



Figure can vary

**Part no.: 50120180**  
**CML720i-R20-470.R/CV-M12**  
**Light curtain receiver**



## Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Suitable transmitters
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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          | 0.3 ... 7 m                                                                                             |
| Operating range limit    | Typical operating range                                                                                 |
| Operating range limit    | 0.2 ... 9 m                                                                                             |
| Measurement field length | 470 mm                                                                                                  |
| Number of beams          | 24 Piece(s)                                                                                             |
| Beam spacing             | 20 mm                                                                                                   |
| <b>Measurement data</b>  |                                                                                                         |
| Minimum object diameter  | 30 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 ... 165 mA , The specified values refer to the entire package consisting of transmitter and receiver. |
| <b>Outputs</b>           |                                                                                                         |
| Number of analog outputs | 2 Piece(s)                                                                                              |
| <b>Analog outputs</b>    |                                                                                                         |
| Current                  | 0 ... 24 mA                                                                                             |
| Voltage                  | 0 ... 11 V                                                                                              |
| <b>Analog output 1</b>   |                                                                                                         |
| Type                     | Voltage                                                                                                 |
| <b>Analog output 2</b>   |                                                                                                         |
| Type                     | Current                                                                                                 |

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## Inputs/outputs selectable

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

## Input/output 1

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

## Timing

|                        |         |
|------------------------|---------|
| Readiness delay        | 450 ms  |
| Cycle time             | 1.12 ms |
| Response time per beam | 30 µs   |

## 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<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           | Connection to transmitter |
| 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 , Aluminum         |

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

**Environmental data**

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

**Certifications**

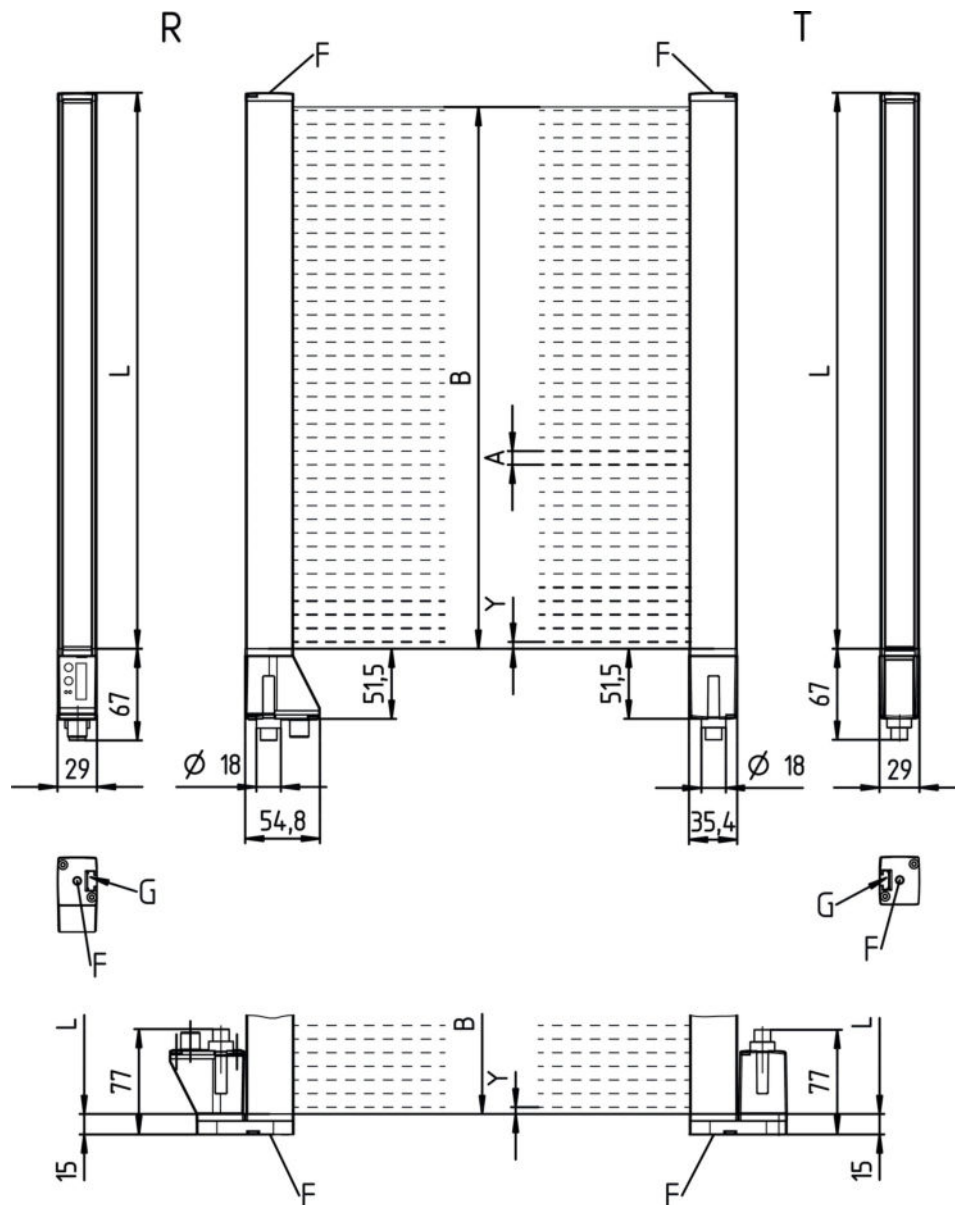
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 65         |
| Protection class     | III           |
| Certifications       | c CSA US      |
| Standards applied    | IEC 60947-5-2 |

