

## Technical data sheet

### Safety laser scanner

Part no.: 53800246

RSL410-M/CU411-RS4

#### Contents

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- Electrical connection
- Operation and display
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For illustration purposes only



# 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	RS4 substitute
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## Functions

Functions	Four-field mode
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 <sub>D</sub>	9E-08 per hour
Mission time T <sub>M</sub>	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	1
Number of quads, switchable	1
Number of protective functions	1 Piece(s)
Number of independent sensor configurations	1
Diffuse reflection, min.	1.8 %
Operating range	0 ... 4.5 m

## Warning field data

Number of field pairs	1
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
<b>Performance data</b>	
Supply voltage U <sub>B</sub>	24 V, DC, -30 ... 20 %
Current consumption (without load),	700 mA, (use power supply unit with 3 A max.)
Power consumption, max.	17 W, For 24 V, plus output load

## Outputs

Number of signal outputs, configurable	3 Piece(s)
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
Switching current, max.	300 mA

## 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

## Time behavior

Response time	80 ms, ≥
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## Service interface

Type	Bluetooth, Ethernet
Ethernet	
Function	Configuration/parametization
Connection	TCP/IP
	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

## Connection

Number of connections	2 Piece(s)
<b>Connection 1</b>	
Function	Machine interface
Type of connection	Cable with Sub-D
Cable length	450 mm
Sheathing material	PUR
Cable color	Black
No. of pins	15 -pin
<b>Connection 2</b>	
Function	Data interface
Type of connection	Connector
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded
<b>Cable properties</b>	
Cable resistance, max.	15 Ω

## Technical data

### Mechanical data

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

### 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
ECLASS 16.0	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

### Operation and display

Type of display	Alphanumeric display
	LED indicator
Number of LEDs	3 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 %

