



Figure can vary

Part no.: 53800227  
**RSL430-L/CU429-10**  
**Safety laser scanner**



## Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Notes
- Accessories

Part no.: 53800227 – RSL430-L/CU429-10 – Safety laser scanner

## Technical data

| <b>Basic data</b>                           |                                                                                                                                                                         |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series                                      | RSL 400                                                                                                                                                                 |
| Application                                 | Mobile danger zone guarding<br>Mobile side guarding<br>Stationary access guarding<br>Stationary danger zone guarding                                                    |
| <b>Functions</b>                            |                                                                                                                                                                         |
| Functions                                   | Data output, configurable<br>Dynamic contactor monitoring (EDM), selectable<br>E-stop linkage<br>Four-field mode<br>Resolution, selectable<br>Safe time delay, internal |
| <b>Characteristic parameters</b>            |                                                                                                                                                                         |
| Type                                        | 3, IEC/EN 61496                                                                                                                                                         |
| SIL                                         | 2, IEC 61508                                                                                                                                                            |
| SILCL                                       | 2, IEC/EN 62061                                                                                                                                                         |
| Performance Level (PL)                      | d, EN ISO 13849-1                                                                                                                                                       |
| PFH <sub>D</sub>                            | 9E-08 per hour                                                                                                                                                          |
| Mission time T <sub>M</sub>                 | 20 years, EN ISO 13849-1                                                                                                                                                |
| Category                                    | 3, EN ISO 13849                                                                                                                                                         |
| <b>Protective field data</b>                |                                                                                                                                                                         |
| Scanning angle                              | 270 °                                                                                                                                                                   |
| Minimum adjustable range                    | 50 mm                                                                                                                                                                   |
| Number of field pairs, reversible           | 10 + 10                                                                                                                                                                 |
| Number of quads, reversible                 | 10 + 10                                                                                                                                                                 |
| Number of protective functions              | 2 Piece(s)                                                                                                                                                              |
| Number of independent sensor configurations | 2                                                                                                                                                                       |
| Diffuse reflection, min.                    | 1.8 %                                                                                                                                                                   |
| Operating range                             | 0 ... 6.25 m                                                                                                                                                            |
| <b>Warning field data</b>                   |                                                                                                                                                                         |
| Number of field pairs                       | 10 + 10                                                                                                                                                                 |
| Operating range                             | 0 ... 20 m                                                                                                                                                              |
| Object size                                 | 150 mm x 150 mm                                                                                                                                                         |
| Diffuse reflection, min.                    | 10 %                                                                                                                                                                    |
| <b>Optical data</b>                         |                                                                                                                                                                         |
| Light source                                | Laser, Infrared                                                                                                                                                         |
| Laser light wavelength                      | 905 nm                                                                                                                                                                  |
| Laser class                                 | 1, IEC/EN 60825-1:2007                                                                                                                                                  |
| Transmitted-signal shape                    | Pulsed                                                                                                                                                                  |
| Repetition frequency                        | 90 kHz                                                                                                                                                                  |
| <b>Measurement data</b>                     |                                                                                                                                                                         |
| Distance resolution                         | 1 mm                                                                                                                                                                    |
| Detection range                             | 0 ... 50 m                                                                                                                                                              |

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|                    |       |
|--------------------|-------|
| Diffuse reflection | 20 %  |
| Angular resolution | 0.1 ° |

### Electrical data

|                    |                        |
|--------------------|------------------------|
| Protective circuit | Overvoltage protection |
|--------------------|------------------------|

### Performance data

|                                          |                                          |
|------------------------------------------|------------------------------------------|
| Supply voltage $U_B$                     | 24 V, DC, -30 ... 20 %                   |
| Current consumption (without load), max. | 700 mA, (use power supply unit with 3 A) |
| Power consumption, max.                  | 17 W, For 24 V, plus output load         |

