## SMART SENSOR BUSINESS

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Part no.: 68000116 MLC500T14-1650 Safety light curtain transmitter



Figure can vary

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## Part no.: 68000116 – MLC500T14-1650 – Safety light curtain transmitter

### **Technical data**

| Pagia data                         |   |
|------------------------------------|---|
| Basic data<br>Series               | MLC 500   |
|                                    | Transmitter                                       |
| Device type<br>Contains            | 2x BT-NC sliding block                            |
|                                    |   |
| Application                        | Finger protection                                 |
| Functions                          |   |
| Functions                          | Range reduction                                   |
|                                    | Transmission channel changeover                   |
| Characteristic parameters          |   |
| Туре                               | 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                         | 14 mm   |
| Protective field height            | 1,650 mm  |
| Operating range                    | 0 6 m   |
|                                    |   |
| Optical data                       |   |
| 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           |
|                                    |   |
| 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.          | 50 mA   |
| Fuse                               | 2 A semi time-lag                                 |
| Inputs                             |   |
| Number of digital switching inputs | 1 Piece(s)  |
| Switching inputs                   |   |
| Туре                               | 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  |
|                                    |   |
| Connection                         |   |
| Number of connections              | 1 Piece(s)  |
|                                    |   |

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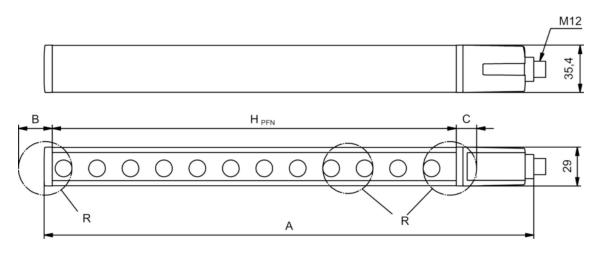
| Connection 1                               |  |  |  |  |
|--|--|--|--|--|
| Type of connection                         | Connector  |  |  |  |
| Function                                   | Machine interface  |  |  |  |
| Thread size                                | M12  |  |  |  |
| Material                                   | 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  |  |  |  |
|  |  |  |  |  |
| Nechanical data                            |  |  |  |  |
| Dimension (W x H x L)                      | 29 mm x 1,716 mm x 35.4 mm   |  |  |  |
| Housing material                           | Metal, Aluminum  |  |  |  |
| ens cover material                         | Plastic / PMMA   |  |  |  |
| Material of end caps                       | Diecast zinc   |  |  |  |
| Net weight                                 | 1,800 g  |  |  |  |
| Housing color                              | Yellow, RAL 1021   |  |  |  |
| Γype of fastening                          | Groove mounting<br>Mounting bracket<br>Mounting on Device Column<br>Swivel mount |  |  |  |
| Operation and display                      |  |  |  |  |
| Гуре of display                            | LED  |  |  |  |
| Number of LEDs                             | 2 Piece(s)   |  |  |  |
|  |  |  |  |  |
| Environmental data                         | 00 55 %0   |  |  |  |
| 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                                   |  |  |  |
| /ibration resistance                       | 50 m/s²  |  |  |  |
| Shock resistance                           | 100 m/s²   |  |  |  |
| JS 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   |  |  |  |
| _ mm 0.0                                   |  |  |  |  |

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#### **Dimensioned drawings**

All dimensions in millimeters

#### Calculation of the effective protective field height HPFE = HPFN + B + C



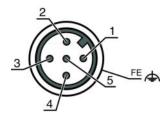
HPFE Effective protective field height = 1662 mm

- HPFN Nominal protective field height = 1650 mm
- A Total height = 1716 mm
- B 6 mm
- C 6 mm
- R Effective protective field height HPFE 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               |  |
| Туре               | Male              |  |
| Material           | Metal             |  |
| No. of pins        | 5 -pin            |  |
| Encoding           | A-coded           |  |
| Connector housing  | FE/SHIELD         |  |

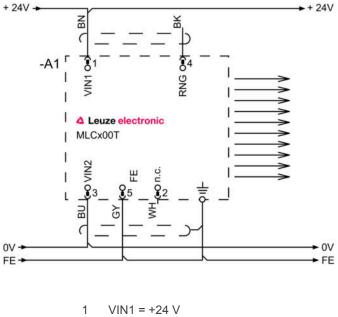
| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1   | VIN1           | Brown           |
| 2   | n.c.           | White           |
| 3   | VIN2           | Blue            |
| 4   | RNG            | Black           |
| 5   | FE/SHIELD      | Gray            |



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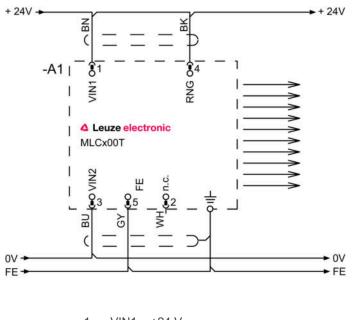
### **Circuit diagrams**

