



Figure can vary

Part no.: 520099
RS4-4M
Safety laser scanner



Contents

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

Technical data

Basic data	
Series	ROTOSCAN RS4
Functions	
Function package	MotionMonitoring
Functions	Additional alarm output Horizontal danger zone guarding Monitored field pair changeover MotionMonitoring Resolution, selectable Start test Start/restart interlock (RES), selectable Vertical access guarding Vertical point of operation guarding Warning field monitoring
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	1.5E-07 per hour
Mission time T _M	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

Part no.: 520099 – RS4-4M – Safety laser scanner

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_B	24 V , DC , -30 ... 20 % , Supply acc. to IEC 742 with secure 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

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

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

Part no.: 520099 – RS4-4M – Safety laser scanner

Connection 2

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

Cable properties

Permissible conductor cross section, typ.	0.5 mm ²
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 , 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 US 7,743,865 B

Classification

Customs tariff number	85365019
eCl@ss 8.0	27272705
eCl@ss 9.0	27272705
ETIM 5.0	EC002550
ETIM 6.0	EC002550

Electrical connection

Connection 1	
Type of connection	Sub-D
Function	Machine interface
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	
Type of connection	Sub-D
Selection of interface	Bridge, pin 5 to pin 6
Function	Configuration interface Data interface Service interface
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

Part no.: 520099 – RS4-4M – Safety laser scanner


Operation and display

LEDs


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.
	Yellow, flashing, 2 Hz	Front cover is soiled.
	Yellow, flashing, 4 Hz	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

Part no.: 520099 – RS4-4M – Safety laser scanner

Services

	Part no.	Designation	Article	Description
	S981051	CS40-I-141	Safety inspection "Safety laser scanners"	<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> <p>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.</p>
	S981047	CS40-S-141	Start-up support	<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> <p>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.</p>

Note

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