### Outputs

|                                                    |            |
|----------------------------------------------------|------------|
| Number of safety-related switching outputs (OSSDs) | 4 Piece(s) |
|----------------------------------------------------|------------|

### Safety-related switching outputs

|                              |                                      |
|------------------------------|--------------------------------------|
| Type                         | Safety-related switching output OSSD |
| Switching voltage high, min. | 20.8 V                               |
| Switching voltage low, max.  | 2 V                                  |
| Voltage type                 | DC                                   |

### Safety-related switching output 1

|                   |                         |
|-------------------|-------------------------|
| Assignment        | Connection 1, gray wire |
| Switching element | Transistor, PNP         |

### Safety-related switching output 2

|                   |                         |
|-------------------|-------------------------|
| Assignment        | Connection 1, pink wire |
| Switching element | Transistor, PNP         |

### Safety-related switching output 3

|                   |                                |
|-------------------|--------------------------------|
| Assignment        | Connection 1, yellow/gray wire |
| Switching element | Transistor, PNP                |

### Safety-related switching output 4

|                   |                               |
|-------------------|-------------------------------|
| Assignment        | Connection 1, pink/green wire |
| Switching element | Transistor, PNP               |

### Service interface

|      |           |
|------|-----------|
| Type | Bluetooth |
|------|-----------|

### Bluetooth

|                             |                                 |
|-----------------------------|---------------------------------|
| Function                    | Configuration/parametering      |
| Frequency band              | 2,400 ... 2,483.5 MHz           |
| Radiated transmitting power | Max. 4.5 dBm (2.82 mW), class 2 |

|      |     |
|------|-----|
| Type | USB |
|------|-----|

### USB

|                          |                                                                  |
|--------------------------|------------------------------------------------------------------|
| Function                 | Configuration/parametering                                       |
| Connection               | USB 2.0 mini-B, socket                                           |
| Transmission speed, max. | 12 Mbit/s                                                        |
| Cable length             | ≤ 5m<br />Longer cable lengths are possible using active cables. |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 2 Piece(s) |
|-----------------------|------------|

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### Connection 1

|                            |                      |
|----------------------------|----------------------|
| Type of connection         | Cable                |
| Function                   | Machine interface    |
| Cable length               | 10,000 mm            |
| Sheathing material         | PVC                  |
| Cable color                | Black                |
| Number of conductors       | 29 -wire             |
| Wire cross section supply  | 1 mm <sup>2</sup>    |
| Wire cross section signals | 0.14 mm <sup>2</sup> |

### Connection 2

|                    |                |
|--------------------|----------------|
| Type of connection | Connector      |
| Function           | Data interface |
| Thread size        | M12            |
| Type               | Female         |
| Material           | Metal          |
| No. of pins        | 4 -pin         |
| Encoding           | D-coded        |

### Cable properties

|                        |      |
|------------------------|------|
| Cable resistance, max. | 15 Ω |
|------------------------|------|

### Mechanical data

|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Dimension (W x H x L) | 140 mm x 149 mm x 140 mm                                                |
| Housing material      | Metal<br>Plastic, Diecast zinc,                                         |
| Lens cover material   | Plastic/PC                                                              |
| Net weight            | 3,000 g                                                                 |
| Housing color         | Yellow, RAL 1021                                                        |
| Type of fastening     | Mounting plate<br>Through-hole mounting<br>Via optional mounting device |

### Operation and display

|                       |                                       |
|-----------------------|---------------------------------------|
| Type of display       | Alphanumeric display<br>LED indicator |
| Number of LEDs        | 6 Piece(s)                            |
| Type of configuration | Software Sensor Studio                |
| Operational controls  | Software Sensor Studio                |

### Environmental data

|                                    |               |
|------------------------------------|---------------|
| Ambient temperature, operation     | 0 ... 50 °C   |
| Ambient temperature, storage       | -20 ... 60 °C |
| Relative humidity (non-condensing) | 15 ... 95 %   |

