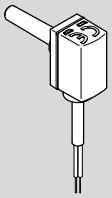
Pressure transmitter SPTE

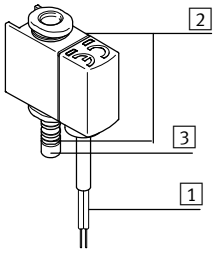


Festo SE & Co. KG
Ruiter Straße 82
73734 Esslingen
Deutschland
+49 711 347-0
www.festo.com

Operating instructions 8058488
Original instructions 2017-03c
[8058490]

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

1 Operating elements and connections



1 Electrical connection
2 Pneumatic connection
3 Blanking plug

Fig. 1

Feature	Order code	Specification
Function	SPTE	Pressure transmitter
Pressure measuring range	-B2, -B11, -P025, -P05, -P1, -P2, -P6, -P10, -V025, -V05, -V1	➔Technical data
Pressure input	R	Relative pressure
Mounting/pneumatic connection	S4	Push-in sleeve 4 mm (insertable)
	S6	Push-in sleeve 6 mm (insertable)
	Q3	Push-in connector 3 mm
	Q4	Push-in connector 4 mm
	F	Flange (with through-hole and screw)
	PC10	Cartridge 10 mm
Electrical output	B	1 ... 5 V
	V	0 ... 10 V
Electrical connection	2.5K	2.5 m cable, open end

Fig. 2

2 Function and application

The SPTE pressure transmitter is intended for measuring the relative pressure in pneumatic applications. The SPTE converts pneumatic pressure values into an electrical analogue signal, which can be used for control or regulating functions.

3 Requirements for product use

➔ **Note**

Incorrect handling can lead to malfunctioning.
- These general conditions for the correct and safe use of the product must be observed at all times.

- Observe the specified limits, e.g. for pressures, forces, temperatures, etc. (➔ 9 “Technical data”).
- Ensure that there is a supply of correctly prepared compressed air.
- Please observe the prevailing ambient conditions.
- Please observe the regulations applicable to the place of use (e.g. those of local or national institutions).
- Remove all transport packing such as protective wax, foils, caps, cardboard boxes.
- Remove everything used for protection during transport such as protective wax, films, caps and cardboard boxes. The individual materials can be stored in containers for recycling purposes.
- The device is intended for industrial use. Measures may need to be implemented in residential areas for interference suppression.
- Remove dirt particles in the supply lines by blowing through the tubing and hoses. In this way you will protect the device from premature failure or heavy wear (➔ DIN ISO 4414, section 9.4).
- Please observe the warnings and instructions:
  – on the product
  – in these operating instructions.

3.1 Range of application and certifications

The information in this section, in combination with the UL marking on the product, must be observed in order for there to be compliance with the certification conditions of Underwriters Laboratories Inc. (UL) for USA and Canada. Observe the following English-language remarks from UL:
For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:
– This component has been judged on the basis of the creepage and clearances required in the indicated standards, which would cover the component itself if submitted for listing: UL 61010-1, CAN/CSA 22.2 No. 61010-1.
– The end-product shall consider that the enclosure does not serve as a fire/electrical/mechanical enclosure, the product should be used with enclosure at the end product.
– The output connectors are not investigated for field wiring.
– The unit is considered acceptable for use in a max ambient of: 50 °C/122 °F.

UL approval information	
Product category code	QUYX2 (USA) or QUXY8 (Canada)
File number	E322346
Considered Standards	UL 61010-1 CAN/CSA 22.2 No. 61010-1
UL mark	c UL us

Fig. 3

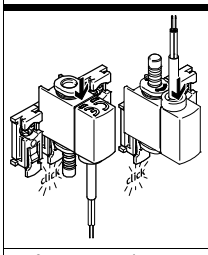
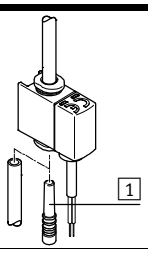
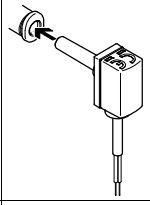
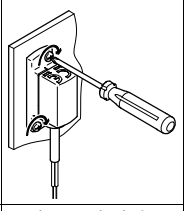
4 Installation

4.1 Mechanical and pneumatic

➔ **Note**

- Mount the SPTE or connect the tubing so that no condensation from the compressed air lines can gather in the device.

It can be fitted in any position. Mount the SPTE as follows:

SPTE-...-Q... with mounting clip	SPTE-...-Q...	SPTE-...-S...	SPTE-...-F
			
1. If necessary, shorten the SAMH-8 to the desired number of slots. 2. Observe the hole pattern for the SAMH (➔ Fig. 10). 3. Mount the SAMH with M3 screws (included in the scope of delivery) 1). 4. Insert the SPTE into the SAMH mounting clip in the direction of the arrow. (Cable outlet at the top or bottom is possible). 5. Connect the tubing of the SPTE (➔ next column).	**Single-ended tubing** 1. Seal a pneumatic connection on the SPTE with the blanking plug 1. 2. Connect the tube to the free pneumatic connection. **Double-sided tubing** 1. Remove the blanking plug 1. 2. Connect the tube to both pneumatic connections.	1. Insert the pneumatic connection of the SPTE into the push-in fitting as far as possible.	1. Observe the hole pattern for the flange (➔ Fig. 10). 2. Check the correct seating of the sealing ring. 3. Secure the SPTE in place using two M2 screws (included in the scope of delivery) 2).

1) Tightening torque: max. 0.6 Nm
2) Tightening torque: max. 0.3 Nm

Fig. 4

4.2 Electrical

Warning

Only use power sources which guarantee reliable electrical isolation of the operating voltage as per IEC/EN 60204-1. Also observe the general requirements for PELV power circuits as per IEC/EN 60204-1.

