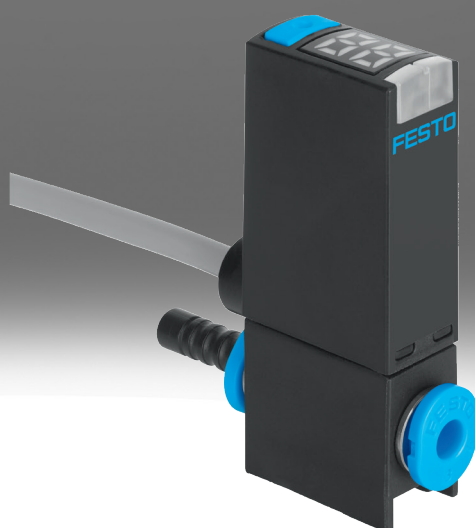


Pressure sensor SPAE

FESTO



Characteristics

At a glance



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

Pressure measuring range

[P10] 0 ... 10 bar

[V1] 0 ... -1 bar

[B2] -1 ... 1 bar

Product version

IO-Link

The SPAE is an electronic pressure sensor with piezoresistive pressure measuring cell, integrated signal processing, numeric pressure indicator in percent, operating button and a switching output, PNP/NPN switchable. IO-Link® can be used to transmit two switching signals and the measured pressure value.

- Sensor can be set via button and display, or alternatively via 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 measured value
- 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)

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

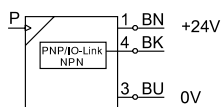
Type code

001	Series	
SPAE	Pressure sensor SPAE	
002	Pressure measuring range	
B2	-1 ... 1 bar	
P10	0 ... 10 bar	
V1	0 ... -1 bar	
003	Pressure inlet	
R	Relative pressure	

004	Pneumatic connection	
F	Flange/sub-base	
PC10	Cartridge 10 mm	
Q3	Push-in connector, 3 mm	
Q4	Push-in connector 4 mm	
S4	Push-in sleeve 4 mm	
S6	Push-in sleeve 6 mm	
005	Electrical output 1	
PNLK	PNP/NPN/IO-Link	
006	Electrical connection	
2.5K	Cable 2.5 m, open end	

Datasheet

General technical data



Approval	RCM, c UL us - Recognised (Oil)
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive, In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity)	To UK instructions for EMC, To UK RoHS instructions
Certificate issuing authority	UL E322346
Note on materials	RoHS compliant

1) For information about the area of use, see the declaration of conformity at: www.festo.com/catalogue/... Support/Downloads. If the devices are subject to usage restrictions in residential, commercial or industrial environments as well as small businesses, further measures for reducing the emitted interference may be necessary.

Input signal for measuring element

Pressure measuring range	-1 ... 1 bar	0 ... 10 bar	0 ... -1 bar
Measured variable	Relative pressure		
Measurement method	Piezoresistive pressure sensor with display		
Start value for pressure measuring range	-0.1 MPa	0 MPa	
End value for pressure measuring range	0.1 MPa	1 MPa	-0.1 MPa
Start value for pressure measuring range	-1 bar	0 bar	
End value for pressure measuring range	1 bar	10 bar	-1 bar
Start value for pressure measuring range	-14.5 psi	0 psi	
End value for pressure measuring range	14.5 psi	145 psi	-14.5 psi
Overload pressure	0.5 MPa	1.5 MPa	0.5 MPa
Overload pressure	5 bar	15 bar	5 bar
Overload pressure	72.5 psi	217.5 psi	72.5 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating and pilot medium	Lubricated operation possible		
Media temperature	0 ... 50°C		
Ambient temperature	0 ... 50°C		

Signal processing

Resolution ADC	10 bit
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General output

Accuracy in $\pm$ % FS	1.5 %FS
Repetition accuracy in $\pm$ %FS ¹⁾	0.3 %FS
Temperature coefficient in $\pm$ %FS/K	0.05 %FS/K

1) Is only observed in IO-Link® operation with activated filter time constant 2 or 4.

