



### Model Number

**M12/MV12-F1-IR/76b/82b/124/128**

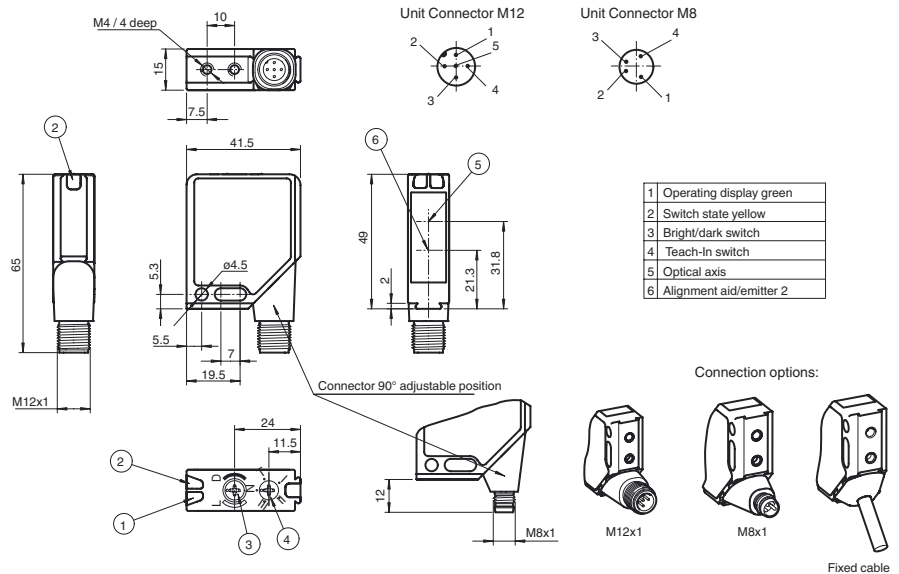
Thru-beam sensor

with 5-pin M12 connector, 90° adjustable position

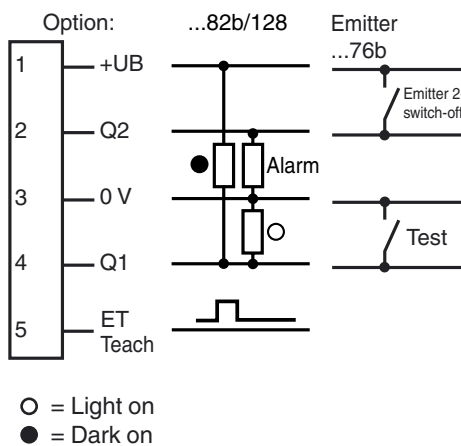
### Features

- 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

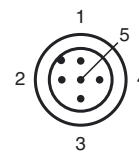
### Dimensions



### Electrical connection



### Pinout



## Technical data

### System components

Emitter	M12-F1-IR/76b/124
Receiver	MV12-F1/82b/124/128

### General specifications

Effective detection range	0 ... 16 m
Threshold detection range	25 m
Light source	2 LED
Light type	modulated infrared light , 880 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 by TEACH-IN key or external wire

### 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
Function input	Ext. Teach-In input (ET)

### Output

Pre-fault indication output	1 PNP, inactive when level falls below function reserve after approx. 5 s. Immediately inactive if the beam is interrupted 4 times during the flashtime.	
Switching type	light/dark on, 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. 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	Metal connector, M12, 5-pin, 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

### V15-G-2M-PUR

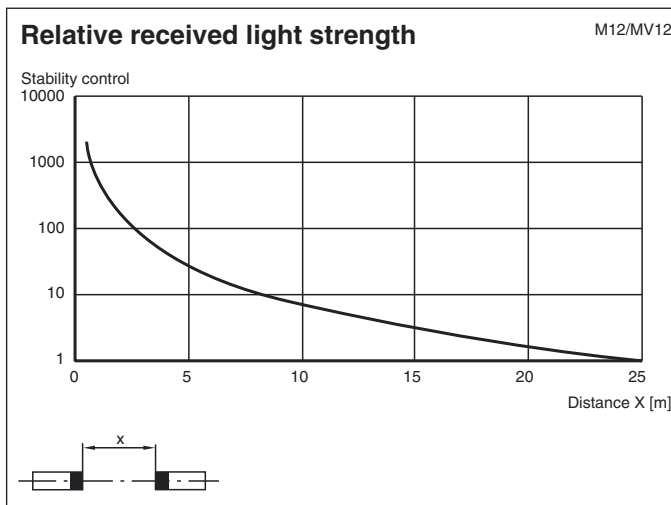
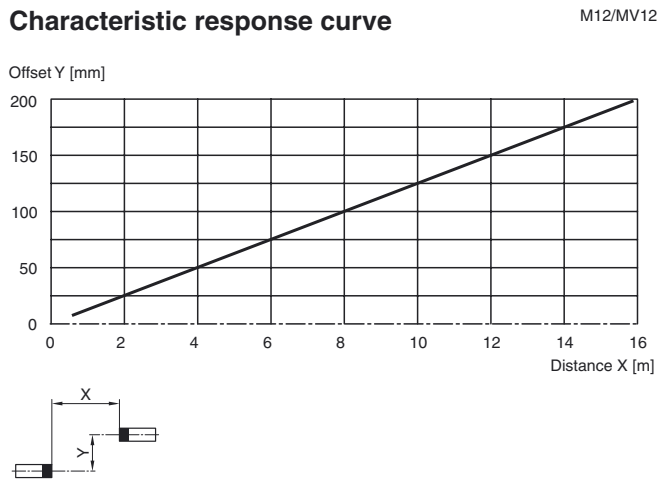
Female cordset, M12, 5-pin, PUR cable

### V15-W-2M-PUR

Female cordset, M12, 5-pin, PUR cable

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 either via the mechanical switch (pos. I, II or III) or an external signal.
- **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.
- **Ext. TEACH-IN input**  
The desired contrast recognition capability can be adjusted by applying of a logic „high“ pulse with a certain pulse length when the switch is in position T.
 

I:	50 ms (30 ms ... 100 ms)
II:	150 ms (100 ms ... 200 ms)
III:	> 200 ms

 Mode selector in position T.