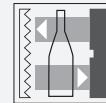




Retroreflective sensor (glass)

OBG5000-R100-E5F-IO



- 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

Retroreflective sensor with polarization filter for clear object detection



IO-Link

Function

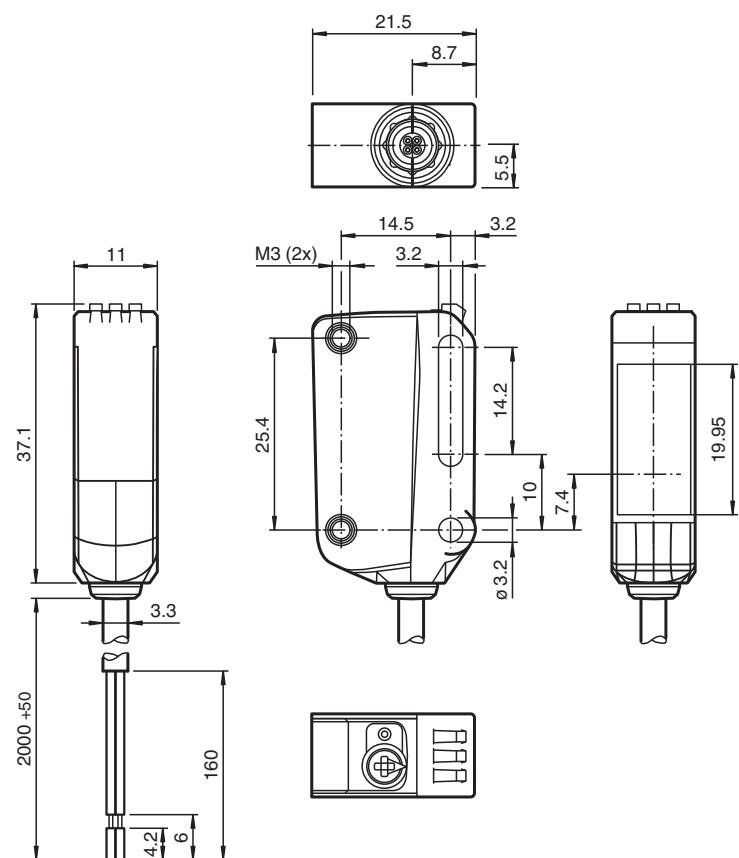
The R100 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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.

Dimensions



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. 170 mm at a distance of 3.5 m
Opening angle		approx. 5 °
Ambient light limit		EN 60947-5-2
Functional safety related parameters		
MTTF _d		600 a
Mission Time (T _M)		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		Yellow LED: Permanently lit - light path clear Permanently off - object detected Flashing (4 Hz) - insufficient operating reserve
Control elements		Teach-In key
Control elements		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 ... 30 V DC
Ripple		max. 10 %
No-load supply current		I ₀ < 25 mA at 24 V supply voltage
Protection class		III
Interface		
Interface type		IO-Link (via C/Q = BK)
IO-Link revision		1.1
Device ID		0x110A08 (1116680)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
Process data width		Process data input 2 Bit Process data output 2 Bit
SIO mode support		yes
Compatible master port type		A
Output		
Stability alarm output		1 PNP stability alarm output (alarm), short-circuit protected, reverse-polarity protected, open collector
Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - BK: PNP normally open / dark-on, IO-Link Alarm output - WH: PNP normally closed
Signal output		1 PNP, short-circuit protected, reverse polarity 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 ≤ 1.5 V DC
Switching frequency		f 500 Hz
Response time		1 ms

Technical Data

Conformity

Communication interface	IEC 61131-9
Product standard	EN 60947-5-2

Approvals and certificates

UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1
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Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Degree of protection	IP67 / IP69 / IP69K
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Connection	2 m fixed cable
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Material

Housing	PC (Polycarbonate)
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Optical face	PMMA
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Mass	approx. 36 g
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Dimensions

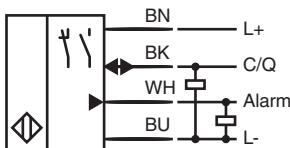
Height	37.1 mm
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Width	11 mm
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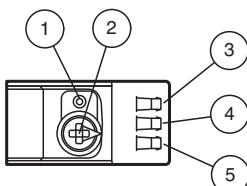
Depth	21.5 mm
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Cable length	2 m
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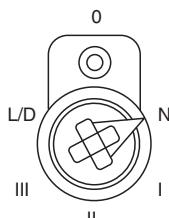
Connection



