

## Technical data sheet

### Safety light curtain transmitter

Part no.: 68040206  
MLC500T20-600-EX2



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 | Range reduction                 |
|           | 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 | 600 mm    |
| Operating range         | 0 ... 9 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, typ.      | 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, typ.  | 0.25 mm² |
| Length of connection cable, max.           | 100 m    |
| Permissible cable resistance to load, max. | 200 Ω    |

Mechanical data

|                       |                            |
|-----------------------|----------------------------|
| Dimension (W x H x L) | 30.7 mm x 666 mm x 40.3 mm |
| Housing material      | Metal                      |
| Metal housing         | Aluminum                   |
| Lens cover material   | Plastic/PC                 |
| Material of end caps  | Diecast zinc               |
| Net weight            | 750 g                      |
| Housing color         | Silver                     |
| 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     | 0 ... 55 °C   |
| Ambient temperature, storage       | -30 ... 70 °C |
| Relative humidity (non-condensing) | 0 ... 95 %    |

Ex specification

|                                 |                                 |
|---------------------------------|---------------------------------|
| Ex device category              | 3D                              |
|                                 | 3G                              |
| Ex-zone                         | 2                               |
|                                 | 22                              |
| Ex device group                 | II                              |
| Permissible surface temperature | T<85° (T4) °C                   |
| Ignition protection type        | "nA" non-sparking               |
|                                 | "tc" protection through housing |

Certifications

|                      |                |
|----------------------|----------------|
| Degree of protection | IP 65          |
| Protection class     | III            |
| Certifications       | c TÜV NRTL US  |
|                      | c UL US        |
|                      | TÜV Süd        |
| Vibration resistance | 50 m/s²        |
| Shock resistance     | 100 m/s²       |
| US patents           | US 6,418,546 B |

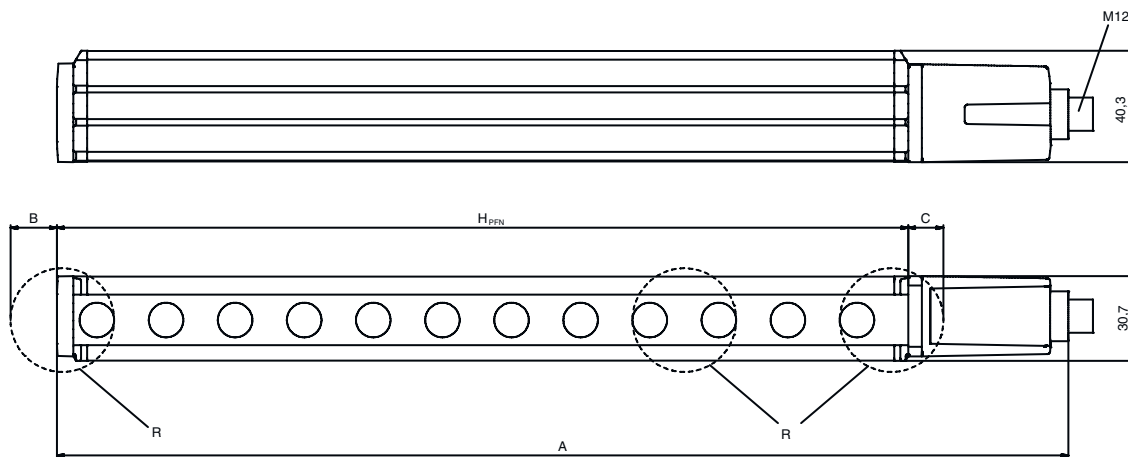
## Technical data

|                       |          |
|-----------------------|----------|
| 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 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | EC002549 |
| ETIM 8.0              | EC002549 |
| ETIM 9.0              | 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 = 617 mm

$H_{PFN}$  Nominal protective field height = 600 mm

A Total height = 666 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.

