

Technical data sheet

Multiple light beam safety device transceiver

Part no.: 66578100

MLD535-RT2M



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- Electrical connection
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Technical data

Basic data

| | |
|-------------|-------------|
| Series | MLD 500 |
| Device type | Transceiver |

Special version

| | |
|-----------------|--|
| Special version | Integrated muting indicator Integrated status indicator |
|-----------------|--|

Functions

| | |
|--------------------------------|--|
| Functions | Alternative connection for second muting signal Configuration by means of wiring Contactor monitoring (EDM), selectable Muting enable function Muting-timeout extension Sequence controlled 2-sensor muting Start/restart interlock (RES) Timing controlled 4-sensor muting |
| Integrated laser alignment aid | No |
| Integrated muting indicator | Yes |
| Integrated status indicator | Yes |

Characteristic parameters

| | |
|-----------------------------|---------------------------|
| Type | 4, IEC/EN 61496 |
| SIL | 3, IEC 61508 |
| SILCL | 3, IEC/EN 62061 |
| Performance Level (PL) | e, EN ISO 13849-1 |
| MTTF _d | 204 years, EN ISO 13849-1 |
| PFH _D | 6.6E-09 per hour |
| Mission time T _M | 20 years, EN ISO 13849-1 |
| Category | 4, EN ISO 13849 |

Protective field data

| | |
|-----------------|-------------|
| Operating range | 0.5 ... 8 m |
|-----------------|-------------|

Optical data

| | |
|---------------------------------|---|
| Number of beams | 2 Piece(s) |
| Beam spacing | 500 mm |
| Light source | LED |
| Light source | Infrared |
| Wavelength | 850 nm |
| Mean power of transmitter diode | 1.369 µW |
| Transmitted-signal shape | Pulsed |
| LED risk group | Exempt group (in acc. with EN 62471:2008) |

Electrical data

| | |
|-----------------------------|--|
| Selection of operating mode | Connection 1, pin 2: +24 V for operating mode 1, 2, 4 Connection 1, pin 2: 0 V for operating mode 3, 5, 6 Connection 1, pin 7: +24 V for operating mode 3, 5, 6 Connection 1, pin 7: 0 V for operating mode 1, 2, 4 |
| Protective circuit | Overvoltage protection Short circuit protected |

Performance data

| | |
|-------------------------------|-------------------------------|
| Supply voltage U _B | 24 V, DC, -20 ... 20 % |
| Current consumption, max. | 150 mA, Without external load |
| Fuse | External with max. 3 A |

Inputs

| | |
|------------------------------------|------------|
| Number of digital switching inputs | 4 Piece(s) |
|------------------------------------|------------|

Switching inputs

| | |
|------------------------------|-------------------------|
| Type | Digital switching input |
| Switching voltage high, min. | 18.2 V |
| Switching voltage low, max. | 2.5 V |
| Switching voltage, type. | 23 V |
| Voltage type | DC |
| Switching current, max. | 5 mA |

Digital switching input 1

| | |
|------------|---|
| Assignment | Connection 1, pin 1 |
| Function | Control input for start/restart interlock (RES) |

Digital switching input 2

| | |
|------------|--|
| Assignment | Connection 1, pin 3 |
| Function | Control input for contactor monitoring (EDM) |

Digital switching input 3

| | |
|------------|-------------------------------------|
| Assignment | Connection 1, pin 4 |
| Function | Control input, second muting signal |

Digital switching input 4

| | |
|------------|---------------------------------------|
| Assignment | Connection 1, pin 8 |
| Function | Control input, muting enable/ timeout |

Outputs

| | |
|--|------------|
| Number of safety-related switching outputs (OSSDs) | 2 Piece(s) |
|--|------------|

| | |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

Safety-related switching outputs

| | |
|------------------------------|--------------------------------------|
| Type | Safety-related switching output OSSD |
| Switching voltage high, min. | 18.2 V |
| Switching voltage low, max. | 2.5 V |
| Switching voltage, type. | 23 V |
| Voltage type | DC |
| Current load, max. | 380 mA |
| Load inductivity | 2,200,000 µH |
| Load capacity | 0.3 µF |
| Residual current, max. | 0.2 mA |
| Residual current, type. | 0.002 mA |
| Voltage drop | 1 V |

Safety-related switching output 1

| | |
|-------------------|---------------------|
| Assignment | Connection 1, pin 6 |
| Switching element | Transistor, PNP |

Safety-related switching output 2

| | |
|-------------------|---------------------|
| Assignment | Connection 1, pin 5 |
| Switching element | Transistor, PNP |

Technical data

Switching outputs

| | |
|------------------------------|--------------------------|
| Type | Digital switching output |
| Switching voltage high, min. | 18.2 V |
| Switching voltage low, max. | 2.5 V |
| Switching voltage, type. | 23 V |
| Voltage type | DC |

Switching output 1

| | |
|-------------------|--------------------------------|
| Assignment | Connection 1, pin 1 |
| Switching element | Transistor, PNP |
| Function | "State of OSSDs" signal output |

Time behavior

| | |
|--------------------|--------|
| Response time | 50 ms |
| Restart delay time | 100 ms |

Connection

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

Connection 1

| | |
|--------------------|-------------------|
| Function | Machine interface |
| Type of connection | Connector |
| Thread size | M12 |
| Material | Metal |
| No. of pins | 8 -pin |

Connection 2

| | |
|--------------------|-----------------|
| Function | Local interface |
| Type of connection | Connector |
| Thread size | M12 |
| Material | Metal |
| No. of pins | 8 -pin |

