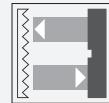


# Laser retroreflective sensor

## OBR1500-R3F-E1-0,2M-V31-L

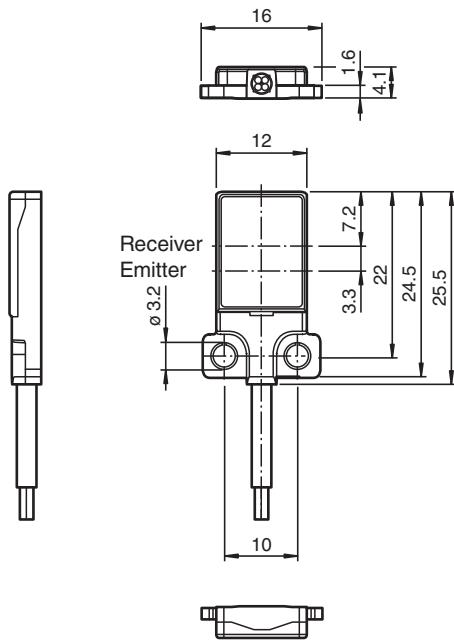


- Very flat design for direct mounting without mounting bracket
- DuraBeam Laser Sensors - durable and employable like an LED
- Glare protected with polarization filter
- Very bright, highly visible light spot

Retroreflective sensor with polarization filter



### Dimensions



### Technical Data

#### General specifications

Effective detection range	0 ... 1500 mm
Reflector distance	60 ... 1500 mm
Threshold detection range	1800 mm
Reference target	H40 reflector
Light source	LASER LIGHT
Light type	modulated visible red light , 680 nm
Polarization filter	yes
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM

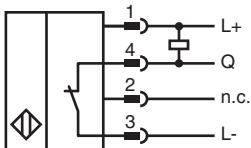
## Technical Data

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
Angle deviation	approx. 0.5 °
Object size	typ. starts from 1.5 mm
Diameter of the light spot	approx. 25 mm at a distance of 1500 mm
Opening angle	approx. 1 °
Optical face	frontal
Ambient light limit	EN 60947-5-2 : 30000 Lux
<b>Functional safety related parameters</b>	
MTTF <sub>d</sub>	800 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %
<b>Indicators/operating means</b>	
Operation indicator	LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz)
Function indicator	Receiver: LED yellow, lights up when light beam is free, flashes when falling short of the operating reserve ; OFF when light beam is interrupted
<b>Electrical specifications</b>	
Operating voltage	U <sub>B</sub> 12 ... 24 V
No-load supply current	I <sub>0</sub> < 10 mA
Protection class	III
<b>Output</b>	
Switching type	NC contact / light-on
Signal output	1 NPN 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
<b>Conformity</b>	
Product standard	EN 60947-5-2
Laser safety	EN 60825-1:2007
<b>Approvals and certificates</b>	
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
<b>Ambient conditions</b>	
Ambient temperature	-10 ... 60 °C (14 ... 140 °F)
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)
<b>Mechanical specifications</b>	
Housing width	16 mm
Housing height	25.5 mm
Housing depth	4.1 mm
Degree of protection	IP67
Connection	200 mm fixed cable with 4-pin, M8x1 connector
Material	
Housing	PC (Polycarbonate) and Stainless steel
Optical face	PMMA
Cable	PUR
Mass	approx. 10 g

## Technical Data

Tightening torque, fastening screws	1 Nm
Cable length	200 mm

## Connection



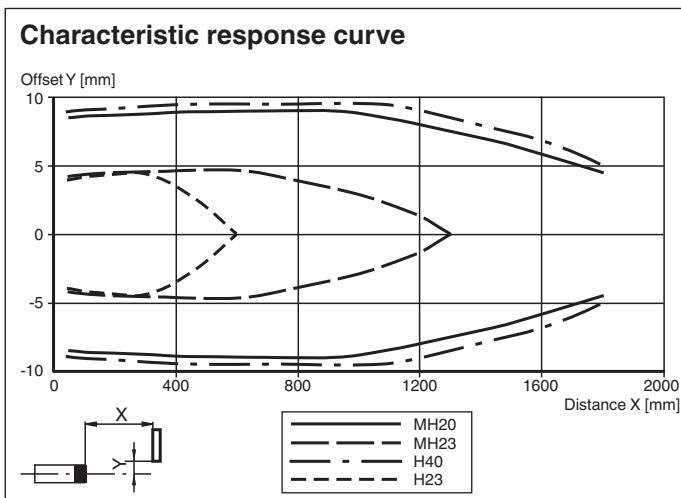
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

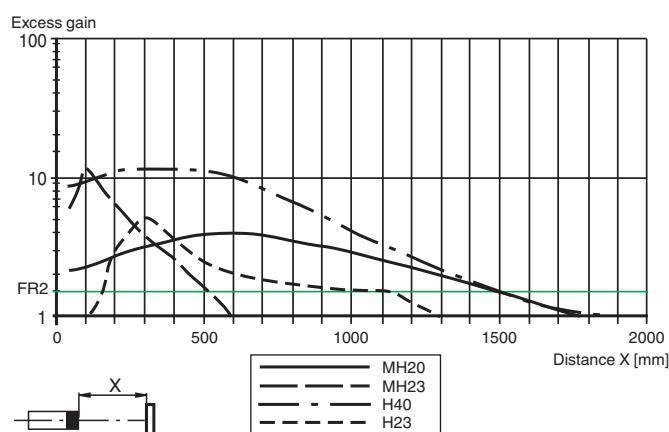
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

## Characteristic Curve

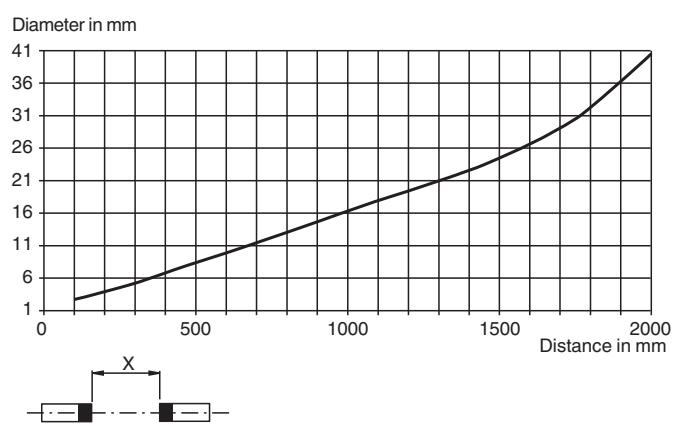


## Characteristic Curve

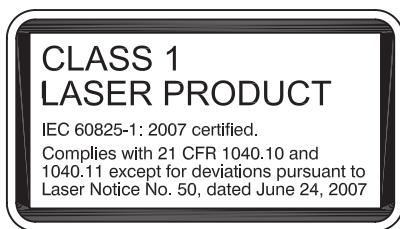
### Relative received light strength



### Light spot diameter



## Safety Information



## Safety Information

### Laser Class 1 Information

The irradiation can lead to irritation especially in a dark environment. Do not point at people!

Maintenance and repairs should only be carried out by authorized service personnel!

Attach the device so that the warning is clearly visible and readable.

The warning accompanies the device and should be attached in immediate proximity to the device.

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

## 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