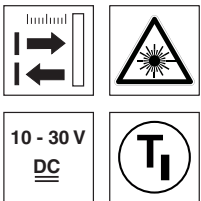


**ODSL 8**

**Optical laser distance sensors**

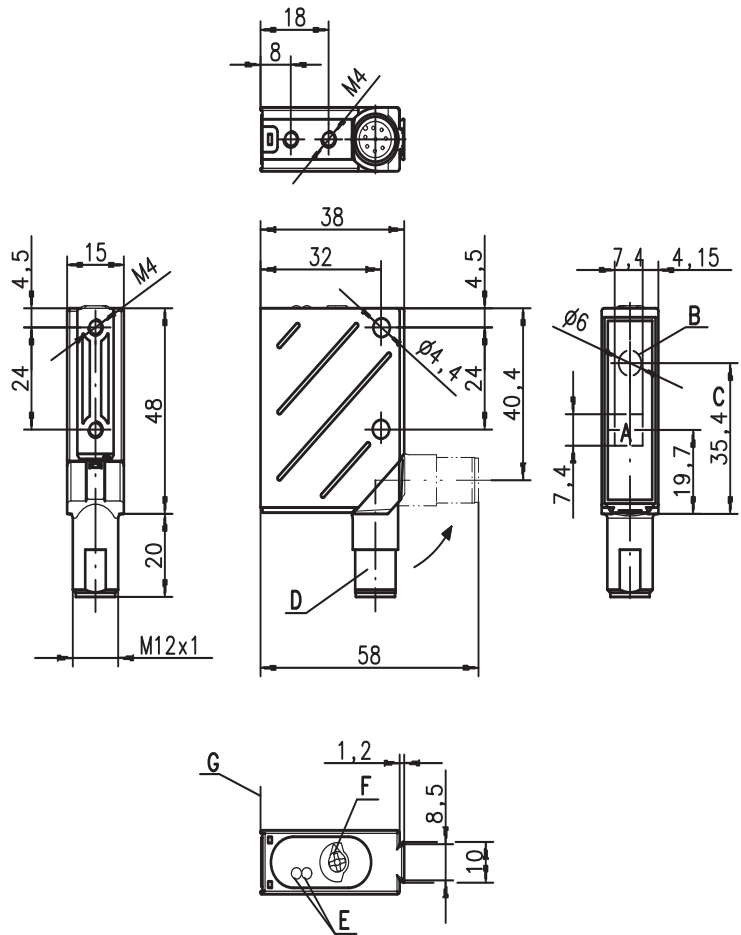
en 08-2014/05 50103923-02



**20 ... 500mm**

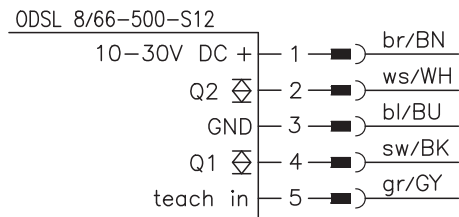
- Reflection-independent distance information
- 2 teachable switching outputs (push-pull)
- M12 turning connector
- Easy alignment through visible red light

**Dimensioned drawing**

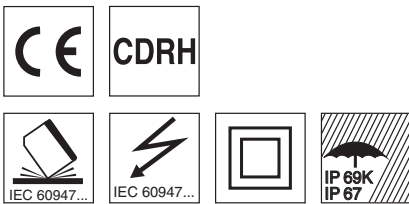


- A** Receiver
- B** Transmitter
- C** Optical axis
- D** 90° turning connector
- E** LED yellow, green
- F** Operational control (rotary switch)
- G** Reference edge for the measurement (cover glass)

**Electrical connection**



We reserve the right to make changes • DS\_ODSL8\_66\_500\_en\_50103923\_02.fm



**Accessories:**

- (available separately)
- Mounting systems
  - Cable with M12 connector (K-D ...)
  - Control guard

## Specifications

### Optical data

Measurement range <sup>1)</sup>	20 ... 500mm
Resolution <sup>2)</sup>	0.1 ... 0.5mm
Hysteresis <sup>2)</sup>	0.6 ... 32mm
Light source	laser
Wavelength	650nm (visible red light)
Max. output power	<1.2 mW
Pulse duration	4ms
Light spot	2x6mm <sup>2</sup> at 500mm
Laser warning notice	see remarks

### Error limits (relative to measurement distance)

Absolute measurement accuracy <sup>1)</sup>	± 2% up to 200mm / ± 4% 200 ... 500mm
Repeatability <sup>3)</sup>	± 1% up to 200mm / ± 3% 200 ... 500mm
B/W detection thresh. (6 ... 90% rem.)	≤ 1.5%
Temperature drift	≤ 0.2%/°C

