



**Model Number**

**ML4.2-54-F/40b/95/110**

Retroreflective sensor  
with 4-pin, M8 x 1 connector

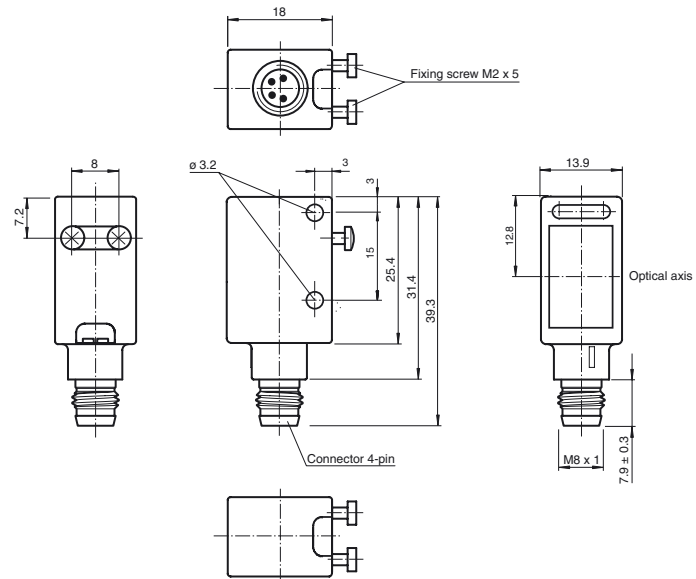
**Features**

- High-precision sensors for complex applications
- Miniature design with very robust and versatile mounting options
- Optical surface made of scratch-resistant glass for areas that are prone to high levels of dirt
- Objects can be reliably detected down to 0 mm: no blind zone
- Small, sharp light spot
- Tamper-proof version with no adjustments

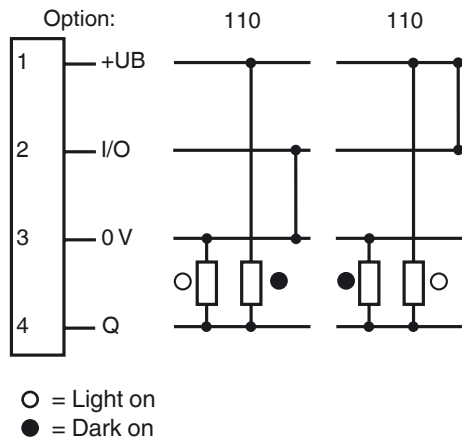
**Product information**

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.

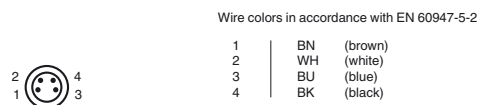
**Dimensions**



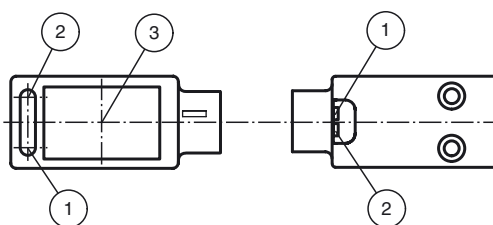
**Electrical connection**



**Pinout**



**Indicators/operating means**



1	Operating display	green
2	Signal display	yellow
3	Optical axis	

Release date: 2016-06-20 12:50 Date of issue: 2016-06-20 207107\_eng.xml

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 4411  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

**Technical data****General specifications**

Effective detection range	0 ... 5 m
Reflector distance	0 ... 5 m
Threshold detection range	6 m
Reference target	H85-2 reflector
Light source	LED
Light type	modulated visible red light , 660 nm
Polarization filter	yes
Angle deviation	max. $\pm 1^\circ$
Diameter of the light spot	approx. 40 mm at detection range 1 m
Angle of divergence	1.7 °
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	LED yellow: switching state ; Stability control

**Electrical specifications**

Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>0</sub>	< 20 mA at 24 V DC

**Output**

Switching type		light/dark on electrically switchable
Signal output		1 push-pull (4 in 1) 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	1 kHz
Response time		500 μs

**Ambient conditions**

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

**Mechanical specifications**

Degree of protection	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 -2000 Hz, 10 g in each X, Y and Z directions

**Approvals and certificates**

CE conformity	yes
EAC conformity	TR CU 020/2011
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-Z**

