Model Number

MLV41-8-H-500-RT-IO/65b/95/136

Background suppression sensor
with 4-pin, M8 x 1 connector

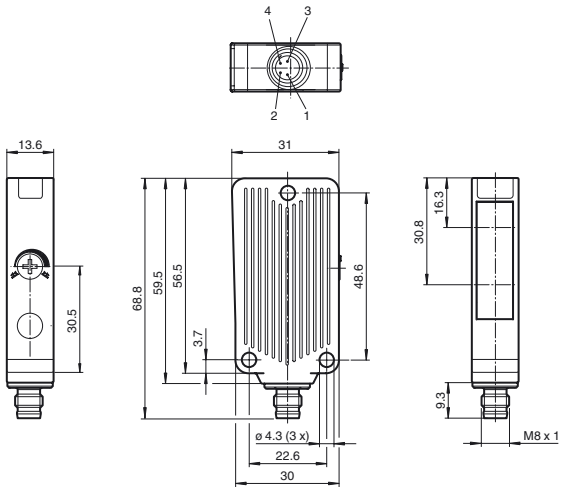
Features

- Rugged series in corrosion-resistant metal housing
- MPT Multi Pixel Technology
- IO-link interface for service and process data
- Reliable detection of all surfaces, independent of color and structure
- Precision background suppression, adjustable
- Low sensitivity to target color
- Clear and functional display concept for the operating modes

Product information

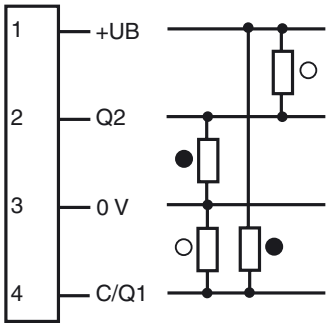
The diffuse mode sensor with MPT technology combines the benefits of the triangulation principle with the measuring functionality of a distance sensor. The integrated measuring principle provides an extremely wide range of switching element functions in one device, along with a large detection range and a small black/white difference up to the final detection range. The sensor is equipped with an IO-Link interface, through which the measuring principle is optimized to the requirements of the relevant application.

Dimensions



Electrical connection

Option:



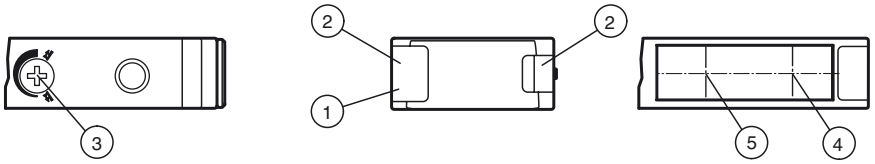
○ = Light on
● = Dark on

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 display green	3	Sensing range adjuster	5	Optical axis receiver
2	Function display yellow	4	Optical axis transmitter		

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Technical data

General specifications		
Detection range		20 ... 500 mm Black-white difference < 5%
Adjustment range		40 ... 500 mm
Diagnosis range		20 ... 500 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
Diameter of the light spot		approx. 25 mm at sensor range 500 mm
Angle of divergence		approx. 3 °
Ambient light limit		25000 Lux
Functional safety related parameters		
$MTTF_d$		500 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function indicator		2 LEDs yellow ON: object inside the scanning range OFF: object outside the scanning range
Control elements		Sensing range adjuster
Parameterization indicator		IO link communication: green LED goes out briefly (1 Hz)
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , class 2
Ripple		max. 10 %
No-load supply current	I_0	max. 25 mA at 24 V supply voltage
Interface		
Interface type		IO-Link
Protocol		IO-Link V1.0
Mode		COM 2 (38.4 kBaud)
Output		
Switching type		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
Voltage drop	U_d	≤ 2 V DC
Switching frequency	f	200 Hz
Response time		2.5 ms
Conformity		
Product standard		EN 60947-5-2
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-40 ... 75 °C (-40 ... 167 °F)
Mechanical specifications		
Housing width		31 mm
Housing height		56.5 mm
Housing depth		13.6 mm
Degree of protection		IP67
Connection		M8 x 1 connector, 4-pin
Material		
Housing		Aluminum , Delta-Seal coated
Optical face		glass pane
Connector		metal
Mass		approx. 40 g
Approvals and certificates		
UL approval		cULus Listed 57M3 (Only in association with UL Class 2 power supply; Type 1 enclosure)
CCC approval		CCC approval / marking not required for products rated ≤36 V

