



Retroreflective sensor

MLV12-54-LAS-300/76b/95/110



- Series of sensors in a widely used standard housing
- Visible red light, pulsed LASER light
- Precision: high degree of repeatability thanks to small light spot
- Reliable detection of minimum target sizes > 0.3 mm
- Resistant against noise: reliable operation under all conditions
- High level of stability thanks to the metal housing frame

Laser retroreflective sensor for the detection of small parts, small design, polarization filter, 450 mm detection range, laser red light, light/dark on, push-pull output, test input, M8 plug



Safety Information

Laser Class 1 Information

The irradiation can lead to irritation especially in a dark environment. Do not point at people!

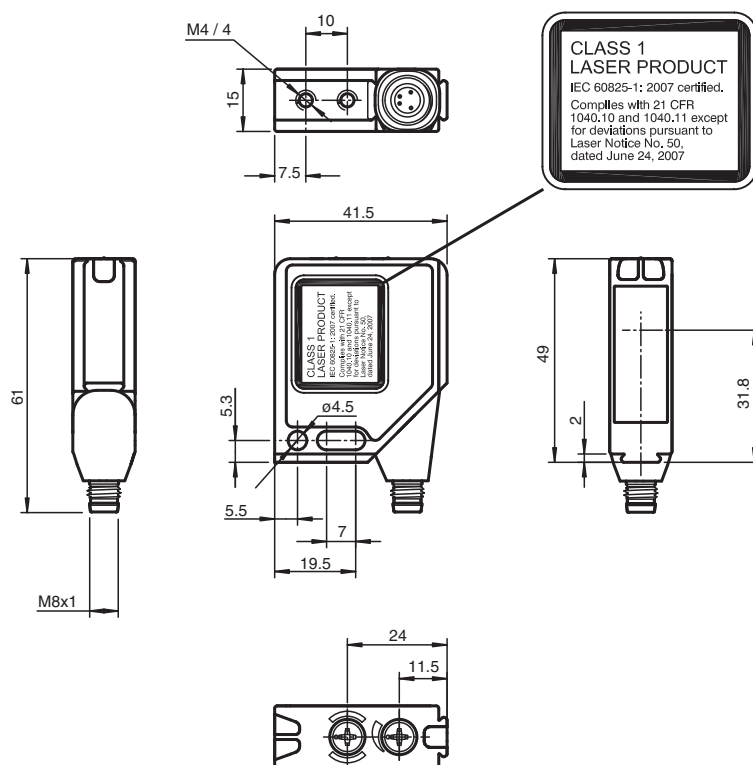
Maintenance and repairs should only be carried out by authorized service personnel!

Attach the device so that the warning is clearly visible and readable.

The warning accompanies the device and should be attached in immediate proximity to the device.

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Dimensions



Technical Data

General specifications

Effective detection range	100 ... 450 mm
Reflector distance	0.02 ... 4 m
Threshold detection range	5.6 m
Reference target	MH82 reflector
Light source	laser diode
Light type	modulated visible red light
Polarization filter	yes
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM
Laser class	1
Wave length	650 nm
Beam divergence	2 mrad
Pulse length	1.8 µs
Repetition rate	17.86 kHz
max. pulse energy	1.1 nJ
Target size	> 0.3 mm
Diameter of the light spot	approx. 0.5 mm at detection range 150 mm up to 400 mm
Opening angle	0.1 °
Ambient light limit	
Continuous light	50000 Lux
Modulated light	5000 Lux

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Technical Data

Functional safety related parameters

MTTF _d	930 a
Mission Time (T _M)	10 a
Diagnostic Coverage (DC)	90 %

Indicators/operating means

Operation indicator	LED green, flashes in case of short-circuit
Function indicator	2 LEDs yellow, light up when light beam is free, flash when falling short of the stability control, off when light beam is interrupted
Control elements	rotary switch for light/dark, sensitivity adjuster

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I ₀	max. 40 mA

Input

Test input	emitter deactivation at 0 V
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Output

Switching type	light/dark on switchable	
Signal output		1 push-pull (4 in 1) output, short-circuit protected, reverse polarity protected
Switching voltage	max. 30 V DC	
Switching current		max. 0.1 A
Voltage drop	U _d	≤ 2.5 V DC
Switching frequency	f	2500 Hz
Response time	0.2 ms	

Conformity

Product standard	EN 60947-5-2
Laser safety	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

Compliance with standards and directives

Standard conformity	
Shock and impact resistance	IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions
Vibration resistance	IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions
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

