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**Part no.: 66556700**

**MLD520-XR4L**

**Multiple light beam safety device receiver**



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## Technical data

| <i>Basic data</i>                |                                                                                     |
|----------------------------------|-------------------------------------------------------------------------------------|
| Series                           | MLD 500                                                                             |
| Device type                      | Receiver                                                                            |
| <i>Special design</i>            |                                                                                     |
| Special design                   | Reflective element for laser alignment aid                                          |
| <i>Functions</i>                 |                                                                                     |
| Functions                        | Contactor monitoring (EDM), selectable<br>Start/restart interlock (RES), selectable |
| <i>Characteristic parameters</i> |                                                                                     |
| 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                                                                    |
| <i>Optical data</i>              |                                                                                     |
| Number of beams                  | 4 Piece(s)                                                                          |
| Beam spacing                     | 300 mm                                                                              |
| <i>Electrical data</i>           |                                                                                     |
| Protective circuit               | Overvoltage protection<br>Short circuit protected                                   |
| <i>Performance data</i>          |                                                                                     |
| Supply voltage U <sub>B</sub>    | 24 V , DC , -20 ... 20 %                                                            |
| Current consumption, max.        | 150 mA , Without external load                                                      |
| Fuse                             | External with max. 3 A                                                              |

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| <b>Inputs</b>                                      |                                                 |
|----------------------------------------------------|-------------------------------------------------|
| Number of digital switching inputs                 | 3 Piece(s)                                      |
| <b>Switching inputs</b>                            |                                                 |
| Type                                               | Digital switching input                         |
| Switching voltage high, min.                       | 18.2 V                                          |
| Switching voltage low, max.                        | 2.5 V                                           |
| Switching voltage, typ.                            | 23 V                                            |
| Voltage type                                       | DC                                              |
| Switching current, max.                            | 5 mA                                            |
| <b>Digital switching input 1</b>                   |                                                 |
| Assignment                                         | Connection 1, pin 1                             |
| Function                                           | Control input for start/restart interlock (RES) |
| <b>Digital switching input 2</b>                   |                                                 |
| Assignment                                         | Connection 1, pin 3                             |
| Function                                           | Control input for contactor monitoring (EDM)    |
| <b>Digital switching input 3</b>                   |                                                 |
| Assignment                                         | Connection 1, pin 4                             |
| Function                                           | Control input for start/restart interlock (RES) |
| <b>Outputs</b>                                     |                                                 |
| Number of safety-related switching outputs (OSSDs) | 2 Piece(s)                                      |
| Number of digital switching outputs                | 1 Piece(s)                                      |
| <b>Safety-related switching outputs</b>            |                                                 |
| Type                                               | Safety-related switching output OSSD            |
| Switching voltage high, min.                       | 18.2 V                                          |
| Switching voltage low, max.                        | 2.5 V                                           |
| Switching voltage, typ.                            | 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, typ.                             | 0.002 mA                                        |
| Voltage drop                                       | 1 V                                             |
| <b>Safety-related switching output 1</b>           |                                                 |
| Assignment                                         | Connection 1, pin 6                             |
| Switching element                                  | Transistor , PNP                                |
| <b>Safety-related switching output 2</b>           |                                                 |
| Assignment                                         | Connection 1, pin 5                             |
| Switching element                                  | Transistor , PNP                                |
| <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 1, pin 1                             |
| Switching element                                  | Transistor , PNP                                |
| Function                                           | "State of OSSDs" signal output                  |

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### Timing

|                    |        |
|--------------------|--------|
| Response time      | 25 ms  |
| Restart delay time | 100 ms |

### Connection

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

#### Cable properties

|                                           |                      |
|-------------------------------------------|----------------------|
| Permissible conductor cross section, typ. | 0.25 mm <sup>2</sup> |
| Length of connection cable, max.          | 100 m                |

