



Figure can vary

**Part no.: 68096005**  
**MLC500T14300/901800**  
**Safety light curtain transmitter**



## Contents

- Technical data
- Suitable receivers
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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- Part number code
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## Technical data

| <b>Basic data</b>                  |                                                    |
|------------------------------------|----------------------------------------------------|
| Series                             | MLC 500                                            |
| Device type                        | Transmitter                                        |
| Contains                           | 2x BT-NC sliding block                             |
| Application                        | Danger zone guarding<br>Access guarding            |
| <b>Functions</b>                   |                                                    |
| Functions                          | Transmission channel changeover<br>Range reduction |
| <b>Characteristic parameters</b>   |                                                    |
| 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                           |
| <b>Protective field data</b>       |                                                    |
| Resolution 1                       | 14 mm                                              |
| Protective field height 1          | 300 mm                                             |
| Resolution 2                       | 90 mm                                              |
| Protective field height 2          | 1,800 mm                                           |
| Operating range                    | 0 ... 20 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 <sub>B</sub>      | 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>                  |                                                    |

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|                                            |                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------|
| Number of connections                      | 1 Piece(s)                                                                       |
| <b>Connection 1</b>                        |                                                                                  |
| Type of connection                         | Connector                                                                        |
| Function                                   | Machine interface                                                                |
| Thread size                                | M12                                                                              |
| Material                                   | Metal                                                                            |
| No. of pins                                | 5 -pin                                                                           |
| <b>Cable properties</b>                    |                                                                                  |
| 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                                                                            |
| <b>Mechanical data</b>                     |                                                                                  |
| Dimension (W x H x L)                      | 29 mm x 2,166 mm x 35.4 mm                                                       |
| Housing material                           | Metal, Aluminum                                                                  |
| Lens cover material                        | Plastic / PMMA                                                                   |
| Material of end caps                       | Diecast zinc                                                                     |
| Net weight                                 | 2,250 g                                                                          |
| Housing color                              | Yellow, RAL 1021                                                                 |
| Type of fastening                          | Mounting bracket<br>Mounting on Device Column<br>Groove mounting<br>Swivel mount |
| <b>Operation and display</b>               |                                                                                  |
| Type of display                            | LED                                                                              |
| Number of LEDs                             | 2 Piece(s)                                                                       |
| <b>Environmental data</b>                  |                                                                                  |
| Ambient temperature, operation             | -30 ... 55 °C                                                                    |
| Ambient temperature, storage               | -30 ... 70 °C                                                                    |
| Relative humidity (non-condensing)         | 0 ... 95 %                                                                       |
| <b>Certifications</b>                      |                                                                                  |
| Degree of protection                       | IP 65                                                                            |
| Protection class                           | III                                                                              |
| Certifications                             | S Mark<br>TÜV Süd<br>c CSA US<br>c TÜV NRTL US                                   |
| Vibration resistance                       | 50 m/s <sup>2</sup>                                                              |
| Shock resistance                           | 100 m/s <sup>2</sup>                                                             |
| US patents                                 | US 6,418,546 B                                                                   |
| <b>Classification</b>                      |                                                                                  |
| eCl@ss 8.0                                 | 27272704                                                                         |
| eCl@ss 9.0                                 | 27272704                                                                         |
| ETIM 5.0                                   | EC002549                                                                         |

