



the sensor people





Figure can vary

Part no.: 50119641 CML720i-R05-2880.A/CN-M12 Light curtain receiver





# **Contents**

- Technical data
- . Dimensioned drawings
- Electrical connection
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- Suitable transmitters
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### **Technical data**

Series 720  Operating principle Throughbeam principle  Receiver Contains 2x BT-NC sliding block Application Object measurement  Special design  Special design  Crossed-beam scanning Diagonal-beam scanning Diagonal-beam scanning Parallel-beam scanning Parallel-beam scanning Parallel-beam scanning Parallel-beam scanning Parallel-beam scanning  Optical data Operating range Guaranteed operating range Operating range Imit Typical operating range Operating range Imit 0.14.5 m  Querating range Imit 0.14.5 m  Que	Pania data	
Departing principle  Device type  Receiver  Receiver  Receiver  Receiver  Receiver  Receiver  Receiver  Receiver  Replication  Object measurement  Crossed-beam scanning Departing range Departing range Departing range Departing range Departing range imit Departing range imit Parallel-beam scanning Departing range imit Reasurement field length Reasurement field length Reasurement field length Resurrement field length  Resurrement fi	Basic data	720
Device type Receiver Contains 2x BT-NC sliding block Application Object measurement  Special design  Crossed-beam scanning Diagonal-beam scanning Parallel-beam		
Contains 2x BT-NC sliding block Application Object measurement  Special design Crossed-beam scanning Diagonal-beam scanning Parallel-beam scanning  Operating range imit Operating range imit Of 1 4.5 m  Measurement field length Sam spacing Operating range imit On 1 4.5 m  Measurement data Winimum object diameter  To mm  Measurement data Winimum object diameter  10 mm  Measurement data Winimum object diameter  Protective circuit Polarity reversal protection Short circuit protected Transfert protection Short circuit quick refer to the entire package con stating of transmitter and receiver.  Inputs/outputs selectable Output current, max. 100 mA Inputs/outputs selectable Output current, max. 100 mA Inputs/outputs selectable Output current Transfert protection Transmitter and receiver.  Inputs/outputs selectable Output current Transmitter and receiver.  Inputs/outputs selectable Output current Transmitter and receiver.  Inputs/outputs selectable Output current Transmitter and receive		
Application Object measurement  Special design  Crossed-beam scanning Diagonal-beam scanning Diagonal-beam scanning Parallel-beam scanni	**	
Special design  Crossed-beam scanning Diagonal-beam scanning Parallel-beam scanning Diagonal-beam scanning Diagona		-
Crossed-heam scanning   Diagonal-heam scanning   Diagonal-heam scanning   Parallet-heam scann	Application	Object measurement
Crossed-heam scanning   Diagonal-heam scanning   Diagonal-heam scanning   Parallet-heam scann	Special design	
Diagonal-beam scanning Parallel-beam scanning Parallel beam scanning Parallel		Crossed-beam scanning
Operating range         Quaranteed operating range           Operating range imit         0.1 3.5 m           Operating range limit         Typical operating range           Operating range limit         0.1 4.5 m           Measurement field length         2,880 mm           Number of beams         576 Piece(s)           Beam spacing         5 mm           Measurement data         Minimum object diameter           Minimum object diameter         10 mm           Electrical data           Protective circuit         Polarity reversal protection Short circuit protection           Performance data           Supply voltage Us         18 30 V , DC           Residual ripple         0 15 % , From UB           Open-circuit current         0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.           Imput/soutputs selectable           Output current, max.         100 mA           Input resistance         6,000 Ω           Number of inputs/outputs selectable         2 Piece(s)           Type         Inputs/output selectable           Voltage type, outputs         DC           Switching voltage, inputs         DC           Switching voltage, inputs         Inp		Diagonal-beam scanning
Operating range         Quaranteed operating range           Operating range imit         0.1 3.5 m           Operating range limit         Typical operating range           Operating range limit         0.1 4.5 m           Measurement field length         2,880 mm           Number of beams         576 Piece(s)           Beam spacing         5 mm           Measurement data         Minimum object diameter           Minimum object diameter         10 mm           Electrical data           Protective circuit         Polarity reversal protection Short circuit protection           Performance data           Supply voltage Us         18 30 V , DC           Residual ripple         0 15 % , From UB           Open-circuit current         0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.           Imput/soutputs selectable           Output current, max.         100 mA           Input resistance         6,000 Ω           Number of inputs/outputs selectable         2 Piece(s)           Type         Inputs/output selectable           Voltage type, outputs         DC           Switching voltage, inputs         DC           Switching voltage, inputs         Inp	Optical data	