### Certifications

|                                                            |                                    |
|------------------------------------------------------------|------------------------------------|
| Degree of protection                                       | IP 65                              |
| Protection class                                           | III, EN 61140                      |
| Certifications                                             | c TÜV Süd US<br>c UL US<br>TÜV Süd |
| Test procedure for EMC in accordance with standard         | DIN 40839-1/3<br>EN 61496-1        |
| Test procedure for oscillation in accordance with standard | EN 60068-2-6                       |

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|                                                                 |                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------|
| Test procedure for continuous shock in accordance with standard | IEC 60068-2-29                                                          |
| US patents                                                      | US 2016/0086469 A<br>US 7,656,917 B<br>US 7,696,468 B<br>US 8,520,221 B |

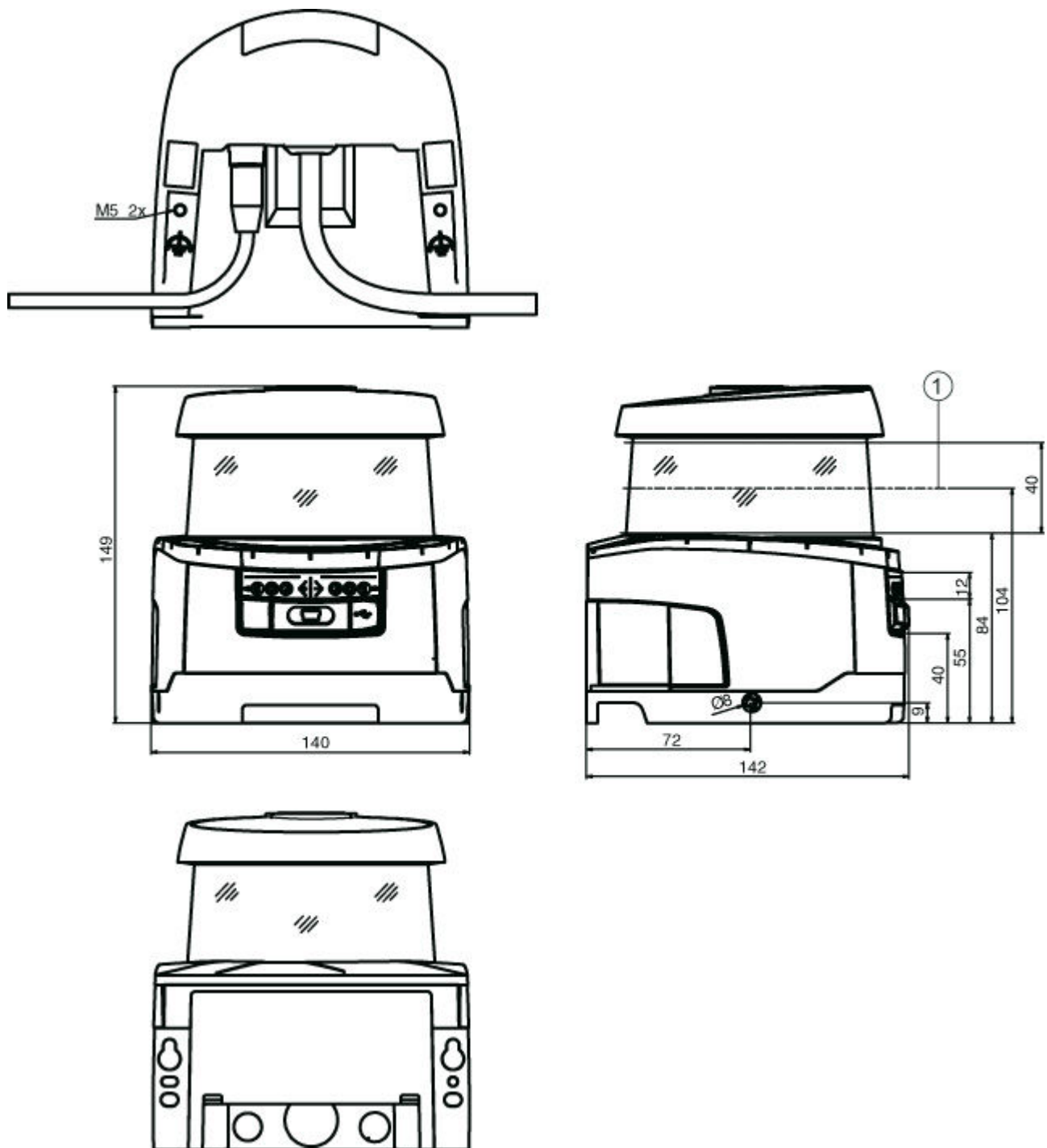
### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27272705 |
| eCl@ss 9.0            | 27272705 |
| ETIM 5.0              | EC002550 |
| ETIM 6.0              | EC002550 |

