

SRBE-...-C1
Limit switch box

Operating instruction
8234634
2025-03c
[8234636]
FESTO
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Original instructions
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1 Identification EX
Table with 2 columns: Identification, Type. Rows include Class I, Division 1, Groups C, D; Class II, Division 1, Groups E, F, G; Class III; Temperature Code T4A; Ex d IIB T5 Gb; Ex tb IIIC T108°C Db; Class I, Zone 1, AEx d IIB T5 Gb; Class II, Zone 21, AEx tb IIIC T108°C Db; Class I, Division 2, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; Temperature Code T4A; Ex nA IIC T5 Gc; Ex tb IIIC T108°C Db; Class I, Zone 2 AEx nA IIC T5 Gc; Class II, Zone 21, AEx tb IIIC T108°C Db; Certificate: CSA-EX-2885024; Ex protection - CSA Canada and USA

Tab. 1: Identification EX

2 Applicable documents
NOTICE
Technical data for the product can have different values in other documents. For operation in an explosive atmosphere, the information in this document always have priority.
All available documents for the product -> www.festo.com/sp.

3 Safety
3.1 Safety instructions
- The device can be used under the stated operating conditions in potentially explosive gas atmospheres, and in potentially explosive dust atmospheres.
- Only use the product in its original condition without unauthorised modifications.
3.2 Intended use
The intended use of the product is to record and display the end positions and intermediate positions of pneumatic drives.
3.3 Training of qualified personnel
Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have skills and experience in dealing with electrical (open-loop) control technology.
3.4 CSA certification
Fitting and commissioning is to be carried out by qualified personnel only in accordance with the operating instructions. The personnel must have several years of training and experience in installing and commissioning electrical and pneumatic industrial control systems.
• Please observe the applicable safety requirements and standards.
Conversion or extension of the product with modules, for which the Recognized Component Mark of CSA does not apply, will lead to loss of the CSA certification.
• Contact Festo if you require information on CSA-certified modules.

Only when connected in potentially explosive areas
Wiring to or from this device, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 (or Division 1) Hazardous Locations, as appropriate for the installation.

Enclosure Environmental ratings are achieved when conduit entries are torqued to at least 90.4 Nm (800) lbs/inch) and fasteners (Class A2-50) to 40 Nm (354 lbs/inch) not-lubricated conditions.
Use field wiring suitable for 95 °C.
Class I. Division 1. Groups C and D
- Open circuit before removing cover.
- Keep cover tight while circuits are alive.
- Seal required within 18 inches.
Class I. Division 2. Group A. B. C and D
WARNING
EXPLOSION HAZARD
Substitution of components may impair suitability for Class I, Division 2.
WARNING
EXPLOSION HAZARD
Do not connect while circuit is alive unless area is known to be nonhazardous.

4 Additional information
- Contact the regional Festo contact if you have technical problems -> www.festo.com.
- Accessories and spare parts -> www.festo.com/catalogue.

5 Product overview
Diagram showing components: 1 Position indicator, 2 Housing cover, 3 Housing screws, 4 Shaft with cam, 5 Proximity switch, 6 Terminal strip, 7 Protective earthing (PE) on the inside and outside of the housing wall, 8 Cable entry 1/2 NPT, 9 Mounting adapter with M5x8 retaining screws

Fig.1
Default settings on delivery:
- Position indicator "closed"
- Switching point for "open" 90° anti-clockwise

6 Function
The limit switch box is used for the detection and electrical and optical feedback of the end positions of a drive. The limit switch box is suitable for operation with semi-rotary drives with a mechanical interface in accordance with VDI/VDE Guideline 3845.

7 Installation
WARNING
Carry out the commissioning, service and inspection outside of the explosive atmosphere. Disconnect the power supply before this work and secure against reconnection.

- 1. Close the process valve.
- 2. Place the limit switch box with the mounting adapter on the drive and align it. - Avoid axial load of the drive shaft.
- 3. Fasten the mounting adapter to the drive. - Lock the retaining screws. Tightening torque: 6 Nm ± 10%

Mounting adapter
Observe the tightening torque when replacing the limit switch attachment.
- Tightening torque between mounting adapter and limit switch box: 10 Nm ± 10%

8 Electrical connection
WARNING
Before switching on the electrical circuit in potentially explosive atmospheres:
• Mount the cover securely on the housing.
• Connect with potential equalisation.

WARNING
Incorrect mounting of the housing cover impairs the explosion prevention and protection of the device.
• Use only the original housing cover.
• Install the housing cover to ensure a tight seal. Note the specified orientation.

WARNING

Use cable connectors of type of (ignition) protection Ex-d and a degree of protection of at least IP67. Seal unused cable entries with blanking plugs.

NOTICE

Thread of the cable guide depends on the product variant: M20x1.5 or 1/2 NPT
Cable fittings must be appropriate for the corresponding thread type. Cable connector threads must not protrude into the interior of the housing.

NOTICE

The supplied plastic blanking plugs are intended exclusively for protection against contamination during transport and handling. During operation, these should be replaced by cable connectors and/or blanking plugs approved for use in explosion protection areas.

1. Note the position of the housing cover relative to the housing. Loosen the housing screws on the housing cover and remove the housing cover.
2. Screw the cable fitting into the cable entry. Insert the electrical connecting cable through the cable fitting to the terminal strip.
3. Wire the connections. Maximum tightening torque of the screws: 0.4 Nm → 9 Wiring diagram
4. Connect the earth terminal with low impedance (short cable with large cross section) to the earth terminal.
5. Place the housing cover in position and tighten the housing screws.
 - Make sure that the seal is positioned correctly.
 - The mounting position of the housing cover must correspond to the delivery status. Do not install the cover in an offset position.

