

Technical data sheet

Safety laser scanner

Part no.: 53800316

RSL450P-S/CU400P-AIDA



For illustration purposes only

Contents

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- Dimensioned drawings
- Electrical connection
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Technical data

Basic data

| | |
|-------------|---------------------------------|
| Series | RSL 400 |
| Application | Mobile danger zone guarding |
| | Mobile side guarding |
| | Stationary access guarding |
| | Stationary danger zone guarding |

Special version

| | |
|-----------------|----------------|
| Special version | AIDA-compliant |
|-----------------|----------------|

Functions

| | |
|-----------|---|
| Functions | Data output, configurable |
| | Four-field mode |
| | PROFIsafe |
| Restart | Start/restart interlock (RES), 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

| | |
|---|-----------------------|
| Resolution (adjustable) | 30/40/50/60/70/150 mm |
| Minimum adjustable range | 50 mm |
| Number of field pairs, switchable | Up to 100 |
| Number of quads, switchable | 50 |
| Number of protective functions | 4 Piece(s) |
| Number of independent sensor configurations | Up to 10 |
| Diffuse reflection, min. | 1.8 % |
| Operating range | 0 ... 3 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 |
| Wavelength | 905 nm |
| Laser class | 1, IEC/EN 60825-1:2014 |
| Transmitted-signal shape | Pulsed |
| Repetition frequency | 90 kHz |
| Angular resolution | 0.1 ° |
| Scanning angle | 270 ° |

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 |

Time behavior

| | |
|---------------|----------|
| Response time | 80 ms, ≥ |
|---------------|----------|

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 |
| | Auto-Negotiation |
| | Auto-Polarity |
| I&M | 0 - 4 |
| Supported topologies | MRP client |
| | SNMP |
| Safety-related switching signals | 4 Piece(s) |

Service interface

| | |
|------|--------------------------|
| Type | Bluetooth, Ethernet, USB |
|------|--------------------------|

Ethernet

| | |
|------------|-------------------------------|
| Function | Configuration/parametization |
| | TCP/IP |
| Connection | M12 connector, 4-pin, D-coded |

Bluetooth

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

USB

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

Connection

| | |
|-----------------------|------------|
| Number of connections | 4 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|--------------------|------------------------|
| Function | Voltage supply |
| Type of connection | PROFINET push-pull 24V |

Connection 2

| | |
|--------------------|---|
| Function | Ethernet, input |
| Type of connection | PROFINET RJ45 push-pull IEC 61076-3-117 var. 14 |

Connection 3

| | |
|--------------------|---|
| Function | Ethernet, output |
| Type of connection | PROFINET RJ45 push-pull IEC 61076-3-117 var. 14 |

Technical data

Connection 4

| | |
|--------------------|------------------------|
| Function | Voltage supply |
| Type of connection | PROFINET push-pull 24V |

Mechanical data

| | |
|-----------------------|------------------------------|
| Dimension (W x H x L) | 140.2 mm x 200 mm x 142 mm |
| Housing material | Metal |
| | Plastic |
| Metal housing | Diecast zinc |
| Lens cover material | Plastic/PC |
| Net weight | 4,500 g |
| Housing color | Yellow, RAL 1021 |
| Type of fastening | Mounting plate |
| | Through-hole mounting |
| | Via optional mounting device |

Operation and display

| | |
|-----------------------|------------------------|
| Type of display | Alphanumeric display |
| | 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 |
| Approvals | TÜV Süd |
| Test procedure for EMC in accordance with standard | DIN 40839-1/3 |
| | 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 10,304,307B |
| | US 7,656,917 B |
| | US 7,696,468 B |
| | US 8,520,221 B |

