

# **Technical data sheet Light curtain receiver** Part no.: 50123607 CML720i-R05-2640.R/D3-M12



1/8

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### **Technical data**

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| 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                                   | 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                          | 2,640 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. |
| lanuto/outnuto oploatable                         |                                                                                                           |
| Inputs/outputs selectable<br>Output current, max. | 100 mA                                                                                                    |
| Input resistance                                  | 6,000 Ω                                                                                                   |
| Number of inputs/outputs select                   | ,                                                                                                         |
| Туре                                              | Inputs/outputs selectable                                                                                 |
| Voltage type, outputs                             | DC                                                                                                        |
| Switching voltage, outputs                        | Typ. U <sub>B</sub> / 0 V                                                                                 |
| Switching voltage, inputs                         | high: ≥6V                                                                                                 |
|                                                   | low: ≤4V                                                                                                  |
|                                                   |                                                                                                           |
| Input/output 1                                    |                                                                                                           |
| Activation/disable delay                          | 1 ms                                                                                                      |
| Timing                                            |                                                                                                           |
| Cycle time                                        | 16.24 ms                                                                                                  |
| Response time per beam                            | 30 µs                                                                                                     |
|                                                   | •                                                                                                         |
| Interface                                         |                                                                                                           |
|                                                   | RS 485 Modbus                                                                                             |
| Interface<br>Type                                 | RS 485 Modbus                                                                                             |
| Interface<br>Type<br>RS 485                       |                                                                                                           |
| Interface<br>Type                                 | RS 485 Modbus<br>Process                                                                                  |

| Service interface              |                              |  |
|--------------------------------|------------------------------|--|
| Туре                           | 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      |  |
|                                | 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                      |  |
| O server a three O             |                              |  |
| Connection 2<br>Function       | BUS IN                       |  |
| Function                       | BUS OUT                      |  |
| Type of connection             | Connector                    |  |
| Thread size                    | M12                          |  |
|                                | Female                       |  |
| Type<br>Material               | Metal                        |  |
| No. of pins                    | 5 -pin                       |  |
| Encoding                       | B-coded                      |  |
| Encoding                       | D-coded                      |  |
| Mechanical data                |                              |  |
| Design                         | Cubic                        |  |
| Dimension (W x H x L)          | 29 mm x 35.4 mm x 2,663 mm   |  |
| Housing material               | Metal                        |  |
| Metal housing                  | Aluminum                     |  |
| Lens cover material            | Plastic                      |  |
| Net weight                     | 2,750 g                      |  |
| Housing color                  | Silver                       |  |
| Type of fastening              | Groove mounting              |  |
|                                | Via optional mounting device |  |
| Operation and display          |                              |  |
|                                | LED                          |  |
| Type of display                |                              |  |
| Number of LEDs                 | OLED display                 |  |
|                                | 2 Piece(s)<br>Software       |  |
| Type of configuration          | Teach-in                     |  |
| Operational controls           |                              |  |
|                                | Membrane keyboard            |  |
| Environmental data             |                              |  |
| Ambient temperature, operation | -30 60 °C                    |  |
| Ambient temperature, storage   | -40 70 °C                    |  |
| ,                              |                              |  |

## **Technical data**

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#### Certifications

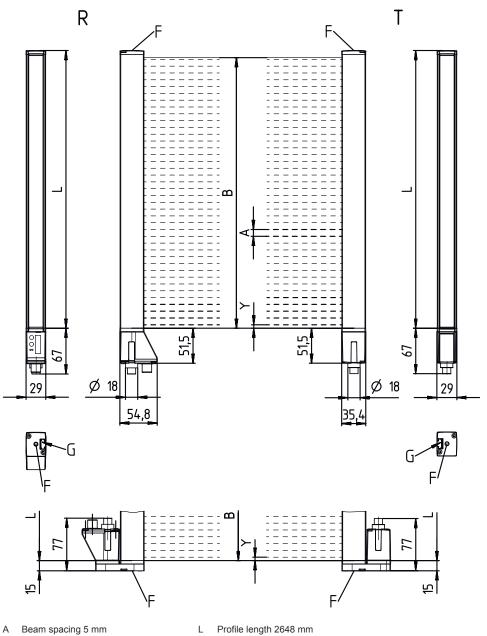
| I            |
|--------------|
| CSAUS        |
| EC 60947-5-2 |
|              |