### Timing

Measurement time	2 ... 7ms
Response time	≤ 20ms
Delay before start-up	≤ 300ms

### Electrical data

Operating voltage $U_B$	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of $U_B$
Open-circuit current	≤ 50mA
Switching output/function <sup>4)</sup>	2 push-pull switching outputs pin 2: Q2, PNP light switching, NPN dark switching pin 4: Q1, PNP light switching, NPN dark switching ≥ ( $U_B - 2 V$ ) / ≤ 2V

Signal voltage high/low

### Indicators

Green LED	continuous light	ready
	flashing (no teach)	fault, teach values were not applied
	off	no voltage
Yellow LED	continuous light	object within teach-in measurement distance (output Q1 <sup>5)</sup> )
	flashing (no teach)	teach values were not applied
	off	object outside teach-in measurement distance (output Q1 <sup>4)</sup> )

### Mechanical data

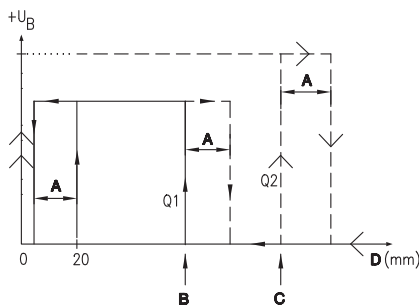
Housing	metal
Optics cover	glass
Weight	70g
Connection type	M12 connector, 5-pin, turning

### Environmental data

Ambient temp. (operation/storage)	-40°C ... +50°C / -40°C ... +70°C
Protective circuit <sup>6)</sup>	2, 3
VDE safety class <sup>7)</sup>	II, all-insulated
Protection class <sup>8)</sup>	IP 67, IP 69K <sup>9)</sup>
Laser class	2 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

- 1) Luminosity coefficient 6% ... 90%, at 20°C, measurement object ≥ 50x50mm<sup>2</sup>
- 2) Minimum and maximum value depend on measurement distance
- 3) Same object, identical environmental conditions, measurement object ≥ 50x50mm<sup>2</sup>
- 4) The push-pull switching outputs must not be connected in parallel
- 5) No display for output Q2
- 6) 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 7) Rating voltage 250VAC
- 8) In stop position of the turning connector (turning connector locked)
- 9) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test

### Characteristic curve of switching outputs:



- A Hysteresis
- B Switching point Q1 (teach point)
- C Switching point Q2 (teach point)
- D Measurement distance

## Order guide

	Designation	Part no.
With M12 connector	ODSL 8/66-500-S12	50101880

## Tables

## Diagrams

## Remarks

### Operate in accordance with intended use!

- ☞ This product is not a safety sensor and is not intended as personnel protection.
- ☞ The product may only be put into operation by competent persons.
- ☞ Only use the product in accordance with the intended use.

- Measurement time depends on the reflectivity of the measurement object and on the measurement mode.

**Laser safety notices – Laser class 2**



**Never look directly into the beam!**

The device fulfills the EN 60825-1:2008-05 (IEC 60825-1:2007) safety regulations for a product in **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24th, 2007.

- ↳ Never look directly into the laser beam or in the direction of reflecting laser beams!  
If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- ↳ Do not point the laser beam of the device at persons!
- ↳ Intercept the laser beam with an opaque, non-reflective object if the laser beam is accidentally directed towards a person.
- ↳ When mounting and aligning the device, avoid reflections of the laser beam off reflective surfaces!
- ↳ **CAUTION!** Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous light exposure.  
The use of optical instruments or devices (e.g., magnifying glasses, binoculars) with the product will increase eye hazard.
- ↳ Adhere to the applicable legal and local regulations regarding protection from laser beams acc. to EN 60825 (IEC 60825) in its latest version.
- ↳ The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

**NOTICE**

**Affix laser information and warning signs!**

Laser information and warning signs are affixed to the device (see ①). In addition, self-adhesive laser information and warning signs (stick-on labels) are supplied in several languages (see ②).

- ↳ Affix the laser information sheet with the language appropriate for the place of use to the device.  
When using the device in the US, use the stick-on label with the "Complies with 21 CFR 1040.10" notice.
- ↳ Affix the laser information and warning signs near the device if no signs are attached to the device (e.g. because the device is too small) or if the attached laser information and warning signs are concealed due to the installation position.  
Affix the laser information and warning signs so that they are legible without exposing the reader to the laser radiation of the device or other optical radiation.

