



the sensor people





Figure can vary

Part no.: 50123413 CML730i-R20-950.R/D3-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	730	
Operating principle	Throughbeam principle	
Device type	Receiver	
Contains	Accessories for the use of the BT-2R1	
Application	Detection of transparent objects 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 9.5 m	
Operating range, transparent media	0.3 3.5 m	
Operating range limit	Typical operating range	
Operating range limit	0.2 12 m	
Measurement field length	950 mm	
Number of beams	48 Piece(s)	
Beam spacing	20 mm	
Measurement data		
Minimum 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	<ol> <li>215 mA , The specified values refer to the entire package consisting of transmitter and receiver.</li> </ol>	
Inputs/outputs selectable		
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	
Switching voltage, inputs	high: ≥6V low: ≤4V	
Input/output 1		
Timing		
Cycle time	1 ms	
Response time per beam	10 µs	
Interface		
	RS 485	
Туре	1.0 100	



Process   Process	B0 405				
Service Interface   Type	RS 485	December			
	Function	Process			
O-Link					
Function  Configuration via software Service  Connection  Number of connections  2 Piece(s)  Plug outlet  Rear side  Connection 1  Function  Configuration interface Connection to transmitter Signal IN Signal IN Signal IN Signal OUT Voltage supply  Type of connection  Connector  Thread size  M12  Type  Male  Material  No. of pins  8 - pin  Encoding  A-coded  Connection  BUS IN BUS OUT  Type of connection  BUS IN BUS OUT  Type of connection  Function  BUS IN BUS OUT  Type of connection  Connection  Thread size  M12  Type  Fenale  Metal  No. of pins  5 - pin  Encoding  B-coded  Connection  Connection  Thread size  M12  Type  Fenale  Metal  No. of pins  5 - pin  Encoding  B-coded  Cubic  Design  Cubic  Cubic  Service  Wechanical data  Design  Cubic  Cubic  Service  Metal, Aluminum  Helas Over material  Lens cover material  Plastic  Net weight  1, 200 g  Housing color  Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display  Number of LEDs  2 Piece(s)  Type of configuration  Eacti-in  Cotheren  Continued  Cotheren  Continued  Configuration  Continued  Configuration  Conf		IO-Link			
Service					
Number of connections   2   Piece(s)	Function				
Number of connections   2   Piece(s)					
Plug outlet Rear side  Connection 1  Function Configuration interface Connection to transmitter Signal Number of LEDs  Type of connection Connector  Thread size M12  Type Material Metal No. of pins 8-pin Encoding A-coded  Connection 2  Function BUS IN BUS OUT Type of connection  Thread size M12  Type of connection Connector  Function BUS IN BUS OUT Type of connection Connector  Thread size M12  Type Female Material Metal No. of pins S-pin Encoding Connection Connector  Thread size M12  Type Female Material Metal No. of pins S-pin Encoding BUS IN BUS OUT  Type of connection Connector  Thread size M12  Type Female Material Metal No. of pins S-pin Encoding B-coded  Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal, Aluminum Lens cover material Plastic Net weight 1.200 g Housing color Silver  Type of fastening Groove mounting Groove mounting Groove mounting Groove mounting device  Operation and display  Type of display  LED OLED display  Number of LEDs 2 Piece(s) Type of configuration Software Teach-in	Connection				
Connection 1	Number of connections	2 Piece(s)			
Function  Configuration interface Connector interface Connector Type of connection Connector Thread size M12 Type Male Material Metal No. of pins BuS ND Function BuS OUT Type of connection Connector  Function BuS ND BuS ND BuS OUT Type of connection Connector Thread size Function BuS ND BuS ND BuS ND BuS ND BuS ND BuS OUT Type of connection Connector Thread size M12 Type Female Material No. of pins S-pin Encoding B-coded  Mechanical data Design Cubic Dimension (W x H x L) Design Dimension (W x H x L) Design Substitute Plastic Net weight 1,200 g Housing color Silver Type of fastening Groove mounting Via optional mounting device  Operation and display Type of display Number of LEDs 2 Piece(s) Stivare Feech-in Feech-in Feech-in	Plug outlet	Rear side			
Connection to transmitter Signal NN Signal OUT Voltage supply  Type of connection  Connector  Thread size  M12  Type Male Material Metal No. of pins Bus Nn Encoding A-coded  Connection  Function Bus NN Bus OUT  Type of connection  Connector  Thread size M12  Type of connection  Thread size M12  Type of connection  Connector  Thread size M12  Type Female Material Metal No. of pins S-pin Encoding Bus OUT  Type of connection  Connector  Thread size M12  Type Female Material Metal No. of pins S-pin Encoding B-coded  Mechanical data  Design Cubic  Dimension (Wx H x L) 29 mm x 35.4 mm x 983 mm Housing material Metal , Aluminum  Lens cover material Plastic Net weight 1,200 g Housing color Silver Type of fastening  Coperation and display  Type of display  LED OLED display  Number of LEDs 2 Piece(s) Type of configuration	Connection 1				
Thread size M12 Type Male  Material Metal No. of pins 8-pin Encoding A-coded  Connection 2 Function BUS IN BUS OUT Type of connection Connector  Thread size M12 Type Female  Material Metal No. of pins 5-pin Encoding B-coded  Mechanical data  Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm Housing material Metal, Aluminum Lens cover material Plastic Net weight 1,200 g Housing color Siliver Type of fastening Groove mounting device  Operation and display Type of display  LED OLED display  Number of LEDS 2 Piece(s) Type of configuration  Software Tacch-in	Function	Connection to transmitter Signal IN Signal OUT			
Male	Type of connection	Connector			
Material         Metal           No. of pins         8 -pin           Encoding         A-coded           Connection 2         Function           Function         BUS IN BUS OUT           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5 -pin           Encoding         B-coded           Mechanical data           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 983 mm           Housing material         Metal , Aluminum           Lens cover material         Plastic           Net weight         1,200 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 Feach-in	Thread size	M12			
