



## Thru-beam sensor

ML4.2-P-8m-RT/40b/76a/95/110



- Short response time
- Highly visible LEDs for Power-On, switching status, short-circuit, and undervoltage
- Test input
- Metal-reinforced fastening holes
- Optical surface made of scratch-resistant glass
- Push-pull output

Thru-beam sensor for complex applications, miniature design, 8000 mm detection range, red light, push-pull output, test input, M8 plug



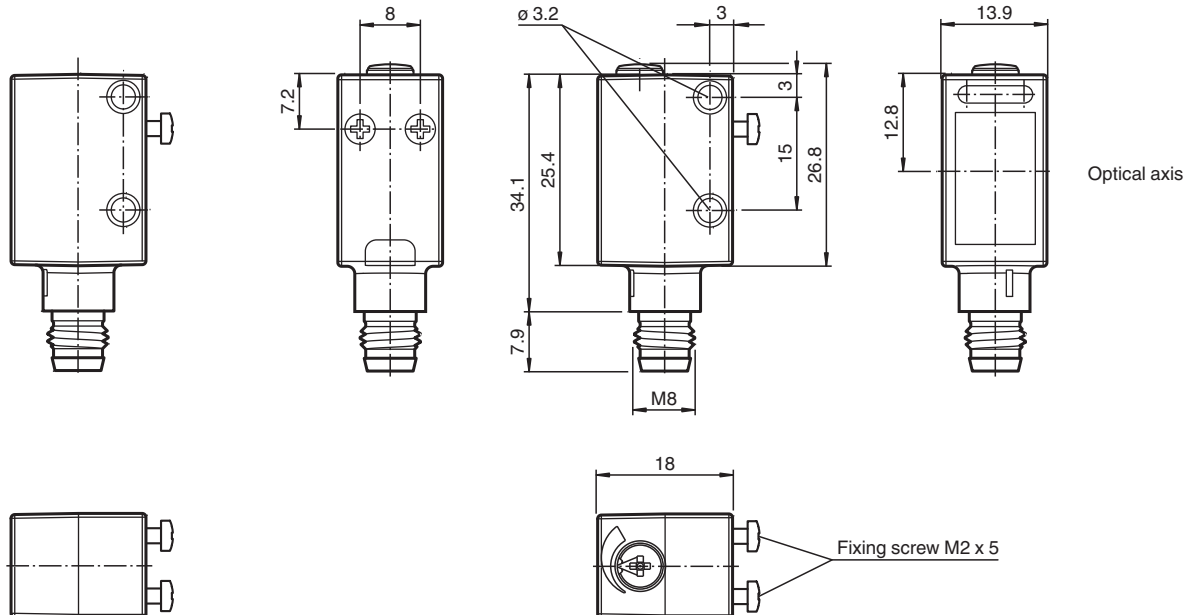
### Function

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

Transmitter

Receiver



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

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## Technical Data

<b>System components</b>		
Emitter		ML4.2-T-8m-RT/76a/95
Receiver		ML4.2-R/40b/95/110
<b>General specifications</b>		
Effective detection range		0 ... 8000 mm
Threshold detection range		10000 mm
Light source		LED
Light type		modulated visible red light
Target size		min. 7 mm
Diameter of the light spot		300 mm at 8000 mm detection range
Angle of divergence		approx. 2 °
<b>Ambient light limit</b>		
Continuous light		40000 Lux
Modulated light		5000 Lux
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>		550 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		60 %
<b>Indicators/operating means</b>		
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, lights up with receiver lit flashes when falling short of the stability control
Control elements		sensitivity adjustment
<b>Electrical specifications</b>		
Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		< 10 %
No-load supply current	I <sub>0</sub>	< 15 mA at 24 V DC
<b>Input</b>		
Test input		emitter deactivation at +U <sub>B</sub>
<b>Output</b>		
Switching type		light/dark on electrically switchable
Signal output		Push-pull 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	2000 Hz
Response time		250 μs
<b>Conformity</b>		
Product standard		EN 60947-5-2
<b>Compliance with standards and directives</b>		
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
<b>Approvals and certificates</b>		
CE conformity		yes
UL approval		cULus Listed
CCC approval		CCC approval / marking not required for products rated ≤36 V
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-20 ... 75 °C (-4 ... 167 °F)
<b>Mechanical specifications</b>		
Housing width		13.9 mm
Housing height		31.4 mm

