



Model Number

ML71-6/59/82b/103/143

Retroreflective sensor
with 4-pin, M8 x 1 connector

Features

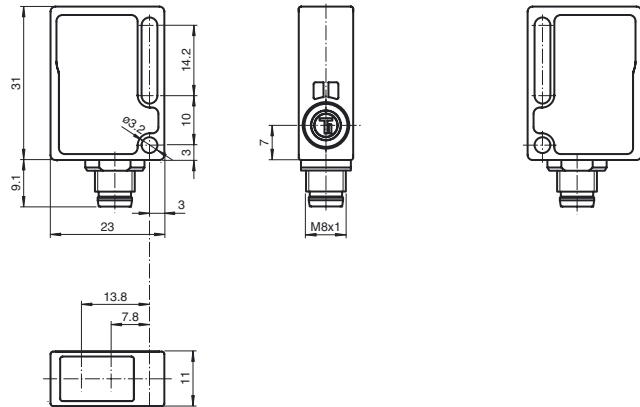
- Reliable sensor for standard applications
- Miniature design with front optical face
- Automatic adjustment of sensitivity via TEACH-IN
- Resistant against noise: reliable operation under all conditions
- Certified by ECOLAB

Product information

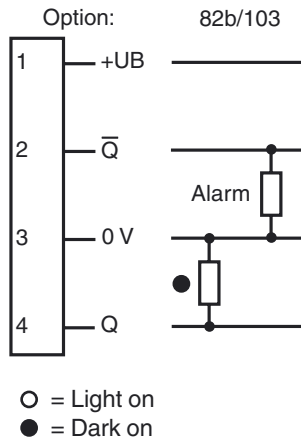
Small, robust, effective, and reliable - these are the properties of the ML7 sensor series. Due to their small size, number of versions, and two different lens positions, they are particularly suited for installation in tight spaces. The robust design and high quality of Pepperl+Fuchs mean they can also be used under harsh environmental conditions. The efficient technology, switching frequencies up to 1000 Hz, high resistance to ambient light, and 4-in-1 output make the series suitable for non-contact object detection.

Release date: 2013-04-18 14:45 Date of issue: 2013-05-13 127472_eng.xml

Dimensions



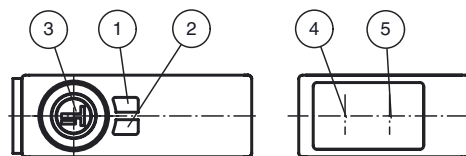
Electrical connection



Pinout



Indicators/operating means



| | | |
|---|-------------------|--------|
| 1 | Operating display | green |
| 2 | Signal display | yellow |
| 3 | TEACH-IN button | |
| 4 | Emitter | |
| 5 | Receiver | |

Technical data**General specifications**

| | |
|----------------------------|---------------------------------------|
| Effective detection range | 0 ... 3 m |
| Reflector distance | 0.02 ... 3 m |
| Threshold detection range | 3.5 m |
| Reference target | H85-2 reflector |
| Light source | LED |
| Light type | modulated visible red light |
| Diameter of the light spot | approx. 180 mm at a distance of 3.5 m |
| Angle of divergence | approx. 3 ° |
| Ambient light limit | 40000 Lux |

Functional safety related parameters

| | |
|--------------------------------|--------|
| MTTF _d | 1530 a |
| Mission Time (T _M) | 20 a |
| Diagnostic Coverage (DC) | 0 % |

Indicators/operating means

| | |
|-------------------|--|
| Operating display | LED green, flashes in case of short-circuit |
| Function display | LED yellow, lights up when light beam is free, flashes when falling short of the stability control |
| Controls | TEACH-IN key |

Electrical specifications

| | | |
|------------------------|----------------|--------------------------|
| Operating voltage | U _B | 10 ... 30 V DC , class 2 |
| Ripple | | max. 10 % |
| No-load supply current | I ₀ | < 20 mA |

Output

| | | |
|-----------------------------|---|------------|
| Pre-fault indication output | 1 PNP, inactive when level falls below function reserve after approx. 5 s. Immediately inactive if the beam is interrupted 4 times during the flashtime. | |
| Switching type | dark on | |
| Signal output | 1 PNP output, short-circuit protected, reverse polarity protected, open collector | |
| Switching voltage | max. 30 V DC | |
| Switching current | max. 100 mA | |
| Voltage drop | U _d | ≤ 1.5 V DC |
| Switching frequency | f | 1000 Hz |
| Response time | | 0.5 ms |

Ambient conditions

| | |
|---------------------|--------------------------------|
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | -40 ... 75 °C (-40 ... 167 °F) |