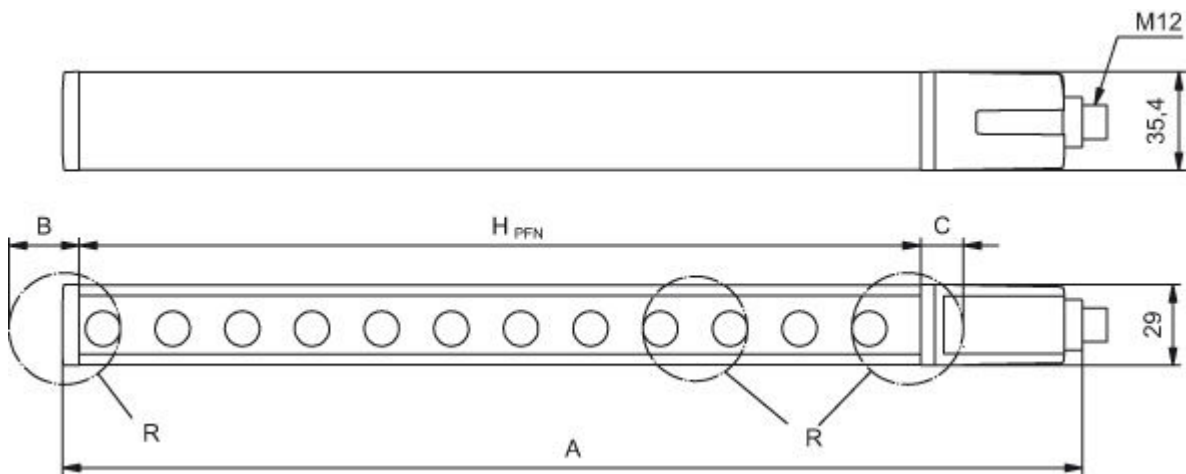
## Suitable receivers

|                                                                                   | Part no. | Designation             | Article                       | Description                                                                                                                                                                             |
|-----------------------------------------------------------------------------------|----------|-------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 68096004 | MLC530R14300/901800-SPG | Safety light curtain receiver | Function package: Smart Process Gating<br>Resolution: 14 mm / 90 mm<br>Protective field height: 300 mm / 1,800 mm<br>Response time: 100 ms<br>Connection: Connector, M12, Metal, 8 -pin |

## Dimensioned drawings

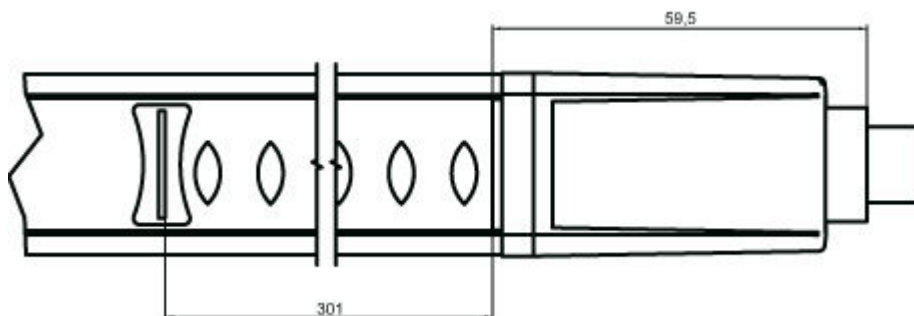
All dimensions in millimeters

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



|           |                                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| $H_{PFE}$ | Effective protective field height = 2190 mm                                                                                                   |
| $H_{PFN}$ | Nominal protective field height = 2100 mm                                                                                                     |
| A         | Total height = 2166 mm                                                                                                                        |
| B         | 50 mm                                                                                                                                         |
| C         | 40 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. |

## Position of resolution limits

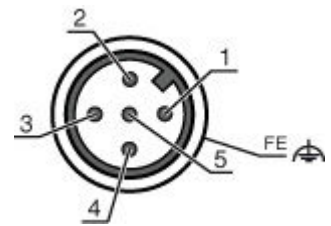


- The resolution change takes place at the marked position

## Electrical connection

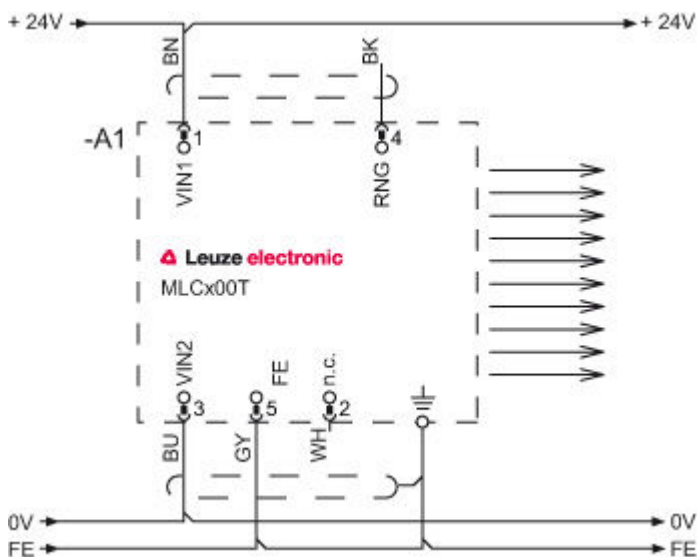
| Connection 1       |                   |
|--------------------|-------------------|
| Type of connection | Connector         |
| Function           | Machine interface |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| 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            |



