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Figure can vary

**Part no.: 53800315**
**RSL450P-XL/CU400P-3M12**
**Safety laser scanner**





# Contents




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# Part no.: 53800315 – RSL450P-XL/CU400P-3M12 – Safety laser scanner

## Technical data

| *Basic data* | |
|---|---|
| Series | RSL 400 |
| Application | Mobile danger zone guarding<br>Mobile side guarding<br>Stationary access guarding<br>Stationary danger zone guarding |

| *Functions* | |
|---|---|
| Functions | Data output, configurable<br>Four-field mode<br>PROFIsafe<br>Resolution, selectable |

| *Characteristic parameters* | |
|---|---|
| Type | 3 , IEC/EN 61496 |
| SIL | 2 , IEC 61508 |
| SILCL | 2 , IEC/EN 62061 |
| Performance Level (PL) | d , EN ISO 13849-1 |
| $PFH_D$ | 9E-08 per hour |
| Mission time $T_M$ | 20 years , EN ISO 13849-1 |
| Category | 3 , EN ISO 13849 |

| *Protective field data* | |
|---|---|
| Scanning angle | 270 ° |
| Minimum adjustable range | 50 mm |
| Number of field pairs, reversible | Up to 100 |
| Number of quads, reversible | 50 |
| Number of protective functions | 2 Piece(s) |
| Number of independent sensor configurations | Up to 10 |
| Diffuse reflection, min. | 1.8 % |
| Operating range | 0 ... 8.25 m |

| *Warning field data* | |
|---|---|
| Number of field pairs | Up to 100 |
| Operating range | 0 ... 20 m |
| Object size | 150 mm x 150 mm |
| Diffuse reflection, min. | 10 % |

| *Optical data* | |
|---|---|
| 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 |

| *Measurement data* | |
|---|---|
| Distance resolution | 1 mm |
| Detection range | 0 ... 50 m |
| Diffuse reflection | 20 % |
| Angular resolution | 0.1 ° |

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| | |
|---|---|
| ***Electrical data*** | |
| Protective circuit | Overvoltage protection |
| ***Performance data*** | |
| Supply voltage $U_B$ | 24 V , DC , -30 ... 20 % |
| Current consumption (without load), max. | 900 mA , (use power supply unit with 3 A) |
| Power consumption, max. | 22 W , For 24 V, plus output load |

| | |
|---|---|
| ***Interface*** | |
| Type | PROFINET |
| ***Profinet*** | |
| Function | Process |
| PROFINET device | Device acc. to Spec V2.3.4 |
| GSDML | GSDML acc. to Spec V2.3.2 |
| Profile | PROFINET/PROFIsafe |
| Conformance class | C |
| Network load class | III |
| Security level | 1 |
| Switch functionality | IRT-ready 2-port switch acc. to IEEE 802, integrated in connection unit |
| Port properties | Auto-Crossover<br>Auto-Negotiation<br>Auto-Polarity |
| I&M | 0 - 4 |
| Supported topologies | MRP client<br>SNMP |
| Safety-related switching signals | 4 Piece(s) |

| | |
|---|---|
| ***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 | 3 Piece(s) |
| ***Connection 1*** | |
| Type of connection | Connector |
| Function | Voltage supply |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | A-coded |

| | |
|---|---|
| ***Connection 2*** | |
| Type of connection | Connector |
| Function | PROFINET/PROFIsafe communication, input |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | D-coded |
| ***Connection 3*** | |
| Type of connection | Connector |
| Function | PROFINET/PROFIsafe communication, output |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | D-coded |

| | |
|---|---|
| ***Mechanical data*** | |
| Dimension (W x H x L) | 140.2 mm x 170 mm x 142 mm |
| Housing material | Metal<br>Plastic , Diecast zinc , |
| Lens cover material | Plastic/PC |
| Net weight | 4,300 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 | Alphanumerical display<br>LED indicator |
| Number of LEDs | 11 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 % |

