



the sensor people





Figure can vary

Part no.: 50120145 CML720i-R05-1920.R/CV-M12 Light curtain receiver





# **Contents**

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- Electrical connection
- · Operation and display
- Suitable transmitters
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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  |
| Аррисации                     | Object measurement  |
| Special design                |   |
| Special design                | Crossed-beam scanning<br>Diagonal-beam scanning<br>Parallel-beam scanning                           |
| 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      | 1,920 mm  |
| Number of beams               | 384 Piece(s)  |
| Beam spacing                  | 5 mm  |
| Beam spacing                  | 3 Hilli   |
| 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          | 0 435 mA , The specified values refer to the entire package consisting of transmitter and receiver. |
| Outputs                       |   |
| Number of analog outputs      | 2 Piece(s)  |
| Analog outputs                |   |
| Current                       | 0 24 mA   |
| Voltage                       | 0 11 V  |
| Analog output 1               |   |
| Туре                          | Voltage   |
| Analog output 2               |   |
| Туре                          | Current   |
| <del></del>                   |   |



| 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  | nign: ≥6V<br>low: ≤4V  | high: ≥6V<br>low: ≤4V |  |  |  |
| Input/output 1   |  |                       |  |  |  |
| Activation/disable delay   | 1 ms   |                       |  |  |  |
| ming   |  |                       |  |  |  |
| eadiness delay   | 450 ms   |                       |  |  |  |
| ycle time  | 11.92 ms   |                       |  |  |  |
| esponse time per beam  | 30 µs  |                       |  |  |  |
| soponee time per seam  |  |                       |  |  |  |
| ervice interface   |  |                       |  |  |  |
| /pe  | IO-Link  |                       |  |  |  |
| IO-Link  |  |                       |  |  |  |
| Function   | Configuration via software<br>Service                                      |                       |  |  |  |
|  |  |                       |  |  |  |
| onnection umber of connections   | 2 Diogg(a)   |                       |  |  |  |
|  | 2 Piece(s)  Rear side  |                       |  |  |  |
| ug outlet  | Rear side  |                       |  |  |  |
| Connection 1   |  |                       |  |  |  |
| Function   | Configuration interface<br>Signal IN<br>Signal OUT<br>Voltage supply       |                       |  |  |  |
| Type of connection   | Connector  |                       |  |  |  |
| Thread size  | M12  |                       |  |  |  |
| Tillead Size   |  |                       |  |  |  |
|  | Male   |                       |  |  |  |
| Type Material  | Male Metal   |                       |  |  |  |
| Type<br>Material   | Metal  |                       |  |  |  |
| Type Material No. of pins  | Metal<br>8 -pin  |                       |  |  |  |
| Type Material No. of pins Encoding   | Metal  |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  | Metal<br>8 -pin<br>A-coded   |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  | Metal 8 -pin A-coded  Connection to transmitter                            |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  Type of connection                              | Metal 8 -pin A-coded  Connection to transmitter Connector                  |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  Type of connection  Thread size                 | Metal 8 -pin A-coded  Connection to transmitter Connector M12              |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  Type of connection  Thread size  Type           | Metal 8 -pin A-coded  Connection to transmitter Connector M12 Female       |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  Type of connection  Thread size  Type  Material | Metal 8 -pin A-coded  Connection to transmitter Connector M12 Female Metal |                       |  |  |  |
| Type  Material  No. of pins  Encoding  Connection 2  Function  Type of connection  Thread size  Type           | Metal 8 -pin A-coded  Connection to transmitter Connector M12 Female       |                       |  |  |  |

| Mechanical data       |                            |
|-----------------------|----------------------------|
| Design                | Cubic                      |
| Dimension (W x H x L) | 29 mm x 35.4 mm x 1,943 mm |
| Housing material      | Metal , Aluminum           |
|                       |                            |



| Lens cover material            | Plastic                                      | Plastic   |  |  |
|--------------------------------|--|-----------|--|--|
| Net weight                     | 2,100 g                                      | 2,100 g   |  |  |
| lousing color Silver           |  |           |  |  |
| Type of fastening              | Groove mounting 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                         |           |  |  |
|                                |  |           |  |  |
| Environmental data             |  |           |  |  |
| Ambient temperature, operation | -30 60 °C                                    | -30 60 °C |  |  |
| Ambient temperature, storage   | 40 70 °C                                     | -40 70 °C |  |  |