**Classification**

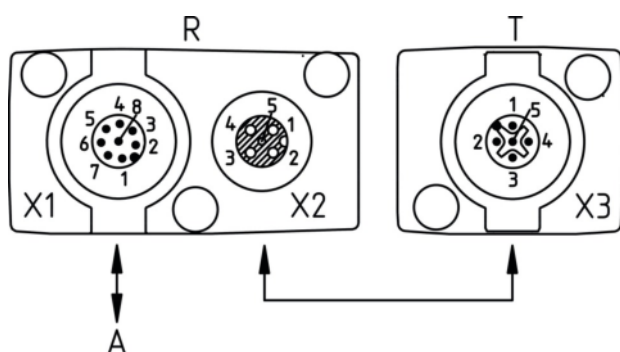
|                       |          |
|-----------------------|----------|
| Customs tariff number | 90314990 |
| eCl@ss 8.0            | 27270910 |
| eCl@ss 9.0            | 27270910 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |

## Dimensioned drawings

All dimensions in millimeters



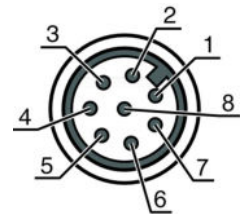
- A Beam spacing 20 mm
- B Measurement field length 470 mm
- F M6 thread
- G Fastening groove
- L Profile length 488 mm
- T Transmitter
- R Receiver
- Y 5 mm



## Electrical connection

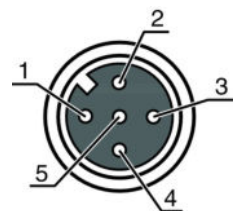
| Connection 1       |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Function           | Configuration interface<br>Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection | 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   | OUT V          |
| 7   | OUT mA         |
| 8   | AGND           |



| Connection 2       |                           |
|--------------------|---------------------------|
| Function           | Connection to transmitter |
| Type of connection | Connector                 |
| Thread size        | M12                       |
| Type               | Female                    |
| Material           | Metal                     |
| No. of pins        | 5 -pin                    |
| Encoding           | A-coded                   |

| Pin | Pin assignment |
|-----|----------------|
| 1   | FE/SHIELD      |
| 2   | V+             |
| 3   | GND            |
| 4   | RS 485 Tx+     |
| 5   | RS 485 Tx-     |



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## 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                                                                   |
|------------------------------------------------------------------------------------|----------|-----------------------|---------------------------|-------------------------------------------------------------------------------|
|  | 50119507 | CML720i-T20-470.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-YYY-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!

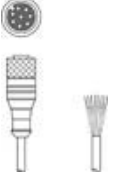
- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

### For UL applications:

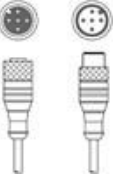
- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

## Accessories

### Connection technology - Connection cables

|                                                                                     | Part no. | Designation        | Article          | Description                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------|--------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50135128 | KD S-M12-8A-P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -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                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|----------|-----------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |

### 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 |

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## 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<br>MD12-US2-IL1.1<br>+ 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 | 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.