Technical data sheet Optical data transmission

Part no.: 50141106 DDLS 538 40.3 L H S2





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We reserve the right to make technical changes eng • 2023-02-07

Technical data

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| Basic data | | |
|---|--|--|
| Series | DDLS 500 | |
| Special version | | |
| Special version | Heating | |
| | Integrated laser alignment aid | |
| | Not influenced by reflective surfaces | |
| | Operation of parallel light axes | |
| Optical data | | |
| Working range | 100 40,000 mm | |
| Light source | Laser | |
| Transmission frequency | F3 | |
| Usable opening angle transmitter | 1 ° | |
| Electrical data | | |
| Deufermen et de te | | |
| Performance data Supply voltage U _B | 18 30 V, DC | |
| Supply voltage o _B | 10 00 V, DO | |
| Inputs | | |
| Number of digital switching inputs | 1 Piece(s) | |
| | | |
| Outputs | | |
| Number of digital switching outputs | 1 Piece(s) | |
| Interface | | |
| Туре | EtherCAT link down 5 ms, EtherCAT Safety-over-EtherCAT (FSoE) | |
| Connection | | |
| Number of connections | 2 Piece(s) | |
| O survey the state | | |
| Connection 1 | Connector | |
| Type of connection Designation on device | POWER | |
| Thread size | M12 | |
| Type | Male | |
| No. of pins | 5 -pin | |
| Encoding | A-coded | |
| Encounty | | |
| Connection 2 | | |
| Type of connection | Connector | |
| Designation on device | PLIC | |

| Type of connection | Connector |
|-----------------------|-----------|
| Designation on device | BUS |
| Thread size | M12 |
| Туре | 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 | 1,255 g | |
| Operation and display | | |
| Type of display | Bar graph | |
| | LED | |
| Environmental data | | |
| Ambient temperature, operation | -35 50 °C | |
| Ambient temperature, storage | -35 70 °C | |
| Certifications | | |
| Degree of protection | IP 65 | |
| Certifications | c UL US | |
| Test procedure for EMC in accordance | EN 1000-6-4 | |
| with standard | 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 | |
| ECLASS 5.1.4 | 19039001 | |
| ECLASS 8.0 | 19179090 | |
| ECLASS 9.0 | 19179090 | |
| ECLASS 10.0 | 19179090 | |
| ECLASS 11.0 | 19179090 | |
| ECLASS 12.0 | 19179090 | |
| ECLASS 13.0 | 19179090 | |
| | | |

EC000515

EC000515

EC000310

EC000310

ETIM 5.0

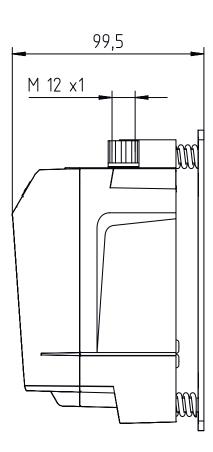
ETIM 6.0

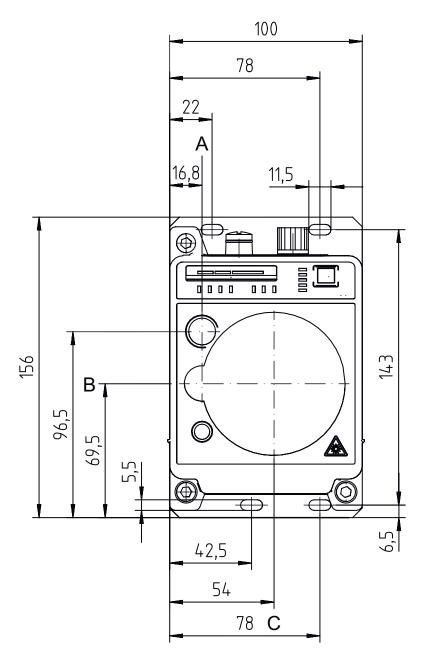
ETIM 7.0

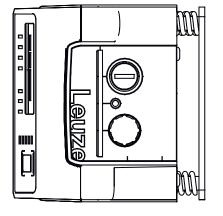
ETIM 8.0

Dimensioned drawings

All dimensions in millimeters







Center axis of transmitter and alignment laser А

В Center axis of transmitter and receiver

С Center axis of receiver

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Electrical connection

| Connection 1 | POWER | |
|--------------------|----------------|--|
| Function | Signal IN | |
| | Signal OUT | |
| | Voltage supply | |
| Type of connection | Connector | |
| Thread size | M12 | |
| Туре | Male | |
| Material | Metal | |
| No. of pins | 5 -pin | |
| Encoding | A-coded | |

