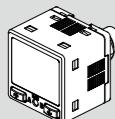


Pressure sensor

SPAB-...



FESTO

Operating instructions

Original: en

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P.O. Box
D-73726 Esslingen
Germany
Phone:
+49/711/347-0
www.festo.com



1310 en/de

Please note

Avoid stress loading on the connecting cable. If the cable is subjected to excessive stress, fasten it if necessary with the aid of cable clips or similar strain relief.

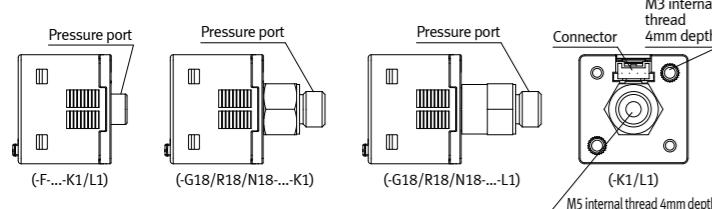
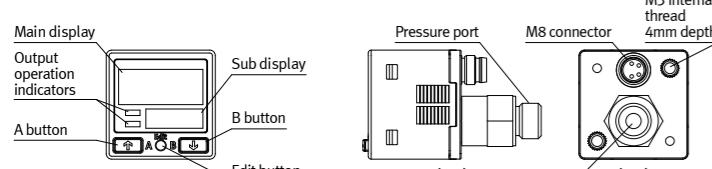
Warning

Use only power units which guarantee reliable electrical isolation of the operating voltage as per IEC/EN 60204-1. Observe also the general requirements for PELV power circuits as per IEC/EN 60204-1.

Warning

Depending on the functioning of the machine/system, the manipulation of signal states can cause serious injury to human beings and damage to property. Note that if the switching behaviour of the outputs is modified in the EDIT mode, the new status will be effective immediately. Activate the password protection (security code) in order to prevent unintentional modification by unauthorized third parties. (see EDIT mode under section 8)

1. Operating elements, ports and variants



Features	Type designation
Pressure range	-B2R-... (-1... +1 bar) -P10R-... (0... 10 bar)
Pressure type	Relative pressure
Pneumatic connection	-G18... (M5 internal- and G1/8" external thread) -R18... (M5 internal- and R1/8" external thread) -N18... (M5 internal- and NPT1/8" external thread) -F... (M5 internal thread and for adapter plate) ¹⁾
Electrical output	-2P-... (2 digital outputs PNP) -2N-... (2 digital outputs NPN) -PB-... (1 digital output PNP, 1 analog output 1...5V/4...20mA/external input) -NB-... (1 digital output PNP, 1 analog output 1...5V/4...20mA/external input)
Electrical connection	-K1 (cable 2.5m) -M8 (Plug M8) -L1 (Plug design L1)

Note 1) This variant may not be used without mounting accessories → Chapter 5, mounting.

2. Function and application

The SPAB-... has been designed for monitoring changes in pressure in the compressed air system or terminal devices.

3. Conditions of use



Please note

Malfunctions will occur if the device is not used correctly. The sensor can be damaged. Make sure that the following specifications are always observed:

- This product has been developed/produced for industrial use only.
- Fitting and commissioning to be carried out by qualified personnel only in accordance with the operating instructions.
- Compare the maximum values specified in these operating instructions with your actual application (e.g. forces, torques, temperatures, voltages).
- Take care that the sensor does not come in contact with water, oil, grease, or organic solvents, such as, thinner, etc.
- Use a blunt pencil to press a key. Do not press the keys with pointed or sharp objects.
- SPAB is designed for use with air and non-corrosive gas. It cannot be used for liquid or corrosive gas.
- Please note the permitted pressure range.
- Take into consideration the ambient conditions at the location of use.
- Please comply with national and local safety laws and regulations.
- Remove all transport packing such as protective wax, foils (polyamide), caps (polyethylene), cardboard boxes (except for the sealing elements of the pneumatic connections).
- Use the product in its original state. Unauthorized modification is not permitted.

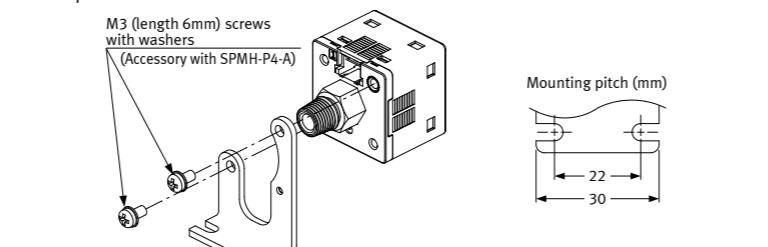
4. Pneumatic

When connecting a commercial coupler to the pressure port, attach a 14mm spanner (12mm for -R18... or -N18...) to the pressure port's hexagon section to fix the port, and then tighten with a tightening torque of 9.8Nm or less (M5 internal: 1Nm or less). The commercial coupler or pressure port section will be damaged if the tightening torque is excessive. Wrap sealing tape around the coupler when connecting to prevent leaks.

5. Mounting

- Wall mounting bracket SPAB (SAMH-P4-A)

When mounting the sensor onto the wall mounting bracket, etc., the tightening torque should be 0.5Nm or less.



- Panel mounting bracket (SAMH-P4-F) / Front protection cover (SACC-P4-G)

1. Fit the front attachment on the front side of the sensor.

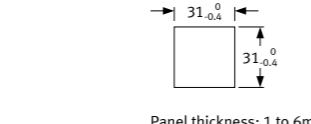
2. Insert to the panel, in the condition described in step 1.