EAC conformity	TR CU 020/2011
UL approval	cULus Listed, Type 1 enclosure
CCC approval	CCC approval / marking not required for products rated ≤36 V

Ambient conditions

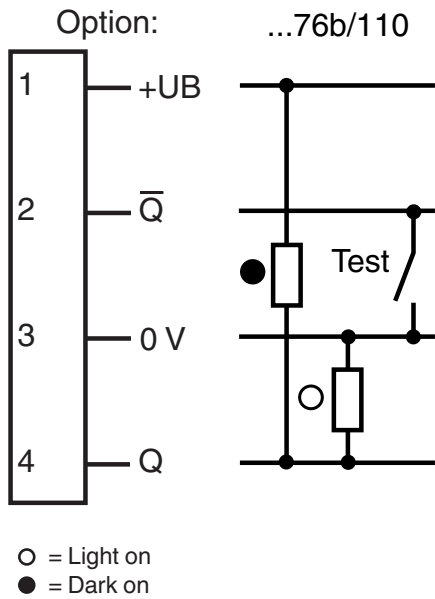
Ambient temperature	-10 ... 50 °C (14 ... 122 °F)
Storage temperature	-20 ... 65 °C (-4 ... 149 °F)

Mechanical specifications

Housing width	41.5 mm
Housing height	49 mm
Housing depth	15 mm
Degree of protection	IP67
Connection	4-pin M8 metal connector, 90° rotatable
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Optical face	Plastic pane
Mass	60 g

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Connection Assignment



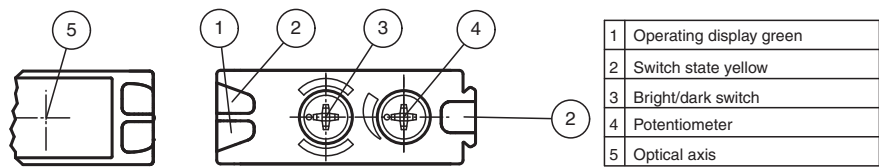
Connection Assignment



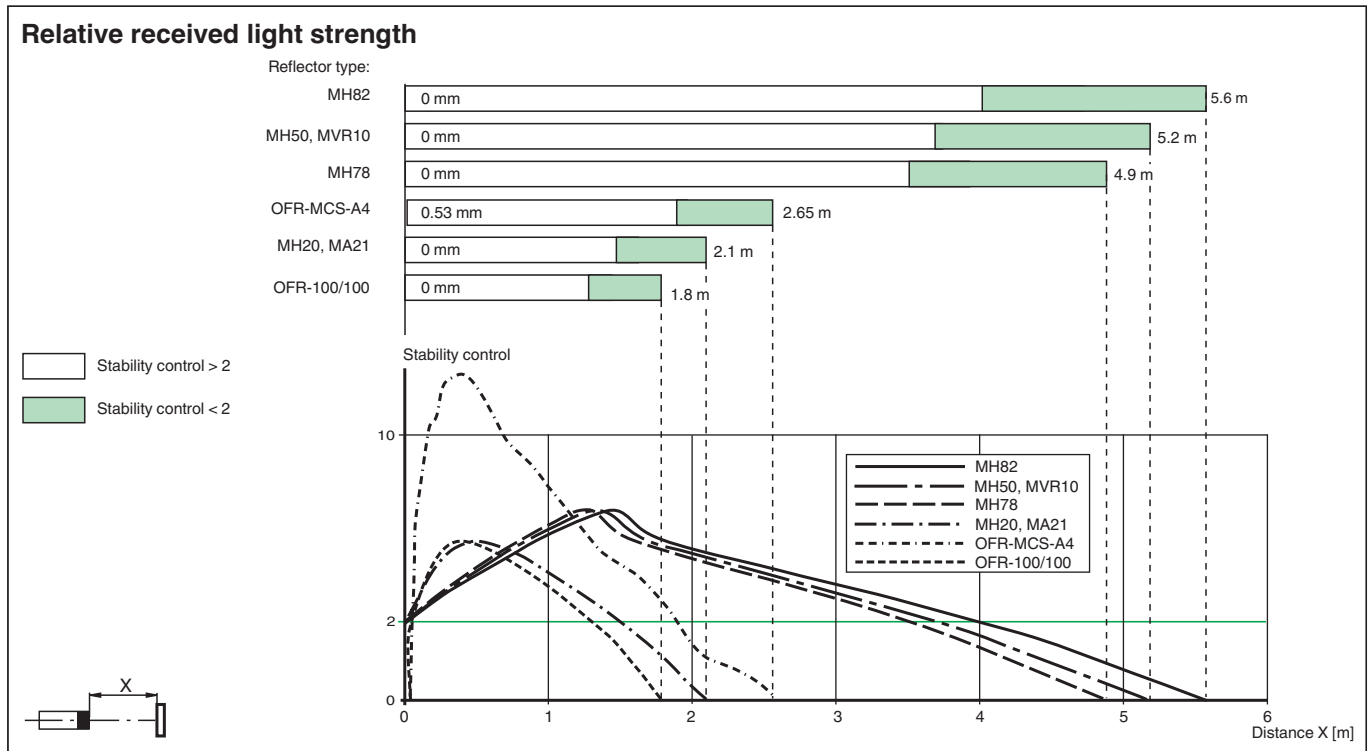
Wire colors in accordance with EN 60947-5-2

