Model Number

ML6-54-F/25/115/136

Retroreflective sensor
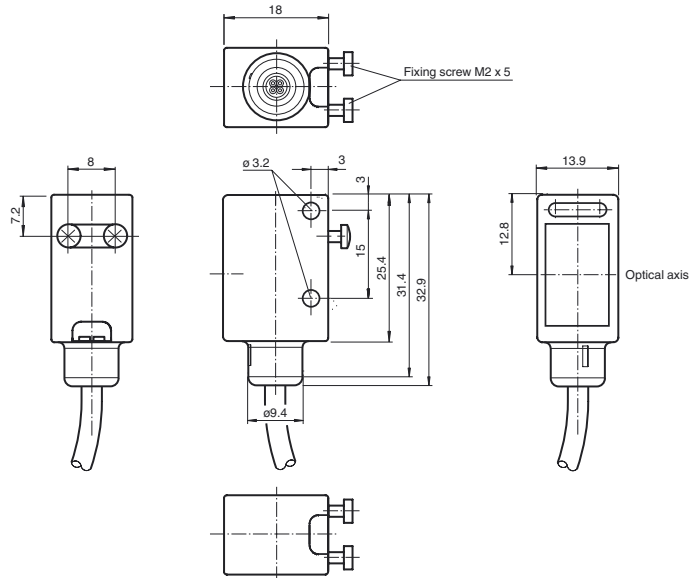with 2 m fixed cable

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
- Rear mounting option for easy mounting without mounting bracket
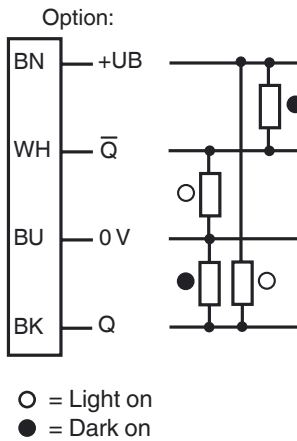- Tamper-proof version with no adjustments

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.
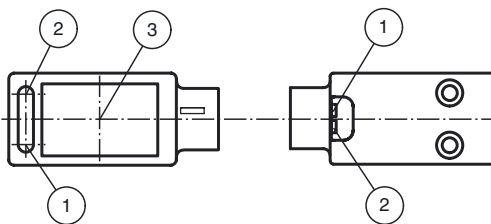
Dimensions

Fixing screw M2 x 5

18
8
7.2
ø 3.2
3
3
15
25.4
31.4
32.9
ø9.4
13.9
12.8
Optical axis

Electrical connection

Option:

BN	+UB
WH	$\overline{Q}$
BU	0 V
BK	Q

○ = Light on
● = Dark on

Indicators/operating means

1	Operating display	green
2	Signal display	yellow
3	Optical axis	

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

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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

Switching type		light/dark on, programmable
Signal output		2 push-pull (4 in 1) outputs, complementary, short-circuit proof, 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

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	2 m fixed cable
Material	
Housing	ABS
Optical face	PMMA
Cable	PUR
Mass	50 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

