



Retroreflective area sensor

OGR4000-R305-2EP-IO-0,3M-V1



- Retroreflective area sensor with five light beams in a standard photoelectric sensor enclosure
- Bright, highly visible transmitter beams guarantee convenient alignment of the sensor
- Reliable detection of all surfaces irrespective of the object texture
- Reliable small part detection for very flat objects with an irregular shape
- Constant object detection from 2 mm within the entire detection area

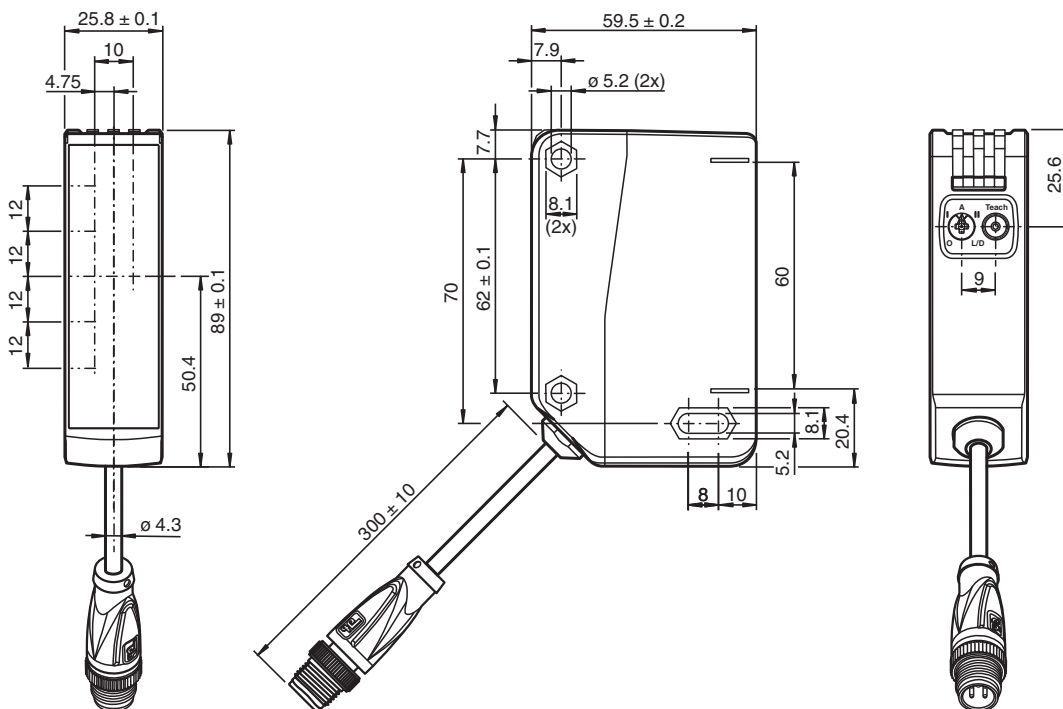
Retroreflective area sensor, red light, max. detection range 4 m, light field height 60 mm, IO-Link interface, 2 push-pull outputs, fixed cable with M12 plug



Function

The retroreflective area sensor contains several emitters and a receiver in a single housing. With a suitable reflector, the device can achieve a range of up to 4 m. Up to a range of 1.5 m, small parts from 2 mm in size can be precisely detected without multiple switching. The device specializes in the reliable detection of flat and irregularly shaped objects. Quick and easy commissioning, as well as additional functions such as suppression of conveyor belts or measurement of object height and data output via IO-Link, round off the range of features offered by the device.

Dimensions



Technical Data

General specifications

Effective detection range	Standard mode: 0 ... 4 m High resolution: 0 ... 2 m
Reflector distance	0.2 ... 4 m H85-2 reflector
Threshold detection range	4 m

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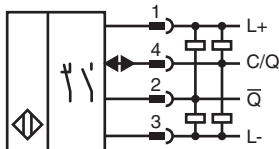
Technical Data

Sensing range		see table
Reference target		H85-2 reflector
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Field height		60 mm
Field width		12 mm
Object size		Minimum 2 mm, 3 mm, 5 mm, 8 mm, 10 mm; position-independent detection within detection range
Number of beams		5
Opening angle		+/- 2 °
Ambient light limit		EN 60947-5-2
Resolution		see table
Functional safety related parameters		
MTTF _d		674 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 on: light path clear Permanently off: object detected Flashing (8 Hz) - end of compensation
Control elements		Teach-In key
Control elements		5-step rotary switch for operating modes selection
Electrical specifications		
Operating voltage	U _B	10 ... 30 V DC IO-Link mode: 18 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I ₀	< 35 mA at 24 V supply voltage
Protection class		III
Interface		
Interface type		IO-Link
IO-Link revision		1.1
Device profile		Identification and Diagnosis - I&D Smart Sensor - SSP 2.1
Process data		Input 8 Bit - switching signal 1 Bit - stability alarm 1 Bit - measurement value 6 Bit Output 2 Bit - sensor control function 1 Bit - evaluation control function 1 Bit
Vendor ID		1 (0x0001)
Device ID		0x101001 (1052673)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
SIO mode support		yes
Compatible master port type		Class A , Class B (use 3-pole adapter or 3-wire cable)
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