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

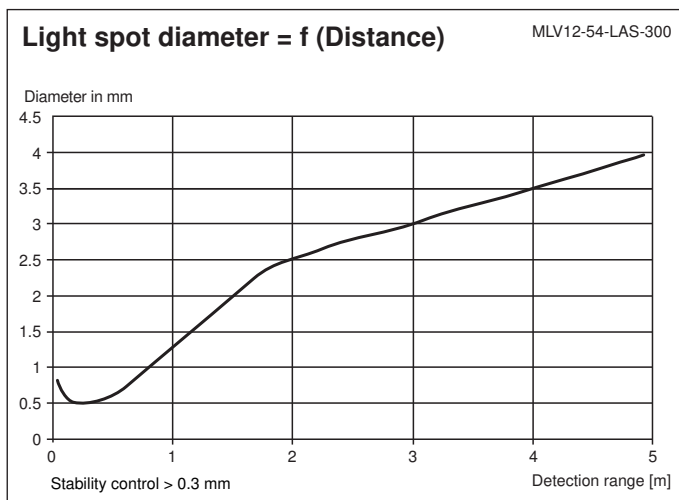
Assembly



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Characteristic Curve



System Description

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The retro-reflective sensor contains both an emitter and a receiver in a single housing. A reflector reflects the light from emitter back to the receiver. If an object interrupts the light beam, the switching function is initiated.

Installation

Mounting

The sensors can be secured directly using thru-holes or using a mounting bracket or mounting clamp. Mounting brackets and clamping elements are available as accessories.

Ensure that the background is level to prevent the housing from becoming distorted when the fittings are tightened.

Secure the nut and screw with spring disks to prevent the sensor from becoming misaligned.

Commissioning

Aligning the sensor: Apply the operating voltage to the sensor. The operating indicator lights up green.

Mount a suitable reflector opposite the light barrier. Roughly align the sensor (without an object) with the reflector. Next, adjust the sensor to the reflector by swiveling the sensor horizontally and vertically so that the yellow signal indicator lights up continuously. In the event of misalignment, the yellow signal indicator flashes.

Commissioning

Checking object detection: Follow the steps below to check that the sensor detects objects as required.

Position the object in the beam path of the sensor.

When the object is detected, the yellow signal indicator goes out. If the yellow signal indicator remains lit, reduce the sensitivity of the potentiometer until the yellow signal indicator goes out.

When the object disappears from the beam path of the sensor, the yellow signal indicator lights up again continuously.

Maintenance

Maintenance

Cleaning: If the transmission reception deteriorates, e.g., due to dirt, the yellow signal indicator on the receiver flashes. Clean the optical interfaces of the sensor (e.g., lenses) at regular intervals.

Maintenance: Check the mounting fittings and the electrical connections regularly.

Accessories

	OMH-MLV12-HWG	Mounting bracket for series MLV12 sensors
	OMH-MLV12-HWK	Mounting bracket for series MLV12 sensors
	OMH-K01	dove tail mounting clamp
	OMH-K02	dove tail mounting clamp
	OMH-K03	dove tail mounting clamp
	OMH-01	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	OMH-06	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	REF-MH82	Reflector with Micro-structure, rectangular 82 mm x 60 mm, mounting holes
	REF-MH78	Reflector with Micro-structure, hexagonal 78 mm x 61 mm, mounting holes
	REF-MH20	Reflector with Micro-structure, rectangular 32 mm x 20 mm, mounting holes
	REF-MA21	Reflector with Micro-structure, round ø 21 mm, self-adhesive
	OFR-MCS-A4	Reflective tape A4 (297 mm x 210 mm)
	OFR-MCS-400/18	Reflective tape, cut to size