

# **Technical data sheet Light curtain receiver** Part no.: 50120154 CML720i-R05-2640.R/CV-M12



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 changes

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### **Technical data**

#### Basic 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                        |  |  |
| Operating range                     | 0.1 3.5 m  |  |
| Operating range                     | Guaranteed operating range   |  |
| Operating range limit               | 0.1 4.5 m  |  |
| Operating range limit               | Typical operating range  |  |
| Measurement field length            | 2,640 mm   |  |
| Number of beams                     | 528 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                | 0 435 mA, The specified values refer<br>to the entire package consisting of trans-<br>mitter and receiver. |  |
|                                     |  |  |
| Outputs                             | $2 \operatorname{Pioco}(c)$  |  |
| Number of analog outputs            | 2 Piece(s)   |  |
| Analog outputs                      |  |  |
| Туре                                | Analog output  |  |
| Current                             | 0 24 mA  |  |
| Voltage                             | 0 11 V   |  |
|                                     |  |  |
| Analog output 1                     |  |  |
| Туре                                | Voltage  |  |
|                                     |  |  |
| Analog output 2                     | Current  |  |
| Туре                                | Current  |  |
| Inputs/outputs selectable           |  |  |
| Output current, max.                | 100 mA   |  |
| Input resistance                    | 6,000 Ω  |  |
| Number of inputs/outputs selectable |  |  |
|                                     | Inputs/outputs selectable  |  |
| Type                                | DC   |  |
| Voltage type, outputs               |  |  |
| Switching voltage, outputs          | Typ. U <sub>B</sub> / 0 V  |  |
| Voltage type, inputs                | DC   |  |
| Switching voltage, inputs           | high: ≥6V  |  |
|                                     | $low: \le 4 V$   |  |
|                                     |  |  |

|        | Input/output 1                   |                                      |
|--------|----------------------------------|--------------------------------------|
|        | Activation/disable delay         | 1 ms                                 |
| Tim    | ne behavior                      |                                      |
| Rea    | idiness delay                    | 450 ms                               |
| Сус    | cle time                         | 16.24 ms                             |
| Res    | sponse time per beam             | 30 µs                                |
| Ser    | rvice interface                  |                                      |
| Тур    | e                                | IO-Link                              |
|        |                                  |                                      |
|        | O-Link<br>Function               | Configuration via software           |
| ſ      | unction                          | Service                              |
| Сог    | nnection                         |                                      |
| Nun    | nber of connections              | 2 Piece(s)                           |
| Plug   | g outlet                         | Rear side                            |
|        |                                  |                                      |
|        | Connection 1                     | Configuration interface              |
| F      | unction                          | Configuration interface<br>Signal IN |
|        |                                  | Signal OUT                           |
|        |                                  | Voltage supply                       |
| Т      | ype of connection                | Connector                            |
|        | hread size                       | M12                                  |
|        | Type                             | Male                                 |
|        | /aterial                         | Metal                                |
|        | lo. of pins                      | 8 -pin                               |
|        | Encoding                         | A-coded                              |
|        | incounig                         | A-couleu                             |
| C      | Connection 2                     |                                      |
|        | Function                         | Connection to transmitter            |
| Т      | ype of connection                | Connector                            |
| т      | hread size                       | M12                                  |
| Т      | Туре                             | Female                               |
|        | laterial                         | Metal                                |
| N      | lo. of pins                      | 5 -pin                               |
| Е      | Encoding                         | A-coded                              |
| Mod    | chanical data                    |                                      |
| _      |                                  | 0.11                                 |
|        | sign                             |                                      |
|        | nension (W x H x L)              | 29 mm x 35.4 mm x 2,663 mm           |
|        | using material<br>al housing     | Metal                                |
|        | iai nousing<br>is cover material | Plastic                              |
|        |                                  | 2,750 g                              |
|        | weight<br>using color            | 2,750 g<br>Silver                    |
|        | e of fastening                   | Groove mounting                      |
| ιyp    | o or nationing                   | Via optional mounting device         |
| Ор     | eration and display              |                                      |
| τγρ    | e of display                     | LED                                  |
| - 7 12 |                                  | OLED display                         |
|        | mber of LEDs                     | 2 Piece(s)                           |
| Nun    |                                  | Software                             |
|        | e of configuration               | Sollware                             |
|        | e of configuration               | Teach-in                             |

