Technical data sheet
Safety laser scanner
Part no.: 53802110
RSL235-S/12-M12

For Illustration purposes only

Contents




Technical data

Basic data

Series	RSL 200
Application	Mobile danger zone guarding
	Stationary danger zone guarding
	Vehicle navigation

Functions

Functions	Contactor monitoring (EDM)
	Field triple changeover
	Field triple monitoring
	Fixed selection of one field triple
Restart	Automatic start/restart
	Start interlock/automatic restart
	Start/restart interlock (RES)

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	2E-08 per hour
Mission time T_M	20 years, EN ISO 13849-1
Category	3, EN ISO 13849

Protective field data

Resolution (adjustable)	50/70 mm
Number of field triples, switchable	32 Piece(s)
Number of protective functions	1 Piece(s)
Diffuse reflection, min.	1.8 %
Operating range	0 ... 3 m

Warning field data

Number of warning fields per field triple	2 Piece(s)
Operating range	0 ... 15 m
Object size	150 mm x 150 mm
Diffuse reflection, min.	20 %

Optical data

Light source	Laser, Infrared
Wavelength	905 nm
Laser class	1, IEC/EN 60825-1:2014
Transmitted-signal shape	Pulsed
Repetition frequency	96 kHz
Angular resolution	0.2 °
Scanning angle	275 °

Measurement data

Detection range	0 ... 25 m, Diffuse reflection > 90%
Distance resolution, radial	2 mm
Distance resolution, lateral	0.2 °
Systematic measurement error D_{meas} - D_{real}	min.: -20 mm typ.: -20 mm max.: +20 mm (Diffuse reflection: 1.8% … retro-reflector Measurement range: 0.2 … 25 m)
Measurement value noise	10 mm 1 σ (Diffuse reflection: 1.8% retro-reflector) Measurement range: 0 … 25 m)
Laser spot (H x W), 5 m	63 mm x 8 mm
Laser spot (H x W), 15 m	188 mm x 23 mm
Laser spot (H x W), 25 m	318 mm x 38 mm

Electrical data

Protective circuit	Cross circuit protection
	Overvoltage protection

Performance data

Supply voltage U_B	24 V, DC, -30 ... 20 %
Current consumption (without load), max.	300 mA, (use power supply unit with 1 A)
Power consumption, max.	7 W, For 24 V, plus output load

Outputs

Number of signal outputs, configurable	8 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.	22.2 V
Switching voltage low, max.	3 V
Voltage type	DC
Switching current, max.	85 mA

Safety-related switching output 1

Switching element	Transistor, PNP

Safety-related switching output 2

Switching element	Transistor, PNP

Time behavior

Response time	≥ 75 ms

Service interface

Type	Bluetooth, Ethernet, USB 2.0

Ethernet

Function	Configuration/parametization
	Diagnosis
	Display of the measurement contour
	Protective field definition and warning field definition
Connection	M12 connector, 4-pin, D-coded

Technical data

Bluetooth

Function	Configuration/parametization
	Diagnosis
	Protective field definition and warning field definition
Frequency band	2,400 ... 2,483.5 MHz
Radiated transmitting power	Max. 4.5 dBm (2.82 mW), class 2

USB

Function	Configuration/parametization
	Diagnosis
	Protective field definition and warning field definition
Connection	USB 2.0 type C, socket
Transmission speed, max.	12 Mbit/s
Cable length	≤ 5m Longer cable lengths are possible using active cables.

