

Technical data sheet Safety laser scanner

Part no.: 53800332

RSL420P-XL/CU400P-4M12



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- Technical data
- Dimensioned drawings
- Electrical connection
- Operation and display
- Notes
- Accessories













Technical data



Basic data

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

Functions

Functions	PROFIsafe
Restart	Start/restart interlock (RES), selectable

Characteristic parameters

Туре	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	10
Number of quads, switchable	-
Number of protective functions	1 Piece(s)
Number of independent sensor configurations	1
Diffuse reflection, min.	1.8 %
Operating range	0 8.25 m

Warning field data

Operating range 0 20 m	
- por a g g	
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 °
Transmitted-signal shape Repetition frequency Angular resolution	Pulsed 90 kHz 0.1 °

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	

Outputs

Number of signal outputs, configu- 4 Piece(s) rable

Time behavior Response time

Interface			
Туре		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	С	
	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	

0 - 4

SNMP 1 Piece(s)

MRP client

80 ms, ≥

Sorvice interface

Supported topologies

Safety-related switching signals

I&M

S	ervice interface	
Туре		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

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D			

Radiated transmitting power

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

Max. 4.5 dBm (2.82 mW), class 2

Connection

Number of connections		4 Piece(s)	
	Connection 1		
	Function	Voltage supply	
	Type of connection	Connector	
	Thread size	M12	
	Туре	Male	
	Material	Metal	
	No. of pins	5 -pin	
	Encoding	L-coded	

Technical data



Connec	ction 2			
Function	1	PROFINET/PROFIsafe communication, input		
Type of	connection	Connector		
Thread s	size	M12		
Type		Female		
Material		Metal		
No. of pi	ins	4 -pin		
Encodin	g	D-coded		
	-			
Connec	ction 3			
Function	1	PROFINET/PROFIsafe communication, output		
Type of	connection	Connector		
Thread s	size	M12		
Type		Female		
Material		Metal		
No. of pi	ins	4 -pin		
Encodin	g	D-coded		
Connec				
Function		Voltage supply		
Type of	connection	Connector		
Thread s	size	M12		
Type		Female		
Material		Metal		
No. of pi	ins	5 -pin		
Encodin	g	L-coded		
Mechanic	al data			
Dimension	(W x H x L)	140.2 mm x 170 mm x 142 mm		
Housing m	aterial	Metal		
		Plastic		
Metal hous	ing	Diecast zinc		
Lens cover	r material	Plastic/PC		
Net weight		4,300 g		
Housing co	olor	Yellow, RAL 1021		
Type of fastening		Mounting plate		
		Through-hole mounting		
		Via optional mounting device		
Operation and display				
Type of die	nlov	Alphanumoriaal diaplay		
Type of dis	piay	Alphanumerical display		
Number	LEDo	LED indicator		
Number of LEDs		10 Piece(s)		
Type of cor	inguration	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	DIN 40839-1/3
with standard	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
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550
ETIM 8.0	EC002550
ETIM 9.0	EC002550

Software Sensor Studio

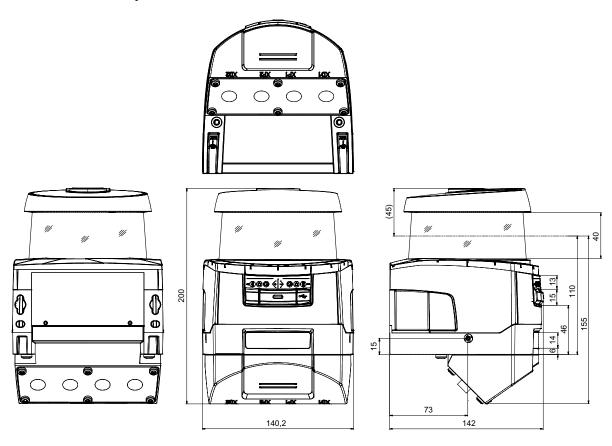
Operational controls

Dimensioned drawings



All dimensions in millimeters

Dimensions safety laser scanner with connection unit

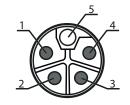


Electrical connection

Connection 1	XD1	
Function	Voltage supply	
Type of connection	Connector	
Thread size	M12	
Туре	Male	
Material	Metal	
No. of pins	5 -pin	
Encoding	L-coded	