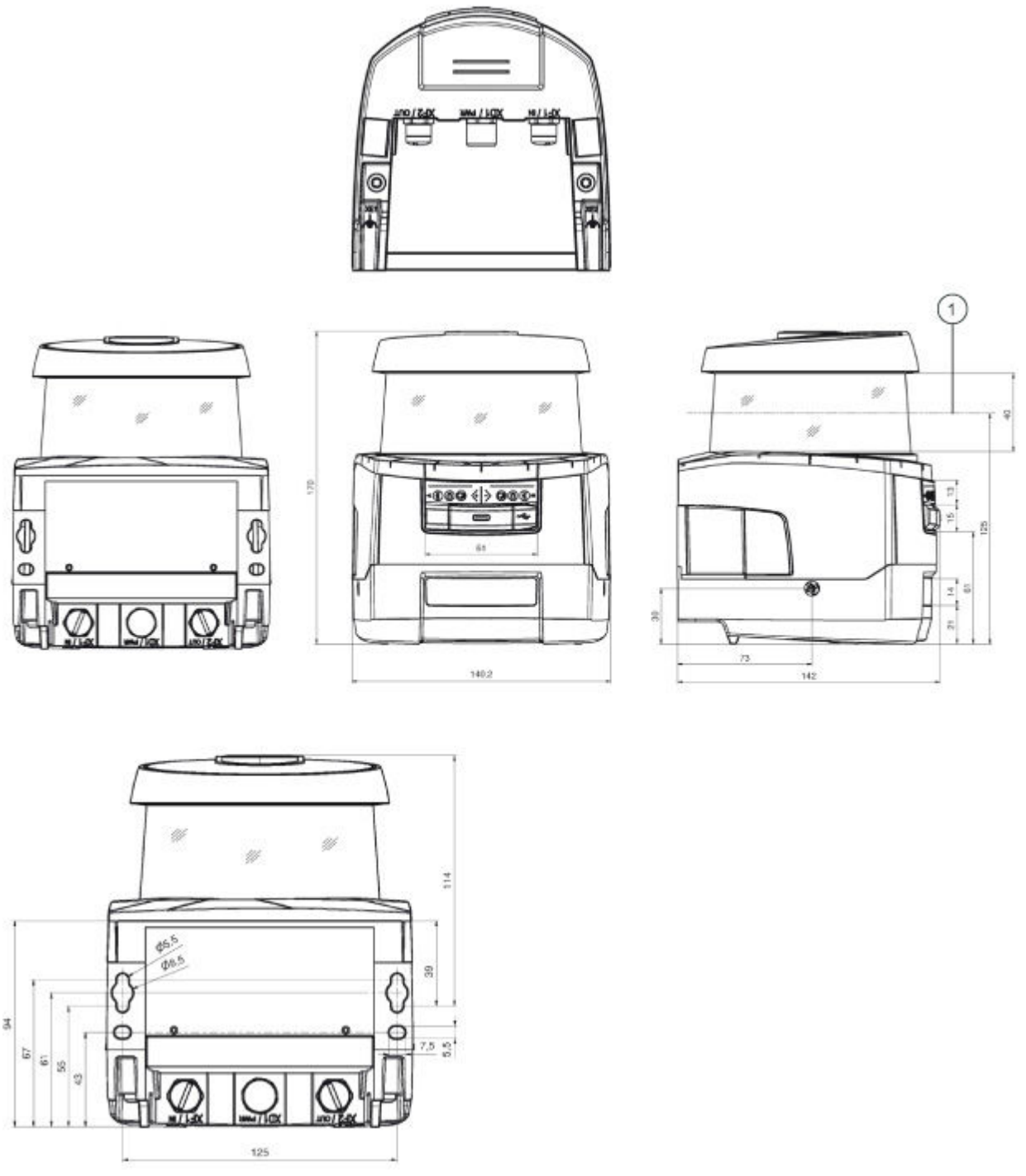
| | |
|---|---|
| ***Certifications*** | |
| Degree of protection | IP 65 |
| Protection class | III , EN 61140 |
| Certifications | TÜV Süd |
| Test procedure for EMC in accordance with standard | DIN 40839-1/3<br>EN 61496-1 |
| Test procedure for oscillation in accordance with standard | EN 60068-2-6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