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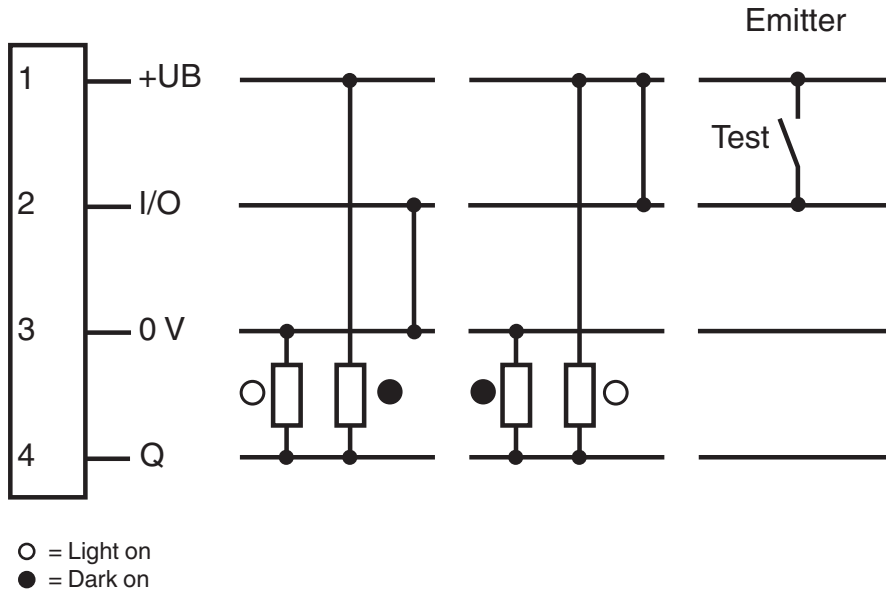
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**Technical Data**

Housing depth	18 mm
Degree of protection	IP67 / IP69K
Connection	M8 x 1 connector, 4-pin
Material	
Housing	ABS
Optical face	glass pane
Mass	15 g (device)

**Connection Assignment**



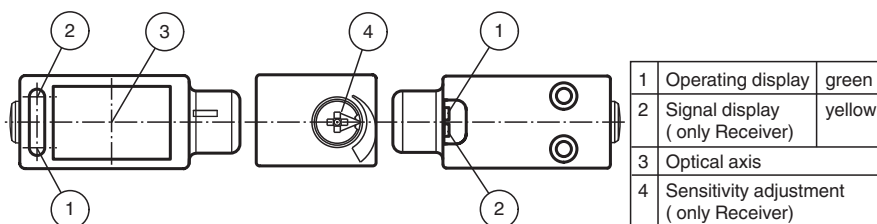
**Connection Assignment**



Wire colors in accordance with EN 60947-5-2

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

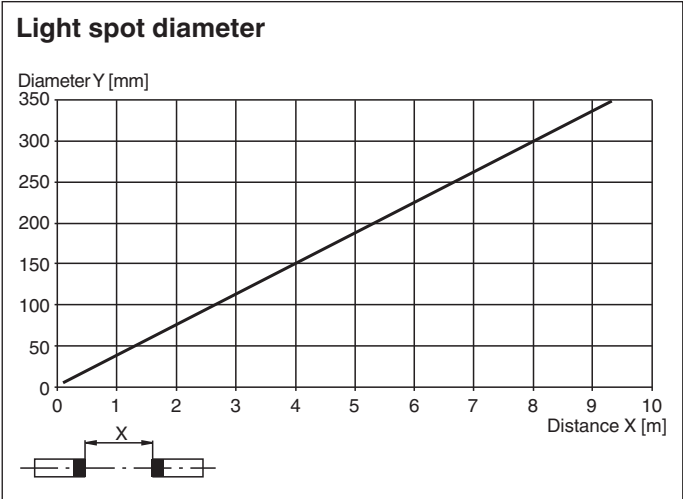
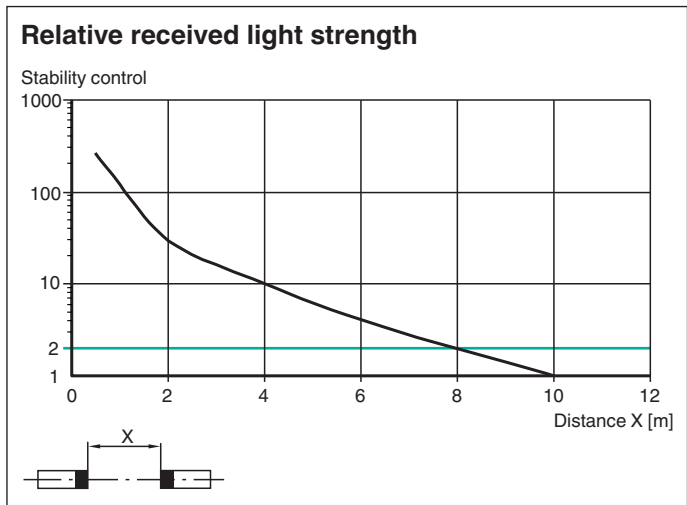
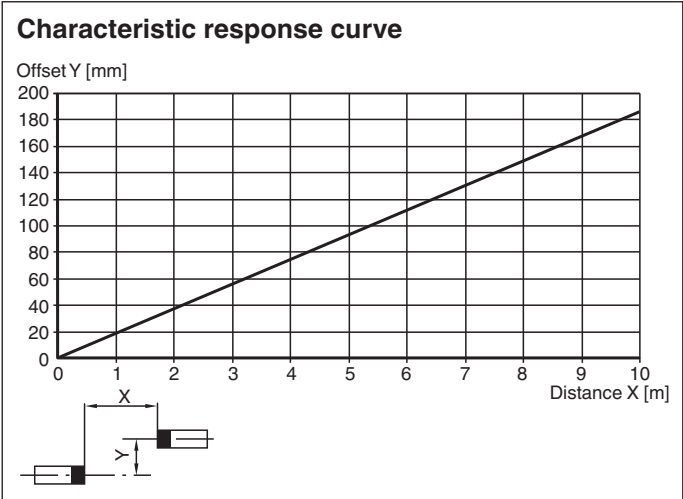
**Assembly**



