Model Number

MLV41-LL-IR-IO/92/136

Fiber optic sensor
with 4-pin, M12 x 1 connector

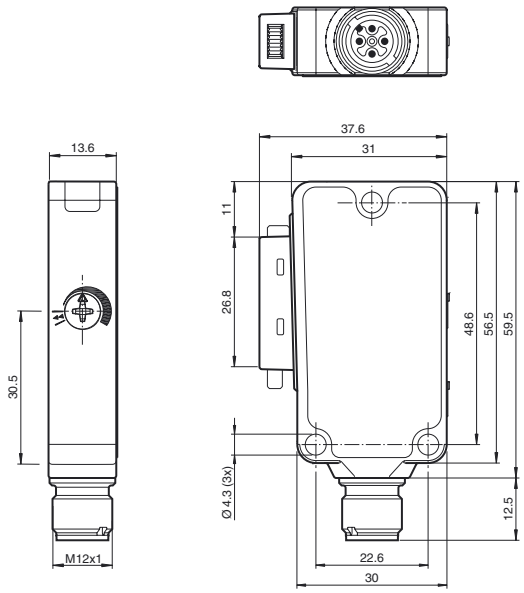
Features

- Robust fiber optic sensor for reliable operation under all conditions
- Adjustable continuous sensitivity
- Easy fiber optic installation with quick-action clamping lock
- Aluminum housing with high-quality Delta Seal coating
- IO-link interface for service and process data

Product information

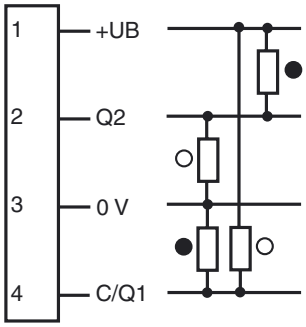
The unique and extremely popular design of the MLV41 series enables it be mounted correctly in confined areas and offers all the functions that are normally only found on larger photoelectric sensors. The MLV41 series comes with a range of functions. For example, highly visible status LEDs on the front and back, resistance to ambient light, crosstalk protection and universally applicable output stages that permit every possible switching logic and polarity to be realized. The enhanced resistance to ambient light ensures reliable operation even where modern energy-saving lamps with electronic ballasts are in use. The same applies where multiple devices are present, i.e. the use of a number of sensors in the same vicinity causes no problems.

Dimensions



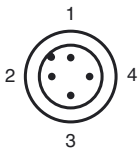
Electrical connection

Option:

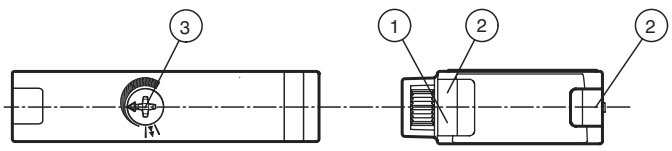


○ = Light on
● = Dark on

Pinout



Indicators/operating means



1	Operating display green	3	Sensing range adjuster / adjustment mode
2	Function display yellow		

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Technical data

General specifications		
Sensor range		on black (6 %): up to 55 mm on Kodak white, reflection factor 90% up to 160 mm with LLR 04-1.6-0.5-WC3 fiberoptic cable
Adjustment range		0 ... 160 mm on Kodak white, reflection factor 90%
Reference target		100 mm x 100 mm on Kodak white, reflection factor 90%
Light source		IRED
Light type		modulated infrared light , 880 nm
Functional safety related parameters		
$MTTF_d$		770 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) , IO link communication: green LED goes out briefly (1 Hz)
Function indicator		LED yellow, lights up with receiver lit ; flashes when falling short of the stability control
Control elements		sensitivity adjustment
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	max. 40 mA
Interface		
Interface type		IO-Link
Protocol		IO-Link V1.0
Mode		COM 2 (38.4 kBaud)
Output		
Switching type		light/dark on
Signal output		2 push-pull (4 in 1) outputs, complementary, short-circuit proof, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Voltage drop	U_d	≤ 2.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-40 ... 75 °C (-40 ... 167 °F)
Mechanical specifications		
Fiber optic adapter		04
Degree of protection		IP67
Connection		4-pin, M12 x 1 connector
Material		
Housing		aluminum , Delta-Seal coated
Optical face		Fiber optic connection
Connector		metal
Mass		50 g
Compliance with standards and directives		
Directive conformity		
EMC Directive 2004/108/EC		EN 60947-5-2:2007
Standard conformity		
Product standard		EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates	
Protection class	II, rated voltage ≤ 50 V AC with pollution degree 1-2 according to IEC 60664-1 functional insulation acc. to DIN EN 50178
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

IO link function

The IO link operating mode is indicated by the green LED indicator with a short interruption (f = 1 Hz). IO link communication simultaneously provides process data (measurement data from the sensor) and access to requirement data.
The requirement data contains the following information:

Identification:

- Manufacturer information
- Product ID
- User-specific ID

Device parameters:

Accessories

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

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

OMH-41
Mounting bracket

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

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

LCR 04-1,6-0,5-Z1
Glass fiber optic - diffuse with PVC covering

LLR 04-1,6-0,5-G(M6x30)
Glass fiber optic - diffuse with metal silicone covering

LCR 04-1,6-0,5-WC 3
Glass fiber optic - diffuse with PVC covering

LLR 04-1,6-0,5-W C3
Glass fiber optic - diffuse with metal silicone covering

LCE 04-1,6-1,0-Z1
Glass fiber optic - thru-beam with PVC covering

LCE 04-1,6-1,0 G
Glass fiber optic - thru-beam with PVC covering

LLE 04-1,6-1,0-G
Glass fiber optic - thru-beam with metal silicone covering

LCE 04-1,6-1,0-W C3
Glass fiber optic - thru-beam with PVC covering

LLE 04-1,6-1,0-W C3
Glass fiber optic - thru-beam with metal silicone covering

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

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

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- Teach-in parameters
- Operating parameters
- Configuration parameters
- Device commands

Diagnostic messages and warnings

Setting information

Detection range adjustment:

The detection range can be set via the rotary switch or the IO-Link.

Setting using the rotary switch:

If you would like to change the detection range on the sensor, turn:
- the rotary switch to the left to reduce the value.
- the rotary switch to the right to increase the value.

With the IO-Link, the set detection range the current rotary switch configuration is always assigned.
If the rotary switch is too far to the left or the right, perform the following:

Turn the potentiometer completely to the left until it stops. The LED will briefly flash green.
The assignment of the current rotary switch configuration to the detection range set via IO-Link is overridden.
Now set the desired detection range again.

Example application - manually reduce detection range:

The potentiometer has one position as shown here. The adjustable detection range is set via IO-Link to maximum. The rotary switch is too far to the left to set a considerably lower detection range for example.

Turn the potentiometer to the left until it stops to override the set value to this rotary switch configuration. The LED will briefly flash green.

Now set the desired detection range again.

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