Model Number

VDM28-15-L-IO/73c/110/122

Distance sensor

with 4-pin, M12 x 1 connector

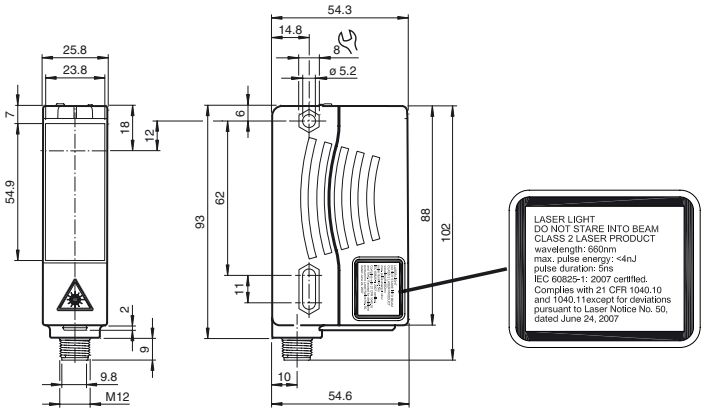
Features

- Operates reliably with Pulse Ranging Technology (PRT)
- Red laser as the light emitter
- No mutual interference (no crosstalk)
- Analog output 0/4 mA ... 20 mA
- Smallest device with PRT for applications as measuring sensor
- High reproducibility irrespective of the surface
- IO-link interface for service and process data
- Minimal black/white difference
- Not sensitive to ambient light, even with energy saving lamps

Product information

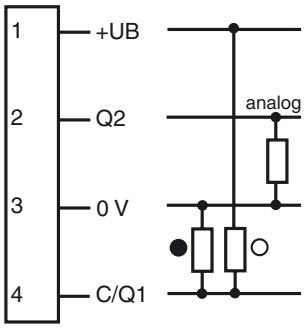
The VDM28 distance measurement device employs Pulse Ranging Technology (PRT). It has a repeat accuracy of 5 mm with an operating range of 0.2 ... 15 m and an absolute accuracy of 25 mm.
The sensor is highly resistant to ambient conditions. The compact housing of the Series 28 photoelectric sensors, with dimensions of 88 mm (height), 26 mm (width) and 54 mm (depth), make it the smallest device available in its class.

Dimensions



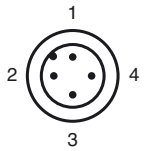
Electrical connection

Option:

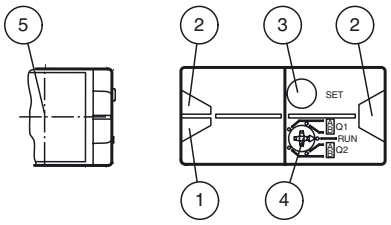


○ = Light on
● = Dark on

Pinout



Indicators/operating means



1	Operating display	green
2	Signal display	yellow
3	TEACH-IN button	
4	Mode rotary switch	
5	Laser output	

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Technical data

General specifications		
Measurement range		0.2 ... 15 m
Reference target		Kodak white (90%)
Light source		laser diode typ. service life 85,000 h at Ta = +25 °C
Light type		modulated visible red light
Laser nominal ratings		
Note		LASER LIGHT , DO NOT STARE INTO BEAM
Laser class		2
Wave length		660 nm
Beam divergence		1 mrad
Pulse length		5 ns
Repetition rate		250 kHz
max. pulse energy		< 4 nJ
Angle deviation		max. ± 2°
Measuring method		Pulse Ranging Technology (PRT)
Diameter of the light spot		< 15 mm at a distance of 15 m at 20 °C
Ambient light limit		50000 Lux
Temperature influence		typ. ≤ 0.25 mm/K
Functional safety related parameters		
$MTTF_d$		200 a
Mission Time (T_M)		10 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operating display		LED green
Function display		2 LEDs yellow for switching state
TEACH-IN indication		TEACH-IN: LED green/yellow equiphase flashing; 2.5 Hz Teach Error:LED green/yellow non equiphase flashing; 8.0 Hz
Controls		5-step rotary switch for operating modes selection (threshold setting and operating modes)
Controls		Switch for setting the threshold values
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC when operating in IO-Link mode: 18 ... 30 V
Ripple		10 % within the supply tolerance
No-load supply current	I_0	≤ 70 mA / 24 V DC
Interface		
Interface type		IO-Link
Protocol		IO link V1.0
Cycle time		min. 2.3 ms
Mode		COM 2 (38.4 kBaud)
Process data witdh		16 bit
SIO mode support		yes
Output		
Signal output		Push-pull output, short-circuit protected, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Measurement output		1 analog output 4 ... 20 mA, short-circuit/overload protected
Switching frequency	f	50 Hz
Response time		10 ms
Measurement accuracy		
Absolute accuracy		± 25 mm
Repeat accuracy		< 5 mm
Ambient conditions		
Ambient temperature		-30 ... 50 °C (-22 ... 122 °F)
Storage temperature		-30 ... 70 °C (-22 ... 158 °F)
Mechanical specifications		
Protection degree		IP65
Connection		connector M12 x 1, 4-pin
Material		
Housing		Plastic ABS
Optical face		Plastic pane
Mass		90 g
Compliance with standards and directives		
Directive conformity		EMC Directive 2004/108/EC
Standard conformity		
Product standard		EN 60947-5-2:2007 IEC 60947-5-2:2007
Laser class		IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007
Approvals and certificates		

