



the sensor people





Figure can vary

Part no.: 50123354 CML730i-R05-160.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                     | 0.1 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            | 160 mm  |  |
| Number of beams                     | 32 Piece(s)   |  |
| Beam spacing                        | 5 mm  |  |
| Measurement data                    |   |  |
| Minimum object diameter             | 10 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                | 135 mA , The specified values refer to the entire package consisting of transmitter and receiver. |  |
| 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<br>low: ≤4V   |  |
| Input/output 1                      | IOW: \$4V   |  |
| Time in a                           |   |  |
| Timing                              | 4   |  |
| Cycle time                          | 1 ms  |  |
| Response time per beam              | 10 μs   |  |
|                                     |   |  |
| Interface                           |   |  |



| Function Process  Service interface  Type IO-Link  Function Configuration via software Service | RS 485                |  |  |  |  |  |
|--|-----------------------|--|--|--|--|--|
| Service interface   Type   |                       | Process  |  |  |  |  |
|  |                       |  |  |  |  |  |
|  | Sarvica interface     |  |  |  |  |  |
| Gounction  Connection  Number of connections  Plug outlet  Rear side  Connection t  Function  Configuration interface Connection to transmitter Signal IN Signal OUT Voitage supply  Type of connection  Tread size  Type  Mate Material Metal No. of pins Benoding A-coded  Connection t  Function  BUS IN BUS OUT  Type of connection  Connection  Function  BUS IN BUS OUT  Type of connection  Connection  Connection t  Function  BUS IN BUS OUT  Type of connection  Connection t  Function  BUS IN BUS OUT  Type of connection  Con |                       | IO-Link  |  |  |  |  |
| Function  Connection  Number of connections  2 Piece(s)  Plug outlet  Rear side  Connection 1  Function  Configuration interface Connection to transmitter Signal IN S |                       | Ю-ЕШК  |  |  |  |  |
| Service  |                       | Configuration via coftware                           |  |  |  |  |
| Number of connections         2 Piece(s)           Plug outet         Rear side           Connection 1         Configuration interface Connection to transmitter Signal IM Notation of Voltage supply           Type of connection         Connector           Thread size         M12           Type         Male           Material         Metal           No. of pins         8 -pin           Encoding         A-coded           Connection 2         BUS IN BUS OUT           Function         BUS SOUT           Type of connection         Connector           Thread size         M12           Type         Female           Material         Metal           No. of pins         5 -pin           Encoding         B-coded           Mechanical data         Design           Design         Cubic           Dimension (W x H x L)         29 mm x 35.4 mm x 183 mm           Housing material         Metal , Aluminum           Housing material         Metal , Aluminum           Lens cover material         Plastic           Not weight         400 g           Housing color         Silver           Type of fastening         Groove mounting , Via optional m  | Fulction              |  |  |  |  |  |
| Plug outlet  | Connection            |  |  |  |  |  |
| Connection 1   | Number of connections | 2 Piece(s)   |  |  |  |  |
| Function  Configuration interface Connection to transmitter Signal OUT Signal OUT Voltage supply  Type of connection  Connector  Thread size  M12  Type Male  Material Metal No. of pins BuS N Function BUS N Function BUS OUT Type of connection  Connector  Function BUS OUT  Type of connection Connector  Thread size M12  Function BUS OUT  Type of connection Connector  Thread size M12  Type Female Metal No. of pins S-pin Encoding B-coded  Mechanical No. of pins S-pin Encoding B-coded  Mechanical data  Design Cubic Dimension (W x H x L) Design Cubic Dimension (W x H x L) Plastic Net weight A00 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  | Plug outlet           |  |  |  |  |  |
| Connection to transmitter   Signal IN   Signal OUT   Voltage supply  | Connection 1          |  |  |  |  |  |
| Thread size M12 Type Male  Material Metal No. of pins 8-pin Encoding A-coded  Connection 2 Function BUS IN 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 183 mm Housing material Metal, Aluminum Lens cover material Plastic Net weight 400 g Housing olor Silver Type of fastening  Coperation and display Type of display  LED OLED display  LED OLED display  LED OLED display  LED OLED display  Number of LEDS 2 Pice(s) Type of configuration  Software Teach-in  | Function              | Connection to transmitter<br>Signal IN<br>Signal OUT |  |  |  |  |
| Type Male  Material Metal  No. of pins 8 -pin  Encoding A-coded  Connection 2  Function BUS IN BUS OUT  Type of connecton  Thread size M12  Type Pemale  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 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display  LED OLED display  Type of configuration  Software Type of configuration  Software Type of configuration  Software Type of configuration  Software Type of configuration  | 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 183 mm           Housing material         Metal , Aluminum           Lens cover material         Plastic           Net weight         400 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         8 -pin           Encoding         A-coded           Connection 2         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 183 mm           Housing material         Metal, Aluminum           Lens cover material         Plastic           Net weight         400 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 Feach-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 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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 I | 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 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 g  Housing color Silver  Type of fastening Groove mounting Via optional mounting device  Operation and display  Type of display LED  Number of LEDs 2 Piece(s)  Type of configuration Solvare  Table 100  Connector  BUS IN  BUS IN  BUS IN  BUS IN  BUS IN  BUS IN  BUS ON  Hall  A 12  Temale  Metal  Metal  A 12  Type of configuration  BUS IN  Metal  A 00 g  Connector  BUS IN  BUS ON  Metal  A 12  Type of display  LED  OLED display  Number of LEDs  2 Piece(s)  Type of configuration  Software Teach-in  | No. of pins           | 8 -pin   |  |  |  |  |
| Function BUS IN BUS OUT  Type of connection Connector Thread size M12 Type Female Material No. of pins Encoding B-coded  Mechanical data Design Cubic Dimension (W x H x L) 29 mm x 35.4 mm x 183 mm Housing material Metal , Aluminum Lens cover material Plastic Net weight 400 g Housing color Silver Type of fastening  Operation and display Type of display  Number of LEDs Type of configuration Software Teach-in  Software Teach-in   | Encoding              | A-coded  |  |  |  |  |
| Type of connection Thread size M12 Type Female Material Metal No. of pins Encoding B-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 configuration  BUS OUT Connector Coulc Cou | 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 183 mm  Housing material Metal , Aluminum Lens cover material Plastic Net weight 400 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 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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  Cyroove mounting Via optional mounting device  Coperation and display  LED  OLED display  Number of LEDs  2 Piece(s)  Type of configuration  Software  Teach-in   | Туре                  | Female   |  |  |  |  |
| Encoding  B-coded  Mechanical data  Design  Cubic  Dimension (W x H x L)  10   | Material              | Metal  |  |  |  |  |
| Mechanical data  Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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   |  |  |  |  |
| Design Cubic  Dimension (W x H x L) 29 mm x 35.4 mm x 183 mm  Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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  |  |  |  |  |
| Dimension (W x H x L)  29 mm x 35.4 mm x 183 mm  Housing material  Metal , Aluminum  Lens cover material  Plastic  Net weight  400 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   | Mechanical data       |  |  |  |  |  |
| Housing material Metal , Aluminum  Lens cover material Plastic  Net weight 400 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  | Design                | Cubic  |  |  |  |  |
| Lens cover material Plastic  Net weight 400 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   | Dimension (W x H x L) | 29 mm x 35.4 mm x 183 mm                             |  |  |  |  |
| Net weight 400 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 material      | Metal , Aluminum                                     |  |  |  |  |
| 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   | Lens cover material   | Plastic  |  |  |  |  |
| 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            | 400 g  |  |  |  |  |
| 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         | Silver   |  |  |  |  |
| 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         |  |  |  |  |
| 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   | 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 |

