

Technical data sheet Safety laser scanner

Part no.: 53800305

RSL420P-M/CU400P-AIDA



Contents

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













Technical data



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

Special version

Restart

Special version	AIDA-compliant	
Functions		
Functions	PROFIsafe	

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 4.5 m

Warning field data

Number of field pairs	10
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

Per	forr	nan	Ce	data

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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	

PROFINET

Time behavior

Response time	80 ms, ≥
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Interface

Type

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
I&M	0 - 4
Supported topologies	MRP client

SNMP 1 Piece(s)

Service interface

Safety-related switching signals

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
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

Connection

Type of connection

Oomection	
4 Piece(s)	
Voltage supply	
PROFINET push-pull 24V	
Ethernet, input	

active cables.

3-117 var. 14

We reserve the right to make technical

Longer cable lengths are possible using

PROFINET RJ45 push-pull IEC 61076-

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Technical data



Connection 3	
Function	Ethernet, output
Type of connection	PROFINET RJ45 push-pull IEC 61076- 3-117 var. 14
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	Alphanumerical display
	LED indicator
Number of LEDs	10 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 %

Cortifications

ETIM 5.0

ETIM 6.0

ETIM 7.0

ETIM 8.0

ETIM 9.0

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	

EC002550

EC002550

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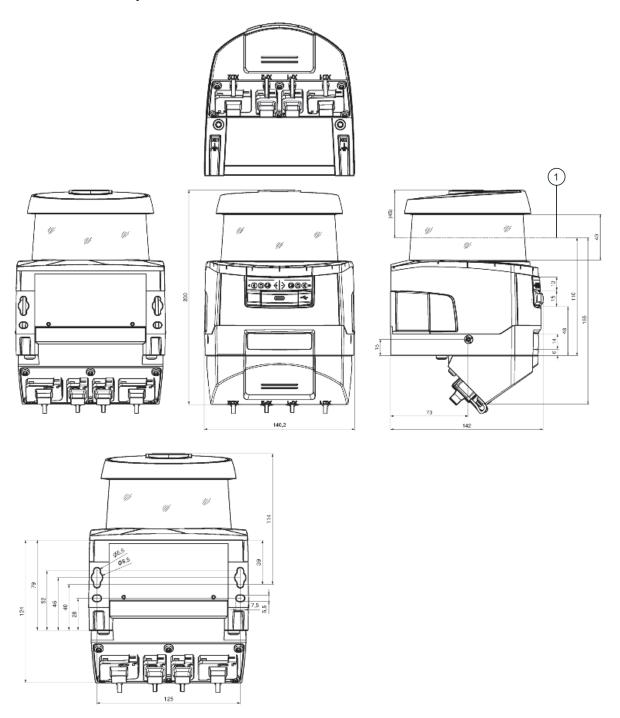
EC002550

Dimensioned drawings



All dimensions in millimeters

Dimensions safety laser scanner with connection unit



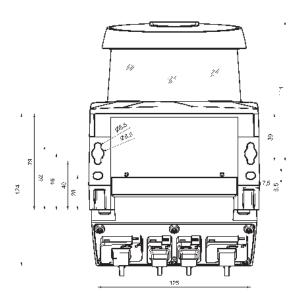
Scan level

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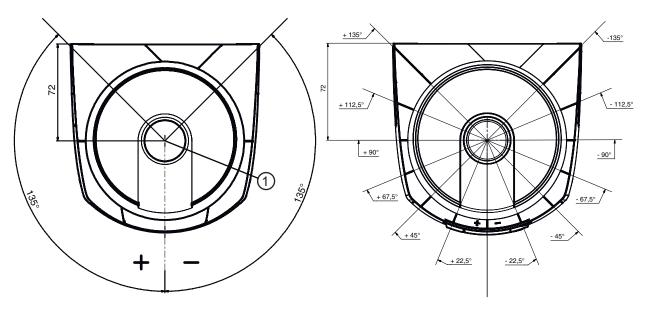
Dimensioned drawings



Mounting dimensions safety laser scanner with connection unit



Dimensions of scanning range



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

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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	3 XF

