



Figure can vary

**Part no.: 66037100**  
**MLD310-RT2**  
**Multiple light beam safety device**  
**transmitter/receiver**



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- Dimensioned drawings
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## Technical data

| <b>Basic data</b>                |   |
|----------------------------------|---|
| Series                           | MLD 300   |
| Device type                      | Transceiver                                       |
| <b>Functions</b>                 |   |
| Functions                        | Automatic restart                                 |
| <b>Characteristic parameters</b> |   |
| Type                             | 2, IEC/EN 61496                                   |
| SIL                              | 1, IEC 61508                                      |
| SILCL                            | 1, IEC/EN 62061                                   |
| Performance Level (PL)           | c, EN ISO 13849-1                                 |
| MTTF <sub>d</sub>                | 204 years, EN ISO 13849-1                         |
| PFH <sub>D</sub>                 | 1.2E-08 per hour                                  |
| Mission time T <sub>M</sub>      | 20 years, EN ISO 13849-1                          |
| Category                         | 3, EN ISO 13849                                   |
| <b>Protective field data</b>     |   |
| Operating range                  | 0.5 ... 8 m                                       |
| <b>Optical data</b>              |   |
| Number of beams                  | 2 Piece(s)  |
| Beam spacing                     | 500 mm  |
| Light source                     | LED, Infrared                                     |
| LED light wavelength             | 850 nm  |
| Mean power of transmitter diode  | 1,369 µW  |
| Transmitted-signal shape         | Pulsed  |
| LED group                        | 1   |
| <b>Electrical data</b>           |   |
| Protective circuit               | Overvoltage protection<br>Short circuit protected |
| <b>Performance data</b>          |   |
| 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                            |

**Outputs**

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

**Safety-related switching output 1**

|                   |                     |
|-------------------|---------------------|
| Assignment        | Connection 1, pin 2 |
| Switching element | Transistor, PNP     |

**Safety-related switching output 2**

|                   |                     |
|-------------------|---------------------|
| Assignment        | Connection 1, pin 4 |
| Switching element | Transistor, PNP     |

**Timing**

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

**Connection**

Number of connections 1 Piece(s)

**Connection 1**

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

**Cable properties**

|  |                      |
|--|----------------------|
| Permissible conductor cross section, typ.  | 0.25 mm <sup>2</sup> |
| 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, 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<br>Swivel mount |

**Operation and display**

|                 |     |
|-----------------|-----|
| Type of display | LED |
|-----------------|-----|

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|                |            |
|----------------|------------|
| 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       | TÜV Süd<br>c CSA US<br>c TÜV NRTL US |
| US patents           | US 6,418,546 B<br>US 7,741,595 B     |

**Classification**

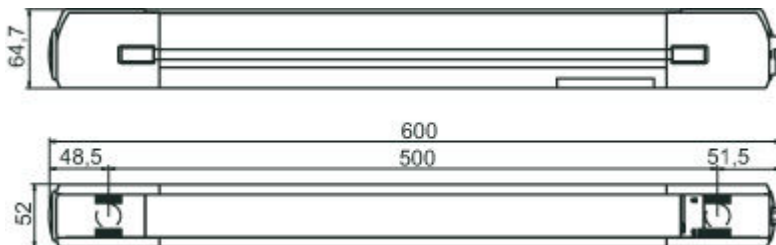
|            |          |
|------------|----------|
| eCl@ss 8.0 | 27272703 |
| eCl@ss 9.0 | 27272703 |
| ETIM 5.0   | EC001832 |

**Suitable deflecting mirrors**

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

**Dimensioned drawings**

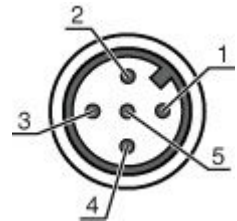
All dimensions in millimeters



## 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   | +24V           | Brown           |
| 2   | OSSD1          | White           |
| 3   | 0 V            | Blue            |
| 4   | OSSD2          | Black           |
| 5   | n.c.           | Gray            |



## 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. |

## 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  |

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|            |  |
|------------|--|
| <b>MLD</b> | <b>Multiple light beam safety device</b>   |
| 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)   |

## Accessories




### Connection technology - Connection cables

|    | Part no. | Designation        | Article          | Description   |
|---|----------|--------------------|------------------|---|
|    | 678058   | CB-M12-25000E-5GF  | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 25,000 mm<br>Sheathing material: PUR |
|    | 50133860 | KD S-M12-5A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR  |
|   | 50133861 | KD S-M12-5A-P1-100 | 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: PUR |
|  | 50137014 | KD S-M12-5A-P1-150 | 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 |
|  | 50137013 | KD S-M12-5A-P1-500 | 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  |
|  | 560342   | BT-SET-240BCS   | Mounting bracket set | Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 240°, Shock absorber<br>Material: Metal<br>Shock absorber: Yes          |
|  | 540352   | BT-SET-240BCS-E | Mounting bracket set | Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Shock absorber, Turning, 240°<br>Material: Metal, Plastic<br>Shock absorber: Yes |


**Mounting technology - Other**

|  | Part no. | Designation | Article              | Description  |
|--|----------|-------------|----------------------|--|
|  | 424417   | BT-2P40     | Mounting bracket set | Contains: 2x BT-P40 clamp bracket<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Groove mounting<br>Mounting bracket, at device: Groove mounting<br>Type of mounting device: Clampable<br>Material: Metal |









**Alignment aids**

|   | Part no. | Designation | Article       | Description   |
|---|----------|-------------|---------------|---|
|  | 520023   | LA-78M      | Alignment aid | Light source: laser, Red<br>Housing material: Metal |
|  | 520024   | LA-78M-UDC  | Alignment aid | Light source: laser, Red<br>Housing material: Metal |

**Device columns**

|   | Part no. | Designation | Article       | Description  |
|---|----------|-------------|---------------|--|
|  | 549856   | UDC-1000-S2 | Device column | Dimensions: 160 mm x 1,060 mm x 149 mm<br>Column height without foot: 1,000 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |

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|   | Part no. | Designation | Article       | Description  |
|---|----------|-------------|---------------|--|
|    | 549879   | UDC-1140-S2 | Device column | Dimensions: 160 mm x 1,200 mm x 149 mm<br>Column height without foot: 1,140 mm<br>Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices |
|    | 549852   | UDC-1300-S2 | Device column | Dimensions: 160 mm x 1,360 mm x 149 mm<br>Column height without foot: 1,300 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |
|    | 549853   | UDC-1600-S2 | Device column | Dimensions: 160 mm x 1,660 mm x 149 mm<br>Column height without foot: 1,600 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |
|    | 549854   | UDC-1900-S2 | Device column | Dimensions: 160 mm x 1,960 mm x 149 mm<br>Column height without foot: 1,900 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |
|   | 549867   | UDC-2100-S2 | Device column | Dimensions: 160 mm x 2,160 mm x 149 mm<br>Column height without foot: 2,100 mm<br>Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices |
|  | 549857   | UDC-2500-S2 | Device column | Dimensions: 160 mm x 2,560 mm x 149 mm<br>Column height without foot: 2,500 mm<br>Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices |
|  | 549865   | UDC-3100-S2 | Device column | Dimensions: 160 mm x 3,160 mm x 149 mm<br>Column height without foot: 3,100 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |
|  | 549855   | UDC-900-S2  | Device column | Dimensions: 160 mm x 960 mm x 149 mm<br>Column height without foot: 900 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions     |