



## Retroreflective sensor (glass)

### OBG8000-R200-EP-IO-V3



- Medium 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



## Function

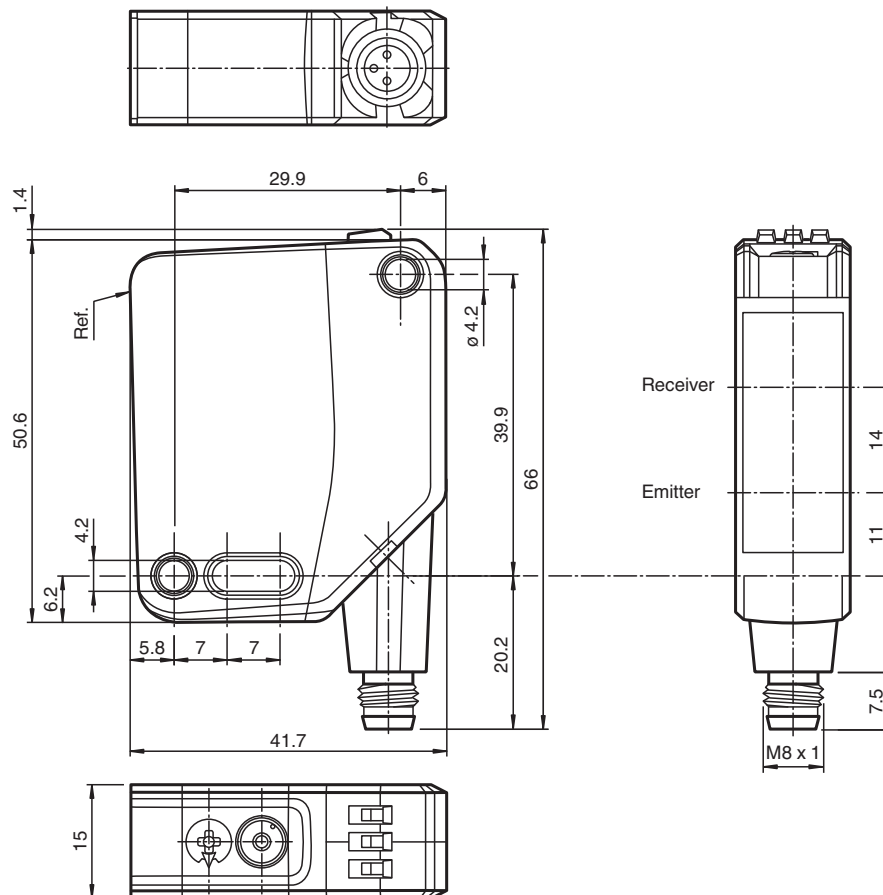
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

## Dimensions



## Technical Data

### General specifications

Effective detection range	0 ... 5.6 m in TEACH mode ; 0 ... 8 m at switch position "N"
Reflector distance	0 ... 5.6 m in TEACH mode ; 0 ... 8 m at switch position "N"
Threshold detection range	9 m
Reference target	H85-2 reflector
Light source	LED
Light type	modulated visible red light
LED risk group labelling	exempt group
Polarization filter	yes
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 : 18000 Lux

### Functional safety related parameters

MTTF <sub>d</sub>	600 a
Mission Time (T <sub>M</sub> )	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 <sub>B</sub>	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>0</sub>	< 25 mA at 24 V supply voltage
Protection class		III

### Interface

Interface type	IO-Link ( via C/Q = pin 4 )
IO-Link revision	1.1
Device profile	Identification and diagnosis Smart Sensor type 2.4
Device ID	0x111A01 (1120769)
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

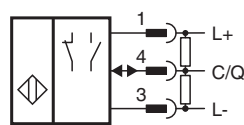
### Output

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
Signal output		1 push-pull (4 in 1) output, 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 <sub>d</sub>	≤ 1.5 V DC

Technical Data

Switching frequency	f	500 Hz
Response time		1 ms
<b>Conformity</b>		
Communication interface		IEC 61131-9
Product standard		EN 60947-5-2
<b>Approvals and certificates</b>		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
CCC approval		CCC approval / marking not required for products rated ≤36 V
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
<b>Mechanical specifications</b>		
Housing width		15 mm
Housing height		50.6 mm
Housing depth		41.7 mm
Degree of protection		IP67 / IP69 / IP69K
Connection		Connector plug, M8 x 1, 3 pin, rotatable by 90°
<b>Material</b>		
Housing		PC (Polycarbonate)
Optical face		PMMA
Mass		approx. 35 g

Connection



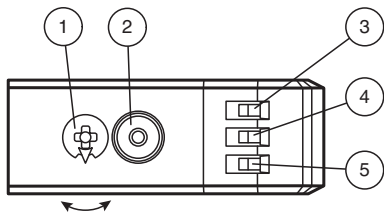
Connection Assignment



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
3	BU	(blue)
4	BK	(black)

Assembly

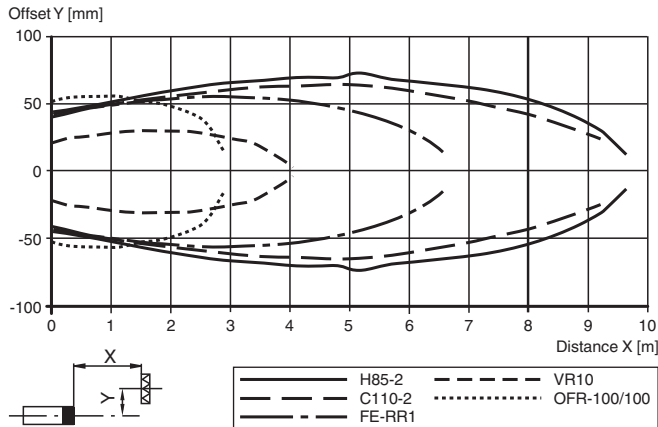


1	Mode rotary switch	
2	Teach-in button	
3	Operating indicator/dark-on	GN
4	Function indicator	YE
5	Operating indicator/light-on	GN