| *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

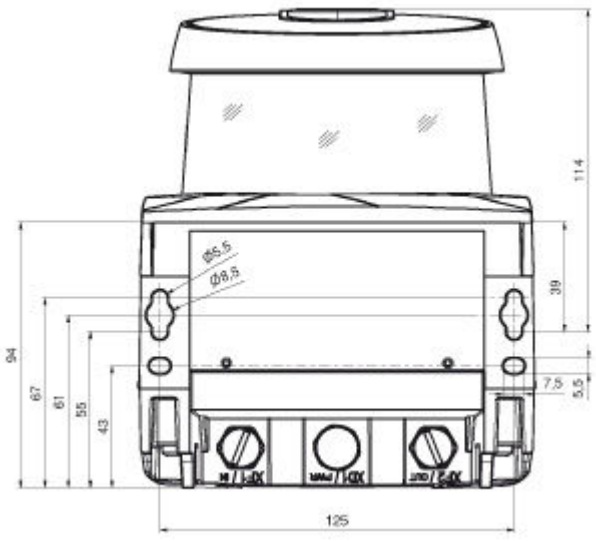
All dimensions in millimeters

## Dimensions safety laser scanner with connection unit

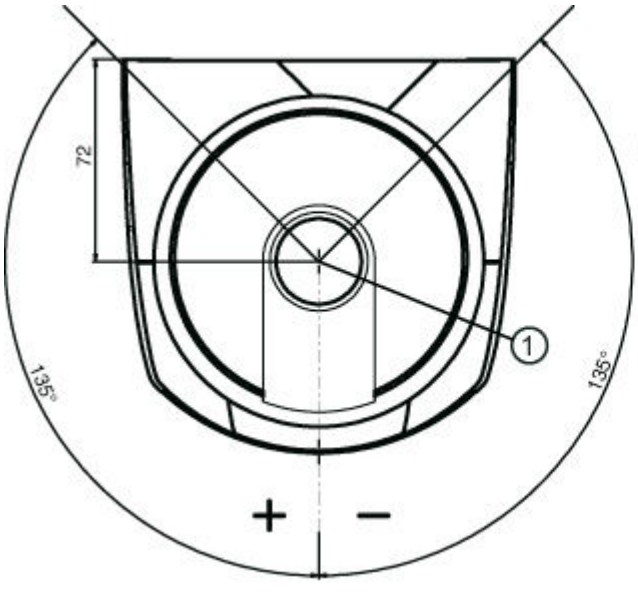


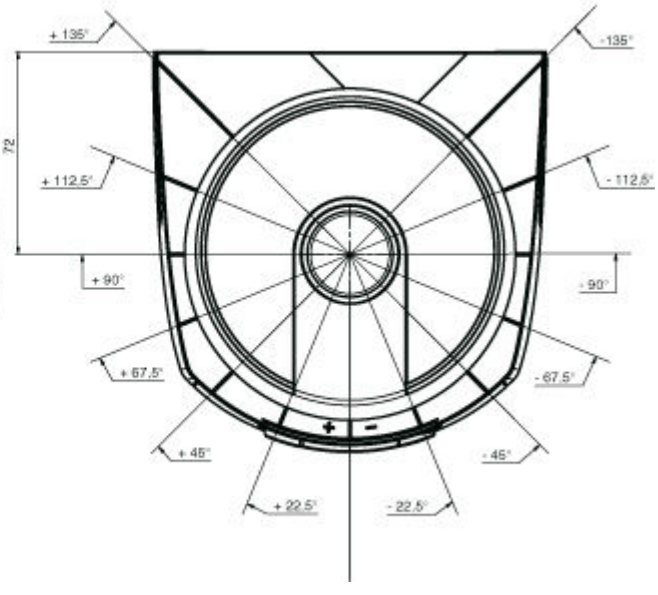

1 Scan level

## Mounting dimensions safety laser scanner with connection unit




## Dimensions of scanning range




1 Reference point for distance measurement and protective field radius

## Electrical connection

| Connection 1 | XD1 |
|---|---|
| Type of connection | Connector |
| Function | Voltage supply |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | A-coded |

