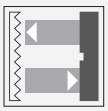


Distance sensor (PRT)

OMR50M-R300-UEP-V1-Y70200981

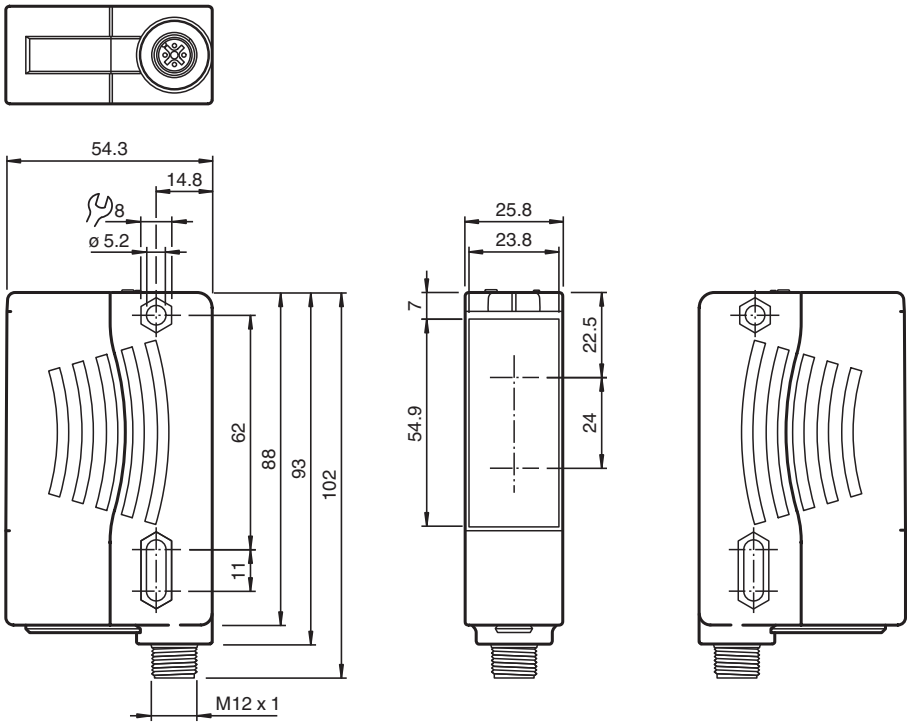


- Pulse Ranging Technology (PRT)
- Analog output 0 ... 10 V
- Good alignability due to red transmission LED
- Reliable detection of reflecting metall objects

Function

The sensors in the R300 series represent a versatile product line and adopt various functional principles. All sensors operate using proven Pulse Ranging Technology (PRT) and are characterized by high sensing ranges and detection ranges. Contained within the compact housing of the 28 series of light barriers, the R300 offers all of the properties of PRT such as maximum reliability when detecting objects and immunity against ambient light and cross-talk. To achieve this, the sensors in the R300 series make use of a number of different kinds of measurement data. What's more, the sensors are equipped with red light that is safe for the human eye as standard, making it easier to align the devices, even across expansive work areas. These features, combined with an innovative and intuitive operating concept, provide solutions for conventional automation tasks delivering the highest level of performance.

Dimensions



Technical Data

General specifications	
Effective detection range	0 ... 50 m
Reflector distance	0.2 ... 50 m

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Technical Data

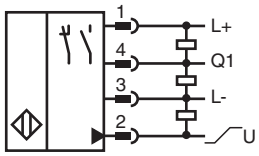
Reference target		3 x REF-H100
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Angle deviation		max. ± 2°
Measuring method		Pulse Ranging Technology (PRT)
Diameter of the light spot		approx. 16 cm x 18 cm at a distance of 10 m
Ambient light limit		50000 Lux
Resolution		12 bit, however > 0.5 mm
Functional safety related parameters		
$MTTF_d$		100 a
Mission Time (T_M)		10 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green
Function indicator		2 LEDs yellow for switching state
Teach-in indicator		Teach-In: LED green/yellow equiphase flashing; 2.5 Hz Teach Error:LED green/yellow non equiphase flashing; 8.0 Hz
Control elements		5-step rotary switch for operating modes selection (threshold setting and operating modes)
Control elements		Switch for setting the threshold values
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		10 % within the supply tolerance
No-load supply current	I_0	≤ 80 mA / 24 V DC
Time delay before availability	t_v	< 0.7 s , for temperatures < -30 °C compliance of the specification 5 mins after power on
Output		
Signal output		1 push-pull (4 in 1) output, short-circuit protected, reverse polarity protected, overvoltage protected , 1 analog output 0 ... 10 V
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Measurement output		1 analog output 0 ... 10 V ; preset to 10 V at 0.2 m , preset to 0 V at 13 m or without reflector Rmin = 1 kΩ
Switching frequency	f	50 Hz
Response time		5 ms
Conformity		
Product standard		EN 60947-5-2
Measurement accuracy		
Repeat accuracy		< 5 mm
Approvals and certificates		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
Ambient conditions		
Ambient temperature		-40 ... 55 °C (-40 ... 131 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Degree of protection		IP67
Connection		4-pin, M12 x 1 connector
Material		
Housing		Plastic ABS
Optical face		PMMA
Mass		90 g
Dimensions		
Height		88 mm

