

# Technical data sheet

## Light curtain receiver

Part no.: 50119116

CML730i-R20-2070.R/CN-M12

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For illustration purposes only



## Technical data

### Basic data

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| Series              | 730                                                    |
| Operating principle | Throughbeam principle                                  |
| Device type         | Receiver                                               |
| Contains            | Accessories for the use of the BT-2R1                  |
| Application         | Detection of transparent objects<br>Object measurement |

### Special version

|                 |                                                                           |
|-----------------|---------------------------------------------------------------------------|
| Special version | Crossed-beam scanning<br>Diagonal-beam scanning<br>Parallel-beam scanning |
|-----------------|---------------------------------------------------------------------------|

### Optical data

|                                    |                            |
|------------------------------------|----------------------------|
| Operating range                    | 0.3 ... 9.5 m              |
| Operating range                    | Guaranteed operating range |
| Operating range, transparent media | 0.3 ... 3.5 m              |
| Operating range limit              | 0.2 ... 12 m               |
| Operating range limit              | Typical operating range    |
| Measurement field length           | 2,070 mm                   |
| Number of beams                    | 104 Piece(s)               |
| Beam spacing                       | 20 mm                      |

### Measurement data

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

### Electrical data

|                    |                                                                                 |
|--------------------|---------------------------------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>Short circuit protected<br>Transient protection |
|--------------------|---------------------------------------------------------------------------------|

### Performance data

|                      |                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------|
| Supply voltage $U_B$ | 18 ... 30 V, DC                                                                                        |
| Residual ripple      | 0 ... 15 %, From $U_B$                                                                                 |
| 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 $\Omega$                      |
| Number of inputs/outputs selectable | 2 Piece(s)                          |
| Type                                | Inputs/outputs selectable           |
| Voltage type, outputs               | DC                                  |
| Switching voltage, outputs          | Typ. $U_B$ / 0 V                    |
| Voltage type, inputs                | DC                                  |
| Switching voltage, inputs           | high: $\geq 6$ V<br>low: $\leq 4$ V |

### Input/output 1

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

### Time behavior

|                        |            |
|------------------------|------------|
| Readiness delay        | 450 ms     |
| Cycle time             | 1.19 ms    |
| Response time per beam | 10 $\mu$ s |

### Interface

|      |         |
|------|---------|
| Type | CANopen |
|------|---------|

### CANopen

|          |         |
|----------|---------|
| Function | Process |
|----------|---------|

### Service interface

|          |                                       |
|----------|---------------------------------------|
| Type     | IO-Link                               |
| IO-Link  |                                       |
| Function | Configuration via software<br>Service |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 2 Piece(s) |
| Plug outlet           | Rear side  |

### Connection 1

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| 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                                                                                           |

### Connection 2

|                    |                   |
|--------------------|-------------------|
| Function           | BUS IN<br>BUS OUT |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Female            |
| Material           | Metal             |
| No. of pins        | 5 -pin            |
| Encoding           | A-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<br>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 |
| Operational controls  | Membrane keyboard    |

### Environmental data

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

## Technical data

### 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



- |   |                                  |   |                        |
|---|----------------------------------|---|------------------------|
| A | Beam spacing 20 mm               | L | Profile length 2088 mm |
| B | Measurement field length 2070 mm | T | Transmitter            |
| F | M6 thread                        | R | Receiver               |
| G | Fastening groove                 | Y | 5 mm                   |

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                       |
| 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  |

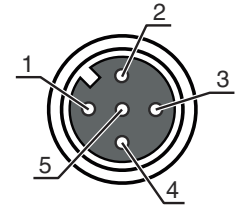


Connection 2

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

## Electrical connection

| Pin | Pin assignment |
|-----|----------------|
| 1   | FE/SHIELD      |
| 2   | n.c.           |
| 3   | CAN GND        |
| 4   | CAN H          |
| 5   | CAN L          |



## 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

|                                                                                    | Part no. | Designation            | Article                   | Description                                                                     |
|------------------------------------------------------------------------------------|----------|------------------------|---------------------------|---------------------------------------------------------------------------------|
|  | 50118978 | CML730i-T20-2070.R-M12 | Light curtain transmitter | Operating range: 0.3 ... 9.5 m<br>Connection: Connector, M12, Rear side, 5 -pin |

## Part number code

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

|             |                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CML</b>  | <b>Operating principle</b><br>Measuring light curtain                                                                                            |
| <b>7XXi</b> | <b>Series</b><br>720i: 720i series<br>730i: 730i series                                                                                          |
| <b>Y</b>    | <b>Device type</b><br>T: transmitter<br>R: receiver                                                                                              |
| <b>ZZ</b>   | <b>Beam spacing</b><br>05: 5 mm<br>10: 10 mm<br>20: 20 mm<br>40: 40 mm                                                                           |
| <b>AAAA</b> | Measurement field length [mm], dependent on beam spacing                                                                                         |
| <b>B</b>    | <b>Equipment</b><br>A: Axial connector outlet<br>R: Rear connector outlet                                                                        |
| <b>CCC</b>  | <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 |

## Part number code

|     |                                                    |
|-----|----------------------------------------------------|
| 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 |

### Connection technology - Interconnection cables

|                                                                                     | Part no. | Designation                 | Article               | Description                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|----------|-----------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50129781 | KDS DN-M12-5A-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 |

## Accessories

### 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                                |
|  | 50118185 | K-YCN M12A-M12A-S-PUR   | Interconnection cable | Suitable for interface: CANopen<br>Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connection 3: Connector, M12, Axial, Male, A-coded, 5 -pin<br>Shielded: Yes<br>Cable length fork 1: 250 mm<br>Cable length fork 2: 350 mm<br>Sheathing material: PUR |

### Connection technology - Terminating resistors

|                                                                                   | Part no. | Designation | Article         | Description                                                                                                                 |
|-----------------------------------------------------------------------------------|----------|-------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|
|  | 50040099 | TS 01-5-SA  | Terminator plug | Suitable for: DeviceNet, CANopen<br>Function: Bus termination<br>Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin |

### 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 |

## 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. |

Accessories

|                                                                                  | Part no. | Designation | Article          | Description                                                                                                                                                           |
|----------------------------------------------------------------------------------|----------|-------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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                                                                             |                                                                                                                                  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.</p> |