Model Number

ML6-P-8m-RT/25/76a/95/136

Thru-beam sensor
with 4-pin, M8 x 1 connector

Features

- Precision sensor for standard applications
- Miniature design with very robust and versatile mounting options
- Short response time
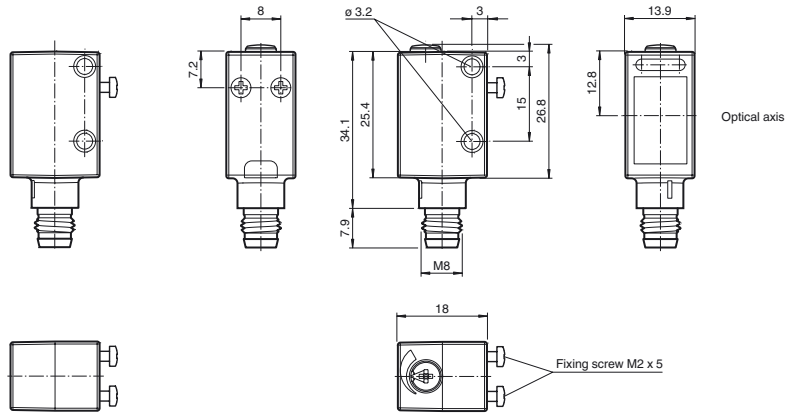- Rear mounting option for easy mounting without mounting bracket

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.
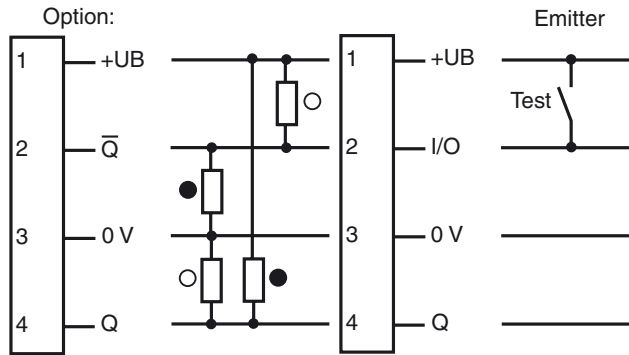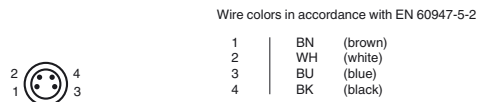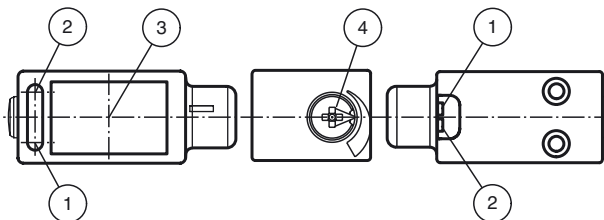
Dimensions

Transmitter

Receiver

Optical axis

M8

Fixing screw M2 x 5

Electrical connection

Option:

Emitter

1	+UB
2	$\overline{Q}$
3	0 V
4	Q

1	+UB
2	I/O
3	0 V
4	Q

Test

○ = 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 (only Receiver)	yellow
3	Optical axis	
4	Sensitivity adjustment (only Receiver)	

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".
Pepperl+Fuchs Group   USA: +1 330 486 0001   Germany: +49 621 776 1111   Singapore: +65 6779 9091
www.pepperl-fuchs.com   fa-info@us.pepperl-fuchs.com   fa-info@de.pepperl-fuchs.com   fa-info@sg.pepperl-fuchs.com   **PEPPERL+FUCHS**   **1**

Technical data

System components		
Emitter		ML6-T-8m-RT/76a/95
Receiver		ML6-R/25/95/136
General specifications		
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 °
Ambient light limit		
Continuous light		40000 Lux
Modulated light		5000 Lux
Functional safety related parameters		
$MTTF_d$		550 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		60 %
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, lights up with receiver lit flashes when falling short of the stability control
Control elements		sensitivity adjustment
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		< 10 %
No-load supply current	I_0	< 15 mA at 24 V DC
Input		
Test input		emitter deactivation at $+U_B$
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
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 (device)
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-2M-PVC
Female cordset single-ended, M8, 4-pin, PVC cable