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## **Technical data**

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#### **Environmental data**

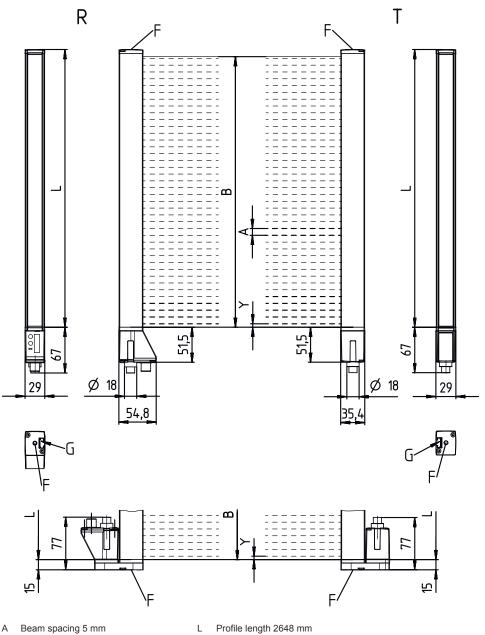
| Ambient temperature, operation | -30 60 °C |
|--------------------------------|-----------|
| Ambient temperature, storage   | -40 70 °C |
| Certifications                 |           |

| 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 |

### **Dimensioned drawings**

All dimensions in millimeters

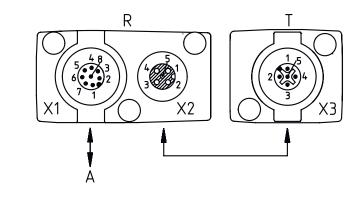


- Beam spacing 5 mm А
- В Measurement field length 2640 mm
- F M6 thread G Fastening groove
- Transmitter Т R Receiver
  - 2.5 mm Υ

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## **Dimensioned drawings**





A PWR / SW IN / OUT

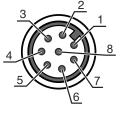
## **Electrical connection**

**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- |



#### and display Operati

LED 1

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|--|--|
| Display  | Meaning                                |
| Green, continuous light                                    | Operational readiness                  |
| Green, flashing  | Teach / error                          |
| Yellow, continuous light                                   | Light path free, with function reserve |
| Yellow, flashing   | No function reserve                    |

Object detected

# Suitable transmitters

Off

| <br>Part no. | Designation                | Article                      | Description   |
|--------------|----------------------------|------------------------------|---|
| 50119481     | CML720i-T05-<br>2640.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<br>Measuring light curtain  |  |  |
|-----------|---|--|--|
| 7XXi      | Series           720i: 720i series           730i: 730i series  |  |  |
| Y         | Device type<br>T: transmitter<br>R: receiver  |  |  |
| 22        | 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<br>A: Axial connector outlet<br>R: Rear connector outlet  |  |  |
| ccc       | Interface<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       | Special equipment<br>-PS: Power Setting   |  |  |
| EEE       | Electrical connection<br>M12: M12 connector   |  |  |
| FFF       | -EX: Explosion protection   |  |  |
| Note      |   |  |  |
| A list wi | th all available device types can be found on the Leuze website at www.leuze.com.   |  |  |

#### Notes

#### Observe intended use!

✤ This product is not a safety sensor and is not intended as personnel protection.

 $\ensuremath{^{\ensuremath{\oplus}}}$  The product may only be put into operation by competent persons.

 $\ensuremath{^{\ensuremath{\Downarrow}}}$  Only use the product in accordance with its intended use.

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

#### Accessories

### Connection technology - Connection cables

| <br>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>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-<br>M12-5A-P3-050 | Interconnection cable | 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   |
|--|----------|----------------|---------------------|---|
| 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | 50142900 | BT 700M.5-2SET | Mounting device set | 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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#### Accessories

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# Mounting technology - Swivel mounts

|     | Part no. | Designation | Article              | Description   |
|-----|----------|-------------|----------------------|---|
| ęę. | 429029   | BT-2RG      | Mounting bracket set | 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  |
|--------|----------|------------------------------|-----------------|--|
| Cies . | 50121098 | SET MD12-US2-IL1.1<br>+ Zub. | Diagnostics set | Interface: USB<br>Connections: 2 Piece(s)<br>Degree of protection: IP 20 |

#### Services

| <br>Part no. | Designation | Article          | Description  |
|--------------|-------------|------------------|--|
| S981001      | CS10-S-110  | Start-up support | Details: Performed at location of customer's choosing, duration: max. 10<br>hours.<br>Conditions: Devices and connection cables are already mounted, price not<br>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<br>expenses.   |

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