Transmission channel C1, reduced range



3 VIN2 = 0 V 4 RNG = 0 V or open

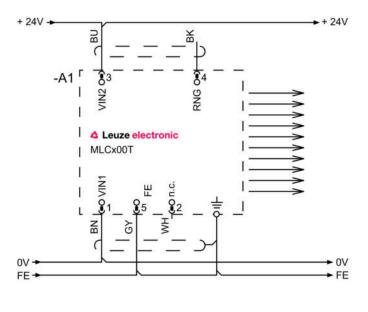
#### Transmission channel C1, standard range



| 1 | VIN1 = +24 \   | V |
|---|----------------|---|
| 3 | VIN2 = 0 V     |   |
| Λ | $DNC = \pm 24$ | 1 |

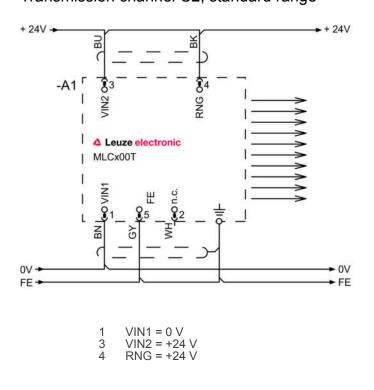
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Transmission channel C2, reduced range



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

Transmission channel C2, standard range



### **Operation and display**

#### LEDs

|   | LED | Display | Meaning             |
|---|-----|---------|---------------------|
| 1 |     | Off     | Device switched off |

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| LED | Display                                       | Meaning                                       |
|-----|---|---|
|     | 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   |
|----------|----------------|----------------------------------|---|
| 68001116 | MLC510R14-1650 | Safety light curtain<br>receiver | Resolution: 14 mm<br>Protective field height: 1,650 mm<br>Response time: 36 ms<br>Connection: Connector, M12, Metal, 5 -pin<br>Function package: Basic    |
| 68002116 | MLC520R14-1650 | Safety light curtain<br>receiver | Resolution: 14 mm<br>Protective field height: 1,650 mm<br>Response time: 36 ms<br>Connection: Connector, M12, Metal, 8 -pin<br>Function package: Standard |
| 68003116 | MLC530R14-1650 | Safety light curtain<br>receiver | Resolution: 14 mm<br>Protective field height: 1,650 mm<br>Response time: 36 ms<br>Connection: Connector, M12, Metal, 8 -pin<br>Function package: Extended |

### Part number code

Part designation: MLCxyy-za-hhhhei-ooo

| MLC  | Safety light curtain  |
|------|---|
| x    | Series:<br>3: MLC 300<br>5: MLC 500   |
| уу   | Function classes:<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    | Device type:<br>T: transmitter<br>R: receiver   |
| а    | Resolution:<br>14: 14 mm<br>20: 20 mm<br>30: 30 mm<br>40: 40 mm<br>90: 90 mm  |
| hhhh | Protective field height:<br>150 3000: from 150 mm to 3000 mm  |
| e    | Host/Guest (optional):<br>H: Host<br>MG: Middle Guest<br>G: Guest   |

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| MLC | Safety light curtain   |  |  |
|-----|--|--|--|
| i   | Interface (optional):<br>/A: AS-i  |  |  |
| 000 | Option:<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.

### 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-<br>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 |

## Mounting technology - Swivel mounts

|            | Part no. | Designation | Article              | Description   |
|------------|----------|-------------|----------------------|---|
| <b>PPQ</b> | 429393   | BT-2HF      | Mounting bracket set | Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on<br>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 |

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## Services

|    | Part no. | Designation | Article   | Description  |
|----|----------|-------------|---|--|
| () | S981050  | CS40-I-140  | Safety inspection<br>"Safety light<br>barriers" | Details: Checking of a safety light barrier application in<br>accordance with current standards and guidelines. Inclusion of<br>the device and machine data in a database, production of a test<br>log per application.<br>Conditions: It must be possible to stop the machine, support<br>provided by customer's employees and access to the machine<br>for Leuze employees must be ensured.<br>Restrictions: Travel costs and accommodation expenses<br>charged separately and according to expenditure. |
|    | S981046  | CS40-S-140  | Start-up support                                | Details: For safety devices including stopping time<br>measurement and initial inspection.<br>Conditions: Devices and connection cables are already<br>mounted, price not including travel costs and, if applicable,<br>accommodation expenses.<br>Restrictions: Max. 2 h., no mechanical (mounting) and electrical<br>(wiring) work performed, no changes (attachments, wiring,<br>programming) to third-party components in the nearby<br>environment.   |

| Note   |   |
|--|---|
| A list with all available accessories can be found on the Leuze electronic website in the Download tab of the article detailed page. | 1 |