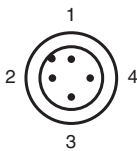
Technical Data

Voltage drop	U_d	≤ 1.5 V DC
Switching frequency	f	Standard mode: 500 Hz , High resolution: 250 Hz
Response time		Standard mode: 1 ms , High resolution: 2 ms
Conformity		
Communication interface		IEC 61131-9 / IO-Link V1.1.4
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		-40 ... 60 °C (-40 ... 140 °F) The permissible minimum ambient temperature during teach-in is -30 °C. The permissible temperature change after teach-in is ± 20 K.
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Degree of protection		IP67
Connection		300 mm fixed cable with M12 x 1, 4-pin connector
Material		
Housing		PC (Polycarbonate)
Optical face		Plastic pane
Mass		104 g
Dimensions		
Height		89 mm
Width		25.8 mm
Depth		59.5 mm

Connection Assignment



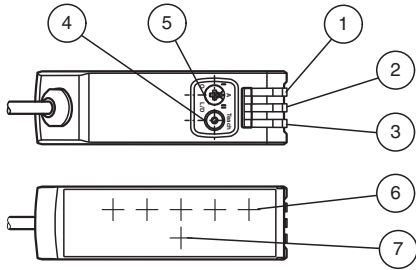
Connection Assignment



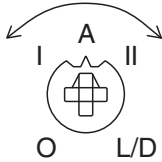
Wire colors in accordance with EN 60947-5-2

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

Assembly



1	Operating indicator light on	GN
2	Signal indicator	YE
3	Operating indicator dark on	GN
4	Teach-in push button	
5	Operating mode selector switch	
6	Emitter	
7	Receiver	



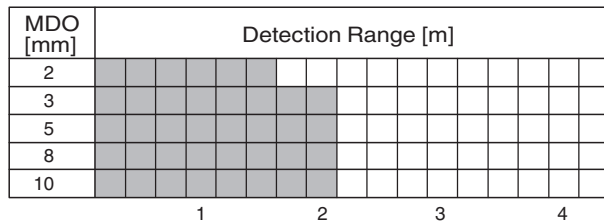
O	Keylock, operating mode, teach-in button is disabled
I	High resolution mode
A	Alignment mode
II	Standard resolution mode
L/D	Light on/dark on

Characteristic Curve

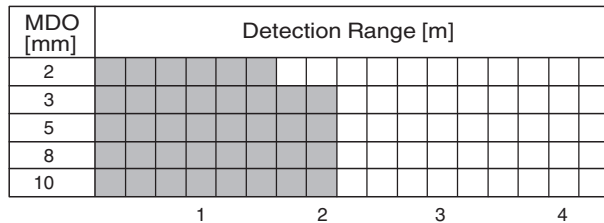
Minimum Detectable Object (MDO)

High Resolution Mode

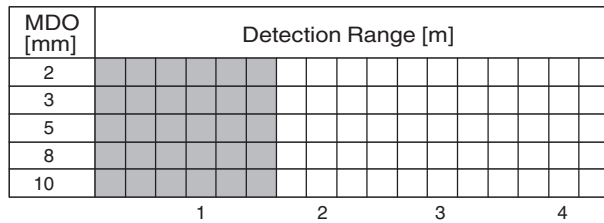
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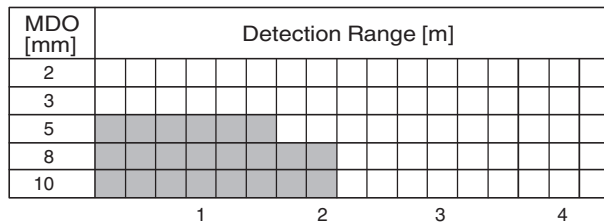
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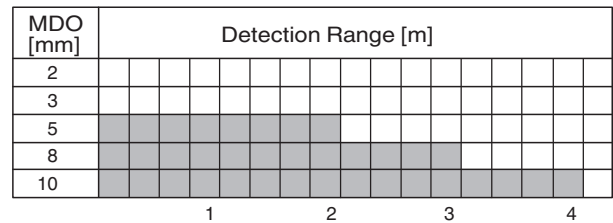


