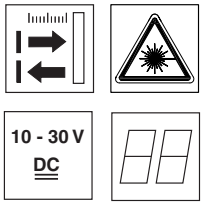
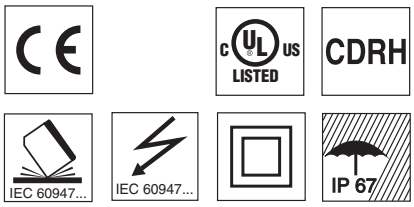
## ODSL 30 — Optical laser distance sensors

Part No. 501 08370




**0.2 … 30 m**

- Reflection-independent distance information
- High accuracy through referencing
- RS 485 interface
- 2 teachable switching outputs
- LC display and key pad for configuration
- Measurement value is indicated in mm on LC display
- M12 connector
- Mounting device included
- Connection option for a coupling module, e.g. for PROFIBUS

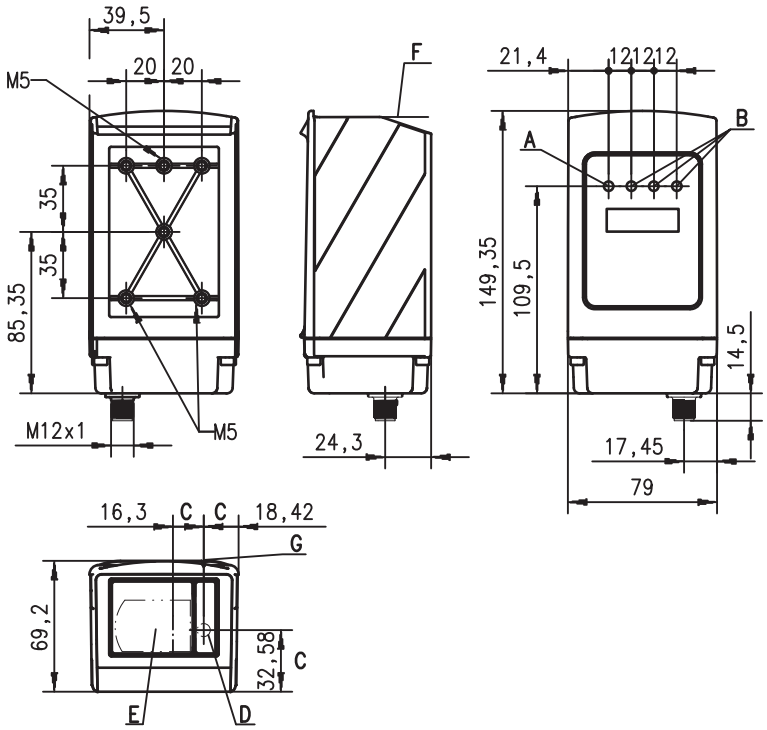



## Accessories:

**(available separately)**

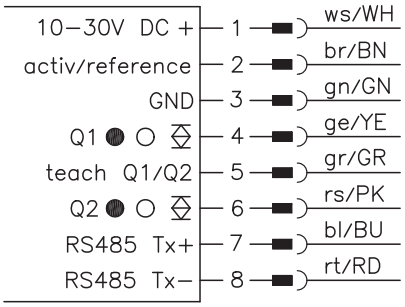
- Ready-made cable K-D M12A-8P-2m-PUR
- Co-operative Target CTS 100x100 (reflectivity 50 … 90%)

## Dimensioned drawing




**A** 1 green indicator diode / ready
**B** 3 yellow indicator diodes / switching outputs Q1, Q2, Q3
**C** Optical axes
**D** Transmitter
**E** Receiver
**F** Reference edge for the measurement (distance zero point)
**G** Sight for coarse alignment

## Electrical connection



# Specifications

**Optical data**

| | |
|---|---|
| Measurement range [1] | 0.2 … 30m [1b] |
| Resolution [2] | 0.1mm/1mm (factory setting) |
| Light source | laser |
| Wavelength | 650nm (visible red light) |
| Light spot | divergent, ∅ 6mm at 10m |
| Laser warning notice | see remarks |

**Error limits [3]**

| | |
|---|---|
| Absolute measurement accuracy [1] | ± 5mm (6 … 90% diffuse reflection)<br>± 2mm (90% diffuse reflection) after referencing |
| Repeatability [4] | ± 2mm (6 … 90% diffuse reflection) |
| Temperature drift | typ. 0.5mm/°C (without referencing) |