Pin	Pin assignment
1	L1, 24V DC (US1 +)
2	N2, 0V DC (US2 -)
3	N1, 0V DC (US1 -)
4	L2, 24V DC (US2 +)
5	GND

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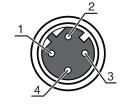


Electrical connection



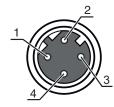
Connection 2	XF1
Function	PROFINET/PROFIsafe communication, input
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded
Connector housing	FE/SHIELD

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



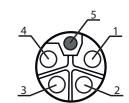
Connection 3	XF2
Function	PROFINET/PROFIsafe communication, output
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded
Connector housing	FE/SHIELD

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



Connection 4	XD2
Function	Voltage supply
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	5 -pin
Encoding	L-coded

Pin	Pin assignment
1	L1, 24V DC (US1 +)
2	N2, 0V DC (US2 -)
3	N1, 0V DC (US1 -)
4	L2, 24V DC (US2 +)
5	GND



Operation and display



1 - Red, continuous light Red, flashing Device switched off Red, continuous light Ped, flashing 2 - Red, flashing Error 3 - Off RES deactivated or RES activated and released Pellow, continuous light Pellow, continuous light Res and linked sensor is enabled if applicable free and linked sensor is enabled if applicable free warning field merupted Res activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable free warning field applicable Res and linked sensor is enabled if applicable Res and linked Res and link	LED		Display	Meaning
Red, flashing	1 -	1 -	Off	Device switched off
Creen, continuous light Creen, continuous light Creen, continuous light Creen, flashing Cr			Red, continuous light	OSSD off
2 Position of the protective field coccupied (pellow, flashing) RES deactivated or RES activated and released (pellow, flashing) 3 Positive field coccupied (pellow, continuous light) RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable 4 Off Eluc, continuous light Warming field interrupted 5 Position (pellow mode: warming field 3 free (pellow mode			Red, flashing	Error
Profession Pro			Green, continuous light	OSSD on
Performance	2 -		Off	RES deactivated or RES activated and released
President Pres			Yellow, flashing	Protective field occupied
Blue, continuous light Warning field interrupted			Yellow, continuous light	
4	3 -		Off	Free warning field
Blue, continuous light Four field mode: warning field 3 interrupted 5			Blue, continuous light	Warning field interrupted
5 - Yellow, flashing Four field mode: warning field 2 interrupted 6 - Off No function 7 PWRAP PWRAP Fore, flashing Off Device switched off 6 Creen, flashing PROFINET wave function active 7 PROFINET wave function active 8 PSAP Green, continuous light Off PROFISATE communication not initialized or switched off 9 PSAP Green, flashing Off PROFISATE communication not initialized or switched off 9 PROFISATE continuous light Device in passive state or PROFINET wave function active 9 PROFISATE communication not initialized or inactive 10 PROFINET communication active 10 PROFINET own initialization or PROFINET wave function active 11 PROFINET active, data exchange with IO controller active 12 PROFINET active, data exchange with IO controller active 13 PROFINET active, data exchange with IO controller active 14 PROFINET active, data exchange with IO controller active 15 PROFINET active, data exchange with IO controller active 16 PROFI	4 -		Off	Four field mode: warning field 3 free
6 0 Off No function 7 PWRPA Red, continuous light Off Device switched off 8 Red, continuous light Error during self test or internal communication problems 8 PSA Creen, flashing Oevice switched on, supply voltage applied, no internal error 8 PSA Creen, flashing Oevice in passive state or PROFINET wave function active 9 PROFIsafe communication not initialized or switched off 9 PROFIsafe continuous light Device in passive state or PROFINET wave function active 9 PROFIsafe configuration failed 9 PROFIsafe configuration failed 9 PROFIsafe configuration failed 9 PROFISAFE communication error 9 PROFINET communication error 9 PROFINET communication not initialized or inactive 9 PROFINET active, data exchange with IO controller active 9 PROFINET active, data exchange with IO controller active 9 PROFINET active, data exchange with IO controller active 9 PROFINET active, data exchange with IO controller active 9 Profined in active, continuous light Ethernet topology error 1			Blue, continuous light	Four field mode: warning field 3 interrupted
