Dimensions

Operating principle	color
Retroreflective sensor with polarisation filter	green
Retroreflective sensor	blue
Diffusive mode sensor	white
Thru-beam sensor	grey
Diffusive mode sensor with background suppression	red

LED yellow   LED green

Color coding for operating principle (see table)

M12 x 1
18

24
8
34.35

7.15
5   ø 4.5   5
6
62
50
36
2
5   ø 14
25
35
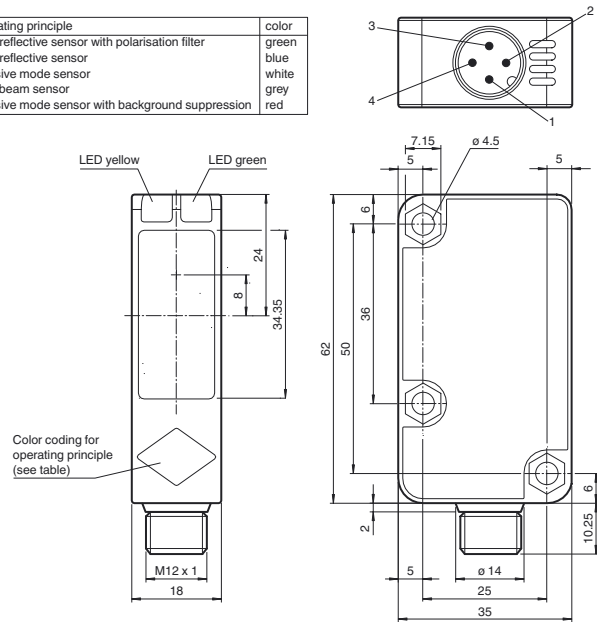10.25
6

Model Number

LD31/LV31/25/73c/76a/136
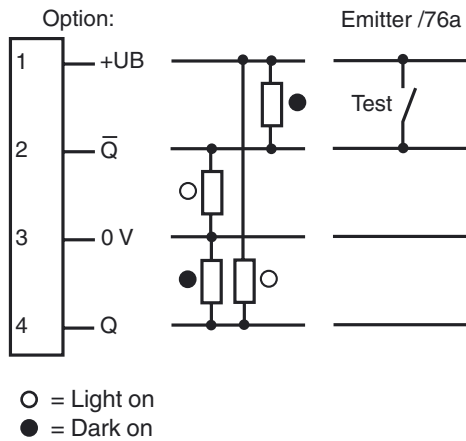
Thru-beam sensor
with 4-pin, M12 x 1 connector

Features

- Highly visible LED
- Powerful push-pull output
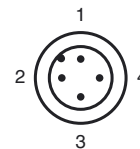- Compact and stable housing
- Protection class II

Electrical connection

Option: Emitter /76a

1 — +UB
2 — Q̅
3 — 0 V
4 — Q

Test

○ = Light on
● = Dark on

Pinout

1
2   4
3

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".
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1

Technical data

System components

Emitter	LD31/73c/76a
Receiver	LV31/25/73c/136

General specifications

Effective detection range	0 ... 30 m
Threshold detection range	43 m
Light source	LED
Light type	modulated visible red light , 630 nm
Alignment aid	LED yellow: 1. LED illuminates: Sufficient light signal received, emitter and receiver alignment is correct 2. LED flashes: Reaching switching point 3. LED off: Light beam is interrupted or the alignment is out
Diameter of the light spot	approx. 800 mm at a distance of 30 m
Angle of divergence	Emitter: 1.5 ° , Receiver: 1.5 °
Ambient light limit	50000 Lux ; according EN 60947-5-2

Functional safety related parameters

$MTTF_d$	750 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	90 %

Indicators/operating means

Operation indicator	LED green: power on
Function indicator	LED yellow: 1. LED lit constantly: signal > 2 x switching point (function reserve) 2. LED flashes: signal between 1 x switching point and 2 x switching point 3. LED off: signal < switching point

