

# Technical data sheet Multiple light beam safety device transceiver

Part no.: 66538201

MLD510-RT3M/A



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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                      | Automatic restart |
|--------------------------------|-------------------|
| Integrated laser alignment aid | No                |
| Integrated muting indicator    | No                |
| Integrated status indicator    | Yes               |

#### **Characteristic parameters**

| Туре                        | 4, IEC/EN 61496           |
|-----------------------------|---------------------------|
| SIL                         | 3, IEC 61508              |
| SILCL                       | 3, IEC/EN 62061           |
| Performance Level (PL)      | e, EN ISO 13849-1         |
| MTTF <sub>d</sub>           | 204 years, EN ISO 13849-1 |
| PFH <sub>D</sub>            | 6.6E-09 per hour          |
| Mission time T <sub>M</sub> | 20 years, EN ISO 13849-1  |
| Category                    | 4, EN ISO 13849           |

#### Protective field data

| Operating range                             | 0.5 6 m |
|---|---------|
| Operating range in connection with MLD-XM03 | 0.5 8 m |

#### **Optical data**

| Number of beams                 | 3 Piece(s)                                |
|---------------------------------|---|
| Beam spacing                    | 400 mm                                    |
| Light source                    | LED, 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**

| Performance data                      |             |
|---------------------------------------|-------------|
| Supply voltage U <sub>B</sub>         | 26.5 31.6 V |
| Current consumption from AS-i circuit | 140 mA      |

#### Time behavior

| Response time      | 30 ms  |
|--------------------|--------|
| Restart delay time | 100 ms |

#### Interface

tions

| Туре                               | AS-Interface Safety at Work |
|------------------------------------|-----------------------------|
| AS-i                               |                             |
| Function                           | Process                     |
| AS-i profile                       | S-7.B.1                     |
| Slave address                      | 131 programmable, default=0 |
| Cycle time acc. to AS-i specifica- | 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**

| Dimension (W x H x L) | 52 mm x 900 mm x 64.7 mm |
|-----------------------|--------------------------|
| Housing material      | Metal                    |
| Metal housing         | Aluminum                 |
| Lens cover material   | Plastic / PMMA           |
| Material of end caps  | Diecast zinc             |
| Net weight            | 2,000 g                  |
| Housing color         | Yellow, RAL 1021         |
| Type of fastening     | Groove mounting          |
|                       | Swivel mount             |

#### **Operation and display**

| Type of 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 |

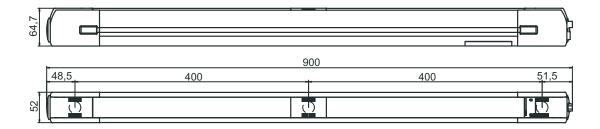
#### Classification

| 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 |
| ETIM 5.0              | EC001832 |
| ETIM 6.0              | EC001832 |
| ETIM 7.0              | EC001832 |
| ETIM 8.0              | EC001832 |
| ETIM 9.0              | EC001832 |
| ETIM 10.0             | EC001832 |

# **Dimensioned drawings**



All dimensions in millimeters

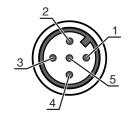


## **Electrical connection**

#### **Connection 1**

| Function           | Machine interface |
|--------------------|-------------------|
| Type of connection | Connector         |
| Thread size        | M12               |
| Туре               | 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**

| 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.                      |
|     | Off  | No voltage on AS-i cable.                            |
|     | Red, continuous light                                  | AS-i slave not communicating with AS-i master        |
|     | Yellow, flashing                                       | AS-i slave has invalid address 0                     |
|     | Red/green, flashing alternately                        | AS-i slave device error or AS-i connection defective |
|     | Green, continuous light, flashing red at the same time | Periphery error                                      |
|     | Green, continuous light                                | AS-i slave communicating with AS-i master            |
|     |  |  |





| Part no. | Designation | Article           | Description  |
|----------|-------------|-------------------|--|
| 66500200 | MLD-M003    | Deflecting mirror | Number of beams: 3 Piece(s) Beam spacing: 400 mm Type of fastening: Groove mounting, Mounting on Device Column, Swivel mount |
| 66500201 | MLD-XM03    | Deflecting mirror | Number of beams: 3 Piece(s) Beam spacing: 400 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   |
|-----|---|
| х   | Series 3: MLD 300 5: MLD 500  |
| уу  | 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  |
| а   | 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



## **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<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 2.000 mm<br>Sheathing material: PUR  |
| 50136146 | KD S-M12-5A-P1-250 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 25.000 mm<br>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<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 240°<br>Material: Metal<br>Shock absorber: No          |
| 540350   | BT-SET-240BC-E | Mounting bracket set | Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 240°<br>Material: Metal, Plastic<br>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.   |

#### Note



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