## Dimensioned drawings

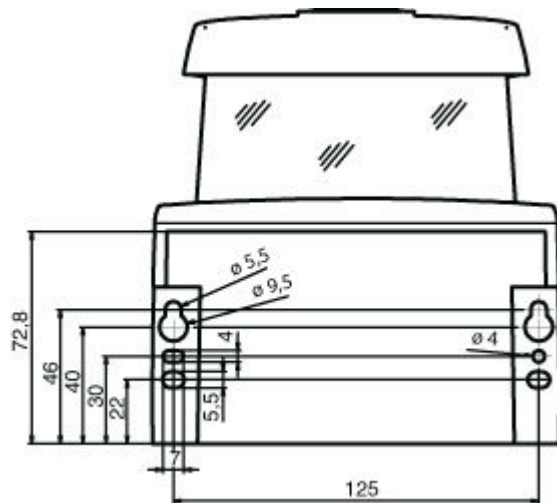
All dimensions in millimeters

Dimensions safety laser scanner with connection unit

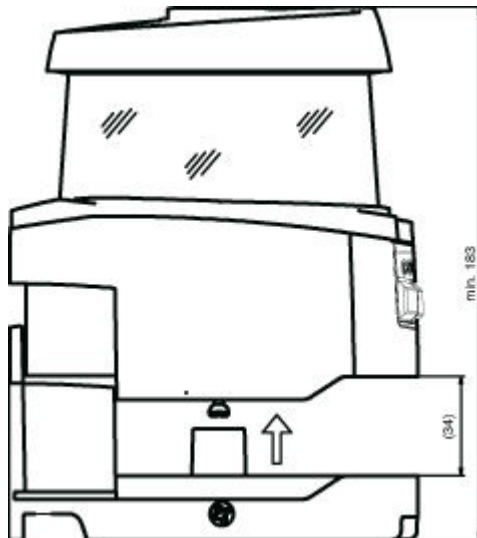


1 Scan level

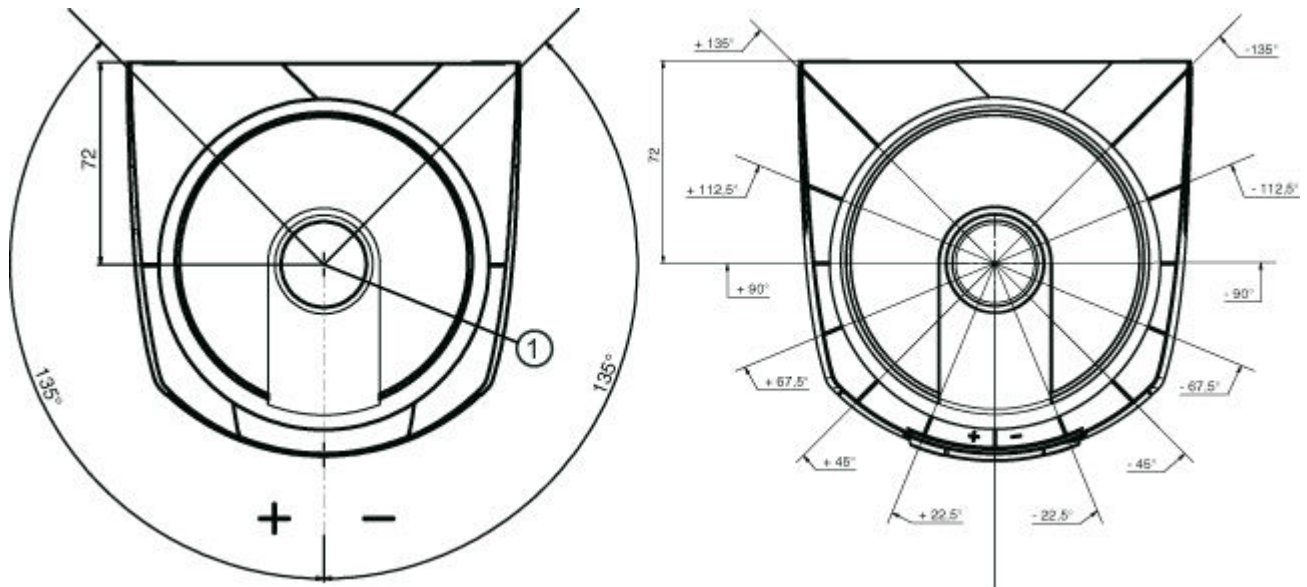
## Mounting dimensions safety laser scanner with connection unit



### Minimum space requirements for installation and replacement of scanner unit



## Dimensions of scanning range



1 Reference point for distance measurement and protective field radius

## Electrical connection

| Connection 1               |                      |
|----------------------------|----------------------|
| Type of connection         | Cable                |
| Function                   | Machine interface    |
| Cable length               | 10,000 mm            |
| Sheathing material         | PVC                  |
| Cable color                | Black                |
| Number of conductors       | 29 -wire             |
| Wire cross section         |                      |
| Wire cross section supply  | 1 mm <sup>2</sup>    |
| Wire cross section signals | 0.14 mm <sup>2</sup> |

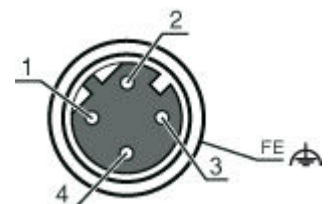
| Conductor color | Conductor assignment |
|-----------------|----------------------|
| White           | RES1                 |
| Brown           | +24V                 |
| Green           | EA1                  |
| Yellow          | A1                   |
| Gray            | OSSDA1               |
| Pink            | OSSDA2               |
| Blue            | GND / Ground         |
| Red             | MELD                 |
| Black           | F1                   |
