

## Technical data sheet Light curtain receiver

Part no.: 50119943

CML720i-R10-480.R/CN-M12

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- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Suitable transmitters
- Part number code
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Figure can vary



## Technical data

### Basic data

|                     |                                       |
|---------------------|---------------------------------------|
| Series              | 720                                   |
| Operating principle | Throughbeam principle                 |
| Device type         | Receiver                              |
| Contains            | Accessories for the use of the BT-2R1 |
| Application         | Object measurement                    |

### Special version

|                 |                        |
|-----------------|------------------------|
| Special version | Crossed-beam scanning  |
|                 | Diagonal-beam scanning |
|                 | Parallel-beam scanning |

### Optical data

|                          |                            |
|--------------------------|----------------------------|
| Operating range          | Guaranteed operating range |
| Operating range          | 0.3 ... 7 m                |
| Operating range limit    | Typical operating range    |
| Operating range limit    | 0.2 ... 9 m                |
| Measurement field length | 480 mm                     |
| Number of beams          | 48 Piece(s)                |
| Beam spacing             | 10 mm                      |

### Measurement data

|                         |       |
|-------------------------|-------|
| Minimum object diameter | 20 mm |
|-------------------------|-------|

### Electrical data

|                    |                              |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
|                    | Short circuit protected      |
|                    | Transient protection         |

### Performance data

|                      |  |
|----------------------|--|
| Supply voltage $U_B$ | 18 ... 30 V, DC  |
| Residual ripple      | 0 ... 15 %, From $U_B$   |
| Open-circuit current | 0 ... 165 mA, The specified values refer to the entire package consisting of transmitter and receiver. |

### Inputs/outputs selectable

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| Output current, max.                | 100 mA                            |
| Input resistance                    | 6,000 $\Omega$                    |
| Number of inputs/outputs selectable | 2 Piece(s)                        |
| Type                                | Inputs/outputs selectable         |
| Voltage type, outputs               | DC                                |
| Switching voltage, outputs          | Typ. $U_B$ / 0 V                  |
| Voltage type, inputs                | DC                                |
| Switching voltage, inputs           | high: $\geq 6V$<br>low: $\leq 4V$ |

### Input/output 1

|                          |      |
|--------------------------|------|
| Activation/disable delay | 1 ms |
|--------------------------|------|

### Timing

|                        |            |
|------------------------|------------|
| Readiness delay        | 450 ms     |
| Cycle time             | 1.84 ms    |
| Response time per beam | 30 $\mu s$ |

### Interface

|                  |         |
|------------------|---------|
| Type             | CANopen |
| CANopen Function | Process |

### Service interface

|                  |                                       |
|------------------|---------------------------------------|
| Type             | IO-Link                               |
| IO-Link Function | Configuration via software<br>Service |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 2 Piece(s) |
| Plug outlet           | Rear side  |

#### Connection 1

|                    |                           |
|--------------------|---------------------------|
| Function           | Configuration interface   |
|                    | Connection to transmitter |
|                    | Signal IN                 |
|                    | Signal OUT                |
|                    | Voltage supply            |
| Type of connection | Connector                 |
| Thread size        | M12                       |
| Type               | Male                      |
| Material           | Metal                     |
| No. of pins        | 8 -pin                    |
| Encoding           | A-coded                   |

#### Connection 2

|                    |           |
|--------------------|-----------|
| Function           | BUS IN    |
|                    | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 5 -pin    |
| Encoding           | A-coded   |

### Mechanical data

|                       |   |
|-----------------------|---|
| Design                | Cubic   |
| Dimension (W x H x L) | 29 mm x 35.4 mm x 503 mm                        |
| Housing material      | Metal   |
| Metal housing         | Aluminum  |
| Lens cover material   | Plastic   |
| Net weight            | 750 g   |
| Housing color         | Silver  |
| Type of fastening     | Groove mounting<br>Via optional mounting device |

### Operation and display

|                       |                   |
|-----------------------|-------------------|
| Type of display       | LED               |
|                       | OLED display      |
| Number of LEDs        | 2 Piece(s)        |
| Type of configuration | Software          |
|                       | Teach-in          |
| Operational controls  | Membrane keyboard |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -30 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

