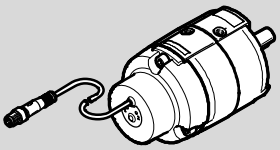
Position sensor
SRBS-...-Q1, SRBS-...-Q12



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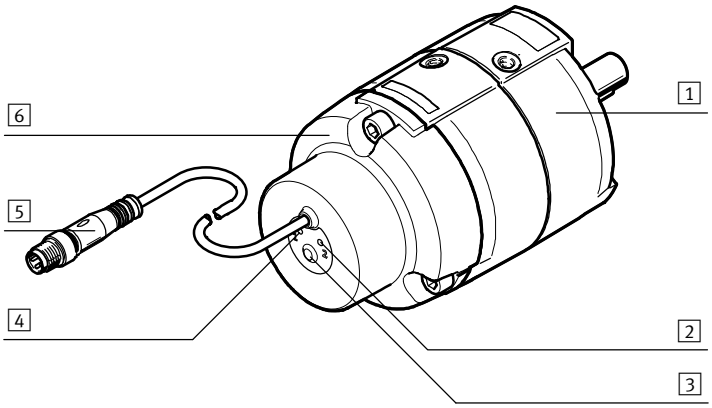
Instructions | Operating 8152170
Translation of the original instructions 2021-02b
[8152172]

c UL us LISTED
Industrial Control Equipment 2MD1

For all available product documentation ➔ www.festo.com/sp

1 Product description

1.1 Overview



1 Semi-rotary drive
2 LED 2
3 Operating key
4 LED 1
5 Connecting cable with plug connector, M8 rotatable
6 Position sensor housing

Fig. 1

1.2 Characteristics

Characteristic	Type	Description
Type	SRBS	Position sensor
Designation	-Q1	For Festo drive DSM
	-Q12	For Festo drive DSM and DRVS
Size	-6, -8, -10, -12, -16, -25, -32, -40	
Display	-E	LED indicator
Measuring range	270	0 ... 270°
Sensor principle	-EP	Non-contacting, programmable switching function
Nominal operating voltage	-1	24 V DC
Electrical output	-S	PNP or NPN
Electrical connection	-M8	M8 plug connector

Fig. 2

2 Function and application

The SRBS sensor kit, consisting of a position sensor and magnet holder, is intended to provide contact-free recording of the piston position of semi-rotary drives. The Festo DRVS and DSM drives are appropriate.

The magnet holder is fastened to the drive shaft of the semi-rotary drive. The position sensor records the magnetic field of the magnets and continuously senses the piston movement in the range of rotation of the drive.

Two binary switching points are output as output signal. The switching points can be freely selected within the sensing range (range of rotation of the drive) and can be learned via the teach function.

3 Requirements for product use

- Use the product only in its original status and without unauthorised modifications.
- Use the sensor kit only on the intended drives (➔ www.festo.com/catalogue).
- Prevent magnetic objects being in close proximity. These can influence the behaviour of the sensor.
- The device is intended for use in an industrial environment. Measures for interference suppression may need to be implemented in residential areas.
- Maximum permissible length of the signal line: 30 m.
- Remove transport packaging. The material used in the packaging has been specifically chosen for its recyclability.

Range of applications and certifications

In combination with the UL mark on the product, the information included in this section is also applicable for compliance with the certification requirements of Underwriters Laboratories Inc. (UL) for USA and Canada. Observe the following English-language remarks from UL:

UL approval information	
Product category code	NRKH, NRKH7
File number	E232949
UL mark	c UL us LISTED
Considered standards	UL 60947-1 and 60947-5-2, C22.2 No. 14.

Fig. 3

Only for connection to an NEC/CEC Class 2 supply.
Raccorder Uniquement a un circuit de NEC/CEC Classe 2.

Electrical and environmental ratings	
Input voltage	Max. 30 V DC, Class 2
Max. input current	120 mA / max. 3.6 W
Transistor output	Max. 50 mA G.P.
Maximum ambient temperature	70 °C / 158 °F
Enclosure type rating	Type 1

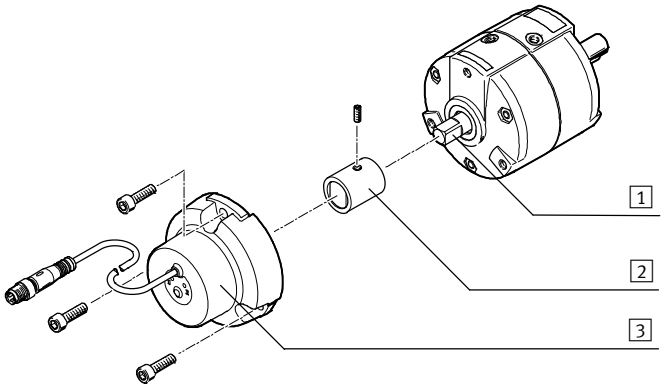
Fig. 4

4 Installation

Note

Installation only by qualified personnel and in accordance with the operating instructions.