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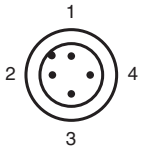
Technical Data

Width	25.8 mm
Depth	54.3 mm

Connection Assignment



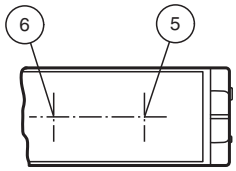
Connection Assignment

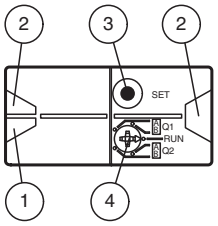


Wire colors in accordance with EN 60947-5-2

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

Assembly



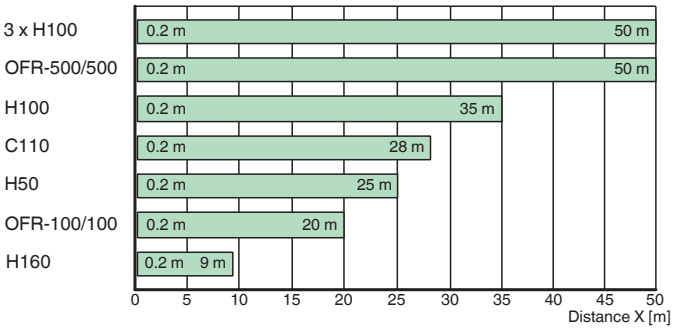


1	Operating indicator	green
2	Signal indicator	yellow
3	Teach-in push button	
4	Mode rotary switch	
5	Emitter	
6	Receiver	

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Characteristic Curve

Reflector-dependent effective operating distances



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Additional Information

Intended Use

Mounting instructions:
The sensor can be mounted directly with thru-holes or by using a fixing bracket or mounting clamp (not included in the scope of delivery).
Ensure that the surface is level in order to prevent the housing from becoming distorted when the fittings are tightened. It is advisable to secure the nuts and screws to prevent the sensor from being misaligned.

Connection:
Connect the device as set out in the connection diagram.

Adjustment:
The green LED lights up when the operating voltage is applied.
Adjust the sensor so that the light spot is on the center of the reflector.

Installation Note

A pressure equalization membrane is fitted on the sensor nameplate.

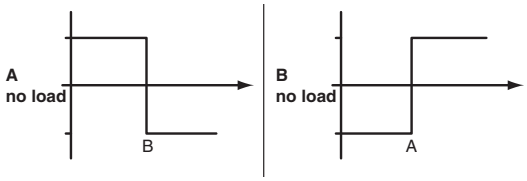
When mounting, make sure that the pressure equalization membrane is not sealed off.

Teach-in
Use the rotary switch for switching signal **Q1** to select the relevant switching threshold
A and/or B to teach in.
The yellow LEDs indicate the current state of the selected output.

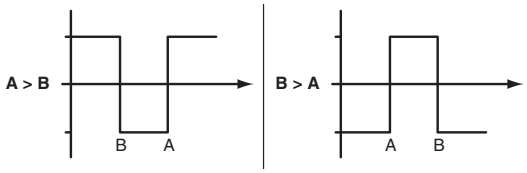
To teach in a switching threshold, press and hold the "SET" button until the yellow and green LEDs flash in phase (approx. 1 s). Teach-in starts when the "SET" button is released.
Successful Teach-in is indicated by the yellow and green LEDs flashing alternately (2.5 Hz). An unsuccessful Teach-in is indicated by the yellow and green LEDs rapidly flashing alternately (8 Hz).

After an unsuccessful Teach-in, the sensor continues to operate with the previous valid setting after the relevant visual fault signal is issued.

Different switching modes can be defined by teaching in the relevant distance data for switching thresholds A and B.
Single-point operation:



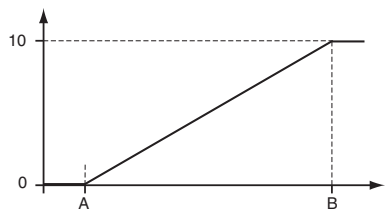
Window operation:



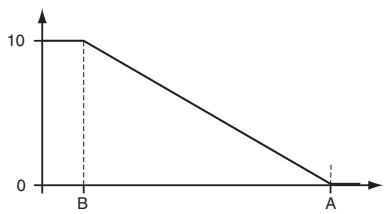
Every taught-in switching threshold can be retaught (overwritten) by pressing the "SET" button again.

A taught-in value can be reset by pressing the "SET" button for > 4 s. The yellow and green LEDs go out simultaneously to indicate that this procedure has been completed. The reset process starts when the "SET" button is released. A successful reset is indicated by the yellow and green LEDs flashing alternately (2.5 Hz).The minimum and maximum values for analog output **Q2** are taught in in the same way as for the switching output:
The following values apply: A = 0 V
B = 10 V
This provides three different options for operation:

A < B -> rising slope



A > B -> falling slope



Resetting to Factory Settings:
Factory settings can be restored by pressing the "SET" button for > 10 s with the rotary switch in the "Run" position. The yellow

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and green LEDs go out simultaneously to indicate that this procedure has been completed. The reset starts when the "SET" button is released. The green LED lights up to indicate that the reset has completed successfully. After completing the reset, the sensor will immediately function with the factory settings.

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