

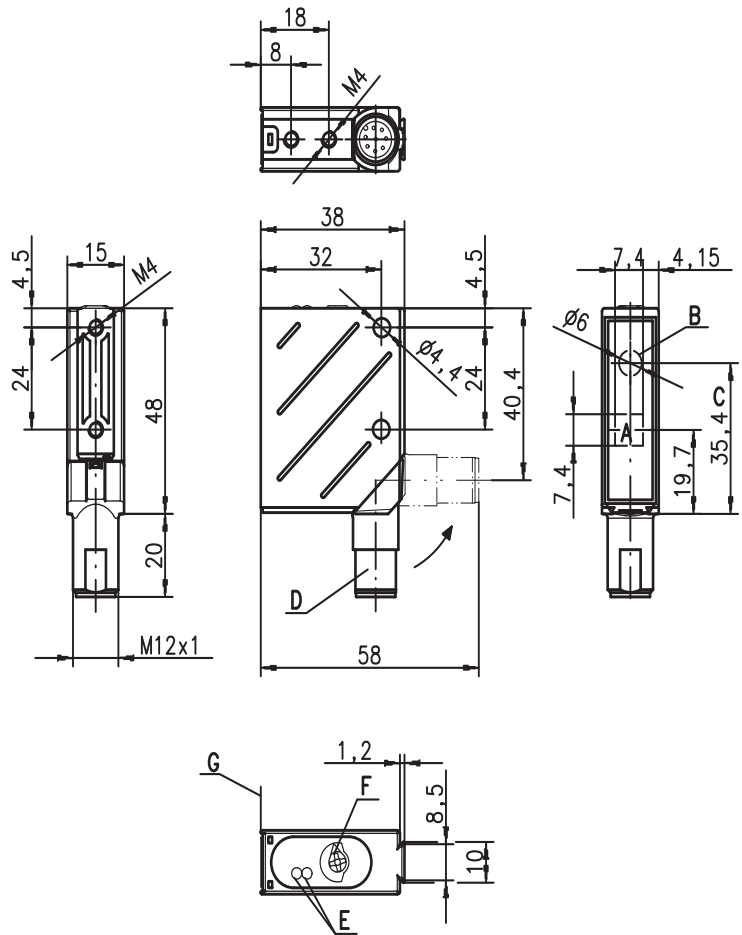
ODSL 8

Optical laser distance sensors

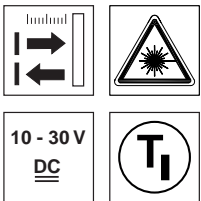
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Dimensioned drawing



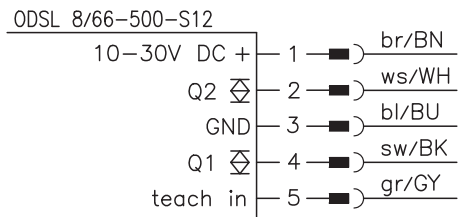
- A Receiver
- B Transmitter
- C Optical axis
- D 90° turning connector
- E LED yellow, green
- F Operational control (rotary switch)
- G Reference edge for the measurement (cover glass)



20 ... 500mm

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

Electrical connection

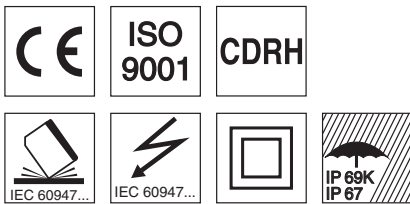


Accessories:

(available separately)

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

We reserve the right to make changes • DS_ODSL8_66_500_en.fm



Specifications

Optical data

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

Error limits (relative to measurement distance)

| | |
|---|---------------------------------------|
| Absolute measurement accuracy ¹⁾ | ± 2% up to 200mm / ± 4% 200 ... 500mm |
| Repeatability ³⁾ | ± 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 ⁴⁾ | 2 push-pull switching outputs pin 2: Q2, PNP light switching, NPN dark switching pin 4: Q1, PNP light switching, NPN dark switching |
| Signal voltage high/low | ≥ (U _B -2 V)/≤ 2V |

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 ⁵⁾) |
| | flashing (no teach) | teach values were not applied |
| | off | object outside teach-in measurement distance (output Q1 ⁴⁾) |

Mechanical data

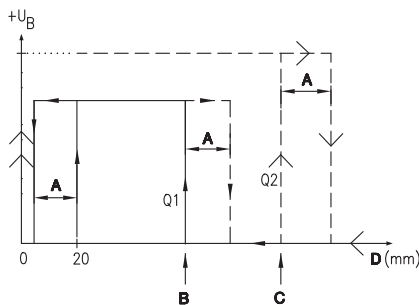
| | |
|-----------------|-------------------------------|
| Housing | metal |
| Optics cover | glass |
| Weight | 70g |
| Connection type | M12 connector, 5-pin, turning |

Environmental data

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

- 1) Luminosity coefficient 6% ... 90%, at 20°C, measurement object ≥ 50x50mm²
- 2) Minimum and maximum value depend on measurement distance
- 3) Same object, identical environmental conditions, measurement object ≥ 50x50mm²
- 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 250 VAC
- 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

- Measurement time depends on the reflectivity of the measurement object and on the measurement mode.
- **Approved purpose:** The ODSL 8 laser distance sensors are optical electronic sensors for the optical, contactless measurement of distance to objects.

ODSL 8

Optical laser distance sensors

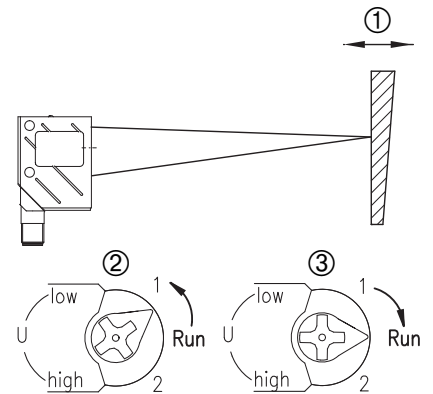
T₁ teach-in with rotary switch

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).



T₁ teach-in via input

1. Position measurement object at the desired measurement distance.
2. The respective teach function is activated by applying +U_B 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_B 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):

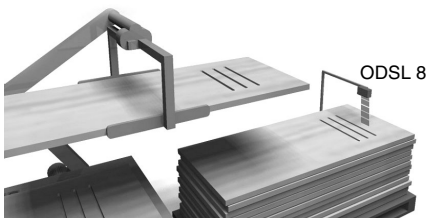
| Green LED | Yellow LED | Error |
|---------------------|------------|--|
| Flash synchronously | | Teach switching output Q1 unsuccessful |
| Flash alternatingly | | Teach switching output Q1 unsuccessful |

Remedy:

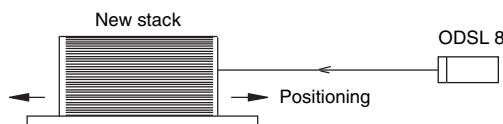
- Repeat teach event or
- Disconnect sensor from voltage to restore the old values.

Typical areas of application of optical distance sensors

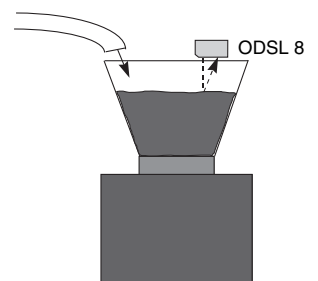
Continuous distance measurement



Positioning tasks



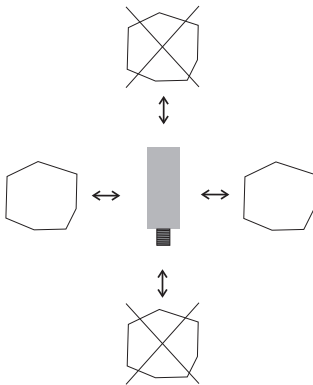
Filling level control



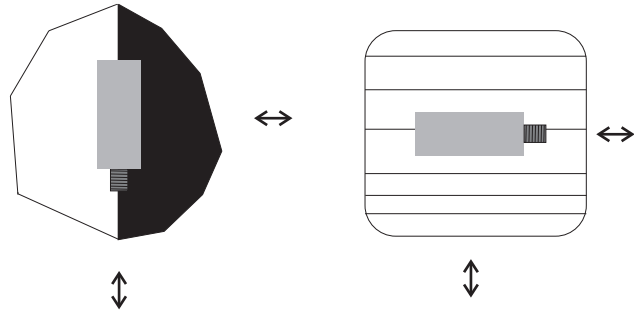
Installation instructions

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

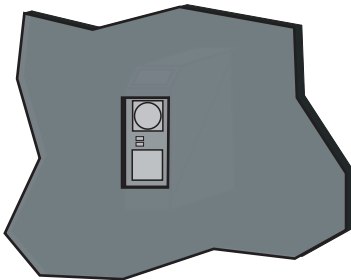


Preferred mounting in connection to objects with structured surface



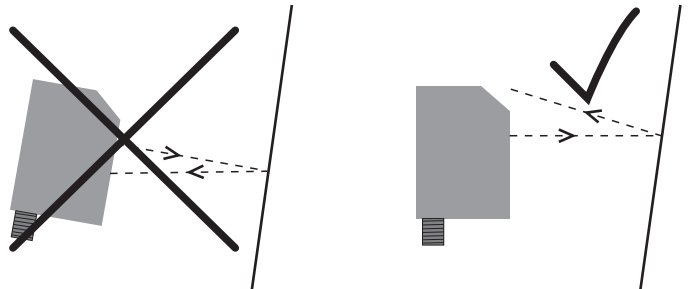
View through a chase

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.



Working safely



Attention Laser Radiation!

The optical distance sensors ODSL 8 operate with a red light laser of class 2 acc. to EN 60825-1. If you look into the beam path over a longer time period, the retina of your eye may be damaged!

Never look directly into the beam path! Do not point the laser beam of the ODSL 8 at persons!

When mounting and aligning the ODSL 8 take care to avoid reflections of the laser beam off reflective surfaces!

The use of operating and adjusting devices other than those specified in the technical description, carrying out of differing procedures, or improper use of the optical laser distance sensor may lead to dangerous exposure to radiation!

The use of optical instruments or devices in combination with the device increases the danger of eye damage!

Adhere to the applicable legal and local regulations regarding protection from laser beams acc. to EN 60825-1 in its latest version.

The ODSL 8 uses a laser diode with low power in the visible red light range with an emitted wavelength of about 630nm.

The glass optics cover is the only opening through which the laser radiation can escape from the device. The housing of the ODSL 8 is sealed and has no parts that need to be adjusted or maintained by the user. The device must not be tampered with and must not be changed in any way! The destruction of the seal voids the warranty!



Notice!

It is important to attach the stick-on labels delivered with the device (notice signs)! If the signs could be covered due to the installation location of the ODSL 8, attach them close to the ODSL 8 so that it is not possible to look into the laser beam when reading the notices!