Pressure sensors SPAB, with display

FESTO

Pressure sensors SPAB

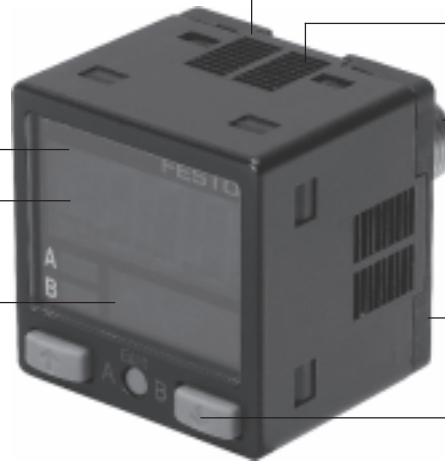Key features, product range overview

At a glance

Variants:
– Plug M8x1 with electric adapter SASC
– Plug, square design L1
– Cable version with connecting cable NEBU
– Threaded mounting
– Angle mounting
– Front panel mounting

Multi-coloured, two-part display

Alphanumeric pressure display

Displayable units:
– bar
– inchH$_2$O
– inchHg
– kPa
– psi
– mmHg
– kgf/cm^2
– MPa

Compact design
30 x 30 mm

Country-specific pressure
supply ports:
– G$\frac{1}{8}$
– R$\frac{1}{8}$
– NPT$\frac{1}{8}$-27
– M5 female thread

Wall or front panel mounting,
angle mounting

High ease of use thanks to
intuitive operator prompting

Product description	Main applications	Key features	
The pressure sensor SPAB can be used in all industries thanks to its wide range of connection and configuration options and its compact size. Switching point settings are emphasised via switching status indication and switching of the display value colour. Once programmed, the settings can be transferred to other pressure sensors SPAB.	• Pressure/vacuum sensing • Light assembly • Wherever there is a need for space-saving pressure measurement with visualisation and limited robustness • Easy identification of the system status by means of clear, colour-based switching status detection	• Pressure measuring range –1 ... +1 or 0 ... 10 bar • Relative pressure measurement • Pressure supply port G$\frac{1}{8}$, R$\frac{1}{8}$, NPT$\frac{1}{8}$-27 or M5 female thread • Electrical connection cable, plug M8x1 or plug, square design • Switching output PNP, NPN and analogue output 1 ... 5 V • Two-part, multi-coloured display	• Copy function (settings can be transferred from one device to another) • Simple commissioning thanks to intuitive operation • Compact design 30x30 mm

Pressure sensors SPAB
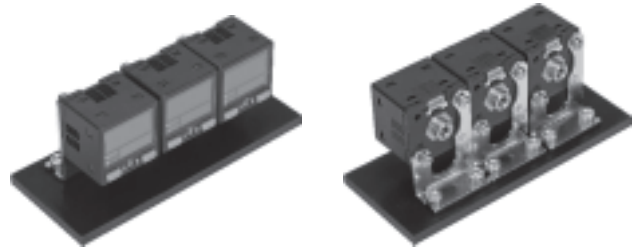
Key features, product range overview

Mounting options	
Wall mounting	Manifold sub-bases via mounting bracket

Threaded mounting with adapter M8

| **Product range overview**							
Measurement method	Measured variable	Pressure measuring range [bar]	Switching function	Pneumatic connection		Electrical output	
				Male thread	Female thread	Digital	Analogue
Piezoresistive pressure sensor with display	1x relative pressure	−1 … +1 or 0 … 10	Freely programmable	G⅛, R⅛ or NPT⅛-27	M5	1x PNP	1 … 5 V
						2x PNP	–
						1x NPN	1 … 5 V
						2x NPN	–

