Model Number

ML6-54-F/82b/95/110

Retroreflective sensor
with 4-pin, M8 x 1 connector

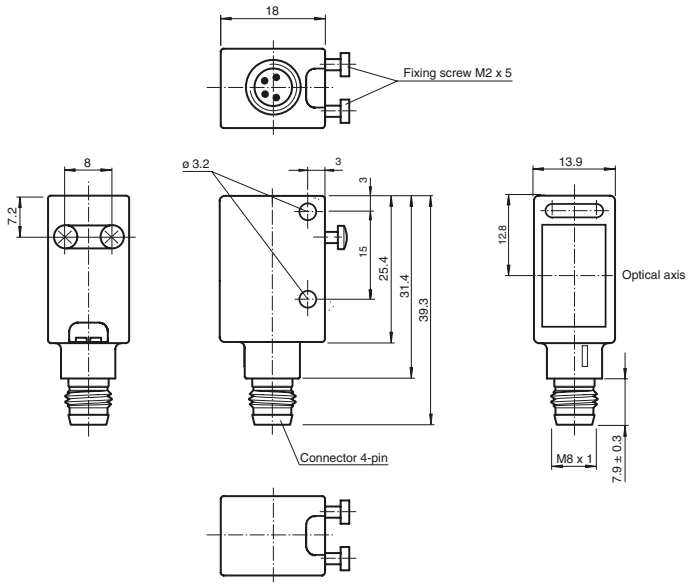
Features

- Precision sensor for standard applications
- Miniature design with very robust and versatile mounting options
- Objects can be reliably detected down to 0 mm: no blind zone
- Small, sharp light spot
- Weak signal output and indicator
- Tamper-proof version with no adjustments

Product information

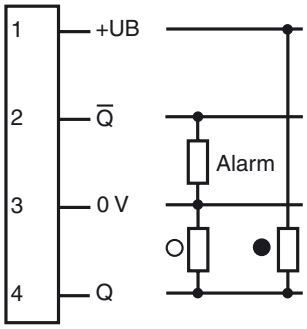
The ML6 series is characterized by a robust, powerful and standard design in a miniature housing. The housing offers IP67/IP69K degree of protection, a food-grade lens, highly visible LEDs and robust all-metal bushings for mounting. Adjustable and tamper-proof sensors with a double push-pull output are available. 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. Clearly visible red light sources facilitates alignment. 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

Option:



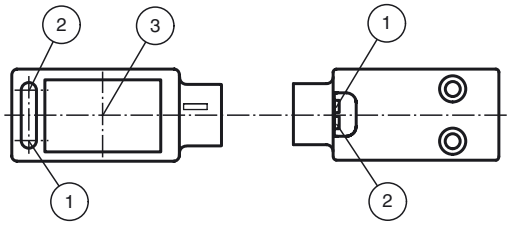
○ = Light on
● = Dark on

Pinout

Wire colors in accordance with EN 60947-5-2

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

Indicators/operating means



1	Operating display	green
2	Signal display	yellow
3	Optical axis	

Release date: 2019-11-26 15:31 Date of issue: 2019-11-26 207102_eng.xml

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. ± 1°
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		
$MTTF_d$		980 a
Mission Time (T_M)		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_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 20 mA at 24 V DC
Output		
Pre-fault indication output		1 PNP function reserve output (alarm), short-circuit protected, protected from reverse polarity, open collector
Switching type		light on
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_d	≤ 2.5 V DC
Switching frequency	f	1 kHz
Response time		500 µs
Conformity		
Product standard		EN 60947-5-2
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		PMMA
Mass		10 g
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
Approvals and certificates		
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

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-5M-PUR
Female cordset single-ended, M8, 4-pin, PUR cable

V31-WM-5M-PUR
Female cordset single-ended, M8, 4-pin, PUR 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

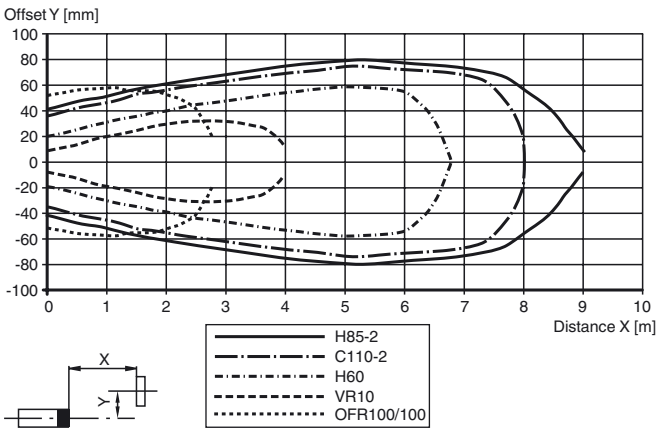
REF-A17
Reflector, round ø 20.5 mm, self-adhesive