Accessories

PACTware 4.X

VDM28-IO-Link DTM
Device DTM for communication with VDM28-IO-Link sensors

IODD Interpreter
Software for the integration of IODDs in a frame application (e. g. PACTware)

IO-Link-Master01-USB
IO-Link Master

IO-Link-Master-USB DTM
Communication DTM for use of IO-Link-Master

OMH-VDM28-01-B

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

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

OMH-21
Mounting bracket

OMH-22
Mounting bracket

OMH-MLV11-K
dove tail mounting clamp

OMH-RLK29
Mounting bracket

OMH-RLK29-HW
Mounting bracket for rear wall mounting

OMH-RL28-C
Protective cover

OMH-K01
dove tail mounting clamp

OMH-K03
dove tail mounting clamp

OMH-VDM28-01-A

OMH-VDM28-01

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

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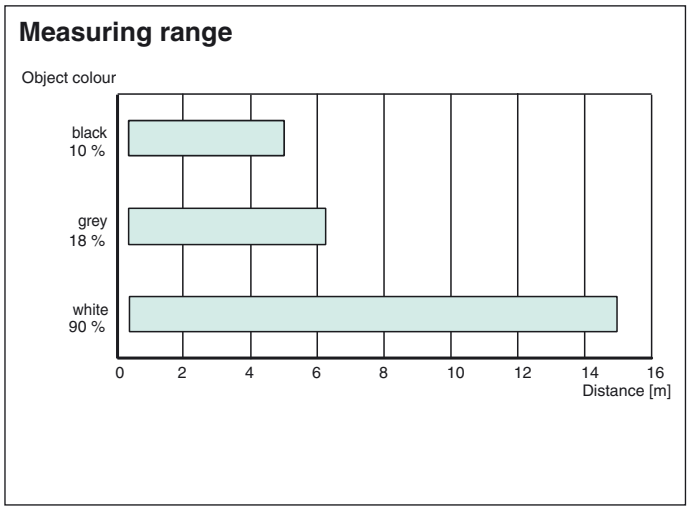
Protection class	II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

Curves/Diagrams



Adjustment

Teach-in

With the rotary switch, you can select output Q1 and the relevant switching threshold A and/or B.
The yellow LEDs indicate the current state of the selected output.

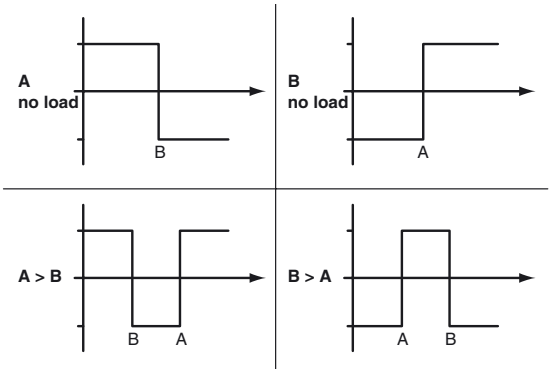
To store the switching threshold (distance value) press the "SET" button until the LEDs flash in phase (approx. 2 s). Teach-in starts when the "SET" button is released.
Successful teach-in is indicated by alternating flashing (2.5 Hz) of the yellow and green LEDs.

Unsuccessful teach-in is indicated by alternating flashing (8 Hz).

After successful teach-in, the output and LED change their status.
After unsuccessful teach-in, the sensor continues to operate with the previous valid setting after the relevant error message is issued.

This procedure can be repeated for all switching points.

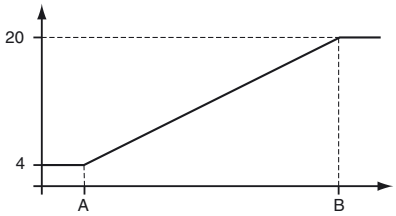
Different switching modes can be selected by choosing different switching points.



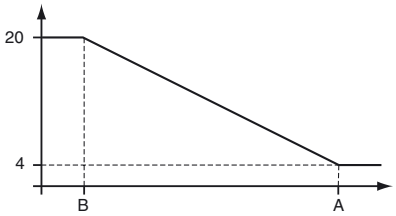
Every taught-in value can be re-taught (overwritten) by pressing the SET button again.

By pressing the "SET" button for > 5 s, the taught-in value is deleted. This procedure is indicated when the LEDs go out simultaneously.
The teach-in of the minimum and maximum value for the analog output **Q2** is set in the same way as the switching output:
For: A = 4 mA
B = 20 mA
With this three different modes are achieved:

A < B -> rising slope



A > B -> falling slope



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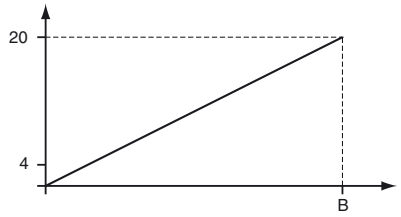
A empty -> zero point straight



Default setting analog output Q2

A = 200 mm
B = 5000 mm

It is not possible to delete value B.
By deleting value A you reach mode „zero point straight“

Reset to default settings

- Set the rotary switch to the "RUN" position.
- Press the "SET" button until the in-phase flashing of the LEDs stops (approx. 10 s)
- If the green LED lights up, the procedure is complete.

Error messages

- Short circuit — In the event of a short circuit, the green LED flashes with a frequency of approx. 4 Hz.
- Teach error: — In the event of a teach error, both LEDs flash alternately with a frequency of approx. 8 Hz.

Laser notice laser class 2

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Caution: Do not look into the beam!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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