

## Technical data sheet Safety light curtain receiver

Part no.: 68009330

MLC530R30-3000-SPG

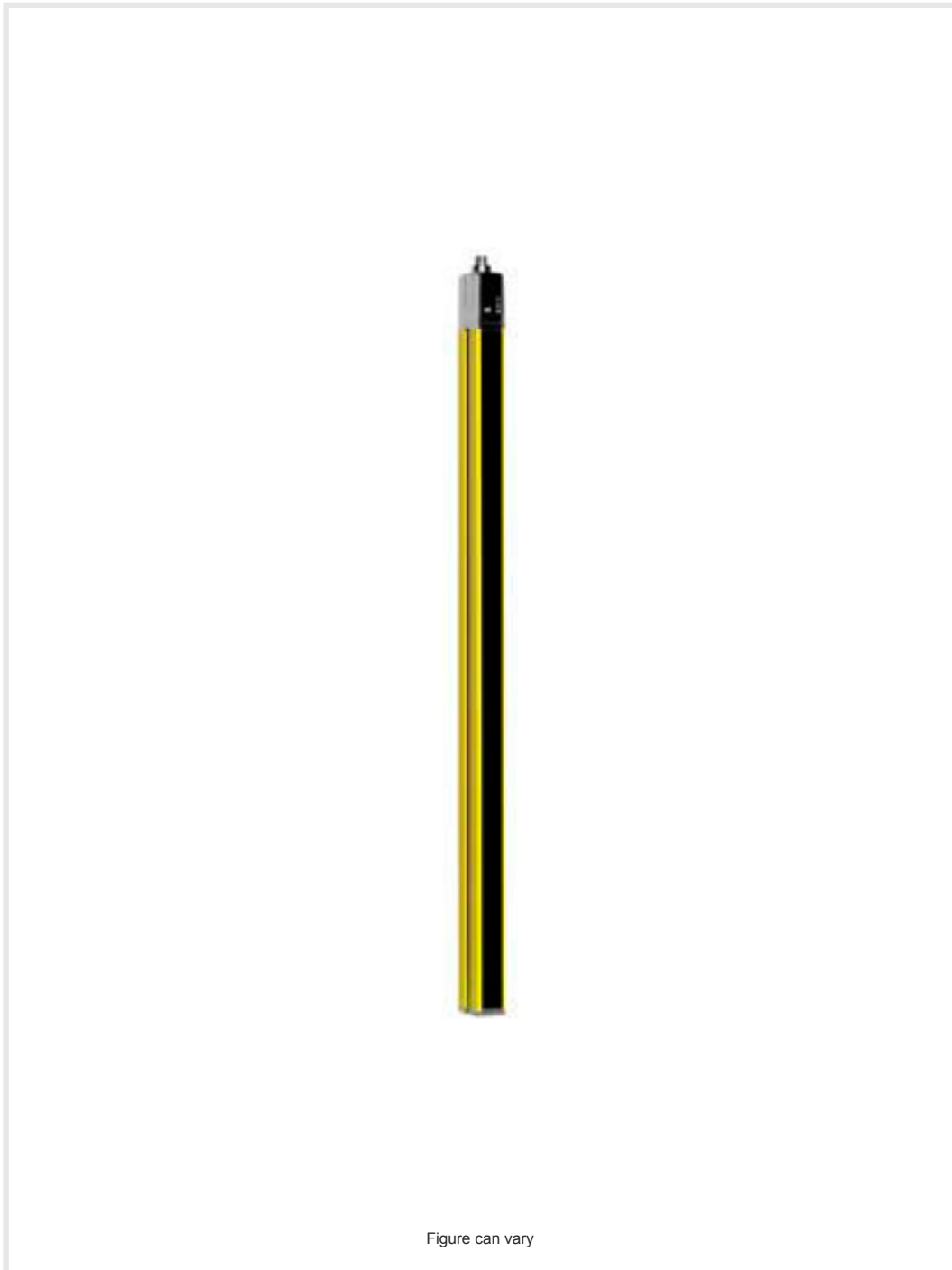


Figure can vary

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## Technical data

### Basic data

|             |   |
|-------------|---|
| Series      | MLC 500                                 |
| Device type | Receiver                                |
| Contains    | 2x BT-NC sliding block                  |
| Application | Hand protection<br>Smart Process Gating |