①

**A** Laser exit opening  
**B** Laser warning sign

②

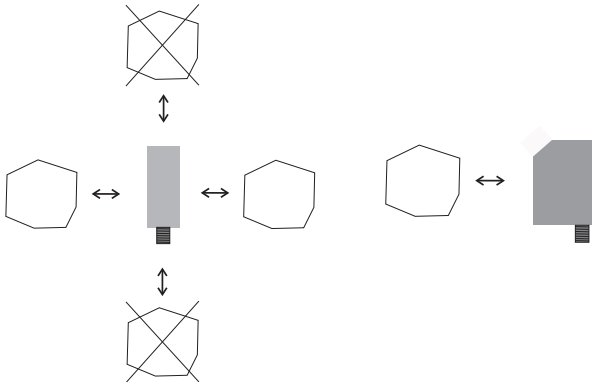
**50101928-02**

<p style="text-align: center; margin: 0;"><b>LASERSTRAHLUNG</b> NICHT IN DEN STRAHL BLICKEN</p> <p style="font-size: 8px; margin: 0;">Max. Leistung (peak): 1,2 mW Impulsdauer: 4 ms Wellenlänge: 650 nm</p> <p style="text-align: center; margin: 0;"><b>LASER KLASSE 2</b> DIN EN 60825-1:2008-05</p>	<p style="text-align: center; margin: 0;"><b>RADIAZIONE LASER</b> NON FISSARE IL FASCIO</p> <p style="font-size: 8px; margin: 0;">Potenza max. (peak): 1,2 mW Durata dell'impulso: 4 ms Lunghezza d'onda: 650 nm</p> <p style="text-align: center; margin: 0;"><b>APPARECCHIO LASER DI CLASSE 2</b> EN 60825-1:2007</p>
<p style="text-align: center; margin: 0;"><b>LASER RADIATION</b> DO NOT STARE INTO BEAM</p> <p style="font-size: 8px; margin: 0;">Maximum Output (peak): 1,2 mW Pulse duration: 4 ms Wavelength: 650 nm</p> <p style="text-align: center; margin: 0;"><b>CLASS 2 LASER PRODUCT</b> EN 60825-1:2007</p>	<p style="text-align: center; margin: 0;"><b>RAYONNEMENT LASER</b> NE PAS REGARDER DANS LE FAISCEAU</p> <p style="font-size: 8px; margin: 0;">Puissance max. (crête): 1,2 mW Durée d'impulsion: 4 ms Longueur d'onde: 650 nm</p> <p style="text-align: center; margin: 0;"><b>APPAREIL A LASER DE CLASSE 2</b> EN 60825-1:2007</p>
<p style="font-size: 8px; margin: 0;">↑</p> <p style="font-size: 8px; margin: 0;">AVOID EXPOSURE – LASER RADIATION IS EMITTED FROM THIS APERTURE</p>	<p style="font-size: 8px; margin: 0;">↑</p> <p style="font-size: 8px; margin: 0;">EXPOSITION DANGEREUSE – UN RAYONNEMENT LASER EST EMIS PAR CETTE OUVERTURE</p>
<p style="text-align: center; margin: 0;"><b>RADIAÇÃO LASER</b> NÃO MIRAR FIXAMENTE AL HAZ</p> <p style="font-size: 8px; margin: 0;">Potência máx. (peak): 1,2 mW Duração del impulso: 4 ms Longitud de onda: 650 nm</p> <p style="text-align: center; margin: 0;"><b>PRODUCTO LASER DE CLASSE 2</b> EN 60825-1:2007</p>	<p style="text-align: center; margin: 0;"><b>RADIAÇÃO LASER</b> NÃO OLHAR FIXAMENTE O FEIXE</p> <p style="font-size: 8px; margin: 0;">Potência máx. (peak): 1,2 mW Período de pulso: 4 ms Comprimento de onda: 650 nm</p> <p style="text-align: center; margin: 0;"><b>EQUIPAMENTO LASER CLASSE 2</b> EN 60825-1:2007</p>
<p style="text-align: center; margin: 0;"><b>LASER RADIATION</b> DO NOT STARE INTO BEAM</p> <p style="font-size: 8px; margin: 0;">Maximum Output (peak): 1,2 mW Pulse duration: 4 ms Wavelength: 650 nm</p> <p style="text-align: center; margin: 0;"><b>CLASS 2 LASER PRODUCT</b> EN 60825-1:2007 Complies with 21 CFR 1040.10</p>	<p style="text-align: center; margin: 0;"><b>激光辐射</b> 勿直视光束</p> <p style="font-size: 8px; margin: 0;">最大输出 (峰值): 1,2 mW 脉冲持续时间: 4 ms 波长: 650 nm</p> <p style="text-align: center; margin: 0;"><b>2 类激光产品</b> GB7247.1-2012</p>

