

Pressure sensors SPAE



# Pressure sensors SPAE

Key features

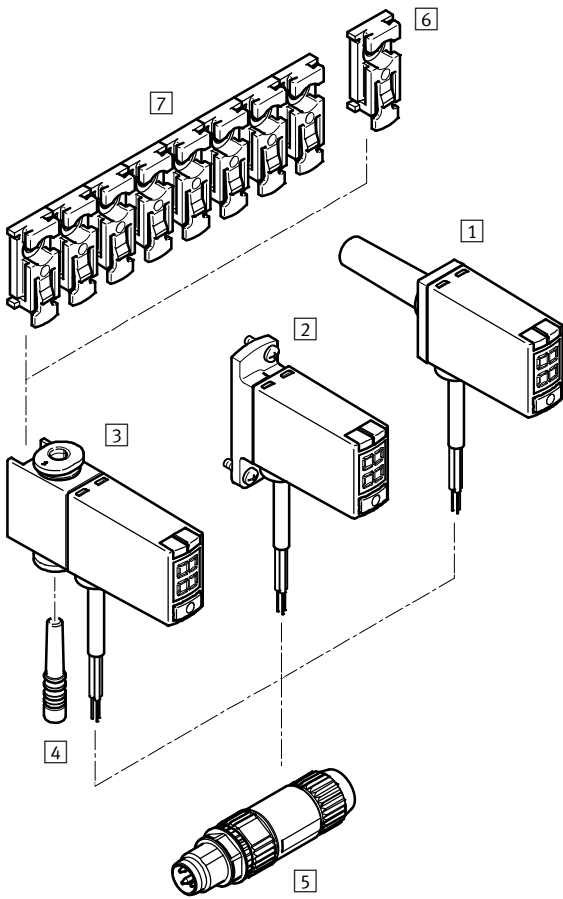
Function			
The SPAE is an electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal	processing, numerical percentage pressure indicator, control keys and a	switching output, PNP/NPN switchable. Two switching signals and the	pressure measurement value can be transmitted via IO-Link.

Key features			
<ul style="list-style-type: none"> <li>The sensor can be set using the keys and display or alternatively using IO-Link or teach-in</li> <li>Switching functions: threshold value or window comparator</li> </ul>	<ul style="list-style-type: none"> <li>Switching logic: normally open (NO) or normally closed (NC)</li> <li>Threshold values and hysteresis are adjustable</li> <li>Display of minimum and maximum readings</li> </ul>	<ul style="list-style-type: none"> <li>Display can be rotated and switched off</li> <li>Protection against tampering using security code</li> </ul>	<ul style="list-style-type: none"> <li>All parameters that have been input can be transferred to other SPAE (replicator function)</li> </ul>

