Model Number

M12/MV12-F1/76b/82b/115/128
Thru-beam sensor with fixed cable

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
• High level of stability thanks to the metal housing frame
• Resistant against noise: reliable operation under all conditions

Dimensions

Electrical connection

Option: ...82b/128 Emitter ...76b

- BN +UB Emitter 2-switch-off
- WH Q2 Alert
- BU 0 V Test
- BK Q1
- GR ET Teach

○ = Light on
● = Dark on
Thru-beam sensor

M12/MV12-F1/76b/82b/115/128

Technical data

System components
Emitter: M12-F1/76b/115
Receiver: MV12-F1/82b/115/128

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
MTTFd: 570 a
Mission Time (Tm): 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 ≤ 10 ... 30 V DC
Ripple: max. 10 %
No-load supply current:
- 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 flash time.
- 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 ≤ 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: 2500 mm fixed cable, PUR
Material:
- Housing: frame: nickel plated, die cast zinc, Lateral: glass-fiber reinforced plastic PC
- Optical face: Plastic pane
Mass: 120 g (emitter and receiver)

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 -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

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Curves/Diagrams

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.

Notes