Accessories

OMH-09
Mounting bracket for Sensors series MLV41 for M12 rod mounting

OMH-40
Mounting bracket

OMH-41
Mounting bracket

V31-WM-2M-PUR
Female cordset single-ended, M8, 4-pin, PUR cable

V31-GM-2M-PUR
Female cordset single-ended, M8, 4-pin, PUR cable

IO-Link-Master02-USB
IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

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

MLV41-8 IODD
IODD for communication with MLV41-8-IO-Link sensors

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

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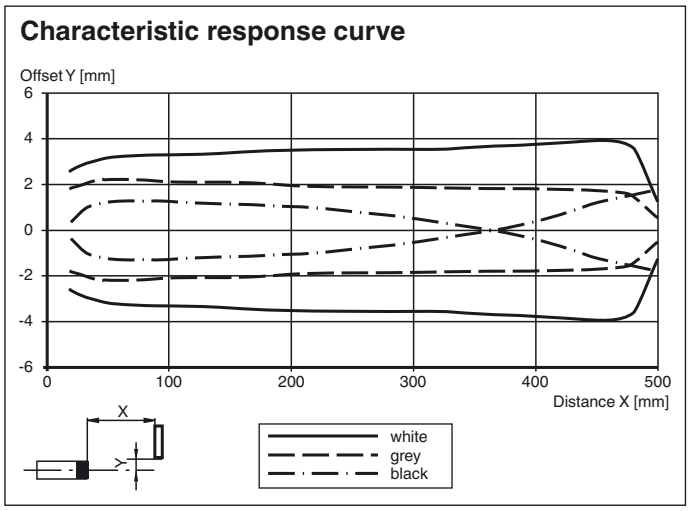
Curves/Diagrams



Setting information

Detection range adjustment:

The detection range can be adjusted between 40 mm and 500 mm via the rotary switch or IO-Link. For finer adjustment, the adjustable detection range is divided into several subranges which can be selected using Page Up/Down.

The value set with IO-Link is always assigned the current rotary switch configuration.

Setting using the rotary switch:

Increasing the detection range:
Turn the potentiometer to the right. If the desired detection range is not reached, turn the potentiometer to the right until it stops (Page Up). The green LED will flash briefly. Now set the desired detection range again.

Reducing the detection range:
Turn the potentiometer to the left. If the desired detection range is not reached, turn the potentiometer to the left until it stops (Page Down). The green LED will flash briefly. Now set the desired detection range again.

Example application: manually reduce detection range from 450 mm to 60 mm:

The potentiometer has a position as shown here, but works with a 450 mm detection range.

Now turn the potentiometer completely to the left until it stops (Page Down). The green LED will flash briefly.

Now set the detection range to 60 mm. If the desired detection range cannot be set, turn the potentiometer again to the left until it stops (Page Down) and repeat the procedure.

Setting via IO-Link interface

Setting different operating modes via IO-Link interface

The devices have an IO-Link interface as standard for diagnostic and parameterization tasks enabling optimum adaptation of the sensors to the application. In addition, four different operating modes can be set:

Background suppression operating mode (1 or 2 switching points):

- Detection of objects irrespective of type and color in a defined sensing range. Objects in the background are reliably suppressed
- Background suppression with 2 switching points

Background evaluation operating mode:

- Detection of objects irrespective of type and color against a defined background. Reliable detection of objects at close range (detection range >= 0 mm). The background serves as reference

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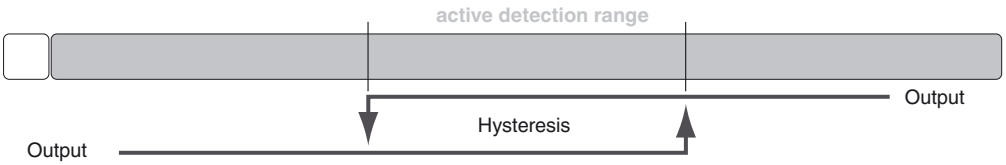
Window operation operating mode:

- Detection of objects irrespective of type and color in a defined sensing range. Reliable detection when leaving the defined sensing range.

Hysteresis operating mode:

- Detection of objects irrespective of type and color between a defined switch-on and switch-off point



To use the diagnostic and parameterization options, you will find the compatible IODD, and if required, the FDT base application PACTware in the download area at **www.pepperl-fuchs.com**.

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