

## **Technical data sheet Light curtain receiver** Part no.: 50131711 CML730i-R05-2160.R/PN-M12



 Leuze electronic GmbH + Co. F

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## **Technical data**

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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 version	
Special version	Crossed-beam scanning
	Diagonal-beam scanning
	Parallel-beam scanning
Optical data	
Operating range	Guaranteed operating range
Operating range	0.1 4.5 m
Operating range, transparent media	0.1 1.75 m
Operating range limit	Typical operating range
Operating range limit	0.1 6 m
Measurement field length	2,160 mm
Number of beams	432 Piece(s)
Beam spacing	5 mm
Measurement data	
Minimum object diameter	10 mm
Electrical data	
Protective circuit	Polarity reversal protection
Protective circuit	Polarity reversal protection
	Short circuit protected Transient protection
Performance data	
Performance data Supply voltage U <sub>R</sub>	18 30 V, DC
Performance data Supply voltage U <sub>B</sub> Residual ripple	18 30 V, DC 0 15 %, From U <sub>R</sub>
Supply voltage U <sub>B</sub>	0 15 %, From $\rm U_B$ 0 435 mA, The specified values refer
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current	<ul> <li>0 15 %, From U<sub>B</sub></li> <li>0 435 mA, The specified values refer to the entire package consisting of trans</li> </ul>
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable	0 15 %, From U <sub>B</sub> 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver.
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max.	<ul> <li>0 15 %, From U<sub>B</sub></li> <li>0 435 mA, The specified values refer to the entire package consisting of trans mitter and receiver.</li> <li>100 mA</li> </ul>
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance	<ul> <li>0 15 %, From U<sub>B</sub></li> <li>0 435 mA, The specified values refer to the entire package consisting of transmitter and receiver.</li> <li>100 mA</li> <li>6,000 Ω</li> </ul>
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable	<ul> <li>0 15 %, From U<sub>B</sub></li> <li>0 435 mA, The specified values refer to the entire package consisting of transmitter and receiver.</li> <li>100 mA</li> <li>6,000 Ω</li> <li>2 Piece(s)</li> </ul>
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type	<ul> <li>0 15 %, From U<sub>B</sub></li> <li>0 435 mA, The specified values refer to the entire package consisting of transmitter and receiver.</li> <li>100 mA</li> <li>6,000 Ω</li> <li>2 Piece(s)</li> <li>Inputs/outputs selectable</li> </ul>
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs	0 15 %, From U <sub>B</sub> 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 Ω 2 Piece(s) Inputs/outputs selectable DC
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs	0 15 %, From $U_B$ 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 $\Omega$ 2 Piece(s) Inputs/outputs selectable DC Typ. $U_B / 0 V$
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs	0 15 %, From $U_B$ 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 $\Omega$ 2 Piece(s) Inputs/outputs selectable DC Typ. $U_B$ / 0 V DC
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs	0 15 %, From U <sub>B</sub> 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 Ω 2 Piece(s) Inputs/outputs selectable DC Typ. U <sub>B</sub> / 0 ∨ DC high: ≥6V
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs	0 15 %, From $U_B$ 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 $\Omega$ 2 Piece(s) Inputs/outputs selectable DC Typ. $U_B$ / 0 V DC
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Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs Switching voltage, inputs	0 15 %, From $U_B$ 0 435 mA, The specified values refer to the entire package consisting of transmitter and receiver. 100 mA 6,000 $\Omega$ 2 Piece(s) Inputs/outputs selectable DC Typ. $U_B / 0 V$ DC high: $\geq 6V$
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs Switching voltage, inputs Switching voltage, inputs Input/output 1 Activation/disable delay	0 15 %, From U <sub>B</sub> 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 Ω 2 Piece(s) Inputs/outputs selectable DC Typ. U <sub>B</sub> / 0 V DC high: ≥6V Iow: ≤4V
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs Switching voltage, inputs Switching voltage, inputs Input/output 1 Activation/disable delay Timing	0 15 %, From $U_B$ 0 435 mA, The specified values refer to the entire package consisting of transmitter and receiver. 100 mA 6,000 Ω 2 Piece(s) Inputs/outputs selectable DC Typ. $U_B / 0 \vee$ DC high: ≥6 $\vee$ Iow: ≤4 $\vee$ 1 ms
Supply voltage U <sub>B</sub> Residual ripple Open-circuit current Inputs/outputs selectable Output current, max. Input resistance Number of inputs/outputs selectable Type Voltage type, outputs Switching voltage, outputs Voltage type, inputs Switching voltage, inputs Switching voltage, inputs Input/output 1 Activation/disable delay	0 15 %, From U <sub>B</sub> 0 435 mA, The specified values refer to the entire package consisting of trans- mitter and receiver. 100 mA 6,000 Ω 2 Piece(s) Inputs/outputs selectable DC Typ. U <sub>B</sub> / 0 V DC high: ≥6V Iow: ≤4V

## Interface

Туре

PROFINET

Profinet	
Function	Process
Conformance class	В
Protocol	PROFINET RT
Switch functionality	Integrated
Transmission speed	10 Mbit/s
nunsinission speed	100 Mbit/s
Service interface	
уре	IO-Link
IO-Link	
Function	Configuration via software
- unotion	Service
Connection	
lumber of connections	3 Piece(s)
Plug outlet	Rear side
Connection 1	Configuration interface
Function	Configuration interface
	Connection to transmitter
	Signal IN
	Signal OUT
Turne of commention	Voltage supply
Type of connection	Connector M12
Thread size	Male
Type	
Material	Metal
No. of pins	8 -pin A-coded
Encoding	A-coded
Connection 2	
Function	BUS IN
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded
Connection 3	
Function	BUSOUT
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded
Mechanical data	
Design	Cubic
Dimension (W x H x L)	29 mm x 35.4 mm x 2,183 mm
lousing material	Metal
letal housing	Aluminum
ens cover material	Plastic
let weight	2,300 g
lousing color	Silver
Type of fastening	Groove mounting
	Via optional mounting device
	-

