
| Diameter of the light spot        | approx. 1.5 mm at 20 mm  |
| Angle of divergence               | approx. 5 °  |
| Ambient light limit               |  |
| Continuous light                  | 40000 Lux  |
| Modulated light                   | 5000 Lux   |

### Functional safety related parameters

|                                |        |
|--------------------------------|--------|
| MTTF <sub>d</sub>              | 1940 a |
| Mission Time (T <sub>M</sub> ) | 20 a   |
| Diagnostic Coverage (DC)       | 0 %    |

### 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  | LEDs yellow: light up when object is detected  |

### Electrical specifications

|                        |                |                |
|------------------------|----------------|----------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC |
| Ripple                 |                | 10 %           |
| No-load supply current | I <sub>0</sub> | < 25 mA        |

### 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 <sub>d</sub> | ≤ 2.5 V DC  |
| Switching frequency | f              | 1000 Hz   |
| Response time       |                | 0.5 ms  |

### 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 -150 Hz, 5 g in each X, Y and Z directions |

### 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) |

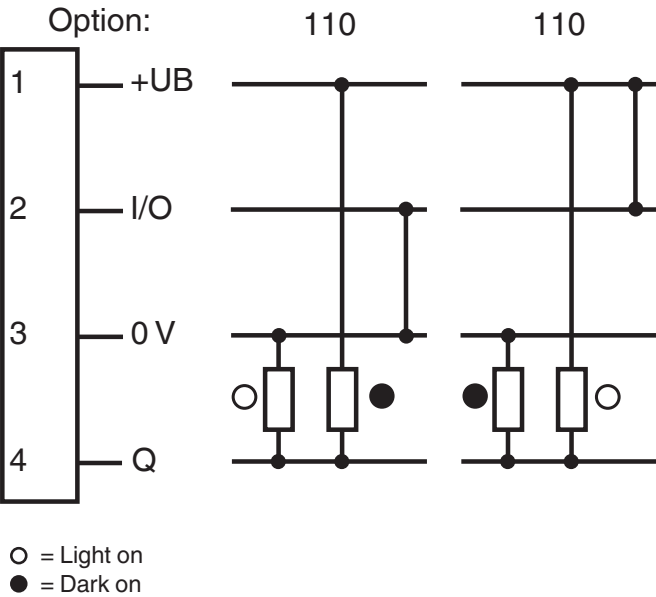
### Mechanical specifications

|                      |                         |
|----------------------|-------------------------|
| 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                     |

Technical Data

|              |              |
|--------------|--------------|
| Optical face | glass pane   |
| Mass         | approx. 10 g |

Connection Assignment



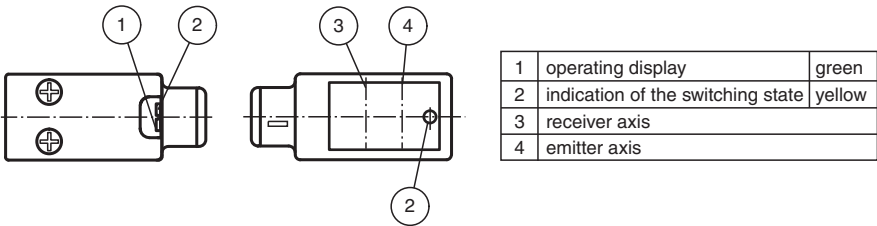
Connection Assignment



Wire colors in accordance with EN 60947-5-2

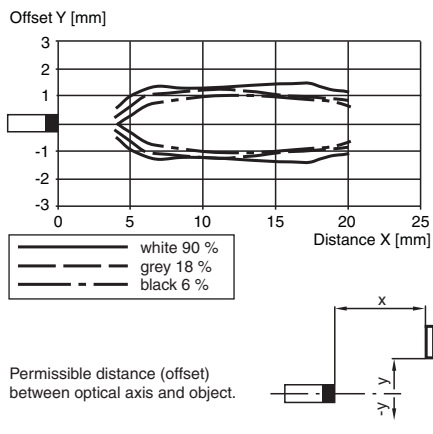
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Assembly

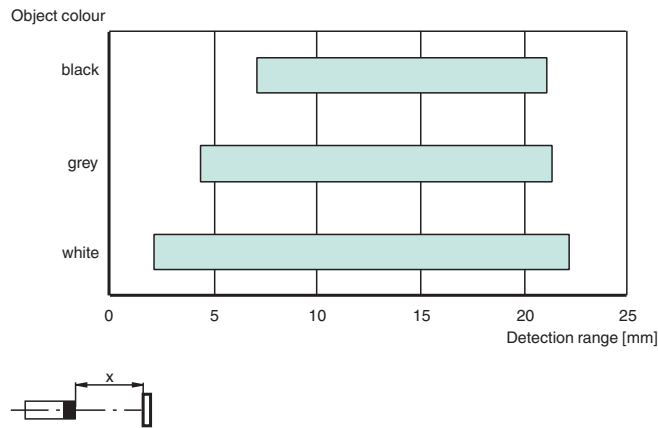


Characteristic Curve

Characteristic response curve

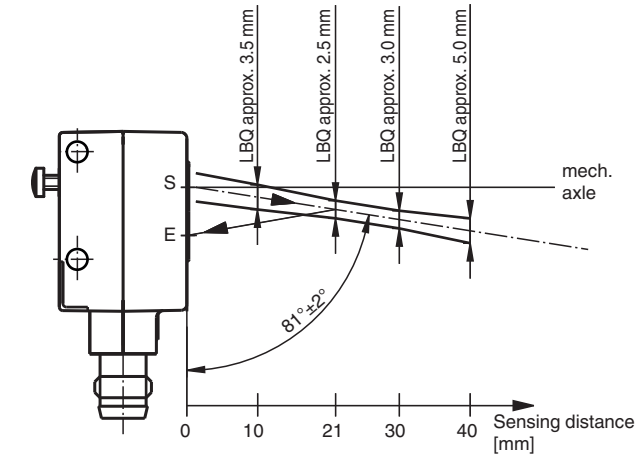


Detection ranges





Characteristic Curve





Emitting characteristics



Accessories

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

**Accessories**

|   |                      |  |
|---|----------------------|--|
|  | <b>OMH-ML6-U</b>     | Mounting bracket   |
|  | <b>OMH-ML6-Z</b>     | Mounting bracket   |
|  | <b>V31-GM-2M-PVC</b> | Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey |
|  | <b>V31-WM-2M-PVC</b> | Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey   |