



Figure can vary

**Part no.: 68001125**  
**MLC510R14-2550**  
**Safety light curtain receiver**



## Contents

- Technical data
- Suitable transmitters
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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## Technical data

| <b>Basic data</b>                |  |
|----------------------------------|--|
| Series                           | MLC 500  |
| Device type                      | Receiver   |
| Contains                         | 2x BT-NC sliding block                                     |
| Application                      | Finger protection  |
| <b>Functions</b>                 |  |
| Function package                 | Basic  |
| Functions                        | Automatic start/restart<br>Transmission channel changeover |
| <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  |
| PFH <sub>D</sub>                 | 7.73E-09 per hour  |
| Mission time T <sub>M</sub>      | 20 years, EN ISO 13849-1                                   |
| Category                         | 4, EN ISO 13849  |
| <b>Protective field data</b>     |  |
| Resolution                       | 14 mm  |
| Protective field height          | 2,550 mm   |
| <b>Optical data</b>              |  |
| Synchronization                  | Optical between transmitter and receiver                   |
| <b>Electrical data</b>           |  |
| Protective circuit               | Overvoltage protection<br>Short circuit protected          |
| <b>Performance data</b>          |  |
| Supply voltage                   | 24 V, DC, -20 ... 20 %                                     |
| Current consumption, max.        | 150 mA   |
| Fuse                             | 2 A semi time-lag  |

**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 V                                 |
| Switching voltage low, max.  | 2.5 V                                |
| Switching voltage, typ.      | 22.5 V                               |
| Voltage type                 | DC                                   |
| Current load, max.           | 380 mA                               |
| Load inductivity             | 2,000 $\mu$ H                        |
| Load capacity                | 0.3 $\mu$ F                          |
| Residual current, max.       | 0.2 mA                               |
| Residual current, typ.       | 0.002 mA                             |
| Voltage drop                 | 1.5 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      | 55 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 $\Omega$         |

**Mechanical data**

|                       |  |
|-----------------------|--|
| Dimension (W x H x L) | 29 mm x 2,616 mm x 35.4 mm   |
| Housing material      | Metal, Aluminum  |
| Lens cover material   | Plastic / PMMA   |
| Material of end caps  | Diecast zinc   |
| Net weight            | 2,700 g  |
| Housing color         | Yellow, RAL 1021   |
| Type of fastening     | Swivel mount<br>Mounting on Device Column<br>Groove mounting<br>Mounting bracket |

**Operation and display**

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

### Environmental data

|                                    |               |
|------------------------------------|---------------|
| Ambient temperature, operation     | -30 ... 55 °C |
| Ambient temperature, storage       | -30 ... 70 °C |
| Relative humidity (non-condensing) | 0 ... 95 %    |


### Certifications

|                      |  |
|----------------------|--|
| Degree of protection | IP 65  |
| Protection class     | III  |
| Certifications       | S Mark<br>c TÜV NRTL US<br>c CSA US<br>TÜV Süd |
| Vibration resistance | 50 m/s <sup>2</sup>                            |
| Shock resistance     | 100 m/s <sup>2</sup>                           |
| US patents           | US 6,418,546 B                                 |

### Classification

|            |          |
|------------|----------|
| eCl@ss 8.0 | 27272704 |
| eCl@ss 9.0 | 27272704 |
| ETIM 5.0   | EC002549 |

## Suitable transmitters

|   | Part no. | Designation    | Article                          | Description   |
|---|----------|----------------|----------------------------------|---|
|  | 68000125 | MLC500T14-2550 | Safety light curtain transmitter | Resolution: 14 mm<br>Protective field height: 2,550 mm<br>Operating range: 0 ... 6 m<br>Connection: Connector, M12, Metal, 5 -pin |

## Dimensioned drawings

All dimensions in millimeters

Calculation of the effective protective field height  $H_{PFE} = H_{PFN} + B + C$



- HPFE Effective protective field height = 2562 mm
- HPFN Nominal protective field height = 2550 mm
- A Total height = 2616 mm
- B 6 mm
- C 6 mm
- R Effective protective field height  $H_{PFE}$  goes beyond the dimensions of the optics area to the outer borders of the circles labeled with R.

## Electrical connection

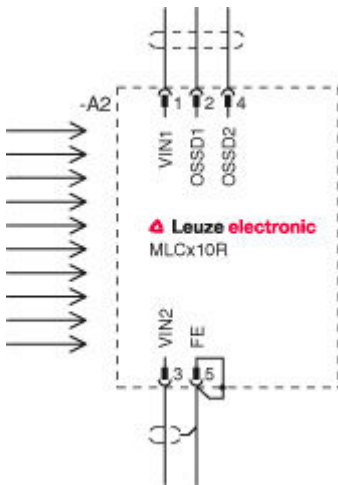
| Connection 1       |                   |
|--------------------|-------------------|
| Type of connection | Connector         |
| Function           | Machine interface |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| No. of pins        | 5 -pin            |
| Encoding           | A-coded           |
| Connector housing  | FE/SHIELD         |

| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1   | VIN1           | Brown           |
| 2   | OSSD1          | White           |
| 3   | VIN2           | Blue            |
| 4   | OSSD2          | Black           |
| 5   | FE/SHIELD      | Gray            |