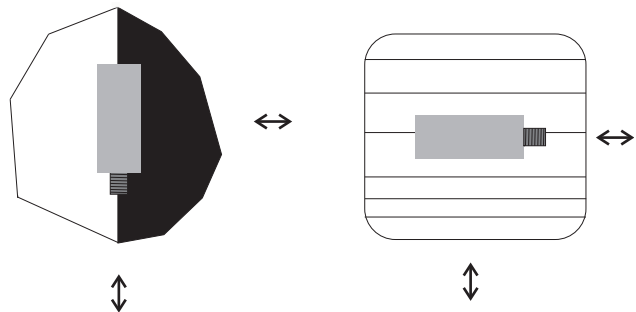
**Installation instructions**

Mounting systems are available which have to be ordered separately at Leuze electronic. Apart from this, the drilled-through holes and threaded holes are suitable for the individual mounting of the ODSL 8, depending on the area in which it is used. When mounting, avoid application of excessive force on the housing.

**Preferred movement of the objects**

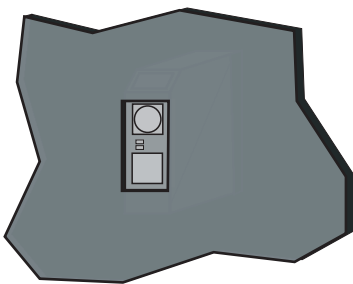


**Preferred mounting in connection to objects with structured surface**



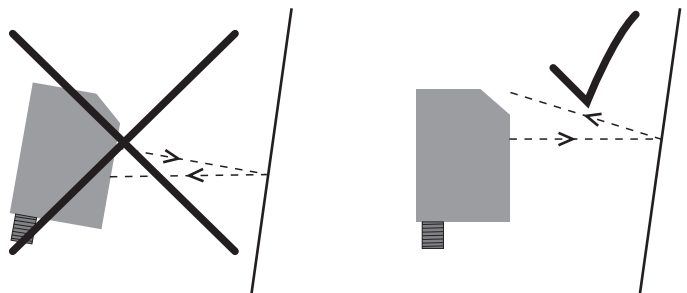
**View through a chase**

If the ODSL 8 has to be installed behind a cover, the chase has to have at least the size of the optical glass cover. Otherwise, a correct measurement is not possible or can not be guaranteed.



**Alignment to measurement objects with reflecting surfaces**

If the measurement object to be detected has a reflecting surface, a measurement may not be possible depending on the angle in which the light is reflected by the measurement object's surface. Adjust the angle between the sensor and the measurement object such that the sensor can reliably detect the measurement object.



**T<sub>1</sub> teach-in with rotary switch**

1. Position measurement object at the desired measurement distance (①).

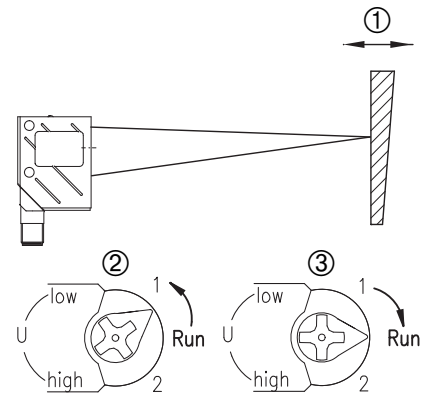
2. Turn rotary switch into the desired position (Low, High, 1, 2) (②).

Wait for optical confirmation by flashing of the LEDs.

Teach function	Rotary switch position	Green LED	Yellow LED
Switching output Q1	1	Flash synchronously	
Switching output Q2	2	Flash alternatingly	

3. For teaching, position rotary switch onto "Run" (③).

Wait for optical confirmation by end of flashing signal (green LED on).



**T<sub>1</sub> teach-in via input**

1. Position measurement object at the desired measurement distance.

2. The respective teach function is activated by applying +U<sub>B</sub> to teach input (pin 5).

The teach event is signaled by flashing of the LEDs.

Teach function	Duration of the teach signal	Green LED	Yellow LED
Switching output Q1	2 ... 4s	Flash synchronously	
Switching output Q2	4 ... 6s	Flash alternatingly	

3. To finish the teach event, disconnect the teach input from +U<sub>B</sub> or switch it to 0V after the desired time.

4. A successful teach event is signaled by the end of the flashing (green LED on)

**Error messages**

Continuously flashing LEDs signal an unsuccessful teach event (sensor not ready):

Green LED	Yellow LED	Error
Flash synchronously		Teach switching output Q1 unsuccessful
Flash alternatingly		Teach switching output Q1 unsuccessful

Remedy:

- Repeat teach event or
- Disconnect sensor from voltage to restore the old values.

