

Pressure sensors SPAE

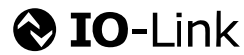


Pressure sensors SPAE

Key features

At a glance

- Single-button operation
- 7-segment display
- Various pneumatic connection options
- Switching status indication
- Choice of pressure ranges







Function

The SPAE is an electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, pressure indicator with percentage, con-

trol button and a switching output, PNP/NPN switchable. Two switching signals and the pressure reading can be transmitted via IO-Link®.

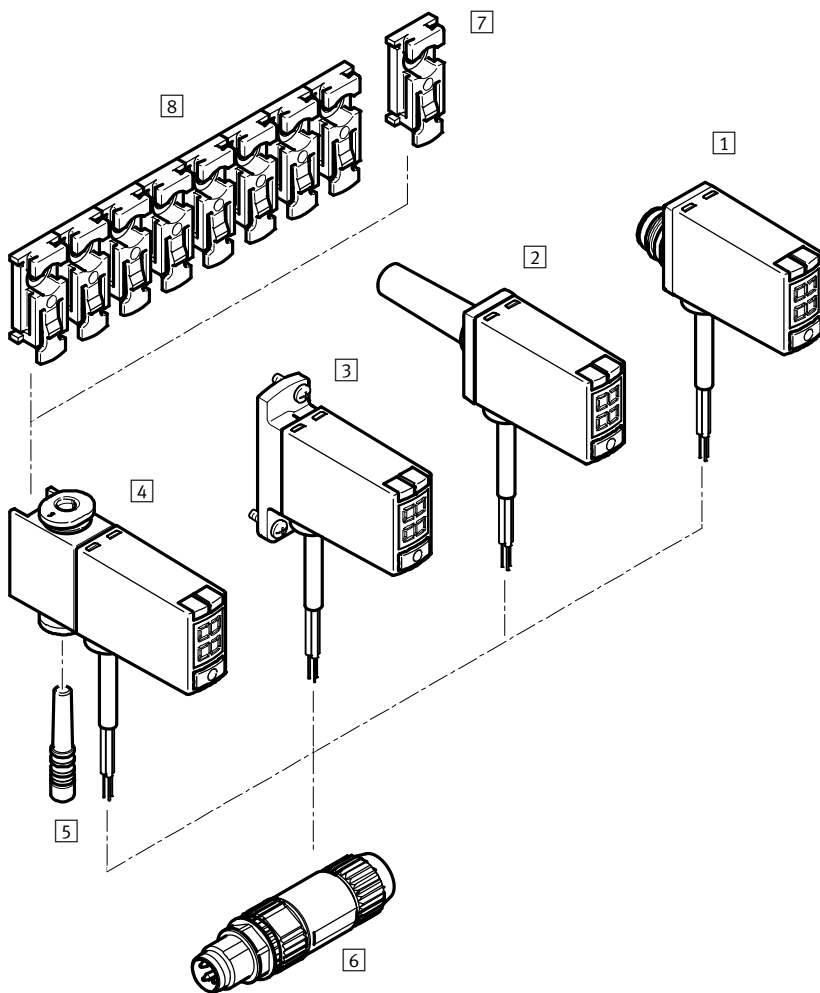
- The sensor can be set using the key and display or alternatively using IO-Link® or teach-in
- Switching functions: threshold value or window comparator
- Switching logic: normally open (NO) or normally closed (NC)
- Threshold values and hysteresis are adjustable
- Display of minimum and maximum readings
- Display can be rotated and switched off
- Protection against tampering using security code
- All parameters that have been input can be transferred to other SPAE (replicator function)

Method of measurement	Pressure measuring range [bar]	Measured variable	Pneumatic connection	Output	Electrical connection	
Piezoresistive pressure sensor	-1 ... +1	Relative pressure	Cartridge 10 mm 	PNP/NPN switchable, IO-Link®	Cable, 3-wire open end	
			Push-in sleeve 4 mm			
			Push-in sleeve 6 mm			
			Plug connector 3 mm			
			Plug connector 4 mm			
			Flange			
	0 ... -1		Cartridge 10 mm 			
						Push-in sleeve 4 mm
						Push-in sleeve 6 mm
						Plug connector 3 mm
						Plug connector 4 mm
						Flange
0 ... 10	Cartridge 10 mm 					
		Push-in sleeve 4 mm				
		Push-in sleeve 6 mm				
		Plug connector 3 mm				
		Plug connector 4 mm				
		Flange				

