



Figure can vary

Part no.: 68012909
MLC520R90-900H
Safety light curtain receiver



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- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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Technical data

| Basic data | |
|------------------------------------|--|
| Series | MLC 500 |
| Device type | Receiver |
| Cascading | Host |
| Contains | 2x BT-NC sliding block |
| Application | Access guarding Danger zone guarding |
| Functions | |
| Function package | Standard |
| Functions | Start/restart interlock (RES) Contactor monitoring (EDM) 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 _D | 7.73E-09 per hour |
| Mission time T _M | 20 years, EN ISO 13849-1 |
| Category | 4, EN ISO 13849 |
| Protective field data | |
| Resolution | 90 mm |
| Protective field height | 900 mm |
| Optical data | |
| Number of beams | 12 Piece(s) |
| Synchronization | Optical between transmitter and receiver |
| Electrical data | |
| Protective circuit | Short circuit protected Overvoltage protection |
| Performance data | |
| Supply voltage | 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 μ H |
| Load capacity | 0.3 μ F |
| 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 | 4 ms |
| Restart delay time | 100 ms |

Connection

Number of connections 2 Piece(s)

Connection 1

| | |
|--------------------|-------------------|
| Type of connection | Connector |
| Function | Machine interface |
| Thread size | M12 |
| Material | Metal |
| No. of pins | 8 -pin |

Connection 2

| | |
|--------------------|---|
| Type of connection | Cable with connector |
| Function | Cascade, Guest Out Cascade, Middle Guest Out |
| Cable length | 330 mm |
| Sheathing material | PUR |
| Thread size | M12 |
| Material | Plastic |
| No. of pins | 8 -pin |

Cable properties

| | |
|--|----------------------|
| Permissible conductor cross section, typ. | 0.25 mm ² |
| 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 966 mm x 53 mm |
| Housing material | Metal, Aluminum |

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| | |
|----------------------|---|
| Lens cover material | Plastic / PMMA |
| Material of end caps | Diecast zinc |
| Net weight | 1,125 g |
| Housing color | Yellow, RAL 1021 |
| Type of fastening | Swivel mount Mounting bracket Groove mounting |

Operation and display

| | |
|-----------------|--------------------------|
| Type of display | 7-segment 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 |
| Protection class | III |
| Certifications | c TÜV NRTL US c CSA US TÜV Süd |
| Vibration resistance | 50 m/s ² |
| Shock resistance | 100 m/s ² |
| US patents | US 6,418,546 B |

Classification

| | |
|------------|----------|
| eCl@ss 8.0 | 27272704 |
| eCl@ss 9.0 | 27272704 |
| ETIM 5.0 | EC002549 |