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I_0	Emitter: ≤ 18 mA Receiver: ≤ 18 mA

Input

Test input	emitter deactivation at $+U_B$

Output

Switching type		light on
Signal output		2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Voltage drop	U_d	≤ 1.5 V
Switching frequency	f	≤ 250 Hz
Response time		≤ 2 ms

Ambient conditions

Ambient temperature	-30 ... 55 °C (-22 ... 131 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Degree of protection	IP67
Connection	4-pin, M12 x 1 connector
Material	
Housing	Polycarbonate
Optical face	PMMA
Mass	Emitter: 24 g Receiver: 24 g

Compliance with standards and directives

Directive conformity	EMC Directive 2004/108/EC
Standard conformity	
Product standard	EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates

Protection class	II , rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit basis insulation of input circuit according to EN 50178, rated insulation voltage 240 V AC
UL approval	cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval	CCC approval / marking not required for products rated ≤36 V

Accessories

OMH-RL31-01
Mounting bracket

OMH-RL31-02
Mounting bracket narrow

OMH-RL31-03
Mounting bracket narrow

OMH-RL31-04
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-RL31-05
Mounting bracket with M10 threaded rod

OMH-RL31-06
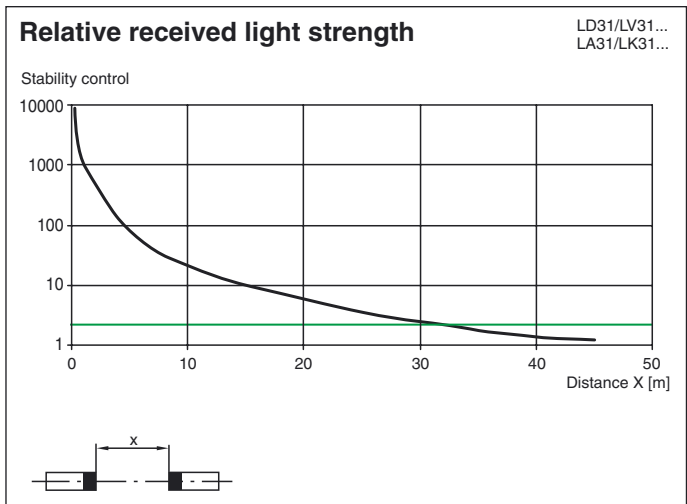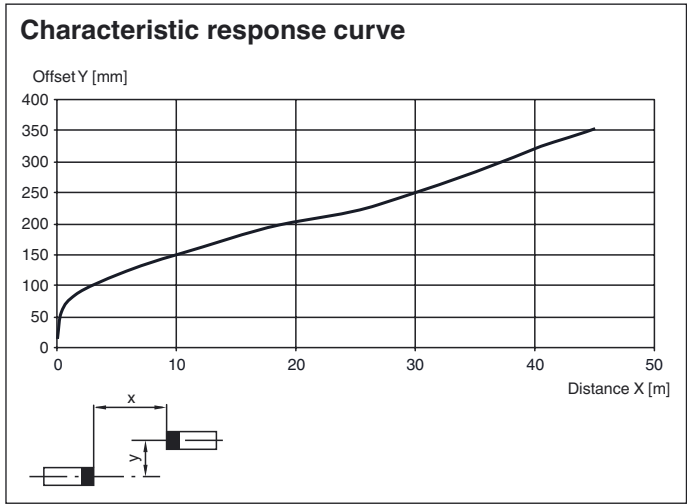Stainless steel mounting bracket with adjustable half clamp on the side

V1-G-2M-PUR
Female cordset, M12, 4-pin, PUR cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

Additional accessories can be found in the Internet.

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Curves/Diagrams

Characteristic response curve

Offset Y [mm]

Distance X [m]

Relative received light strength

LD31/LV31...
LA31/LK31...

Stability control

Distance X [m]

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