Switching output

Switching output	PNP/NPN, switchable
Switching function	Freely programmable
Switching element function	N/C contact, N/O contact, Switchable
Switch-on time	1 ms
Switch-off time	1 ms
Max. output current	100 mA
Short circuit current rating	Yes

Datasheet

Measured value display

Display range start value	0 %FS
Display range end value	99 %FS

Output, additional data

Short circuit current rating	Yes
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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 channel (BDC), Process data variable (PDV), Identification, Diagnostics, Teach channel
IO-Link, communication mode	COM2 (38.4 kBaud)
IO-Link, SIO-Mode support	Yes
IO-Link, Port class	A
IO-Link, Process data length OUT	0 bytes
IO-Link, Process data length IN	2 bytes
IO-Link, Process data content IN	14 bit PDV (pressure measurement value), 2 bit BDC (pressure monitoring)
IO-Link, Min. cycle time	3 ms
IO-Link, Data storage required	0.5 KB

Electronics

Operational voltage range DC	18 ... 30 V
Reverse polarity protection	For all electrical connections

Electromechanical systems

Electrical connection	3-core, Cable, Open end
Cable length	2.5 m

Mechanics

Pneumatic connection	Cartridge 10 mm	Flange	QS-3	QS-4	Push-in sleeve QS-4	Push-in sleeve QS-6
Type of mounting	Pin-type connection	Via through-hole and screw	With accessories		Plug-in	
Mounting position	Any					
Product weight	40 g					
Material housing	Reinforced PA					
Material sealing ring	Fluoro rubber, NBR	Fluoro rubber	Fluoro rubber, NBR		Fluoro rubber	

Display, operation

Display type	LED indicator, 2 digits
Displayable units	%FS
Switching status indication	Yellow LED
Setting options	IO-Link®, Teach-in, Via display and buttons
Protection against tampering	PIN code
Setting range threshold value	1 ... 98%

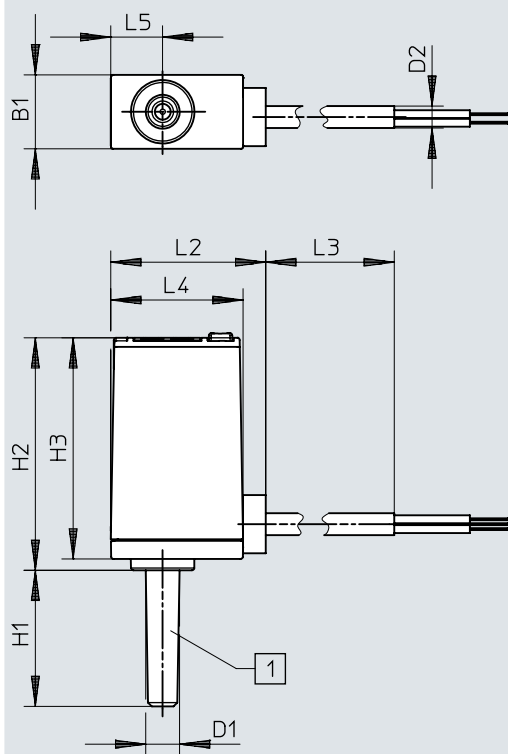
Datasheet

Immission, emission						
Pneumatic connection	Cartridge 10 mm	Flange	QS-3	QS-4	Push-in sleeve QS-4	Push-in sleeve QS-6
Degree of protection	IP40					
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress					
LABS (PWIS) conformity	VDMA24364-B2-L					
Suitability for the production of Li-ion batteries	Suitable for battery pro- duction with reduced Cu/Zn/Ni values (F1a)	–			Suitable for battery production with reduced Cu/ Zn/Ni values (F1a)	
Cleanroom suitability, meas- ured according to ISO 14644- 14	Class 4 according to ISO 14644-1					

1) Corrosion resistance class CRC 2 to Festo standard FN 940070. Moderate corrosion stress. Indoor application where condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with a normal industrial environment.

Dimensions

Dimensions – SPAE...S.....