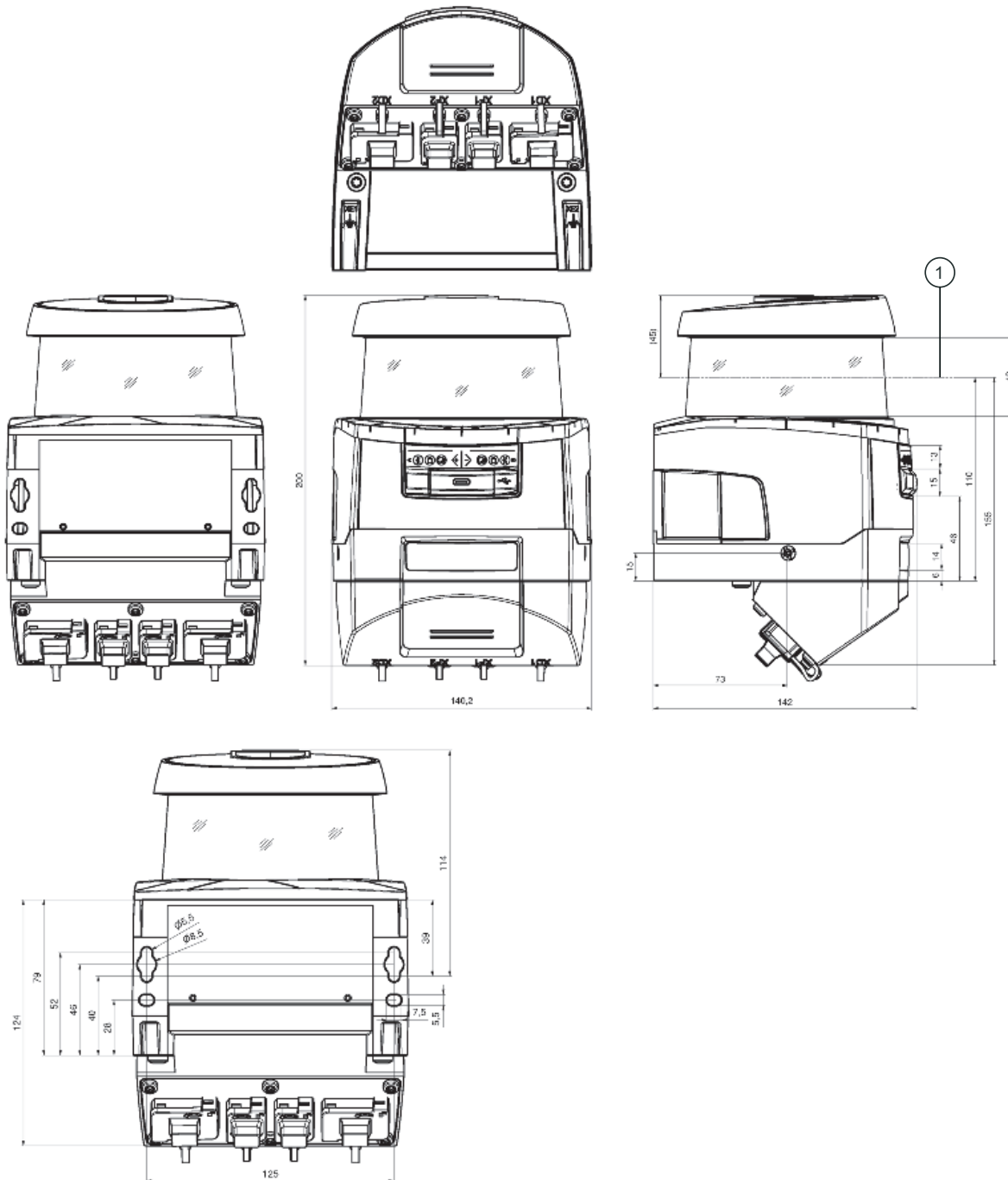
Classification

| | |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4 | 27272705 |
| ECLASS 8.0 | 27272705 |
| ECLASS 9.0 | 27272705 |
| ECLASS 10.0 | 27272705 |
| ECLASS 11.0 | 27272705 |
| ECLASS 12.0 | 27272705 |
| ECLASS 13.0 | 27272705 |
| ECLASS 14.0 | 27272705 |
| ECLASS 15.0 | 27272705 |
| ETIM 5.0 | EC002550 |
| ETIM 6.0 | EC002550 |
| ETIM 7.0 | EC002550 |
| ETIM 8.0 | EC002550 |
| ETIM 9.0 | EC002550 |
| ETIM 10.0 | EC002550 |