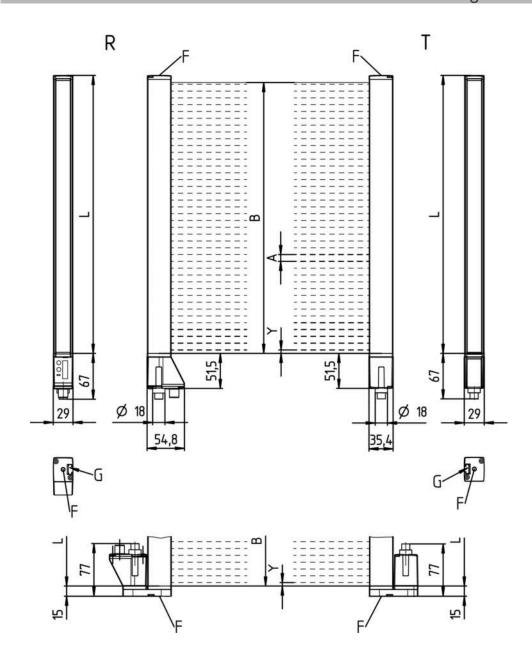
| Certifications       |               |
|----------------------|---------------|
| Degree of protection | IP 65         |
| Protection class     | III           |
| Certifications       | c CSA US      |
| Standards applied    | IEC 60947-5-2 |

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

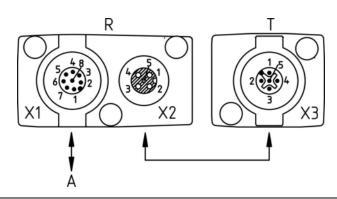
# **Dimensioned drawings**

All dimensions in millimeters





- A Beam spacing 5 mm B Measurement field length 1920 mm
- F M6 thread
- G Fastening groove
- L Profile length 1928 mm
- T Transmitter
- R Receiver
- Y 2.5 mm



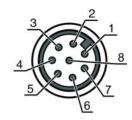


APWR / SW IN/OUT

### **Electrical connection**

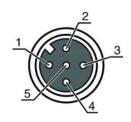
| Connection 1       |   |  |
|--------------------|---|--|
| Function           | Configuration interface Signal IN Signal OUT Voltage supply |  |
| Type of connection | Connector   |  |
| Thread size        | M12   |  |
| Туре               | Male  |  |
| Material           | Metal   |  |
| No. of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

| 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                       |  |
| Туре               | 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**

### **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   |
|----------|----------------------------|------------------------------|---|
| 50119472 | CML720i-<br>T05-1920.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  |  |  |  |  |
| Υ    | Device type: T: transmitter R: receiver  |  |  |  |  |
| 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:   |  |  |  |  |

| N  | _ | 4 | • |
|----|---|---|---|
| 14 | v | u |   |

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  |
|----------|------------------------|------------------|--|
| 50135128 | KD S-M12-8A-<br>P1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |

## Connection technology - Interconnection cables

| Part no. | Designation                     | Article               | Description   |
|----------|---------------------------------|-----------------------|---|
|          | KDS DN-M12-5A-<br>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 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 |

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# Mounting technology - Swivel mounts

|     | Part no. | Designation | Article | Description   |
|-----|----------|-------------|---------|---|
| EE. | 429046   | BT-2R1      | 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  |
|-----|----------|---------------------------------|---------|--|
| 166 | 50121098 | SET<br>MD12-US2-IL1.1<br>+ Zub. |         | Interface: USB Connections: 2 Piece(s) 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. 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.