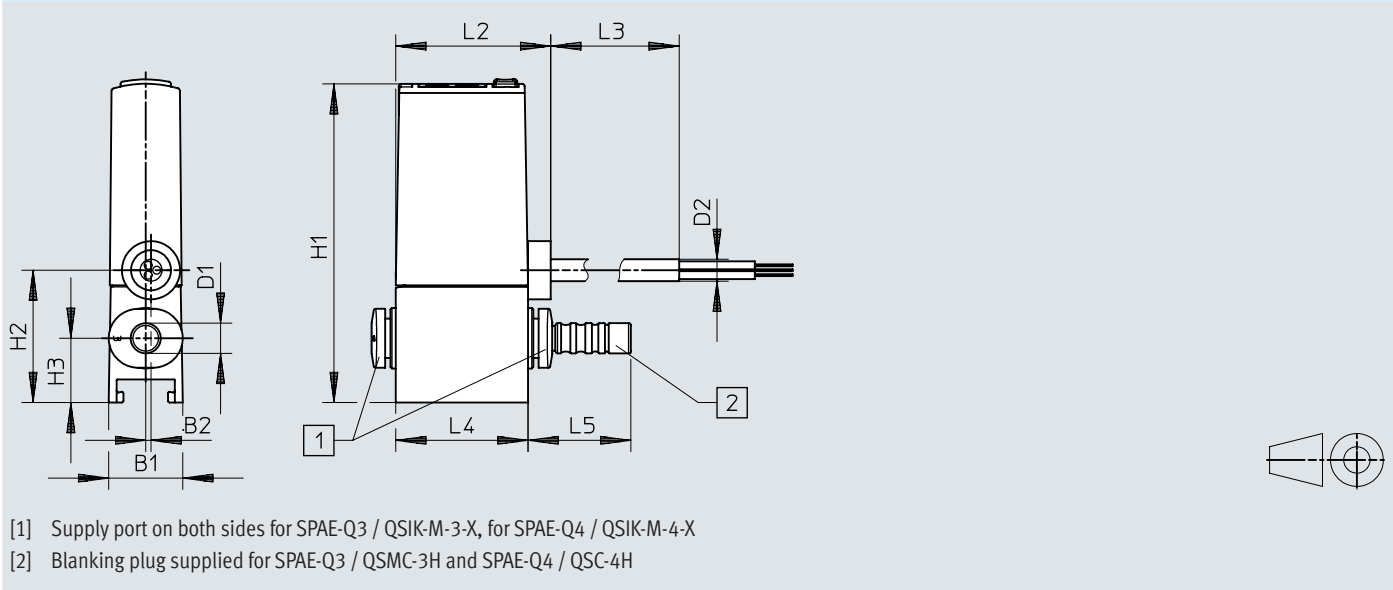
Download CAD data www.festo.com

[1] Supply port, push-in sleeve for SPAE-S4, for SPAE-S6

	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

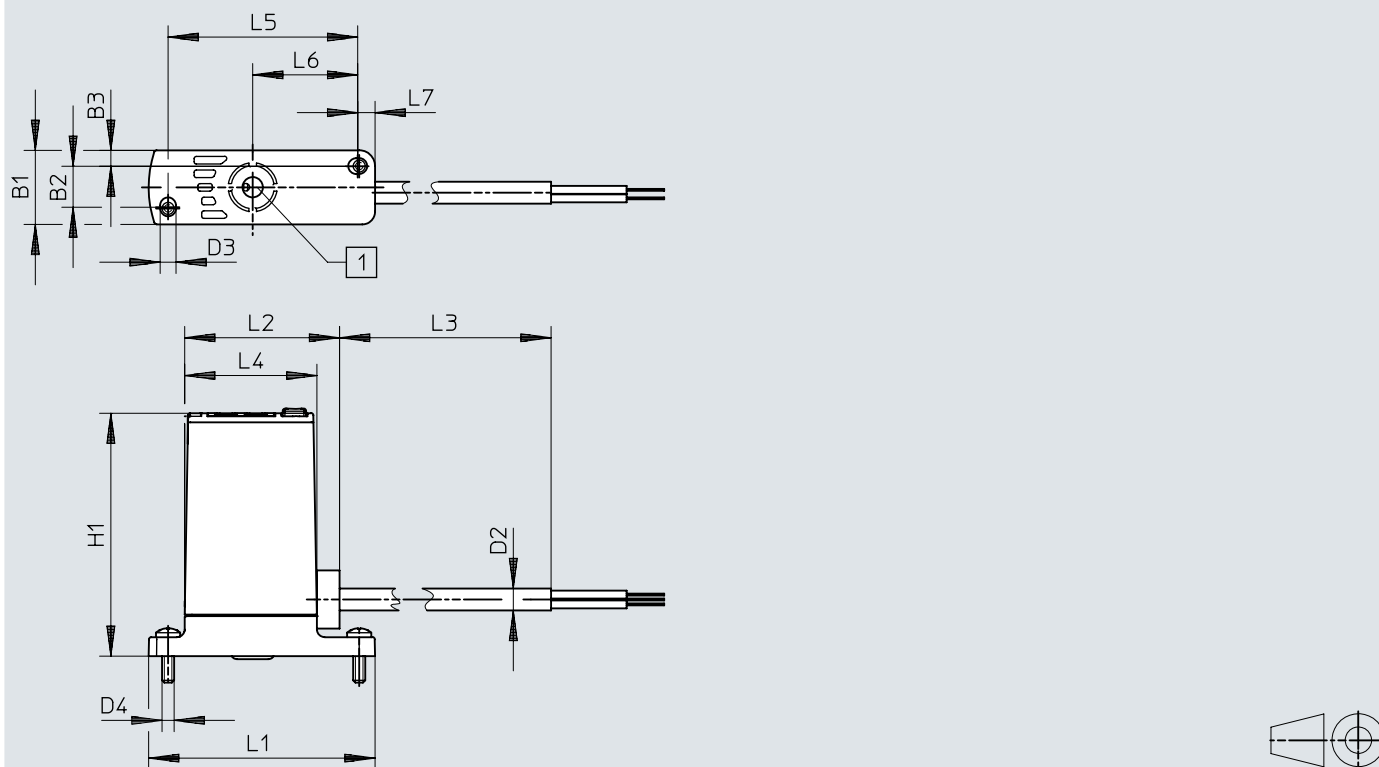
Dimensions – SPAE...Q..... [Download CAD data](#) www.festo.com



