



Figure can vary

**Part no.: 544005**  
**MLC500T14-1050-IP**  
**Safety sensor/transmitter set**



## Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
- Operation and display
- Suitable receivers
- Part number code
- Notes
- Accessories

## Technical data

| <b>Basic data</b>                  |  |
|------------------------------------|--|
| Series                             | MLC 500  |
| Device type                        | Transmitter  |
| Contains                           | 2x BT-IP swivel mount                              |
| Application                        | Finger protection                                  |
| <b>Functions</b>                   |  |
| Functions                          | Range reduction<br>Transmission channel changeover |
| <b>Characteristic parameters</b>   |  |
| Type                               | 4 , IEC/EN 61496                                   |
| SIL                                | 3 , IEC 61508                                      |
| SILCL                              | 3 , IEC/EN 62061                                   |
| Mission time $T_M$                 | 20 years , EN ISO 13849-1                          |
| <b>Protective field data</b>       |  |
| Resolution                         | 14 mm  |
| Protective field height            | 1,050 mm   |
| Operating range                    | 0 ... 4.8 m  |
| <b>Optical data</b>                |  |
| Synchronization                    | Optical between transmitter and receiver           |
| Light source                       | LED , Infrared                                     |
| LED light wavelength               | 940 nm   |
| Transmitted-signal shape           | Pulsed   |
| LED group                          | Exempt group in acc. with EN 62471:2008            |
| <b>Electrical data</b>             |  |
| Protective circuit                 | Overvoltage protection<br>Short circuit protected  |
| <b>Performance data</b>            |  |
| Supply voltage $U_B$               | 24 V , DC , -20 ... 20 %                           |
| Current consumption, max.          | 50 mA  |
| Fuse                               | 2 A semi time-lag                                  |
| <b>Inputs</b>                      |  |
| Number of digital switching inputs | 1 Piece(s)   |
| <b>Switching inputs</b>            |  |
| 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   |
| <b>Connection</b>                  |  |
| Number of connections              | 1 Piece(s)   |

**Part no.: 544005 – MLC500T14-1050-IP – Safety sensor/transmitter set**
**Connection 1**

|                    |                      |
|--------------------|----------------------|
| Type of connection | Cable with connector |
| Function           | Machine interface    |
| Cable length       | 15,000 mm            |
| Sheathing material | PVC                  |
| 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            | 1,250 mm 52.5 mm |
| Housing material     | Metal , Aluminum |
| Lens cover material  | Plastic / PMMA   |
| Material of end caps | Diecast zinc     |
| Net weight           | 1,200 g          |
| Housing color        | Yellow, RAL 1021 |
| Type of fastening    | Swivel mount     |

**Protective tube**

|  |                              |
|--|------------------------------|
| Material                                   | PMMA, clear                  |
| Material of end caps                       | V4A stainless steel (1.4404) |
| Material of clamping cylinder              | PA 6                         |
| Material of pressure-equalization membrane | PA 6                         |
| Cable gland material                       | PA 6                         |

**Operation and display**

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

**Environmental data**

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

**Certifications**

|                      |  |
|----------------------|--|
| Degree of protection | IP 65<br>IP 66<br>IP 67<br>IP 69K              |
| 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                                 |