7 PWR	5 -		Yellow, flashing	Four field mode: warning field 2 interrupted
Red, continuous light Green, flashing PROFINET wave function active	6 -		Off	No function
Green, flashing	7 P	PWR	Off	Device switched off
Seen, continuous light Device switched on, supply voltage applied, no internal error			Red, continuous light	Error during self test or internal communication problems
8PS FRANCE 			Green, flashing	PROFINET wave function active
Green, flashing Green, continuous light Red, flashing Red, continuous light PROFIsafe configuration failed Red, continuous light PROFIsafe communication error PROFINET communication not initialized or inactive Green, flashing PROFINET communication not initialized or inactive Green, flashing PROFINET active, data exchange with IO controller active Orange, flashing PROFINET active, data exchange with IO controller active Drange, flashing Ethernet topology error Red, flashing Ethernet configuration failed, no data exchange or exchange of invalid data Red, continuous light UNK/ACT1 Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission Ethernet link active, current data transmission Ethernet link present Green, continuous light Ethernet link active, no current data transmission Ethernet link present Green, continuous light Ethernet link active, no current data transmission Ethernet link present Green, continuous light Ethernet link active, no current data transmission Ethernet link present Green, continuous light Ethernet link active, no current data transmission			Green, continuous light	Device switched on, supply voltage applied, no internal error
Green, continuous light Red, flashing PROFIsafe configuration failed PROFIsafe communication error PROFINET communication or initialized or inactive Green, flashing PROFINET bus initialization or PROFINET wave function active Green, continuous light PROFINET active, data exchange with IO controller active Green, continuous light PROFINET active, data exchange with IO controller active Green, flashing Ethernet topology error Red, flashing Ethernet configuration failed, no data exchange or exchange of invalid data Red, continuous light Bus error, no communication INK/ACTI Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, current data transmission INK/ACTI Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission INK/ACTI Off No Ethernet link active, no current data transmission	8 P	PS	Off	PROFIsafe communication not initialized or switched off
Red, flashing Red, continuous light PROFIsafe comfiguration failed PROFIsafe communication error PROFINET communication not initialized or inactive PROFINET communication not initialized or inactive PROFINET wave function active PROFINET active, data exchange with IO controller active PROFINET active, data exchange or exchange of invalid data PRED, continuous light PROFINET wave function active PROFINET communication or PROFINET wave function active PROFINET wave function active PROFINET communication or PROFINET wave function active PROFINET wave function active PROFINET communication or PROFINET wave function active PROFINET wave function active PROFINET communication or PROFINET wave function active PROFINET wave function active PROFINET communication or PROFINET wave function active PROFINET wave fu			Green, flashing	Device in passive state or PROFINET wave function active
Red, continuous light PROFIsafe communication error PROFINET communication not initialized or inactive PROFINET wave function active 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 LNK/ACT1 Off No Ethernet link present Ethernet link active, no current data transmission Ethernet link active, current data transmission Ethernet link active, current data transmission Ethernet link present Ethernet link present Ethernet link active, current data transmission Ethernet link active, no current data transmission Ethernet link active, no current data transmission Ethernet link active, no current data transmission			Green, continuous light	Device on PROFIsafe active
9NETOffPROFINET communication not initialized or inactiveGreen, flashingPROFINET bus initialization or PROFINET wave function activeGreen, continuous lightPROFINET active, data exchange with IO controller activeOrange, flashingEthernet topology errorRed, flashingEthernet configuration failed, no data exchange or exchange of invalid dataRed, continuous lightBus error, no communication10LNK/ACT1OffGreen, continuous lightEthernet link presentGreen/orange, flashingEthernet link active, no current data transmission11LNK/ACT2OffGreen, continuous lightNo Ethernet link presentGreen, continuous lightEthernet link active, current data transmission			Red, flashing	PROFIsafe configuration failed