Departing range		Guaranteed operating range
Operating range limit         Typical operating range           Operating range limit         0.1 4.5 m           Weasurement field length         2,880 mm           Number of beams         576 Piece(s)           Seam spacing         5 mm           Measurement data         Minimum object diameter           Winimum object diameter         10 mm           Electrical data         Polarity reversal protection Short circuit protected Transient protection           Performance data         Supply voltage UB         18 30 V , DC           Residual ripple         0 15 % , From UB           Open-circuit current         0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.           Inputs/outputs selectable         Output current, max.           Input resistance         6,000 Ω           Number of inputs/outputs selectable         2 Piece(s)           Type         Inputs/outputs selectable           Voltage type, outputs         DC           Switching voltage, outputs         Typ. Ug / 0 V           Voltage type, inputs         DC           Switching voltage, inputs         Input/output 1           Activation/disable delay         1 ms           **Timing           **Cealiness delay         450 ms		
Operating range limit  O.1 4.5 m  Measurement field length  2,880 mm  576 Piece(s)  3eam spacing  5 mm   Measurement data  Minimum object diameter  10 mm   Performance data Supply voltage UB Residual ripple  Open-circuit current  Open-circuit current  Inputs/outputs selectable  Output current, max.  Input resistance  Input resistance  Switching voltage, outputs  Voltage type, outputs  DC Switching voltage, inputs  DC Switching voltage, inputs  Inputs/output 1  Activation/disable delay  Activation/disable delay  450 ms  Timing  Readiness delay  Activation/disable delay  450 ms  17.68 ms		
Author of beams   576 Piece(s)		
Number of beams 576 Piece(s)  3eam spacing 5 mm  Measurement data Minimum object diameter 10 mm  Electrical data  Protective circuit Polected Transient protection Short circuit protected Transient protection  Performance data  Supply voltage UB 18 30 V , DC  Residual ripple 0 15 % , From UB  Open-circuit current 0 600 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)  Type Inputs/outputs selectable  Voltage type, outputs DC  Switching voltage, outputs DC  Switching voltage, outputs DC  Switching voltage, inputs DC  Switching voltage, inputs DC  Input/output 1  Activation/disable delay 1 ms  Timing  Readiness delay 450 ms  17.68 ms		
Measurement data  Winimum object diameter  10 mm  Pelectrical 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 UB  Open-circuit current  0 600 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)  Type Inputs/outputs selectable  Voltage type, outputs DC  Switching voltage, outputs DC  Switching voltage, outputs DC  Switching voltage, inputs  high: ≥6V low: ≤4V  Input/output 1  Activation/disable delay 1 ms  Fining  Readiness delay 450 ms  Cycle time  17,68 ms	<u> </u>	<u> </u>
Measurement data  Minimum object diameter  10 mm   Electrical data  Protective circuit  Performance data  Supply voltage UB  Residual ripple  Open-circuit current  0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.  Inputs/outputs selectable  Output current, max.  Input resistance  Number of inputs/outputs selectable  2 Piece(s)  Type  Inputs/outputs selectable  Voltage type, outputs  DC  Switching voltage, outputs  DC  Switching voltage, inputs  DC  Switching voltage		
Performance data	South opacing	
Flectrical data  Protective circuit  Performance data Supply voltage UB  Residual ripple  Open-circuit current  Inputs/outputs selectable  Output current, max.  Input resistance  Number of inputs/outputs selectable  Voltage type, outputs  DC  Switching voltage, outputs  DC  Switching voltage, inputs  Input voltage, inputs  DC  Switching voltage, inputs  Input voltage type, inputs  DC  Switching voltage, inputs  Input voltage, inputs  DC  Switching voltage, in	Weasurement data	
Performance data  Supply voltage UB  Residual ripple  Open-circuit current  Inputs/outputs selectable  Voltage type, outputs  Switching voltage, uiputs  Switching voltage, inputs  DC  Switching voltage, inputs  Input voltage inputs  DC  Switching voltage, inputs  Switching voltage, inputs  Switching voltage, inputs  Switching voltage	Minimum object diameter	10 mm