Pressure sensors SPAB, with display

Peripherals overview
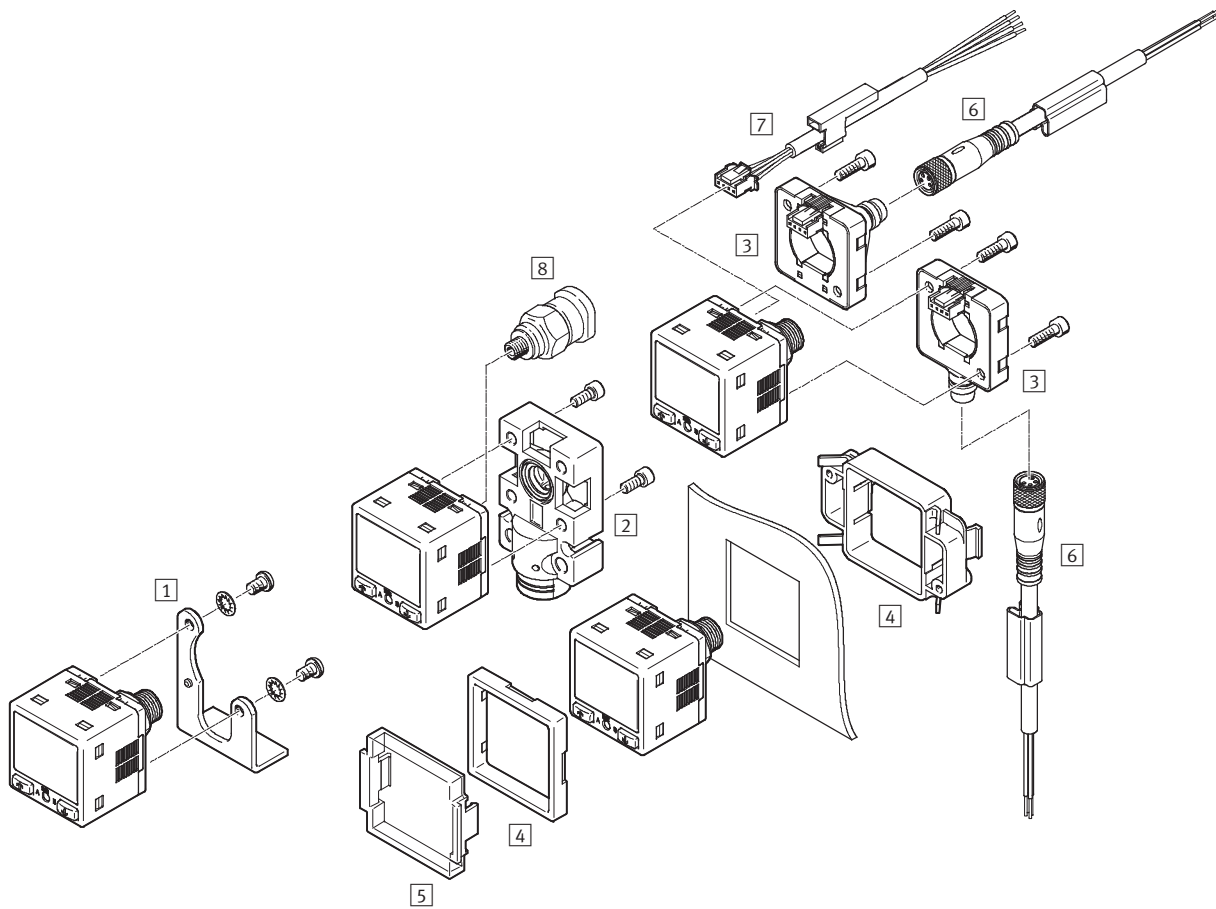
Accessories		➔ Page/ Internet
1	Mounting bracket SAMH-…-A	10
2	Adapter plate SASF for pressure sensor SPAB-…-F	12
3	Electric adapter SASC-…-A	11
4	Front panel installation kit SAMH-…-F	10

Accessories		➔ Page/ Internet
5	Protective cover SACC	10
6	Connecting cable NEBU-M8	13
7	Connecting cable NEBS-L1G4	13
8	Push-in fitting QSM-M5	13

Pressure sensors SPAB, with display

Type codes

	SPAB	–	P10	R	–	G18	–	PB	–	L1

Type	
SPAB	Piezoresistive pressure sensor with multi-coloured display

Pressure measuring range [bar]	
B2	−1 … +1
P10	0 … 10

Pressure input	
R	Relative pressure

Pneumatic connection	
G18	Male thread G⅛ and female thread M5
R18	Male thread R⅛ and female thread M5
N18	Male thread NPT⅛-27 and female thread M5
F	Female thread M5

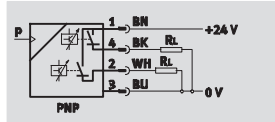| Electrical output	
2P	2 switching outputs PNP
2N	2 switching outputs NPN
PB	1 switching output PNP, 1 analogue output 1 … 5 V
NB	1 switching output NPN, 1 analogue output 1 … 5 V

Electrical connection	
L1	Plug, L1 design

Pressure sensors SPAB, with display

Technical data

Function
E.g. switching output 2x PNP

Voltage

12 ... 24 V DC

Pressure

−1 ... +10 bar

Temperature range

−10 ... +50 °C

E.g. switching output NPN, analogue
output

General technical data		
SPAB	-B2	-P10
General information		
Certification	c UL us - Recognized (OL)	
	C-Tick	
CE mark (see declaration of conformity)	To EU EMC Directive[1]	
Note on materials	Contains PWIS (paint wetting impairment substances)	
	RoHS-compliant	
Input signal/measuring element		
Measured variable	Relative pressure	
Measurement method	Piezoresistive pressure sensor with display	
Pressure measuring range [bar]	−1 ... +1	0 ... 10
Overload capacity [bar]	5	15
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Operation with lubricated medium not possible	
Ambient temperature [°C]	−10 ... +50	

1)   For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com ➜ Support ➜ 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.