Assembly

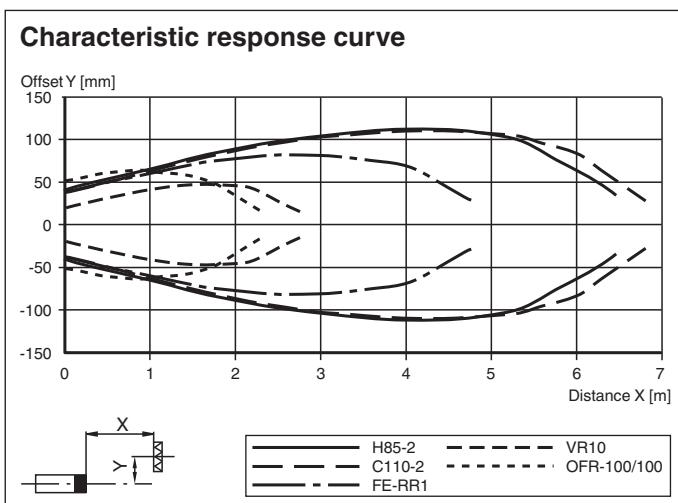


1	Teach-in button
2	Mode rotary switch
3	Operating indicator / dark on
4	Signal indicator
5	Operating indicator / light on

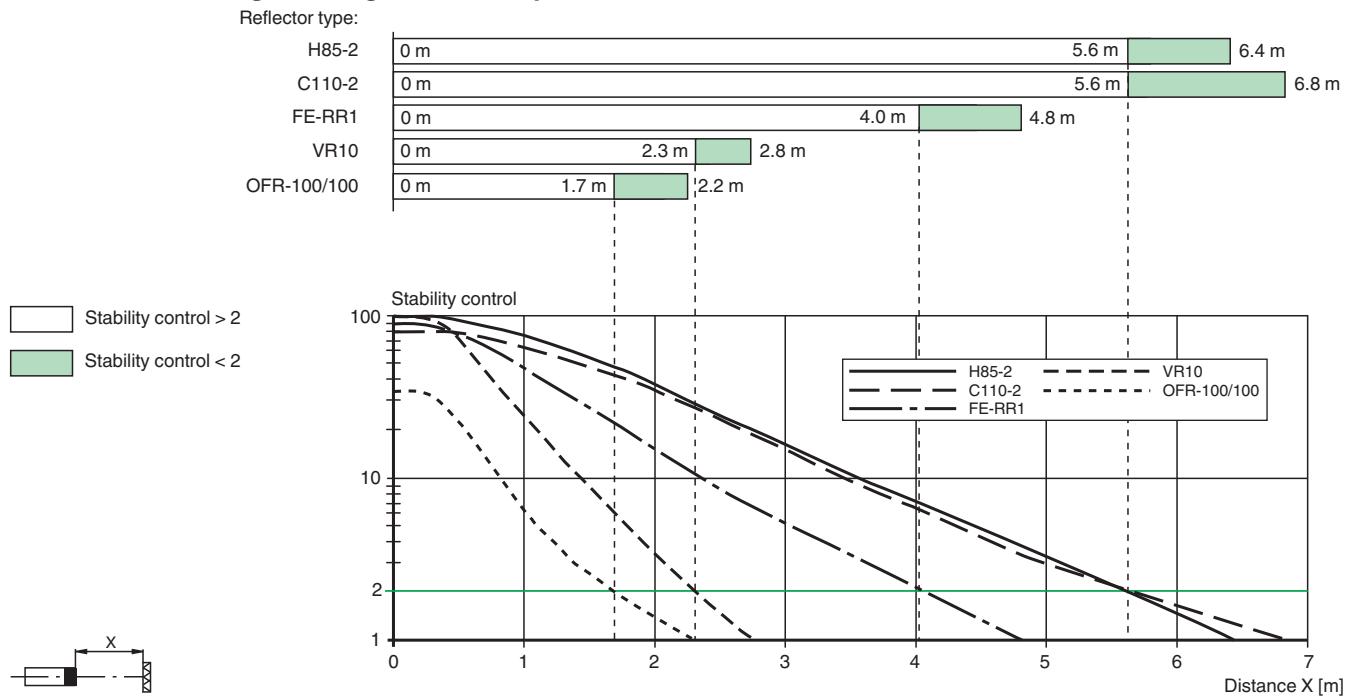


N	Normal mode
I	10 % contrast detection
II	18 % contrast detection
III	40 % contrast detection
L/D	Switching type
0	Keylock

Characteristic Curve



Relative received light strength in switch position "N"



Commissioning

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.

Commissioning

- 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: