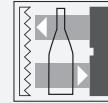




Retroreflective sensor (glass)

OBG8000-R201-2EP-IO-V15



- 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



IO-Link

Function

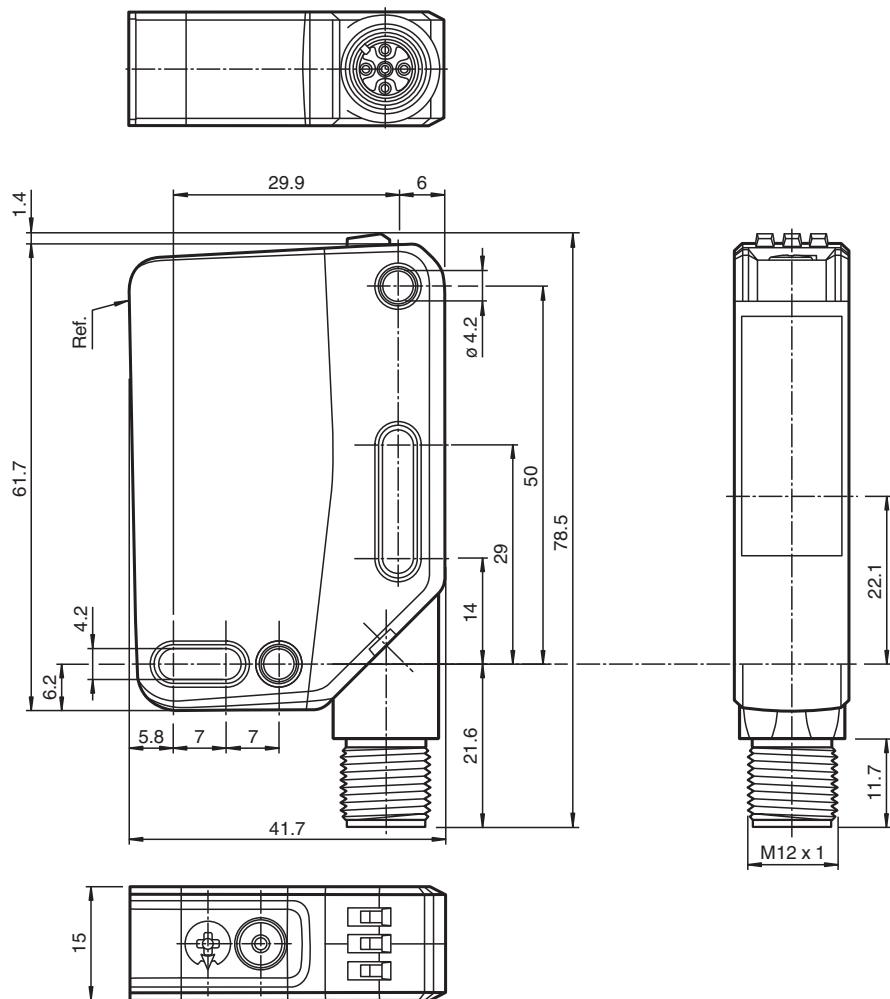
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

Release date: 2023-01-16 Date of issue: 2023-01-16 Filename: 295670-100193_eng.pdf

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 _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
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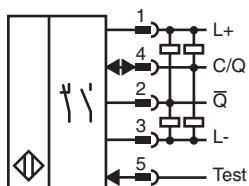
Technical Data

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 = pin 4)
IO-Link revision		1.1
Device profile		Identification and diagnosis Smart Sensor type 2.4
Device ID		0x111A13 (1120787)
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
Input		
Test input		emitter deactivation at $+U_B$
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	≤ 1.5 V DC
Switching frequency	f	500 Hz
Response time		1 ms
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
CCC approval		CCC approval / marking not required for products rated ≤ 36 V
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Housing width		15 mm
Housing height		61.7 mm
Housing depth		41.7 mm
Degree of protection		IP67 / IP69 / IP69K
Connection		5-pin, M12 x 1 connector, 90° rotatable

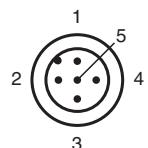
Technical Data

Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 47 g
Cable length	0.3 m

Connection



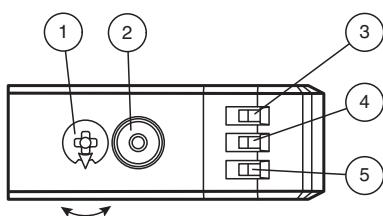
Connection Assignment



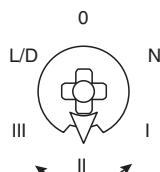
Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Assembly



