

Pressure sensors SPAE

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Pressure sensors SPAE

Key features

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At a glance

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



 **IO-Link**

Function

The SPAE is an electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, pressure indicator with percentage, control 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 switch- able, IO-Link®	Cable, 3-wire open end
	0 ... -1		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		

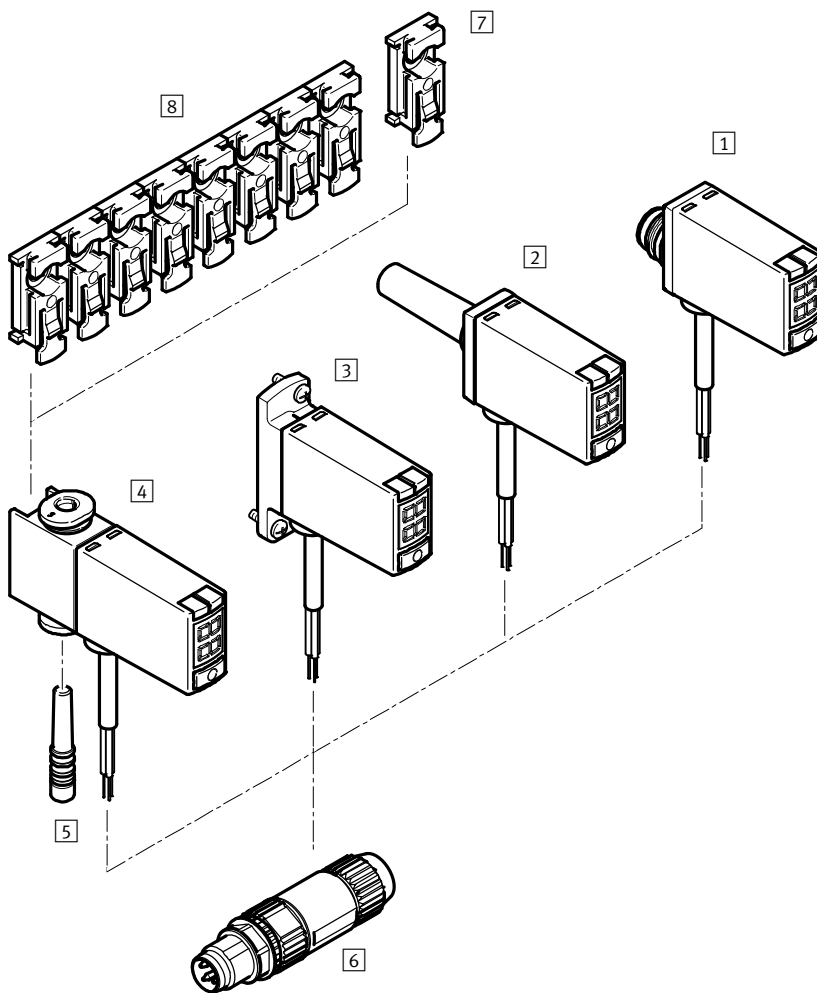
 Note

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

Pressure sensors SPAE

Peripherals overview

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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

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SPAE

		SPAE	–		R	–		–	PNLK	–	2,5 K
Pressure sensors											
SPAE											
Pressure measuring range¹⁾											
P10	0 ... 10 bar										
V1	0 ... –1 bar										
B2	–1 ... 1 bar										
Supply port											
R	Relative pressure										
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										
Electrical connection											
2,5 K	Connecting cable 2.5 m, open end										

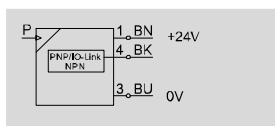
1) Additional pressure ranges on request (in packs of 80)

Pressure sensors SPAE

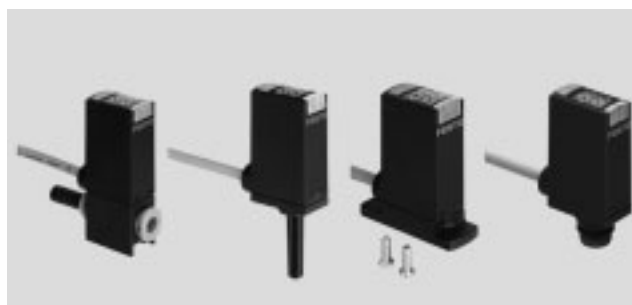
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Technical data

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
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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

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Technical data

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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	