	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

Dimensions

Dimensions – SPAE...F...

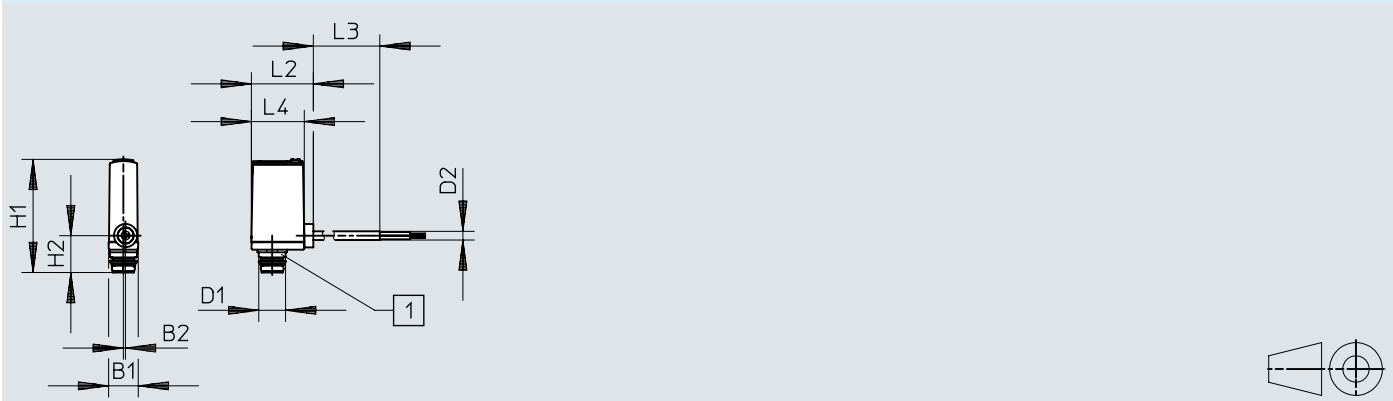
[Download CAD data](http://www.festo.com)


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

	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...														

