## SMART SENSOR BUSINESS

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Part no.: 50123658 CML720i-R40-2850.R/D3-M12 Light curtain receiver



Figure can vary

# Contents

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

### Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver

#### **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 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	2,850 mm
Number of beams	71 Piece(s)
Beam spacing	40 mm
Measurement data	
Minimum object diameter	50 mm
Electrical data	
Protective circuit	Polarity reversal protection Short circuit protected Transient protection
Performance data	
Supply voltage UB	18 30 V , DC
Residual ripple	0 15 % , From U <sub>B</sub>
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 Ω
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 Iow: ≤4V
Input/output 1	
Activation/disable delay	1 ms
Timing	0.50
Cycle time	2.53 ms
Response time per beam	30 µs

## Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver

Type         R5 485           Function         Process           Service interface         Type           ID-Link         ID-Link           ID-Link         Configuration via software Service           ID-Link         Configuration via software Service           Connection         Service           Connection         Rear side           Connection 1         Configuration infrace Connection 1           Function         Configuration infrace Connection 1           Type of connection         Configuration infrace Connection 1           Type of connection         Connector           Type of connection         BUS IN Head all           Material         Metail           No. of pins         8-pin           Function         BUS IN BUS NUT           Type in connection         Connector           Type in connection         Connector           Type in connection         Connector           Type in connection         Connector           Type in connection         Connector </th <th>Interface</th> <th></th>	Interface		
PS 485           Function         Process           Service Interface         Process           Service Interface         Process           IVpe         IO-Link           IO-Link         Configuration via software           Function         Configuration via software           Service         Service           Connection         2 Piace(s)           Number of connections         2 Piace(s)           Pige odet         Rear side           Connection 1         Configuration interface           Function         Configuration interface           Connection 0         Connector           Type of connection         Connector           Type         Male           Material         Metal           No. of pins         8-pin           Encoding         A-coded           Connector 2         Function           Function         BUS IN           Encoding         A-coded           Connector 2         Function           Function         BUS IN           Signal Cubic         Connector           Type of connecton         Connector           Type of connecton         Connector           Type o		DS 495	
Function         Process           Service interface         IO-Link           Type         IO-Link           Function         Configuration via software Service           Connection         2 Pleac(s)           Number of connections         2 Pleac(s)           Plug outlet         Rear side           Connection         Configuration interface Connection to transmitter Signal OUT           Type of connection         Connector           Trace size         M12           Type of connection         Connector           Tread size         M12           Type of connector         Connector           Tread size         M12 <td< td=""><td></td><td>Kõ 400</td></td<>		Kõ 400	
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Number of connections         2 Pleac(s)           Plug outlet         Rear side           Connection 1         Configuration interface Connection to transmitter Signal N           Function         Configuration interface Connection         Connection           Thread size         M12           Type of connection         Connector           Material         Metal           No. of pins         8-pin           Encoding         A-coded           Connector         BUS IN BUS OUT           Type of connection         Connector           Thread size         M12           Type of connection         BUS N           Bus OUT         BUS N           Portion         BUS N           Bus OUT         Type           Fermale         M12           Type         Fermale           Material         Metal           No. of pins         5-pin           Encoding         B-coded           Dimension (W x H x L)         29 mm x 35.4 mm x 2.903 mm           Netweight         2,960 g           Housing color         Silver           Type of display         LED           OutED display         DLED           OutED display	Composition		
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Type of connection       Connector         Thread size       M12         Type       Male         Material       Metal         No. of pins       8 -pin         Encoding       A-coded         Connection 2       Function         Function       BUS IN BUS OUT         Type of connection 0       Connector         Thread size       M12         Type of connection       Connector         Thread size       M12         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 2,903 mm         Housing material       Metal, Aluminum         Lens cover material       Plastic         Net weight       2,950 g         Housing color       Silver         Type of display       LED OLED display         Cuerton and display          Software <td col<="" td=""><td></td><td>Signal IN Signal OUT</td></td>	<td></td> <td>Signal IN Signal OUT</td>		Signal IN Signal OUT
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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       Methanical data     Metal       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 2,903 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     2,950 g       Housing color     Silver       Type of fastening     Groove mounting device       Operation and display     LED oLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Thread size	M12	
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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 2,903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2,950 g         Housing color       Silver         Type of fastening       Groove mounting via optional mounting device         Operation and display         Number of LEDs       2 Piece(s)         Type of configuration       Software Teach-in	Connection 2		
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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 2,903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2,950 g         Housing color       Silver         Type of fastening       Groove mounting device         Vertice of tisplay         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 2,903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2,950 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       5 -pin         Encoding       B-coded         Mechanical data          Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 2.903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2.950 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	Туре	Female	
Encoding       B-coded         Mechanical data       Cubic         Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 2,903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2,950 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		Metal	
Mechanical data         Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 2,903 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       2,950 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	No. of pins	5 -pin	
DesignCubicDimension (W x H x L)29 mm x 35.4 mm x 2,903 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight2,950 gHousing colorSilverType of fasteningGroove mounting Via optional mounting deviceOperation and displayType of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in	Encoding	B-coded	
DesignCubicDimension (W x H x L)29 mm x 35.4 mm x 2,903 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight2,950 gHousing colorSilverType of fasteningGroove mounting Via optional mounting deviceOperation and displayType of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in	Mechanical data		
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Housing materialMetal , AluminumLens cover materialPlasticNet weight2,950 gHousing colorSilverType of fasteningGroove mounting Via optional mounting deviceOperation and displayType of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in			
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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		
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	Net weight		
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		
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	
Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		Via optional mounting device	
Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in	Operation and display		
OLED display           Number of LEDs         2 Piece(s)           Type of configuration         Software Teach-in			
Type of configuration Software Teach-in		OLED display	
Teach-in	Number of LEDs		
Operational controls Membrane keyboard	Type of configuration		
	Operational controls	Membrane keyboard	