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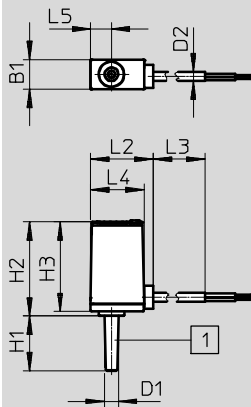
Technical data

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Dimensions

Download CAD data → www.festo.com

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



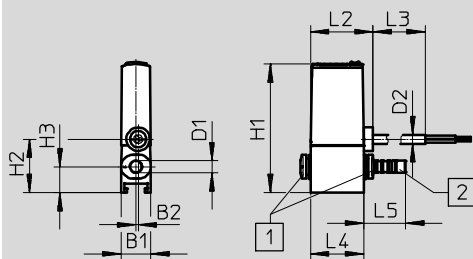
- 1 Pressure supply port, push-in sleeve
for SPAE-S4
for SPAE-S6

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

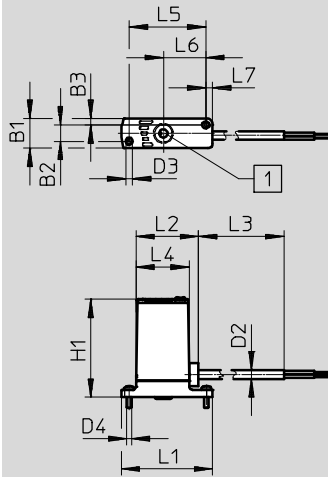
Technical data

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Dimensions

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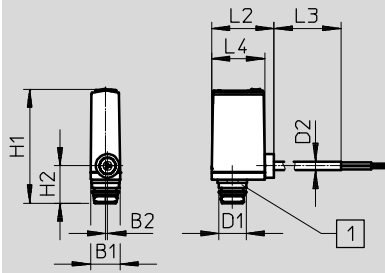
SPAE-...-F-...



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

Type	B1	B2	B3	D2 Ø	D3 Ø	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 Ø	D2 Ø	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

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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
		Plug connector 3 mm		8001442	SPAE-V1R-Q3-PNLK-2.5K
		Plug connector 4 mm		8001443	SPAE-V1R-Q4-PNLK-2.5K
		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
		Plug connector 3 mm		8001447	SPAE-P10R-Q3-PNLK-2.5K
		Plug connector 4 mm		8001448	SPAE-P10R-Q4-PNLK-2.5K
		Flange		8001449	SPAE-P10R-F-PNLK-2.5K
	-1 ... 1	Cartridge 10 mm		8025979	SPAE-B2R-PC10-PNLK-2.5K

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Accessories

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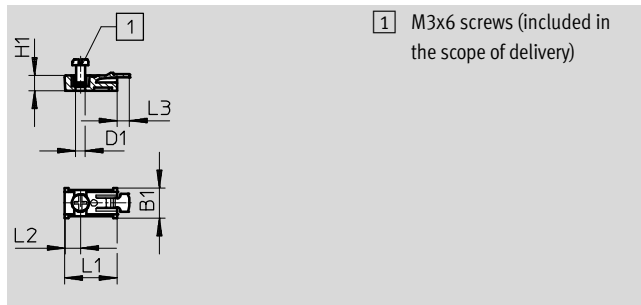
Mounting clip SAMH-PE-MC-1

Materials:

POM

Note on materials:

RoHS-compliant



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

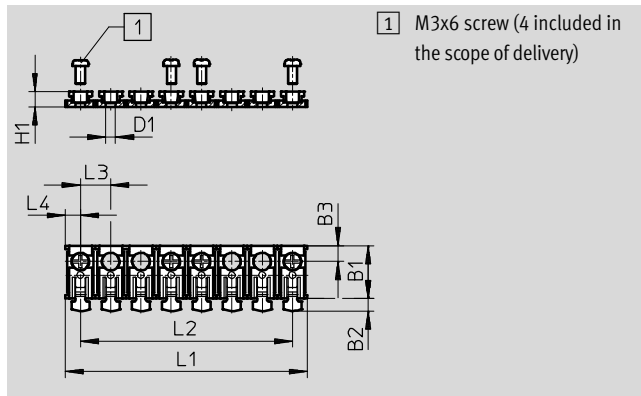
Mounting clip SAMH-PE-MC-8

Materials:

POM

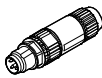
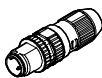
Note on materials:

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

Ordering data – Plug connectors			Part No.	Type
	Electrical connection			
	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