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

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
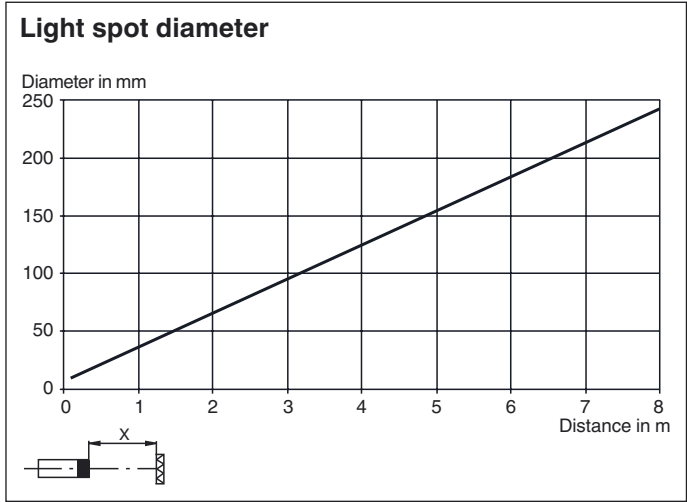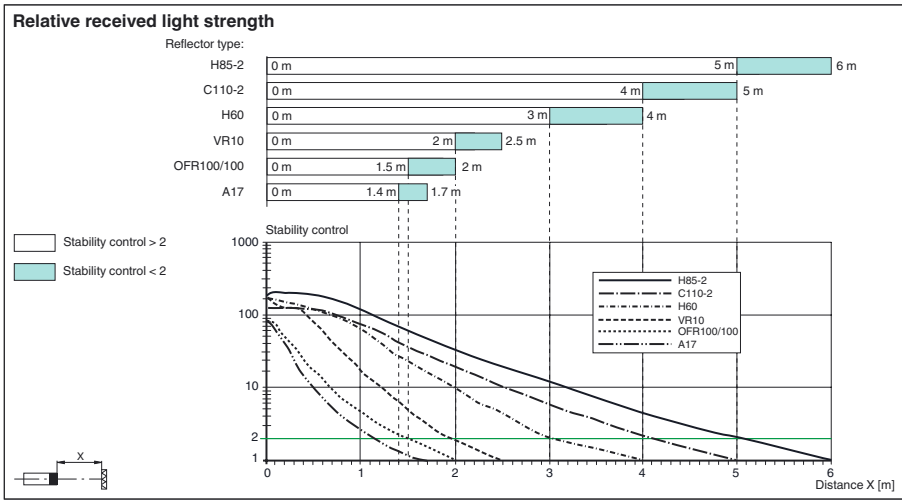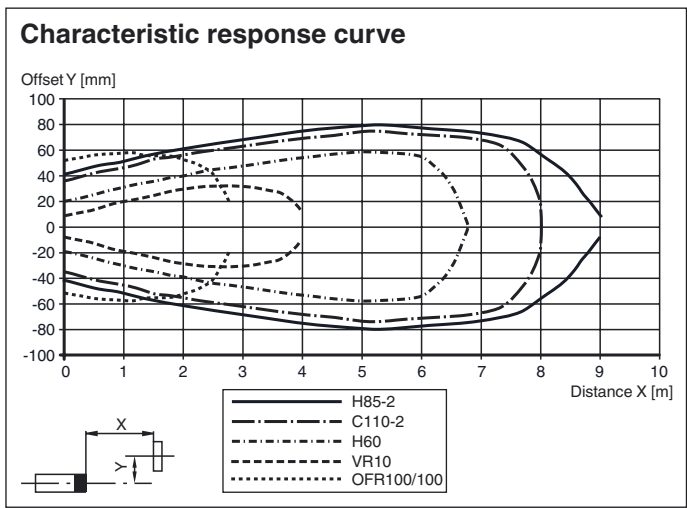
OFR-100/100
Reflective tape 100 mm x 100 mm

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

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

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

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Curves/Diagrams

Characteristic response curve

Offset Y [mm]

Distance X [m]

Legend:
- H85-2
- C110-2
- H60
- VR10
- OFR100/100

Relative received light strength

Reflector type:

Reflector type			
H85-2	0 m	5 m	6 m
C110-2	0 m	4 m	5 m
H60	0 m	3 m	4 m
VR10	0 m	2 m	2.5 m
OFR100/100	0 m	1.5 m	2 m
A17	0 m	1.4 m	1.7 m

- ☐ Stability control > 2
- ▨ Stability control < 2

Stability control

Distance X [m]

Legend:
- H85-2
- C110-2
- H60
- VR10
- OFR100/100
- A17

Light spot diameter

Diameter in mm

Distance in m

Aperture alignment

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

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

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