Dimensions

Dimensions – SPAE...PC10... Download CAD data www.festo.com

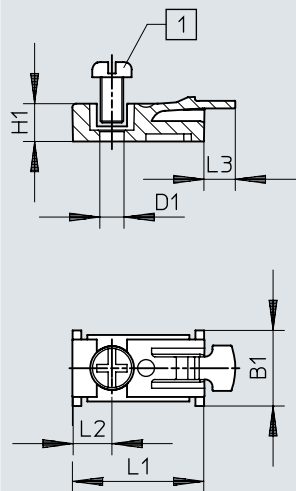


[1] Supply port: pin-type cartridge 10 mm with SPAE-PC-10

	B1	B2	D1 ø	D2 ø	H1	H2	L2	L3	L4
SPAE-...-PC10	9,8	0,7	8,9	2,9	~37,5	12,2	20,5	2500	17,5

Dimensions

Dimensions – Mounting clip SAMH-PE-MC-1

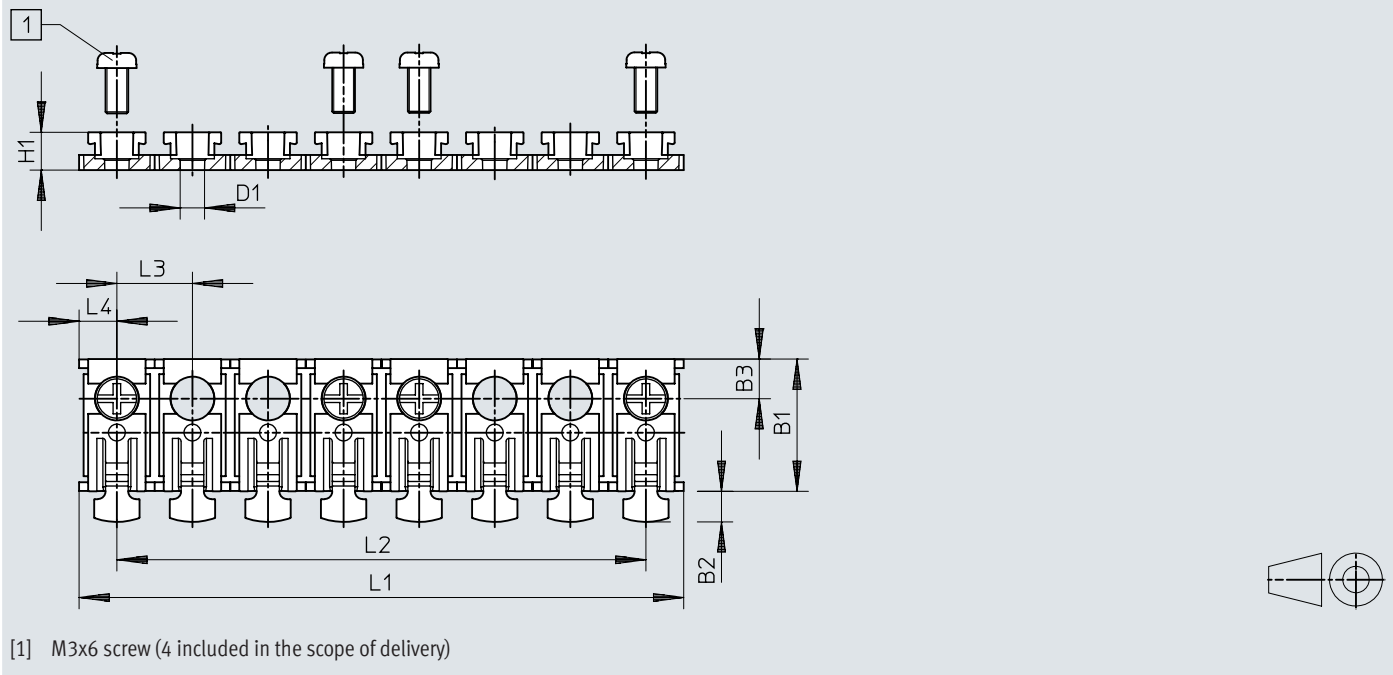
[Download CAD data](#) www.festo.com


[1] M3x6 screw (included in the scope of delivery)

	B1	D1 Ø	H1	L1	L2	L3
SAMH-PE-MC-1	10	3,2	5	17,5	5,3	4

Dimensions

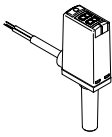
Dimensions – Mounting clip SAMH-PE-MC-8 Download CAD data www.festo.com