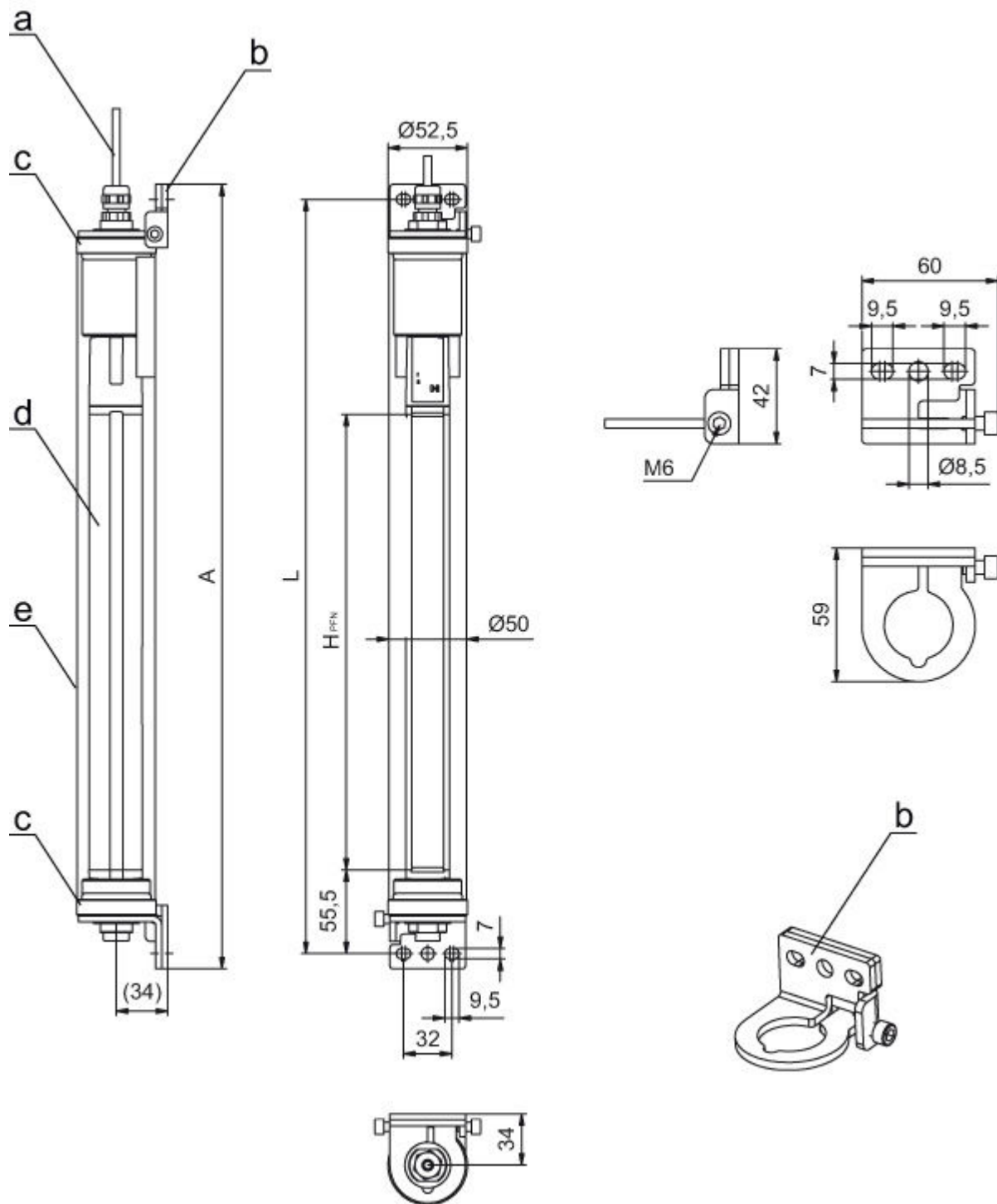
**Classification**

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27272704 |
| eCl@ss 9.0            | 27272704 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |

## Dimensioned drawings

All dimensions in millimeters

MLC safety light curtains pre-mounted in the IP protective tube



- a Connection cable
- b Mounting brackets for mounting
- c End caps, stainless steel V4A
- d MLC transmitter
- e IP protective tube
- A Total height incl. mounting brackets = 1270 mm
- L Spacing of drilled holes for mounting brackets = 1250 mm
- HPFN Effective protective field height = 1050 mm

## Electrical connection

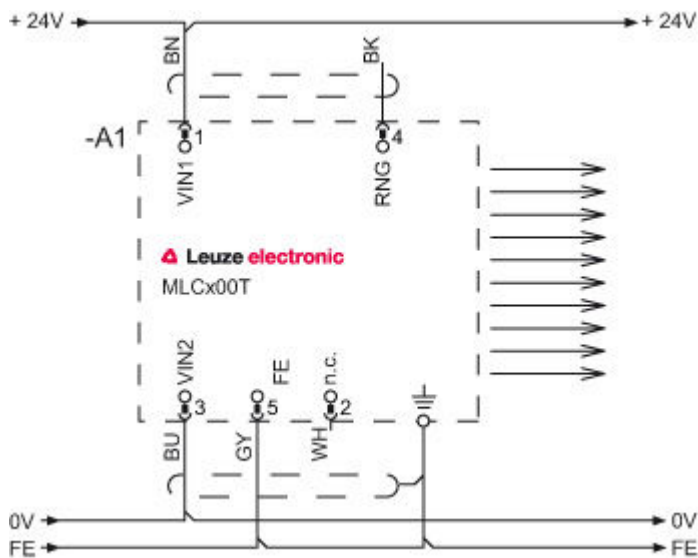
| Connection 1       |                      |
|--------------------|----------------------|
| Type of connection | Cable with connector |
| Function           | Machine interface    |
| Cable length       | 15,000 mm            |
| Sheathing material | PVC                  |
| Cable color        | Black                |
| Wire cross section |                      |
| 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   | RNG            | Black           |
| 5   | FE/SHIELD      | Gray            |