4.1 Mechanical



1 Drive shaft of the swivel drive
2 Magnet holder
3 Position sensor

Fig. 5

1. Place the magnet holder on the drive shaft (square) of the swivel drive so that the mounting screw is applied to one of the flat surfaces of the square (not an edge).
2. Push the magnet holder onto the drive shaft up to the stop to keep the magnet holder from grinding against the position sensor housing.
3. Tighten the mounting screw on the magnet holder.
   – Max. tightening torque ➔ Fig. 6
   – Tool: Internal hexagon socket key (spanner size 2.0 mm)
4. Place the position sensor onto the drive so it positively locks and mount it with the accompanying mounting screws.
   – Max. tightening torque ➔ Fig. 6

SRBS-...-		6	8	10	12	16	25	32	40
Max. tightening torque of sensor	[Nm]	0.3	0.6	1.0		2.0	3.0	4.0	
Max. tightening torque of magnet holder	[Nm]	1.2							

Fig. 6

4.2 Electrical

Note

For the electrical power supply, use only PELV circuits in accordance with IEC/EN 60204-1. Use only power sources which guarantee reliable electrical isolation of the operating voltage from the mains in accordance with IEC/EN 60204-1. Observe also the general requirements for PELV power circuits in accordance with IEC/EN 60204-1.

Circuit diagram and pin allocation

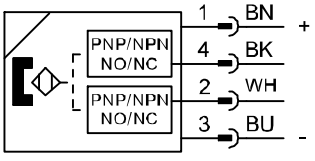
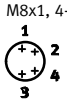


Fig. 7

Pin	Allocation	Wire colours 1)	Plug connectors 2)
1	Operating voltage +24 V DC	Brown (BN)	M8x1, 4-pin
2	Switching output 2	White (WH)	
3	0 V	Blue (BU)	
4	Switching output 1	Black (BK)	

1) With use of a connecting cable with open end.
2) Tightening torque for the union nut at the plug connector is max. 0.3 Nm.

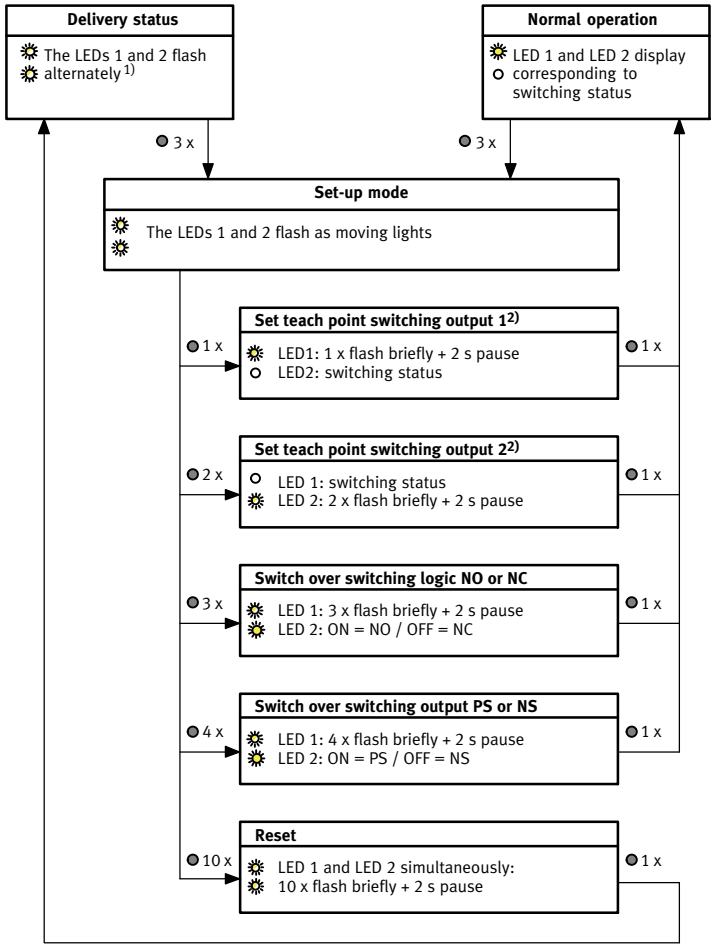
Fig. 8

5 Commissioning and operation

Note

Commissioning only by qualified personnel and in accordance with the operating instructions.
Commissioning possible only with magnets present (➔ Chapter 4.1).

5.1 Overview



1 x = Press the operating key (example: 1 time)

1) In case of hardware error flash mode error ➔ Chapter 7
2) Abort teaching: Press operating key min. 3 s or timeout › 30 s

Fig. 9

5.2 Initial commissioning

Requirement: Magnet present and position sensor mounted.