	B1	B2	B3	D1 Ø	H1	L1	L2	L3	L4
SAMH-PE-MC-8	17,5	4	5,3	3,2	5	80	70	10	5

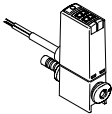
Ordering data

Ordering data – Plug-in sleeve

	Start value for pressure measuring range ¹⁾	End value for pressure measuring range	Pneumatic connection	Part no.	Type
	0 bar	-1 bar	Push-in sleeve QS-4	8001440	SPAE-V1R-S4-PNLK-2.5K
			Push-in sleeve QS-6	8001441	SPAE-V1R-S6-PNLK-2.5K
		10 bar	Push-in sleeve QS-4	8001445	SPAE-P10R-S4-PNLK-2.5K
			Push-in sleeve QS-6	8001446	SPAE-P10R-S6-PNLK-2.5K

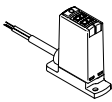
1) Other pressure ranges on request (batch size 40 pieces)

Ordering data – Push-in connector

	Start value for pressure measuring range ¹⁾	End value for pressure measuring range	Pneumatic connection	Part no.	Type
	0 bar	-1 bar	QS-3	8001442	SPAE-V1R-Q3-PNLK-2.5K
			QS-4	8001443	SPAE-V1R-Q4-PNLK-2.5K
		10 bar	QS-3	8001447	SPAE-P10R-Q3-PNLK-2.5K
			QS-4	8001448	SPAE-P10R-Q4-PNLK-2.5K

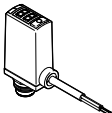
1) Other pressure ranges on request (batch size 40 pieces)

Ordering data – Flange

	Start value for pressure measuring range ¹⁾	End value for pressure measuring range	Pneumatic connection	Part no.	Type
	0 bar	-1 bar	Flange	8001444	SPAE-V1R-F-PNLK-2.5K
		10 bar		8001449	SPAE-P10R-F-PNLK-2.5K

1) Other pressure ranges on request (batch size 40 pieces)

