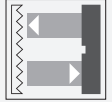




Retroreflective sensor ML4.2-54-F/40b/95/110



- 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

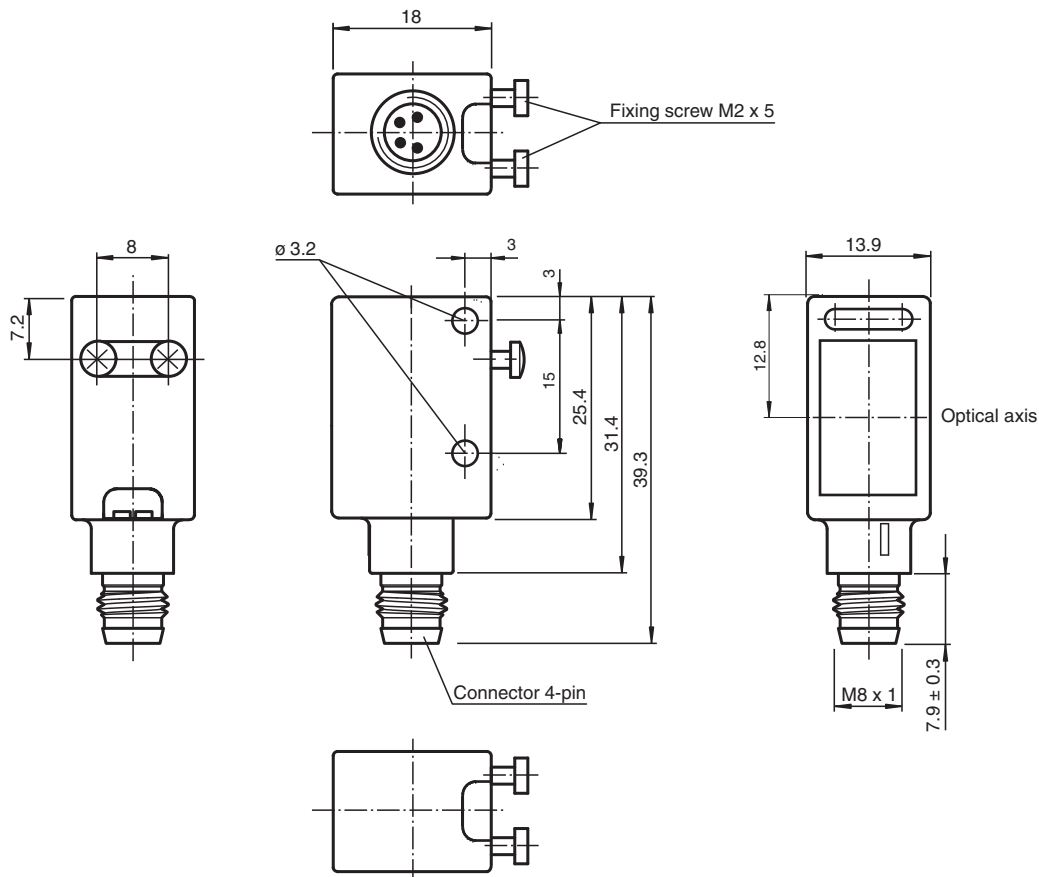
Retroreflective sensor for complex applications, miniature design, polarization filter, 6 m detection range, red light, light/dark on, push-pull output, M8 plug



Function

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.

Dimensions



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 _d	1940 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 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 _d	≤ 2.5 V DC
Switching frequency	f	1 kHz
Response time		500 μs

Conformity

Product standard	EN 60947-5-2
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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

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

Ambient conditions

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

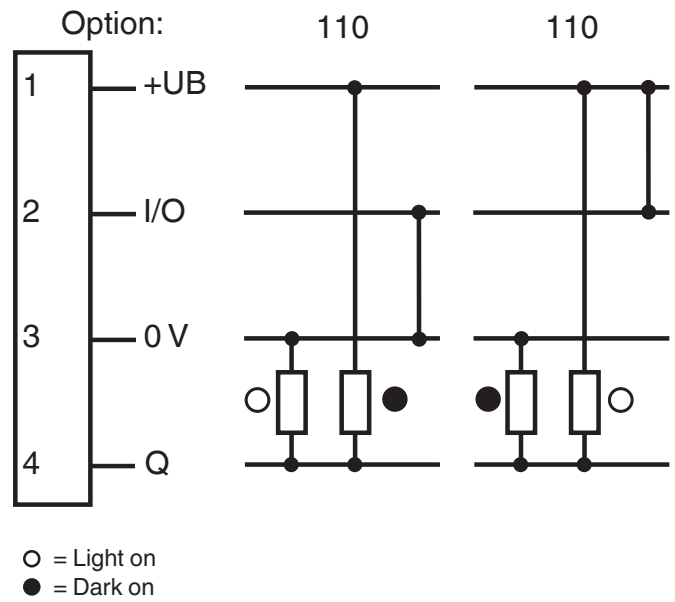
Mechanical specifications

Housing width	13.9 mm
Housing height	31.4 mm
Housing depth	18 mm
Degree of protection	IP67 / IP69K

Technical Data

Connection	M8 x 1 connector, 4-pin
Material	
Housing	ABS
Optical face	glass pane
Mass	approx. 10 g