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### Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver

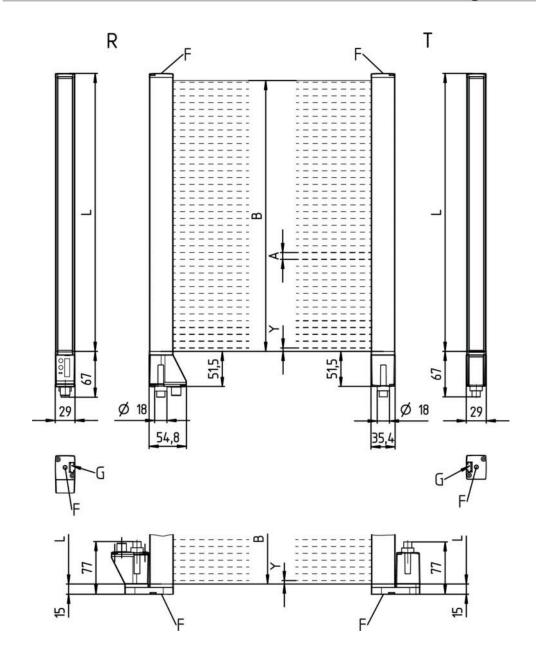
Environmental data		
Ambient temperature, operation	-30 60 °C	
Ambient temperature, storage	-40 70 °C	
Certifications		
Degree of protection	IP 65	
Protection class	III	
Certifications	c CSA US	
Standards applied	IEC 60947-5-2	

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

Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver



A Beam spacing 40 mm B Measurement field length 2850 mm

F M6 thread

- G Fastening groove
- L Profile length 2888 mm

T Transmitter

R Receiver

Y 5 mm

Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver



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

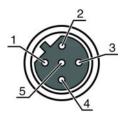
Pin	Pin assignment
1	V+
2	I/O 1
3	GND
4	IO-Link
5	I/O 2
6	RS 485 Tx+
7	RS 485 Tx+
8	FE/SHIELD



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	

## Part no.: 50123658 - CML720i-R40-2850.R/D3-M12 - Light curtain receiver

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
5		CML720i- T40-2850.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
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

### Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver

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

### Part no.: 50123658 – CML720i-R40-2850.R/D3-M12 – Light curtain receiver

#### Connection technology - Y distribution cables

	Part no.	Designation	Article	Description
		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
RR.	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

### 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