

# **Technical data sheet** Light curtain receiver

Part no.: 50131985

CML720i-R20-950.R/PN-M12



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- Technical data
- Dimensioned drawings
- 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                    |

#### **Special version**

|  | Crossed-beam scanning  |
|--|------------------------|
|  | Diagonal-beam scanning |
|  | Parallel-beam scanning |

### **Optical data**

| Operating range          | 0.3 7 m                    |
|--------------------------|----------------------------|
| Operating range          | Guaranteed operating range |
| Operating range limit    | 0.2 9 m                    |
| Operating range limit    | Typical operating range    |
| Measurement field length | 950 mm                     |
| Number of beams          | 48 Piece(s)                |
| Beam spacing             | 20 mm                      |
|                          |                            |

#### Measurement data

| Minimum object diameter | 30 mm |
|-------------------------|-------|
|-------------------------|-------|

### **Electrical data**

|  | Polarity reversal protection |
|--|------------------------------|
|  | Short circuit protected      |
|  | Transient protection         |

### Performance data

| i errormance data             |  |
|-------------------------------|--|
| Supply voltage U <sub>B</sub> | 18 30 V, DC  |
| Residual ripple               | 0 15 %, From U <sub>B</sub>  |
| Open-circuit current          | 0 215 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)                |
| Туре                                | 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                 |
|                                     | low: ≤ 4 V                |
|                                     |                           |

### Input/output 1

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

### Time behavior

| Readiness delay        | 1,500 ms |
|------------------------|----------|
| Cycle time             | 1.84 ms  |
| Response time per beam | 30 µs    |

### Interface

| Гуре | PROFINET |
|------|----------|
|      |          |

### **PROFINET**

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

### Service interface

| Туре     | IO-Link                    |
|----------|----------------------------|
| IO-Link  |                            |
| Function | Configuration via software |
|          | Service                    |

#### Connection

| Number of connections | 3 Piece(s) |
|-----------------------|------------|
| Plug outlet           | Rear side  |

#### Connection 1

| 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   |

### **Connection 3**

| Connection 3       |           |
|--------------------|-----------|
| Function           | BUS OUT   |
| Type of connection | Connector |
| Thread size        | M12       |
| Туре               | 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 1,003 mm   |
| Housing material      | Metal                        |
| Metal housing         | Aluminum                     |
| Lens cover material   | Plastic                      |
| Net weight            | 1,200 g                      |
| Housing color         | Silver                       |
| Type of fastening     | Groove mounting              |
|                       | Via optional mounting device |

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### **Technical data**



### Operation and display

| Type of display   | LED                    |
|---|------------------------|
|   | OLED display           |
| Number of LEDs  | 4 Piece(s)             |
| Type of configuration   | Software               |
|   | Teach-in               |
| Operational controls  | Membrane keyboard      |
|   |                        |
| Environmental data  |                        |
| Environmental data  |                        |
| Ambient temperature, operation  | -30 60 °C              |
|   | -30 60 °C<br>-40 70 °C |
| Ambient temperature, operation Ambient temperature, storage                                       |                        |
| Ambient temperature, operation  |                        |
| Ambient temperature, operation Ambient temperature, storage                                       |                        |
| Ambient temperature, operation Ambient temperature, storage Certifications                        | -40 70 °C              |
| Ambient temperature, operation Ambient temperature, storage  Certifications  Degree of protection | -40 70 °C              |

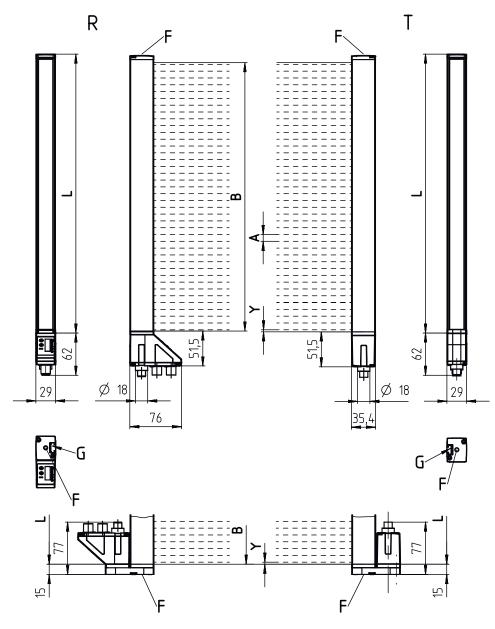
### Classification

| 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**

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All dimensions in millimeters

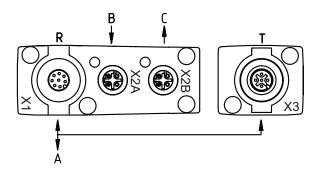


- Beam spacing 20 mm
- В Measurement field length 950 mm
- M6 thread
- Fastening groove
- Profile length 968 mm
- Transmitter
- Receiver
- 5 mm

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# **Dimensioned drawings**



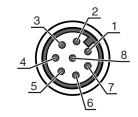


- PWR / SW IN / OUT
- **BUS IN**
- BUS OUT

# **Electrical connection**

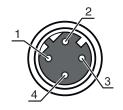
| Connection 1       | X1                        |
|--------------------|---------------------------|
| Function           | Configuration interface   |
|                    | Connection to transmitter |
|                    | Signal IN                 |
|                    | Signal OUT            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

| 1 V+<br>2 I/O 1<br>3 GND |
|--------------------------|
| 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-           |

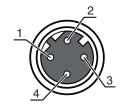


### **Electrical connection**



| Connection 3       | X2B       |  |
|--------------------|-----------|--|
| Function           | BUS OUT   |  |
| 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-           |



# **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  |
|----------|---------------------------|------------------------------|--|
| 50119510 | CML720i-T20-950.R-<br>M12 | Light curtain<br>transmitter | Operating range: 0.3 7 m 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           720i: 720i series           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: Axial connector outlet R: Rear connector outlet   |

### Part number code



| 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 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  |
|-------|----------|-------------------------|------------------|--|
| VIII/ | 50132079 | KD U-M12-5A-V1-<br>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                  |
| W     | 50135074 | KS ET-M12-4A-P7-<br>050 | Connection cable | Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5.000 mm Sheathing material: PUR |

### **Accessories**



# 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 Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm 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 | 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. | 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  |
|-----|----------|------------------------------|-----------------|--|
| 165 | 50121098 | SET MD12-US2-IL1.1<br>+ Zub. | Diagnostics set | Interface: USB Connections: 2 Piece(s) Degree of protection: IP 20 |

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### **Accessories**



### 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 hours.  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. 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.