



Background suppression sensor

ML100-8-H-100-RT/103/115a



- Miniature design
- Small, sharp light spot
- Can be adapted to the application in question thanks to the adjustable detection range
- Precision object detection, almost irrespective of the color
- Full metal thread mounting

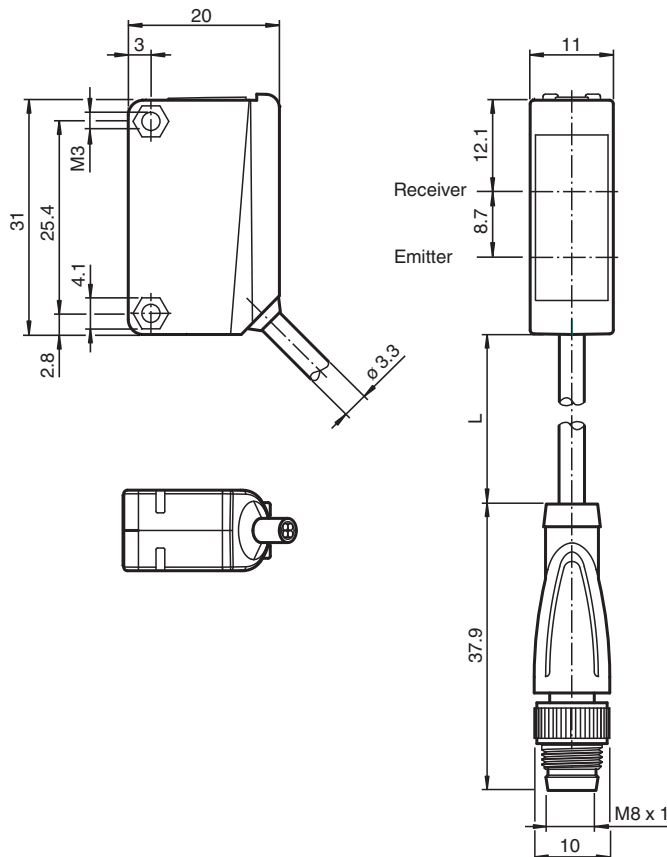
Triangulation sensor with background suppression, 100 mm adjustable sensing range, red light, light on, PNP output, 0.3 m fixed cable with M8 plug



Function

The optical sensors of this series are suitable for both standard and demanding applications. The series features a miniature housing design, two M3 metal-threaded mounting holes and a highly visible LED status indicator. Each device is equipped with a sensitivity adjuster and a light-on/dark-on changeover switch for increased flexibility. A wide variety of versions are available in both infrared light and red light with PowerBeam for easy alignment. Special versions with BlueBeam are suitable for challenging applications like those in the solar and battery industries.

Dimensions



Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 70105614_eng.pdf

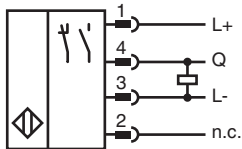
Technical Data

General specifications		
Detection range		5 ... 100 mm
Detection range min.		5 ... 25 mm
Detection range max.		5 ... 100 mm
Adjustment range		25 ... 100 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
Polarization filter		no
Black-white difference (6%/90%)		< 20 %
Diameter of the light spot		approx. 4 mm at a distance of 100 mm
Opening angle		approx. 2.5 °
Optical face		frontal
Ambient light limit		EN 60947-5-2
Functional safety related parameters		
MTTF _d		860 a
Mission Time (T _M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green: power on
Function indicator		LED yellow: lights when object is detected
Control elements		Sensing range adjuster
Control elements		Light-on/dark-on changeover switch
Electrical specifications		
Operating voltage	U _B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I ₀	< 15 mA
Output		
Switching type		The switching type of the sensor is adjustable. The default setting is: light-on
Signal output		1 PNP output, short-circuit protected, reverse polarity protected, open collector
Switching voltage		max. 30 V DC
Switching current		max. 100 mA , resistive load
Voltage drop	U _d	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms
Conformity		
Product standard		EN 60947-5-2
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source or listed Power Supply with a limited voltage output with (maybe integrated) fuse (max. 3.3 A according UL248), Type 1 enclosure
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-30 ... 60 °C (-22 ... 140 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Housing width		11 mm
Housing height		31 mm
Housing depth		20 mm
Degree of protection		IP67
Connection		300 mm fixed cable with 4-pin, M8 x 1 connector
Material		
Housing		PC (Polycarbonate)
Optical face		PMMA

Technical Data

Mass	approx. 20 g
Tightening torque, fastening screws	0.6 Nm
Cable length	0.3 m

Connection



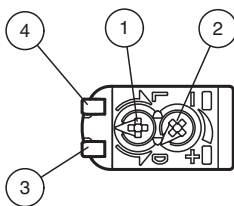
Connection Assignment



Wire colors in accordance with EN 60947-5-2

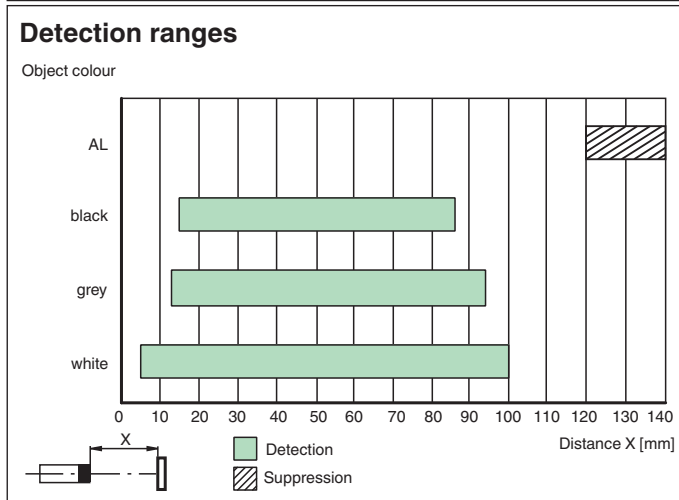
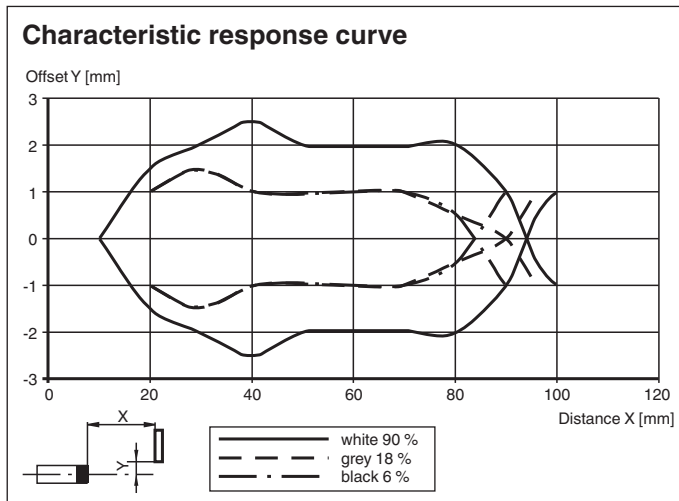
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Assembly



1	Light-Dark-switching	
2	Sensitivity adjuster	
3	Signal display	yellow
4	Operating display	green

Characteristic Curve



Accessories

	OMH-ML100-09	Mounting aid for round steel \varnothing 12 mm or sheet 1.5 mm ... 3 mm
	OMH-ML100-01	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-02	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-03	Mounting aid for round steel \varnothing 12 mm or sheet 1.5 mm ... 3 mm
	OMH-ML100-04	Mounting aid for ML100 series, mounting bracket
	OMH-ML100-05	Mounting aid for ML100 series, mounting bracket
	OMH-F10-ML100	Mounting aid for ML100 series
	OMH-10	Mounting aid for ML100 series

Accessories**OMH-ML100-S1**

Mounting bracket

System Description

System Description

The triangulation sensor with background suppression (BGS) contains both an emitter and a receiver in a single housing. Targeted blanking of objects outside the scanning range is made possible by a corresponding angle arrangement between emitter and receiver (2 receiver elements). The triangulation sensor (BGS) detects objects regardless of their surface structure, brightness and color, as well as the brightness of the background.

Mounting

The sensors can be mounted directly with fixing screws or by using a mounting bracket. Mounting brackets are available as accessories.

Ensure that the surface is flat to avoid housing distortion during mounting and fixing.

Secure nut and bolt with spring washers to prevent misalignment of the sensor.

Adjusting the Sensor: Apply the operating voltage to the sensor. The power indicator lights green.

Adjust the sensor to the background.

Yellow signal indicator permanently lights up: Use the sensing range adjuster to adjust the sensor to correct sensing range. Once the correct sensing range is set, the yellow signal indicator goes out.

Commissioning

Check Object Detection: Check as follows if the sensor detects objects as intended.

Position the object in the required sensing range of the sensor and align the light spot towards the object.

The yellow signal indicator is off. The indicator lights up only when the object is detected.

Troubleshooting: If the sensor does not respond as expected, change the sensing range setting until the signal indicator lights up during object detection.

Maintenance

Cleaning: Clean the optical surface of the sensor at regular intervals.

Servicing: Check the mounting screw connections and the electrical connections regularly.