



## Laser retroreflective sensor OBR2000-R2-E2-0,2M-V31-L



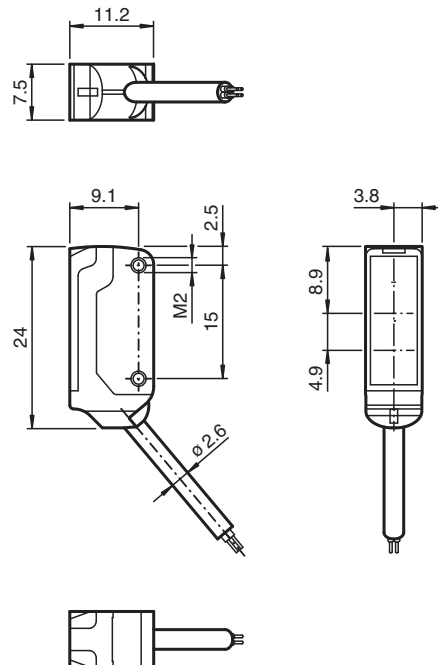
- Ultra-small housing design
- DuraBeam Laser Sensors - durable and employable like an LED
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front

Laser retroreflective sensor, ultra-small design with M2 mounting, polarization filter, 2000 mm detection range, PNP output, 200 mm fixed cable with plug M8, 4-pin



The nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new options.

### Dimensions



## Technical Data

### General specifications

Effective detection range	0 ... 2 m
Reflector distance	40 ... 2000 mm
Threshold detection range	2.3 m
Reference target	H40 reflector
Light source	laser diode
Light type	modulated visible red light , 680 nm
Polarization filter	yes
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM
Laser class	1
Wave length	680 nm
Beam divergence	> 5 mrad
Pulse length	approx. 3 $\mu$ s
Repetition rate	approx. 16.6 kHz
max. pulse energy	8 nJ
Diameter of the light spot	approx. 35 mm at a distance of 2000 mm
Opening angle	approx. 0.5 °
Optical face	frontal
Ambient light limit	EN 60947-5-2 : 30000 Lux

### Functional safety related parameters

MTTF <sub>d</sub>	800 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %

### Indicators/operating means

Operation indicator	LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz)
Function indicator	LED yellow: lights up when receiving the light beam ; flashes when falling short of the stability control; OFF when light beam is interrupted

### Electrical specifications

Operating voltage	U <sub>B</sub>	12 ... 24 V
No-load supply current	I <sub>0</sub>	< 10 mA
Protection class		III

### Output

Switching type		NO contact
Signal output		1 PNP output, short-circuit protected, reverse polarity protected, open collector
Switching voltage		max. 30 V DC
Switching current		max. 50 mA , resistive load
Voltage drop	U <sub>d</sub>	≤ 1.5 V DC
Switching frequency	f	approx. 2 kHz
Response time		250 $\mu$ s

### Conformity

Product standard	EN 60947-5-2
Laser safety	EN 60825-1:2007

### Approvals and certificates

EAC conformity	TR CU 020/2011
UL approval	E87056 , cULus Recognized, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V
FDA approval	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

### Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Storage temperature	-30 ... 70 °C (-22 ... 158 °F)

### Mechanical specifications

Housing width	7.5 mm
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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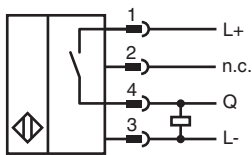
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## Technical Data

Housing height	24 mm
Housing depth	11.2 mm
Degree of protection	IP67
Connection	200 mm fixed cable with 4-pin, M8x1 connector
Material	
Housing	PC/ABS and TPU
Optical face	glass
Cable	PUR
Installation	Fixing screws , 2 x M2 allen head screws included with delivery
Mass	approx. 10 g
Cable length	200 mm

## Connection



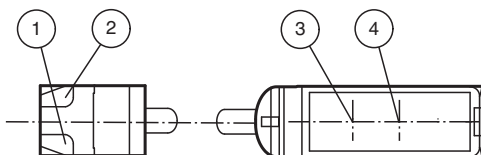
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

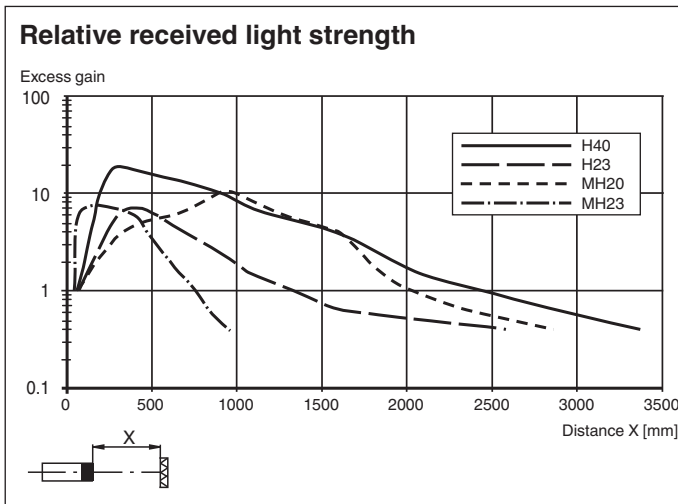
## Assembly



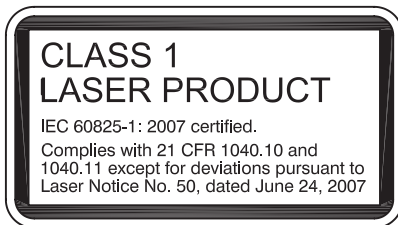
1	Operating display	green
2	Signal display	yellow
3	Emitter	
4	Receiver	

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## Characteristic Curve



## Safety Information



## Accessories

	<b>MH-R2-01</b>	Mounting aid for R2 series, Mounting bracket
	<b>MH-R2-02</b>	Mounting aid for R2 series, Mounting bracket
	<b>MH-R2-03</b>	Mounting aid for R2 series, Mounting bracket
	<b>MH-R2-04</b>	Mounting aid for R2 series, Mounting bracket

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



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## Accessories

	<b>REF-H40</b>	Reflector, rectangular 47.5 mm x 23.5 mm, mounting holes, fixing strap
	<b>REF-H23</b>	Reflector with mounting holes
	<b>REF-MH20</b>	Reflector with Micro-structure, rectangular 32 mm x 20 mm, mounting holes
	<b>REF-MH23</b>	Reflector with Micro-structure, rectangular 23 mm x 13.8 mm, diagonal mounting hole
	<b>V31-GM-2M-PUR</b>	Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey
	<b>V31-WM-2M-PUR</b>	Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey