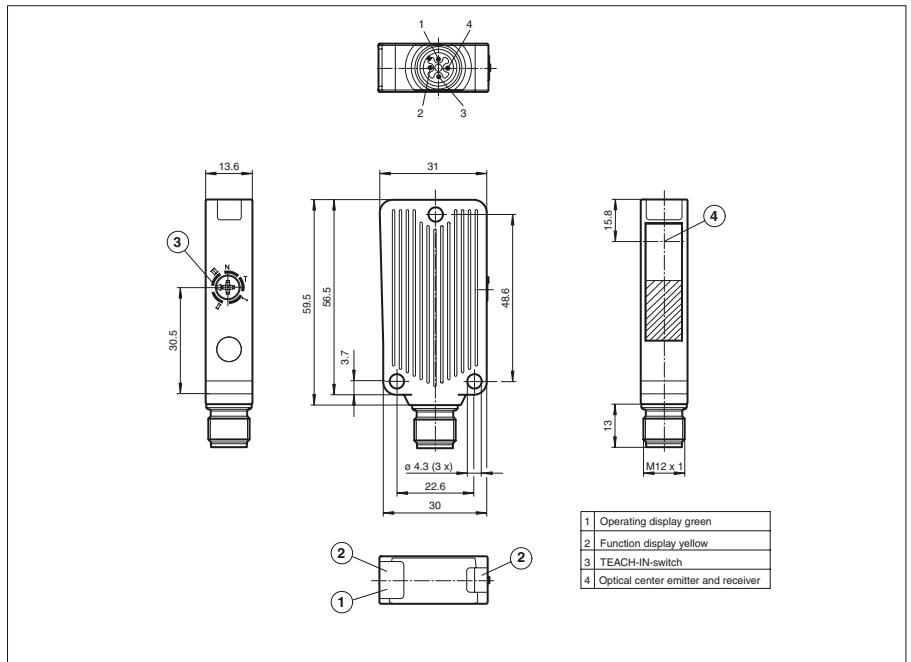CE | c(UL)us | □ | **VISO+**

Model Number

MLV41-54-G-1700

Retroreflective sensor
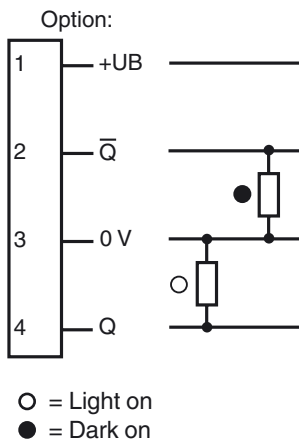
with M12, 4-pin metal connector

Features

- Rugged series in corrosion-resistant metal housing

- Reliable detection of reflecting metall objects

- Sturdy aluminum housing

- Scratch-resistant and solvent resistant glass lens

- Clearly visible LED functional display

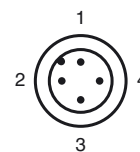- Resistant against noise: reliable operation under all conditions

Dimensions

1	Operating display green
2	Function display yellow
3	TEACH-IN-switch
4	Optical center emitter and receiver

Electrical connection

Option:

1 — +UB

2 — $\overline{Q}$

3 — 0 V

4 — Q

○ = Light on
● = Dark on

Pinout

Subject to modifications without notice

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Technical data

General specifications

Effective detection range	0 ... 200 mm
Reference target	VR10 reflector
Light source	LED
Light type	modulated visible red light , 660 nm
Angle deviation	max. ± 1°
Diameter of the light spot	approx. 8 mm at 200 mm detection range
Angle of divergence	approx. 2 °
Ambient light limit	40000 Lux

Functional safety related parameters

$MTTF_d$	900 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operating display	LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function display	2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode
Controls	5-step switch for setting the contrast detection levels.
Contrast detection levels	10 % - clean, water filled PET bottles 18 % - clear glass bottles 40 % - colored glass or opaque materials adjustable by TEACH-IN key or external wire

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	max. 35 mA

Output

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	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 75 °C (-40 ... 167 °F)

Mechanical specifications

Protection degree	IP67
Connection	connector M12 x 1, 4-pin
Material	
Housing	aluminum , Delta-Seal coated
Optical face	glass pane
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

Monting note:

It is recommended, that the device is installed so that the tear open cord runs parallel with the longitudinal axis of the device.
The minimum separation between the carrier material and the reflector should be 25 mm.
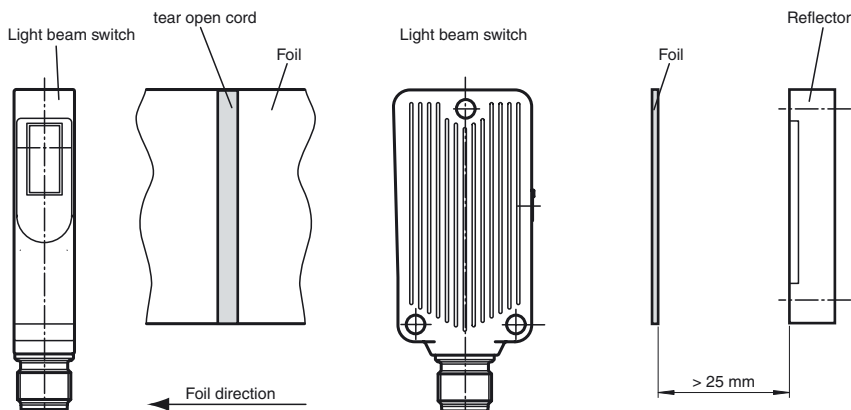
Accessories

OMH-41
Mounting bracket

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

Suitable reflectors and cable sockets can be found in the Internet

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Light beam switch　tear open cord　Foil　　Light beam switch　　Foil　　Reflector

Foil direction

> 25 mm

Additional information

Adjustment instructions for Teach-In operation:

Step	Switch position	LED green	LED yellow	Time/ frequency	Explanations/ comments
1	N	on	flashes	4/s	In switch position "N" directed towards reflector. Reflector detected **without function reserve**.
	N	on	on	-	In switch position "N" directed towards reflector. Reflector detected **with function reserve** (recommended).
2	T	off/on	on	200 ms	The selection of a new switch position is indicated by the green LED going out for a short time. This also applies to the selection of the other switch positions.
	T	flashes	flashes	2.5/s	*Slow* alternating flashing: Teach-In process has been performed **correctly**. Max. duration of the Teach-In process: 2 s
	T	flashes	flashes	8/s	*Quick* alternating flashing: Teach-In process has **not** been performed **correctly**. (e.g. receiver signal not sufficient, sensor not directed correctly towards reflector). Status is terminated by turning switch to position N.
3/1	I	on	on	-	Contrast detection 10 % is activated. (e.g. clean PET bottles filled with water)
3/2	II	on	on	-	Contrast detection 18 % is activated. (e.g. clear glass bottles)
3/3	III	on	on	-	Contrast detection 40 % is activated. (e.g. coloured glass or non-transparent materials)

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