



the sensor people





Figure can vary

Part no.: 50131893 CML720i-R05-2880.R/PN-M12 Light curtain receiver





# **Contents**

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### **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  |  |  |
| 7.0000000                           | Sheet measurement   |  |  |
| Optical data                        |   |  |  |
| 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            | 2,880 mm  |  |  |
| Number of beams                     | 576 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 <sub>B</sub>       | 18 30 V , DC  |  |  |
| Residual ripple                     | 0 15 % , From U <sub>B</sub>  |  |  |
| Open-circuit current                | 0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver. |  |  |
| Inputs/outputs selectable           | Sisting of transmitter and receiver.  |  |  |
| 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 <sub>B</sub> / 0 V   |  |  |
| Voltage type, inputs                | DC  |  |  |
| Switching voltage, inputs           | high: ≥6V<br>low: ≤4V   |  |  |
| Input/output 1                      | 1010  |  |  |
| Activation/disable delay            | 1 ms  |  |  |
|                                     | · ····  |  |  |
| Timing                              |   |  |  |
| Readiness delay                     | 1,500 ms  |  |  |
| Cycle time                          | 17.68 ms  |  |  |
| Response time per beam              | 30 µs   |  |  |
| •                                   |   |  |  |
| Interface                           |   |  |  |
| Туре                                | PROFINET  |  |  |
|                                     |   |  |  |



| Profinet              |   |  |  |
|-----------------------|---|--|--|
| Function              | Process   |  |  |
| Conformance class     | В   |  |  |
| Protocol              | PROFINET RT   |  |  |
| Switch functionality  | Integrated  |  |  |
| Transmission speed    | 10 Mbit/s<br>100 Mbit/s   |  |  |
|                       |   |  |  |
| Service interface     |   |  |  |
| Туре                  | IO-Link   |  |  |
| IO-Link               |   |  |  |
| Function              | Configuration via software<br>Service   |  |  |
| Connection            |   |  |  |
| Number of connections | 3 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   |  |  |
| Туре                  | Male  |  |  |
| Material              | Metal   |  |  |
| No. of pins           | 8 -pin  |  |  |
| Encoding              | A-coded   |  |  |
| Connection 2          |   |  |  |
| Function              | BUS IN  |  |  |
| Type of connection    | Connector   |  |  |
| Thread size           | M12   |  |  |
| Туре                  | Female  |  |  |
| Material              | Metal   |  |  |
| No. of pins           | 4 -pin  |  |  |
| Encoding              | D-coded D-coded   |  |  |
| Connection 3          |   |  |  |
| Function              | BUS OUT   |  |  |
| Type of connection    | Connector   |  |  |
| Thread size           | M12   |  |  |
| Туре                  | Female  |  |  |
| Material              | Metal   |  |  |
| No. of pins           | 4 -pin  |  |  |
| Encoding              | D-coded D-coded   |  |  |
| Mechanical data       |   |  |  |
| Design                | Cubic   |  |  |
| Dimension (W x H x L) | 29 mm x 35.4 mm x 2,903 mm  |  |  |
| Housing material      | Metal , Aluminum  |  |  |
| Lens cover material   | Plastic   |  |  |
| Net weight            | 2,950 g   |  |  |

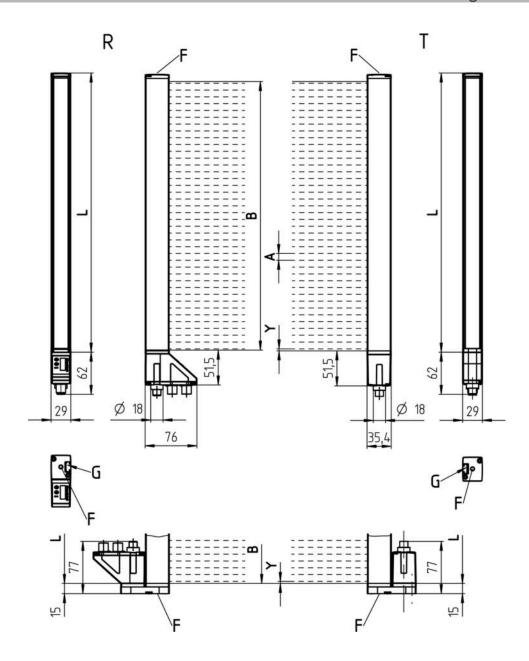


| Housing color                  | Silver                                       |  |  |
|--------------------------------|--|--|--|
| Type of fastening              | Groove mounting Via optional mounting device |  |  |
|                                |  |  |  |
| Operation and display          |  |  |  |
| Type of display                | LED<br>OLED display                          |  |  |
| Number of LEDs                 | 4 Piece(s)                                   |  |  |
| Type of configuration          | Software<br>Teach-in                         |  |  |
| Operational controls           | Membrane keyboard                            |  |  |
| Environmental data             |  |  |  |
|                                | -30 60 °C                                    |  |  |
| Ambient temperature, operation | -50 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                                     |  |  |