Dimensioned drawings

K-VM12-Ex interlocking guard



Electrical connection

Connection 1

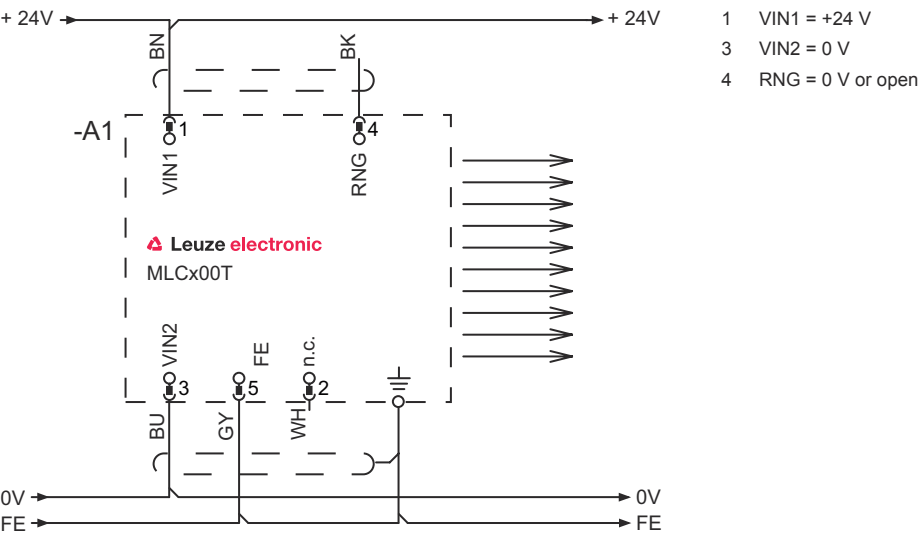
|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| 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   | RNG            | Black           |
| 5   | FE/SHIELD      | Gray            |