### Functions

|                  |   |
|------------------|---|
| Function package | Smart Process Gating  |
| Functions        | Fixed blanking with 1-beam tolerance<br>Fixed blanking without tolerance<br>Integration of "contact-based safety circuit"<br>Integration of "electronic safety-related switching outputs"<br>MaxiScan<br>Muting-timeout extension<br>Qualified stop<br>Smart Process Gating<br>Start/restart interlock (RES)<br>Transmission channel changeover |

### Characteristic parameters

|                             |                          |
|-----------------------------|--------------------------|
| 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          |

### Protective field data

|                         |          |
|-------------------------|----------|
| Resolution              | 30 mm    |
| Protective field height | 3,000 mm |

### Optical data

|                 |  |
|-----------------|--|
| Synchronization | Optical between transmitter and receiver |
|-----------------|--|

### Electrical data

|                    |   |
|--------------------|---|
| Protective circuit | Overvoltage protection<br>Short circuit protected |
|--------------------|---|

### Performance data

|                               |                        |
|-------------------------------|------------------------|
| Supply voltage U <sub>B</sub> | 24 V, DC, -20 ... 20 % |
| Current consumption, max.     | 150 mA                 |
| Fuse                          | 2 A semi time-lag      |

### Inputs

|                                    |            |
|------------------------------------|------------|
| Number of digital switching inputs | 3 Piece(s) |
|------------------------------------|------------|

### Switching inputs

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

### 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 µH                             |
| Load capacity                | 0.3 µF                               |
| 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 5 |
| Switching element | Transistor, PNP     |

### Safety-related switching output 2

|                   |                     |
|-------------------|---------------------|
| Assignment        | Connection 1, pin 6 |
| Switching element | Transistor, PNP     |

### Timing

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

### Connection

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

### Connection 1

|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| Thread size        | M12               |
| Material           | Metal             |
| No. of pins        | 8 -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) | 29 mm x 3,066 mm x 35.4 mm   |
| Housing material      | Metal  |
| Metal housing         | Aluminum   |
| Lens cover material   | Plastic / PMMA   |
| Material of end caps  | Diecast zinc   |
| Net weight            | 3,150 g  |
| Housing color         | Yellow, RAL 1021   |
| Type of fastening     | Groove mounting<br>Mounting bracket<br>Mounting on Device Column<br>Swivel mount |

### Operation and display

|                 |                          |
|-----------------|--------------------------|
| Type of display | 7-segment display<br>LED |
| Number of LEDs  | 3 Piece(s)               |

## Technical data

### 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       | c CSA US<br>c TÜV NRTL US<br>S Mark<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                                 |

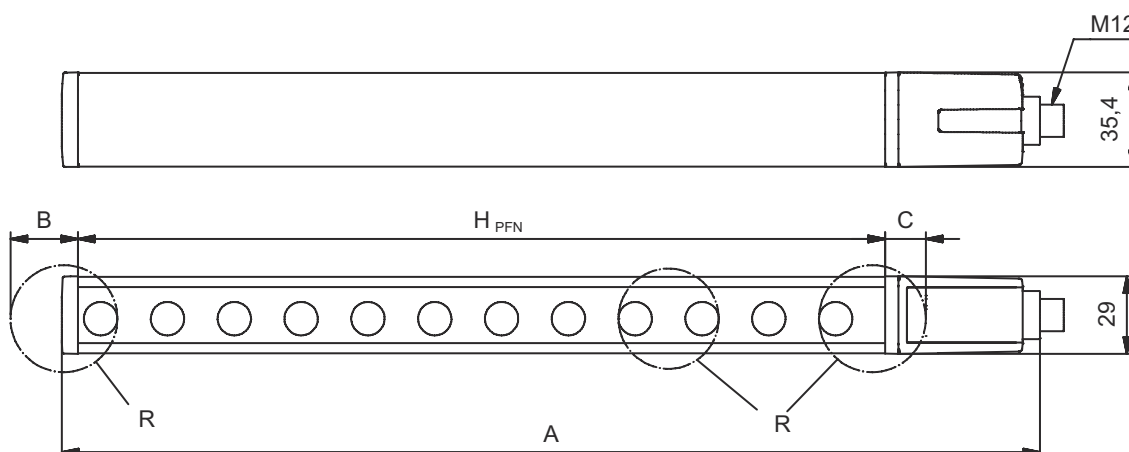
### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 5.1.4          | 27272704 |
| eCl@ss 8.0            | 27272704 |
| eCl@ss 9.0            | 27272704 |
| eCl@ss 10.0           | 27272704 |
| eCl@ss 11.0           | 27272704 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | 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 = 3028 mm  
 $H_{PFN}$  Nominal protective field height = 3000 mm  
 A Total height = 3066 mm  
 B 19 mm