| Violet          | F2                   |
| Gray Pink       | F3                   |
| Blue Red        | F4                   |
| Green White     | F5                   |

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| Conductor color | Conductor assignment |
|-----------------|----------------------|
| Brown<br>Green  | SE1                  |
| White<br>Yellow | SE2                  |
| Brown<br>Yellow | A2                   |
| Gray<br>White   | A3                   |
| Brown<br>Gray   | A4                   |
| Pink<br>White   | EA2                  |
| Brown<br>Pink   | EA3                  |
| Blue<br>White   | EA4                  |
| Blue<br>Brown   | F6                   |
| Red<br>White    | F7                   |
| Brown<br>Red    | F8                   |
| Black<br>White  | F9                   |
| Black<br>Brown  | F10                  |
| Gray<br>Green   | RES2                 |
| Gray<br>Yellow  | OSSDB1               |
| Green<br>Pink   | OSSDB2               |

| Connection 2       |                |
|--------------------|----------------|
| Type of connection | Connector      |
| Function           | Data interface |
| Thread size        | M12            |
| Type               | Female         |
| Material           | Metal          |
| No. of pins        | 4 -pin         |
| Encoding           | D-coded        |
| Connector housing  | FE/SHIELD      |

| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1   | TD+            | Yellow          |
| 2   | RD+            | White           |
| 3   | TD-            | Orange          |
| 4   | RD-            | Blue            |
| 5   |                |                 |