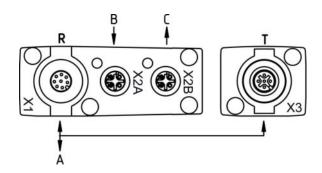
### **Dimensioned drawings**

All dimensions in millimeters





- A Beam spacing 5 mm B Measurement field length 2880 mm
- F M6 thread
- G Fastening groove
- L Profile length 2888 mm
- T Transmitter
- R Receiver
- Y 2.5 mm



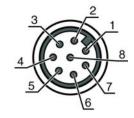


A PWR / SW IN/OUT B BUS IN C BUS OUT

### **Electrical connection**

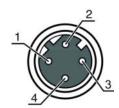
| Connection 1       | X1  |  |  |
|--------------------|---|--|--|
| Function           | Configuration interface Connection to transmitter Signal IN Signal OUT Voltage supply |  |  |
| Type of connection | Connector   |  |  |
| Thread size        | M12   |  |  |
| Туре               | Male  |  |  |
| Material           | Metal   |  |  |
| No. of pins        | 8 -pin  |  |  |
| Encoding           | A-coded 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       |  |
| Туре               | Female    |  |
| Material           | Metal     |  |
| No. of pins        | 4 -pin    |  |
| Encoding           | D-coded   |  |

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

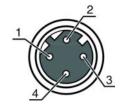


| Connection 3       | X2B       |  |
|--------------------|-----------|--|
| Function           | BUS OUT   |  |
| Type of connection | Connector |  |
| Thread size        | M12       |  |
| Туре               | Female    |  |



| 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   |
|----------|----------------------------|------------------------------|---|
| 50119484 | CML720i-<br>T05-2880.R-M12 | Light curtain<br>transmitter | Operating range: 0.1 3.5 m<br>Connection: Connector, M12, Rear side, 5 -pin |

### Part number code

Part designation: CML7XXi-YZZ-AAAA.BCCCDDD-EEEFFF

| CML  | Operating principle: Measuring light curtain      |
|------|---|
| 7XXi | Series:<br>720i: 720i series<br>730i: 730i series |
| Y    | Device type: T: transmitter R: receiver           |

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| ZZ   | Beam spacing: 05: 5 mm 10: 10 mm 20: 20 mm 40: 40 mm   |
|------|--|
| AAAA | Measurement field length [mm], dependent on beam spacing   |
| В    | Equipment: A: connector outlet, axial R: rear connector outlet   |
| ccc  | Interface: L: IO-Link /CN: CANopen /PB: PROFIBUS /PN: PROFINET /CV: Analog current and voltage output /D3: RS 485 Modbus |
| DDD  | Special equipment: -PS: Power Setting  |
| EEE  | Electrical connection: M12: M12 connector  |
| FFF  | -EX: Explosion protection:   |

#### Note

A list with all available device types can be found on the Leuze electronic website at 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-<br>V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |

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| Pa   | art no. Des          | esignation | Article | Description   |
|------|----------------------|------------|---------|---|
| 5013 | 135074 KS E<br>P7-09 |            |         | Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |

## Connection technology - Interconnection cables

|  | Part no. | Designation                     | Article               | Description  |
|--|----------|---------------------------------|-----------------------|--|
|  | 50135081 | KSS ET-M12-4A-<br>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-<br>M12A-S-PUR | Interconnection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 3: Connector, M12, Axial, Female, A-coded, 8 -pin Shielded: Yes Cable length fork 1: 5,000 mm Cable length fork 2: 150 mm 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 Design of mounting device: Bracket mounting Fastening, at system: Through-hole mounting, T slotted hole Mounting bracket, at device: Screw type, Sliding block Type of mounting device: Rigid Material: Steel |

## Mounting technology - Swivel mounts

|     | Part no. | Designation | Article              | Description   |
|-----|----------|-------------|----------------------|---|
| EE. | 429046   | BT-2R1      | Mounting bracket set | Contains: 2x BT-R swivel mount, 1 cylinder for mounting on the light curtain Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic |

|     | Part no. | Designation                     | Article         | Description  |
|-----|----------|---------------------------------|-----------------|--|
| 165 | 50121098 | SET<br>MD12-US2-IL1.1<br>+ Zub. | Diagnostics set | Interface: USB<br>Connections: 2 Piece(s)<br>Degree of protection: IP 20 |

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### 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.  Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.  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. Conditions: Price not including travel costs and, if applicable, accommodation expenses. 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.