Cable properties

| | |
|--|----------------------|
| Permissible conductor cross section, type. | 0.25 mm ² |
| Length of connection cable, max. | 100 m |
| Permissible cable resistance to load, max. | 200 Ω |

Mechanical data

| | |
|-----------------------|---------------------------------|
| Dimension (W x H x L) | 52 mm x 600 mm x 64.7 mm |
| Housing material | Metal |
| Metal housing | Aluminum |
| Lens cover material | Plastic / PMMA |
| Material of end caps | Diecast zinc |
| Net weight | 1,400 g |
| Housing color | Yellow, RAL 1021 |
| Type of fastening | Groove mounting Swivel mount |

Operation and display

| | |
|-----------------|--------------------------|
| Type of display | 7-segment display LED |
| Number of LEDs | 2 Piece(s) |

Environmental data

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

Certifications

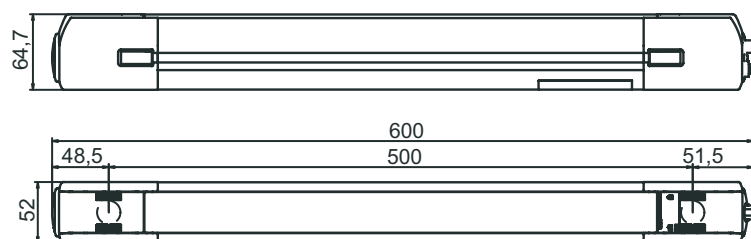
| | |
|----------------------|-------------------------------------|
| Degree of protection | IP 67 |
| Protection class | III |
| Approvals | c TÜV NRTL US c UL US TÜV Süd |
| US patents | US 6,418,546 B US 7,741,595 B |

Classification

| | |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4 | 27272703 |
| ECLASS 8.0 | 27272703 |
| ECLASS 9.0 | 27272703 |
| ECLASS 10.0 | 27272703 |
| ECLASS 12.0 | 27272703 |
| ECLASS 13.0 | 27272703 |
| ECLASS 14.0 | 27272703 |
| ECLASS 15.0 | 27272703 |
| ECLASS 16.0 | 27272703 |
| ETIM 5.0 | EC001832 |
| ETIM 6.0 | EC001832 |
| ETIM 7.0 | EC001832 |
| ETIM 8.0 | EC001832 |
| ETIM 9.0 | EC001832 |
| ETIM 10.0 | EC001832 |
| UNSPSC 26.08 | 32151804 |

Dimensioned drawings

All dimensions in millimeters

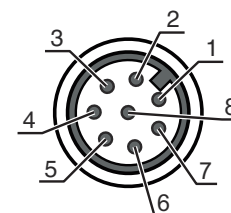


Electrical connection

Connection 1

| | |
|--------------------|-------------------|
| Function | Machine interface |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 8 -pin |
| Encoding | A-coded |

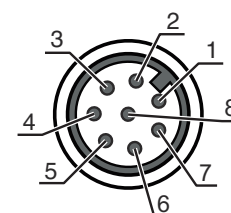
| Pin | Pin assignment | Conductor color |
|-----|------------------------|-----------------|
| 1 | RES/OSSD status signal | White |
| 2 | VIN | Brown |
| 3 | EDM | Green |
| 4 | MS2 | Yellow |
| 5 | OSSD2 | Gray |
| 6 | OSSD1 | Pink |
| 7 | VIN | Blue |
| 8 | M-EN/TO | Red |



Connection 2

| | |
|--------------------|-----------------|
| Function | Local interface |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 8 -pin |
| Encoding | A-coded |


| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1 | MS3 | White |
| 2 | +24 V | Brown |
| 3 | MS2 | Green |
| 4 | MS1 | Yellow |
| 5 | RES/LMP | Gray |
| 6 | MS4 | Pink |
| 7 | 0 V | Blue |
| 8 | n.c. | Red |



Operation and display

| LED | Display | Meaning |
|-----|--------------------------|--|
| 1 | Red, continuous light | OSSD off. |
| | Green, continuous light | OSSD on |
| | Red, flashing, 1 Hz | External error |
| | Red, flashing, 10 Hz | Internal error |
| | Green, flashing, 1 Hz | Weak signal, device not optimally aligned or soiled. |
| 2 | Yellow, continuous light | Start/restart interlock locked. |

Suitable deflecting mirrors

| | Part no. | Designation | Article | Description |
|---|----------|-------------|-------------------|--|
|  | 66500100 | MLD-M002 | Deflecting mirror | Number of beams: 2 Piece(s) Beam spacing: 500 mm Type of fastening: Groove mounting, Mounting on Device Column, Swivel mount |

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.

Notes




Observe intended use!





- ↪ The product may only be put into operation by competent persons.
- ↪ Only use the product in accordance with its intended use.

Accessories

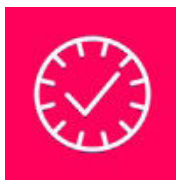
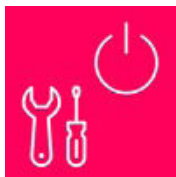
Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|--|----------|--------------------|------------------|--|
|  | 50135128 | KD S-M12-8A-P1-050 | Connection cable | Application: Oil and lubricant resistant Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |

Mounting technology - Swivel mounts

| | Part no. | Designation | Article | Description |
|--|----------|----------------|----------------------|---|
|  | 560340 | BT-SET-240BC | Mounting bracket set | Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 240° Material: Metal Shock absorber: No |
|  | 540350 | BT-SET-240BC-E | Mounting bracket set | Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 240° Material: Metal, Plastic Shock absorber: No |

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. |

Accessories

Note



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