 **Note**
The version with 10 mm cartridge is designed for the vacuum generator OVEL.

Pressure sensors SPAE

Peripherals overview



Accessories		→ Page/Internet
1	Pressure sensor SPAE-...-PC10...	5
2	Pressure sensor SPAE-...-S...	5
3	Pressure sensor SPAE-...-F...	5
4	Pressure sensor SPAE-...-Q...	5
5	Blanking plug (included in the scope of delivery of SPAE-...-Q...)	qs
6	Plug connector NECU-S-M...G3-HX	10
7	Mounting clip SAMH-PE-MC-1	10
8	Mounting clip SAMH-PE-MC-8	10

Pressure sensors SPAE

Type codes

SPAE

SPAE – [] – R – [] – PNLK – 2,5 K

Pressure sensors

SPAE	
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Pressure measuring range¹⁾

P10	0 ... 10 bar
V1	0 ... -1 bar
B2	-1 ... 1 bar

Supply port

R	Relative pressure
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Pneumatic connection

S4	Push-in sleeve 4 mm
S6	Push-in sleeve 6 mm
Q3	Plug connector 3 mm
Q4	Plug connector 4 mm
F	Flange
PC10	Cartridge 10 mm

Electrical output

PNLK	Switching output PNP/NPN/IO-Link
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Electrical connection

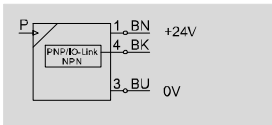
2,5 K	Connecting cable 2.5 m, open end
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


1) Additional pressure ranges on request (in packs of 80)

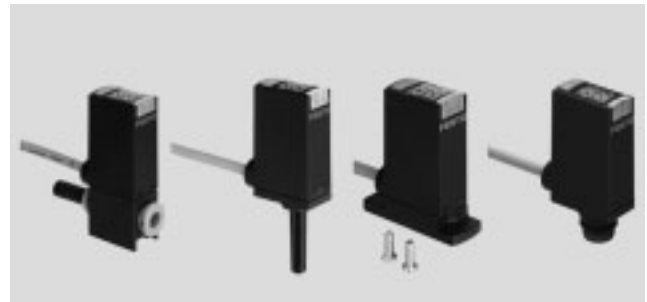
Pressure sensors SPAE

Technical data

Function



-  Voltage
18 ... 30 V DC
-  Pressure measuring range
-1 ... +10 bar
-  Temperature range
0 ... +50 °C



General technical data	
Certification	RCM mark c UL us - Recognized (OL)
Degree of protection	IP40
Note on materials	RoHS-compliant
Corrosion resistance class CRC ¹⁾	2
CE marking (see declaration of conformity)	In accordance with EU EMC Directive ²⁾

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal for measuring element	V1R	B2R	P10R
Measured variable	Relative pressure		
Method of measurement	Piezoresistive pressure sensor with display		
Pressure measuring range starting value [bar]	0	-1	0
Pressure measuring range final value [bar]	-1	1	10
Max. overload pressure [bar]	5	5	15
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible		
Temperature of medium [°C]	0 ... 50		
Ambient temperature [°C]	0 ... 50		

Signal processing	
Resolution ADC	10 bits

Output, general		
Accuracy [% FS]	1.5 at room temperature	
Repetition accuracy [% FS]	0.3	
Temperature coefficient [% FS/K]	Typically 0.05	

Switching output		
Switching output	PNP/NPN, switchable	
Switching function	Freely programmable	
Switching element function	N/C or N/O contact, switchable	
Switch-on time [ms]	1	
Switch-off time [ms]	1	
Max. output current [mA]	100	
Protection against short circuit	Yes	

Pressure sensors SPAE

Technical data

Measured value display		
Indicating range starting value	[% FS]	0
Indicating range final value	[% FS]	99

Communication interface	
Protocol	IO-Link
IO-Link, protocol version	Device V 1.1
IO-Link, profile	Smart Sensor profile
IO-Link, function classes	Binary data
	Diagnostics
	Identification
	Process Data Variable (PDV)
	Teach channel
IO-Link, communication mode	COM2 (38.4 kbd)
IO-Link, port class	A
IO-Link, process data width OUT	0 byte
IO-Link, process data width IN	2 bytes
IO-Link, process data content IN	2 bit BDC (pressure monitoring)
	14 bit PDV (pressure reading)
IO-Link, minimum cycle time	[ms] 3
IO-Link, SIO mode support	Yes
IO-Link, data memory required	0.5 KB