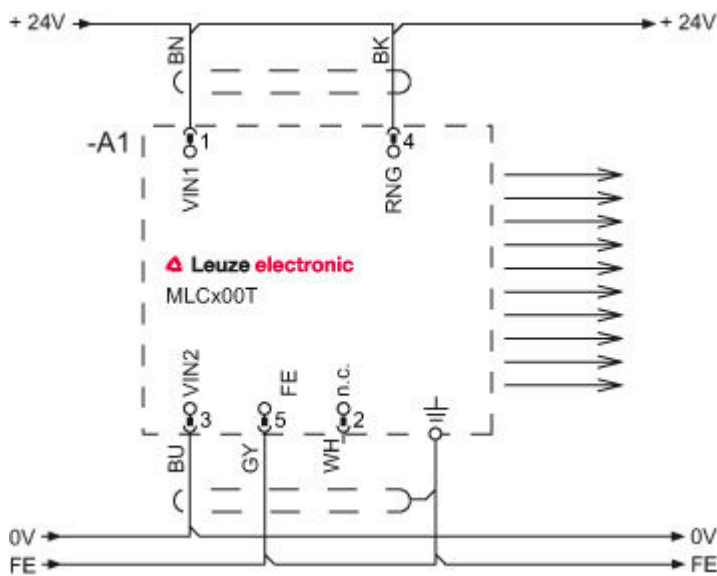
## Circuit diagrams

### Transmission channel C1, reduced range



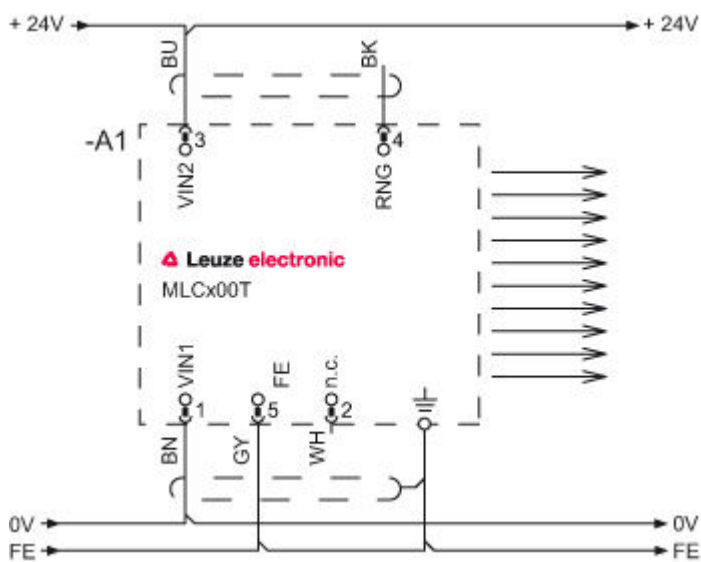
- 1 VIN1 = +24 V
- 3 VIN2 = 0 V
- 4 RNG = 0 V or open

Transmission channel C1, standard range



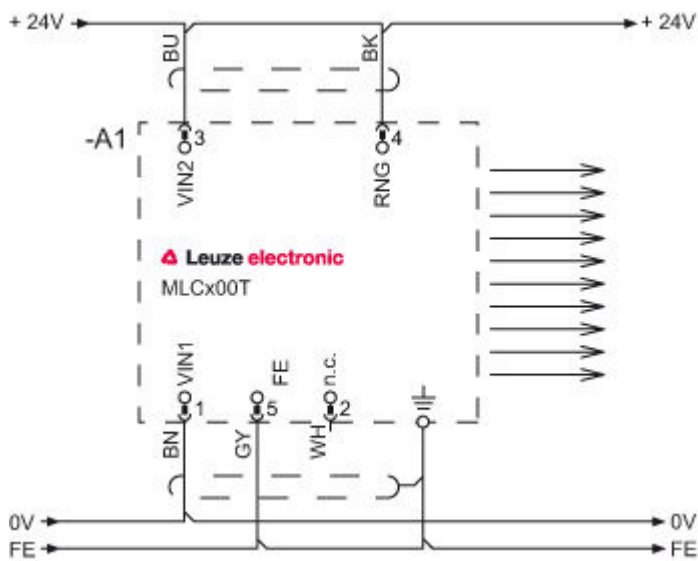
- 1 VIN1 = +24 V
- 3 VIN2 = 0 V
- 4 RNG = +24 V

Transmission channel C2, reduced range



- 1 VIN1 = 0 V
- 3 VIN2 = +24 V
- 4 RNG = 0 V or open

### Transmission channel C2, standard range




- 1 VIN1 = 0 V
- 3 VIN2 = +24 V
- 4 RNG = +24 V

## Operation and display

### LEDs

| 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 | Reduced range selected by the wiring of pin 4 |
|     | Off   | Transmission channel C1                       |
|     | Green, continuous light                       | Transmission channel C2                       |

## Suitable receivers

|   | Part no. | Designation       | Article                        | Description   |
|---|----------|-------------------|--------------------------------|---|
|  | 544012   | MLC510R14-1050-IP | Safety sensor/<br>receiver set | Resolution: 14 mm<br>Protective field height: 1,050 mm<br>Response time: 23 ms<br>Connection: Cable with connector, M12, Metal, 5 -pin, 15,000 mm, PVC<br>Function package: Basic |

## Part number code

Part designation: **MLCxxy-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  |
| hhhh | <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).


## 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

## 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. |

Part no.: 544005 – MLC500T14-1050-IP – Safety sensor/transmitter set

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