



Part no.: 53800245  
**RSL410-S/CU411-RS4**  
Safety laser scanner



Figure can vary

## Contents

- . Technical data
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- . Operation and display
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## 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>Special design</b>                       |  |
| Special design                              | RS4 substitute   |
| <b>Functions</b>                            |  |
| Functions                                   | Resolution, selectable   |
| <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           | 1  |
| Number of quads, reversible                 | 1  |
| Number of protective functions              | 1 Piece(s)   |
| Number of independent sensor configurations | 1  |
| Diffuse reflection, min.                    | 1.8 %  |
| Operating range                             | 0 ... 3 m  |
| <b>Warning field data</b>                   |  |
| Number of field pairs                       | 1  |
| 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) | 2 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, pin 11 |
| Switching element | Transistor, PNP      |

**Safety-related switching output 2**

|                   |                      |
|-------------------|----------------------|
| Assignment        | Connection 1, pin 12 |
| 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 |

**Connection**

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

**Connection 1**

|                    |                   |
|--------------------|-------------------|
| Type of connection | Cable with Sub-D  |
| Function           | Machine interface |
| Cable length       | 450 mm            |
| Sheathing material | PUR               |
| Cable color        | Black             |
| No. of pins        | 15 -pin           |

**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 $\Omega$ |
|------------------------|-------------|

| <b>Mechanical data</b> |   |
|------------------------|---|
| Dimension (W x H x L)  | 140.2 mm x 148.6 mm x 140.3 mm  |
| Housing material       | Metal<br>Plastic, Diecast zinc,   |
| Lens cover material    | Plastic/PC  |
| Net weight             | 3,000 g   |
| Housing color          | Black<br>Yellow, RAL 1021   |
| Type of fastening      | Mounting plate<br>Through-hole mounting<br>Via optional mounting device |

| <b>Operation and display</b> |                                       |
|------------------------------|---------------------------------------|
| Type of display              | Alphanumeric display<br>LED indicator |
| Number of LEDs               | 3 Piece(s)                            |
| Type of configuration        | Software Sensor Studio                |
| Operational controls         | Software Sensor Studio                |

| <b>Environmental data</b>          |               |
|------------------------------------|---------------|
| Ambient temperature, operation     | 0 ... 50 °C   |
| Ambient temperature, storage       | -20 ... 60 °C |
| Relative humidity (non-condensing) | 15 ... 95 %   |

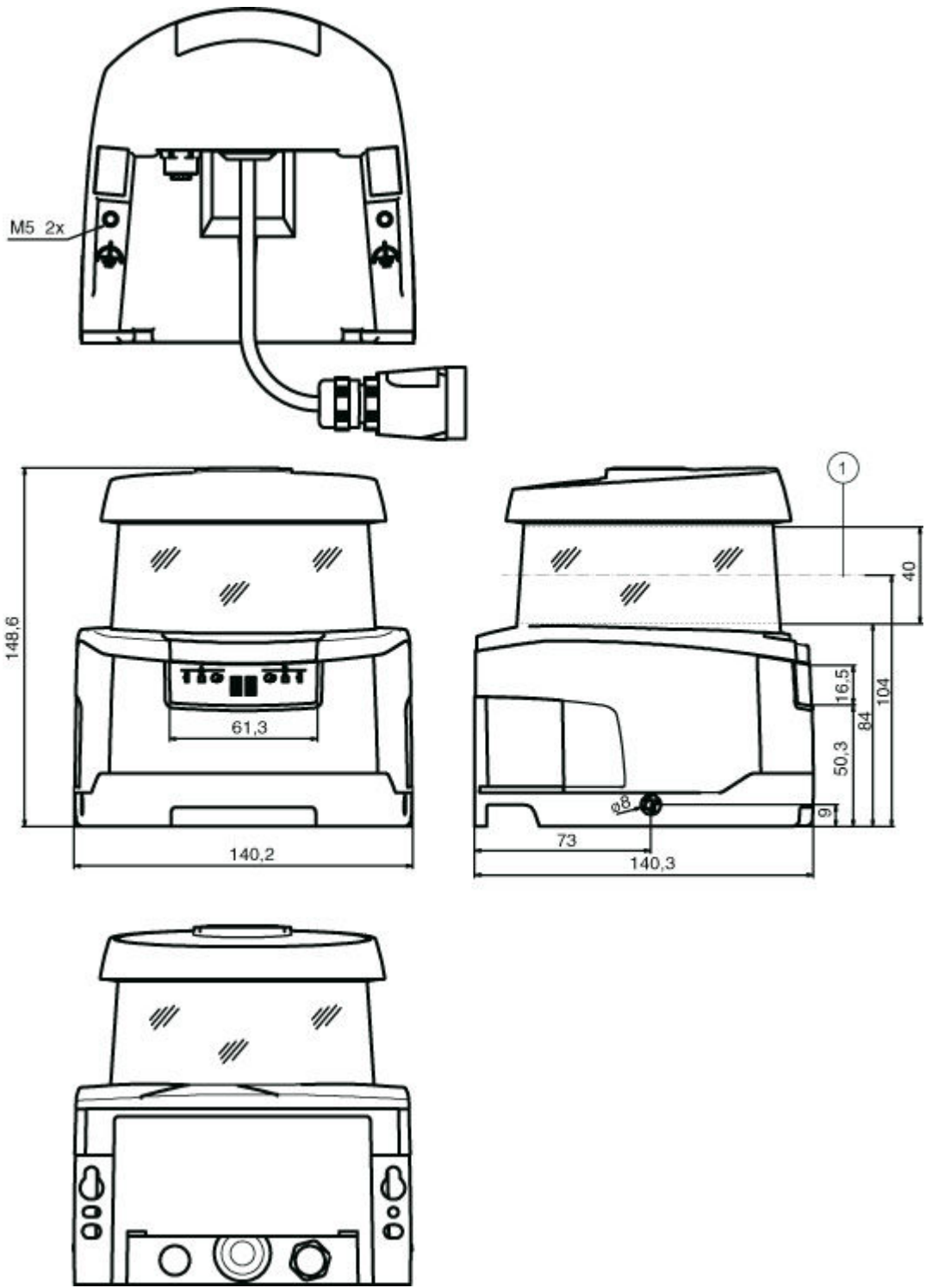
| <b>Certifications</b>   |   |
|---|---|
| Degree of protection  | IP 65   |
| Protection class  | III, EN 61140   |
| Certifications  | c TÜV Süd US<br>c UL US<br>TÜV Süd                                      |
| Test procedure for EMC in accordance with standard              | DIN 40839-1/3<br>EN 61496-1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