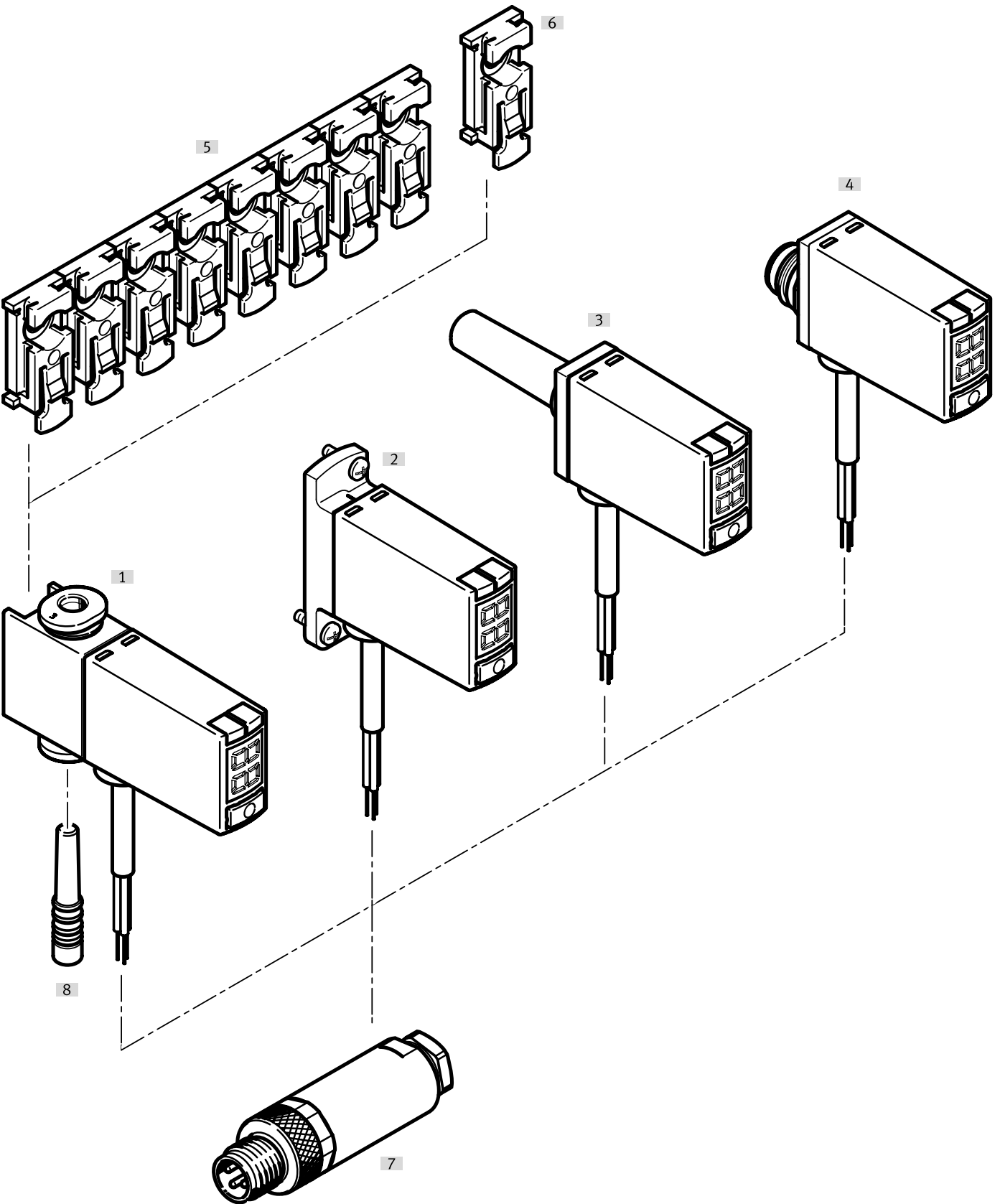
Ordering data – Cartridge

	Start value for pressure measuring range ¹⁾	End value for pressure measuring range	Pneumatic connection	Part no.	Type
	-1 bar	1 bar	Cartridge 10 mm	8025979	SPAE-B2R-PC10-PNLK-2.5K
	0 bar	-1 bar		8025978	SPAE-V1R-PC10-PNLK-2.5K

1) Other pressure ranges on request (batch size 40 pieces)

Peripherals

Peripherals overview

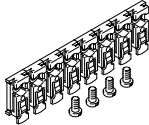


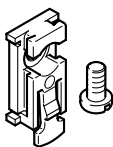
Accessories		→ Link
Type/order code	Description	
[1] Pressure sensor SPAE-...-Q...	With push-in connector 3 mm, or 4 mm	spae

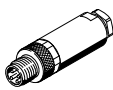
Peripherals

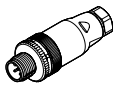
Accessories		→ Link
Type/order code	Description	
[2] Pressure sensor SPAE-...-F...	With flange plate, sub-base	spae
[3] Pressure sensor SPAE-...-S...	With push-in sleeve 4 mm or 6 mm	spae
[4] Pressure sensor SPAE-...-PC10...	With cartridge 10 mm	spae
[5] Mounting clip SAMH-PE-MC-8	can be shortened to the required number of slots	16
[6] Mounting clip SAMH-PE-MC-1	–	16
[7] Plug	–	16
[8] Blanking plug	(included in the scope of delivery of SPAE-...-Q...)	qs

Accessories

Mounting clip SAMH-PE-MC-8				
	Material mounting	Note on materials	Part no.	Type
	POM	RoHS compliant	571490	SAMH-PE-MC-8

Mounting clip SAMH-PE-MC-1				
	Material mounting	Note on materials	Part no.	Type
	POM	RoHS compliant	571489	SAMH-PE-MC-1

Plug M8x1, 3-pin, straight				
	Electrical connection	Material housing	Part no.	Type
	3-pin, M8x1, Straight plug/insulation displacement connector	PA, Die-cast zinc, nickel-plated	564945	NECU-S-M8G3-HX-Q3

Plug, 4-pin, straight						
	Electrical connection 1, connector system	Electrical connection 1, number of connections/cores	Electrical connection 1, type of mounting	Material housing	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	4	Screw-type lock with 18 mm hexagon and longitudinal knurl, Rotatable	PA66-GF30	8162294	NECB-S-M12G4-C2