Note

Long signal lines reduce the resistance to interference.
- Make sure that the signal cable is never longer than 30 m.

Circuit diagram

SPTE-...-

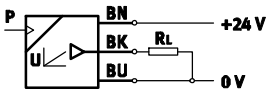


Fig. 5

5 Commissioning and operation

1. Switch on the operating voltage.
2. Pressurise the SPTE with the desired pressure.
   At the analogue output, depending on the pressure measuring range, the pressure measurement value is an electrical pressure-proportional signal.

Attention

An increase in temperature above the permissible material temperature of 80 °C can destroy the SPTE.
- Avoid high cycle frequencies with large pressure amplitudes.

6 Maintenance and care

- Switch off the following sources of energy before cleaning the exterior of the device:
  – Operating voltage
  – Compressed air/vacuum
- Clean the exterior of the SPTE with a soft, dry cloth if required.

7 Disassembly

1. Switch off the following sources of energy before dismantling:
   – Operating voltage
   – Compressed air/vacuum
2. Disconnect the respective connections from the SPTE.

Remove the SPTE-...Q... from the mounting clip

1. Press the lever [1] on the SAMH mounting clip and keep it depressed.
2. Remove the SPTE from the mounting clip in the direction of the arrow.

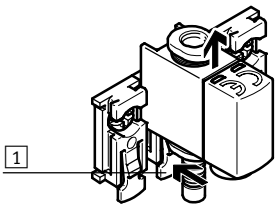


Fig. 6

8 Troubleshooting

Malfunction	Possible cause	Remedy
No voltage or unexpected voltage at the analogue output	Operating voltage not applied or no permissible operating voltage	Switch on power supply/ maintain permitted operating voltage range
	Connections swapped (incorrect polarity)	Connect the SPTE in accordance with the diagram
	Wire break	Send the SPTE to Festo with a description of the fault
	Short circuit/overload at analogue output	Eliminate short circuit/overload
	Pressure drop/failure	Check the pneumatic connection. Eliminate pressure failure
	SPTE operated with non-permitted medium	Replace the SPTE and operate with compressed air only
	SPTE defective	Send the SPTE to Festo with a description of the fault

Fig. 7

9 Technical data

SPTE		
General		
Approval		C-Tick, c UL us – Recognized (OL)
CE marking (➔ declaration of conformity)		According to EU-EMV-RL[1]
Note on materials		RoHS-compliant
Input signal/measuring element		
Measured variable		Relative pressure
Operating medium		Compressed air quality class according to ISO 8573-1:2010 [7:7:4], no aggressive gases
Temperature of medium – General	[°C]	0...+50
Ambient temperature – General	[°C]	0...+50
Output, general[2]		
Accuracy	[±%FS]	3 at ambient temperature (approx. 23 °C) 4 in ambient temperature range
Repetition accuracy	[±%FS]	0.3
Analogue output		
Output characteristic curve	[V]	SPTE-...-B: 1 ... 5
		SPTE-...-V: 0 ... 10
Rise time	[ms]	Typ. 1
Min. load resistance of voltage output	[kohms]	15
Output, additional data		
Protection against short circuit		For all electrical connections (also output for pos. supply voltage)
Overload protection		Yes
Electronic components		
Operating voltage range	[V DC]	SPTE-...-B: 10 ... 30
		SPTE-...-V: 18 ... 30
Idle current	[mA]	Typ. 11
Reverse polarity protection		For all electrical connections
Electromechanical components		
Electrical connection		Cable, 3-wire, open end
Max. permissible cable length	[m]	30
Materials – cable sheath		PVC
Mechanical components		
Mounting position		Any; avoid condensation gathering in the SPTE
Product weight	[g]	approx. 35 (incl. cable 2.5 m)
Housing material		Reinforced PA
Immissions/emissions		
Storage temperature	[°C]	-20 ... +80
Protection class		IP40
Electrical protection class		III
Shock resistance		Severity level 2 as per EN 60068-2-27 (Half sine 30g, 11 ms)
Vibration resistance		Severity level 2 as per EN 60068-2-6 (10 ... 60 Hz: 0.35 mm / 60 ... 150 Hz: 5g)

1) Measures may need to be implemented in residential areas for interference suppression.
2) %FS (fullscale) = measuring range or range of the output characteristic

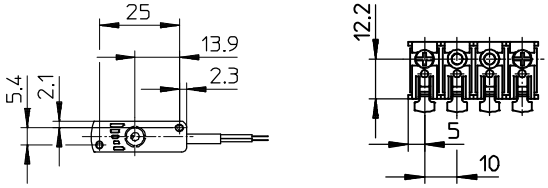
Fig. 8

SPTE-		B2	B11	V025	V05	V1	P025	P05	P1	P2	P6	P10
Pressure measuring range												
Starting value	[bar]	-1		0								
	[MPa]	-0.1		0								
Final value	[bar]	1	10	-0.25	-0.5	-1	0.25	0.5	1	2	6	10
	[MPa]	0.1	1	-0.025	-0.05	-0.1	0.025	0.05	0.1	0.2	0.6	1
Overload range												
Starting value	[bar]	-1										
	[MPa]	-0.1										
Final value	[bar]	5	15	1	2	5	1	2	5	6	15	15
	[MPa]	0.5	1.5	0.1	0.2	0.5	0.1	0.2	0.5	0.6	1.5	1.5

Fig. 9

10 Appendix

Hole patterns for flange SPTE-...-F[1] and mounting clip SAMH



1) Pressure connection hole: ∅ 2 mm max.

Fig. 10