

Technical data sheet Safety laser scanner

Part no.: 53800166

RSL455P-M



For illustration purposes only

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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 | Measurement data output optimized for vehicle navigation |
|-----------------|--|

Functions

| | |
|-----------|---|
| Functions | Data output, configurable |
| | Four-field mode |
| | PROFIsafe |
| | 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 ... 4.5 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 ° |

Measurement data

| | |
|--|--|
| Detection range | 0 ... 50 m, Diffuse reflection > 90% |
| Diffuse reflection | 90 % |
| Distance resolution, radial | 1 mm |
| Distance resolution, lateral | 0.1 ° |
| Systematic measurement error $D_{\text{meas}} - D_{\text{real}}$ | min.: -20 mm typ.: -10 mm max.: 0 mm , (Diffuse reflection: 1.8% ... retro-reflector Measurement range: 0.2 ... 25 m) |
| Measurement value noise | 10 mm 1 σ (• Diffuse reflection: 1.8% ... 20% Measurement range: 0 ... 9 m • Diffuse reflection: 20% ... retro-reflector Measurement range: 0 ... 25 m) |
| Laser spot (H x W), 10 m | 60 mm x 13 mm |
| Laser spot (H x W), 20 m | 165 mm x 24 mm |
| Laser spot (H x W), 30 m | 265 mm x 40 mm |
| Laser spot (H x W), 40 m | 285 mm x 57 mm |

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, \geq |
|---------------|---------------|

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 |

Technical data

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. |

Mechanical data

| | |
|-----------------------|---|
| Dimension (W x H x L) | 140.2 mm x 170 mm x 142 mm |
| Housing material | Metal Plastic |
| Metal housing | Diecast zinc |
| Lens cover material | Plastic/PC |
| Net weight | 4,300 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 | 27279290 |
| ECLASS 8.0 | 27279290 |
| ECLASS 9.0 | 27272705 |
| ECLASS 10.0 | 27272791 |
| ECLASS 11.0 | 27272791 |
| ECLASS 12.0 | 27272791 |
| ECLASS 13.0 | 27272791 |
| ECLASS 14.0 | 27272791 |
| ECLASS 15.0 | 27272791 |
| ETIM 5.0 | EC002550 |
| ETIM 6.0 | EC002550 |
| ETIM 7.0 | EC002550 |
| ETIM 8.0 | EC003015 |
| ETIM 9.0 | EC003015 |
| ETIM 10.0 | EC003015 |

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 |

Operation and display

| LED | Display | Meaning |
|--------------------|-------------------------|---|
| 8 PS | Green, flashing | Device in passive state or PROFINET wave function active |
| | Green, continuous light | Device on PROFI-safe active |
| | Red, flashing | PROFI-safe configuration failed |
| | Red, continuous light | PROFI-safe 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.

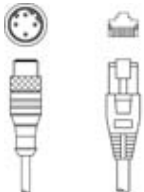
- ⚡ Observe the applicable statutory and local laser protection regulations.
- ⚡ The device must not be tampered with and must not be changed in any way.
There are no user-serviceable parts inside the device.
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

Accessories


Connection technology - Interconnection cables

| | Part no. | Designation | Article | Description |
|--|----------|-----------------------------|-----------------------|--|
|   | 50135081 | KSS ET-M12-4A-RJ45-A-P7-050 | Interconnection cable | Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |




Accessories

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


Connection technology - Connection boxes

| | Part no. | Designation | Article | Description |
|--|----------|-------------|-----------------|--|
|  | 53800150 | CU400P-3M12 | Connection unit | Number of connections: 3 Piece(s) Connection 1: Connector, M12, A-coded, 4 -pin Connection 2: Connector, M12, D-coded, 4 -pin Connection 3: Connector, M12, D-coded, 4 -pin Dimensions: 140.2 mm x 93.8 mm x 142 mm Color: Black Type of fastening: Bayonet system |

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

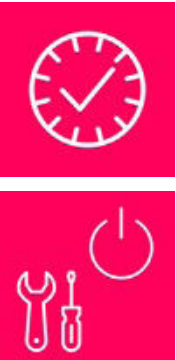
| | Part no. | Designation | Article | Description |
|--|----------|-------------|------------|--|
|  | 53800131 | BTP800M | Loop guard | Dimensions: 160 mm x 169 mm Color: Black Material: Metal |

Accessories

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. |
| | 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.