



**Model Number**

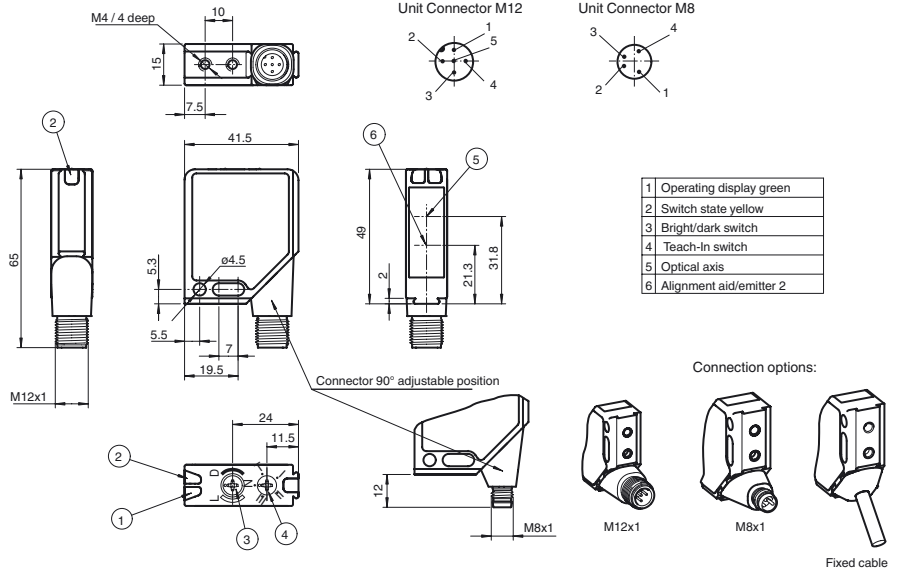
**M12/MV12-F1/47/76b/92**

Thru-beam sensor  
with 4-pin M12 connector, 90° adjustable position

**Features**

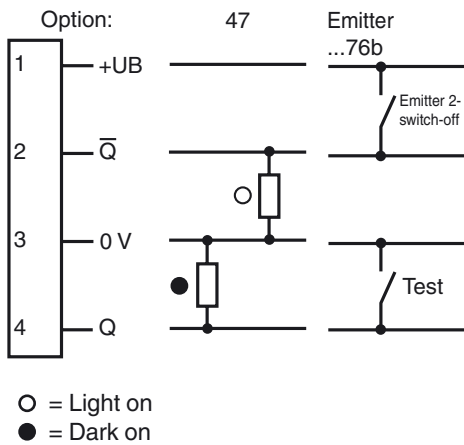
- Series of sensors in a widely used standard housing
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- Additional LED as alignment aid in receiver optics
- High level of stability thanks to the metal housing frame
- Resistant against noise: reliable operation under all conditions

**Dimensions**

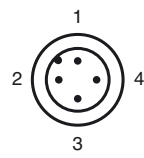


1	Operating display green
2	Switch state yellow
3	Bright/dark switch
4	Teach-In switch
5	Optical axis
6	Alignment aid/emitter 2

**Electrical connection**



**Pinout**



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

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**Technical data****System components**

Emitter	M12-F1/76b/92
Receiver	MV12-F1/47/92

**General specifications**

Effective detection range	0 ... 16 m
Threshold detection range	25 m
Light source	2 LED
Light type	modulated visible red light , 660 nm
Target size	min. 12 mm
Alignment aid	LED red in receiver
Diameter of the light spot	approx. 420 mm at a distance of 16 m
Angle of divergence	1.5 °
Ambient light limit	
Continuous light	40000 Lux
Modulated light	5000 Lux

**Functional safety related parameters**

MTTF <sub>d</sub>	570 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	90 %

**Indicators/operating means**

Operating display	LED green, flashes in case of short-circuit
Function display	2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode
Controls	rotary switch for light/dark, 5-step switch for contrast recognition adjustment
Contrast detection levels	15 % - clear glass bottles 25 % - plastic foils 40 % - colored glass or opaque materials adjustable due to TEACH-IN switch

**Electrical specifications**

Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>0</sub>	Emitter: ≤ 35 mA Receiver: ≤ 45 mA

**Input**

Test input	emitter deactivation at 0 V
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**Output**