Connection

Number of connections	3 Piece(s)

Connection 1

Function	Machine interface
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded

Connection 2

Function	Data interface
	Measurement value transmission via UDP (signal strength, distance and process image)
Type of connection	Connector
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

Connection 3

Function	Configuration interface
Type of connection	USB
Connector type	USB 2.0 type C

Mechanical data

Dimension (W x H x L)	80 mm x 80 mm x 86 mm
Housing material	Metal
	Plastic
Plastic housing	PC
Metal housing	Diecast zinc
Lens cover material	Plastic
Net weight	600 g
Housing color	Black
	Gray
	Yellow, RAL 1021
Type of fastening	Mounting plate
	Through-hole mounting
	Via optional mounting device

Operation and display

Type of display	LED
Number of LEDs	5 Piece(s)
Type of configuration	Software Sensor Studio

Environmental data

Ambient temperature, operation	0 ... 50 °C
Ambient temperature, storage	-20 ... 60 °C
Relative humidity (non-condensing)	15 ... 95 %

Certifications

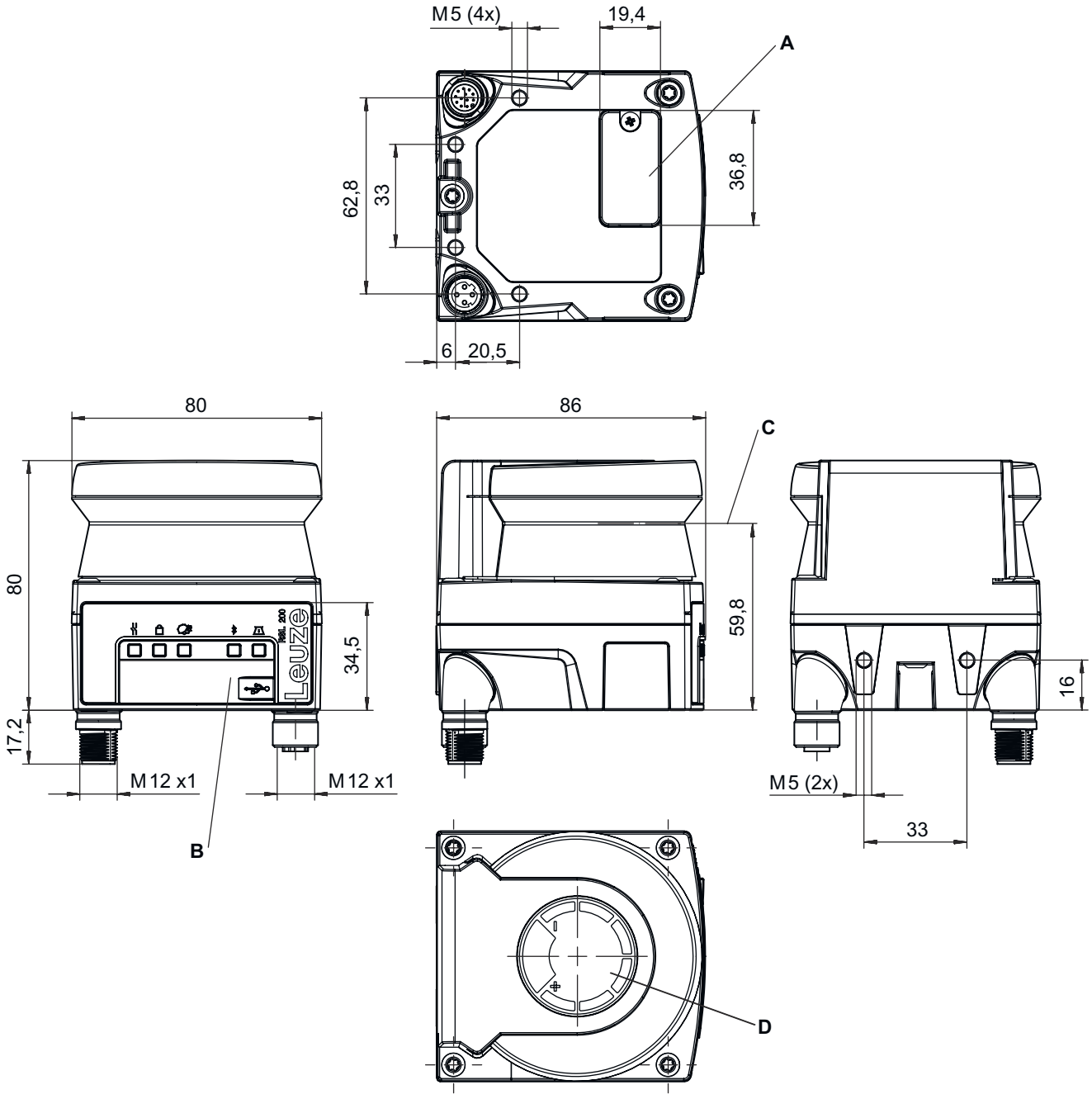
Degree of protection	IP 65
Protection class	III
Approvals	TÜV Süd
	UL US
Test procedure for oscillation in accordance with standard	IEC/EN 60068-2-6
Test procedure for continuous shock in accordance with standard	IEC 60068-2-29, test Eb