Pin **Pin assignment**

| 1 2 | VIN IO1 | Ĉ |
|--------|------------|---|
| 3 | GND | 3 |
| 4 | 102 | |
| 5 | FE/SHIELD | 4 |

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Connection 2

| Connection 2 | BUS |
|--------------------|-----------|
| Function | BUS IN |
| Type of connection | Connector |
| Thread size | M12 |
| Туре | 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 | Orange, continuous light | Operating temperature critical |
| | | | |





Operation and display



| LED | | Display | Meaning | |
|-----|-------------------|---|---|--|
| 7 | ТМР | Red, continuous light | Operating temperature exceeded or not met | |
| 8 | LSR | Off | With function reserve | |
| | | Orange, continuous light | Device OK, warning set | |
| 9 | MAS | Off | Installation on slave side | |
| | | Green, continuous light | Installation on master side | |
| 10 | OLK | Off | Fault | |
| | | Green, continuous light | No data transmission | |
| | | Orange, continuous light | Data transmission active | |
| 11 | ERL | ange, continuous light Data transmission active Link OK | 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 | Operating temperature exceeded or not met With function reserve Device OK, warning set Installation on slave side Installation on master side Fault No data transmission Data transmission active Link OK Missing link (Ethernet cable connection) on the second device No cable-connected link to the connected device | |
| | | 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 |
|--------------|-------------------------|------------------------------|--|
| 50141107 | DDLS 538 40.4 L H S2 | Optical data transmission | Special version: Not influenced by reflective surfaces, Heating, Integrated laser alignment aid, Operation of parallel light axes Working range: 100 40,000 mm Transmission frequency: F4 Connection: Connector, M12 |

Part number code

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

| DDLS | Optical transceiver for digital data transmission |
|------|--|
| 5XXX | Series 508i: without integrated web server for remote diagnostics 508i: with integrated web server for remote diagnostics 538: without integrated web server for remote diagnostics (EtherCAT) 548i: with integrated web server for remote diagnostics |
| YYY | Range for data transmission in m |
| Z | Frequency of the transmitter 0: Frequency F0 1: Frequency F1 2: Frequency F2 3: Frequency F3 4: Frequency F4 |
| Α | Option L: integrated laser alignment aid (for transmitter/receiver) n/a: standard |
| В | Special equipment H: With heating n/a: no special equipment |
| сс | Special equipment S2: Optimized for EtherCAT transmission n/a: no special equipment |



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

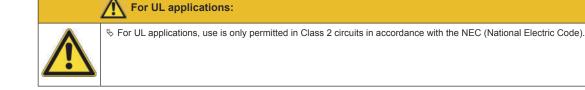
Notes

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Observe intended use!

✤ This product is not a safety sensor and is not intended as personnel protection.

 $\ensuremath{^{\ensuremath{\Downarrow}}}$ The product may only be put into operation by competent persons.



| 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. |
| bo 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. |
| Scheduler Looking into the beam path for extended periods using telescope optics may damage the eye's retina. Never look using telescope optics into the labeam 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 dange 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. |

ATTENTION! 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.

- th 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.

- Repairs must only be performed by Leuze electronic GmbH + Co. KG.

Accessories

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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 Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC |
| Ŵ | 50135074 | KS ET-M12-4A-P7- 050 | Connection cable | Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5.000 mm 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 Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, D-coded, 4 -pin Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |
| | 50135081 | KSS ET-M12-4A- RJ45-A-P7-050 | Interconnection cable | Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |

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 Connection: Connector, M12, Axial, Male, D-coded, 4 -pin |

Accessories

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Services

| | Part no. | Designation | Article | Description |
|---------|----------|-------------|------------------|---|
| y; U | S981001 | CS10-S-110 | Start-up support | Details: Performed at location of customer's choosing, duration: max. 10 hours. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. 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. Conditions: Price not including travel costs and, if applicable, accommodation expenses. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure. |

| | Note |
|---|--|
| 6 | ^t ♦ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page. |