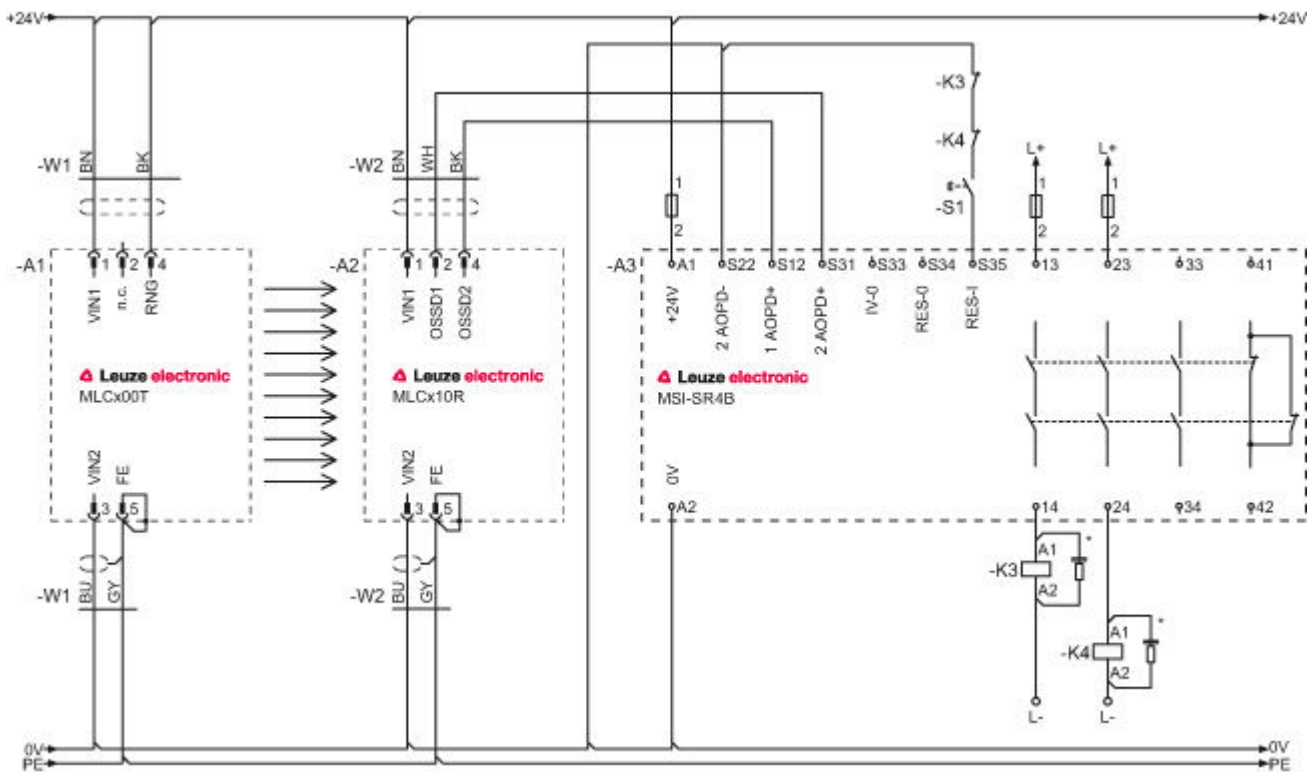
**Circuit diagrams**

Connection diagram receiver



- VIN1 = +24 V, VIN2 = 0 V: transmission channel C1
- VIN1 = 0 V, VIN2 = +24 V: transmission channel C2

Circuit diagram example with downstream MSI-SR4B safety relay



## Operation and display

### LEDs

| LED | Display                 | Meaning                           |
|-----|-------------------------|-----------------------------------|
| 1   | Off                     | Device switched off               |
|     | Red, continuous light   | OSSD off.                         |
|     | Red, flashing, 1 Hz     | External error                    |
|     | Red, flashing, 10 Hz    | Internal error                    |
|     | Green, flashing, 1 Hz   | OSSD on, weak signal              |
|     | Green, continuous light | OSSD on                           |
| 2   | Off                     | Transmission channel C1           |
|     | Red, continuous light   | OSSD off, transmission channel C2 |

## Part number code

Part designation: **MLCxyy-za-hhhhei-ooo**

| MLC | Safety light curtain   |
|-----|--|
| x   | <b>Series:</b><br>3: MLC 300<br>5: MLC 500   |
| yy  | <b>Function classes:</b><br>00: Transmitter<br>01: transmitter (AIDA)<br>02: Transmitter with test input<br>10: Basic receiver - automatic restart<br>11: basic receiver - automatic restart (AIDA)<br>20: Standard receiver - EDM/RES selectable<br>30: Extended receiver - blanking/muting |
| z   | <b>Device type:</b><br>T: transmitter<br>R: receiver   |
| a   | <b>Resolution:</b><br>14: 14 mm<br>20: 20 mm<br>30: 30 mm<br>40: 40 mm<br>90: 90 mm  |
| hhh | <b>Protective field height:</b><br>150 ... 3000: from 150 mm to 3000 mm  |
| e   | <b>Host/Guest (optional):</b><br>H: Host<br>MG: Middle Guest<br>G: Guest   |
| i   | <b>Interface (optional):</b><br>/A: AS-i   |
| ooo | <b>Option:</b><br>/V: high Vibration-proof<br>EX2: explosion protection (zones 2 + 22)<br>SPG: Smart Process Gating  |

