



Figure can vary

**Part no.: 50131857**  
**CML720i-R05-160.R/PN-M12**  
**Light curtain receiver**



## Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Suitable transmitters
- Part number code
- Notes
- Accessories

## 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>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            | 160 mm  |
| Number of beams                     | 32 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 ... 135 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  |
| Voltage type, inputs                | DC  |
| Switching voltage, inputs           | high: $\geq 6$ V<br>low: $\leq 4$ V   |
| <b>Input/output 1</b>               |   |
| Activation/disable delay            | 1 ms  |
| <b>Timing</b>                       |   |
| Readiness delay                     | 1,500 ms  |
| Cycle time                          | 1.36 ms   |
| Response time per beam              | 30 $\mu$ s  |
| <b>Interface</b>                    |   |
| Type                                | PROFINET  |

### Profinet

|                      |                         |
|----------------------|-------------------------|
| Function             | Process                 |
| Conformance class    | B                       |
| Protocol             | PROFINET RT             |
| Switch functionality | Integrated              |
| Transmission speed   | 10 Mbit/s<br>100 Mbit/s |

### Service interface

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

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 3 Piece(s) |
| Plug outlet           | Rear side  |

#### 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   |

#### Connection 2

|                    |           |
|--------------------|-----------|
| Function           | BUS IN    |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

#### Connection 3

|                    |           |
|--------------------|-----------|
| Function           | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

### Mechanical data

|                       |                          |
|-----------------------|--------------------------|
| Design                | Cubic                    |
| Dimension (W x H x L) | 29 mm x 35.4 mm x 183 mm |
| Housing material      | Metal , Aluminum         |
| Lens cover material   | Plastic                  |
| Net weight            | 400 g                    |

**Part no.: 50131857 – CML720i-R05-160.R/PN-M12 – Light curtain receiver**

|                   |   |
|-------------------|---|
| Housing color     | Silver  |
| Type of fastening | Groove mounting<br>Via optional mounting device |

**Operation and display**

|                       |                      |
|-----------------------|----------------------|
| Type of display       | LED<br>OLED display  |
| Number of LEDs        | 4 Piece(s)           |
| Type of configuration | Software<br>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 160 mm
- F M6 thread
- G Fastening groove
- L Profile length 168 mm
- T Transmitter
- R Receiver
- Y 2.5 mm

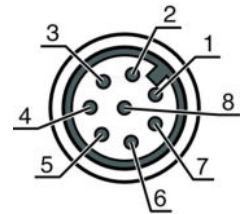


A PWR / SW IN/OUT  
 B BUS IN  
 C BUS OUT

## Electrical connection

| Connection 1       | X1  |
|--------------------|---|
| 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       | X2A       |
|--------------------|-----------|
| Function           | BUS IN    |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

| Pin | Pin assignment |
|-----|----------------|
| 1   | TD0+           |
| 2   | RD0+           |
| 3   | TD0-           |
| 4   | RD0-           |



| Connection 3       | X2B       |
|--------------------|-----------|
| Function           | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |

Part no.: 50131857 – CML720i-R05-160.R/PN-M12 – Light curtain receiver

| Connection 3 | X2B     |
|--------------|---------|
| Material     | Metal   |
| No. of pins  | 4 -pin  |
| Encoding     | D-coded |

| Pin | Pin assignment |
|-----|----------------|
| 1   | TD0+           |
| 2   | RD0+           |
| 3   | TD0-           |
| 4   | RD0-           |




## 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                        |
| 3   | Green, continuous light (at the X2A / X2B connector)  | Link                                   |
| 4   | Yellow, continuous light (at the X2A / X2B connector) | Activity                               |

## Suitable transmitters

|   | Part no. | Designation           | Article                   | Description   |
|---|----------|-----------------------|---------------------------|---|
|  | 50119450 | CML720i-T05-160.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-YZZ-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   |
| 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 |



**Part no.: 50131857 – CML720i-R05-160.R/PN-M12 – Light curtain receiver**

|   | Part no. | Designation         | Article          | Description  |
|---|----------|---------------------|------------------|--|
|  | 50135074 | KS ET-M12-4A-P7-050 | Connection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

**Connection technology - Interconnection cables**

|   | Part no. | Designation                 | Article               | Description  |
|---|----------|-----------------------------|-----------------------|--|
|  | 50135081 | KSS ET-M12-4A-RJ45-A-P7-050 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

**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 |

**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 |

|   | Part no. | Designation               | Article         | Description  |
|---|----------|---------------------------|-----------------|--|
|  | 50121098 | SET MD12-US2-IL1.1 + Zub. | Diagnostics set | Interface: USB<br>Connections: 2 Piece(s)<br>Degree of protection: IP 20 |

## Services

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