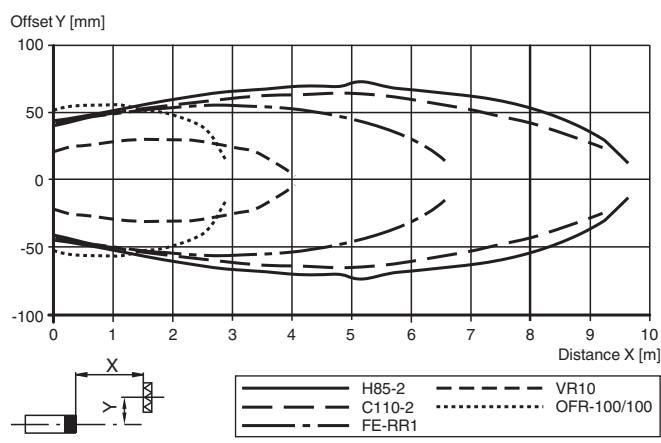
1	Mode rotary switch	
2	Teach-in button	
3	Operating indicator/dark-on	GN
4	Function indicator	YE
5	Operating indicator/light-on	GN



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



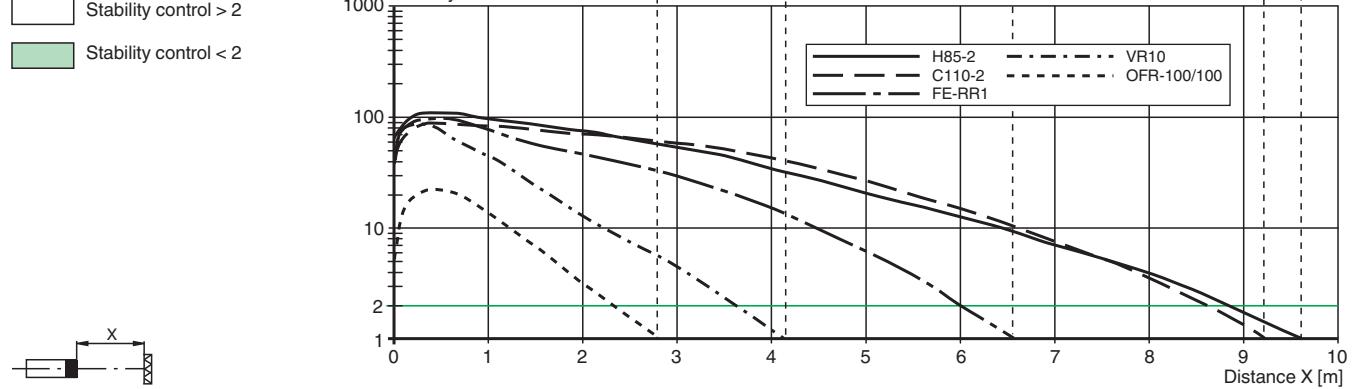
Relative received light strength in switch position "N" (typical)

Reflector type:

H85-2	0 m	8.8 m	9.6 m
C110-2	0 m	8.6 m	9.2 m
FE-RR1	0 m	6.0 m	6.5 m
VR10	0 m	3.6 m	4.1 m
OFR-100/100	0 m	2.3 m	2.8 m

 Stability control > 2
 Stability control < 2

Stability control



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:

Accessories

	REF-ORR50G-2	Reflector
	V15-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 5-pin, PUR cable grey
	V15-G-2M-PUR	Female cordset single-ended M12 straight A-coded, 5-pin, PUR cable grey
	REF-H85-2	Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes
	REF-C110-2	Reflector, round ø 84 mm, central mounting hole
	FE-RR1	Reflector, round ø 80.87 mm, central mounting hole
	REF-VR10	Reflector, rectangular 60 mm x 19 mm, mounting holes
	OFR-100/100	Reflective tape 100 mm x 100 mm
	REF-H32G-2	Reflector
	V1-G-2M-PUR	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	OMH-RL31-02	Mounting bracket narrow
	OMH-RL31-03	Mounting bracket narrow
	OMH-RL31-04	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	OMH-RL31-07	Mounting bracket including adjustment
	OMH-RL31-08	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	OMH-R20x-Quick-Mount	Quick mounting accessory
	ICE2-8IOL-G65L-V1D	EtherNet/IP IO-Link master with 8 inputs/outputs
	ICE3-8IOL-G65L-V1D	PROFINET IO IO-Link master with 8 inputs/outputs

Accessories

	ICE2-8IOL-K45S-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	ICE3-8IOL-K45P-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	ICE3-8IOL-K45S-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	IO-Link-Master02-USB	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	ICE1-8IOL-G30L-V1D	Ethernet IO-Link module with 8 inputs/outputs
	ICE1-8IOL-G60L-V1D	Ethernet IO-Link module with 8 inputs/outputs
	ICE2-8IOL-K45P-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors