# Technical data sheet
# Optical data transmission
Part no.: 50134432
DDLS 548i 200.4 L

Figure can vary

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# Technical data

## Basic data

| | |
|---|---|
| **Series** | DDLS 500 |

## Special version

| | |
|---|---|
| **Special version** | Integrated laser alignment aid |
| | Not influenced by reflective surfaces |
| | Operation of parallel light axes |
| | Remote maintenance via web server |

## Optical data

| | |
|---|---|
| **Working range** | 100 ... 200,000 mm |
| **Light source** | Laser |
| **Usable opening angle transmitter** | 1 ° |

## Electrical data

### Performance data

| | |
|---|---|
| **Supply voltage $U_B$** | 18 ... 30 V, DC |

## Interface

| | |
|---|---|
| **Type** | PROFINET, PROFIsafe over PROFINET |

### Profinet

| | |
|---|---|
| **Transmission speed** | 100 Mbit/s |

## Connection

| | |
|---|---|
| **Number of connections** | 2 Piece(s) |

### Connection 1

| | |
|---|---|
| **Type of connection** | Connector |
| **Designation on device** | POWER |
| **Thread size** | M12 |
| **Type** | Male |
| **No. of pins** | 5 -pin |
| **Encoding** | A-coded |

### Connection 2

| | |
|---|---|
| **Type of connection** | Connector |
| **Designation on device** | BUS |
| **Thread size** | M12 |
| **Type** | Female |
| **No. of pins** | 4 -pin |
| **Encoding** | D-coded |

## Mechanical data

| | |
|---|---|
| **Dimension (W x H x L)** | 100 mm x 156 mm x 99.5 mm |
| **Housing material** | Metal |
| **Net weight** | 1,185 g |

## Operation and display

| | |
|---|---|
| **Type of display** | Bar graph |
| | LED |
| **Type of configuration** | GSDML file |
| | Software |
| | Via web browser |

## Environmental data

| | |
|---|---|
| **Ambient temperature, operation** | -5 ... 50 °C |
| **Ambient temperature, storage** | -35 ... 70 °C |

## Certifications

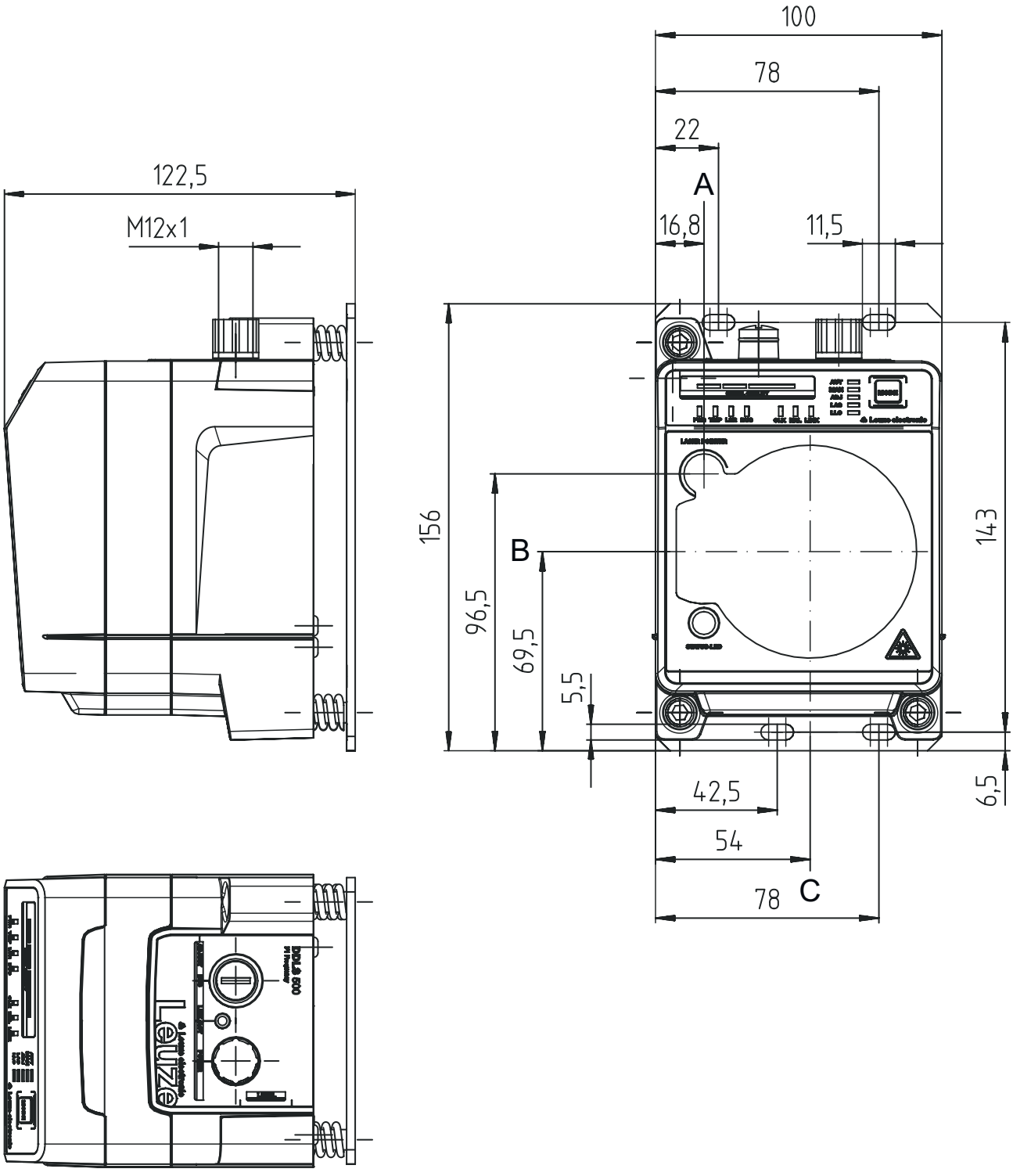
| | |
|---|---|
| **Degree of protection** | IP 65 |
| **Test procedure for EMC in accordance with standard** | EN 1000-6-4 |
| | EN 61000-6-2 |
| **Test procedure for noise in accordance with standard** | EN 60068-2-64 |
| **Test procedure for oscillation in accordance with standard** | EN 60068-2-6 |
| **Test procedure for shock in accordance with standard** | EN 60068-2-27 |

## Classification

| | |
|---|---|
| **Customs tariff number** | 85365019 |
| **eCl@ss 5.1.4** | 19039001 |
| **eCl@ss 8.0** | 19179090 |
| **eCl@ss 9.0** | 19179090 |
| **eCl@ss 10.0** | 19179090 |
| **eCl@ss 11.0** | 19179090 |
| **ETIM 5.0** | EC000515 |
| **ETIM 6.0** | EC000515 |
| **ETIM 7.0** | EC000310 |

# Dimensioned drawings

All dimensions in millimeters

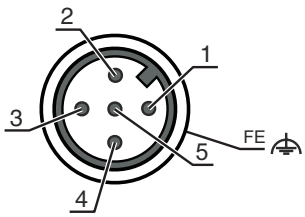



A Center axis of transmitter and alignment laser
B Center axis of transmitter and receiver
C Center axis of receiver

# Electrical connection

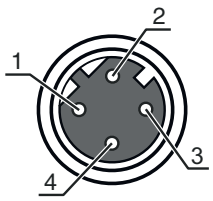
| Connection 1 | POWER |
|---|---|
| **Type of connection** | Connector |
| **Thread size** | M12 |
| **Type** | Male |
| **Material** | Metal |
| **No. of pins** | 5 -pin |
| **Encoding** | A-coded |

| Pin | Pin assignment |
|---|---|
| **1** | VIN |
| **2** | IO1 |
| **3** | GND |
| **4** | IO2 |
| **5** | FE/SHIELD |




| Connection 2 | BUS |
|---|---|
| **Type of connection** | Connector |
| **Thread size** | M12 |
| **Type** | Female |
| **Material** | Metal |
| **No. of pins** | 4 -pin |
| **Encoding** | D-coded |

| Pin | Pin assignment |
|---|---|
| **1** | TD+ |
| **2** | RD+ |
| **3** | TD- |
| **4** | RD- |




# Operation and display

| LED | | Display | Meaning |
|---|---|---|---|
| **1** | **AUT** | Off | Operating mode not active |
| | | Green, continuous light | Operating mode 'Automatic' |
| **2** | **MAN** | Off | Operating mode not active |
| | | Green, continuous light | Operating mode 'Manual' |
| **3** | **ADJ** | Off | Operating mode not active |
| | | Green, continuous light | Operating mode 'Adjust' |
| **4** | **LAS** | Off | Operating mode not active |
| | | Green, continuous light | Operating mode 'Alignment-laser mounting support' |
| **5** | **LLC** | Off | Operating mode not active |
| | | Green, continuous light | LLC without interruption |
| | | Red, continuous light | LLC interrupted at least once |
| **6** | **PWR** | Off | No supply voltage |
| | | Green, flashing | Device ok, initialization phase |
| | | Green, continuous light | Data transmission active |
| | | Red, flashing | Data transmission interrupted |
| | | Red, continuous light | Device error |
| **7** | **TMP** | Off | Operating temperature OK |
| | | Orange, continuous light | Operating temperature critical |
| | | Red, continuous light | Operating temperature exceeded or not met |
| **8** | **LSR** | Off | With function reserve |
| | | Orange, continuous light | Device OK, warning set |
| **9** | **BUS** | Off | No supply voltage |