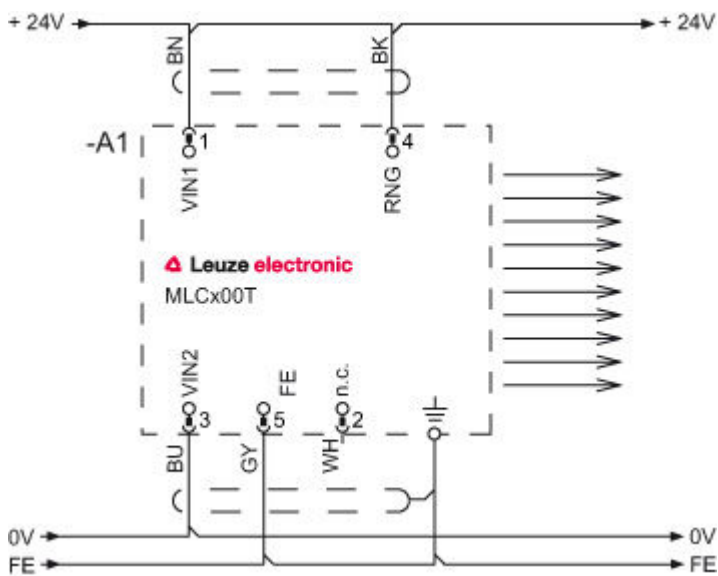
## Circuit diagrams

Transmission channel C1, reduced range



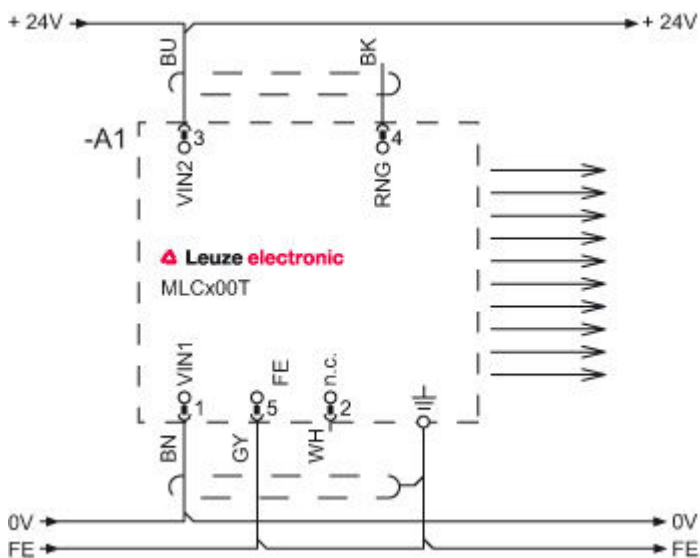
- 1 VIN1 = +24 V
- 3 VIN2 = 0 V
- 4 RNG = 0 V or open

### Transmission channel C1, standard range



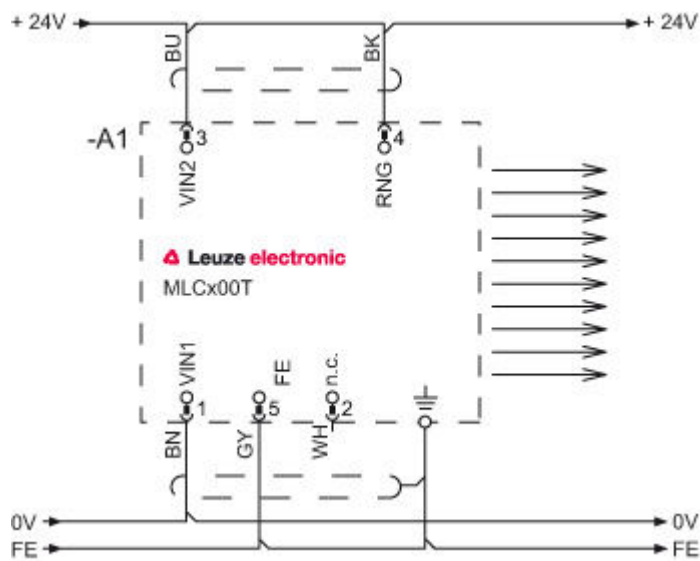
- 1 VIN1 = +24 V
- 3 VIN2 = 0 V
- 4 RNG = +24 V

### 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                       |

## Part number code

Part designation: **MLC5yyzahhh/ahhhh-ooo**

| MLC | Safety light curtain                                                                                                                                                                                                                                                                         |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5   | <b>Series:</b><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                                                                                                                                                                                                                                         |

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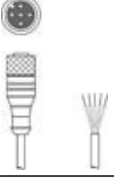
| MLC | Safety light curtain                                                                                                |
|-----|---------------------------------------------------------------------------------------------------------------------|
| a   | <b>Resolution:</b><br>14: 14 mm<br>20: 20 mm<br>30: 30 mm<br>40: 40 mm<br>90: 90 mm                                 |
| hhh | <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

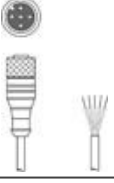
A list with all available device types can be found on the Leuze electronic website at [www.leuze.com](http://www.leuze.com).

