Dimensions

Receiver
Emitter

Model Number

ML100-54-F/103/115b

Retroreflective sensor
with fixed cable and M12 connector, 4-pin

Features

- Miniature design
- Easy to use
- Full metal thread mounting
- Clearly visible LEDs for Power ON, switching state and weak signal indication
- Not sensitive to ambient light

Product information

The ML100 series is characterized by its miniature housing with integral, all-metal threaded bushings. All versions are equipped with a visible red transmitter LED. This greatly simplifies installation and commissioning. The switching states are easily visible from all directions thanks to the highly visible LEDs.
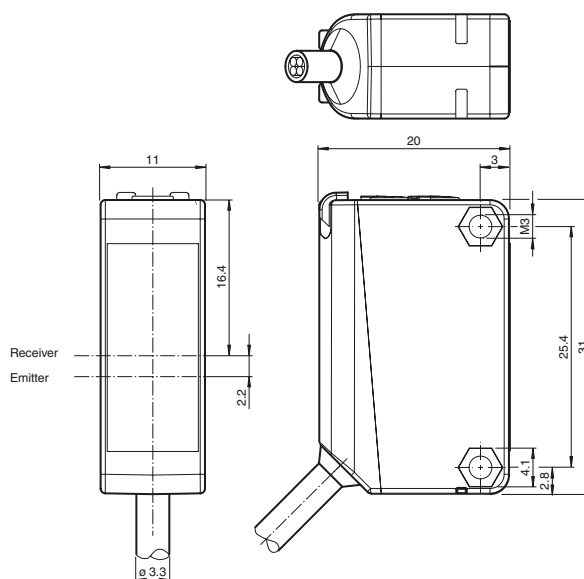
Electrical connection
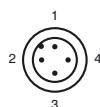
Option: 103

1	+UB
2	n.c.
3	0 V
4	Q
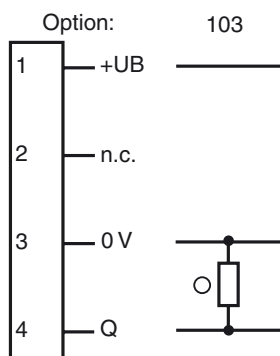
○ = Light on
● = Dark on

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
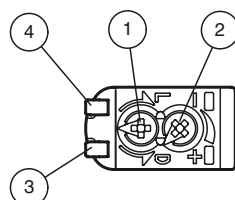
1	Light-Dark-switching	
2	Sensitivity adjuster	
3	Signal display	yellow
4	Operating display	green

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

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Technical data

General specifications

Effective detection range	0 ... 2.7 m
Reflector distance	0.02 ... 2.7 m
Threshold detection range	3 m
Reference target	H50 reflector
Light source	LED
Light type	modulated visible red light
Polarization filter	yes
Diameter of the light spot	approx. 200 mm at a distance of 3 m
Angle of divergence	approx. 4 °
Optical face	frontal
Ambient light limit	EN 60947-5-2:2007+A1:2012

Functional safety related parameters

$MTTF_d$	860 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green: power on
Function indicator	LED yellow: lights up when receiving the light beam ; flashes when falling short of the stability control; OFF when light beam is interrupted
Control elements	sensitivity adjustment
Control elements	Light-on/dark-on changeover switch

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 20 mA

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: light 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 , resistive load
Voltage drop	U_d	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Housing width	11 mm
Housing height	31 mm
Housing depth	20 mm
Degree of protection	IP67
Connection	300 mm fixed cable with 4-pin, M12 x 1 connector
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 20 g
Tightening torque, fastening screws	0.6 Nm
Cable length	0.3 m

Compliance with standards and directives

Directive conformity	
EMC Directive 2004/108/EC	EN 60947-5-2:2007+A1:2012
Standard conformity	
Standards	UL 60947-5-2

Approvals and certificates

UL approval	cULus Listed, Class 2 Power Source or listed Power Supply with a limited voltage output with (maybe integrated) fuse (max. 3.3 A according UL248), Type 1 enclosure
CCC approval	CCC approval / marking not required for products rated ≤36 V

Accessories

OMH-F10-ML100
Mounting aid for ML100 series

OMH-ML100-01
Mounting aid for ML100 series, Mounting bracket

OMH-ML100-02
Mounting aid for ML100 series, Mounting bracket

OMH-ML100-03
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-ML100-04
Mounting aid for ML100 series, Mounting bracket

OMH-ML100-05
Mounting aid for ML100 series, Mounting bracket

OMH-10
Mounting aid

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-H60-2
Reflector with mounting holes

REF-H50
Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap

REF-H33
Reflector with screw fixing

OFR-70-2
Reflective tape 70 mm x 70 mm

OMH-ML100-S1
Mounting bracket

OMH-ML100-08
Mounting aid for ML100 series, Snap-in

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
- H50
- OFR-100/100
- OFR 20 mm x 20 mm

Relative received light strength (typical)

Reflector type:

Reflector type		Range
H85-2	20 mm	4 m
C110-2	20 mm	3.5 m
H50	20 mm	3 m
OFR-100/100	20 mm	1.2 m
OFR 20 mm x 20 mm	20 mm	0.8 m

Stability control

- ☐ Stability control > 1.5
- ▨ Stability control < 1.5

Distance X [m]

Legend:
- H85-2
- C110-2
- H50
- OFR-100/100
- OFR 20 mm x 20 mm

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

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