## Technical data

### Certifications

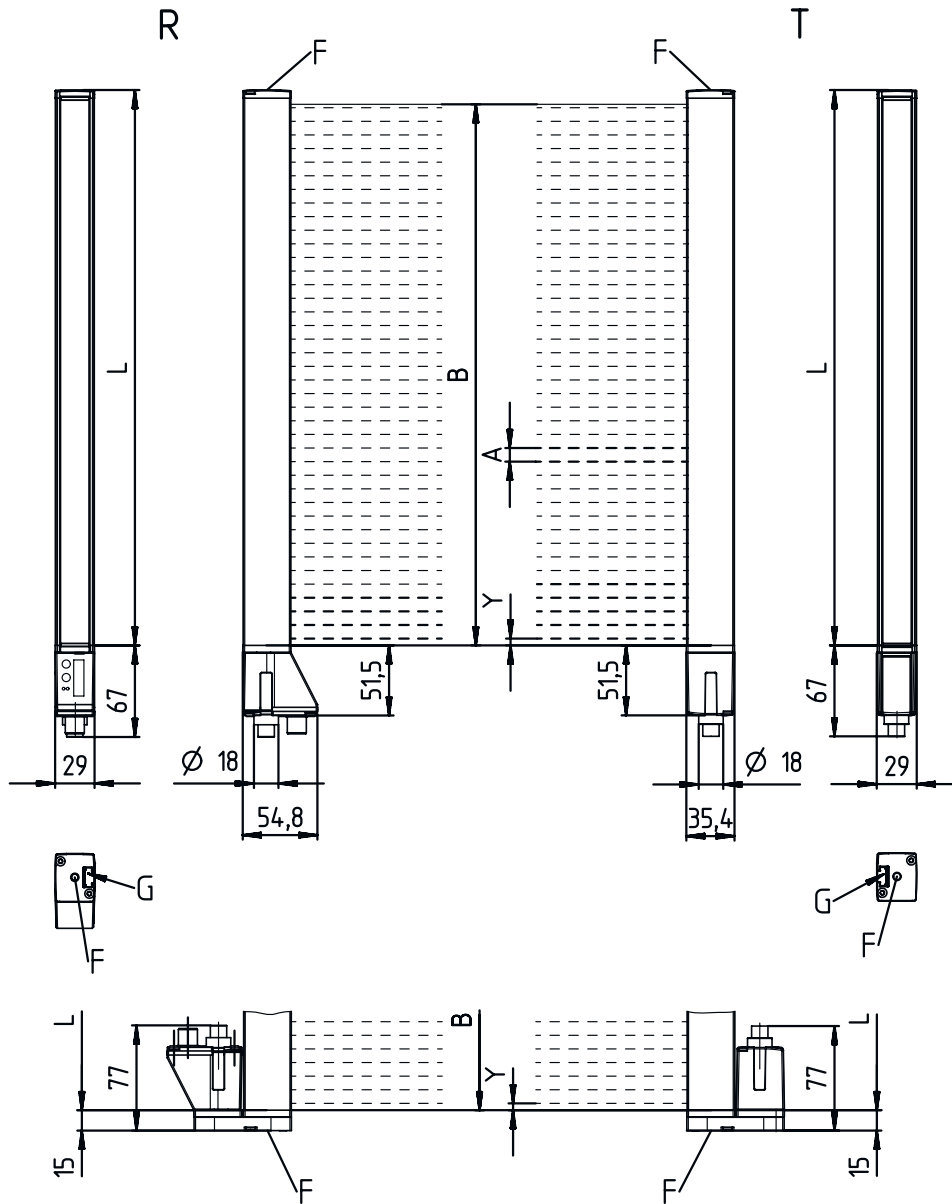
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 65         |
| Protection class     | III           |
| Certifications       | c CSA US      |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 90314990 |
| eCl@ss 5.1.4          | 27270910 |
| eCl@ss 8.0            | 27270910 |
| eCl@ss 9.0            | 27270910 |
| eCl@ss 10.0           | 27270910 |
| eCl@ss 11.0           | 27270910 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | EC002549 |

## Dimensioned drawings

All dimensions in millimeters



- |   |                                 |   |                       |
|---|---------------------------------|---|-----------------------|
| A | Beam spacing 10 mm              | L | Profile length 488 mm |
| B | Measurement field length 480 mm | T | Transmitter           |
| F | M6 thread                       | R | Receiver              |
| G | Fastening groove                | Y | 5 mm                  |

## Dimensioned drawings



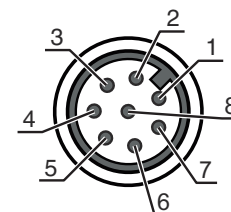
## Electrical connection

### Connection 1

|                    |   |
|--------------------|---|
| Function           | Configuration interface<br>Connection to transmitter<br>Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection | Connector   |
| Thread size        | M12   |
| Type               | Male  |
| Material           | Metal   |
| No. of pins        | 8 -pin  |
| Encoding           | A-coded   |

### Pin Pin assignment

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | I/O 1          |
| 3   | GND            |
| 4   | IO-Link        |
| 5   | I/O 2          |
| 6   | RS 485 Tx+     |
| 7   | RS 485 Tx+     |
| 8   | FE/SHIELD      |

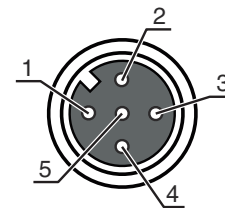


### Connection 2

|                    |                   |
|--------------------|-------------------|
| Function           | BUS IN<br>BUS OUT |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Female            |
| Material           | Metal             |
| No. of pins        | 5 -pin            |
| Encoding           | A-coded           |

## Electrical connection


| Pin | Pin assignment |
|-----|----------------|
| 1   | FE/SHIELD      |
| 2   | n.c.           |
| 3   | CAN GND        |
| 4   | CAN H          |
| 5   | CAN L          |