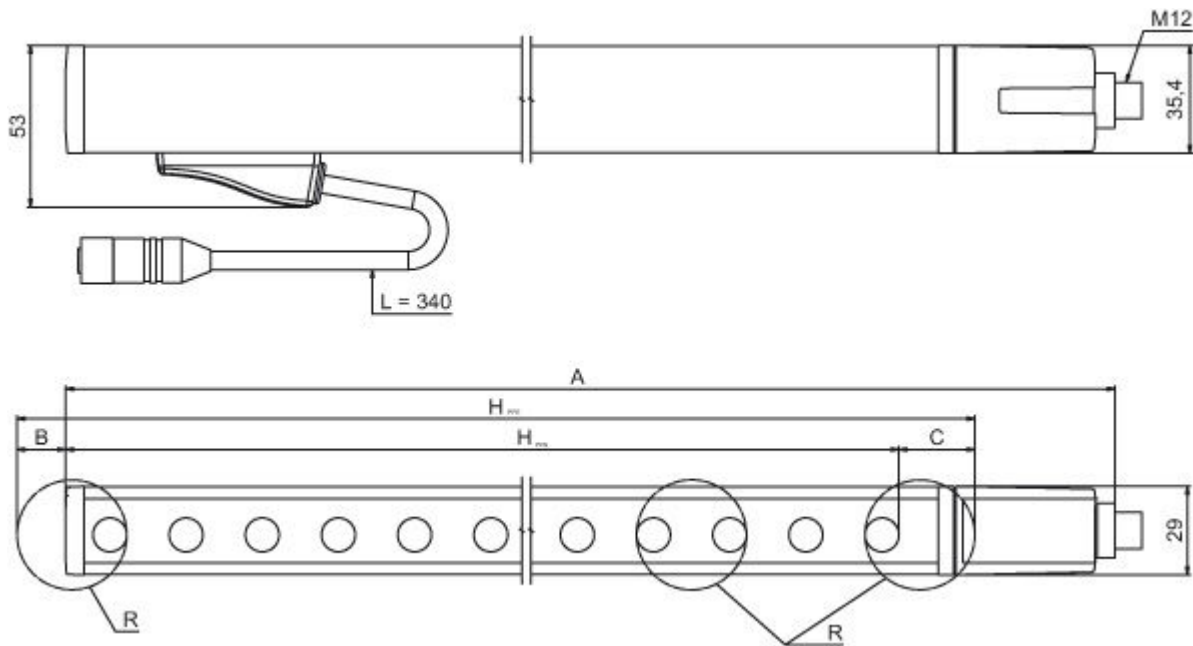
Suitable transmitters

| | Part no. | Designation | Article | Description |
|---|----------|----------------|----------------------------------|--|
|  | 68010909 | MLC500T90-900H | Safety light curtain transmitter | Resolution: 90 mm Protective field height: 900 mm Operating range: 0 ... 20 m Connection: Connector, M12, Metal, 5 -pin |

Dimensioned drawings

All dimensions in millimeters

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

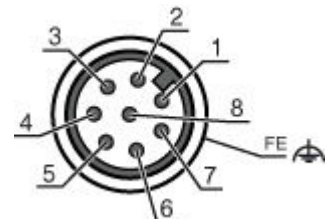


- H_{PFE} Effective protective field height = 990 mm
- H_{PFN} Nominal protective field height = 900 mm
- A Total height = 966 mm
- B 50 mm
- C 40 mm
- R Effective protective field height H_{PFE} goes beyond the dimensions of the optics area to the outer borders of the circles labeled with R.

Electrical connection

| Connection 1 | |
|--------------------|-------------------|
| Type of connection | Connector |
| Function | Machine interface |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 8 -pin |
| Encoding | A-coded |
| Connector housing | FE/SHIELD |

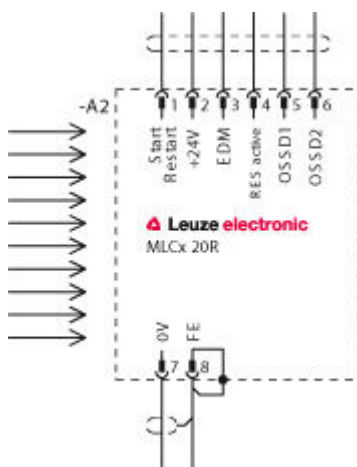
| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1 | IO1 | White |
| 2 | VIN1 | Brown |
| 3 | IN3 | Green |
| 4 | IN4 | Yellow |
| 5 | OSSD1 | Gray |
| 6 | OSSD2 | Pink |
| 7 | VIN2 | Blue |
| 8 | IN8 | Red |



| Connection 2 | |
|--------------------|---|
| Type of connection | Cable with connector |
| Function | Cascade, Guest Out Cascade, Middle Guest Out |
| Cable length | 330 mm |
| Sheathing material | PUR |
| Cable color | Black |
| Wire cross section | 0.14 mm ² |
| Type of stranding | Pair stranding (twisted pair) |
| Thread size | M12 |
| Type | Female |
| Material | Plastic |
| No. of pins | 8 -pin |
| Encoding | A-coded |

Circuit diagrams

Connection diagram receiver



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

Circuit diagram example with downstream MSI-RM2 safety relay



Operation and display

LEDs

| 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 |
| | Green, continuous light | OSSD on |
| 2 | 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 |

Part number code

Part designation: MLCxyy-za-hhhhei-ooo

| MLC | Safety light curtain |
|-----|-------------------------------------|
| x | Series: 3: MLC 300 5: MLC 500 |

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| MLC | Safety light curtain |
|------|--|
| yy | Function classes: 00: Transmitter 01: transmitter (AIDA) 02: Transmitter with test input 10: Basic receiver - automatic restart 11: basic receiver - automatic restart (AIDA) 20: Standard receiver - EDM/RES selectable 30: Extended receiver - blanking/muting |
| z | Device type: T: transmitter R: receiver |
| a | Resolution: 14: 14 mm 20: 20 mm 30: 30 mm 40: 40 mm 90: 90 mm |
| hhhh | Protective field height: 150 ... 3000: from 150 mm to 3000 mm |
| e | Host/Guest (optional): H: Host MG: Middle Guest G: Guest |
| i | Interface (optional): /A: AS-i |
| ooo | Option: /V: high Vibration-proof EX2: explosion protection (zones 2 + 22) SPG: Smart Process Gating |

Note

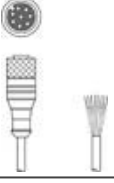





A list with all available device types can be found on the Leuze electronic website at www.leuze.com.

