

## Technical data sheet

### Safety laser scanner

Part no.: 520085  
RS4-4E



Figure can vary

#### Contents

- Technical data
- Electrical connection
- Operation and display
- Accessories



## Technical data

### Basic data

Series	ROTOSCAN RS4
--------	--------------

### Functions

Function package	Extended
Functions	<ul style="list-style-type: none"> <li>Additional alarm output</li> <li>Horizontal danger zone guarding</li> <li>Monitored field pair changeover</li> <li>Resolution, selectable</li> <li>Start test</li> <li>Start/restart interlock (RES), selectable</li> <li>Vertical access guarding</li> <li>Vertical point of operation guarding</li> <li>Warning field monitoring</li> </ul>

### 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>	1.5E-07 per hour
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1
Category	3, EN ISO 13849

### Protective field data

Number of protective fields	8 Piece(s)
Scanning angle	190 °
Type, field pair selection	Via switching inputs
Resolution (adjustable)	30/40/50/70/150 mm
Minimum adjustable range	200 mm
Operating range at 30 mm resolution	1.6 m
Operating range at 40 mm resolution	2.2 m
Operating range at 50 mm resolution	2.8 m
Operating range at 70 mm resolution	4 m
Operating range at 150 mm resolution	4 m
Number of field pairs, reversible	8
Diffuse reflection, min.	1.8 %
Reference contour selectable	Yes
Operating range	0 ... 4 m

### Warning field data

Number of warning fields	8 Piece(s)
Scanning angle	190 °
Angular resolution	0.36 °
Operating range	0 ... 15 m
Object size	150 mm x 150 mm
Diffuse reflection, min.	20 %

### Optical data

Light source	Laser, Infrared
Laser light wavelength	905 nm
Laser class	1, IEC/EN 60825-1:2007
Transmitted-signal shape	Pulsed
Pulse duration	0.003 µs
Pulse pause	40 µs
Repetition frequency	25 kHz
Lateral tolerance with mounting system	-0.22 ... 0.22 °, (relative to the mounting surface)
Lateral tolerance without mounting system	-0.18 ... 0.18 °, (relative to rear wall of housing)

### Measurement data

Distance resolution	5 mm
Detection range	0 ... 50 m
Detection angle	190 °
Angular resolution	0.36 °
Scanning rate	25 scans/s

### Electrical data

Protective circuit	Overvoltage protection
--------------------	------------------------

### Performance data

Supply voltage U <sub>B</sub>	24 V, DC, -30 ... 20 %, Supply acc. to IEC 742 with safe mains supply isolation and equalization for power outages of up to 20 ms acc. to EN 61496-1.
-------------------------------	---

Current consumption, max.	420 mA, (use power supply unit with 2.5 A)
---------------------------	--

Power consumption, max.	10 W, For 24 V, plus output load
-------------------------	----------------------------------

Fuse	1.6 A semi time-lag
------	---------------------

### Inputs

Number of digital switching inputs	4 Piece(s)
------------------------------------	------------

### Switching inputs

Type	Digital switching input
Switching voltage high, min.	16 V
Switching voltage low, max.	3 V
Switching voltage, typ.	24 V
Voltage type	DC
Switching current, max.	5 mA

### Outputs

Number of safety-related switching outputs (OSSDs)	2 Piece(s)
--	------------

Number of digital switching outputs	2 Piece(s)
-------------------------------------	------------

### Safety-related switching outputs

Type	Safety-related switching output OSSD
Switching voltage high, min.	18 V
Switching voltage low, max.	2 V
Switching voltage, typ.	21 V
Voltage type	DC
Current load, max.	250 mA
Load inductivity	1,000,000 µH
Load capacity	0.1 µF
Residual current, max.	0.5 mA
Residual current, typ.	0.005 mA
Voltage drop	3.2 V

### 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

## Technical data

### Switching outputs

Type	Digital switching output
Switching voltage high, min.	20 V
Switching voltage low, max.	2 V
Switching voltage, typ.	21 V
Voltage type	DC
Switching current, max.	100 mA

### Timing

Response time	80 ms
Response time (MultiScan)	80 ... 640 ms

### Service interface

Type	RS 232, RS 422
------	----------------

#### RS 232

Function	Configuration via software
	Data transmission
	Service

#### RS 422

Function	Configuration via software
	Data transmission
	Service

### Connection

Number of connections	2 Piece(s)
-----------------------	------------

#### Connection 1

Function	Machine interface
Type of connection	Sub-D
No. of pins	15 -pin

#### Connection 2

Function	Configuration interface
	Data interface
	Service interface
Type of connection	Sub-D
No. of pins	9 -pin