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

# Pressure sensors SPAE

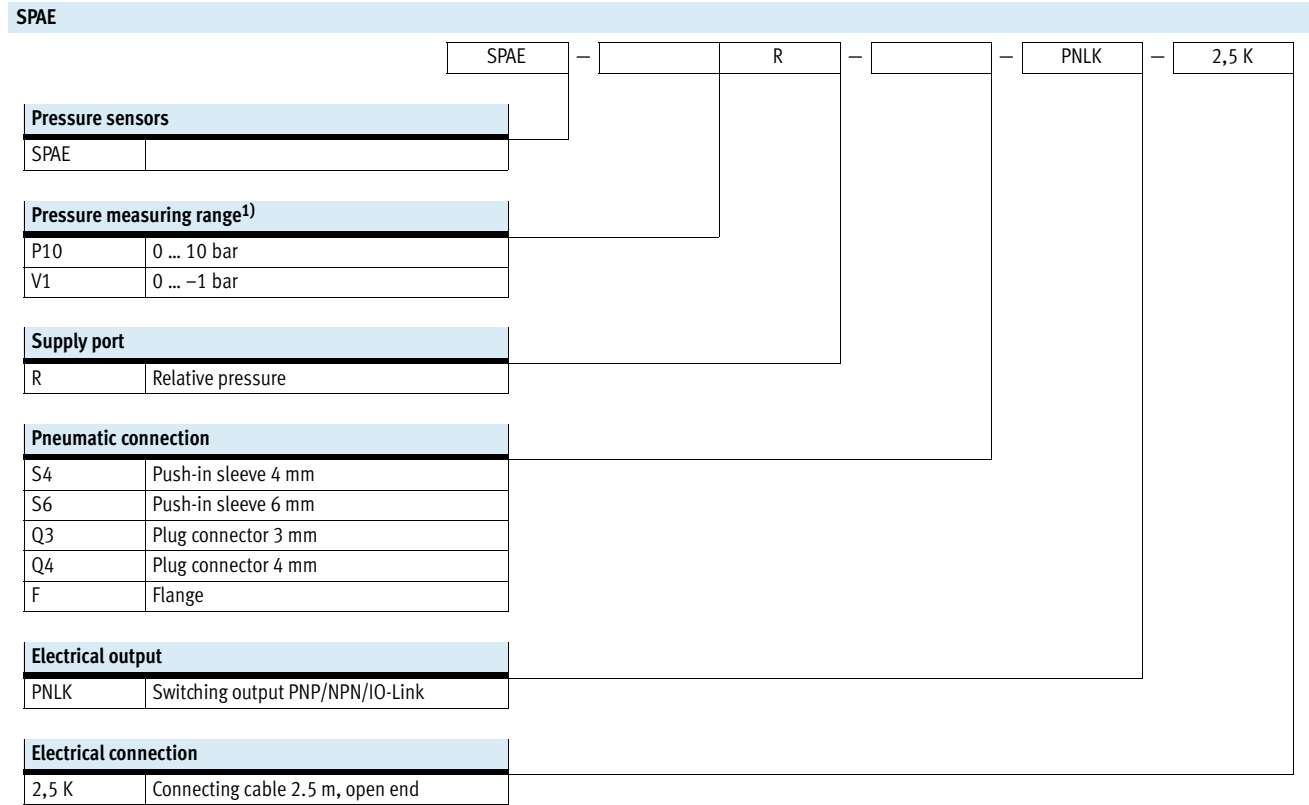
Peripherals overview



Accessories	→ Page/Internet
1 Pressure sensor SPAE-...-S...	5
2 Pressure sensor SPAE-...-F...	5
3 Pressure sensor SPAE-...-Q...	5
4 Blanking plug (included in the scope of delivery of SPAE-...-Q...)	qs
5 Plug connector NECU-S-M...G3-HX	9
6 Mounting clip SAMH-PE-MC-1	9
7 Mounting clip SAMH-PE-MC-8	9

# Pressure sensors SPAE

Type codes

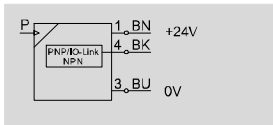





1) Additional pressure ranges on request

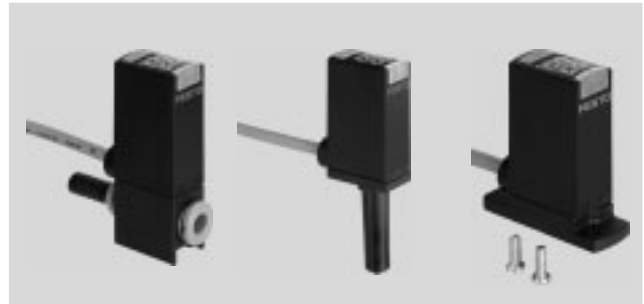
# Pressure sensors SPAE

## 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 <sup>1)</sup>	2
CE marking (see declaration of conformity)	In accordance with EU EMC Directive <sup>2)</sup>