## Operation and display

### LEDs

| LED | Display                  | Meaning                                                                                                               |
|-----|--------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1   | Off                      | Device switched off                                                                                                   |
|     | Red, continuous light    | OSSD off                                                                                                              |
|     | Red, flashing            | Error                                                                                                                 |
|     | Green, continuous light  | OSSD on                                                                                                               |
| 2   | Off                      | RES deactivated or RES activated and released                                                                         |
|     | Yellow, flashing         | Protective field occupied                                                                                             |
|     | Yellow, continuous light | RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable |
| 3   | Off                      | Free warning field                                                                                                    |
|     | Blue, continuous light   | Warning field interrupted                                                                                             |
| 4   | Off                      | Free warning field                                                                                                    |
|     | Blue, continuous light   | Warning field interrupted                                                                                             |
| 5   | Off                      | RES deactivated or RES activated and released                                                                         |
|     | Yellow, flashing         | Protective field occupied                                                                                             |
|     | Yellow, continuous light | RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable |
| 6   | Off                      | Device switched off                                                                                                   |
|     | Red, continuous light    | OSSD off                                                                                                              |
|     | Red, flashing            | Error                                                                                                                 |
|     | Green, continuous light  | OSSD on                                                                                                               |

## Notes

### Observe intended use!

- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

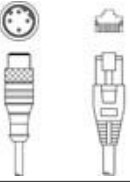
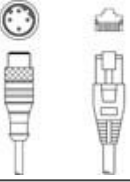
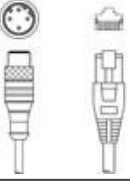
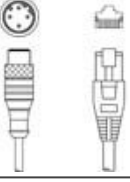
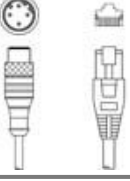
### WARNING! INVISIBLE LASER RADIATION – LASER CLASS 1

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.

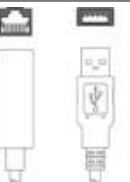
- Observe the applicable statutory and local laser protection regulations.
- The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## Accessories

### Connection technology - Interconnection cables

|                                                                                     | Part no. | Designation                 | Article               | Description                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|----------|-----------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50135080 | KSS ET-M12-4A-RJ45-A-P7-020 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 2,000 mm<br>Sheathing material: PUR  |
|    | 50135081 | KSS ET-M12-4A-RJ45-A-P7-050 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR  |
|    | 50135082 | KSS ET-M12-4A-RJ45-A-P7-100 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 10,000 mm<br>Sheathing material: PUR |
|   | 50135083 | KSS ET-M12-4A-RJ45-A-P7-150 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 15,000 mm<br>Sheathing material: PUR |
|  | 50135084 | KSS ET-M12-4A-RJ45-A-P7-300 | Interconnection cable | Suitable for interface: Ethernet<br>Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin<br>Connection 2: RJ45<br>Shielded: Yes<br>Cable length: 30,000 mm<br>Sheathing material: PUR |

### Connection technology - Adapters

|                                                                                     | Part no. | Designation                 | Article       | Description                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------|-----------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50134949 | KDS ET-RJ45-A-USB3-A-P4-000 | Adapter cable | Suitable for: Ethernet<br>Number of connections: 2 Piece(s)<br>Connection 1: RJ45<br>Connection 2: USB                                                                                                                                                                                                                                                       |
|  | 50134656 | RSL400 M12 Adapter          | Adapter       | Application: Permanent installation on the Ethernet port of the RSL400 connection unit, for simple connection of an Ethernet cable to the front of the device.<br>Number of connections: 2 Piece(s)<br>Connection 1: Connector, M12, D-coded, 4 -pin<br>Connection 2: Connector, M12, D-coded, 4 -pin<br>Dimensions: 20 mm x 90.5 mm x 40 mm<br>Color: Black |