#### Classification

| 90314990 |
|----------|
| 27270910 |
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| EC002549 |
| EC002549 |
| EC002549 |
|          |

#### **Dimensioned drawings**

All dimensions in millimeters



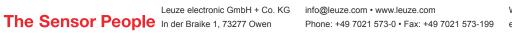
Beam spacing 5 mm А

Fastening groove

- В Measurement field length 2640 mm
- F M6 thread

G

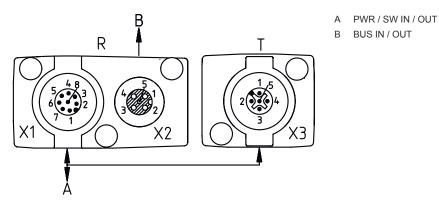
- Transmitter Т
- R Receiver
- 2.5 mm Υ





#### **Dimensioned drawings**





## **Electrical connection**

**Connection 1** 

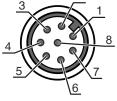
| Function           | Configuration interface   |
|--------------------|---------------------------|
|                    | Connection to transmitter |
|                    | Signal IN                 |
|                    | Signal OUT                |
|                    | Voltage supply        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

#### 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  |  |  |
|   |            |  |  |



| Function           | BUS IN    |
|--------------------|-----------|
|                    | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Туре               | Female    |
| Material           | Metal     |
| No. of pins        | 5 -pin    |
| Encoding           | B-coded   |



## **Electrical connection**

# Pin Pin assignment 1 V+ 2 Tx 3 PB GND 4 Tx+ 5 FE/SHIELD

# **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

| <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<br>720i: 720i series<br>730i: 730i series                                                                                          |
| Y    | Device type<br>T: transmitter<br>R: receiver                                                                                              |
| 22   | Beam spacing<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                                                                                  |
| В    | Equipment<br>A: connector outlet, axial<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 |

#### 6/8

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#### Part number code



7/8

| DDD | Special equipment<br>-PS: Power Setting                                                      |
|-----|----------------------------------------------------------------------------------------------|
| EEE | Electrical connection<br>M12: M12 connector                                                  |
| FFF | -EX: Explosion protection                                                                    |
|     | Note                                                                                         |
|     |                                                                                              |
| A   | ✤ A list with all available device types can be found on the Leuze website at www.leuze.com. |

#### Notes

| Observe intended use!                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul> <li>This product is not a safety sensor and is not intended as personnel protection.</li> <li>The product may only be put into operation by competent persons.</li> <li>Only use the product in accordance with its intended use.</li> </ul> |



#### 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

| <br>Part no. | Designation            | Article          | Description                                                                                                                                                 |
|--------------|------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50132079     | KD U-M12-5A-V1-<br>050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

#### 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<br>Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Connection 3: Connector, M12, Axial, Female, A-coded, 8 -pin<br>Shielded: Yes<br>Cable length fork 1: 5,000 mm<br>Cable length fork 2: 150 mm<br>Sheathing material: PUR |

#### Accessories

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|  | Part no. | Designation                  | Article               | Description                                                                                                                                                                                                                                                                                       |
|--|----------|------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50123265 | K-YPB M12A-5m-<br>M12A-S-PUR | Interconnection cable | Suitable for interface: PROFIBUS DP<br>Connection 1: Connector, M12, Axial, Male, B-coded, 5 -pin<br>Connection 2: Cable with connector, M12, Axial, Female, B-coded, 5 -pin<br>Connection 3: Cable with connector, M12, Axial, Male, B-coded, 5 -pin<br>Shielded: Yes<br>Sheathing material: PUR |

#### Mounting technology - Mounting brackets

|                   | Part no. | Designation    | Article             | Description                                                                                                                                                                                                               |
|-------------------|----------|----------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |

### Mounting technology - Swivel mounts

|     | Part no. | Designation | Article              | Description                                                                                                                                                 |
|-----|----------|-------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ęę. | 429046   | BT-2R1      | 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 |

#### Services

|      | Part no. | Designation | Article          | Description                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|----------|-------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| y, U | 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.<br>Restrictions: No mechanical (mounting) and electrical (wiring) work<br>performed, no changes (attachments, wiring, programming) to third-party<br>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<br>expenses.<br>Restrictions: Travel costs and accommodation expenses charged separately<br>and according to expenditure.                                                                                                                                           |

#### Note

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