C 9 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.

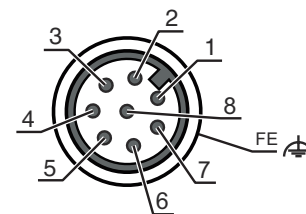
## Electrical connection

### Connection 1

|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| No. of pins        | 8 -pin            |
| Encoding           | A-coded           |
| Connector housing  | FE/SHIELD         |

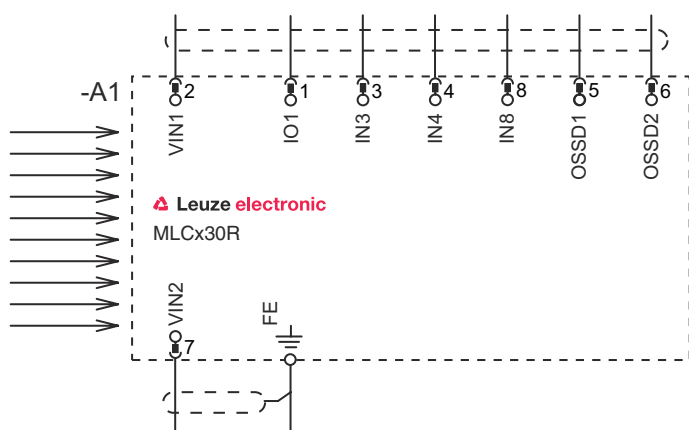
## Electrical connection

| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1   | IO1/RES        | White           |
| 2   | VIN1           | Brown           |
| 3   | IN3            | Green           |
| 4   | IN4            | Yellow          |
| 5   | OSSD1          | Gray            |
| 6   | OSSD2          | Pink            |
| 7   | VIN2           | Blue            |
| 8   | IN8            | Red             |