V31-WM-2M-PVC
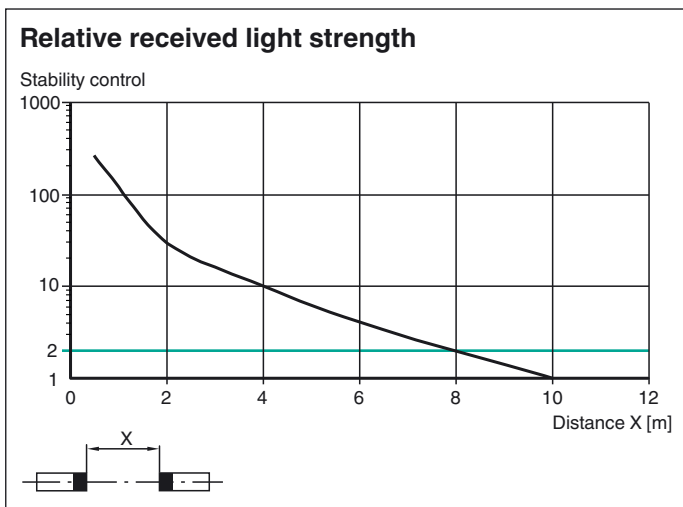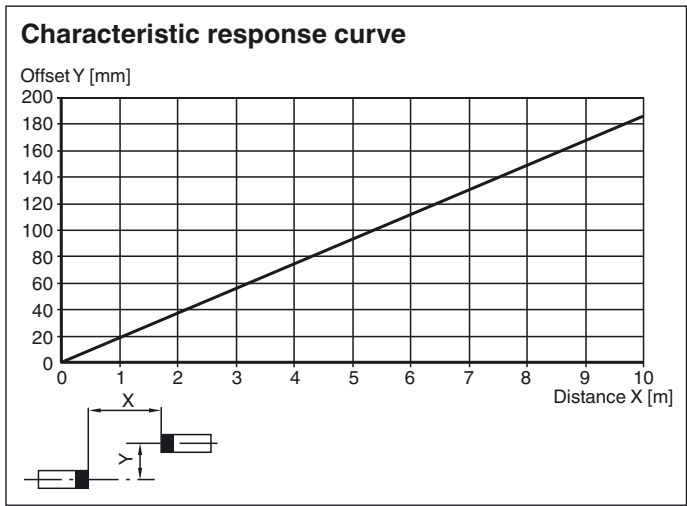Female cordset single-ended, M8, 4-pin, PVC cable

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

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

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Curves/Diagrams

Characteristic response curve

Offset Y [mm]

Distance X [m]

Relative received light strength
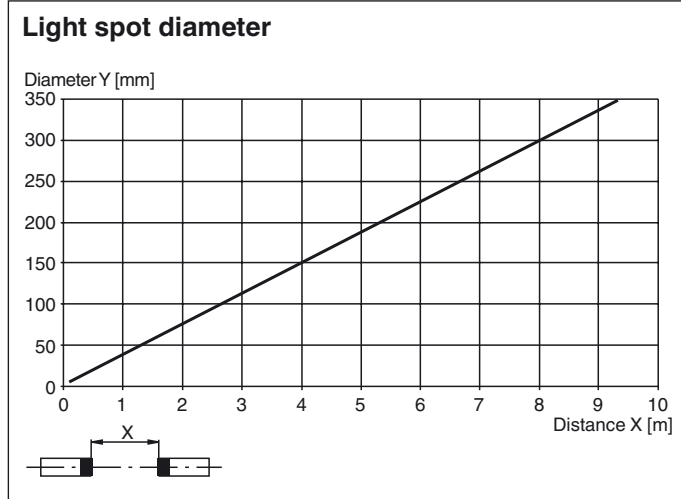
Stability control

Distance X [m]

Curves/Diagrams

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

Aperture	Aperture type	Min. object size	Detection range
No aperture		7.0 mm	
OMH-11-08	Vertical	2.0 mm	
OMH-11-08	Horizontal	2.0 mm	
OMH-11-06	Vertical	1.5 mm	
OMH-11-06	Horizontal	1.5 mm	
OMH-11-04	Vertical	1.0 mm	
OMH-11-04	Horizontal	1.0 mm	
OMH-11-02	Vertical	0.5 mm	
OMH-11-02	Horizontal	0.5 mm	

Detection range in X [m]

Effective detection range
Range limit

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Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
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fa-info@sg.pepperl-fuchs.com

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Light spot diameter

Diameter Y [mm]

Aperture alignment

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

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