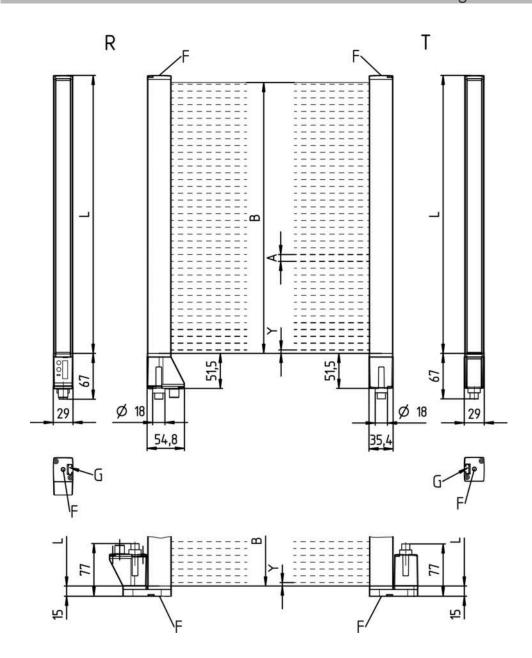
| Certifications       |               |
|----------------------|---------------|
| Degree of protection | IP 65         |
| Protection class     | III           |
| Certifications       | c CSA US      |
| Standards applied    | IEC 60947-5-2 |

| 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**

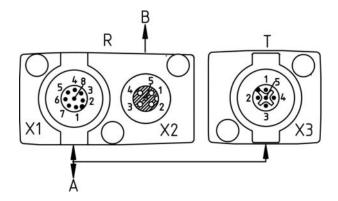
All dimensions in millimeters





- A Beam spacing 5 mm B Measurement field length 160 mm
- F M6 thread
- G Fastening groove
- L Profile length 168 mm
- T Transmitter
- R Receiver
- Y 2.5 mm



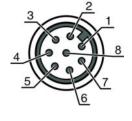


A PWR / SW IN/OUT B BUS IN / OUT

### **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   |  |

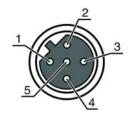
| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | I/O 1          |
| 3   | GND            |
| 4   | IO-Link        |
| 5   | I/O 2          |
| 6   | RS 485 Tx+     |
| 7   | RS 485 Tx+     |
| 8   | FE/SHIELD      |



| Connection 2       |                   |
|--------------------|-------------------|
| Function           | BUS IN<br>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   |
|----------|---------------------------|------------------------------|---|
| 50118913 | CML730i-<br>T05-160.R-M12 | Light curtain<br>transmitter | Operating range: 0.1 4 m<br>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-<br>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 - Y distribution cables

|  | Part no. | Designation                  | Article               | Description  |
|--|----------|------------------------------|-----------------------|--|
|  |          | K-Y1 M12A-5m-<br>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-<br>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.