

## **Technical data sheet** Light curtain receiver Part no.: 50120132 CML720i-R05-880.R/CV-M12



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 eng • 2024-06-21

We reserve the right to make technical changes

### **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	
	880 mm	
Number of beams	176 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>	
	0 215 mA, The specified values refer to the entire package consisting of trans- mitter and receiver.	
Outputs		
Number of analog outputs	2 Piece(s)	
Analog outputs		
- · ·	Analog output	
	0 24 mA	
	0 11 V	
, and the second s		
Analog output 1		
Туре	Voltage	
Analog output 2		
Туре	Current	
Inputs/outputs selectable Output current, max.	100 mA	
· · · · ·		
•	6,000 Ω	
Number of inputs/outputs selectable		
	Inputs/outputs selectable	
	DC	
	Typ. U <sub>B</sub> / 0 V	
0 31 7 1	DC	
	high: ≥6V	
	low: ≤ 4 V	

Activation disable delay         1 ms           Time behavior         5.68 ms           Readiness delay         450 ms           Cycle time         5.68 ms           Response time per beam         30 μs           Service interface         In-Link           Type         IO-Link           Function         Configuration via software Service           Connection         Service           Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Signal IN Signal OUT Voltage supply           Type of connection         Configuration interface           Signal OUT Voltage supply         Male           Material         Metal           No. of pins         8-pin           Encoding         A-coded           Connection 2         Function           Function         Connector           Thread size         M12           Type of connection         Connector           Thread size         M12           Type of connection         Connector           Thread size         M12           Type of connection         Connector           Thread size         M12 <td< th=""><th>Input/output 1</th><th></th></td<>	Input/output 1	
Time behavior       450 ms         Readiness delay       450 ms         Cycle time       5.68 ms         Response time per beam       30 µs         Service interface       10-Link         Type       IO-Link         Function       Configuration via software         Service       Connection         Number of connections       2 Piece(s)         Plug outlet       Rear side         Connection 1       Configuration interface         Signal OUT       Voltage supply         Type of connection       Connector         Thread size       M12         Type       Male         Material       Metal         No. of pins       8 - pin         Encoding       A-coded         Connector       Thread size         Type of connection       Connector         Thread size       M12         Type       Female         Material       Metal         No. of pins       5 -pin         Encoding       A-coded         Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 903 mm         Housing material       Metal         Not of pins	· ·	1 ms
Readiness delay         450 ms           Cycle time         5.68 ms           Response time per beam         30 μs           Service interface         IO-Link           Type         IO-Link           Function         Configuration via software Service           Connection         Rear side           Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Signal IN         Signal IN           Signal OUT         Voltage supply           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5-pin		
Cycle time         5.68 ms           Response time per beam         30 μs           Service interface         30 μs           Service interface         IO-Link           Function         Configuration via software Service           Connection         Service           Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Function         Configuration interface           Signal IN         Signal OUT           Voltage supply         Connector           Thread size         M12           Type         Male           Material         Metal           No. of pins         8 -pin           Encoding         A-coded           Connection 2         Function           Function         Connector           Type of connection         Connector           Type of connection         Connector           Type of connection 2         Function           Function         Connector           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector	Time behavior	
Response time per beam     30 μs       Service interface     IO-Link       Type     IO-Link       Function     Configuration via software Service       Connection     Service       Number of connections     2 Piece(s)       Plug outlet     Rear side       Connection 1     Configuration interface       Function     Configuration interface       Signal OUT     Voltage supply       Type of connection     Connector       Thread size     M12       Type     Male       Material     Metal       No. of pins     8 -pin       Encoding     A-coded       Type f connection     Connection to transmitter       Type     Fernation       No. of pins     5 -pin       Encoding     A-coded       Material     Metal       No. of pins     5 -pin       Encoding     A-coded       Metal     Motor       Material     Metal       No. of pins     5 -pin       Encoding     A-coded       Design     Cubic       Dimension (Wx H x L)     29 mm x 35.4 mm x 903 mm       Housing material     Metal       Metal     Motor       Housing color     Silver       Type	-	450 ms
Service interface       Type     Io-Link       Function     Configuration via software Service       Connection     2 Piece(s)       Number of connections     2 Piece(s)       Plug outlet     Rear side       Connection 1     Configuration interface       Function     Configuration interface       Signal IN     Signal OUT       Voltage supply     Connector       Type of connection     Co		
Type IO-Link	Response time per beam	30 µs
IO-Link     Function     Configuration via software Service       Connection     Service       Number of connections     2 Piece(s)       Plug outlet     Rear side       Connection 1     Configuration interface       Function     Configuration interface       Signal IN     Signal OUT       Votage supply     Votage supply       Type of connection     Connector       Thread size     M12       Type     Material       Material     Metal       No. of pins     8 -pin       Encoding     A-coded       Connection 2     Function       Type of connection     Connector       Type of connection     Connector <th>Service interface</th> <th></th>	Service interface	
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Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Signal IN         Signal OUT           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           Function         Connector           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5 -pin           Encoding         A-coded           Metal         Metal           No. of pins         100 Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 903 mm           Housing color         Silver           Type of fastening         Groove mounting </th <th>Connection</th> <th></th>	Connection	
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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         Function       Connector to transmitter         Type of connection       Connector         Thread size       M12         Type of connection       Connector         Material       Metal         No. of pins       5 -pin         Encoding       A-coded         Metal       Metal         No. of pins       S -pin         Elscoutin       Guine	Connection 1	
Signal OUT           Voltage supply           Type of connection         Connector           Type         Male           Material         Metal           No. of pins         8 -pin           Encoding         A-coded           Connection 2         Function           Function         Connector to transmitter           Type of connection         Connector           Thread size         M12           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector           Material         Metal           No. of pins         5 -pin           Encoding         A-coded           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 903 mm           Housing color	Function	Configuration interface
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Mechanical data         Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 903 mm         Housing material       Metal         Metal housing       Aluminum         Lens cover material       Plastic         Net weight       1,150 g         Housing color       Silver         Type of fastening       Groove mounting Via optional mounting device         Operation and display       LED         Type of display       LED         Number of LEDs       2 Piece(s)         Type of configuration       Software         Teach-in       Teach-in	No. of pins	5 -pin
Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 903 mm         Housing material       Metal         Metal housing       Aluminum         Lens cover material       Plastic         Net weight       1,150 g         Housing color       Silver         Type of fastening       Groove mounting Via optional mounting device         Operation and display       LED         Type of display       LED         Number of LEDs       2 Piece(s)         Type of configuration       Software         Teach-in       Teach-in	Encoding	A-coded
Dimension (W x H x L)     29 mm x 35.4 mm x 903 mm       Housing material     Metal       Metal housing     Aluminum       Lens cover material     Plastic       Net weight     1,150 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Mechanical data	
Dimension (W x H x L)     29 mm x 35.4 mm x 903 mm       Housing material     Metal       Metal housing     Aluminum       Lens cover material     Plastic       Net weight     1,150 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Design	Cubic
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Metal housing     Aluminum       Lens cover material     Plastic       Net weight     1,150 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		
Net weight     1,150 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED       Type of display     LED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	-	Aluminum
Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED       Type of display     LED display       Number of LEDs     2 Piece(s)       Type of configuration     Software       Teach-in     Teach-in	Lens cover material	Plastic
Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED       Type of display     LED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Net weight	1,150 g
Via optional mounting device       Operation and display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Housing color	Silver
Operation and display     LED       Type of display     LED display       Number of LEDs     2 Piece(s)       Type of configuration     Software       Teach-in     Teach-in	Type of fastening	
Type of display     LED       OLED display     OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software       Teach-in     Teach-in		via optional mounting device
Number of LEDs     OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software       Teach-in     Teach-in	Operation and display	
Number of LEDs     2 Piece(s)       Type of configuration     Software       Teach-in	Type of display	LED
Type of configuration     Software       Teach-in		OLED display
Teach-in	Number of LEDs	2 Piece(s)
	Type of configuration	
Operational controls Membrane keyboard		
	Operational controls	Membrane keyboard