Mounting bracket

**OMH-ML6-U**

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, M8, 4-pin, PVC cable

**V31-WM-2M-PVC**

Female cordset, M8, 4-pin, PVC cable

**REF-H85-2**

Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes

**REF-C110-2**

Reflector, round ø 84 mm, central mounting hole

**REF-H60**

Reflector, rectangular 40.5 mm x 60 mm, mounting holes

**REF-VR10**

Reflector, rectangular 60 mm x 19 mm, mounting holes

**OFR-100/100**

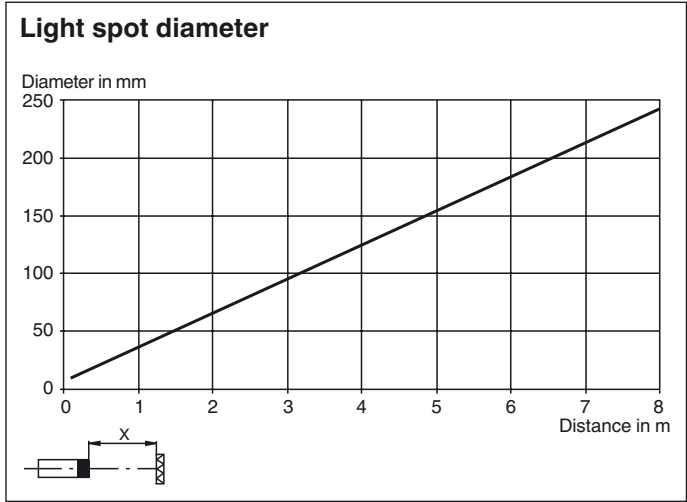
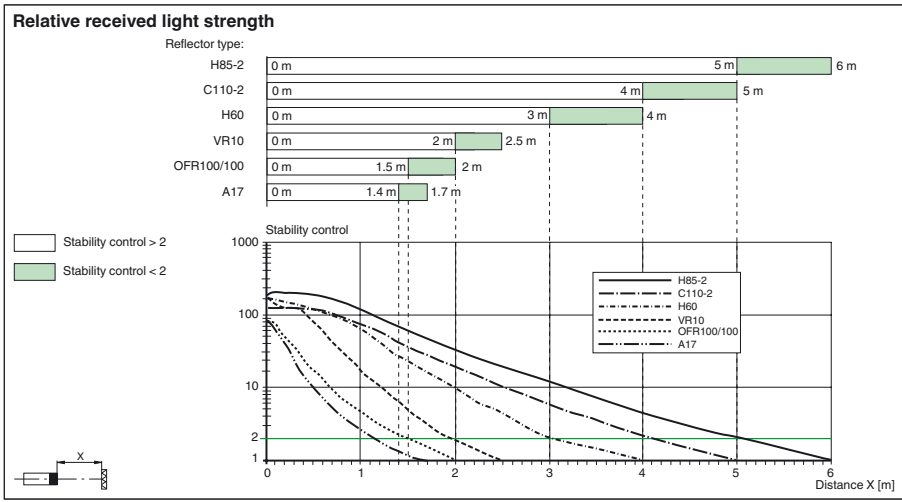
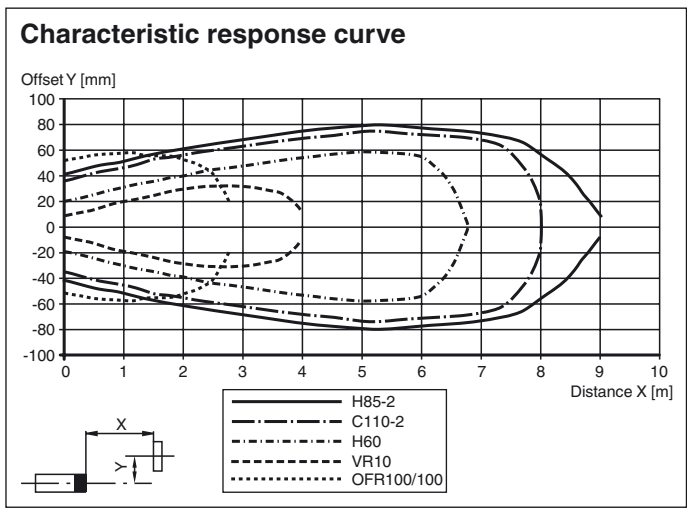
Reflective tape 100 mm x 100 mm

**REF-A17**

Reflector, round ø 20.5 mm, self-adhesive

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

**Curves/Diagrams**



Release date: 2016-06-20 12:50 Date of issue: 2016-06-20 207107\_eng.xml