OFR-100/100

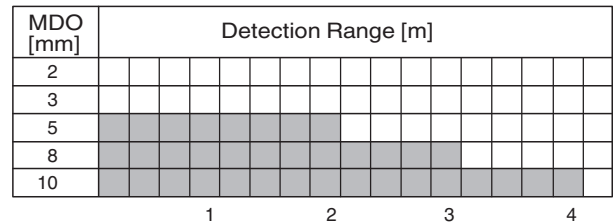


Standard Mode

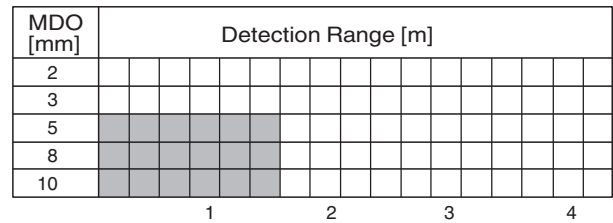
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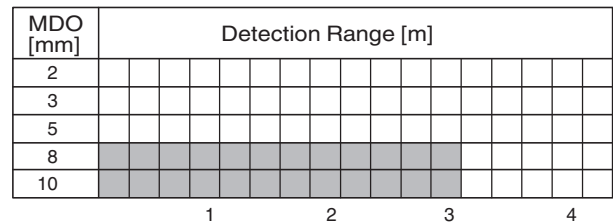
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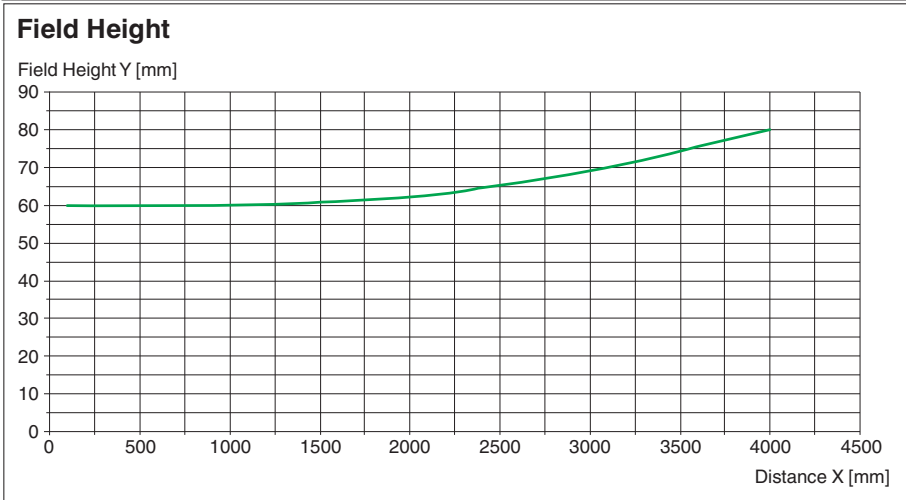
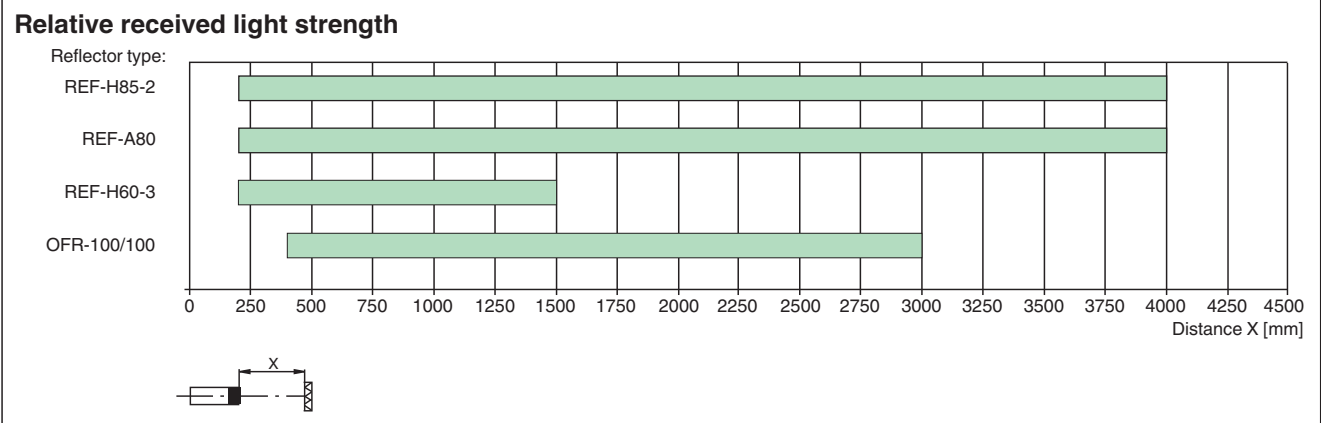


OFR-100/100



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Characteristic Curve



Technical Features

Resolution

Operating mode	High resolution mode	Standard mode
Effective detection range	0 ... 2 m	0 ... 4 m
Resolution	2 mm: 0 ... 1.5 m 3 mm: 0 ... 2 m	5 mm: 0 ... 2 m 8 mm: 0 ... 3 m 10 mm: 0 ... 4 m

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