# Operation and display

| LED | | Display | Meaning |
|---|---|---|---|
| 9 | BUS | Green, flashing | Device waiting for communication to be re-established, no data exchange |
| | | Green, continuous light | Communication with IO-Controller established, data exchange active |
| | | Orange, flashing | PROFINET wave function activated, the PWR and BUS LEDs flash in sync in orange |
| | | Red, flashing | Parameterization or configuration failed, no data exchange |
| | | Red, continuous light | Bus error, no communication established to the IO controller |
| 10 | OLK | Off | Fault |
| | | Green, continuous light | No data transmission |
| | | Orange, continuous light | Data transmission active |
| 11 | ERL | Off | Link OK |
| | | Orange, continuous light | Missing link (Ethernet cable connection) on the second device |
| | | Red, continuous light | No cable-connected link to the connected device |
| 12 | LINK | Off | No cable-connected link to the connected device |
| | | Green, continuous light | Link OK |
| | | Orange, continuous light | Data transmission active |
| 13 | SIGNAL QUALITY | 2 red, 2 orange and 4 green | Received signal level |

# Suitable transmitters

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | 50134431 | DDLS 548i 200.3 L | Optical data transmission | Special version: Integrated laser alignment aid, Not influenced by reflective surfaces, Operation of parallel light axes, Remote maintenance via web server<br>Working range: 100 ... 200,000 mm<br>Interface: PROFINET<br>Connection: Connector, M12 |

# Part number code

Part designation: **DDLS 5XXX YYY.Z A B CC**

| | |
|---|---|
| **DDLS** | Optical transceiver for digital data transmission |
| **5XXX** | **Series**<br>508i: without integrated web server for remote diagnostics<br>508i: with integrated web server for remote diagnostics<br>538: without integrated web server for remote diagnostics (EtherCAT)<br>548i: with integrated web server for remote diagnostics |
| **YYY** | Range for data transmission in m |
| **Z** | **Frequency of the transmitter**<br>0: Frequency F0<br>1: Frequency F1<br>2: Frequency F2<br>3: Frequency F3<br>4: Frequency F4 |
| **A** | **Option**<br>L: integrated laser alignment aid (for transmitter/receiver)<br>n/a: standard |

# Part number code

| | |
|---|---|
| **B** | **Special equipment**<br>H: with heating<br>n/a: no special equipment |
| **CC** | **Special equipment**<br>W: transmission optics with larger opening angle (on request)<br>n/a: no special equipment |

**Note**

- A list with all available device types can be found on the Leuze website at www.leuze.com.

# Notes

**Observe 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 its intended use.

**For UL applications:**

- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).

**WARNING! INVISIBLE LASER RADIATION – CLASS 1M LASER PRODUCT**

**Do not expose users of telescopic optics!**
**The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of laser class 1M as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.**

- **Do not expose users of telescopic optics!**
  **The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of laser class 1M as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.**
- Looking into the beam path for extended periods using telescope optics may damage the eye's retina. Never look using telescope optics into the laser beam or in the direction of reflecting beams.
- CAUTION! The use of operating and adjusting devices other than those specified here or the carrying out of differing procedures may lead to dangerous exposure to radiation!
  The use of optical instruments or devices (e.g., magnifying glasses, binoculars) in combination with the device increases the danger of eye damage.
- Observe the applicable statutory and local laser protection regulations.
- 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.

# Notes

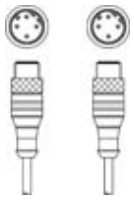
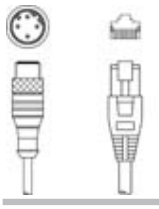
| | |
|---|---|
| | **WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT (alignment laser)** |
| | The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1 as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.**<br>The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1 as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.**<br>Observe the applicable statutory and local laser protection regulations.<br>The device must not be tampered with and must not be changed in any way.<br>There are no user-serviceable parts inside the device.<br>Repairs must only be performed by Leuze electronic GmbH + Co. KG. |

# Accessories

## Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |
| | 50135074 | KS ET-M12-4A-P7-050 | Connection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

## Connection technology - Interconnection cables

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
|  | 50137078 | KSS ET-M12-4A-M12-4A-P7-050 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Shielded: Yes<br>Cable length: 1,000 mm<br>Sheathing material: PUR |
|  | 50135081 | KSS ET-M12-4A-RJ45-A-P7-050 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

# Accessories

## Connection technology - Connectors

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | 50020501 | KD 095-5A | Connector | Connection: Connector with screw terminals, M12, Axial, Female, A-coded, 5 -pin |
| | 50112155 | S-M12A-ET | Connector | Suitable for interface: Ethernet<br>Connection: Connector, M12, Axial, Male, D-coded, 4 -pin |

## Services

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
| | S981001 | CS10-S-110 | Start-up support | Details: Performed at location of customer's choosing, duration: max. 10 hours.<br>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment. |
| | S981005 | CS10-T-110 | Product training | Details: Location and content to be agreed upon, duration: max. 10 hours.<br>Conditions: Price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure. |

**Note**

A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.