| <b>Classification</b> |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27272705 |
| eCl@ss 9.0            | 27272705 |
| ETIM 5.0              | EC002550 |
| ETIM 6.0              | EC002550 |

## Dimensioned drawings

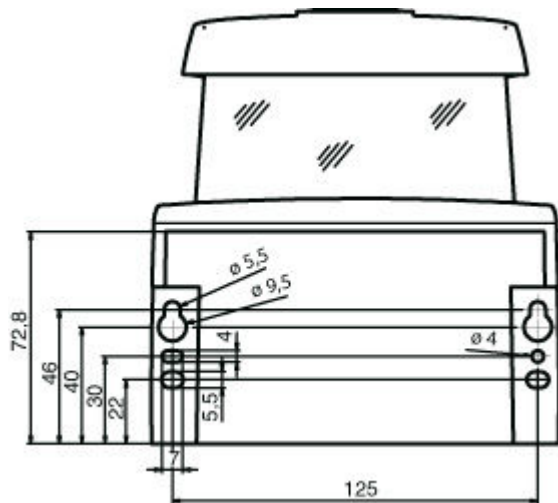
All dimensions in millimeters

Dimensions safety laser scanner with connection unit

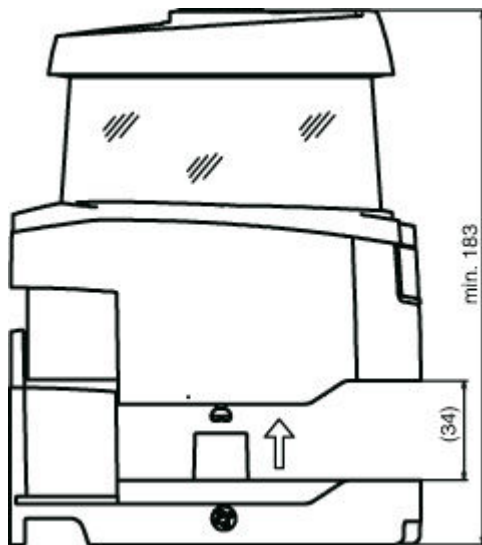


1 Scan level

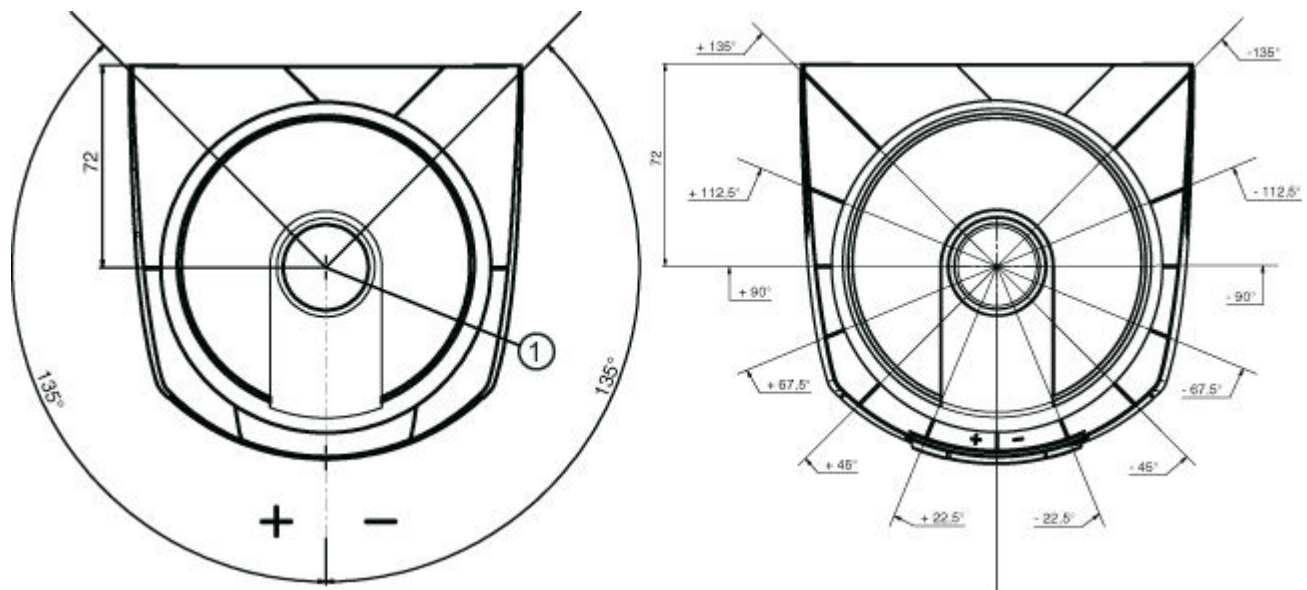
Mounting dimensions safety laser scanner with connection unit



Minimum space requirements for installation and replacement of scanner unit



### Dimensions of scanning range



1 Reference point for distance measurement and protective field radius

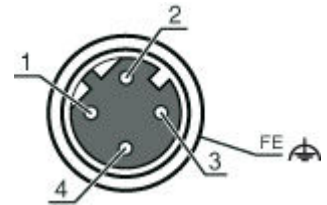
### Electrical connection

| Connection 1       |                   |
|--------------------|-------------------|
| Type of connection | Cable with Sub-D  |
| Function           | Machine interface |
| Cable length       | 450 mm            |
| Sheathing material | PUR               |
| Cable color        | Black             |
| Wire cross section |                   |
| Type               | Male              |
| No. of pins        | 15 -pin           |

| Pin | Pin assignment | Conductor color |
|-----|----------------|-----------------|
| 1   | 0 V            | Blue            |
| 2   | RES-I          | White           |
| 3   | +24V           | Brown           |
| 4   | F1             | Black           |
| 5   | A1             | Yellow          |
| 6   | F2             | Violet          |
| 7   | F3             | Gray<br>Pink    |
| 8   | F4             | Blue<br>Red     |
| 9   | n.c.           | -               |
| 10  | n.c.           | -               |
| 11  | OSSDA1         | Gray            |
| 12  | OSSDA2         | Pink            |
| 13  | n.c.           | -               |