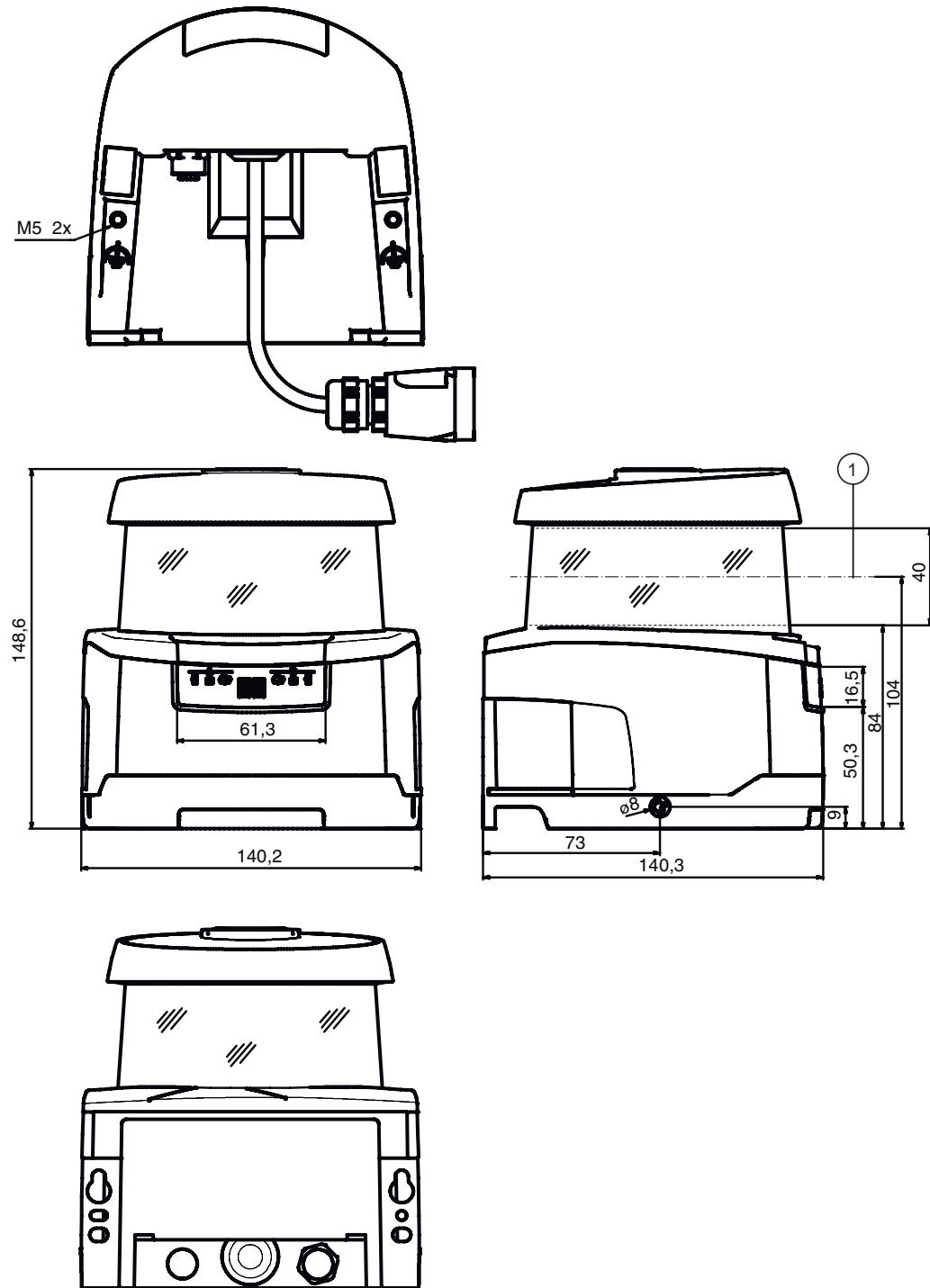
### Certifications

Degree of protection	IP 65
Protection class	III, EN 61140
Approvals	c TÜV Süd US
	c UL US
	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