**Timing**

| | |
|---|---|
| Measurement time [5] | 30 … 100ms (factory setting: 100ms) |
| Delay before start-up | ≤ 1s |

**Electrical data**

| | |
|---|---|
| Operating voltage $U_B$ | 10 … 30VDC (incl. residual ripple) |
| Residual ripple | ≤ 15% of $U_B$ |
| Power consumption | ≤4W |
| Switching outputs | PNP transistor, HIGH active (default),<br>NPN transistor or push-pull through configuration |
| Signal voltage high/low | ≥ ($U_B$-2 V)/≤ 2V |
| Serial interface | RS 485, 9600Baud, no termination |

**Indicators**

| | | |
|---|---|---|
| Green LED | continuous light | ready |
| | off | no voltage |
| Yellow LED | continuous light | object inside teach-in measurement distance |
| | off | object outside teach-in measurement distance |

**Mechanical data**

| | |
|---|---|
| Housing | metal |
| Optics cover | glass |
| Weight | 650g |
| Connection type | M12 connector, 8-pin |

**Environmental data**

| | |
|---|---|
| Ambient temp. (operation/storage) | -10°C … +45°C / -40°C … +70°C |
| Protective circuit [6] | 2, 3 |
| VDE safety class [7] | II, all-insulated |
| Protection class | IP 67 |
| Laser class | 2 (acc. to EN 60825-1) |
| Standards applied | IEC 60947-5-2 |

1) Luminosity coefficient 6% … 90%, temperature range 0°C … +45°C
1b)ODSL 30/D… up to 65m, luminosity coefficient 50% … 90%
2) Display and output resolution 0.1mm configurable
3) In the temperature range of 0°C … +45°C, measurement object ≥ 50x50mm²; at temperatures < 0°C different error limits apply
4) Same object, identical environmental conditions
5) Configurable, depends on the reflectivity of the object and on the max. detection range
6) 2=polarity reversal protection, 3=short-circuit protection for all outputs
7) Rating voltage 250VAC

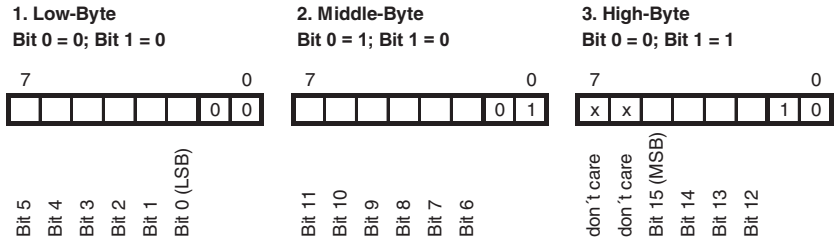
**Approved purpose**:

The ODSL 30 distance sensors are optical electronic sensors for the optical, contactless measurement of distance to objects.

**Example 1: ASCII transmission of the measurement value**

Transmission format: **MMMMM<CR>**
**MMMMM** = 5-digit measurement value
**<CR>** = ASCII character "Carriage Return" (x0D)

**Example 2: measurement value = 16 Bit**




# Order guide

| | Designation | Part No. |
|---|---|---|
| **With M12 connector** | ODSL 30/D 485-30M-S12 | 500 41204 |

# Remarks

- **Measurement time:** configurable, depends on the reflectivity of the object and on the measurement mode.
- **Teaching procedure (factory setting):** Position measurement object at the desired measurement distance. Apply +$U_B$ to the teach input. Take teach input back to GND, switching output has now been taught. First edge on line **teach Q1/ Q2** teaches output Q1, second edge teaches Q2. During the teaching of Q1, the yellow LED Q1 will flash. During the teaching of Q2, the green LED and the yellow LED Q2 will flash.
- **Activation/referencing input:** Referencing is carried out by applying the voltage (for a duration of about 300ms). If this process is activated before the measurement, the highest possible accuracy is achieved.
- Possible protocols for the serial interface, selectable through configuration.
  **1.** Distance output in ASCII

  **2.** Measurement value=14/16/20 bit (measurement distance up to 15,000mm at a resolution of 1mm / 30,000mm at a resolution of 1mm / 30,000mm at a resolution of 0.1mm)

  **3.** Remote control, ASCII transfer of the measurement value on request (compatible to Bitbus): 4 bytes (measurement distance up to 9900mm), 5/6 bytes (measurement distance up to 30000mm).
- The enclosed laser warning signs must be attached to the sensor or in its immediate vicinity such that they are well visible.