CE  c(UL)us  VISO⊕

## Model Number

**ML4.2-8-H-80-IR/40b/95/110**

Background suppression sensor
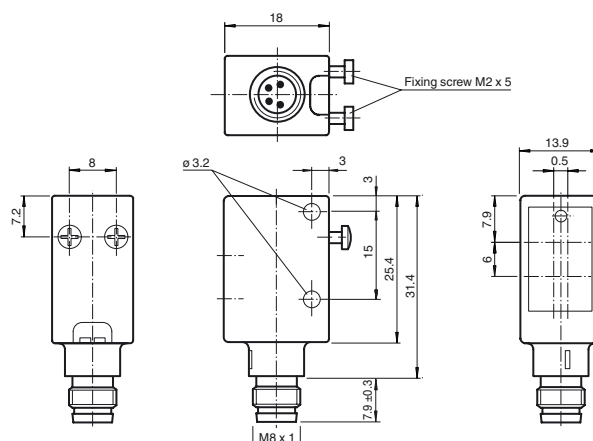with 4-pin, M8 x 1 connector

## Features

- 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
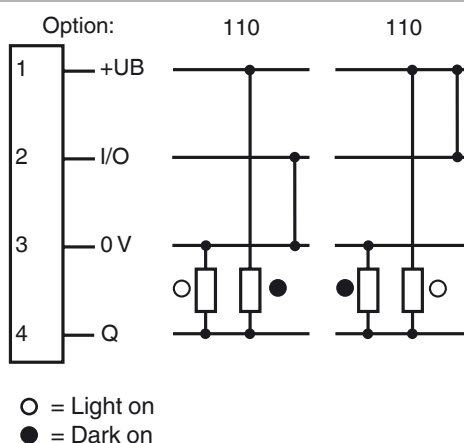- Tamper-proof version with no adjustments
- Push-pull output

## Product information

The ML4.2 series is characterized by a robust, powerful and standard design in a miniature housing. The housing offers IP67/IP69K degree of protection, a scratch- and chemical-resistant lens, highly visible LEDs and robust all-metal bushings for mounting. Adjustable and tamper-proof sensors are available with a universal push-pull output and an electrical light ON/dark ON switch. The sensors have a high ambient light limit. Reflections from the background are suppressed. The unusually small, sharp light spot and the quick response time offer maximum switching precision on object edges.. Both red and infrared light sources are available. A high-performance fixed focus background suppressor is a useful feature. The sensors are suitable for precise object detection and open up a wide range of application fields.
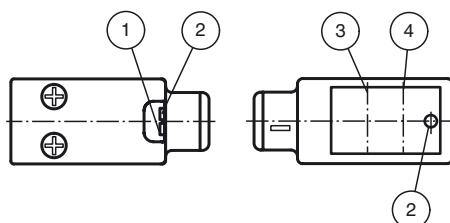
## Dimensions

Fixing screw M2 x 5

## Electrical connection

Option: 110   110

| 1 | +UB |
| 2 | I/O |
| 3 | 0 V |
| 4 | Q |

○ = Light on
● = Dark on

## Pinout

## Indicators/operating means

| 1 | operating display | green |
| 2 | indication of the switching state | yellow |
| 3 | receiver axis | |
| 4 | emitter axis | |

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

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## Technical data

### General specifications

| | |
|---|---|
| Detection range | 10 ... 80 mm |
| Detection range max. | 10 ... 100 mm |
| Background suppression | starts from 100 mm |
| Light source | IRED |
| Light type | modulated infrared light , 880 nm |
| Black/White difference (6 %/90 %) | approx. 15 mm |
| Diameter of the light spot | approx. 6 mm at 80 mm |
| Angle of divergence | approx. 5 ° |
| Ambient light limit | |
| Continuous light | 40000 Lux |
| Modulated light | 5000 Lux |

### Functional safety related parameters

| | |
|---|---|
| $MTTF_d$ | 1940 a |
| Mission Time ($T_M$) | 20 a |
| Diagnostic Coverage (DC) | 0 % |

### Indicators/operating means

| | |
|---|---|
| Operating display | LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz) |
| Function display | LED yellow: lights when object is detected |

### Electrical specifications

| | | |
|---|---|---|
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | $I_0$ | < 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 | $U_d$ | ≤ 2.5 V DC |
| Switching frequency | f | 1000 Hz |
| Response time | | 0.5 ms |

### Ambient conditions

| | |
|---|---|
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | -20 ... 75 °C (-4 ... 167 °F) |

### Mechanical specifications

| | |
|---|---|
| Protection degree | IP67 / IP69K |
| Connection | M8 x 1 connector, 4-pin |
| Material | |
| Housing | ABS |
| Optical face | glass pane |
| Mass | approx. 10 g |

### Compliance with standards and directives

| | |
|---|---|
| Standard conformity | |
| Product standard | EN 60947-5-2:2007 IEC 60947-5-2:2007 |
| 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 |

## Accessories

**OMH-4.1**
Mounting Clamp

**OMH-ML6**
Mounting bracket

**OMH-ML6-U**
Mounting bracket

**OMH-ML6-Z**
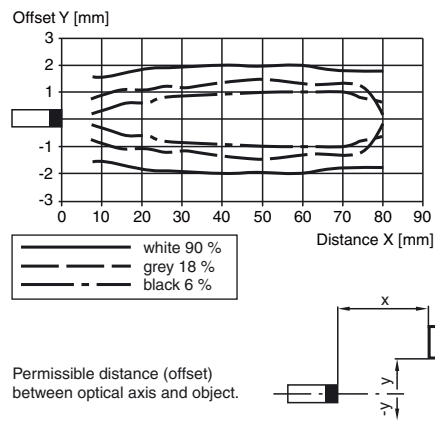Mounting bracket

**V31-GM-2M-PVC**
M8, 4-pin socket, PVC cable

**V31-WM-2M-PVC**
M8, 4-pin socket, PVC cable

Other suitable accessories can be found at www.pepperl-fuchs.com

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

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## Curves/Diagrams

### Characteristic response curve

Offset Y [mm]



white 90 %
grey 18 %
black 6 %

Permissible distance (offset)
between optical axis and object.

### Detection ranges

ML4.2-8-H-80-IR...

Object colour



Detection range [mm]

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