



the sensor people





Figure can vary

Part no.: 50120105 CML720i-R20-1910.R/L-M12 Light curtain receiver







# **Contents**

- Technical data
- Dimensioned drawings
- · Electrical connection
- Operation and display
- Suitable transmitters
- · Part number code
- Notes
- Accessories



### **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 design			
Special design	Crossed-beam scanning Diagonal-beam scanning Parallel-beam scanning		
Optical data			
Operating range	Guaranteed operating range		
Operating range	0.3 7 m		
Operating range limit	Typical operating range		
Operating range limit	0.2 9 m		
Measurement field length	1,910 mm		
lumber of beams	96 Piece(s)		
Beam spacing	20 mm		
fleasurement data			
/linimum object diameter	30 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	0 350 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	4 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: ≤4V		
Input/output 1			
Activation/disable delay	0 1 ms		
Fiming			
Readiness delay	400 ms		
	2.20		
Cycle time Response time per beam	3.28 ms 30 µs		



	Interface	
O-Link		IΩ-l ink
COM mode		IO-LIIIX
Specification		COMS
Min. cycle time		
Configuration via software	Specification	
Type	Min. cycle time	COM2 = 2.3 ms
Type		
Configuration via software Service	Service interface	
Function  Connection  Number of connections  Plug outlet  Rear side  Connection  Connection  Function  Connection  Connection  Signal IN Signal OUT Voltage surply  Type of connection  Connector  Thread size  M12  Type  Material  No. of pins  Encoding  A coded  Connection  Connection  Connection  Connection  Connection  A coded  Connection  Connection  Connection  Connection  A coded  Connection  Connection  Connection  Connection  Function  Connection to transmitter  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 1.943 mm  Housing material  Metal , Aluminum  Lens cover material  Plastic  Net weight  2, 100 g  Housing color  Type of fastering  Groove mounting Via optional mounting device	Туре	IO-Link
Connection  Number of connections  Plug outlet Rear side  Connection 1  Function Signal IN Signal OUT Voltage supply  Type of connection  Thread size M12  Type Mate Material Metal No. of pins Bencoding A-coded  Connection 2  Function Connection Connection Connection Material Metal No. of pins Bencoding A-coded  Connection Connection Thread size M12  Function Connection transmitter Type of connection Thread size M12  Function Connection transmitter Type of connection Thread size M12  Type Female Material Metal Moterial Metal Moterial Metal Moterial Metal Moterial Metal Metal Moterial Metal Metal Moterial Metal Moterial Metal Metal Moterial Metal Metal Moterial Metal Metal Moterial Metal Moterial Metal Metal Moterial Metal Moterial Metal Moterial Metal Moterial Metal Moterial Metal Moterial Metal A-coded  Mechanical data  Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm Housing material Lens cover material Plastic Housing color Silver Type of fastering Groove mounting Via optional mounting device  Operation and display Type of display LED OLED display	IO-Link	
Connection         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Function         Signal N           Signal N         Signal N           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         Encoding           Function         Connection to transmitter           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector           Type of connection         Connector           Type of permanent         Metal           No. of pins         5 -pin           Encoding         A-coded           Mechanical data         Design           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 1,943 mm           Housing material         Metal, Aluminum           Housing material         Metal, Aluminum           Housing colo	Function	
Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Function         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         Connection to transmitter           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5 -pin           Encoding         A-coded           Mechanical data         Leoded           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 1,943 mm           Housing material         Metal , Aluminum           Lens cover material         Pisatic           Net weight         2,100 g           Housing color         Silver           Type of fastening         Groove mounting via optional mounting device		Service
Number of connections         2 Piece(s)           Plug outlet         Rear side           Connection 1         Configuration interface           Function         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         Connection to transmitter           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5 -pin           Encoding         A-coded           Mechanical data         Leoded           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 1,943 mm           Housing material         Metal , Aluminum           Lens cover material         Pisatic           Net weight         2,100 g           Housing color         Silver           Type of fastening         Groove mounting via optional mounting device		
Plug outlet Rear side  Connection 1  Function Configuration interface 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 Connector  Thread size M12  Function Connection to transmitter  Type of connection Connector  Type of connection Connector  Thread size M12  Function Connector  Type of connection Connector  Thread size M12  Type of connection Connector  Thread size M12  Metal  No. of pins 5 -pin  Encoding A-coded  Metal  No. of pins 5 -pin  Encoding A-coded  Metal  No. of pins Female  Metal  No. of		
Connection 1 Function Signal IN 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 Connector Thread size M12 Type Of management of the pinch of the pin	Number of connections	
Function Configuration interface Signal INN 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 Connector Union to transmitter  Type of connection Connector  Thread size M12  Type Female  Material Metal No. of pins S-pin Encoding A-coded  Connector Union Connector Union		Rear side