No. of pins 8 -pin Encoding A-coded  Connection 2  Function BUS IN BUS OUT  Type of connection Connector  Thread size M12  Type Female  Material Metal No. of pins 5 -pin Encoding B-coded  Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal, Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Groove mounting via optional mounting device  Operation and display  Type of display  Number of LEDS 2 Piece(s)  Type of configuration  Software Facch-in	Туре	Male			
Encoding A-coded  Connection 2 Function BUS IN BUS OUT  Type of connection Connector  Thread size M12  Type Female  Material Metal  No. of pins 5 - pin  Encoding B-coded  Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal, Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Siliver  Type of fastening Grove mounting Via optional mounting device  Operation and display  Type of display  Number of LEDs 2 Piece(s)  Type of configuration  BUS IN BUS	Material	Metal			
Function BUS IN BUS OUT Type of connection Connector Thread size M12 Type Female Material Metal No. of pins 5-pin Encoding B-coded  Mechanical data Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm Housing material Metal, Aluminum Lens cover material Plastic Net weight 1,200 g Housing color Silver Type of fastening Groove mounting Via optional mounting device  Operation and display Type of display Number of LEDs 2 Piece(s) Type of configuration  BUS IN BUS	No. of pins	8 -pin			
Function BUS OUT Type of connection Connector Thread size M12 Type Female Material No. of pins 5 - pin Encoding B-coded  Mechanical data Design Cubic Dimension (W x H x L) 10 - 29 mm x 35.4 mm x 983 mm Housing material Metal, Aluminum Lens cover material Net weight 1,200 g Housing color Silver Type of fastening  Operation and display Type of display  Number of LEDs Type of configuration  BUS IN BUS OUT Connector Female Antical Metal Aluminum Alea Aluminum Aluminum Alea Aluminum Alea Aluminum Alea Aluminum Alea Aluminum Aluminum Alea Aluminum Aluminum Alea Aluminum Al	Encoding	A-coded			
Type of connection Thread size M12 Type Female Material Metail No. of pins Encoding B-coded  Mechanical data Design Cubic Dimension (W x H x L) Lens cover material Net weight Housing color Type of fastening  Operation and display Type of configuration  BUS OUT Connector Connector M12 M12 M12 M14 Metal Metal Metal Metal Metal Metal Aluminum Metal Aluminum  Lens cover material Corove mounting Via optional mounting device  Diversion and display Type of display  Number of LEDs Type of configuration Software Teach-in	Connection 2				
Thread size M12 Type Female Material Metal No. of pins 5 - pin Encoding B-coded  Mechanical data  Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 1,200 g Housing color Silver  Type of fastening Groove mounting 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	Function				
Type Female  Material Metal  No. of pins 5 -pin  Encoding B-coded   Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Groove mounting 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	Type of connection	Connector			
Material Metal No. of pins 5 -pin Encoding B-coded  Mechanical data  Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 1,200 g Housing color Silver Type of fastening Groove mounting 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	Thread size	M12			
No. of pins  Encoding  B-coded  Mechanical data  Design  Cubic  Dimension (W x H x L)  Dimension (W x H x L)  Housing material  Lens cover material  Net weight  Housing color  Type of fastening  Croove mounting Via optional mounting device  Deration and display  Type of display  Number of LEDs  2 Piece(s)  Type of configuration  Software Teach-in	Туре	Female			
Encoding  Mechanical data  Design  Cubic  Dimension (W x H x L)  129 mm x 35.4 mm x 983 mm  Housing material  Metal , Aluminum  Lens cover material  Net weight  1,200 g  Housing color  Type of fastening  Groove mounting Via optional mounting device  Operation and display  Type of display  Number of LEDs  2 Piece(s)  Type of configuration  B-coded  B-coded  B-coded  B-coded  B-coded  LED  OLED display  Software Teach-in	Material	Metal			
Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Groove mounting 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		5 -pin			
Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Groove mounting 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	Encoding	B-coded			
Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 983 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Groove mounting 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	Machanical data				
Dimension (W x H x L)  29 mm x 35.4 mm x 983 mm  Housing material  Metal , Aluminum  Lens cover material  Plastic  Net weight  1,200 g  Housing color  Silver  Type of fastening  Groove mounting 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		Cubic			
Housing material Lens cover material Plastic Net weight 1,200 g Housing color Silver Type of fastening Groove mounting 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					
Lens cover material Plastic  Net weight 1,200 g  Housing color Silver  Type of fastening Grove mounting 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					
Net weight 1,200 g Housing color Silver Type of fastening Groove mounting 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  Type of fastening  Groove mounting 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					
Type of fastening  Groove mounting 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					
Operation and display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		Groove mounting			
Type of display  LED OLED display  Number of LEDs  2 Piece(s)  Type of configuration  Software Teach-in		Via optional mounting device			
OLED display  Number of LEDs 2 Piece(s)  Type of configuration Software Teach-in	Operation and display				
Type of configuration Software Teach-in	Type of display				
Teach-in Teach-in	Number of LEDs	2 Piece(s)			
Operational controls Membrane keyboard	Type of configuration				
	Operational controls	Membrane keyboard			