Switching type	light/dark on, switchable	
Signal output	2 PNP outputs, complementary, short-circuit protected, reverse polarity protected, open collector	
Switching voltage	max. 30 V DC	
Switching current	max. 0.2 A	
Voltage drop	U <sub>d</sub>	≤ 2.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms

**Ambient conditions**

Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 75 °C (-40 ... 167 °F)

**Mechanical specifications**

Protection degree	IP67
Connection	4-pin, M12 metal connector, 90° rotatable
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Optical face	Plastic pane
Mass	120 g (emitter and receiver)

**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 -150 Hz, 5 g in each X, Y and Z directions

**Approvals and certificates**

Protection class	II, rated voltage ≤ 300 V AC with pollution degree 1-2 according to IEC 60664-1
UL approval	cULus
CCC approval	CCC approval / marking not required for products rated ≤ 36 V

**Accessories****OMH-MLV12-HWG**

Mounting bracket for series MLV12 sensors

**OMH-MLV12-HWK**

Mounting bracket for series MLV12 sensors

**OMH-K01**

dove tail mounting clamp

**OMH-K02**

dove tail mounting clamp

**OMH-K03**

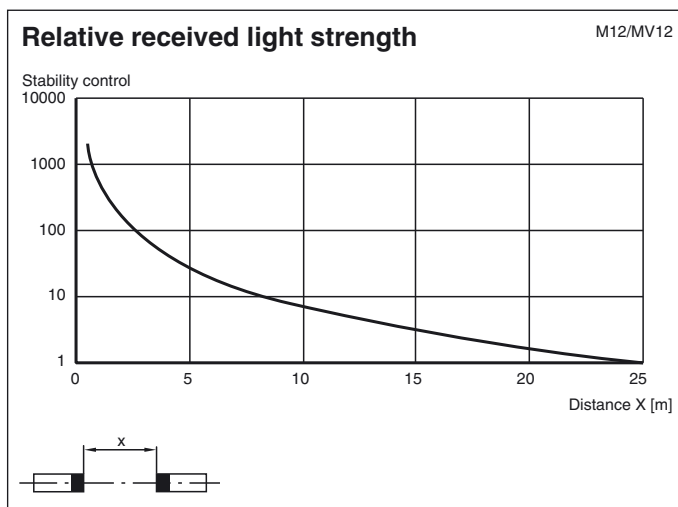
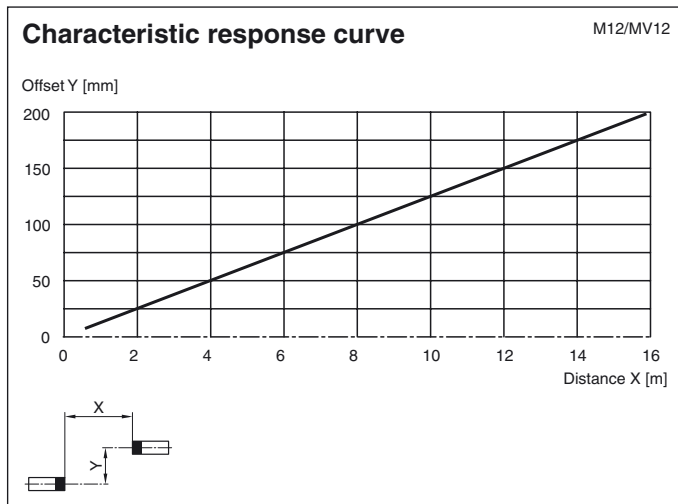
dove tail mounting clamp

**OMH-06**

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

## Curves/Diagrams



## Notes

**Alignment**

In switching position "N" senders and recipients align to:  
Yellow LED lights up constantly, red LED is off.

**TEACH-IN**

- **Switch position "N" (standard operation):**  
LEDs are lit when the light beam is unobstructed, they flash when the value falls short of the function reserve and switch off when the beam is interrupted.
- **Switch position "T" (Teach-in mode):**  
After 1 s, the LED flashes slowly (approx. 1.5 Hz). The sensor is now ready to be set for a specific contrast detection value via the mechanical switch (pos. I, II or III).
- **Switch positions "I", "II" and "III" (contrast detection mode)**  
Contrast recognition values: I for 15 %, II for 25 %, III for 40 %
  1. LED permanently lit: light path unobstructed
  2. LED off: element to be sensed detected
  3. LED flashes rapidly: detection failure, excessive soiling, function reserve too low.