

## Technical data sheet Light curtain receiver

Part no.: 50131871

CML720i-R05-2080.R/PN-M12



For illustration purposes only

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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                    |

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 | 2,080 mm                   |
| Number of beams          | 416 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 to the entire package consisting of transmitter and receiver. |

Inputs/outputs selectable

|                                     |                           |
|-------------------------------------|---------------------------|
| 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: ≤ 4 V   |

Input/output 1

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

Time behavior

|                        |          |
|------------------------|----------|
| Readiness delay        | 1,500 ms |
| Cycle time             | 12.88 ms |
| Response time per beam | 30 μs    |

Interface

|      |          |
|------|----------|
| Type | PROFINET |
|------|----------|

PROFINET

|                      |             |
|----------------------|-------------|
| Function             | Process     |
| Conformance class    | B           |
| Protocol             | PROFINET RT |
| Switch functionality | Integrated  |
| Transmission speed   | 10 Mbit/s   |
|                      | 100 Mbit/s  |

Service interface

|          |                            |
|----------|----------------------------|
| Type     | IO-Link                    |
| IO-Link  |                            |
| Function | Configuration via software |
|          | 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                       |
| Type               | Male                      |
| Material           | Metal                     |
| No. of pins        | 8 -pin                    |
| Encoding           | A-coded                   |

Connection 2

|                    |           |
|--------------------|-----------|
| Function           | BUS IN    |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

Connection 3

|                    |           |
|--------------------|-----------|
| Function           | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

Mechanical data

|                       |                              |
|-----------------------|------------------------------|
| Design                | Cubic                        |
| Dimension (W x H x L) | 29 mm x 35.4 mm x 2,103 mm   |
| Housing material      | Metal                        |
| Metal housing         | Aluminum                     |
| Lens cover material   | Plastic                      |
| Net weight            | 2,250 g                      |
| Housing color         | Silver                       |
| Type of fastening     | Groove mounting              |
|                       | Via optional mounting device |

Technical data

Operation and display

|                       |              |
|-----------------------|--------------|
| Type of display       | LED          |
|                       | OLED display |
| Number of LEDs        | 4 Piece(s)   |
| Type of configuration | Software     |
|                       | Teach-in     |

Environmental data

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

Certifications

|                      |               |
|----------------------|---------------|
| Degree of protection | IP 65         |
| Protection class     | III           |
| Certifications       | 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 |
| ETIM 5.0              | EC002549 |
| ETIM 6.0              | EC002549 |
| ETIM 7.0              | EC002549 |
| ETIM 8.0              | EC002549 |
| ETIM 9.0              | EC002549 |

## Dimensioned drawings

All dimensions in millimeters



- |   |                                  |   |                        |
|---|----------------------------------|---|------------------------|
| A | Beam spacing 5 mm                | L | Profile length 2088 mm |
| B | Measurement field length 2080 mm | T | Transmitter            |
| F | M6 thread                        | R | Receiver               |
| G | Fastening groove                 | Y | 2.5 mm                 |

Dimensioned drawings



Electrical connection

Connection 1

X1

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| Function           | Configuration interface<br>Connection to transmitter<br>Signal IN<br>Signal OUT<br>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 | RS 485 Tx+ |
| 7 | RS 485 Tx+ |
| 8 | FE/SHIELD  |



Connection 2

X2A

|                    |           |
|--------------------|-----------|
| Function           | BUS IN    |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

Pin Pin assignment

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



Electrical connection

| Connection 3       | X2B       |
|--------------------|-----------|
| Function           | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Type               | Female    |
| Material           | Metal     |
| No. of pins        | 4 -pin    |
| Encoding           | D-coded   |

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



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                        |
| 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                                                                     |
|-------------------------------------------------------------------------------------|----------|------------------------|---------------------------|---------------------------------------------------------------------------------|
|  | 50119474 | CML720i-T05-2080.R-M12 | Light curtain transmitter | Operating range: 0.1 ... 3.5 m<br>Connection: Connector, M12, Rear side, 5 -pin |

Part number code

Part designation: CML7XXi-YYZ-AAAA.BCCDDDD-EEEEFF

|      |                                                                           |
|------|---------------------------------------------------------------------------|
| CML  | <b>Operating principle</b><br>Measuring light curtain                     |
| 7XXi | <b>Series</b><br>720i: 720i series<br>730i: 730i series                   |
| Y    | <b>Device type</b><br>T: transmitter<br>R: receiver                       |
| ZZ   | <b>Beam spacing</b><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                  |
| B    | <b>Equipment</b><br>A: Axial connector outlet<br>R: Rear connector outlet |

|     |                                                                                                                                                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|
| CCC | <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 |
| DDD | <b>Special equipment</b><br>-PS: Power Setting                                                                                                   |
| EEE | <b>Electrical connection</b><br>M12: M12 connector                                                                                               |
| FFF | <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                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------|---------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50132079 | KD U-M12-5A-V1-050  | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC                                    |
|                                                                                     | 50135074 | KS ET-M12-4A-P7-050 | Connection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5.000 mm<br>Sheathing material: PUR |

## Accessories

### Connection technology - Interconnection cables

|                                                                                  | Part no. | Designation                 | Article               | Description                                                                                                                                                                                |
|----------------------------------------------------------------------------------|----------|-----------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50135081 | KSS ET-M12-4A-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-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 |

### Mounting technology - Mounting brackets

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

Accessories

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. |