1. Switch on the operating voltage.
   ➔ Die LEDs flash alternately: The sensor is ready for operation with the factory settings.
   ➔ The LEDs flash simultaneously and fast: No magnet present, input not possible.
   ➔ The LEDs flash alternately and fast: error (➔ Chapter 7).
2. Set switching point (➔ Chapter 5.3)

Parameter	Factory setting
Switching point switching output 1	Not set
Switching point switching output 2	Not set
Switching logic	NO
Switching output	PS

Fig. 10

5.3 Switching point adjustment

The teach value is the middle of the switching travel. Fixed values are set for switching travel and hysteresis.

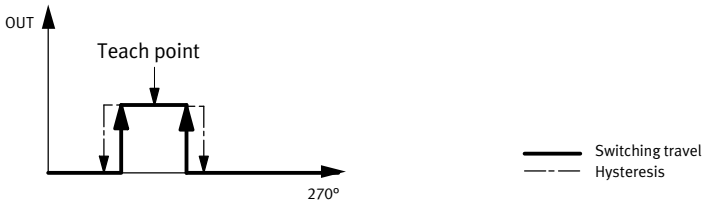


Fig. 11

Requirement: The LEDs flash alternately (delivery status) or display the current switching status.

Set switching point for switching output 1:

1. Set the sensing position on the semi-rotary drive.
2. Press the operating key 3 times.
   ➔ The LEDs flash as moving lights (set-up mode)
3. Press the operating key 1 time.
   ➔ LED 1 flashes (1 time, then 2 s pause).
4. Press the operating key 1 time.
   ➔ The switching point is established.
   ➔ Change into the operating mode (normal operation).

Set switching point for switching output 2:

1. Set the sensing position on the semi-rotary drive.
2. Press the operating key 3 times.
   ➔ The LEDs flash as moving lights (set-up mode)
3. Press the operating key 2 times.
   ➔ LED 2 flashes (2 times, then 2 s pause).
4. Press the operating key 1 time.
   ➔ The switching point is established.
   ➔ Change into the operating mode (normal operation).

➔ Note

Reverse additional settings (switching logic (NO, NC) and switching output (PS, NS), reset to the delivery status) ➔ Fig. 9.
These settings always affect both switching outputs.

5.4 LED displays in normal operation

The LEDs flash alternately	Delivery status Condition: Sensor and magnet holder are correctly mounted
The LEDs flash as moving lights	Set-up mode Status displays in the set-up mode ➔ Fig. 9
LED 1 illuminated	Switching output 1 is active
LED 2 illuminated	Switching output 2 is active

Fig. 12

6 Disassembly

1. Switch off operating voltage.
2. Disconnect connections from the device.
3. Loosen mounting screws.

7 Malfunctions

LED indicator	Possible cause	Remedy
No display	Voltage supply defective	Secure the power supply
	Connecting cable defective	Replace the connecting cable
	Sensor defective	Replace device
The LEDs flash simultaneously and fast	No magnet available, no input possible	Mount magnet correctly (➔ Chapter 4)
The LEDs flash alternately and fast	Memory error while learning	1. Acknowledge error (press operating key 1 time) 2. Return to set-up mode 3. Reset sensor to delivery status (➔ Fig. 9)
	Temperature too high	Check ambient temperature Check output current
	Undervoltage	Check operating voltage
	Hardware error	Replace device

Fig. 13

8 Technical data

SRBS		
General		
Approval		RCM, c UL us - Listed (OL)
CE marking		In accordance with EU EMC Directive
Note on materials		RoHS-compliant, halogen-free
Sensors		
Sensing range (type-dependent)	[°]	› 270
Typical sampling interval	[ms]	3
Switching output		2 x PNP or 2 x NPN switchable
Repetition accuracy of switching point	[°]	≤ 1
Hysteresis	[°]	1
Switching output		
Switch-on time	[ms]	‹ 4
Switch-off time	[ms]	‹ 4
Max. switching frequency	[Hz]	125
Max. output current[1)]	[mA)	50
Max. switching capacity DC[1)]	[W]	1.5
Voltage drop	[V]	‹ 1
Electronics		
Operating voltage range DC	[V]	10 … 30
Idle current	[mA]	≤ 20
Protection against short circuit		Yes
Overload protection		Present
Ready-state delay	[ms]	‹ 100
Electromechanics		
Electrical connection		Cable with plug connector M8, 4-pin
Cable length	[m]	0.3
Conductor nominal cross section	[mm²]	0.1
Mechanics		
Assembly position		Any
Housing material		PA reinforced, polyester
Immissions/emissions		
Ambient temperature	[°C]	–20 … +70
Degree of protection		IP65 / IP68

1) Specifications per switching output

Fig. 14