Accessories


Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|---|
|  | 429288 | CB-M12-25000-8GF | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 25,000 mm Sheathing material: PUR |
|  | 429289 | CB-M12-50000-8GF | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 50,000 mm Sheathing material: PUR |
|  | 50135128 | KD S-M12-8A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |
|  | 50135129 | KD S-M12-8A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR |


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| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|---|
|  | 50135130 | KD S-M12-8A-P1-150 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR |
|  | 50135131 | KD S-M12-8A-P1-250 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 25,000 mm Sheathing material: PUR |
|  | 50135132 | KD S-M12-8A-P1-500 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 50,000 mm Sheathing material: PUR |
|  | 50135122 | KD U-M12-8A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR |
|  | 50135123 | KD U-M12-8A-P1-100 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR |
|  | 50135124 | KD U-M12-8A-P1-150 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PUR |


Connection technology - Connectors

| | Part no. | Designation | Article | Description |
|---|----------|-------------|-----------|--|
|  | 429178 | CB-M12-8GF | Connector | Connection: Connector, M12, Axial, Female, A-coded, 8 -pin |





Connection technology - Terminating resistors

| | Part no. | Designation | Article | Description |
|---|----------|-------------|---------------|-----------------------------|
|  | 426128 | AC-MLC-END | Connector set | Degree of protection: IP 67 |



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| | Part no. | Designation | Article | Description |
|---|----------|---------------|---------------------------|--|
|  | 426127 | AC-MLC-HR-END | Host receiver termination | Connection 1: Connector, M12, Axial, Male, 8 -pin Connector, encoding: A-coded Degree of protection: IP 67 |


Mounting technology - Mounting brackets

| | Part no. | Designation | Article | Description |
|---|----------|-------------|----------------------|---|
|  | 429056 | BT-2L | Mounting bracket set | Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal |
|  | 429006 | BT-2L-HG | Mounting device set | Mounting bracket, at device: Screw type Material: Metal |
|  | 429057 | BT-2Z | Mounting bracket set | Design of mounting device: Angle, Z-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal |
|  | 429005 | BT-L-HG | Mounting device set | Mounting bracket, at device: Screw type Material: Metal |





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 Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic |
|  | 429394 | BT-2HF-S | Mounting bracket set | Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic Shock absorber: Yes |




Mounting technology - Other

| | Part no. | Designation | Article | Description |
|---|----------|-------------|-------------------|--|
|  | 425740 | BT-10NC60 | Sliding block set | Contains: 10x BT-NC sliding block Bore hole 1: Ø 4.7 mm Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal |



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| | Part no. | Designation | Article | Description |
|---|----------|-------------|----------------------|---|
|  | 425741 | BT-10NC64 | Sliding block set | Contains: 10x BT-NC-M4-M6 sliding block Bore hole 1: M4 Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal |
|  | 425742 | BT-10NC65 | Sliding block set | Contains: 10x BT-NC-M5-M6 sliding block Bore hole 1: M5 Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal |
|  | 424422 | BT-2SB10 | Mounting bracket set | Contains: 2x BT-SB10 Design of mounting device: Mounting clamp Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable, an der seitlichen C-Nut Type of mounting device: Swiveling Swivel range: -8 ... 8 ° Material: Metal |
|  | 424423 | BT-2SB10-S | Mounting bracket set | Contains: 2x BT-SB10-S Design of mounting device: Mounting clamp Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable, an der seitlichen C-Nut Swivel range: -8 ... 8 ° Material: Metal Shock absorber: Yes |

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 Housing material: Metal |

Protective screens

| | Part no. | Designation | Article | Description |
|---|----------|-------------|----------------------|---|
|  | 429038 | MLC-2PSF | Mounting bracket set | Type of fastening: Clampable Mounting device material: Metal |
|  | 347076 | MLC-PS900 | Protective screen | Protective field height: 900 mm Material: PMMA, clear |

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.