Dimensioned drawings

All dimensions in millimeters

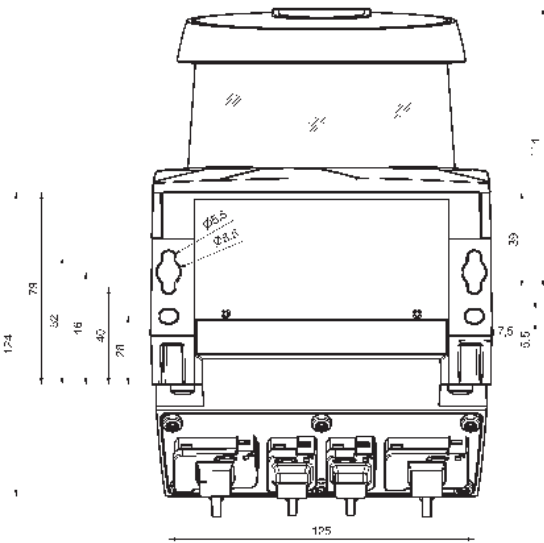
Dimensions safety laser scanner with connection unit



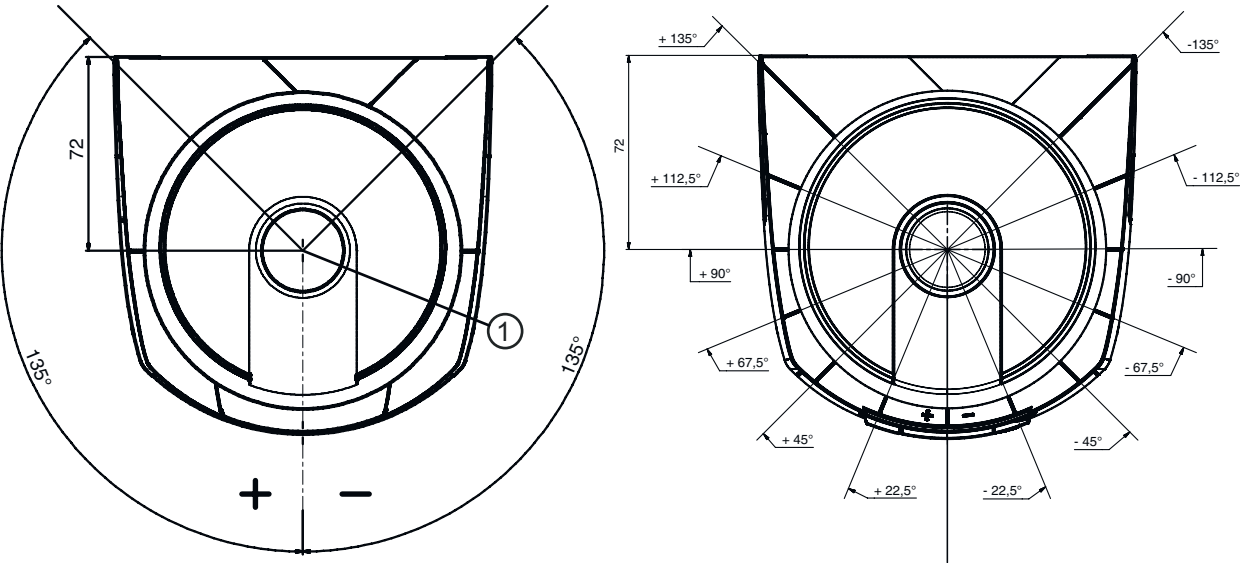
1 Scan level

Dimensioned drawings

Mounting dimensions safety laser scanner with connection unit



Dimensions of scanning range



1 Reference point for distance measurement and protective field radius

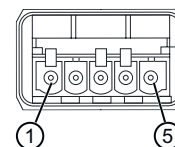
Electrical connection

| | |
|--------------------|------------------------|
| Connection 1 | XD1 |
| Function | Voltage supply |
| Type of connection | PROFINET push-pull 24V |
| No. of pins | 5 -pin |