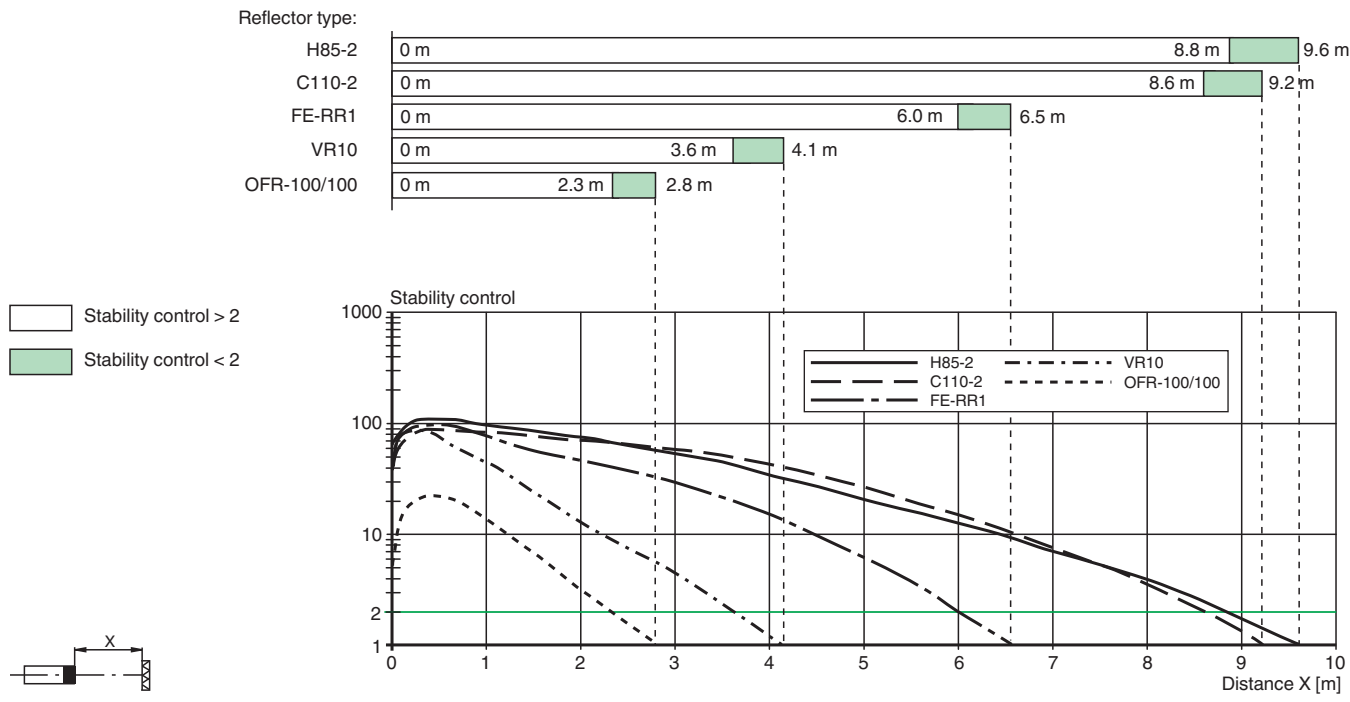
N	Normal operation
I	10 % contrast detection
II	18 % contrast detection
III	40 % contrast detection
L/D	Switching type
0	Keylock

Characteristic Curve

Characteristic response curve



Relative received light strength in switch position "N" (typical)



Release date: 2023-05-09 Date of issue: 2023-05-09 Filename: 295670-100142\_eng.pdf

## 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.
- 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:

## Accessories

	<b>REF-ORR50G-2</b>	Reflector
	<b>REF-H85-2</b>	Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes
	<b>REF-C110-2</b>	Reflector, round ø 84 mm, central mounting hole
	<b>FE-RR1</b>	Reflector, round ø 80.87 mm, central mounting hole
	<b>REF-VR10</b>	Reflector, rectangular 60 mm x 19 mm, mounting holes
	<b>OFR-100/100</b>	Reflective tape 100 mm x 100 mm
	<b>REF-H32G-2</b>	Reflector
	<b>OMH-MLV12-HWG</b>	Mounting bracket for series MLV12 sensors
	<b>OMH-R200-01</b>	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	<b>OMH-MLV12-HWK</b>	Mounting bracket for series MLV12 sensors
	<b>OMH-R20x-Quick-Mount</b>	Quick mounting accessory
	<b>ICE2-8IOL-G65L-V1D</b>	EtherNet/IP IO-Link master with 8 inputs/outputs
	<b>ICE3-8IOL-G65L-V1D</b>	PROFINET IO-Link master with 8 inputs/outputs

## Accessories

	<b>ICE2-8IOL-K45S-RJ45</b>	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	<b>ICE3-8IOL-K45P-RJ45</b>	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	<b>ICE3-8IOL-K45S-RJ45</b>	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	<b>IO-Link-Master02-USB</b>	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	<b>ICE1-8IOL-G30L-V1D</b>	Ethernet IO-Link module with 8 inputs/outputs
	<b>ICE1-8IOL-G60L-V1D</b>	Ethernet IO-Link module with 8 inputs/outputs
	<b>ICE2-8IOL-K45P-RJ45</b>	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors
	<b>V3-GM-2M-PUR</b>	Female cordset single-ended M8 straight A-coded, 3-pin, PUR cable grey
	<b>V3-WM-2M-PUR</b>	Female cordset single-ended M8 angled A-coded, 3-pin, PUR cable grey