

## Technical data sheet

### Safety light curtain transmitter

Part no.: 68008204  
MLC502T20-450



For illustration purposes only

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## Technical data

### Basic data

|             |                        |
|-------------|------------------------|
| Series      | MLC 500                |
| Device type | Transmitter            |
| Contains    | 2x BT-NC sliding block |
| Application | Hand protection        |

### Functions

|           |                                 |
|-----------|---------------------------------|
| Functions | Test signal input               |
|           | Transmission channel changeover |

### Characteristic parameters

|                             |                          |
|-----------------------------|--------------------------|
| Type                        | 4, IEC/EN 61496          |
| SIL                         | 3, IEC 61508             |
| SILCL                       | 3, IEC/EN 62061          |
| Mission time T <sub>M</sub> | 20 years, EN ISO 13849-1 |

### Protective field data

|                         |            |
|-------------------------|------------|
| Resolution              | 20 mm      |
| Protective field height | 450 mm     |
| Operating range         | 0 ... 15 m |

### Optical data

|                          |                                           |
|--------------------------|-------------------------------------------|
| Synchronization          | Optical between transmitter and receiver  |
| Light source             | LED, Infrared                             |
| Wavelength               | 940 nm                                    |
| Transmitted-signal shape | Pulsed                                    |
| LED risk group           | Exempt group (in acc. with EN 62471:2008) |

### Electrical data

|                    |                         |
|--------------------|-------------------------|
| Protective circuit | Overvoltage protection  |
|                    | Short circuit protected |

#### Performance data

|                               |                        |
|-------------------------------|------------------------|
| Supply voltage U <sub>B</sub> | 24 V, DC, -20 ... 20 % |
| Current consumption, max.     | 50 mA                  |
| Fuse                          | 2 A semi time-lag      |

#### Inputs

|                                    |            |
|------------------------------------|------------|
| Number of digital switching inputs | 1 Piece(s) |
|------------------------------------|------------|

#### Switching inputs

|                              |                         |
|------------------------------|-------------------------|
| Type                         | Digital switching input |
| Switching voltage high, min. | 18 V                    |
| Switching voltage low, max.  | 2.5 V                   |
| Switching voltage, type.     | 22.5 V                  |
| Voltage type                 | DC                      |

### 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            |

### Cable properties

|                                            |                      |
|--------------------------------------------|----------------------|
| Permissible conductor cross section, type. | 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) | 29 mm x 516 mm x 35.4 mm  |
| Housing material      | Metal                     |
| Metal housing         | Aluminum                  |
| Lens cover material   | Plastic / PMMA            |
| Material of end caps  | Diecast zinc              |
| Net weight            | 600 g                     |
| Housing color         | Yellow, RAL 1021          |
| Type of fastening     | Groove mounting           |
|                       | Mounting brackets         |
|                       | Mounting on Device Column |
|                       | 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       | -30 ... 70 °C |
| Relative humidity (non-condensing) | 0 ... 95 %    |

### Certifications

|                      |                      |
|----------------------|----------------------|
| Degree of protection | IP 65                |
| Protection class     | III                  |
| Approvals            | c TÜV NRTL US        |
|                      | c UL US              |
|                      | 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

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27272704 |
| ECLASS 8.0            | 27272704 |
| ECLASS 9.0            | 27272704 |
| ECLASS 10.0           | 27272704 |
| ECLASS 11.0           | 27272704 |
| ECLASS 12.0           | 27272704 |
| ECLASS 13.0           | 27272704 |
| ECLASS 14.0           | 27272704 |
| ECLASS 15.0           | 27272704 |
| ECLASS 16.0           | 27272704 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | EC002549 |
| ETIM 8.0              | EC002549 |
| ETIM 9.0              | EC002549 |
| ETIM 10.0             | EC002549 |

Dimensioned drawings

All dimensions in millimeters

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



- $H_{PFE}$  Effective protective field height = 467 mm

$H_{PFN}$  Nominal protective field height = 450 mm

A Total height = 516 mm

B 7 mm
- C 10 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

|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| 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   | n.c.           | White           |
| 3   | VIN2           | Blue            |
| 4   | Test in        | Black           |
| 5   | FE/SHIELD      | Gray            |



## Circuit diagrams

### Transmission channel C1, OSSDs deactivated on the receiver



### Transmission channel C1, OSSDs activated on the receiver



Circuit diagrams

Transmission channel C2, OSSDs deactivated on the receiver



Transmission channel C2, OSSDs activated on the receiver



Operation and display

| LED | Display                                       | Meaning                 |
|-----|-----------------------------------------------|-------------------------|
| 1   | Off                                           | Device switched off     |
|     | Red, continuous light                         | Device error            |
|     | Green, continuous light                       | Normal operation        |
| 2   | Green, flashing, 10 s long after switching on | Test input activated    |
|     | Off                                           | Transmission channel C1 |
|     | Green, continuous light                       | Transmission channel C2 |

## Suitable receivers

|                                                                                   | Part no. | Designation   | Article                       | Description                                                                                                                                         |
|-----------------------------------------------------------------------------------|----------|---------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 68001204 | MLC510R20-450 | Safety light curtain receiver | Function package: Basic<br>Resolution: 20 mm<br>Protective field height: 450 mm<br>Response time: 9 ms<br>Connection: Connector, M12, Metal, 5 -pin |

## Part number code

Part designation: **MLCxyy-za-hhhh-e-ooo****MLC****Safety light curtain**

|             |                                                                                                                                                                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>x</b>    | <b>Series</b><br>3: MLC 300<br>5: MLC 500                                                                                                                                                                                                                                                                                             |
| <b>yy</b>   | <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 or gating<br>35: Extended receiver – Gating |
| <b>z</b>    | <b>Device type</b><br>T: transmitter<br>R: receiver                                                                                                                                                                                                                                                                                   |
| <b>a</b>    | <b>Resolution</b><br>14: 14 mm<br>20: 20 mm<br>30: 30 mm<br>40: 40 mm<br>90: 90 mm                                                                                                                                                                                                                                                    |
| <b>hhhh</b> | <b>Protective field height</b><br>150 ... 3000: from 150 mm to 3000 mm                                                                                                                                                                                                                                                                |
| <b>e</b>    | <b>Host/Guest (optional)</b><br>H: Host<br>MG: Middle Guest<br>G: Guest                                                                                                                                                                                                                                                               |
| <b>i</b>    | <b>Interface (optional)</b><br>/A: AS-i                                                                                                                                                                                                                                                                                               |
| <b>ooo</b>  | <b>Option</b><br>/V: high Vibration-proof<br>EX2: explosion protection (zones 2 + 22)<br>SPG: Smart Process Gating<br>SPG RR: Smart Process Gating – Reduced resolution                                                                                                                                                               |

### Note



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

## Notes



### Observe intended use!



- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

## Accessories

### Connection technology - Connection cables

|                                                                                   | Part no. | Designation        | Article          | Description                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|----------|--------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50133860 | KD S-M12-5A-P1-050 | Connection cable | Application: Oil and lubricant resistant<br>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: 5,000 mm<br>Sheathing material: PUR |
|  |          |                    |                  |                                                                                                                                                                                                                                |

### 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>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 360°<br>Material: Metal, Plastic |

### Alignment aids

|                                                                                    | Part no. | Designation | Article       | Description               |
|------------------------------------------------------------------------------------|----------|-------------|---------------|---------------------------|
|  | 520101   | AC-ALM-M    | Alignment aid | Housing material: Plastic |

### 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.<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. |
|   | 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.                                                                                                                                         |

#### Note



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