Supply voltage UB       18 30 V , DC         Residual ripple       0 5% , From UB         Open-circuit current       0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.         Inputs/outputs selectable       100 mA         Output current, max.       100 mA         Input resistance       6,000 Ω         Number of inputs/outputs selectable       2 Piece(s)         Type       Inputs/outputs selectable         Voltage type, outputs       DC         Switching voltage, outputs       Typ. U <sub>B</sub> / 0 V         Voltage type, inputs       DC         Switching voltage, inputs       DC         Switching voltage, inputs       high: ≥6V low: ≤4V         Input/output 1       Activation/disable delay       1 ms         Timing         Readiness delay       450 ms         Cycle time       17.68 ms	Protective circuit	Short circuit protected
Residual ripple       0 15 % , From UB         Open-circuit current       0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.         Inputs/outputs selectable       100 mA         Output current, max.       100 mA         Input resistance       6,000 Ω         Number of inputs/outputs selectable       2 Piece(s)         Type       Inputs/outputs selectable         Voltage type, outputs       DC         Switching voltage, outputs       Typ. Ug / 0 V         Voltage type, inputs       DC         Switching voltage, inputs       high: ≥6V low: ≤4V         Input/output 1 Activation/disable delay       1 ms         Readiness delay       450 ms         Cycle time       17.68 ms	Performance data	
Open-circuit current       0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.         Inputs/outputs selectable       100 mA         Output current, max.       100 mA         Input resistance       6,000 Ω         Number of inputs/outputs selectable       2 Piece(s)         Type       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       1 ms         Readiness delay       450 ms         Cycle time       17.68 ms	Supply voltage U <sub>B</sub>	18 30 V , DC
Open-circuit current       0 600 mA , The specified values refer to the entire package consisting of transmitter and receiver.         Inputs/outputs selectable       100 mA         Output current, max.       100 mA         Input resistance       6,000 Ω         Number of inputs/outputs selectable       2 Piece(s)         Type       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       1 ms         Readiness delay       450 ms         Cycle time       17.68 ms	Residual ripple	0 15 % , From U <sub>B</sub>
Output current, max. 100 mA   Input resistance 6,000 Ω   Number of inputs/outputs selectable 2 Piece(s)   Type 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  1 ms  Timing  Readiness delay  450 ms  Cycle time  17.68 ms		0 600 mA , The specified values refer to the entire package con-
Input resistance       6,000 Ω         Number of inputs/outputs selectable       2 Piece(s)         Type       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       1 ms         Timing         Readiness delay       450 ms         Cycle time       17.68 ms	Inputs/outputs selectable	
Number of inputs/outputs selectable       2 Piece(s)         Type       Inputs/outputs selectable         Voltage type, outputs       DC         Switching voltage, outputs       Typ. UB / 0 V         Voltage type, inputs       DC         Switching voltage, inputs       high: ≥6V low: ≤4V         Input/output 1       1 ms         Activation/disable delay       1 ms         Timing       450 ms         Cycle time       17.68 ms		100 mA
Type 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 1 ms  Fiming  Readiness delay 450 ms  Cycle time 17.68 ms	Input resistance	6,000 Ω
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   Activation/disable delay 1 ms    Fiming  Readiness delay  450 ms  17.68 ms	Number of inputs/outputs selectable	2 Piece(s)
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  1 ms  Timing  Readiness delay  450 ms  Cycle time  17.68 ms	Туре	Inputs/outputs selectable
Voltage type, inputs DC   Switching voltage, inputs high: ≥6V low: ≤4V   Input/output 1 1 ms   Activation/disable delay 1 ms    Timing  Readiness delay  450 ms  Cycle time  17.68 ms	Voltage type, outputs	DC
Switching voltage, inputs  high: ≥6V   low: ≤4V  Input/output 1  Activation/disable delay  1 ms  Timing  Readiness delay  450 ms  Cycle time  17.68 ms	Switching voltage, outputs	Typ. U <sub>B</sub> / 0 V
low: ≤4V	Voltage type, inputs	DC
Activation/disable delay 1 ms  Timing  Readiness delay 450 ms  Cycle time 17.68 ms	Switching voltage, inputs	
Timing Readiness delay 450 ms Cycle time 17.68 ms	Input/output 1	
Readiness delay 450 ms Cycle time 17.68 ms	Activation/disable delay	1 ms
Readiness delay 450 ms Cycle time 17.68 ms	Timina	
Cycle time 17.68 ms	-	450 ms
•		
	·	