#### Connection 1

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

#### Cable properties

|                                            |       |
|--------------------------------------------|-------|
| Permissible cable resistance to load, max. | 200 Ω |
|--------------------------------------------|-------|

### 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  | 1 Piece(s) |

### Environmental data

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

### Certifications

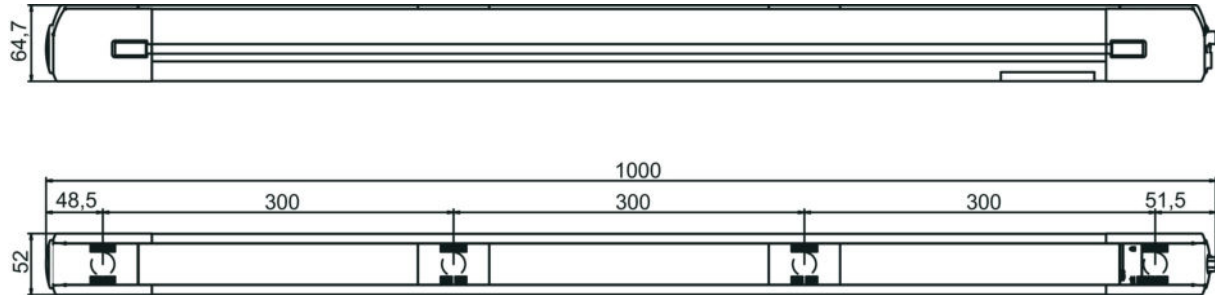
|                      |                                      |
|----------------------|--------------------------------------|
| Degree of protection | IP 67                                |
| Protection class     | III                                  |
| Certifications       | c CSA US<br>c TÜV NRTL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

### Classification

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

## Dimensioned drawings

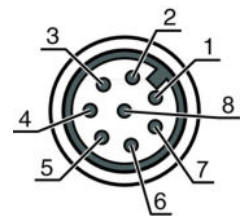
All dimensions in millimeters



## 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   | +24V                   | Brown           |
| 3   | EDM                    | Green           |
| 4   | MODE                   | Yellow          |
| 5   | OSSD2                  | Gray            |
| 6   | OSSD1                  | Pink            |
| 7   | 0 V                    | Blue            |
| 8   | n.c.                   | Red             |



## Operation and display

### LEDs

| LED | Display                 | Meaning        |
|-----|-------------------------|----------------|
| 1   | Red, continuous light   | OSSD off.      |
|     | Green, continuous light | OSSD on        |
|     | Red, flashing, 1 Hz     | External error |

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| LED | Display                  | Meaning                                              |
|-----|--------------------------|------------------------------------------------------|
|     | 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 transmitters

|                                                                                   | Part no. | Designation | Article                                       | Description                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|----------|-------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 66502700 | MLD500-XT4L | Multiple light beam safety device transmitter | Operating range: 20 ... 70 m<br>Number of beams: 4 Piece(s)<br>Beam spacing: 300 mm<br>Connection: Connector, M12, Metal, 5 -pin<br>Special design: Integrated laser alignment aid |

## Part number code

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

| 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 website at [www.leuze.com](http://www.leuze.com).

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## Accessories

### Connection technology - Connection cables

|                                                                                    | Part no. | Designation        | Article          | Description                                                                                                                                                   |
|------------------------------------------------------------------------------------|----------|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | 50135129 | KD S-M12-8A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PUR |
|   | 50135130 | KD S-M12-8A-P1-150 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 15,000 mm<br>Sheathing material: PUR |
|   | 50135131 | KD S-M12-8A-P1-250 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 25,000 mm<br>Sheathing material: PUR |
|  | 50135132 | KD S-M12-8A-P1-500 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 50,000 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          |
|  | 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. |

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|                                                                                   | Part no. | Designation | Article          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|----------|-------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | S981046  | CS40-S-140  | Start-up support | <p>Details: For safety devices including stopping time measurement and initial inspection.</p> <p>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.</p> <p>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.</p> |

### Note

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