#### Cable properties

Permissible conductor cross section, typ.	0.5 mm <sup>2</sup>
Length of connection cable, max.	50 m

### Mechanical data

Dimension (W x H x L)	140 mm x 148 mm x 135 mm
Housing material	Metal
Metal housing	Aluminum
Lens cover material	Plastic / PMMA, scratch-resistant coating
Net weight	2,000 g
Housing color	Black
	Yellow, RAL 1021
Type of fastening	Mounting plate
	Through-hole mounting

### Operation and display

Type of display	LED
Number of LEDs	5 Piece(s)
Type of configuration	Software
Operational controls	PC software

### Environmental data

Ambient temperature, operation	0 ... 50 °C
Ambient temperature, storage	-20 ... 60 °C

### Certifications

Degree of protection	IP 65
Protection class	II
Certifications	c CSA US
	c TÜV NRTL US
	TÜV Süd
Test procedure for EMC in accordance with standard	EN 55022
	EN 61000-6-2:2005
	EN 61000-6-4:2001
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, test Eb
US patents	US 7,656,917 B
	US 7,696,468 B

### Classification

Customs tariff number	85365019
eCl@ss 5.1.4	27272705
eCl@ss 8.0	27272705
eCl@ss 9.0	27272705
eCl@ss 10.0	27272705
eCl@ss 11.0	27272705
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550

## Electrical connection

### Connection 1

Function	Machine interface
Type of connection	Sub-D
Type	Male
No. of pins	15 -pin

Pin	Pin assignment
1	GND
2	Restart
3	+24V
4	FP 1
5	Alarm 1
6	FP 2
7	FP 3
8	FP 4
9	n.c.
10	n.c.
11	OSSD1
12	OSSD2
13	n.c.
14	n.c.
15	Alarm 2

### Connection 2

Function	Configuration interface Data interface Service interface
Type of connection	Sub-D
Selection of interface	Bridge, pin 5 to pin 6
Type	Female
No. of pins	9 -pin

Pin	Pin assignment
1	Reserved
2	TXD
3	RxD
4	Reserved
5	RS 232 GND
6	RS 232
7	n.c.
8	n.c.
9	Reserved

## Operation and display


LED	Display	Meaning
1	Green, continuous light	Sensor function is active, the active protected field is free.
	Green, flashing, 2 Hz	Error in the field pair control inputs.
	Green, flashing, 4 Hz	MotionMonitoring has detected an error.
2	Yellow, continuous light	Active warning field is occupied.
	Yellow, flashing, 2 Hz	Front cover is soiled.
	Yellow, flashing, 4 Hz	Configuration of the ConfigPlug is not compatible with the safety sensor.
3	Red, continuous light	Safety-related switching outputs (OSSD 1 and 2) are switched off.
4	Green, continuous light	Safety-related switching outputs (OSSD 1 and 2) are switched on.
5	Yellow, continuous light	Start/restart interlock locked.

## Operation and display

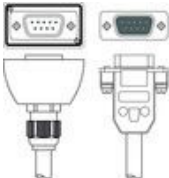
LED	Display	Meaning
5	Yellow, flashing, 2 Hz Yellow, flashing, 4 Hz	Front cover is soiled. Fault

## Accessories

### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	548521	CB-D15E-10000S-11GF	Connection cable	Parameter memory: Yes Connection 1: Sub-D, Axial, Female, 15 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR



### Connection technology - Interconnection cables

	Part no.	Designation	Article	Description
	50035865	CB-D9-5000-5GF/GM	Interconnection cable	Connection 1: Sub-D, Axial, Female, 9 -pin Connection 2: Sub-D, Axial, Male, 9 -pin Shielded: Yes Cable length: 5,000 mm

### Mounting technology - Other

	Part no.	Designation	Article	Description
	50033346	RS4-MS	Mounting system	Dimensions: 192 mm x 57 mm x 156 mm Net weight: 700 g Housing color: Black Design of mounting device: Mounting system Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Type of mounting device: Swiveling, Adjustable Mounting device material: Metal

## Services

	Part no.	Designation	Article	Description
	S981051	CS40-I-141	Safety inspection "Safety laser scanners"	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. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.
	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. Restrictions: Max. 3 h., no mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.

## Accessories

### Note



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