Green, flashing Green, continuous light Orange, flashing Ethernet topology error Red, flashing Red, continuous light Red, continuous light The state of the stat			Red, continuous light	PROFIsafe communication error
Green, continuous light Orange, flashing Ethernet topology error Red, flashing Red, continuous light Red, continuous light Red, continuous light INK/ACT1 INK/ACT1 INK/ACT2 INK/ACT2 Green, continuous light Ethernet topology error Ethernet topology error Ethernet configuration failed, no data exchange or exchange of invalid data Bus error, no communication No Ethernet link present Ethernet link active, no current data transmission Ethernet link active, current data transmission No Ethernet link present Ethernet link active, current data transmission Ethernet link present Ethernet link active, no current data transmission	9 N	IET	Off	PROFINET communication not initialized or inactive
Orange, flashing Red, flashing Red, continuous light Bus error, no communication No Ethernet link present Green, continuous light Ethernet link active, no current data transmission LNK/ACT2 Off No Ethernet link active, current data transmission Ethernet link present Ethernet link active, current data transmission Ethernet link present Ethernet link active, current data transmission Ethernet link active, current data transmission Ethernet link active, current data transmission Ethernet link active, no current data transmission Ethernet link active, no current data transmission			Green, flashing	PROFINET bus initialization or PROFINET wave function active
Red, flashing Red, continuous light Bus error, no communication No Ethernet link present Green, continuous light Coreen/orange, flashing Red, flashing Bus error, no communication No Ethernet link present Ethernet link active, no current data transmission Ethernet link active, current data transmission No Ethernet link present Ethernet link active, current data transmission Ethernet link active, current data transmission Ethernet link active, current data transmission Ethernet link active, no current data transmission			Green, continuous light	PROFINET active, data exchange with IO controller active
Red, continuous light Bus error, no communication No Ethernet link present Green, continuous light Creen/orange, flashing Creen/orange, flashing Creen, continuous light Green, continuous light Green, continuous light Green/orange, flashing Ethernet link active, current data transmission No Ethernet link present Green, continuous light Ethernet link active, no current data transmission Ethernet link present Green, continuous light			Orange, flashing	Ethernet topology error
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			Red, flashing	
Green, continuous light Green/orange, flashing Ethernet link active, no current data transmission Ethernet link active, current data transmission Ethernet link active, current data transmission No Ethernet link present Green, continuous light Ethernet link active, no current data transmission			Red, continuous light	Bus error, no communication
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	10 L	NK/ACT1	Off	No Ethernet link present
11 LNK/ACT2 Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission			Green, continuous light	Ethernet link active, no current data transmission
Green, continuous light Ethernet link active, no current data transmission			Green/orange, flashing	Ethernet link active, current data transmission
	11 L	NK/ACT2	Off	No Ethernet link present
Green/orange, flashing Ethernet link active, current data transmission			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.



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.

- b 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.

We reserve the right to make technical changes

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
	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

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
5	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
A	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
P	53800131	ВТР800М	Loop guard	Dimensions: 160 mm x 169 mm Color: Black Material: Metal

Accessories



General

	Part no.	Designation	Article	Description
1	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.