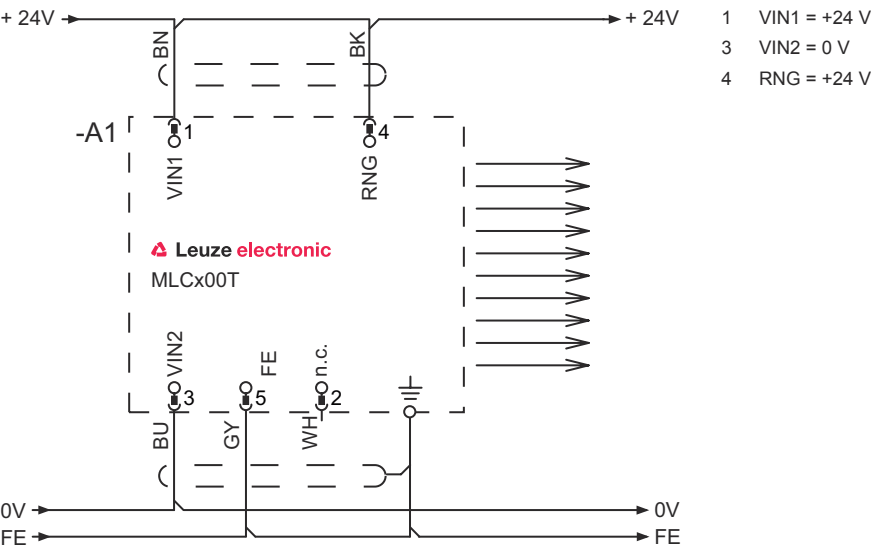


Circuit diagrams

Transmission channel C1, reduced range

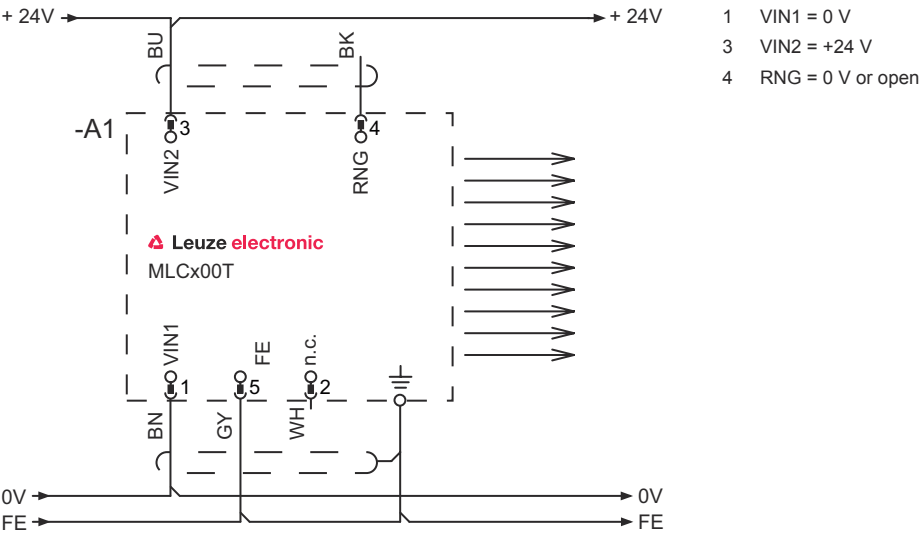


Transmission channel C1, standard range

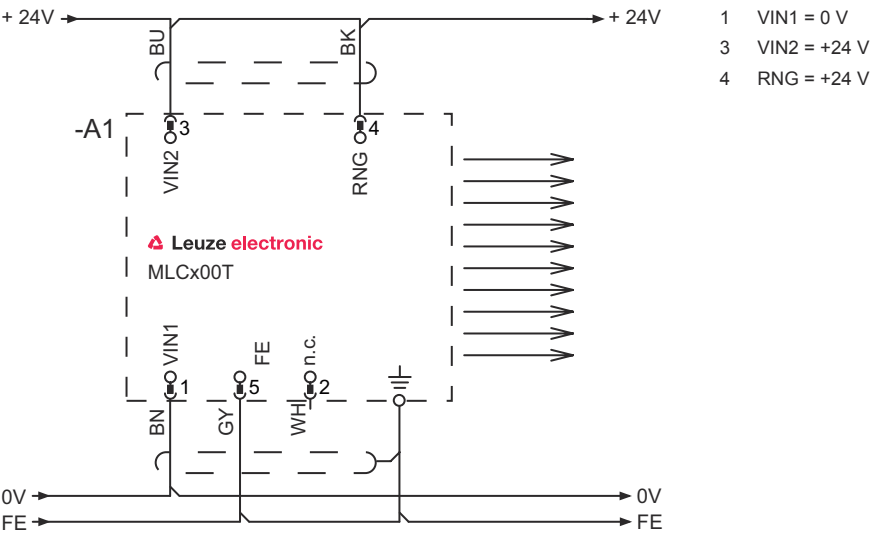


Circuit diagrams

Transmission channel C2, reduced range



Transmission channel C2, standard range



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 | 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                                                                                                                                             |
|-----------------------------------------------------------------------------------|----------|-------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 68042206 | MLC520R20-600-EX2 | Safety light curtain receiver | Function package: Standard<br>Resolution: 20 mm<br>Protective field height: 600 mm<br>Response time: 12 ms<br>Connection: Connector, M12, Metal, 8 -pin |

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                                                                                                                                                                                                          |
| 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 website at <a href="http://www.leuze.com">www.leuze.com</a> . |

Notes

|  Observe intended use! |                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>The product may only be put into operation by competent persons.</p> <p>Only use the product in accordance with its intended use.</p> |

## Accessories

### Connection technology - Connection cables

|                                                                                   | Part no. | Designation        | Article          | Description                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|----------|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50133860 | KD S-M12-5A-P1-050 | Connection cable | 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 | 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 |

### General

|                                                                                    | Part no. | Designation | Article               | Description                   |
|------------------------------------------------------------------------------------|----------|-------------|-----------------------|-------------------------------|
|  | 50109217 | K-V M12-Ex  | Safety locking device | Housing material: Plastic, PA |

### 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.                                                                                                                                         |

Accessories

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