## Operation and display

| LED | Display                  | Meaning                                |
|-----|--------------------------|--|
| 1   | Green, continuous light  | Operational readiness                  |
|     | Green, flashing          | Teach / error                          |
| 2   | Yellow, continuous light | Light path free, with function reserve |
|     | Yellow, flashing         | No function reserve                    |
|     | Off                      | Object detected                        |

## Suitable transmitters

|  | Part no. | Designation           | Article                   | Description   |
|--|----------|-----------------------|---------------------------|---|
|  | 50119489 | CML720i-T10-480.R-M12 | Light curtain transmitter | Operating range: 0.3 ... 6 m<br>Connection: Connector, M12, Rear side, 5 -pin |

## Part number code

Part designation: CML7XXi-YZZ-AAAA.BCCDDDD-EEEEFF

|             |  |
|-------------|--|
| <b>CML</b>  | <b>Operating principle</b><br>Measuring light curtain  |
| <b>7XXi</b> | <b>Series</b><br>720i: 720i series<br>730i: 730i series  |
| <b>Y</b>    | <b>Device type</b><br>T: transmitter<br>R: receiver  |
| <b>ZZ</b>   | <b>Beam spacing</b><br>05: 5 mm<br>10: 10 mm<br>20: 20 mm<br>40: 40 mm   |
| <b>AAAA</b> | Measurement field length [mm], dependent on beam spacing   |
| <b>B</b>    | <b>Equipment</b><br>A: connector outlet, axial<br>R: rear connector outlet   |
| <b>CCC</b>  | <b>Interface</b><br>L: IO-Link<br>/CN: CANopen<br>/PB: PROFIBUS<br>/PN: PROFINET<br>/CV: Analog current and voltage output<br>/D3: RS 485 Modbus |

## Part number code

|            |  |
|------------|--|
| <b>DDD</b> | <b>Special equipment</b><br>-PS: Power Setting     |
| <b>EEE</b> | <b>Electrical connection</b><br>M12: M12 connector |
| <b>FFF</b> | <b>-EX: Explosion protection</b>                   |


**Note**



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


## Notes

**Observe intended use!**



- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.


**For UL applications:**




- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/ CYJV7 or PVVA/PVVA7)

## Accessories

### Connection technology - Connection cables


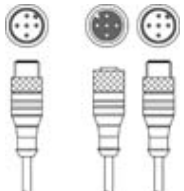
|   | Part no. | Designation        | Article          | Description   |
|---|----------|--------------------|------------------|---|
|  | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

### Connection technology - Interconnection cables


|   | Part no. | Designation                 | Article               | Description   |
|---|----------|-----------------------------|-----------------------|---|
|  | 50129781 | KDS DN-M12-5A-M12-5A-P3-050 | Interconnection cable | Suitable for interface: IO-Link, DeviceNet, CANopen<br>Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

## Accessories


### Connection technology - Y distribution cables

|  | Part no. | Designation             | Article               | Description   |
|--|----------|-------------------------|-----------------------|---|
|  | 50118183 | K-Y1 M12A-5m-M12A-S-PUR | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Connection 3: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Shielded: Yes<br>Cable length fork 1: 5,000 mm<br>Cable length fork 2: 150 mm<br>Sheathing material: PUR                                |
|  | 50118185 | K-YCN M12A-M12A-S-PUR   | Interconnection cable | Suitable for interface: CANopen<br>Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 3: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Shielded: Yes<br>Cable length fork 1: 250 mm<br>Cable length fork 2: 350 mm<br>Sheathing material: PUR |


### Connection technology - Terminating resistors

|   | Part no. | Designation | Article         | Description   |
|---|----------|-------------|-----------------|---|
|  | 50040099 | TS 01-5-SA  | Terminator plug | Suitable for: DeviceNet, CANopen<br>Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Function: Bus termination |


### Mounting technology - Mounting brackets

|  | Part no. | Designation    | Article             | Description   |
|--|----------|----------------|---------------------|---|
|  | 50142900 | BT 700M.5-2SET | Mounting device set | Design of mounting device: Bracket mounting<br>Fastening, at system: Through-hole mounting, T slotted hole<br>Mounting bracket, at device: Screw type, Sliding block<br>Type of mounting device: Rigid<br>Material: Steel |

### Mounting technology - Swivel mounts


|  | Part no. | Designation | Article              | Description   |
|--|----------|-------------|----------------------|---|
|  | 429046   | BT-2R1      | 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 |

## Services

|  | Part no. | Designation | Article          | Description   |
|--|----------|-------------|------------------|---|
|  | S981001  | CS10-S-110  | Start-up support | Details: Performed at location of customer's choosing, duration: max. 10 hours.<br>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment. |



## Accessories

|  | Part no. | Designation | Article          | Description  |
|--|----------|-------------|------------------|--|
|  | S981005  | CS10-T-110  | Product training | <p>Details: Location and content to be agreed upon, duration: max. 10 hours.</p> <p>Conditions: Price not including travel costs and, if applicable, accommodation expenses.</p> <p>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.</p> |

### Note



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