## **Technical data**

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### **Operation and display**

Type of display	LED
	OLED display
Number of LEDs	4 Piece(s)
Type of configuration	Software
	Teach-in
Operational controls	Membrane keyboard
Environmental data	
Ambient temperature, operation	-30 60 °C

Ambient temperature, operation Ambient temperature, storage

### Certifications

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

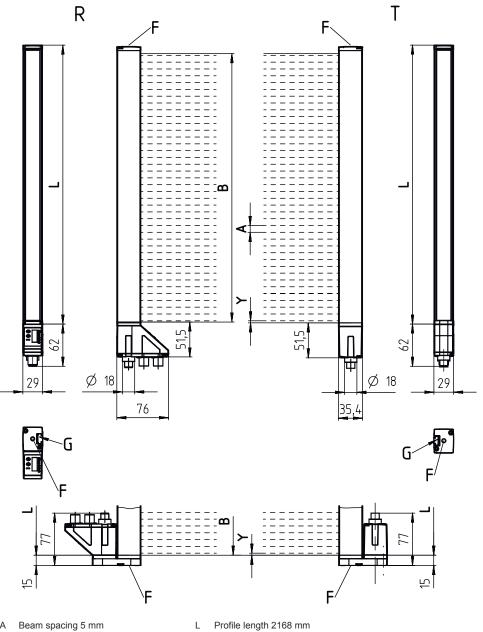
-40 ... 70 °C

### Classification

90314990
27270910
27270910
27270910
27270910
27270910
EC002549
EC002549
EC002549

## **Dimensioned drawings**

All dimensions in millimeters



Beam spacing 5 mm А

Fastening groove

- В Measurement field length 2160 mm
- F M6 thread

G

- Transmitter Т R Receiver
- 2.5 mm Υ

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## **Dimensioned drawings**

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### V+ 1 2 I/O 1

Pin assignment

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

X2A

### **Connection 2**

Pin

Function	BUS IN
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

### Pin Pin assignment

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2 RD0+ 3 TD0- 4 RD0-	1	TD0+
	2	RD0+
4 RD0-	3	TD0-
	4	RD0-

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## **Electrical connection**

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

**X1** 

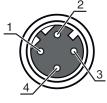
## **Connection 1**

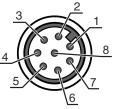
A

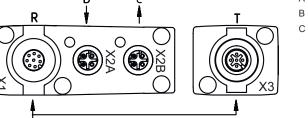
В С А В С Ο 

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

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## **Electrical connection**

**Connection 3** 

Function	BUS OUT
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

X2B

Pin	Pin assignment
1	TD0+
2	RD0+
3	TD0-
4	RD0-

## Operation and display

LED	Display	Meaning
1	Green, continuous light	Operational readiness
	Green, flashing	Teach / error
2	Yellow, continuous light	Light path free, with function reserve
	Yellow, flashing	No function reserve
	Off	Object detected
3	Green, continuous light (at the X2A / X2B connector)	Link
4	Yellow, continuous light (at the X2A / X2B connector)	Activity

## Suitable transmitters

 Part no.	Designation	Article	Description
50118938	CML730i-T05- 2160.R-M12	Light curtain transmitter	Operating range: 0.1 4 m Connection: Connector, M12, Rear side, 5 -pin

## Part number code

Part designation: CML7XXi-YZZ-AAAA.BCCCDDD-EEEFFF

Operating principle Measuring light curtain		
Series           720i: 720i series           730i: 730i series		
Device type T: transmitter R: receiver		
Beam spacing           05: 5 mm           10: 10 mm           20: 20 mm           40: 40 mm		
Measurement field length [mm], dependent on beam spacing		
Equipment A: connector outlet, axial R: rear connector outlet		



## Part number code



CCC	Interface L: IO-Link /CN: CANopen /PB: PROFIBUS /PN: PROFINET /CV: Analog current and voltage output		
	/D3: RS 485 Modbus		
DDD	Special equipment -PS: Power Setting		
EEE	Electrical connection M12: M12 connector		
FFF	-EX: Explosion protection		
Να	ote		
6	A list with all available device types can be found on the Leuze website at www.leuze.com.		

## Notes

Observe intended use!					
	<ul> <li>This product is not a safety sensor and is not intended as personnel protection.</li> <li>The product may only be put into operation by competent persons.</li> <li>Only use the product in accordance with its intended use.</li> </ul>				

For UL applications:
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✤ 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
W	50135074	KS ET-M12-4A-P7- 050	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

## Accessories

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## Connection technology - Interconnection cables

	Part no.	Designation	Article	Description
	50135081	KSS ET-M12-4A- RJ45-A-P7-050	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

## Connection technology - Y distribution cables

	Part no.	Designation	Article	Description
	50118183	K-Y1 M12A-5m- M12A-S-PUR	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 3: Connector, M12, Axial, Female, A-coded, 8 -pin Shielded: Yes Cable length fork 1: 5,000 mm Cable length fork 2: 150 mm Sheathing material: PUR

## Mounting technology - Mounting brackets

 Part no.	Designation	Article	Description
 50142900	BT 700M.5-2SET	Mounting device set	Design of mounting device: Bracket mounting Fastening, at system: Through-hole mounting, T slotted hole Mounting bracket, at device: Screw type, Sliding block Type of mounting device: Rigid Material: Steel

## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
RR.	429046	BT-2R1	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

## Accessories

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## 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.
<u>م</u>	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
6	♣ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.