## Dimensioned drawings

All dimensions in millimeters

Dimensions safety laser scanner with connection unit

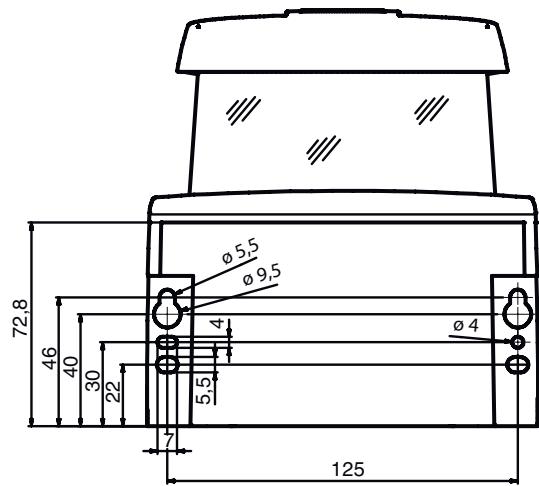


1 Scan level

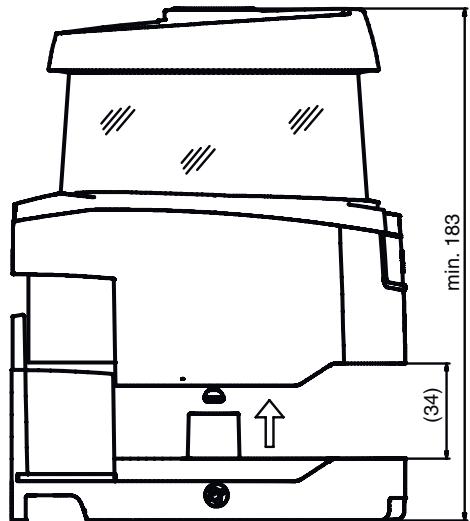
## Dimensioned drawings

Leuze

Mounting dimensions safety laser scanner with connection unit

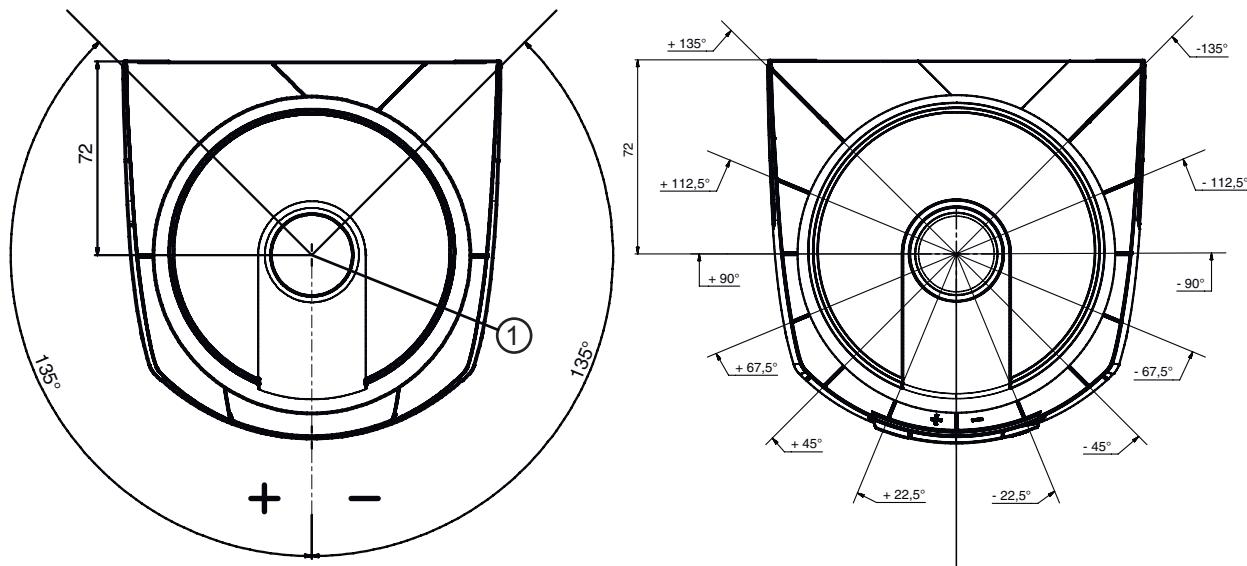


Minimum space requirements for installation and replacement of scanner unit



## Dimensioned drawings

### Dimensions of scanning range



1 Reference point for distance measurement and protective field radius

## Electrical connection

### Connection 1

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

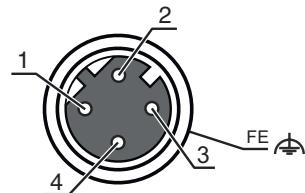
Pin	Pin assignment	Conductor color
1	0 V	Blue
2	RES-I	White
3	+24 V	Brown
4	F1	Black
5	A1	Yellow
6	F2	Violet
7	F3	Gray / Pink
8	F4	Blue / Red
9	n.c.	-
10	n.c.	-
11	OSSDA1	Gray
12	OSSDA2	Pink
13	n.c.	-
14	n.c.	-
15	MELD	Red

## Electrical connection

### Connection 2

Function	Data interface
Type of connection	Connector
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

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

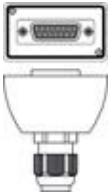
## Notes

<b>⚠ Observe intended use!</b>	
	<ul style="list-style-type: none"> <li>⚠ The product may only be put into operation by competent persons.</li> <li>⚠ Only use the product in accordance with its intended use.</li> </ul>

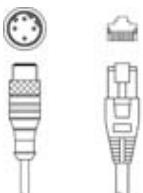
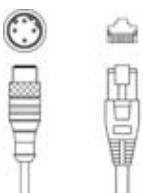
<b>⚠ ATTENTION! INVISIBLE LASER RADIATION – CLASS 1 LASER PRODUCT</b>	
	<p>The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of <b>laser class 1</b> and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.</p> <ul style="list-style-type: none"> <li>⚠ Observe the applicable statutory and local laser protection regulations.</li> <li>⚠ The device must not be tampered with and must not be changed in any way.</li> <li>There are no user-serviceable parts inside the device.</li> <li>Repairs must only be performed by Leuze electronic GmbH + Co. KG.</li> </ul>

## Accessories

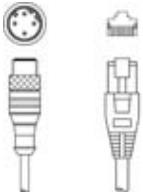
### Connection technology - Connection cables

Part no.	Designation	Article	Description
	520083	AC-D15E-GF	Connection cable Connection: Sub-D, Axial, Female, 15 -pin
	548521	CB-D15E-10000S-11GF	Application: Oil and lubricant resistant Parameter memory: Yes Connection 1: Sub-D, Axial, Female, 15 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	548522	CB-D15E-25000S-11GF	Application: Oil and lubricant resistant Parameter memory: Yes Connection 1: Sub-D, Axial, Female, 15 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 25,000 mm Sheathing material: PUR
	548523	CB-D15E-50000S-11GF	Application: Oil and lubricant resistant Parameter memory: Yes Connection 1: Sub-D, Axial, Female, 15 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 50,000 mm Sheathing material: PUR
	548520	CB-D15E-5000S-11GF	Application: Oil and lubricant resistant Parameter memory: Yes Connection 1: Sub-D, Axial, Female, 15 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

### Connection technology - Interconnection cables

Part no.	Designation	Article	Description
	50135081	KSS ET-M12-4A-RJ45-A-P7-050	Application: Oil and lubricant resistant 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
	50135082	KSS ET-M12-4A-RJ45-A-P7-100	Application: Oil and lubricant resistant 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

## Accessories

Part no.	Designation	Article	Description
	50135083	KSS ET-M12-4A-RJ45-A-P7-150	Interconnection cable Application: Oil and lubricant resistant 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

## Mounting technology - Mounting brackets

Part no.	Designation	Article	Description
	53800134	BT840M	Mounting bracket Application: Mounting on chamfered 90° corner 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 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 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 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 Net weight: 616 g

## Accessories

### Services

Part no.	Designation	Article	Description
	S981051	CS40-I-141	<p>Safety inspection</p> <p>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.</p> <p>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.</p>
	S981047	CS40-S-141	<p>Start-up support</p> <p>Details: For safety devices including stopping time measurement and initial inspection.</p> <p>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.</p>

**Note**

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