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
UNSPSC 26.08	32151804

Dimensioned drawings

All dimensions in millimeters



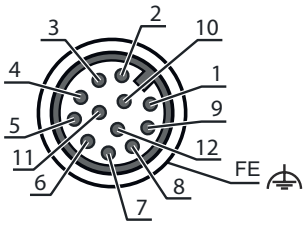
A Position of the configuration memory
B USB connection type C (behind protection cap)
C Scan level
D Template (markings on safety sensor)

Electrical connection

Connection 1

Function	Machine interface
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

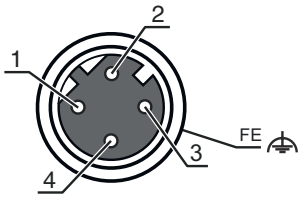
Pin	Pin assignment
1	EA1
2	+24 V DC
3	EA2
4	EA3
5	OSSD1
6	OSSD2
7	0 V DC
8	EA4
9	EA5
10	EA6
11	A7
12	A8 / RES



Connection 2

Function	Data interface
	Measurement value transmission via UDP (signal strength, distance and process image)
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
1	TD+
2	RD+
3	TD-
4	RD-

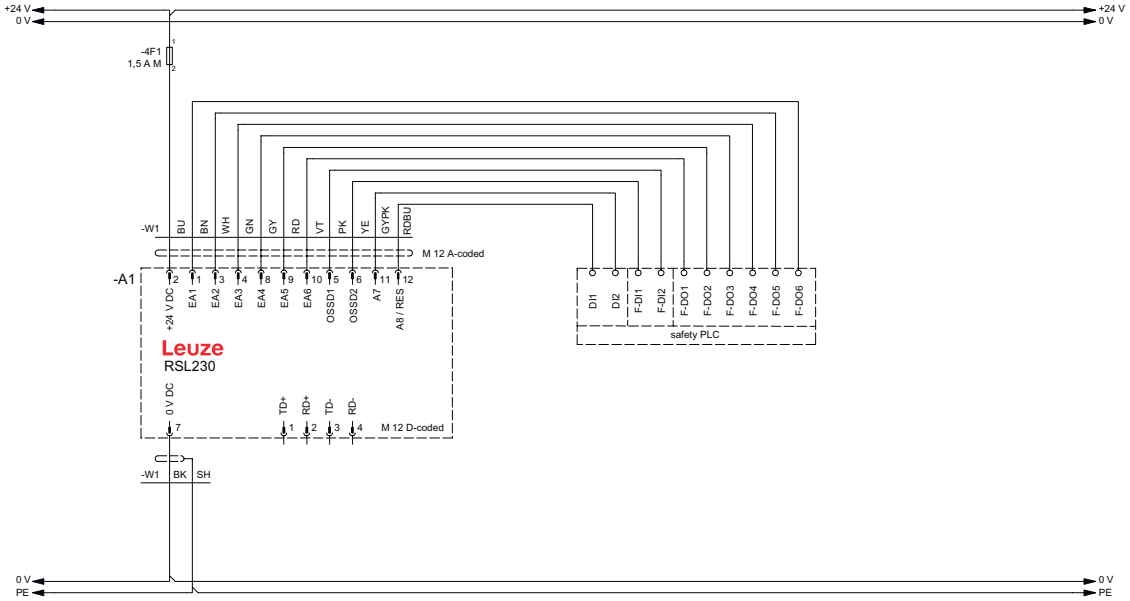


Connection 3

Function	Configuration interface
Type of connection	USB
Connector type	USB 2.0 type C