Electrical connection

Pin Pin assignment

| | |
|---|-------|
| 1 | +24 V |
| 2 | 0 V |
| 3 | +24 V |
| 4 | 0 V |
| 5 | GND |



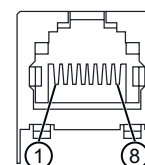
Connection 2

XF1

| | |
|--------------------|---|
| Function | Ethernet, input |
| Type of connection | PROFINET RJ45 push-pull IEC 61076-3-117 var. 14 |
| Connector housing | FE/SHIELD |

Pin Pin assignment Conductor color

| | | |
|---|------|--------|
| 1 | TD+ | Yellow |
| 2 | TD- | Orange |
| 3 | RD+ | White |
| 4 | n.c. | - |
| 5 | n.c. | - |
| 6 | RD- | Blue |
| 7 | n.c. | - |
| 8 | n.c. | - |



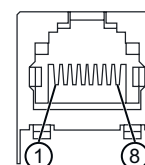
Connection 3

XF2

| | |
|--------------------|---|
| Function | Ethernet, output |
| Type of connection | PROFINET RJ45 push-pull IEC 61076-3-117 var. 14 |
| Connector housing | FE/SHIELD |

Pin Pin assignment Conductor color

| | | |
|---|------|--------|
| 1 | TD+ | Yellow |
| 2 | TD- | Orange |
| 3 | RD+ | White |
| 4 | n.c. | - |
| 5 | n.c. | - |
| 6 | RD- | Blue |
| 7 | n.c. | - |
| 8 | n.c. | - |



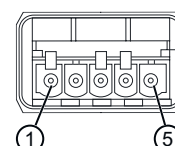
Connection 4

XD2

| | |
|--------------------|------------------------|
| Function | Voltage supply |
| Type of connection | PROFINET push-pull 24V |
| No. of pins | 5 -pin |

Pin Pin assignment

| | |
|---|-------|
| 1 | +24 V |
| 2 | 0 V |
| 3 | +24 V |
| 4 | 0 V |
| 5 | GND |



Operation and display

| 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.
- ⚠ Only use the product in accordance with its intended use.






ATTENTION! INVISIBLE LASER RADIATION – CLASS 1 LASER PRODUCT




- The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 1** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- ⚠ 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 Dimensions: 84.9 mm x 72 mm x 205.2 mm Color: Yellow, RAL 1021 Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Material: Metal |
|  | 53800132 | BTF815M | Mounting bracket | Application: Mounting bracket for floor mounting Dimensions: 186 mm x 120 mm x 288 mm Scan level height: 150 mm Color: Yellow, RAL 1021 Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Material: Metal |
|  | 53800133 | BTF830M | Mounting bracket | Application: Mounting bracket for floor mounting Dimensions: 186 mm x 275 mm x 288 mm Scan level height: 300 mm Color: Yellow, RAL 1021 Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Material: Metal |


Mounting

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


General

| | Part no. | Designation | Article | Description |
|--|----------|----------------|--------------|---|
|  | 430400 | RS4-clean-Set1 | Cleaning set | Number of cleaning cloths: 40 Piece(s) Content of cleaning fluid: 150 ml |

Services

| | Part no. | Designation | Article | Description |
|--|----------|-------------|-------------------|--|
|  | S981051 | CS40-I-141 | Safety inspection | 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. 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. |

Accessories

| | Part no. | Designation | Article | Description |
|--|----------|-------------|------------------|--|
|  | S981047 | CS40-S-141 | Start-up support | Details: For safety devices including stopping time measurement and initial inspection. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. |

| Note | |
|--|---|
|  | A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page. |