Mechanical specifications

| | |
|-------------------|--------------------------------------|
| Protection degree | IP67 / IP69K |
| Connection | 4-pin, M8 plastic connector |
| Material | |
| Housing | PC (glass-fiber-reinforced Makrolon) |
| Optical face | PMMA |
| Mass | approx. 10 g |

Compliance with standards and directives

| | |
|---------------------|---|
| Standard conformity | |
| Product standard | EN 60947-5-2:2007 IEC 60947-5-2:2007 |
| Standards | EN 50178, UL 508 |

Approvals and certificates

| | |
|------------------|---|
| Protection class | II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 |
| UL approval | cULus |
| CCC approval | CCC approval / marking not required for products rated ≤ 36 V |

Accessories**OMH-ML7-01**

Mounting bracket

OMH-ML7-02

Mounting bracket

OMH-ML7-03

Fixing plate

V31-WM-2M-PUR

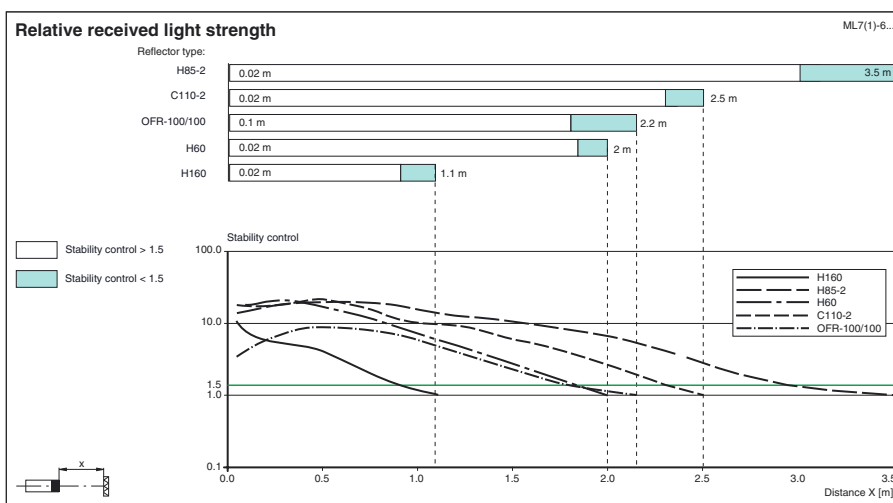
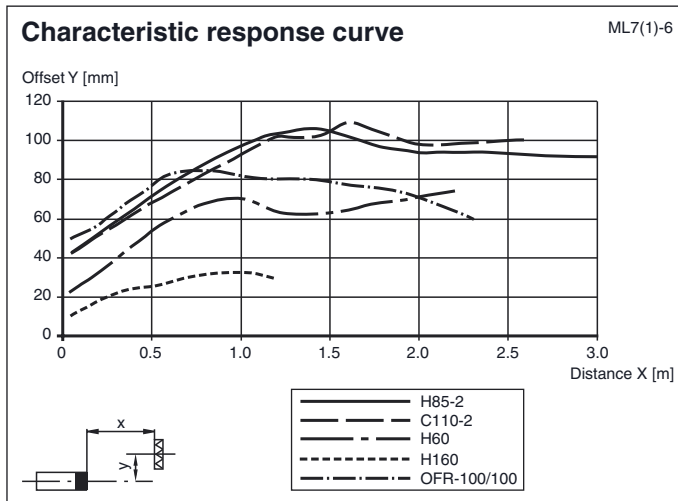
4-pin, M8 socket, PUR cable

V31-GM-2M-PUR

4-pin, M8 socket, PUR cable

Suitable reflectors and cable sockets can be found in the Internet

Curves/Diagrams



Teach-In

Connect the sensor to operating voltage, the LED green lights up constantly. The sensor operates at max. sensitivity (delivery status) or with the last taught values.

Mount suitable reflector opposite light beam switch.

- Adjust the unit to the reflector.
- Press the Teach-In button - as an acknowledgement the green LED will quickly turn off one time.
- Press the Teach-In button until both LEDs green and yellow are blinking in parallel (2Hz). Release the Teach-In button now.
- While the green and yellow LEDs are blinking alternating (2 Hz) the unit is in the internal set up procedure.
- **Teach-In successful:** Both LEDs green and yellow are on. The unit is ready to use and in switching mode now.
- **Teach-In not successful:** Both LEDs are flashing alternating (4 Hz) for approx. 5 seconds. Afterwards the sensor returns to max. sensitivity setting. Please retry the Teach-In procedure beginning by step 1.