

Technical data sheet

Single light beam safety device transmitter

Part no.: 66502001

MLD500-T1L/A

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For illustration purposes only



Technical data

Basic data

| | |
|--------|---------|
| Series | MLD 500 |
|--------|---------|

Special version

| | |
|-----------------|--------------------------------|
| Special version | Integrated laser alignment aid |
|-----------------|--------------------------------|

Functions

| | |
|-----------|-----------------|
| Functions | Range reduction |
|-----------|-----------------|

Characteristic parameters

| | |
|------|-----------------|
| Type | 4, IEC/EN 61496 |
|------|-----------------|

| | |
|-----|--------------|
| SIL | 3, IEC 61508 |
|-----|--------------|

| | |
|-------|-----------------|
| SILCL | 3, IEC/EN 62061 |
|-------|-----------------|

| | |
|------------------------|------------------------|
| Performance Level (PL) | e, EN ISO 13849-1:2008 |
|------------------------|------------------------|

| | |
|-------------------|---------------------------|
| MTTF _d | 204 years, EN ISO 13849-1 |
|-------------------|---------------------------|

| | |
|-----------------------------|--------------------------|
| Mission time T _M | 20 years, EN ISO 13849-1 |
|-----------------------------|--------------------------|

| | |
|----------|----------------------|
| Category | 4, EN ISO 13849:2008 |
|----------|----------------------|

Protective field data

| | |
|-----------------|--------------|
| Operating range | 0.5 ... 70 m |
|-----------------|--------------|

Optical data

| | |
|--------------|---------------|
| Light source | LED, Infrared |
|--------------|---------------|

| | |
|------------|--------|
| Wavelength | 850 nm |
|------------|--------|

| | |
|--------------------------|------------|
| Transmitted-signal shape | Continuous |
|--------------------------|------------|

| | |
|----------------|---|
| LED risk group | Exempt group (in acc. with EN 62471:2008) |
|----------------|---|

| | |
|---------------------|----------------|
| Opening angle, max. | -2.5 ... 2.5 ° |
|---------------------|----------------|

Electrical data

Performance data

| | |
|-------------------------------|-----------------|
| Supply voltage U _B | 26.5 ... 31.6 V |
|-------------------------------|-----------------|

| | |
|---------------------------------------|-------|
| Current consumption from AS-i circuit | 50 mA |
|---------------------------------------|-------|

Interface

| | |
|------|-----------------------------|
| Type | AS-Interface Safety at Work |
|------|-----------------------------|

AS-i

| | |
|----------|---------|
| Function | Process |
|----------|---------|

| | |
|--------------|---------|
| AS-i profile | S-7.B.1 |
|--------------|---------|

| | |
|---------------|-------------------------------|
| Slave address | 1..31 programmable, default=0 |
|---------------|-------------------------------|

| | |
|--|--------------|
| Cycle time acc. to AS-i specifications | Max. 5 ms ms |
|--|--------------|

Connection

| | |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|----------|-------------------|
| Function | Machine interface |
|----------|-------------------|

| | |
|--------------------|-----------|
| Type of connection | Connector |
|--------------------|-----------|

| | |
|-------------|-----|
| Thread size | M12 |
|-------------|-----|

| | |
|----------|-------|
| Material | Metal |
|----------|-------|

| | |
|-------------|--------|
| No. of pins | 5 -pin |
|-------------|--------|

Mechanical data

| | |
|-----------------------|---------------------------------|
| Design | Cubic |
| Dimension (W x H x L) | 52 mm x 193 mm x 64.7 mm |
| Housing material | Metal |
| Metal housing | Aluminum |
| Lens cover material | Plastic / PMMA |
| Material of end caps | Diecast zinc |
| Net weight | 600 g |
| Housing color | Yellow, RAL 1021 |
| Type of fastening | Groove mounting Swivel mount |

Operation and display

| | |
|-----------------|------------|
| Type of display | LED |
| Number of LEDs | 1 Piece(s) |

Environmental data

| | |
|------------------------------------|---------------|
| Ambient temperature, operation | -30 ... 55 °C |
| Ambient temperature, storage | -40 ... 75 °C |
| Relative humidity (non-condensing) | 0 ... 95 % |

Certifications

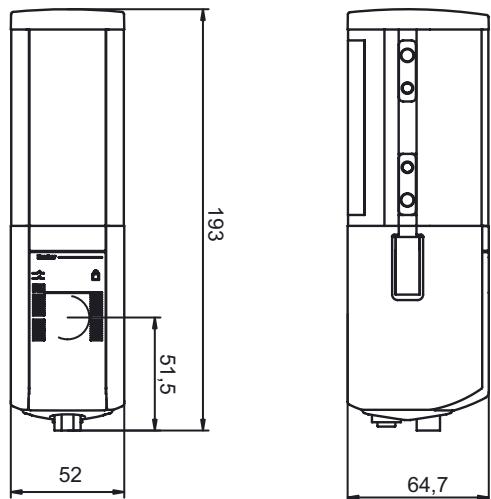
| | |
|----------------------|--------------------------------------|
| Degree of protection | IP 67 |
| Protection class | III |
| Approvals | c CSA US c TÜV NRTL US TÜV Süd |
| US patents | US 6,418,546 B US 7,741,595 B |