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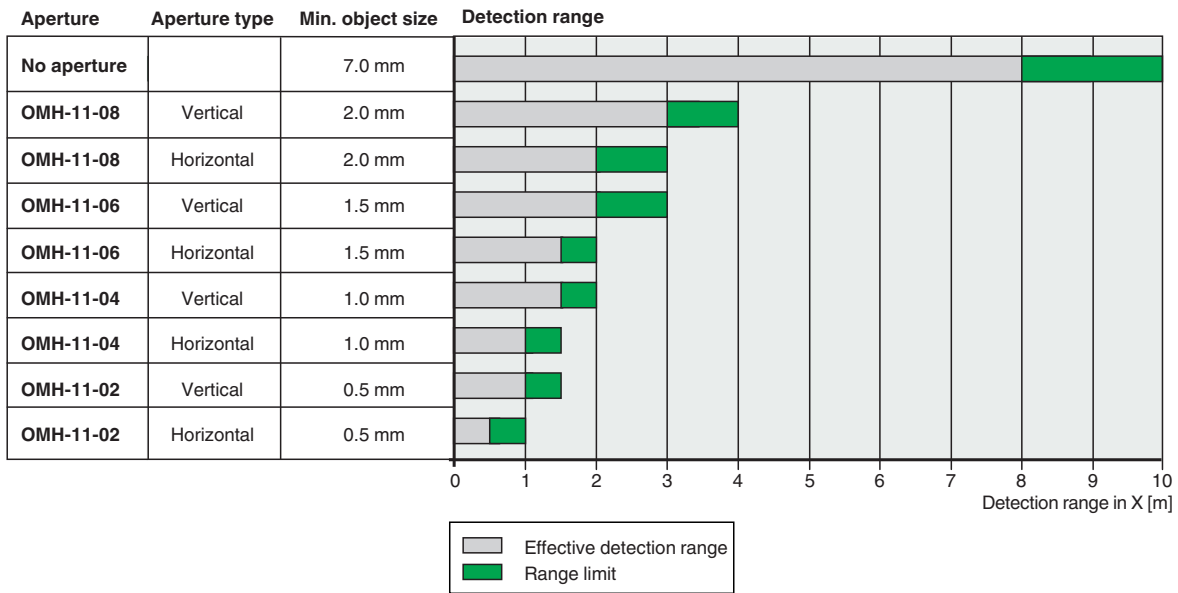
**Characteristic Curve**



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## Characteristic Curve

To aid in the detection of small objects, various apertures OMH-11-... can be placed on the sensors. This results in different detection ranges:



## Accessories

	<b>OMH-4.1</b>	Mounting Clamp
	<b>OMH-ML6</b>	Mounting bracket
	<b>OMH-ML6-U</b>	Mounting bracket
	<b>OMH-ML6-Z</b>	Mounting bracket
	<b>OMH-11-02 Aperture-V-H 0.5 mm</b>	Slit diaphragm can be affixed for detecting very small parts
	<b>OMH-11-04 Aperture-V-H 1.0 mm</b>	Slit diaphragm can be affixed for detecting very small parts
	<b>OMH-11-06 Aperture-V-H 1.5 mm</b>	Slit diaphragm can be affixed for detecting very small parts
	<b>OMH-11-08 Aperture-V-H 2.0 mm</b>	Slit diaphragm can be affixed for detecting very small parts
	<b>V31-GM-2M-PVC</b>	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	<b>V31-WM-2M-PVC</b>	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey

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## Mounting

### Aperture alignment

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