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 Connector  Type of connection Connector  Thread size M12  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 1,943 mm  Housing material Metal  Net weight 2,100 g  Housing color Silver  Type of fastening Grove mounting Via optional mounting device  Operation and display  LED OLED display  LED OLED display  LED OLED display		
Signal OUT Voltage supply  Type of connection  Thread size  M12  Type  Male  Material  Metal  No. of pins  Encoding  A-coded  Connection 2  Function  Connection  Connection transmitter  Type of connection  Thread size  M12  Type  Female  Material  Metal  No. of pins  Signal OUT Voltage supply  Material  Metal  No. of pins  Fencoding  M12  Type of connection  Thread size  M12  Type  Female  Material  Metal  No. of pins  Signal OUT Voltage supply  M12  Foncetion  Connection  Connection  Connection  Connection  Connection transmitter  Type of connection  Connection  Connection  Connection  Thread size  M12  Type  Female  Metal  No. of pins  Signal  Cubic  Dimension (W x H x L)  29 mm x 35.4 mm x 1,943 mm  Housing material  Metal , Aluminum  Lens cover material  Plastic  Net weight  2,100 g  Housing color  Silver  Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Function	Configuration interface
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Thread size		
Type Male  Material Metal  No. of pins 8 -pin  Encoding A-coded  Connection 2  Function Connection  Type of connection  Type of connection  Type of peration and display  Type of fastening  Material Metal  No. of pins 5 -pin  Encoding A-coded  Cubic  Cubic  Silver  Type of sastening  Groove mounting via optional mounting device  Operation and display  LED OLED display  LED OLED display  Metal  A-coded		
Material Metal  No. of pins 8 - pin  Encoding A-coded  Connection 2  Function Connection Thread size M12  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 1,943 mm  Housing material Metal Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  LED OLED display  LED OLED display  LED OLED display	·	
No. of pins  Encoding  A-coded  Connection 2  Function  Type of connection  Thread size  M12  Type  Material  No. of pins  Encoding  Mechanical data  Design  Dimension (W X H X L)  Housing material  Netweight  Housing color  Type of fastening  Copration and display  Type of display  LED OLED display  Connection to transmitter  Connection to transmitter  Connection  Connector  Thread size  M12  Type  Female  Metal  Metal  Acoded  Metal  No. of pins  5 - pin  Encoding  A-coded  Cubic  Dimension (W X H X L)  29 mm x 35.4 mm x 1,943 mm  Metal , Aluminum  Plastic  Qroove mounting Via optional mounting device		
Encoding A-coded  Connection 2  Function Connector Type of connection 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 1,943 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 2,100 g Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display Type of display  LED OLED display  LED OLED display	Material	Metal
Function Connection to transmitter 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 1,943 mm Housing material Metal, Aluminum Lens cover material Plastic Net weight 2,100 g Housing color Silver Type of display  Cupration and display Type of display  LED OLED display  Connection to transmitter  Connection to transmitter  Connection to transmitter  M12  Connection to transmitter  Connection to transmitter  Connection to transmitter  Connector  Connection to transmitter  M12  Type of display  Connection to transmitter  Metal Aluminum  Lens cover material Plastic  Ret weight  2,100 g  Groove mounting Via optional mounting device		8 -pin
Function Connection Connector 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 1,943 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 2,100 g Housing color Silver Type of display LED OLED display  LED OLED display  LED OLED display  M12 Type of display	Encoding	A-coded
Type of connection Thread size M12 Type Female Material Metal No. of pins Encoding A-coded  Mechanical data Design Cubic Dimension (W x H x L) Housing material Lens cover material Net weight Housing color Type of fastening  Operation and display Type of display  LED OLED display  M12  Tennetter Metal Meta	Connection 2	
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 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device   Operation and display  Type of display  LED OLED display	Function	Connection to transmitter
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 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Type of connection	Connector
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 1,943 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 2,100 g Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Thread size	M12
No. of pins Encoding A-coded  Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED OLED display	Туре	Female
Encoding A-coded  Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED OLED display		Metal
Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED OLED display	-	5 -pin
Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Encoding	A-coded
Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 1,943 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display		
Dimension (W x H x L)  29 mm x 35.4 mm x 1,943 mm  Housing material  Metal , Aluminum  Lens cover material  Plastic  Net weight  2,100 g  Housing color  Silver  Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Mechanical data	
Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Design	Cubic
Lens cover material Plastic  Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED OLED display	Dimension (W x H x L)	29 mm x 35.4 mm x 1,943 mm
Net weight 2,100 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED OLED display	Housing material	Metal , Aluminum
Housing color  Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Lens cover material	Plastic
Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display	Net weight	2,100 g
Operation and display  Type of display  LED OLED display	Housing color	Silver
Operation and display       Type of display     LED OLED display	Type of fastening	Groove mounting
Type of display  LED OLED display		via optional mounting device
Type of display  LED OLED display	0 " 1"	
OLED display		150
Number of LEDs 2 Piece(s)		OLED display
	Number of LEDs	2 Piece(s)