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

Leuze electronic GmbH + Co. KG

Operation and display



free and linked sensor is enabled if applicable 7 Off Free warning field 8 Ley continuous light 8 PS Off Poff Poff Poff Poff Poff Poff Poff	LED	Display	Meaning
Red, flashing Error	1 -	Off	Device switched off
Seen		Red, continuous light	OSSD off
2 - Very Michael (Indicating the process) Off (Indicating the process) RES deactivated or RES activated and released 3 - Very Michael (Indicating the process) Off (Indicating the process) Procedure (Indicating the process) 3 - Off (Indicating the process) Pree warning field (Indicating the process) 4 - Off (Indicating the process) Pround field mode: warning field 3 free (Indicating the process) 5 - Vellow, flashing (Indicating the process) Four field mode: warning field 3 interrupted 6 - Off (Indicating the process) Process (Indicating the process) 7 PWR (Indicating the process) Off (Indicating the process) Process (Indicating the process) 8 PS (Indicating the process) Off (Indicating the process) PROFINET wave function active (Indicating the process) 8 PS (Indicating the process) Off (Indicating the process) PROFINET wave function active (Indicating the process) 8 PS (Indicating the process) Off (Indicating the process) PROFINET wave function active (Indicating the process) 8 PS (Indicating the process) Off (Indicating the process) PROFINET communication (Indicating the process) 8 PS (Indicating the process) Off (Indicating the process) PROFI		Red, flashing	Error
Yellow, flashing		Green, continuous light	OSSD on
Yellow, continuous light RES activated and blocked but ready to be unlocked - protective free and linked sensor is enabled if applicable	2 -	Off	RES deactivated or RES activated and released
Second Figure F		Yellow, flashing	Protective field occupied
Blue, continuous light Warning field interrupted 4		Yellow, continuous light	RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable
4 - Composition of the continuous light Four field mode: warning field 3 free 5 - Vellow, flashing Four field mode: warning field 3 interrupted 6 - Off No function 7 PWR Off Device switched off Red, continuous light Error during self test or internal communication problems 7 PCR Red, continuous light PROFINET wave function active 8 PS Off PROFISATE communication not initialized or switched off 9 PROFISATE configuration failed Device on PROFISATE active 9 PROFISATE configuration failed PROFISATE communication error 9 PROFINET communication on thintialized or inactive 9 PROFINET communication on thintialized or inactive PROFINET communication error 9 PROFINET communication on thintialized or inactive PROFINET communication or PROFINET wave function active 9 PROFINET active, data exchange with IO controller active PROFINET active, data exchange with IO controller active 9 PROFINET active, data exchange with IO controller active PROFINET active, data exchange or exchange of indata 10 PROFINET active, data exchange or exchange or exchange of indata PROFINET activ	3 -	Off	Free warning field
Blue, continuous light Four field mode: warning field 3 interrupted		Blue, continuous light	Warning field interrupted
5- Vellow, flashingFour field mode: warning field 2 interrupted62 OffNo function7PWR Red, continuous light Green, flashingError during self test or internal communication problems PROFINET wave function active PROFINET wave function active8PS Green, continuous light Green, flashingPROFISAGE communication not initialized or switched off PROFISAGE active9PS Red, flashingPROFISAGE communication not initialized or switched off PROFISAGE active9PROFISAGE configuration failed Red, continuous lightPROFISAGE configuration failed PROFINET communication not initialized or inactive9PROFISAGE communication proficulation activePROFINET communication proficulation active9PROFISAGE communication proficulation	4 -	Off	Four field mode: warning field 3 free
6 - Off No function 7 PWR PWR PWR Red, continuous light Off Device switched off Red, continuous light Error during self test or internal communication problems 6 Creen, flashing PROFINET wave function active 6 Off PROFIsafe communication not initialized or switched off 7 PROFIsafe communication not initialized or switched off Device in passive state or PROFINET wave function active 8 PROFIsafe configuration failed PROFIsafe configuration failed 8 PROFISAGE configuration failed PROFINET communication error 9 PROFINET communication not initialized or inactive PROFINET wave function active 9 PROFINET bus initialization or PROFINET wave function active PROFINET bus initialization or PROFINET wave function active 9 PROFINET active, data exchange with IO controller active Ethernet topology error 10 PROFINET active, data exchange with IO controller active 11 PROFINET active, data exchange or exchange or exchange of indata 12 PROFINET active, data exchange or e		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 Green, continuous light Green, continuous light Green, continuous light BPS For Iff Coren, flashing Green, continuous light BPS For Iff Coren, flashing Green, continuous light Green, flashing Green, continuous light Green, continuous light Device in passive state or PROFINET wave function active Device on PROFIsafe communication not initialized or switched off Device in passive state or PROFINET wave function active Device on PROFIsafe active Red, flashing Red, continuous light PROFIsafe communication failed Red, continuous light PROFINET communication error 9	6 -	Off	No function
Green, flashing PROFINET wave function active	7 PWR	Off	Device switched off