Electronics		
Operating voltage range DC	[V]	18 ... 30
Reverse polarity protection		For all electrical connections

Electromechanical components	
Electrical connection	Cable, 3-wire open end
Cable length	[m] 2.5

Mechanical system	S4	S6	Q3	Q4	F	PC10
Type of mounting	Push-in		Via accessories		Via through-hole and screw	Pin-type connection
Mounting position	Any					
Pneumatic connection	Push-in sleeve QS-4	Push-in sleeve QS-6	QS3	QS4	Flange	Cartridge 10 mm

Mechanical system, general	
Product weight	[g] 40
Information on housing materials	Reinforced PA

Display/operation	
Display type	LED display, 2-digit
Displayable units	% FS
Switching status display	Yellow LED
Setting options	Via display and keys, teach-in, IO-Link
Threshold value setting range	[%] 1 ... 98
Protection against tampering	PIN code

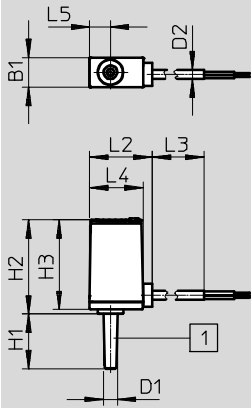
Pressure sensors SPAE

Technical data

Dimensions

Download CAD data → www.festo.com

SPAE-...-S-...-...



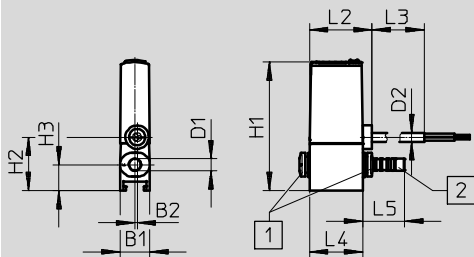
- 1 Pressure supply port, push-in sleeve
for SPAE-S4
for SPAE-S6

Type	B1	D1 Ø	D2 Ø	H1	H2	H3	L2	L3	L4	L5
SPAE-V1R-S4-...	9.8	4	2.9	18	30.8	29.3	20.5	2500	17.5	6.9
SPAE-V1R-S6-...		6		21						
SPAE-P10R-S4-...		4		18						
SPAE-P10R-S6-...		6		21						

Dimensions

Download CAD data → www.festo.com

SPAE-...-Q-...-...



- 1 Pressure supply port on both sides
for SPAE-Q3 / QSIK-M-3-X
for SPAE-Q4 / QSIK-M-4-X
- 2 Blanking plug
for SPAE-Q3 / QSMC-3H
for SPAE-Q4 / QSC-4H
included

Type	B1	B2	D1 Ø	D2 Ø	H1	H2	H3	L2	L3	L4	L5
SPAE-V1R-Q3-...	9.8	0.7	3	2.9	~42	17.5	8.5	20.5	2500	17.5	13.6
SPAE-V1R-Q4-...			4								16.6
SPAE-P10R-Q3-...			3								13.6
SPAE-P10R-Q4-...			4								16.6

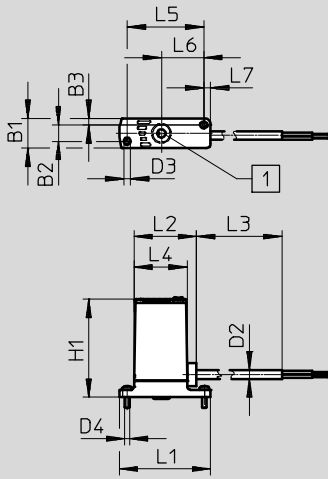
Pressure sensors SPAE

Technical data

Dimensions

Download CAD data → www.festo.com

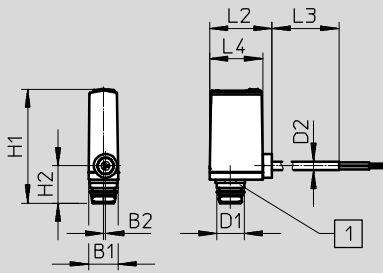
SPAE-...-F-...



1 Pressure supply port with O-ring for flat mounting in the case of SPAE-F

Type	B1	B2	B3	D2 ∅	D3 ∅	D4	H1	L1	L2	L3	L4	L5	L6	L7
SPAE-V1R-F-...	9.8	~5.4	2.1	2.9	2.1	M2x6	~32	30	20.5	2500	17.5	25	13.9	2.3
SPAE-P10R-F-...														

SPAE-...-PC10-...