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## **Technical data**

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#### **Environmental data**

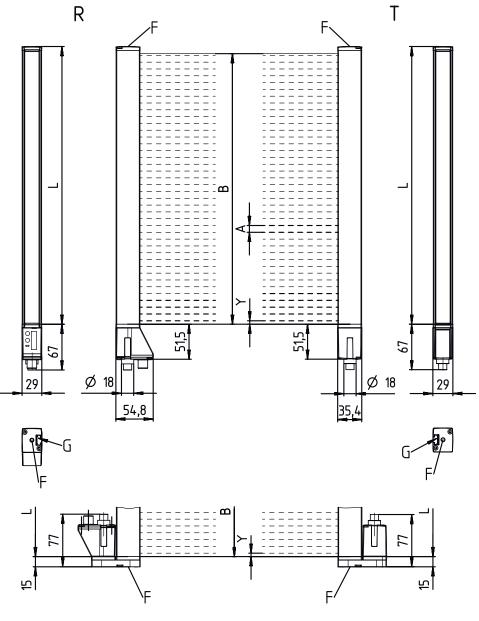
Ambient temperature, operation	-30 60 °C
Ambient temperature, storage	-40 70 °C
Certifications	

Degree of protection	IP 65
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

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 8.0         27270910           ECLASS 9.0         27270910           ECLASS 10.0         27270910           ECLASS 11.0         27270910	
ECLASS 9.0         27270910           ECLASS 10.0         27270910           ECLASS 11.0         27270910	
ECLASS 10.0         27270910           ECLASS 11.0         27270910	
ECLASS 11.0 27270910	
FCI ASS 42.0 27270040	
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

- B Measurement field length 880 mm
- F M6 thread

G

Fastening groove

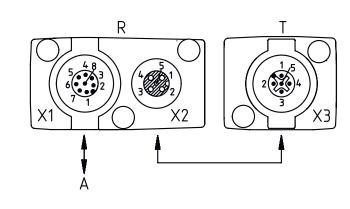
L Profile length 888 mm

- T Transmitter
- R Receiver
- Y 2.5 mm

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### **Dimensioned drawings**





A PWR / SW IN / OUT

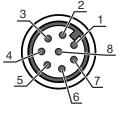
## **Electrical connection**

**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	

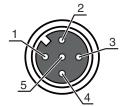


#### **Connection 2**

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-



#### **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
50119459	CML720i-T05-880.R- M12	Light curtain transmitter	Operating range: 0.1 3.5 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
Y	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
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 wi	th all available device types can be found on the Leuze website at www.leuze.com.

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#### Notes

#### Observe intended use!

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

 $\ensuremath{^{\ensuremath{\Downarrow}}}$  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:
Ð	<ul> <li>For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</li> <li>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)</li> </ul>

#### Accessories

#### Connection technology - Connection cables

 Part no.	Designation	Article	Description
50135128	KD S-M12-8A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5.000 mm Sheathing material: PUR

#### 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 Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

#### Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
1 + 1 + + + + + + + + + + + + + + + + +	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

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#### Accessories



## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
RR.	429029	BT-2RG	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic

## Configuration devices

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

#### 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. 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.

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