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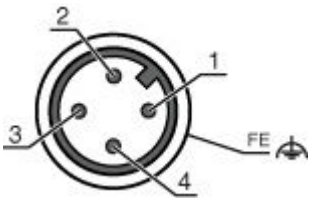
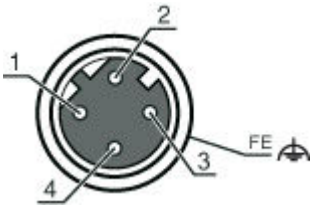
| Connection 1 | XD1 |
|---|---|
| Connector housing | FE/SHIELD |

| Pin | Pin assignment |
|---|---|
| 1 | +24V |
| 2 | EA1 |
| 3 | 0 V |
| 4 | EA2 |



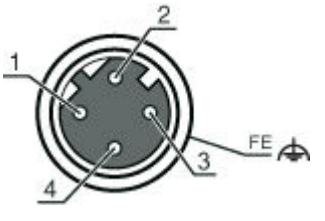

| Connection 2 | XF1 |
|---|---|
| Type of connection | Connector |
| Function | PROFINET/PROFIsafe communication, input |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | D-coded |
| Connector housing | FE/SHIELD |

| Pin | Pin assignment |
|---|---|
| 1 | TD+ |
| 2 | RD+ |
| 3 | TD- |
| 4 | RD- |




| Connection 3 | XF2 |
|---|---|
| Type of connection | Connector |
| Function | PROFINET/PROFIsafe communication, output |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 4 -pin |
| Encoding | D-coded |
| Connector housing | FE/SHIELD |

| Pin | Pin assignment |
|---|---|
| 1 | TD+ |
| 2 | RD+ |
| 3 | TD- |
| 4 | RD- |



## 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 |
| 6 | - | Off | No function |
| 7 | PWR | Off | Device switched off |
| | | Red, continuous light | Error during self test or internal communication problems |
| | | Green, flashing | PROFINET wave function active |
| | | Green, continuous light | Device switched on, supply voltage applied, no internal error |
| 8 | PS | Off | PROFIsafe communication not initialized or switched off |
| | | Green, flashing | Device in passive state or PROFINET wave function active |
| | | Green, continuous light | Device on PROFIsafe active |
| | | Red, flashing | PROFIsafe configuration failed |
| | | Red, continuous light | PROFIsafe communication error |
| 9 | NET | Off | PROFINET communication not initialized or inactive |
| | | Green, flashing | PROFINET bus initialization or PROFINET wave function active |
| | | Green, continuous light | PROFINET active, data exchange with IO controller active |
| | | Orange, flashing | Ethernet topology error |
| | | Red, flashing | Ethernet configuration failed, no data exchange or exchange of invalid data |
| | | Red, continuous light | Bus error, no communication |
| 10 | LNK/ ACT1 | Off | No Ethernet link present |
| | | Green, continuous light | Ethernet link active, no current data transmission |
| | | Green/orange, flashing | Ethernet link active, current data transmission |
| 11 | LNK/ ACT2 | Off | No Ethernet link present |
| | | Green, continuous light | Ethernet link active, no current data transmission |
| | | Green/orange, flashing | Ethernet link active, current data transmission |

## Notes

| Observe intended use! |
|---|
| • The product may only be put into operation by competent persons.<br>• Only use the product in accordance with its intended use. |

# Part no.: 53800315 – RSL450P-XL/CU400P-3M12 – Safety laser scanner

**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

### 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 |

### Mounting

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

### 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. |