



Background suppression sensor

ML100-8-H-100/115/127/162



- Diffuse mode sensor with multiple light spots
- Specially designed for detecting critical objects such as PCBs
- Miniature design
- Detects objects in front of a close background through precise background suppression
- Can be adapted to the application in question thanks to the adjustable detection range
- Precision object detection, almost irrespective of the color
- Not sensitive to ambient light, even with switched energy saving lamps

Diffuse mode sensor with special light spots for detecting PCBs, background suppression, miniature design, 100 mm detection range, red light, light on, NPN outputs, fixed cable



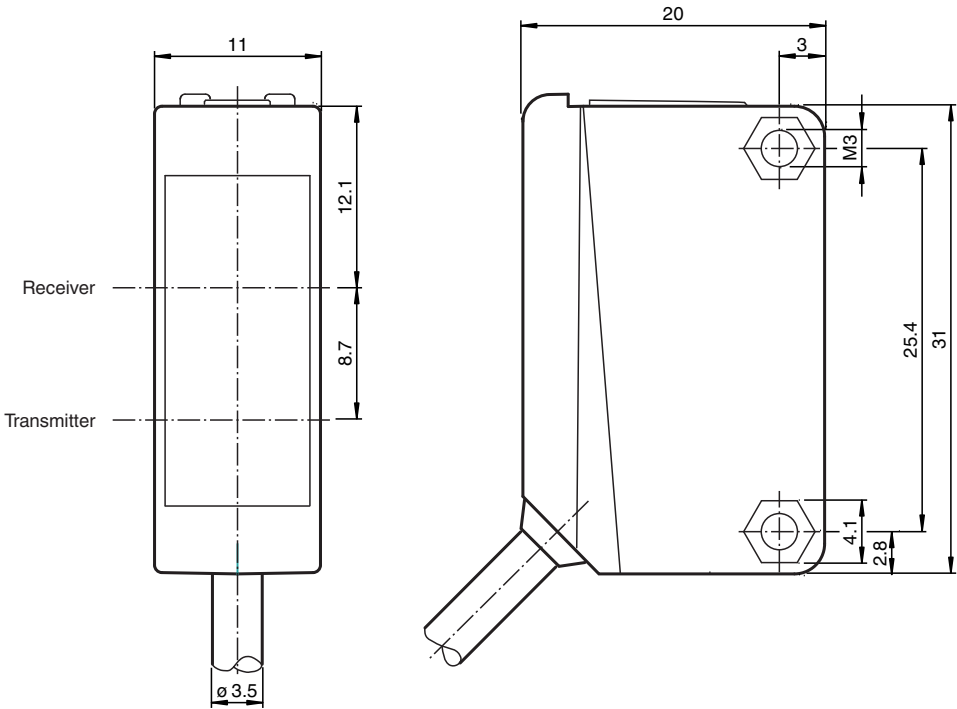
Function

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.

Application

File not found

Dimensions



Technical Data

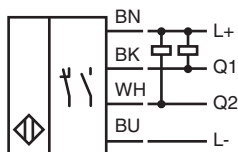
General specifications		
Detection range		20 ... 100 mm
Detection range min.		10 ... 25 mm
Detection range max.		25 ... 100 mm
Adjustment range		25 ... 100 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
Polarization filter		no
Black-white difference (6 %/90 %)		< 20 %
Diameter of the light spot		3 light spots, spotsize 4 mm at a distance of 50 mm, spots are 8 mm apart; spotsize 2.5 mm at a distance of 80 mm, spots are 12 mm apart; spotsize 4 mm at a distance of 100 mm, spots are 15 mm apart (outer spot to outer spot)
Optical face		frontal
Ambient light limit		EN 60947-5-2:2007+A1:2012
Functional safety related parameters		
MTTF _d		1100 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 , flashes when in adjustment mode
Control elements		Sensing range adjuster

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

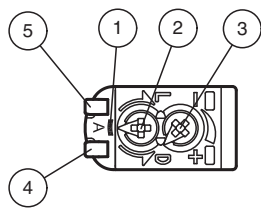
Technical Data

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		2 NPN outputs, independent short-circuit protected , reverse polarity protected , open collector transistor	
Switching voltage		max. 30 V DC	
Switching current		max. 100 mA , resistive load	
Voltage drop	U _d	≤ 1.5 V DC	
Switching frequency	f	500 Hz	
Response time		1 ms	
Conformity			
Product standard		EN 60947-5-2	
Approvals and certificates			
EAC conformity		TR CU 020/2011	
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		2 m fixed cable	
Material			
Housing		PC (Polycarbonate)	
Optical face		PMMA	
Mass		approx. 50 g	
Tightening torque, fastening screws		0.6 Nm	
Cable length		2 m	

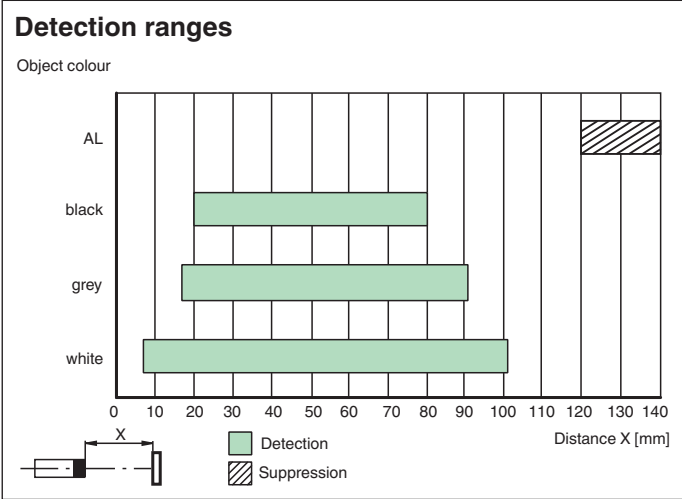
Connection



Assembly



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



Accessories

	OMH-ML100-09	Mounting aid for round steel ø 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 ø 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-ML100-S2	Mounting aid for ML100 series, mounting bracket

Configuration Information

Setting mode (A-Mode):

A-Mode is an additional switch position that is integrated into the light ON/dark ON switch. A-Mode is located between position L and position D. A-Mode is a help mode which enables you to detect whether all three light spots are directed onto the object. If A-Mode is selected, the yellow signal indicator LED flashes; the number of times that the LED flashes equates to the number of detected light spots.

The following scenarios exist:

- No flashing/LED off: No light spots detected
- Fast flashing (8 Hz): One light spot detected
- Slow flashing (4 Hz): Two light spots detected
- Static illumination/LED on: Three light spots detected

As soon as you exit A-Mode, the yellow LEDs light up in the standard manner again.

Switching output AND and OR

The sensor has three light spots, which the sensor evaluates individually. This permits a logical linking of the light spots.

The logical linking of the light spots is available at the switching output as OR (Pin 4/BK) and AND (Pin 2/WH).

Switching outputs:

If at least one of the three light spots provides an adequate receiving light strength from the detected object, the switching output switches to OR.

If all the light spots provide an adequate receiving light strength from the detected object, the switching output switches to AND.

Logical Linking	1. Light spot	2. Light spot	3. Light spot	Switching output
OR	0	0	0	0
	1	0	0	1
	0	1	0	1
	0	0	1	1
	1	1	0	1
	0	1	1	1
	1	1	1	1
AND	0	0	0	0
	1	0	0	0
	0	1	0	0
	0	0	1	0
	1	1	0	0
	0	1	1	0
	1	1	1	1