- 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](http://www.festo.com/sp) → User documentation.  
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	P10R
Measured variable	Relative pressure	
Method of measurement	Piezoresistive pressure sensor with display	
Pressure measuring range starting value [bar]	0	
Pressure measuring range final value [bar]	-1	10
Max. overload pressure [bar]	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
Type of mounting	Push-in		Via accessories		Via through-hole and screw
Mounting position	Any				
Pneumatic connection	Push-in sleeve QS-4	Push-in sleeve QS-6	QS3	QS4	Flange

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

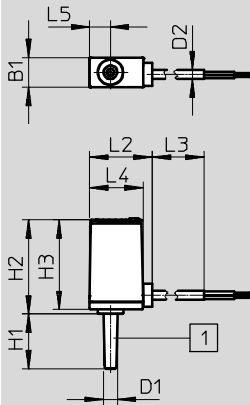
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

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



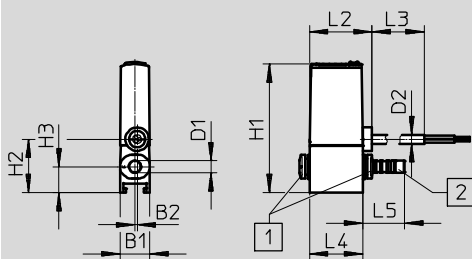
- 1 Pressure supply port, push-in sleeve  
for SPAE-S4  
for SPAE-S6

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](http://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

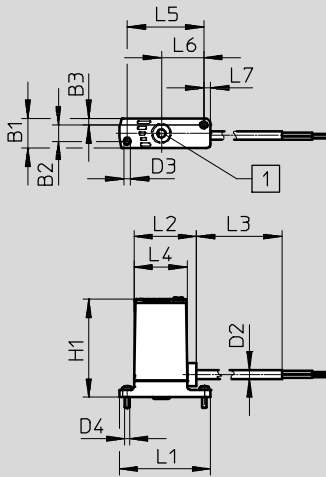
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://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-...														

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

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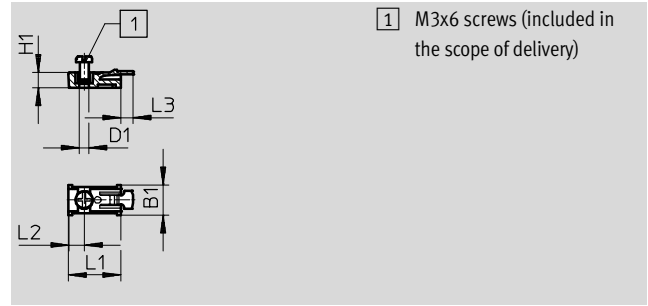
Accessories



## Mounting clip SAMH-PE-MC-1

Materials:  
POM

Note on materials:  
RoHS-compliant

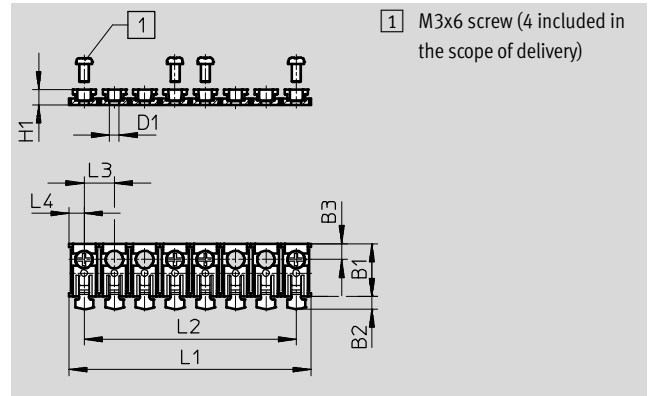


Dimensions and ordering data							Part No.	Type
B1	D1 ∅	H1	L1	L2	L3			
10	3.2	5	17.5	5.3	4	571489	SAMH-PE-MC-1	

## 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 ∅	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			
	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