Circuit diagrams

RSL 235 with safety control



Operation and display

LED	Display	Meaning
1	Off	Device switched off
	Red, flashing	Error
	Red, continuous light	OSSD off
	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
3	Off	All warning fields free
	Blue, flashing	Two warning fields interrupted
	Blue, continuous light	One warning field interrupted
4	Off	Bluetooth deactivated
	Blue, flashing	Bluetooth activated, active connection to external device
	Blue, continuous light	Bluetooth activated
	Green, flashing (30 s)	Ping received via Sensor Studio
5	Off	No contamination warning / no contamination error
	Yellow, flashing	Contamination warning (OSSD ON)
	Yellow, continuous light	Contamination error (OSSD OFF)
	Green, flashing (30 s)	Ping received via Sensor Studio

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.

Notes

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.

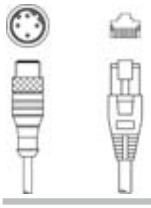
Downloads
You can find the applicable documents on the Internet at www.leuze.com. ↳ Call up the Leuze home page: www.leuze.com ↳ Enter the type designation or part number of the device as the search term. ↳ The applicable documents can be found on the product page for the device under the **Downloads** tab.

Accessories

Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50130282	KD S-M12-CA-P1-050	Connection cable	Application: Oil and lubricant resistant Connection 1: Connector, M12, Axial, Female, A-coded, 12 -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	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: 5,000 mm Sheathing material: PUR

Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50152258	BT 500M	Mounting plate	Suitable for: RSL 200 safety laser scanner Version: Mounting plate Type of fastening, at device: Screw type Material: Steel
	50152259	BTP 500M	Loop guard	Suitable for: RSL 200 safety laser scanner Type of fastening, at device: Screw type Material: Steel

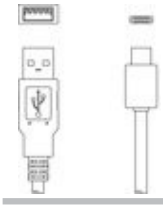
Accessories

	Part no.	Designation	Article	Description
	50152257	BTU 500M-Set	Mounting system	Suitable for: RSL 200 safety laser scanner Version: Mounting system, adjustability in 2 axes Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Swivel range: -5 ... 5 ° Material: Steel
	50152260	BTX 500M-BTU800M	Adapter plate	Suitable for: RSL 200 safety laser scanner Version: Adapter plate Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Material: Steel

Mounting technology - Other

	Part no.	Designation	Article	Description
	50152261	BTU 500M	Mounting system	Suitable for: RSL 200 safety laser scanner Version: Mounting system, adjustability in 2 axes Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Swivel range: -5 ... 5 ° Material: Steel

Start-up/diagnosis

	Part no.	Designation	Article	Description
	50151103	KSS US-USB2-A-USB2-C-V1-020	Service line	Suitable for interface: USB Connection 1: USB Connection 2: USB Shielded: Yes Cable length: 2,000 mm Sheathing material: PVC

General

	Part no.	Designation	Article	Description
	50145020	RSL400 test rod 50	Test piece	Design: Cylindrical Housing material: Plastic, Foam (diffuse reflective)
	50145022	RSL400 test rod 70	Test piece	Design: Cylindrical Housing material: Plastic, Foam (diffuse reflective)

Replacement part

	Part no.	Designation	Article	Description
	50152639	RSL200-WIN	Optics cover	Type of article: Optics cover Suitable for: RSL 200 safety laser scanner

Accessories

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