



Figure can vary

**Part no.: 50123593**  
**CML720i-R05-1520.R/D3-M12**  
**Light curtain receiver**



## Contents

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## Technical data

| <b>Basic data</b>                   |   |
|-------------------------------------|---|
| Series                              | 720   |
| Operating principle                 | Throughbeam principle   |
| Device type                         | Receiver  |
| Contains                            | Accessories for the use of the BT-2R1   |
| Application                         | Object measurement  |
| <b>Special design</b>               |   |
| Special design                      | Crossed-beam scanning<br>Diagonal-beam scanning<br>Parallel-beam scanning                               |
| <b>Optical data</b>                 |   |
| Operating range                     | Guaranteed operating range  |
| Operating range                     | 0.1 ... 3.5 m   |
| Operating range limit               | Typical operating range   |
| Operating range limit               | 0.1 ... 4.5 m   |
| Measurement field length            | 1,520 mm  |
| Number of beams                     | 304 Piece(s)  |
| Beam spacing                        | 5 mm  |
| <b>Measurement data</b>             |   |
| Minimum object diameter             | 10 mm   |
| <b>Electrical data</b>              |   |
| Protective circuit                  | Polarity reversal protection<br>Short circuit protected<br>Transient protection                         |
| <b>Performance data</b>             |   |
| Supply voltage $U_B$                | 18 ... 30 V , DC  |
| Residual ripple                     | 0 ... 15 % , From $U_B$   |
| Open-circuit current                | 0 ... 350 mA , The specified values refer to the entire package consisting of transmitter and receiver. |
| <b>Inputs/outputs selectable</b>    |   |
| 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  |
| Switching voltage, inputs           | high: $\geq 6V$<br>low: $\leq 4V$   |
| <b>Input/output 1</b>               |   |
| Activation/disable delay            | 1 ms  |
| <b>Timing</b>                       |   |
| Cycle time                          | 9.52 ms   |
| Response time per beam              | 30 $\mu s$  |

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### Interface

Type RS 485

#### RS 485

Function Process

### Service interface

Type IO-Link

#### IO-Link

Function Configuration via software  
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 B-coded

### Mechanical data

Design Cubic

Dimension (W x H x L) 29 mm x 35.4 mm x 1,543 mm

Housing material Metal , Aluminum

Lens cover material Plastic

Net weight 1,700 g

Housing color Silver

Type of fastening Groove mounting  
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

**Environmental data**

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

**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 8.0            | 27270910 |
| eCl@ss 9.0            | 27270910 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |

## Dimensioned drawings

All dimensions in millimeters



- A Beam spacing 5 mm
- B Measurement field length 1520 mm
- F M6 thread
- G Fastening groove
- L Profile length 1528 mm
- T Transmitter
- R Receiver
- Y 2.5 mm



A PWR / SW IN/OUT  
B BUS IN / OUT

## Electrical connection

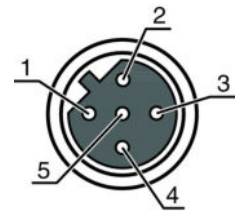
| Connection 1       |   |
|--------------------|---|
| Function           | Configuration interface<br>Connection to transmitter<br>Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection | Connector   |
| Thread size        | M12   |
| Type               | Male  |
| Material           | Metal   |
| No. of pins        | 8 -pin  |
| Encoding           | A-coded   |

| Pin | Pin assignment |
|-----|----------------|
| 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           | B-coded           |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | Tx-            |
| 3   | PB GND         |
| 4   | Tx+            |
| 5   | FE/SHIELD      |




## Operation and display

### LEDs

| LED | Display                  | Meaning                                |
|-----|--------------------------|--|
| 1   | Green, continuous light  | Operational readiness                  |
|     | Green, flashing          | Teach / error                          |
|     |                          | Measurement frequency display          |
| 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   |
|---|----------|------------------------|---------------------------|---|
|  | 50119467 | CML720i-T05-1520.R-M12 | Light curtain transmitter | Operating range: 0.1 ... 3.5 m<br>Connection: Connector, M12, Rear side, 5 -pin |

## Part number code

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

|      |   |
|------|---|
| CML  | <b>Operating principle:</b><br>Measuring light curtain                      |
| 7XXi | <b>Series:</b><br>720i: 720i series<br>730i: 730i series                    |
| Y    | <b>Device type:</b><br>T: transmitter<br>R: receiver                        |
| ZZ   | <b>Beam spacing:</b><br>05: 5 mm<br>10: 10 mm<br>20: 20 mm<br>40: 40 mm     |
| AAAA | Measurement field length [mm], dependent on beam spacing                    |
| B    | <b>Equipment:</b><br>A: connector outlet, axial<br>R: rear connector outlet |

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

#### Note

A list with all available device types can be found on the Leuze electronic 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 |



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## 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                                      |
|  | 50123265 | K-YPB M12A-5m-M12A-S-PUR | Interconnection cable | Suitable for interface: PROFIBUS DP<br>Connection 1: Connector, M12, Axial, Male, B-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Female, B-coded, 5 -pin<br>Connection 3: Connector, M12, Axial, Male, B-coded, 5 -pin<br>Shielded: Yes<br>Cable length fork 1: 5,000 mm<br>Cable length fork 2: 250 mm<br>Sheathing material: PUR |

## Mounting technology - Mounting brackets

|   | Part no. | Designation    | Article             | Description   |
|---|----------|----------------|---------------------|---|
|  | 50142900 | BT 700M.5-2SET | Mounting device set | Contains: 2x mounting brackets, 1 teach template, 4 M6 x 10 screws<br>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 | Contains: 2x BT-R 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 |

## 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. |
|  | S981005  | CS10-T-110  | Product training | Details: Location and content to be agreed upon, duration: max. 10 hours.<br>Conditions: Price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.   |

### Note

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