### 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   |
|---|----------|--------------------|------------------|---|
|    | 429088   | CB-M12-15000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 15,000 mm<br>Sheathing material: PUR  |
|    | 678057   | CB-M12-15000E-5GF  | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 15,000 mm<br>Sheathing material: PUR |
|    | 429089   | CB-M12-25000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 25,000 mm<br>Sheathing material: PUR  |
|   | 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 |
|  | 429281   | CB-M12-50000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 50,000 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 |
|  | 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 |
|  | 50133841 | KD U-M12-5A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR   |



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|   | Part no. | Designation        | Article          | Description  |
|---|----------|--------------------|------------------|--|
|  | 50132534 | KD U-M12-5A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PUR |



## Connection technology - Connectors

|   | Part no. | Designation | Article   | Description  |
|---|----------|-------------|-----------|--|
|  | 429175   | CB-M12-5GF  | Connector | Connection: Connector, M12, Axial, Female, A-coded, 5 -pin |

## Mounting technology - Mounting brackets

|   | Part no. | Designation | Article              | Description   |
|---|----------|-------------|----------------------|---|
|   | 429056   | BT-2L       | Mounting bracket set | Design of mounting device: Angle, L-shape<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Material: Metal |
|  | 429057   | BT-2Z       | Mounting bracket set | Design of mounting device: Angle, Z-shape<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Material: Metal |

## Mounting technology - Swivel mounts

|   | Part no. | Designation | Article              | Description  |
|---|----------|-------------|----------------------|--|
|  | 429393   | BT-2HF      | Mounting bracket set | Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 360°<br>Material: Metal, Plastic                        |
|  | 429394   | BT-2HF-S    | Mounting bracket set | Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 360°<br>Material: Metal, Plastic<br>Shock absorber: Yes |


## Mounting technology - Other

|   | Part no. | Designation | Article           | Description  |
|---|----------|-------------|-------------------|--|
|  | 425740   | BT-10NC60   | Sliding block set | Contains: 10x BT-NC sliding block<br>Bore hole 1: Ø 4.7 mm<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Mounting bracket, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal |




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|  | Part no. | Designation | Article              | Description   |
|--|----------|-------------|----------------------|---|
|   | 425741   | BT-10NC64   | Sliding block set    | Contains: 10x BT-NC-M4-M6 sliding block<br>Bore hole 1: M4<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Mounting bracket, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal                                    |
|   | 425742   | BT-10NC65   | Sliding block set    | Contains: 10x BT-NC-M5-M6 sliding block<br>Bore hole 1: M5<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Mounting bracket, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal                                    |
|   | 424417   | BT-2P40     | Mounting bracket set | Contains: 2x BT-P40 clamp bracket<br>Design of mounting device: Mounting clamp<br>Mounting bracket, at system: Groove mounting<br>Mounting bracket, at device: Groove mounting<br>Type of mounting device: Clampable<br>Material: Metal   |
|   | 424422   | BT-2SB10    | Mounting bracket set | Contains: 2x BT-SB10<br>Design of mounting device: Mounting clamp<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable, an der seitlichen C-Nut<br>Type of mounting device: Swiveling<br>Swivel range: -8 ... 8 °<br>Material: Metal |
|  | 424423   | BT-2SB10-S  | Mounting bracket set | Contains: 2x BT-SB10-S<br>Design of mounting device: Mounting clamp<br>Mounting bracket, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable, an der seitlichen C-Nut<br>Swivel range: -8 ... 8 °<br>Material: Metal<br>Shock absorber: Yes              |


**Test rods**

|   | Part no. | Designation | Article    | Description  |
|---|----------|-------------|------------|--|
|  | 349945   | AC-TR14/30  | Test piece | Diameter 1: 14 mm<br>Diameter 2: 30 mm<br>Housing material: Plastic, ABS |


**Alignment aids**

|   | Part no. | Designation | Article       | Description   |
|---|----------|-------------|---------------|---|
|  | 427300   | AC-ALM      | Alignment aid | Housing material: Plastic                           |
|  | 520101   | AC-ALM-M    | Alignment aid | Housing material: Plastic                           |
|  | 560020   | LA-78U      | Alignment aid | Light source: laser, Red<br>Housing material: Metal |

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|   | Part no. | Designation | Article       | Description   |
|---|----------|-------------|---------------|---|
|  | 520004   | LA-78UDC    | Alignment aid | Light source: laser, Red<br>Housing material: Metal |

## Device columns

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

## Notes

| Observe intended use!   |
|---|
| <ul style="list-style-type: none"> <li>The product may only be put into operation by competent persons.</li> <li>Only use the product in accordance with its intended use.</li> </ul> |