Interface	0.411
Туре	CANopen
CANopen	
Function	Process
Service interface	
Туре	IO-Link
IO-Link	
Function	Configuration via software Service
Connection	
Number of connections	2 Piece(s)
Plug outlet	Axial
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
Connection 2	
Function	BUS IN BUS OUT
Type of connection	Connector
Thread size	M12
Туре	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 2,955 mm
Housing material	Metal , Aluminum
Lens cover material	Plastic
Net weight	2,900 g
Housing color	Silver
Type of fastening	Groove mounting Via optional mounting device
On any time and all the	
Operation and display	LED
Type of display	LED OLED display
Number of LEDs	2 Piece(s)
Type of configuration	Software Teach-in
Operational controls	Membrane keyboard

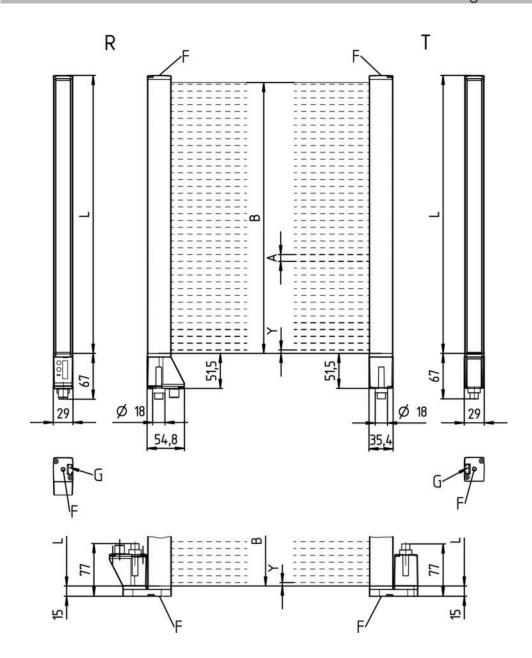


Environmental data				
Ambient temperature, operation	-30 60 °C	-30 60 °C		
Ambient temperature, storage	-40 70 °C			
Certifications				
Degree of protection	IP 65			
Protection class	III			
Certifications	c CSA US			
Standards applied	IEC 60947-5-2	IEC 60947-5-2		
Classification				
Customs tariff number	90314990			
eCl@ss 8.0	27270910	27270910		
eCl@ss 9.0	27270910	27270910		
ETIM 5.0	EC002549	EC002549		
ETIM 6.0	EC002549	EC002549		

### **Dimensioned drawings**

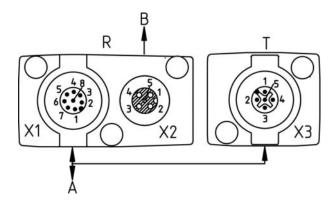
All dimensions in millimeters





- A Beam spacing 5 mm B Measurement field length 2880 mm
- F M6 thread
- G Fastening groove
- L Profile length 2888 mm
- T Transmitter
- R Receiver
- Y 2.5 mm



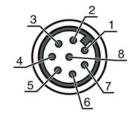


A PWR / SW IN/OUT B BUS IN / OUT

### **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		

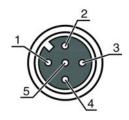
Pin	Pin assignment
1	V+
2	I/O 1
3	GND
4	IO-Link
5	I/O 2
6	RS 485 Tx-
7	RS 485 Tx+
8	FE/SHIELD



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



Pin	Pin assignment
1	FE/SHIELD
2	n.c.
3	CAN GND
4	CAN H
5	CAN L



### **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
	50119403	CML720i- T05-2880.A-M12	Light curtain transmitter	Operating range: 0.1 3.5 m Connection: Connector, M12, Axial, 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

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### Connection technology - Interconnection cables

Part no.	Designation	Article	Description
50129781	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

### 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
	50118185	K-YCN M12A- M12A-S-PUR	Interconnection cable	Suitable for interface: CANopen Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 3: Connector, M12, Axial, Male, A-coded, 5 -pin Shielded: Yes Cable length fork 1: 250 mm Cable length fork 2: 350 mm Sheathing material: PUR

### Connection technology - Terminating resistors

Part no.	Designation	Article	Description
50040099	TS 01-5-SA	Terminator plug	Suitable for: DeviceNet, CANopen Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Function: Bus termination

### 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
E.	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

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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.
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.