Model Number

OBR50M-R300-2PP-V1

Retroreflective sensor
with 4-pin, M12 x 1 connector

Features

- Pulse Ranging Technology (PRT)
- Optimized for use with fixed reflectors
- Good alignability due to red transmission LED
- Reliable detection of reflecting metall objects
- Simple operation with only one TEACH-IN button

Product information

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
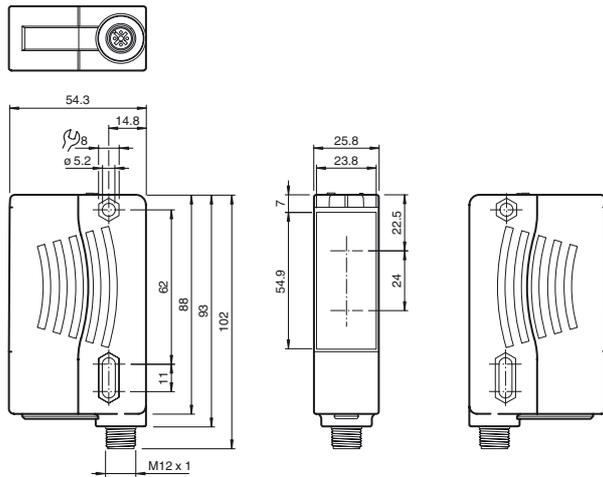
Electrical connection
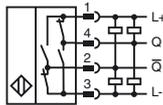
Pinout
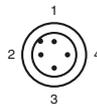
Wire colors in accordance with EN 60947-5-2

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

Indicators/operating means
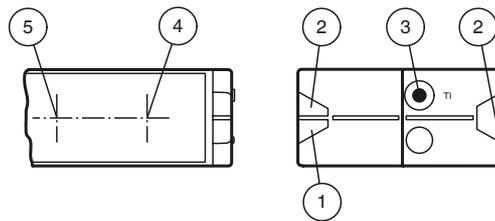
1	Operating indicator	Green
2	Signal indicator	Yellow
3	Teach-in button	
4	Transmitter	
5	Receiver	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS   **1**

Technical data

General specifications

Effective detection range	0 ... 50 m
Reflector distance	0.2 ... 50 m
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
Window width	100 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
Control elements	Teach-In key

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

Switching type	Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on /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
Switching voltage	max. 30 V DC
Switching current	max. 100 mA
Switching frequency	f	50 Hz
Response time	5 ms

Conformity

Product standard	EN 60947-5-2

Ambient conditions

Ambient temperature	-40 ... 55 °C (-40 ... 131 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Housing width	25.8 mm
Housing height	88 mm
Housing depth	54.3 mm
Degree of protection	IP67
Connection	4-pin, M12 x 1 connector
Material	
Housing	Plastic ABS
Optical face	PMMA
Mass	90 g

Approvals and certificates

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

Accessories

OMH-05
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-07-01
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-21
Mounting bracket

OMH-22
Mounting bracket

OMH-VDM28-01
Metal enclosure for inserting protective panes or apertures

OMH-VDM28-02
Mounting and fine adjustment device for sensors from the 28 series

OMH-RLK29-HW
Mounting bracket for rear wall mounting

OMH-K01
dove tail mounting clamp

OMH-K03
dove tail mounting clamp

V1-G-2M-PUR
Female cordset, M12, 4-pin, PUR cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

Other suitable accessories can be found at www.pepperl-fuchs.com

Release date: 2019-04-17 08:47   Date of issue: 2019-04-17   254271_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

2 | Pepperl+Fuchs Group
www.pepperl-fuchs.com | USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com | Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com | Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com | **PEPPERL+FUCHS**

Curves/Diagrams

Reflector-dependent effective operating distances

Reflector type

3 x H100	0.2 m — 50 m
OFR-500/500	0.2 m — 50 m
H100	0.2 m — 35 m
C110	0.2 m — 28 m
H50	0.2 m — 25 m
OFR-100/100	0.2 m — 20 m
H160	0.2 m — 9 m

Distance X [m]: 0 5 10 15 20 25 30 35 40 45 50

Intended Use

Mounting instructions:
The sensor can be mounted directly by means of 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.
The yellow sensor LEDs light up.

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.

Operating Concept

Teach-in:
To ensure reliable functionality, save the position of the reflector by using the Teach-in procedure.
Press the "TI" button (for approx. 2 s) until the yellow and green LEDs flash in phase.
Teach-in begins once the "TI" button is released.

Successful Teach-in: Yellow and green LEDs flash alternately (2.5 Hz). After successful Teach-in, the output and LED change their status.

Unsuccessful Teach-in: Yellow and green LEDs flash alternately very quickly (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.

Every taught-in reflector position can be retaught (overwritten) by pressing the "TI" button again.

Deleting the Taught-in Reflector Position:
To delete a taught-in reflector position, press and hold the "TI" button for > 4 s until the yellow and green LEDs go out. Release the "TI" button. The saved reflector position is deleted. The yellow and green lights will flash alternately (2.5 Hz) to confirm that the deletion has occurred.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group | USA: +1 330 486 0001 | Germany: +49 621 776 1111 | Singapore: +65 6779 9091
www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS **3**