## Accessories

### Connection technology - Connection cables

|                                                                                     | Part no. | Designation        | Article          | Description                                                                                                                                                   |
|-------------------------------------------------------------------------------------|----------|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 429088   | CB-M12-15000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 15,000 mm<br>Sheathing material: PUR  |
|  | 429089   | CB-M12-25000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 25,000 mm<br>Sheathing material: PUR  |
|  | 678058   | CB-M12-25000E-5GF  | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 25,000 mm<br>Sheathing material: PUR |
|  | 429281   | CB-M12-50000-5GF   | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 50,000 mm<br>Sheathing material: PUR  |
|  | 50133860 | KD S-M12-5A-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  |

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|                                                                                     | Part no. | Designation        | Article          | Description                                                                                                                                                   |
|-------------------------------------------------------------------------------------|----------|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50133861 | KD S-M12-5A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PUR |
|    | 50137014 | KD S-M12-5A-P1-150 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PVC |
|    | 50137013 | KD S-M12-5A-P1-500 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PVC |
|   | 50133841 | KD U-M12-5A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR   |
|  | 50132534 | KD U-M12-5A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PUR  |

## Connection technology - Connectors

|                                                                                     | Part no. | Designation | Article   | Description                                                |
|-------------------------------------------------------------------------------------|----------|-------------|-----------|------------------------------------------------------------|
|  | 429175   | CB-M12-5GF  | Connector | Connection: Connector, M12, Axial, Female, A-coded, 5 -pin |

## Mounting technology - Mounting brackets

|                                                                                     | Part no. | Designation | Article              | Description                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------|-------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 429056   | BT-2L       | Mounting bracket set | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Material: Metal |
|  | 429057   | BT-2Z       | Mounting bracket set | Design of mounting device: Angle, Z-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Material: Metal |

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## 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                        |
|  | 429394   | BT-2HF-S    | 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<br>Shock absorber: Yes |

## Mounting technology - Other

|                                                                                     | Part no. | Designation | Article              | Description                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|----------|-------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 425740   | BT-10NC60   | Sliding block set    | Contains: 10x BT-NC sliding block<br>Bore hole 1: Ø 4.7 mm<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Fastening, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal                                   |
|   | 425741   | BT-10NC64   | Sliding block set    | Contains: 10x BT-NC-M4-M6 sliding block<br>Bore hole 1: M4<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Fastening, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal                                   |
|  | 425742   | BT-10NC65   | Sliding block set    | Contains: 10x BT-NC-M5-M6 sliding block<br>Bore hole 1: M5<br>Bore hole 2: M6<br>Design of mounting device: Sliding block<br>Fastening, at system: Mounting thread<br>Mounting bracket, at device: Groove mounting<br>Material: Metal                                   |
|  | 424417   | BT-2P40     | Mounting bracket set | Contains: 2x BT-P40 clamp bracket<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Groove mounting<br>Mounting bracket, at device: Groove mounting<br>Type of mounting device: Clampable<br>Material: Metal                                        |
|  | 424422   | BT-2SB10    | Mounting bracket set | Contains: 2x BT-SB10<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable, On the lateral C-groove<br>Type of mounting device: Swiveling<br>Swivel range: -8 ... 8°<br>Material: Metal |
|  | 424423   | BT-2SB10-S  | Mounting bracket set | Contains: 2x BT-SB10-S<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable, On the lateral C-groove<br>Swivel range: -8 ... 8°<br>Material: Metal<br>Shock absorber: Yes              |

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## Alignment aids

|                                                                                   | Part no. | Designation | Article       | Description                                         |
|-----------------------------------------------------------------------------------|----------|-------------|---------------|-----------------------------------------------------|
|  | 427300   | AC-ALM      | Alignment aid | Housing material: Plastic                           |
|  | 520101   | AC-ALM-M    | Alignment aid | Housing material: Plastic                           |
|  | 560020   | LA-78U      | Alignment aid | Light source: laser, Red<br>Housing material: Metal |
|  | 520004   | LA-78UDC    | Alignment aid | Light source: laser, Red<br>Housing material: Metal |

## Device columns

|                                                                                     | Part no. | Designation | Article       | Description                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------|----------|-------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 549857   | UDC-2500-S2 | Device column | Dimensions: 160 mm x 2,560 mm x 149 mm<br>Column height without foot: 2,500 mm<br>Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices |
|  | 549865   | UDC-3100-S2 | Device column | Dimensions: 160 mm x 3,160 mm x 149 mm<br>Column height without foot: 3,100 mm<br>Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions |

## 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.