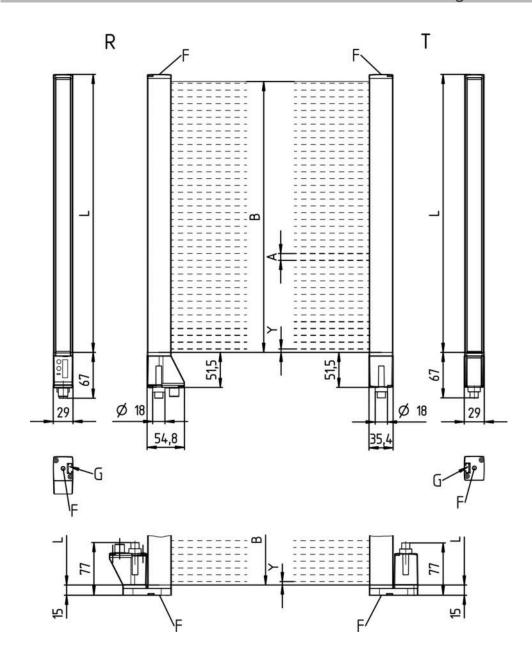


Software Teach-in		
Membrane keyboard		
-30 60 °C		
-40 70 °C		
IP 65		
III		
c CSA US		
IEC 60947-5-2		
90314990		
27270910		
27270910		
EC002549		
EC002549	EC002549	
	Teach-in  Membrane keyboard  -30 60 °C  -40 70 °C  IP 65  III  c CSA US  IEC 60947-5-2  90314990  27270910  27270910  EC002549	

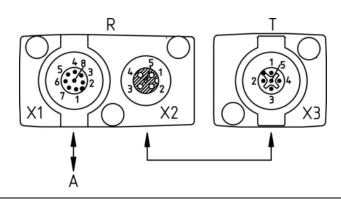
## **Dimensioned drawings**

All dimensions in millimeters





- A Beam spacing 20 mm B Measurement field length 1910 mm
- F M6 thread
- G Fastening groove
- L Profile length 1928 mm
- T Transmitter
- R Receiver
- Y 5 mm



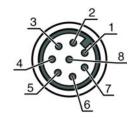


APWR / SW IN/OUT

### **Electrical connection**

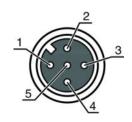
Connection 1		
Function	Configuration interface Signal IN Signal OUT Voltage supply	
Type of connection	Connector	
Thread size	M12	
Туре	Male	
Material	Metal	
No. of pins	8 -pin	
Encoding	A-coded	

Pin	Pin assignment
1	V+
2	101
3	GND
4	IO-Link
5	102
6	103
7	IO4
8	GND



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**

### **LEDs**

LED	Display	Meaning
1	Green, continuous light	Operational readiness
	Green, flashing	Teach / error
		Measurement frequency display
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
50119516	CML720i- T20-1910.R-M12	Light curtain transmitter	Operating range: 0.3 6 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: connector outlet, axial 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:	

N	0	•	c

A list with all available device types can be found on the Leuze electronic 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
50135128	KD S-M12-8A- P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

## Connection technology - Interconnection cables

Part no.	Designation	Article	Description
	KDS DN-M12-5A- M12-5A-P3-050	Interconnection cable	Suitable for interface: IO-Link, 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
 50142900	BT 700M.5-2SET	Mounting device set	Contains: 2x mounting brackets, 1 teach template, 4 M6 x 10 screws 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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# Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
EE.	429046	BT-2R1	set	Contains: 2x BT-R swivel mount, 1 cylinder for mounting on the light curtain Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic

Part no.	Designation	Article	Description
50121098	SET MD12-US2-IL1.1 + Zub.		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. Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.
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. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.

#### Note

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