



Figure can vary

**Part no.: 66536702**  
**MLD510-XR4LE/A**  
**Multiple light beam safety device receiver**



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## Technical data

| <b>Basic data</b>                          |                                                                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|
| Series                                     | MLD 500                                                                                       |
| Device type                                | Receiver                                                                                      |
| <b>Special design</b>                      |                                                                                               |
| Special design                             | Connection socket for external muting indicator<br>Reflective element for laser alignment aid |
| <b>Functions</b>                           |                                                                                               |
| Functions                                  | Automatic restart                                                                             |
| Reflective element for laser alignment aid | Yes                                                                                           |
| Integrated muting indicator                | No                                                                                            |
| <b>Characteristic parameters</b>           |                                                                                               |
| Type                                       | 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                                                                              |
| <b>Optical data</b>                        |                                                                                               |
| Number of beams                            | 4 Piece(s)                                                                                    |
| Beam spacing                               | 300 mm                                                                                        |
| <b>Electrical data</b>                     |                                                                                               |
| Protective circuit                         | Overvoltage protection<br>Short circuit protected                                             |
| <b>Performance data</b>                    |                                                                                               |
| Supply voltage U <sub>B</sub>              | 26.5 ... 31.6 V                                                                               |
| Current consumption from AS-i circuit      | 50 mA                                                                                         |
| <b>Outputs</b>                             |                                                                                               |
| Number of digital switching outputs        | 1 Piece(s)                                                                                    |
| <b>Switching outputs</b>                   |                                                                                               |
| Type                                       | Digital switching output                                                                      |
| Switching voltage high, min.               | 18.2 V                                                                                        |
| Switching voltage low, max.                | 2.5 V                                                                                         |
| Switching voltage, typ.                    | 23 V                                                                                          |
| Voltage type                               | DC                                                                                            |
| <b>Switching output 1</b>                  |                                                                                               |
| Assignment                                 | Connection 2, pin 5                                                                           |
| Switching element                          | Transistor , PNP                                                                              |
| Function                                   | "Muting state" signal output                                                                  |
| <b>Timing</b>                              |                                                                                               |
| Response time                              | 30 ms                                                                                         |

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|                    |        |
|--------------------|--------|
| Restart delay time | 100 ms |
|--------------------|--------|

### Interface

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

#### AS-i

|                                        |                               |
|----------------------------------------|-------------------------------|
| Function                               | Process                       |
| AS-i profile                           | Safe slave                    |
| Slave address                          | 1..31 programmable, default=0 |
| Cycle time acc. to AS-i specifications | Max. 5 ms                     |

### Connection

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

#### Connection 1

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

#### Connection 2

|                    |                           |
|--------------------|---------------------------|
| Type of connection | Connector                 |
| Function           | External muting indicator |
| Thread size        | M12                       |
| Material           | Metal                     |
| No. of pins        | 5 -pin                    |

### Mechanical data

|                       |                                 |
|-----------------------|---------------------------------|
| Dimension (W x H x L) | 52 mm x 1,000 mm x 64.7 mm      |
| Housing material      | Metal , Aluminum                |
| Lens cover material   | Plastic / PMMA                  |
| Material of end caps  | Diecast zinc                    |
| Net weight            | 2,200 g                         |
| Housing color         | Yellow, RAL 1021                |
| Type of fastening     | Groove mounting<br>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                                  |
| Certifications       | c CSA US<br>c TÜV NRTL US<br>TÜV Süd |

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US patents

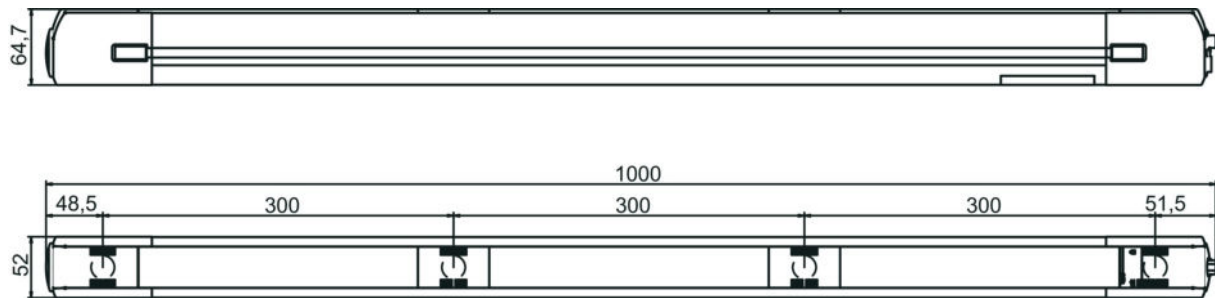
US 6,418,546 B  
US 7,741,595 B

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27272703 |
| eCl@ss 9.0            | 27272703 |
| ETIM 5.0              | EC001832 |
| ETIM 6.0              | EC001832 |

## Dimensioned drawings

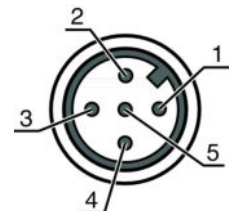
All dimensions in millimeters



## Electrical connection

| Connection 1       |                   |
|--------------------|-------------------|
| Type of connection | Connector         |
| Function           | Machine interface |
| 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            |



| Connection 2       |                           |
|--------------------|---------------------------|
| Type of connection | Connector                 |
| Function           | External muting indicator |
| Thread size        | M12                       |

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| Connection 2 |         |
|--------------|---------|
| Type         | Female  |
| Material     | Metal   |
| No. of pins  | 5 -pin  |
| Encoding     | A-coded |

| Pin | Pin assignment              |
|-----|-----------------------------|
| 1   | AS-i+                       |
| 2   | 0 V (auxiliary supply)      |
| 3   | AS-i-                       |
| 4   | +24 V DC (auxiliary supply) |
| 5   | n.c.                        |

## Operation and display

### LEDs

| 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            |

## Suitable transmitters

|                                                                                     | Part no. | Designation   | Article                                       | Description                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------|---------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 66502701 | MLD500-XT4L/A | Multiple light beam safety device transmitter | Operating range: 20 ... 70 m<br>Number of beams: 4 Piece(s)<br>Beam spacing: 300 mm<br>Type of interface: AS-Interface Safety at Work<br>Connection: Connector, M12, Metal, 5 -pin<br>Special design: Integrated laser alignment aid |

## Part number code

Part designation: **MLDxyy-zab/t**

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

### Note

A list with all available device types can be found on the Leuze electronic website at [www.leuze.com](http://www.leuze.com).

## 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>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>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PVC |

### 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 |

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|                                                                                   | Part no. | Designation    | Article              | Description                                                                                                                                                 |
|-----------------------------------------------------------------------------------|----------|----------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |

## Services

|                                                                                   | Part no. | Designation | Article                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|----------|-------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | S981050  | CS40-I-140  | Safety inspection "Safety light barriers" | 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.<br>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.<br>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure. |
|  | S981046  | CS40-S-140  | Start-up support                          | Details: For safety devices including stopping time measurement and initial inspection.<br>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: Max. 2 h., no mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.                                                   |

### Note

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