Green, continuous light PROFIsafe communication not initialized or switched off Green, flashing Green, continuous light PROFIsafe communication not initialized or switched off Green, flashing Green, continuous light PROFIsafe active PROFIsafe active PROFIsafe configuration failed PROFIsafe configuration failed PROFISAFE communication error PROFISAFE communication error PROFINET communication not initialized or inactive Green, flashing PROFINET bus initialization or PROFINET wave function active PROFINET active, data exchange with IO controller active PROFINET active, data exchange with IO controller active PROFINET active, data exchange or exchange of indata Red, continuous light Bus error, no communication INVIACTI Green, continuous light Ethernet link present Green, continuous light Ethernet link present Ethernet link active, no current data transmission		Red, continuous light	Error during self test or internal communication problems
8PSOffPROFIsafe communication not initialized or switched offGreen, flashingDevice in passive state or PROFINET wave function activeGreen, continuous lightDevice on PROFIsafe activeRed, flashingPROFIsafe configuration failedRed, continuous lightPROFISafe communication error9NETOffPROFINET 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 in dataRed, continuous lightBus error, no communication10LNK/ACT1OffGreen, continuous lightNo Ethernet link presentGreen, continuous lightEthernet link active, no current data transmission		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 bus initialization or PROFINET wave function active PROFINET active, data exchange with IO controller active Orange, flashing Red, flashing Ethernet topology error Red, flashing Red, continuous light Bus error, no communication 10 LNK/ACT1 Green, continuous light Green, continuous light 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 NET Off PROFINET communication not initialized or inactive Green, flashing PROFINET wave function active PROFINET bus initialization or PROFINET wave function active PROFINET active, data exchange with IO controller active Orange, flashing Ethernet topology error Red, flashing Ethernet configuration failed, no data exchange or exchange of indata Red, continuous light No Ethernet link present Green, continuous light Ethernet link present Ethernet data transmission	8 PS	Off	PROFIsafe communication not initialized or switched off
Red, flashing PROFIsafe configuration failed Red, continuous light PROFIsafe communication error PROFINET communication not initialized or inactive PROFINET communication not initialized or inactive PROFINET bus initialization or PROFINET wave function active Green, flashing PROFINET active, data exchange with IO controller active Orange, flashing Ethernet topology error Red, flashing Ethernet configuration failed, no data exchange or exchange of indata Red, continuous light Bus error, no communication 10		Green, flashing	Device in passive state or PROFINET wave function active
Red, continuous light PROFIsafe communication error PROFINET communication not initialized or inactive 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 in data Red, continuous light Bus error, no communication LNK/ACT1 Off No Ethernet link present Green, continuous light 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 indataRed, continuous lightBus error, no communication10LNK/ACT1OffGreen, continuous lightEthernet link presentGreen, continuous lightEthernet link active, no current data transmission		Red, flashing	PROFIsafe configuration failed
Green, flashing Green, continuous light Orange, flashing Ethernet topology error Red, flashing Red, continuous light Off Off Off Off Off Off Off Off Off Of		Red, continuous light	PROFIsafe communication error
Green, continuous light Orange, flashing Ethernet topology error Red, flashing Ethernet configuration failed, no data exchange or exchange of indata Red, continuous light Bus error, no communication 10 LNK/ACT1 Off Oreen, continuous light Ethernet link present Ethernet topology error Ethernet configuration failed, no data exchange or exchange of indata Red, continuous light Ethernet link present Ethernet link active, no current data transmission	9 NET	Off	PROFINET communication not initialized or inactive
Orange, flashing Red, flashing Red, continuous light LNK/ACT1 Orange, flashing Ethernet topology error Ethernet configuration failed, no data exchange or exchange of indata Bus error, no communication No Ethernet link present Green, continuous light Ethernet link active, no current data transmission		Green, flashing	PROFINET bus initialization or PROFINET wave function active
Red, flashing Red, continuous light Red, continuous light Bus error, no communication No Ethernet link present Green, continuous light Ethernet link active, no current data transmission		Green, continuous light	PROFINET active, data exchange with IO controller active
data Red, continuous light Bus error, no communication No Ethernet link present Green, continuous light Ethernet link active, no current data transmission		Orange, flashing	Ethernet topology error
10 LNK/ACT1 Off No Ethernet link present Green, continuous light Ethernet link active, no current data transmission		Red, flashing	Ethernet configuration failed, no data exchange or exchange of invalid data
Green, continuous light Ethernet link active, no current data transmission		Red, continuous light	Bus error, no communication
	10 LNK/ACT1	Off	No Ethernet link present
Green/orange, flashing Ethernet link active, current data transmission		Green, continuous light	Ethernet link active, no current data transmission
- 0-, 0		Green/orange, flashing	Ethernet link active, current data transmission
11 LNK/ACT2 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/orange, flashing Ethernet link active, 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.

- 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



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
2	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	BTP800M	Loop guard	Dimensions: 160 mm x 169 mm Color: Black Material: Metal

General

	Part no.	Designation	Article	Description
A	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.

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

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