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

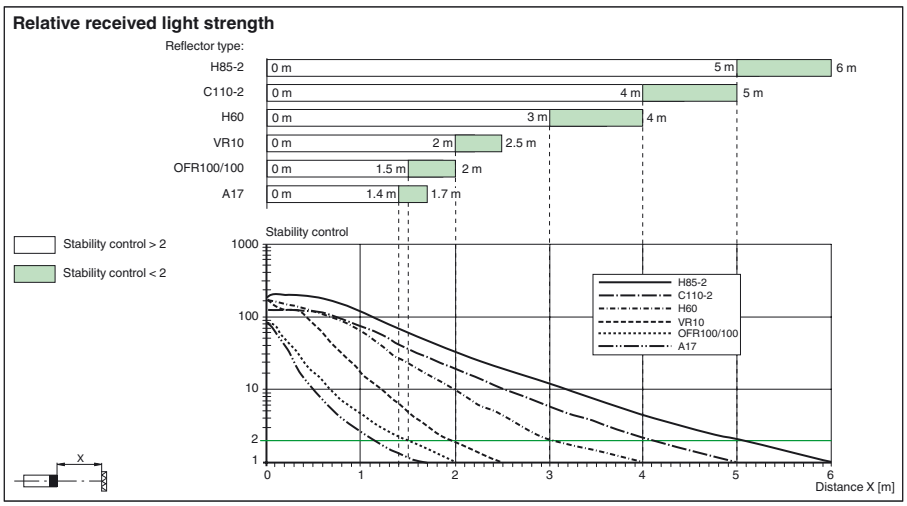
Release date: 2019-11-26 15:31 Date of issue: 2019-11-26 207102_eng.xml

Curves/Diagrams

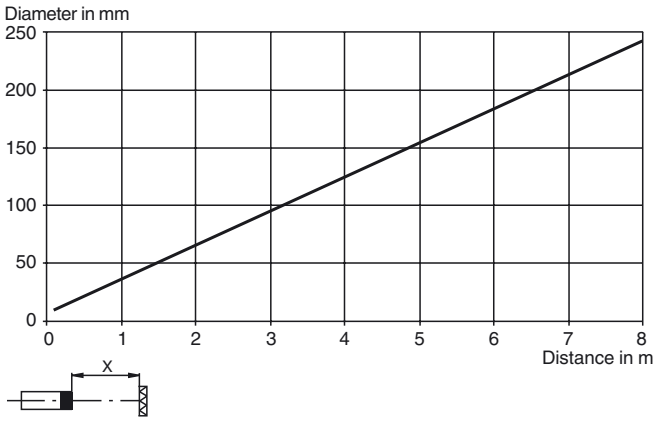
Characteristic response curve



Relative received light strength



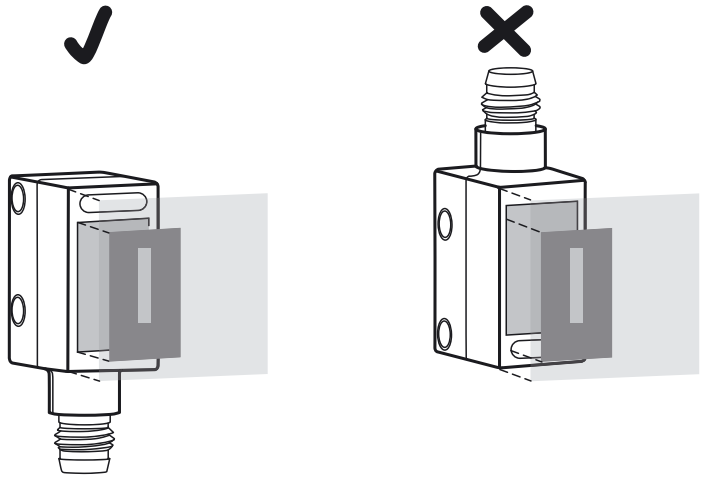
Light spot diameter



Aperture alignment

Release date: 2019-11-26 15:31 Date of issue: 2019-11-26 207102_eng.xml

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



Release date: 2019-11-26 15:31 Date of issue: 2019-11-26 207102_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 1111 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS