Retroreflective sensor for glass detection

ML100-55-G/95/103

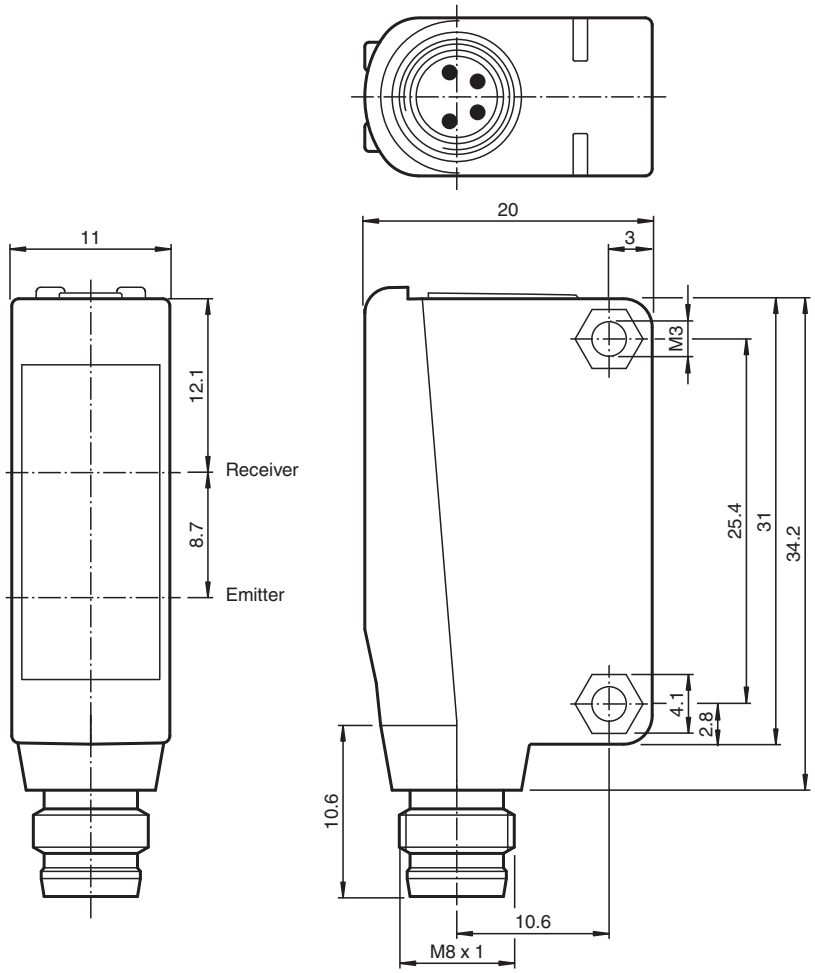
- Miniature design
- Detects transparent materials
- Teach-in switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- Very bright, highly visible light spot
- Full metal thread mounting

Retroreflective sensor for glass detection, plastic housing, detection range: 2.5 m, red light, teach-in, light/dark on, PNP output, 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



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Technical Data

General specifications		
Effective detection range		0 ... 2.5 m
Reflector distance		0.05 ... 2.5 m
Threshold detection range		2.5 m
Reference target		H50 reflector
Light source		LED
Light type		modulated visible red light
Polarization filter		yes
Diameter of the light spot		approx. 180 mm at a distance of 2.5 m
Opening angle		approx. 4 °
Optical face		frontal
Ambient light limit		EN 60947-5-2:2007+A1:2012
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 Teach-In : LED yellow/green; equiphase flashing; 2,5 Hz Teach Error:LED green/yellow non equiphase flashing; 8.0 Hz
Function indicator		LED yellow: lights up when receiving the light beam OFF when light beam is interrupted
Control elements		Teach-In rotary switch
Control elements		Light-on/dark-on changeover switch preset to light-on
Contrast detection levels		18 % - clear glass bottles 40 % - colored glass or opaque materials adjustable due to Teach-In switch
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 20 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		
Degree of protection		IP67
Connection		Connector M8 x 1 , 4-pin
Material		
Housing		PC (Polycarbonate)
Optical face		PMMA
Mass		approx. 10 g

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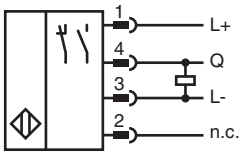
Tightening torque, fastening screws	0.6 Nm
Dimensions	
Height	31 mm
Width	11 mm
Depth	20 mm

Connection

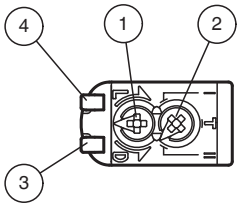


Connection Assignment

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 changeover switch	
2	Teach-in and mode selection potentiometer T Teach-in mode I 18% contrast mode II 40% contrast mode	
3	Signal indicator	yellow
4	Operating indicator	green

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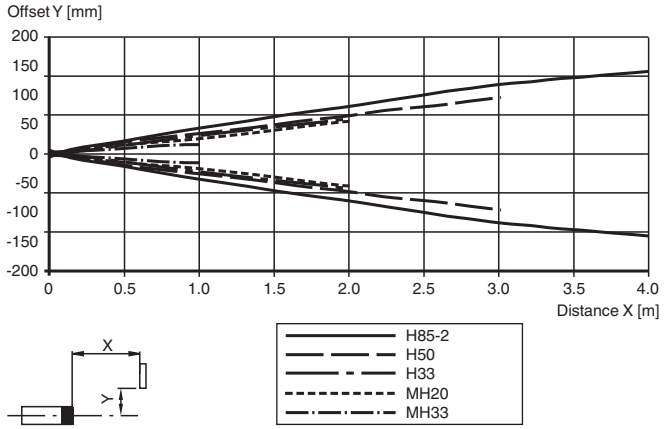
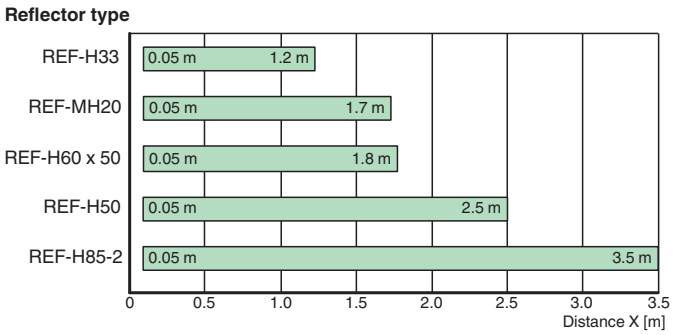
Characteristic Curve

Characteristic response curve



Reflector-dependent effective operating distances, typical



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