Retroreflective sensor OBG5000-R100-2EP-IO-0,3M-V1

Dimensions

Electrical connection

Pinout

Indicators/operating means

Model Number
OBG5000-R100-2EP-IO-0,3M-V1

Retroreflective sensor (glass) with fixed cable and M12 connector, 4-pin

Features

• Miniature design with versatile mounting options
• Detects transparent objects, i.e., clear glass, PET and transparent films
• Two machines in one: clear object detection or reflection operating mode with long range
• High degree of protection IP69K
• IO-link interface for service and process data

Product information

The R100 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks. The entire series enables sensors to communicate via IO-Link.

The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

The use of Multi Pixel Technology gives the standard sensors a high level of flexibility and enables them to adapt more effectively to their operating environment.
## Technical data
### General specifications
- **Effective detection range**: 0 ... 3.5 m in TEACH mode; 0 ... 5 m at switch position "N"
- **Reflector distance**: 0 ... 3.5 m in TEACH mode; 0 ... 5 m at switch position "N"
- **Threshold detection range**: 6 m
- **Reference target**: H85-2 reflector
- **Light source**: LED
- **Light type**: modulated visible red light
- **LED risk group labelling**: exempt group
- **Diameter of the light spot**: approx. 300 mm at a distance of 3.5 m
- **Angle of divergence**: approx. 5 °
- **Ambient light limit**: EN 60947-5-2

### Functional safety related parameters
- **MTTFd**: 600 a
- **Mission Time (TMI)**: 20 a
- **Diagnostic Coverage (DC)**: 0 %

### Indicators/operating means
- **Operation indicator**: LED green: constantly on - power on, flashing (4Hz) - short circuit, flashing with short break (1 Hz) - IO-Link mode
- **Function indicator**: LED yellow: constantly off - object not detected; flashes when falling short of the stability control (4 Hz)

### Control elements
- **Teach-In key
- **5-step rotary switch for operating modes selection
- **Contrast detection levels**: 10 % - clean, water filled PET bottles, 18 % - clear glass bottles, 40 % - colored glass or opaque materials, adjustable via rotary switch

### Electrical specifications
- **Operating voltage**: $U_B = 10 \ldots 30 \text{ V DC}$
- **Ripple**: max. 10 %
- **No-load supply current**: $I_0 < 25 \text{ mA at 24 V supply voltage}$
- **Protection class**: III

### Interface
- **Interface type**: IO-Link (via C/Q = pin 4)
- **Transfer rate**: COM 2 (38.4 kBaud)
- **IO-Link Revision**: 1.1
- **Min. cycle time**: 2.3 ms
- **Process data width**: Process data input 2 Bit, Process data output 2 Bit
- **SIO mode support**: yes
- **Device ID**: 0x110A01 (1116673)
- **Compatible master port type**: A

### Output
- **Switching type**: The switching type of the sensor is adjustable. The default setting is: C/Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link; /Q - Pin2: NPN normally closed / light-on, PNP normally open / dark-on
- **Signal output**: 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected, overvoltage protected
- **Switching voltage**: max. 30 V DC
- **Switching current**: max. 100 mA, resistive load
- **Usage category**: DC-12 and DC-13
- **Voltage drop**: $U_d \leq 1.5 \text{ V DC}$
- **Switching frequency**: f = 500 Hz
- **Response time**: 1 ms

### Ambient conditions
- **Ambient temperature**: -20 ... 60 °C (-4 ... 140 °F), movable cable not appropriate for conveyor chains
- **Storage temperature**: -40 ... 75 °C (-40 ... 167 °F)

### Mechanical specifications
- **Degree of protection**: IP67 / IP69 / IP69K
- **Connection**: 300 mm fixed cable with M12 x 1, 4-pin connector
- **Material**: Housing: PC (Polycarbonate), Optical face: PMMA
- **Mass**: approx. 17 g
- **Cable length**: 0.3 m

### Compliance with standards and directives

### Accessories
- **V31-WM-2M-PUR**: Female cordset, M8, 4-pin, PUR cable
- **V31-GM-2M-PUR**: Female cordset, M8, 4-pin, PUR cable
- **REF-H85-2**: Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes
- **REF-H50**: Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap
- **REF-H33**: Reflector with screw fixing
- **IO-Link-Master02-USB**: IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
- **OFR-100/100**: Reflective tape 100 mm x 100 mm

Other suitable accessories can be found at www.pepperl-fuchs.com
Teach-in:
Use the rotary switch to select the required operating mode: Normal mode (N) or contrast level I – III.
To teach in a threshold or activate an operating mode, press the “TI” button until the yellow and green LEDs flash in phase (approx. 1 s).
Release the “TI” button. Teach-in starts.
Successful teach-in is indicated by alternating flashing (2.5 Hz) of the yellow and green LEDs. The sensor will now operate in the selected operating mode with the taught-in threshold.
An unsuccessful teach-in is indicated by rapidly alternating flashing (8 Hz) of the yellow and green LEDs. After an unsuccessful teach-in, the sensor continues to operate with the previous valid setting after the relevant visual fault signal is issued.
Every taught-in switching threshold can be re-taught (overwritten) by pressing the “TI” button again.
Note: To ensure that the device functions reliably in Contrast mode, the device must be powered on at least 30 s before Teach-in.

Setting the Device to Maximum Sensitivity
Use the rotary switch to select the Normal mode (N) position.
Press the “TI” button for > 4 s. The yellow and green LEDs will go out.
Release the “TI” button. The settings will be reset to maximum sensitivity. After successfully resetting, the yellow and green LEDs will flash alternately (2.5 Hz).

Switching between light on/dark on
Use the rotary switch to select the light on/dark on (L/D) position.
Press the “TI” button for > 1 s.
The respective operating indicator LED (L/D) will illuminate green and the switching type will change.

To reset the switching type, press the "TI" button for > 4 s.
The respective operating indicator LED (L/D) will illuminate green and the operating indicator will be reset to the most recently active switching type.

**Reset to Default Settings**

Use the rotary switch to select the O position.
Press the "TI" button for > 10 s. The yellow and the green LEDs will both switch off.
Release the "TI" button. The yellow LED is on.
After resetting, the sensor will operate with the following default settings:

- Normal mode (N)
- Maximum sensitivity adjustment
- Dark on
- Pin 2 (white core): antivalent switching output