9 Wiring diagram
SRBE-...-MW-22A-1W-.../SRBE-...-R-2A-1W-...

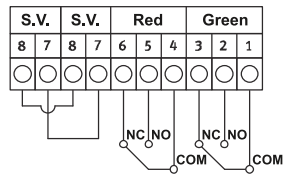


Fig. 2: Two SPDT micro-switches, mechanical or magnetic

SRBE-...-N-20N-ZC-.../SRBE-...-N-1-ZU-...

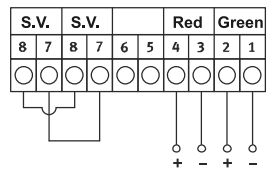


Fig. 3: Two-wire proximity switches, inductive

SRBE-...-N-1-P-.../SRBE-...-N-1-N-...

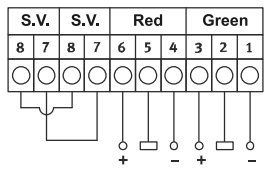


Fig. 4: Three-wire proximity switches, inductive

SRBE-...-MW-22A-2W-...

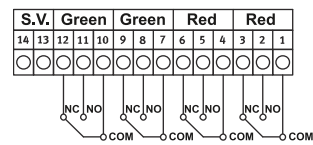


Fig. 5: Four SPDT micro-switches, mechanical

10 Setting switching point

The switching points are preset → 5 Product overview.

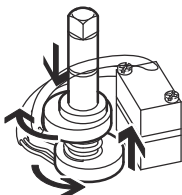


Fig. 6: Setting switching point

1. Close the process valve.
 - ↳ Position indicator: 'closed'.
2. Note the position of the housing cover relative to the housing. Loosen the housing screws on the housing cover and remove the housing cover.

3. Lift the red cam against the spring and turn until the lower proximity switch switches.
4. Release the red cam.
 - ↳ The spring presses the red cam into the annular gear.
 - ↳ The switching point for 'closed' is set.
5. Open the process valve.
 - ↳ Position indicator: 'open'.
6. Press down the green cam against the spring and turn until the upper proximity switch switches.
7. Release the green cam.
 - ↳ The spring presses the green cam into the annular gear.
 - ↳ The switching point for 'open' is set.
8. Place the housing cover in position and tighten the housing screws.
 - Make sure that the seal is positioned correctly.
 - The mounting position of the housing cover must correspond to the delivery status. Do not install the cover in an offset position.

- 11 Maintenance and care**
- The device is maintenance-free.
 - Repairs are not possible.
 - Avoid contact with aggressive substances.
 - Protect surfaces from excessive heat.

12 Fault clearance

Fault description	Cause	Remedy
Incorrect or unexpected signal	Wire break	Replace cable
	Position of the switching points incorrect	Set switching points
	Proximity switch defective	Replace limit switch box

Tab. 2

13 Technical data

SRBE-...-C1	
Certificates, declaration of conformity	→ www.festo.com/sp
Angular detection setting range [°]	0 ... 90
Mounting position	Any
Ambient temperature EX [°C]	–20 ... +60
Degree of protection	IP67, Type 4X
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6
Housing material	Painted die-cast metal
Material: shaft, screw, mounting adapter	High-alloy stainless steel
Material: seal	NBR
Material: visual position indicator	PC

Tab. 3: Technical data, general

SRBE-...-C1		
Operating voltage range AC		
– SRBE-CA3-YR90-MW-22A-1W-... SRBE-CA3-YR90-MW-22A-2W-...	[V]	0 ... 230
– SRBE-CA3-YR90-R-2A-1W-...	[V]	0 ... 240, taking into account a max. permissible power P = 100 W
Max. output current AC		
– SRBE-CA3-YR90-MW-22A-1W-... SRBE-CA3-YR90-MW-22A-2W-...	[A]	3 (230 VAC)
– SRBE-CA3-YR90-R-2A-1W-...	[A]	0.416 (240 VAC); 3, taking into account a max. permissible power P = 100 W
Operating voltage range DC		
– SRBE-CA3-YR90-MW-22A-1W-... SRBE-CA3-YR90-MW-22A-2W-...	[V]	0 ... 30
– SRBE-CA3-YR90-N-20N-ZC-	[V]	8.2
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...	[V]	10 ... 30
– SRBE-CA3-YR90-N-1-ZU-	[V]	5 ... 60
– SRBE-CA3-YR90-R-2A-1W-...	[V]	0 ... 30, taking into account a max. permissible power P = 100 W
Max. output current DC		
– SRBE-CA3-YR90-MW-22A-1W-... SRBE-CA3-YR90-MW-22A-2W-...	[A]	6
– SRBE-CA3-YR90-N-20N-ZC-...	[mA]	3
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...	[mA]	100
– SRBE-CA3-YR90-N-1-ZU-...	[mA]	4 ... 100
– SRBE-CA3-YR90-R-2A-1W-...	[A]	3, taking into account a max. permissible power P = 100 W
Voltage drop		
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...	[V]	≤ 3
– SRBE-CA3-YR90-N-1-ZU-...	[V]	≤ 5
No-load current		
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...	[mA]	≤ 15
Residual current		
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...	[mA]	0 ... 0.5; typically 0.1 mA at 25°C
– SRBE-CA3-YR90-N-1-ZU-...	[mA]	0 ... 1, typical 0.7 mA
Reverse polarity protection		
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-... SRBE-CA3-YR90-N-1-ZU-...		For all electrical connections
Short circuit current rating		
– SRBE-CA3-YR90-N-1-P-... SRBE-CA3-YR90-N-1-N-...		Clocked
Cable entry		2 x 1/2 NPT
Nominal cross section of conductor that can be connected	[mm²]	0.25 ... 2.5

Tab. 4: Technical data, electrical