## Circuit diagrams

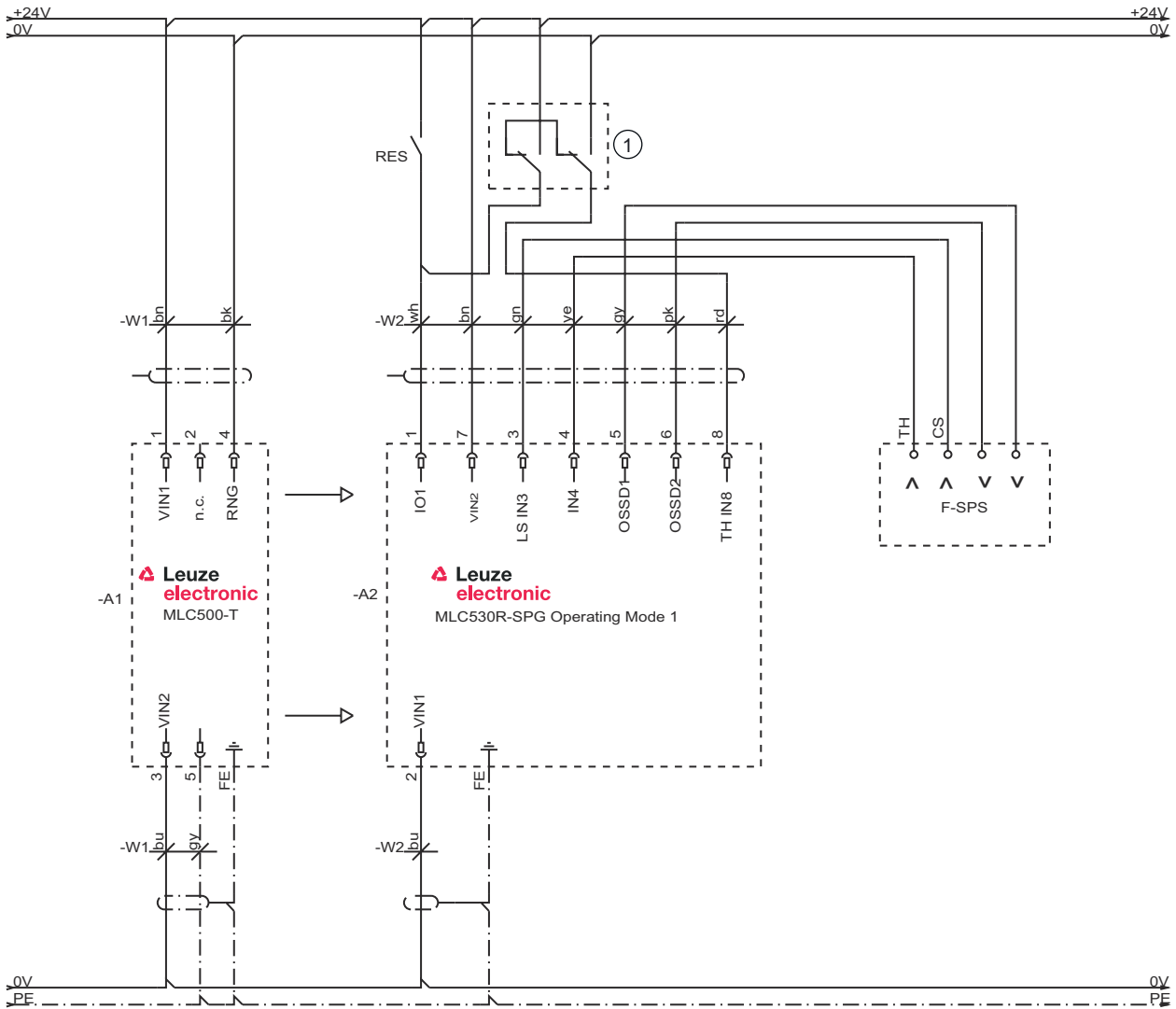
### Connection diagram receiver



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

# Circuit diagrams

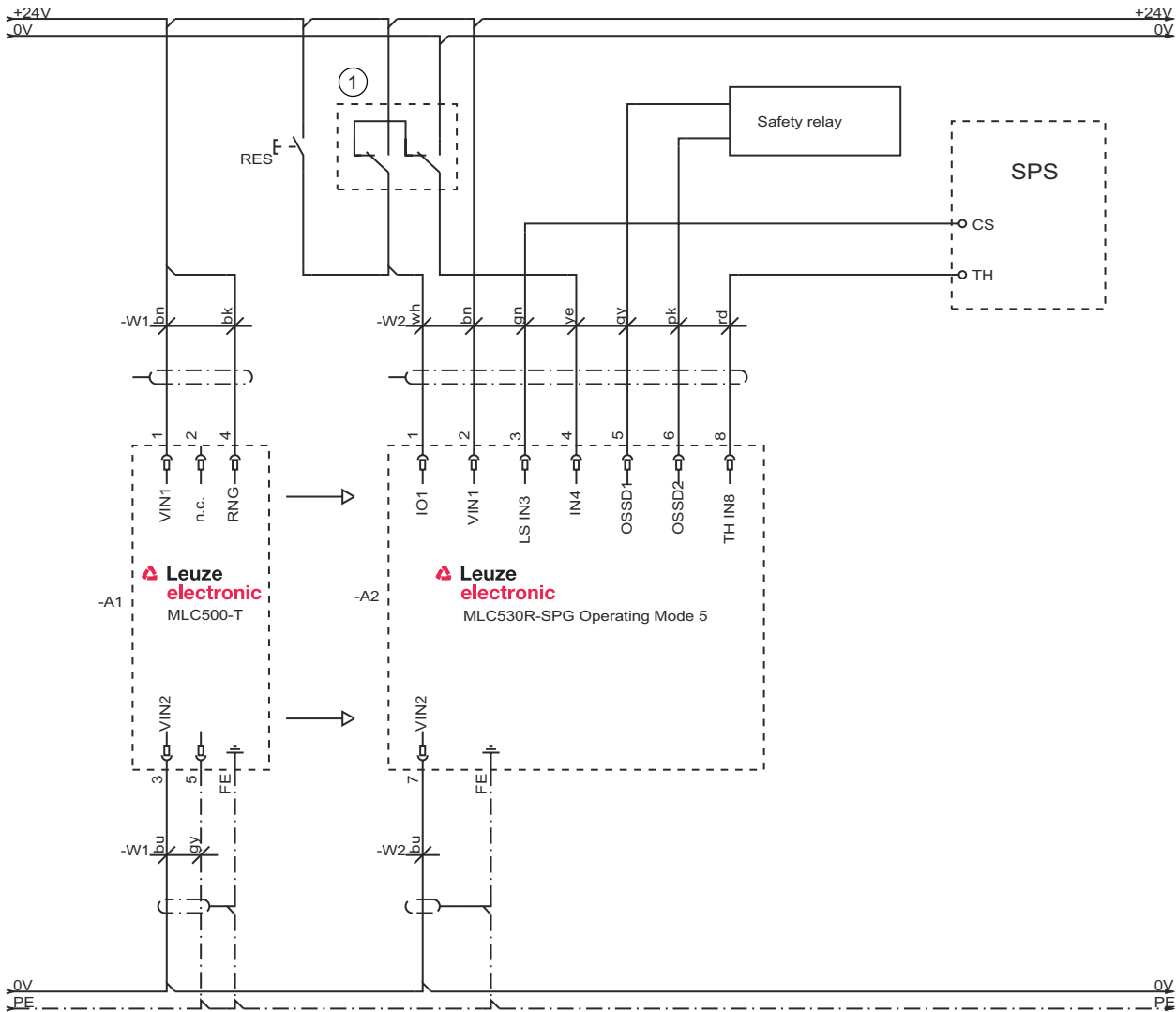
## Operating mode 1: connection example with Smart Process Gating (SPG)



1 Optional teach key switch

# Circuit diagrams

## Operating mode 5: circuit diagram example with Smart Process Gating (SPG)



1 Optional teach key switch


## Operation and display

| 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  |
| 2   | Green, continuous light     | OSSD on   |
|     | Off                         | RES deactivated or RES activated and enabled or RES blocked and protective field interrupted                          |
|     | Yellow, continuous light    | RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable |
|     | Yellow, flashing            | Upstream safety circuit opened  |
| 3   | Yellow, flashing (1x or 2x) | Changeover of the upstream safety circuit   |
|     | Off                         | No special function (blanking, muting, etc.) active   |
|     | Blue, continuous light      | Protective field parameter (blanking) correctly taught  |
|     | Blue, flashing, 1 Hz        | Muting active   |

# Operation and display

| LED | Display                                       | Meaning  |
|-----|---|--|
| 3   | Blue, short flashing<br>Blue, flashing, 10 Hz | Teaching of protective field parameters or muting restart required or muting override active<br>Error during teaching of protective field parameters |

## Suitable transmitters

|   | Part no. | Designation    | Article                          | Description  |
|---|----------|----------------|----------------------------------|--|
|  | 68000330 | MLC500T30-3000 | Safety light curtain transmitter | Resolution: 30 mm<br>Protective field height: 3,000 mm<br>Operating range: 0 ... 10 m<br>Connection: Connector, M12, Metal, 5 -pin |

## Part number code

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

|             |   |
|-------------|---|
| <b>MLC</b>  | <b>Safety light curtain</b>   |
| <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 |
| <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  |

### 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


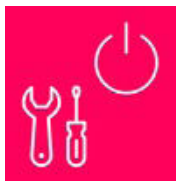
### Connection technology - Connection cables

|  | Part no. | Designation        | Article          | Description  |
|--|----------|--------------------|------------------|--|
|  | 50135128 | KD S-M12-8A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<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 | Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Turning, 360°<br>Material: Metal, Plastic |

## Services

|  | Part no. | Designation | Article                                      | Description  |
|--|----------|-------------|--|--|
|  | S981050  | CS40-I-140  | Safety inspection<br>"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 website in the Download tab of the article detailed page.