Classification

| | |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4 | 27272701 |
| ECLASS 8.0 | 27272701 |
| ECLASS 9.0 | 27272701 |
| ECLASS 10.0 | 27272701 |
| ECLASS 11.0 | 27272701 |
| ECLASS 12.0 | 27272701 |
| ECLASS 13.0 | 27272701 |
| ECLASS 14.0 | 27272701 |
| ECLASS 15.0 | 27272701 |
| ETIM 5.0 | EC001831 |
| ETIM 6.0 | EC001831 |
| ETIM 7.0 | EC001831 |
| ETIM 8.0 | EC001831 |
| ETIM 9.0 | EC001831 |
| ETIM 10.0 | EC001831 |

Dimensioned drawings

All dimensions in millimeters

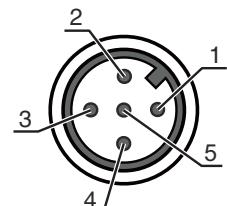


Electrical connection

Connection 1

| | |
|--------------------|-------------------|
| Function | Machine interface |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |

| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1 | AS-i+ | Brown |
| 2 | n.c. | White |
| 3 | AS-i- | Blue |
| 4 | n.c. | Black |
| 5 | n.c. | Gray |



Operation and display

LEDs per light axis

| LEDs per light axis | Meaning |
|-------------------------|-----------------------------|
| Green, continuous light | Transmitted beam active |
| Off | Transmitted beam not active |

Suitable receivers

| Part no. | Designation | Article | Description |
|---|------------------------|--|---|
|  | 66536001 MLD510-R1L/A | Single light beam safety device receiver | Special version: Reflective element for laser alignment aid Response time: 30 ms Type of interface: AS-Interface Safety at Work Connection: Connector, M12, Metal, 5 -pin |
|  | 66536002 MLD510-R1LE/A | Single light beam safety device receiver | Special version: Reflective element for laser alignment aid, Connection socket for external muting indicator Response time: 30 ms Type of interface: AS-Interface Safety at Work Connection: Connector, M12, Metal, 5 -pin |

Part number code

Part designation: **MLDxyy-zab/t**
MLD **Multiple light beam safety device**

| | |
|-----------|---|
| x | Series 3: MLD 300 5: MLD 500 |
| yy | Function classes 00: transmitter 10: automatic restart 12: external testing 20: EDM/RES 30: muting 35: timing controlled 4-sensor muting |
| z | Device type T: transmitter R: receiver RT: transceiver xT: transmitter with high range xR: receiver for high range |
| a | Number of beams |
| b | Option L: integrated laser alignment aid (for transmitter/receiver) M: integrated status indicator (MLD 320, MLD 520) or integrated status and muting indicator (MLD 330, MLD 335, MLD 510/A, MLD 530, MLD 535) E: Connection socket for external muting indicator (AS-i models only) |
| /t | Safety-related switching outputs (OSSDs), connection technology -: transistor output, M12 plug A: Integrated AS-i interface, M12 plug, (safety bus system) |

Note

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



ATTENTION! LASER RADIATION – CLASS 2 LASER PRODUCT

**Do not stare into beam!**

The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 2** as well as the U.S. 21 CFR 1040.10 and 1040.11 regulations with deviations corresponding to Laser Notice No. 56 from May 08, 2019.

- ⌚ Never look directly into the laser beam or in the direction of reflected 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!
- ⌚ Interrupt the laser beam using a non-transparent, 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! 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!
- ⌚ 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.
The alignment laser emits constant radiation that has a maximum output power of 1 mW and is emitted from the device collimated.

NOTE

**Affix laser information and warning signs!**

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

- ⌚ "Affix the laser information sheet to the device in the language appropriate for the place of use. When using the device in the US, use the stick-on label with the "Complies with 21 CFR 1040.10/11" note.
- ⌚ 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.

Accessories**Connection technology - Connection cables**

| Part no. | Designation | Article | Description |
|----------|-------------|--------------------|---|
| | 50133859 | KD S-M12-5A-P1-020 | Connection cable Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 2.000 mm Sheathing material: PUR |
| | 50137014 | KD S-M12-5A-P1-150 | Connection cable Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 15.000 mm Sheathing material: PUR |
| | 50136146 | KD S-M12-5A-P1-250 | Connection cable Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 25.000 mm Sheathing material: PUR |

Accessories

Muting - Mounting systems

| Part no. | Designation | Article | Description |
|--|-------------|----------------------|---|
|  424421 | BT-SB10 | Mounting bracket set | Design of mounting device: Mounting clamp Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Swiveling Swivel range: -8 ... 8 ° Material: Metal |

Services

| Part no. | Designation | Article | Description |
|---|-------------|-------------------|--|
|  S981050 | CS40-I-140 | Safety inspection | Details: Checking of a safety light barrier application in accordance with current standards and guidelines. Inclusion of the device and machine data in a database, production of a test log per application. Conditions: It must be possible to stop the machine, support provided by customer's employees and access to the machine for Leuze employees must be ensured. |
|  S981046 | CS40-S-140 | Start-up support | Details: For safety devices including stopping time measurement and initial inspection. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. |

Note



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