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## Mounting technology - Mounting brackets

|                                                                                    | Part no. | Designation | Article          | Description                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------|----------|-------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | 53800134 | BT840M      | Mounting bracket | Application: Mounting on chamfered 90° corner<br>Dimensions: 84.9 mm x 72 mm x 205.2 mm<br>Color: Yellow, RAL 1021<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal                                         |
|   | 53800135 | BT856M      | Mounting bracket | Application: Mounting on non-chamfered 90° corner<br>Dimensions: 119 mm x 72 mm x 233.5 mm<br>Color: Yellow, RAL 1021<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal                                      |
|   | 53800138 | BTF815-30M  | Mounting bracket | Application: Bracket for floor mounting<br>Dimensions: 217 mm x 512 mm x 295 mm<br>Scan level height, adjustable: 75 ... 375 mm<br>Color: Yellow, RAL 1021<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal |
|   | 53800132 | BTF815M     | Mounting bracket | Application: Mounting bracket for floor mounting<br>Dimensions: 186 mm x 120 mm x 288 mm<br>Scan level height: 150 mm<br>Color: Yellow, RAL 1021<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal           |
|  | 53800133 | BTF830M     | Mounting bracket | Application: Mounting bracket for floor mounting<br>Dimensions: 186 mm x 275 mm x 288 mm<br>Scan level height: 300 mm<br>Color: Yellow, RAL 1021<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal           |

## Mounting technology - Other

|                                                                                     | Part no. | Designation | Article         | Description                                                                                                                                                                |
|-------------------------------------------------------------------------------------|----------|-------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 53800130 | BTU800M     | Mounting system | Dimensions: 54.5 mm x 90 mm x 192 mm<br>Color: Black<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal |

## Start-up/diagnosis

|                                                                                     | Part no. | Designation          | Article         | Description                                                                                                                                 |
|-------------------------------------------------------------------------------------|----------|----------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|  | 547822   | AC-MSI-USB           | Accessories set | Connection 1: USB<br>Connection 2: USB<br>Cable length: 3,000 mm<br>Sheathing material: PUR                                                 |
|  | 50117011 | KB USB A - USB miniB | Service line    | Suitable for interface: USB<br>Connection 1: USB<br>Connection 2: USB<br>Shielded: Yes<br>Cable length: 1,500 mm<br>Sheathing material: PVC |

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## Mounting

|                                                                                   | Part no. | Designation | Article    | Description                                                    |
|-----------------------------------------------------------------------------------|----------|-------------|------------|----------------------------------------------------------------|
|  | 53800131 | BTP800M     | Loop guard | Dimensions: 160 mm x 169 mm<br>Color: Black<br>Material: Metal |

## General

|                                                                                   | Part no. | Designation    | Article      | Description                                                                    |
|-----------------------------------------------------------------------------------|----------|----------------|--------------|--------------------------------------------------------------------------------|
|  | 430400   | RS4-clean-Set1 | Cleaning set | Number of cleaning cloths: 40 Piece(s)<br>Content of cleaning fluid: 150 ml    |
|  | 430410   | RS4-clean-Set2 | Cleaning set | Number of cleaning cloths: 120 Piece(s)<br>Content of cleaning fluid: 1,000 ml |

## Services

|                                                                                     | Part no. | Designation | Article                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------|-------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | S981051  | CS40-I-141  | Safety inspection "Safety laser scanners" | Details: Checking of a safety laser scanner application in accordance with current standards and guidelines. Inclusion of the device and machine data in a database, production of a test log per application.<br>Conditions: It must be possible to stop the machine, support provided by customer's employees and access to the machine for Leuze employees must be ensured.<br>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure. |
|  | S981047  | CS40-S-141  | Start-up support                          | Details: For safety devices including stopping time measurement and initial inspection.<br>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: Max. 3 h., no mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.                                                   |