

## Technical data sheet Light curtain receiver

Part no.: 50120123

CML720i-R05-160.R/CV-M12

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For illustration purposes only



## 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

|                          |             |
|--------------------------|-------------|
| Measurement field length | 160 mm      |
| Number of beams          | 32 Piece(s) |
| Beam spacing             | 5 mm        |

### Measurement data

|                         |       |
|-------------------------|-------|
| Minimum object diameter | 10 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 ... 135 mA, The specified values refer to the entire package consisting of transmitter and receiver. |

### Outputs

|                          |            |
|--------------------------|------------|
| Number of analog outputs | 2 Piece(s) |
|--------------------------|------------|

### Analog outputs

|         |               |
|---------|---------------|
| Type    | Analog output |
| Current | 0 ... 24 mA   |
| Voltage | 0 ... 11 V    |

### Analog output 1

|      |         |
|------|---------|
| Type | Voltage |
|------|---------|

### Analog output 2

|      |         |
|------|---------|
| Type | Current |
|------|---------|

### 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: $\leq 4 V$ |

### Input/output 1

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

### Time behavior

|                        |            |
|------------------------|------------|
| Readiness delay        | 450 ms     |
| Cycle time             | 1.36 ms    |
| Response time per beam | 30 $\mu s$ |

### 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 |
|                    | 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           | 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 183 mm     |
| Housing material      | Metal                        |
| Metal housing         | Aluminum                     |
| Lens cover material   | Plastic                      |
| Net weight            | 400 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 |

## Technical data

### Certifications

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

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 90314990 |
| ECLASS 5.1.4          | 27270910 |
| ECLASS 8.0            | 27270910 |
| ECLASS 9.0            | 27270910 |
| ECLASS 10.0           | 27270910 |
| ECLASS 11.0           | 27270910 |
| ECLASS 12.0           | 27270910 |
| ECLASS 13.0           | 27270910 |
| ECLASS 14.0           | 27270910 |
| ECLASS 15.0           | 27270910 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | EC002549 |
| ETIM 8.0              | EC002549 |
| ETIM 9.0              | EC002549 |
| ETIM 10.0             | EC002549 |

All dimensions in millimeters

- |   |                                 |   |                       |
|---|---------------------------------|---|-----------------------|
| A | Beam spacing 5 mm               | L | Profile length 168 mm |
| B | Measurement field length 160 mm | T | Transmitter           |
| F | M6 thread                       | R | Receiver              |
| G | Fastening groove                | Y | 2.5 mm                |

Dimensioned drawings



Electrical connection

Connection 1

|                    |                         |
|--------------------|-------------------------|
| Function           | Configuration interface |
|                    | 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                 |

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- |



## 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           | Operating range<br>Operating range<br>limit | Description                                                                     |
|-----------------------------------------------------------------------------------|----------|-----------------------|---------------------------------------------|---------------------------------------------------------------------------------|
|  | 50119450 | CML720i-T05-160.R-M12 | 0.1 ... 3.5 m<br>0.1 ... 4.5 m              | 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**

|             |                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <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: Axial connector outlet<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 |
| <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                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------|----------|--------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50135128 | KD S-M12-8A-P1-050 | Connection cable | Application: Oil and lubricant resistant<br>Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Connector, LED: No<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 | Application: Oil and lubricant resistant<br>Suitable for interface: 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 |

## Accessories

### Mounting technology - Swivel mounts

|                                                                                  | Part no. | Designation | Article              | Description                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------|----------|-------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 429029   | BT-2RG      | Mounting bracket set | Contains: 2x BT-R swivel mount, 2 cylinders 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 |

### Configuration devices

|                                                                                  | Part no. | Designation                  | Article         | Description                                                                                    |
|----------------------------------------------------------------------------------|----------|------------------------------|-----------------|------------------------------------------------------------------------------------------------|
|  | 50121098 | SET MD12-US2-IL1.1<br>+ Zub. | Diagnostics set | Supply voltage: DC<br>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. |
|  | 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.                                                          |

#### Note



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