3. Fit the rear attachment from the rear side of the sensor till it touches the panel.

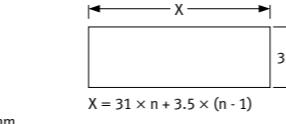
4. Fit the front protection cover on the front attachment. (Only SACC-P4-G)

- Panel cut-out size (mm)

- For single mounting

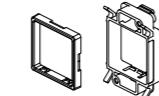


- For adjacent mounting

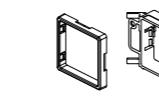


Panel thickness: 1 to 6mm

- Mounting direction of the front attachment differs depending on the mounting direction of the rear attachment.



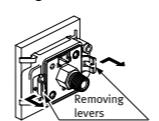
For horizontal adjacent mounting



For vertical adjacent mounting

- How to remove

Pull out the rear attachment while pushing the removing levers out.



Please note

- Take care that if the sensor is forcibly pulled, the sensor itself or the rear attachment may break.
- Rear attachment is not designed for frequent swaps.

- Electric Adapter (SASC-P4-A-M8-...)

Separate assembly manual (included with electric adapter).

- Adapter plate (SASF-P4-P-...)

Separate assembly manual (included with adapter plate).

6. Electrical installation

(-K1) / (-L1)

Pin/cable colors	Assignment	Connector
-2P-.../-2N-...	-PB-.../-NB-...	
1 / brown (BN)	12 ... 24V DC power supply	
2 / black (BK)	Digital output A	
3 / white (WH)	Digital output B	Analog output 1...5V/ 4...20mA/external input
4 / blue (BU)	0V	1

- Disconnection method

Pressing the release lever of the connector, pull out the connector.

- SPEC setting

Unit - Unit of measurement selection
[bar, kPa, MPa¹, psi, mmHg², inchH₂O², kgf/cm²]

Delay timer - Delay timer selection
[0, 2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000 msec]

Color - Main display color selection
[Red when ON/Green when ON/Always Red/Always Green]

Sub - Sub display selection (unit or switching point)

Lock - Security code lock setting (1...9999)

Copy - Copy function

Notes 1) Only -P10R-... 2) Only -B2R-...

indication of the sub display

- SHOW mode

The SHOW mode shows the following settings and values.

Setting for Output A (Output B)

- Unit of measurement
- Switching behaviour
- Switching points
- Hysteresis
- Switching characteristic
- Setting for analog output/external input¹⁾
- Adjustment value (when external input)

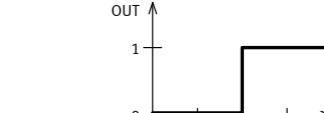
Note 1) Only -PB-.../-NB-...

- TEACH mode

Enables teaching of switching points within the maximum setting range.

Threshold value comparator mode
(SP) = (TP1) + (TP2) / 2

Window comparator mode
(SP-H) = (TP1) or (TP2)
(SP-L) = (TP1) or (TP2)



- Please note

TEACH mode is not possible when using external input.

- MIN/MAX mode

The MIN/MAX mode displays the lowest and highest pressure values up to the time of displaying.

- ZERO ADJUST mode

The ZERO ADJUST mode forcibly sets the pressure value to "zero" when the pressure port is opened.

- RESET mode

Return to default settings.

- COPY mode

The COPY mode can copy the settings of the master side sensor to the slave side sensor.

Please note

- Be sure to use the copy function between the identical models. This function cannot be used between different models.
- Only one sensor can be connected on slave side with a master side sensor for the copy function.
- Do not use the copy function other than the following wiring, as pulsed output generates when turning the power ON after setting the master side sensor to the copy ready state.

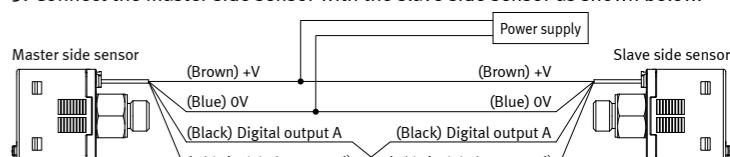
Setting procedure

1. Set the copy function of the master side sensor to copy ready state.

(see EDIT mode under section 10)

2. Turn off the master side sensor.

3. Connect the master side sensor with the slave side sensor as shown below.



Note 1) -PB-.../-NB-..., analog output/external input.

4. Turn on the master side sensor and the slave side sensor at the same time.

5. Set contents (16-bit coded) are shown in orange on the main display of the master side sensor and the copying starts.

6. The same code explained above is shown in green on the main display of the slave side sensor, and "OK" is shown on the sub display (When copying is complete.)

7. Turn off the power of the master side sensor and the slave side sensor and disconnect the wire.

* If copying the setting to another sensor repeatedly, follow steps 3 to 7.

Note 2) Take care that if the power is not turned on at the same time, the setting contents may not be copied.

To cancel the setting copy mode of master side sensor

1. While the slave side sensor is disconnected, turn on the power of the master side sensor.

2. Press the mode selection key for approx. 3 seconds.

- RUN mode

Shows the measured value and the signal status of the digital outputs.

Main display color is changed depending on output A.

4 kind of colors can be selected by using EDIT mode as follows.

Red when ON/Green when ON/Always Red/Always Green

Sub display is always indicated in Green. Output operation indicators always light up in Yellow.

- EDIT mode

The EDIT mode enables the following settings.

- Output setting

Out A ¹⁾ **Out B** ¹⁾ **SP** **SP-L** **SP-H**

- Switching behaviour selection (threshold value comparator or window comparator)

- Switching points selection

HY - Hysteresis selection

SW - Switching characteristic (normally open/close) selection

1/1 ²⁾ - Analog voltage output/Analog current output/Auto-reference input/Remote zero-adjustment

Notes 1) Only -2P-.../-2N-...

2) Only -PB-.../-NB-...