1 Pressure supply port Pin-type Cartridge 10 mm with SPAE-PC-10

Type	B1	B2	D1 ∅	D2 ∅	H1	H2	L2	L3	L4
SPAE-V1R-PC10-...	9.8	0.7	8.9	2.9	~37.5	12.2	20.5	2500	17.5
SPAE-B2R-PC10-...									

Pressure sensors SPAE

Technical data

Ordering data					
	Pressure measuring range ¹⁾	Pneumatic connection	Electrical connection	Part No.	Type
	0 ... -1	Push-in sleeve 4 mm	Cable, 3-wire open end	8001440	SPAE-V1R-S4-PNLK-2.5K
		Push-in sleeve 6 mm		8001441	SPAE-V1R-S6-PNLK-2.5K
	0 ... -1	Plug connector 3 mm		8001442	SPAE-V1R-Q3-PNLK-2.5K
		Plug connector 4 mm		8001443	SPAE-V1R-Q4-PNLK-2.5K
	0 ... -1	Flange		8001444	SPAE-V1R-F-PNLK-2.5K
		Cartridge 10 mm		8025978	SPAE-V1R-PC10-PNLK-2.5K 
	0 ... 10	Push-in sleeve 4 mm		8001445	SPAE-P10R-S4-PNLK-2.5K
		Push-in sleeve 6 mm		8001446	SPAE-P10R-S6-PNLK-2.5K
	0 ... 10	Plug connector 3 mm		8001447	SPAE-P10R-Q3-PNLK-2.5K
		Plug connector 4 mm		8001448	SPAE-P10R-Q4-PNLK-2.5K
	0 ... 10	Flange	8001449	SPAE-P10R-F-PNLK-2.5K	
		Cartridge 10 mm	8025979	SPAE-B2R-PC10-PNLK-2.5K 	
	-1 ... 1	Cartridge 10 mm			

1) Additional pressure ranges on request (in packs of 80)

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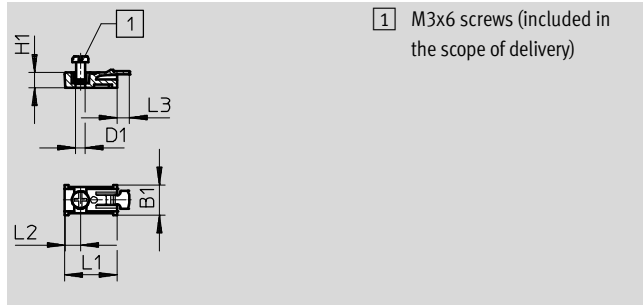
Accessories



Mounting clip SAMH-PE-MC-1

Materials:
POM

Note on materials:
RoHS-compliant

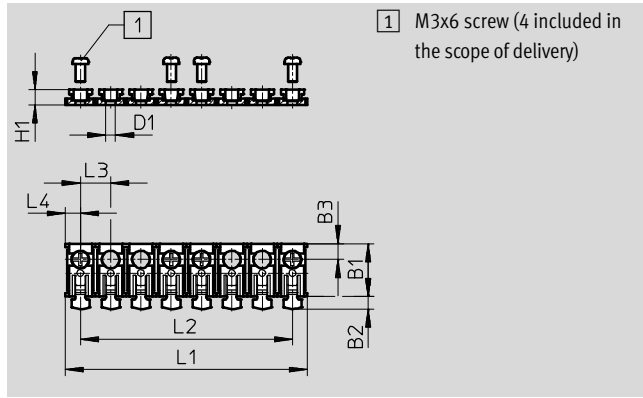


Dimensions and ordering data									
B1	D1	H1	L1	L2	L3	Part No.	Type		
10	3.2	5	17.5	5.3	4	571489	SAMH-PE-MC-1		

Mounting clip SAMH-PE-MC-8

Materials:
POM

Note on materials:
RoHS-compliant



Note
The mounting clip SAMH-PE-MC-8 can be shortened by the user to the required number of slots.

Dimensions and ordering data										
B1	B2	B3	D1	H1	L1	L2	L3	L4	Part No.	Type
17.5	4	5.3	3.2	5	80	70	10	5	571490	SAMH-PE-MC-8

Ordering data – Plug connectors			
	Electrical connection	Part No.	Type
	Plug connector M8x1, 3-pin, straight, insulation displacement connector	562024	NECU-S-M8G3-HX
	Plug connector M12x1, A-coded, 3-pin, straight, insulation displacement connector	562027	NECU-S-M12G3-HX