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

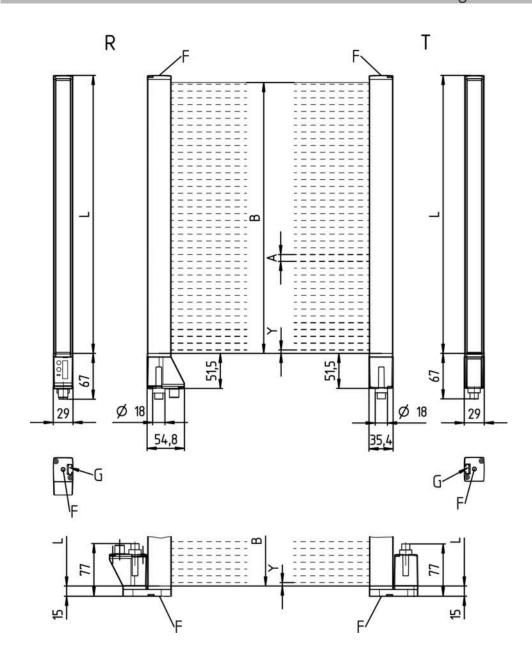
Certifications	
Degree of protection	IP 65
Protection class	III
Certifications	c CSA US
Standards applied	IEC 60947-5-2

Classification	
Customs tariff number	90314990
eCl@ss 8.0	27270910
eCl@ss 9.0	27270910
ETIM 5.0	EC002549
ETIM 6.0	EC002549

### **Dimensioned drawings**

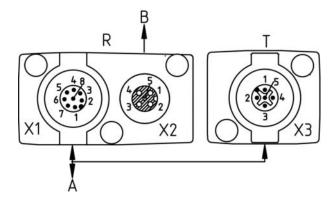
All dimensions in millimeters





- A Beam spacing 20 mm B Measurement field length 950 mm
- F M6 thread
- G Fastening groove
- L Profile length 968 mm
- T Transmitter
- R Receiver
- Y 5 mm



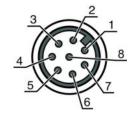


A PWR / SW IN/OUT B BUS IN / OUT

#### **Electrical connection**

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	

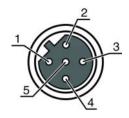
Pin	Pin assignment
1	V+
2	I/O 1
3	GND
4	IO-Link
5	I/O 2
6	RS 485 Tx+
7	RS 485 Tx+
8	FE/SHIELD



Connection 2	
Function	BUS IN BUS OUT
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	5 -pin
Encoding	B-coded



Pin	Pin assignment
1	V+
2	Tx-
3	PB GND
4	Tx+
5	FE/SHIELD



## **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
50118971	CML730i- T20-950.R-M12	Light curtain transmitter	Operating range: 0.3 9.5 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: 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:			

#### Note

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
50132079	KD U-M12-5A- V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC



## 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 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
	50123265	K-YPB M12A-5m- M12A-S-PUR	Interconnection cable	Suitable for interface: PROFIBUS DP Connection 1: Connector, M12, Axial, Male, B-coded, 5 -pin Connection 2: Connector, M12, Axial, Female, B-coded, 5 -pin Connection 3: Connector, M12, Axial, Male, B-coded, 5 -pin Shielded: Yes Cable length fork 1: 5,000 mm Cable length fork 2: 250 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

## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
EE.	429046	BT-2R1	Mounting bracket 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

### 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.