| 14  | n.c.           | -               |
| 15  | MELD           | Red             |

| 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                      | Four field mode: warning field 3 free   |
|     | Blue, continuous light   | Four field mode: warning field 3 interrupted  |
| 5   | Yellow, flashing         | Four field mode: warning field 2 interrupted  |

## 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.

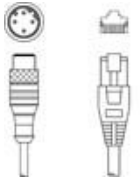
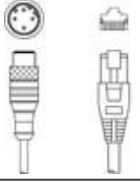
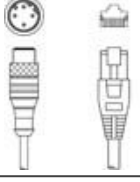
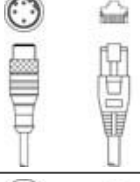
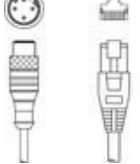
**WARNING! INVISIBLE LASER RADIATION – LASER CLASS 1**

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.

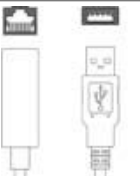
- Observe the applicable statutory and local laser protection regulations.
- The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## 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 |




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|   | Part no. | Designation        | Article | Description  |
|---|----------|--------------------|---------|--|
|  | 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 |

**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  |
|---|----------|-------------|-----------------|--|
|  | 53800137 | BT800MA     | Adapter plate   | Dimensions: 90 mm x 22 mm x 157 mm<br>Color: Black<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal   |
|  | 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 |
|  | 53800136 | BTU804MA    | Mounting plate  | Dimensions: 142 mm x 7 mm x 154 mm<br>Color: Black<br>Type of fastening, at system: Through-hole mounting<br>Type of fastening, at device: Screw type<br>Material: Metal   |

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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.   |