Connection Assignment



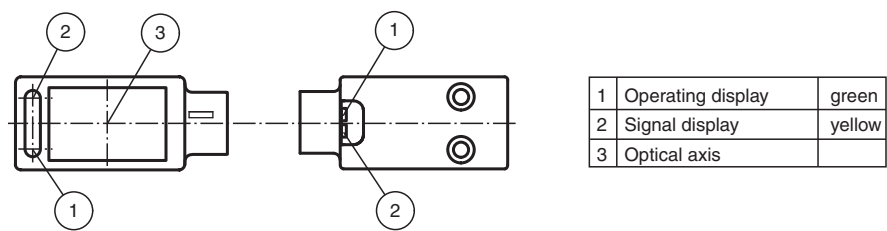
Connection Assignment



Wire colors in accordance with EN 60947-5-2

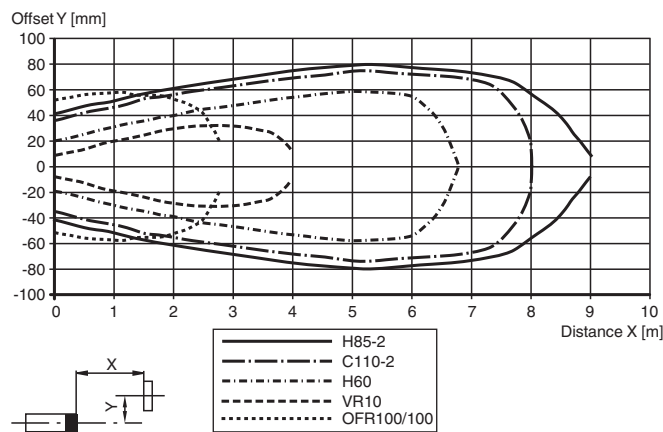
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Assembly



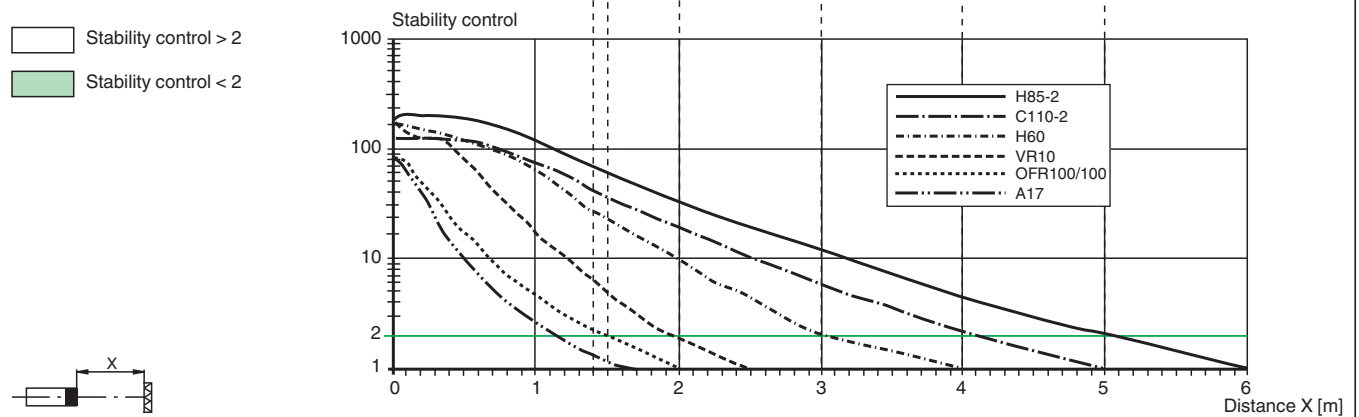
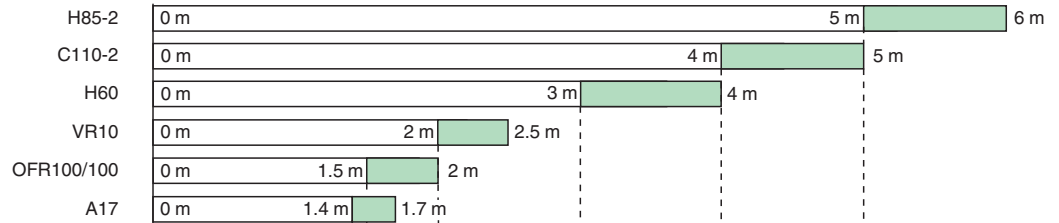
Characteristic Curve

Characteristic response curve

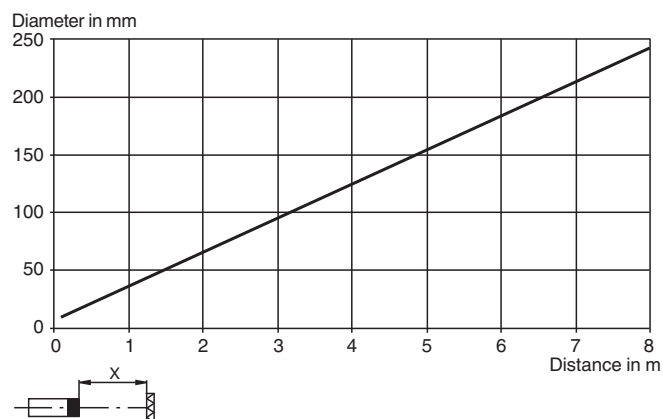


Relative received light strength

















Reflector type:



Light spot diameter



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 single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey
	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