Electrical data								
SPAB	-B2				-P10			
Electrical output	2P	2N	PB	NB	2P	2N	PB	NB
Switching output[1]								
Switching output	2x PNP	2x NPN	PNP	NPN	2x PNP	2x NPN	PNP	NPN
Switching function	Freely programmable							
Switching element function	Switchable							
Accuracy of FS display [%]	1				2			
Reproducibility of switching value [%]	0.1				0.2			
Max. output current [mA]	100							
Analogue output[1]								
Analogue output [V]	–		1 ... 5		–		1 ... 5	
Accuracy of analogue output zero point ±FS [%]	–		5		–		5	
Accuracy of analogue output margin ±FS [%]	–		5		–		5	
Reproducibility of analogue value [%]	–		0.2		–		0.2	
Output, additional data								
Protection against short circuit	Yes							

1)   % FS = % of the measuring range final value (full scale)

➜ Internet: www.festo.com/catalog/...   Subject to change – 2013/05

Pressure sensors SPAB, with display

Technical data

Electrical data

SPAB	-B2				-P10			
Electrical output	2P	2N	PB	NB	2P	2N	PB	NB
Electronic components								
Operating voltage range DC [V]	12 … 24							
Reverse polarity protection	For operating voltage							
Electromechanical components								
Electrical connection	Plug M8x1, 4-pin, round design to EN 60 947-5-2							
	Plug, 4-pin, square design							
	Cable, 4-wire, 2.5 m							

Pin allocation to EN 60947-5-2

Plug, 4-pin

M8x1	Pin	Wire colour	Allocation
	1	Brown	Operating voltage +24 V DC
	3	Blue	0 V
	4	Black	Switching output (Out A)
	2	White	Switching output (Out B)/analogue output

Mechanical components

SPAB	-G18	-R18	-N18	-F
Type of mounting	Screw-in			On adapter plate
	Via accessories			–
Pneumatic connection	Female thread M5			
	Male thread G⅛	Male thread R⅛	Male thread NPT⅛-27	–
Product weight [g]	45			30
Housing materials	ABS, reinforced			
	PBT, reinforced			

Display/operation

SPAB	-B2	-P10
Display type	Illuminated LCD, multi-coloured	
Displayable units	bar	bar
	inchH$_2$O	–
	inchHg	–
	kPa	kPa
	psi	psi
	mmHg	–
	kgf/cm^2	kgf/cm^2
	–	MPa
Switching status display	Yellow LCD	
Setting options	Teach-in	
	Via display and keys	
Tamper protection	PIN code	
Threshold value setting range [%]	0 … 100	
Hysteresis setting range [%]	0 … 90	

Immissions/emissions

Protection class	IP40
Corrosion resistance class CRC[1]	2

1) Corrosion resistance class 2 according to Festo standard 940 070
   Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
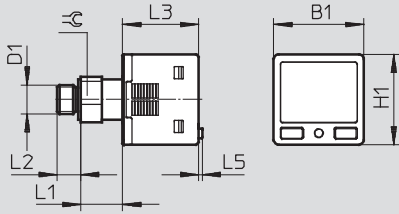
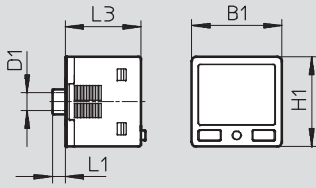# Pressure sensors SPAB, with display

Technical data

Dimensions	Download CAD Data ➜ **www.festo.com/us/cad**

SPAB-...-L1

SPAB-...-F-...-L1

Type	B1	D1	D2	H1	H2	H3	L1	L2	L3	L4	L5	⌒
SPAB-...-G18-...-L1	30	G⅛	–	30	–	–	15	7	~25	–	1	14
SPAB-...-R18-...-L1	30	R⅛	–	30	–	–	14	9.5	~25	–	1	12
SPAB-...-N18-...-L1	30	NPT⅛	–	30	–	–	14	9.5	~25	–	1	12
SPAB-...-F-...-L1	30	M5	–	30	–	–	4.4	–	~25	–	–	–

Pressure sensors SPAB, with display

Technical data

Ordering data				
Pressure measuring range	Electrical output		Electrical connection	
			Plug, square design L1	
[bar]	Digital	Analogue	Part No.	Type
Male thread G⅛				
−1 … +1	1x PNP	1 … 5 V	8000051	SPAB-B2R-G18-PB-L1
	2x PNP	–	8000045	SPAB-B2R-G18-2P-L1
	1x NPN	1 … 5 V	8000054	SPAB-B2R-G18-NB-L1
	2x NPN	–	8000048	SPAB-B2R-G18-2N-L1
0 … 10	1x PNP	1 … 5 V	8000063	SPAB-P10R-G18-PB-L1
	2x PNP	–	8000057	SPAB-P10R-G18-2P-L1
	1x NPN	1 … 5 V	8000066	SPAB-P10R-G18-NB-L1
	2x NPN	–	8000060	SPAB-P10R-G18-2N-L1
Male thread R⅛				
−1 … +1	1x PNP	1 … 5 V	8000052	SPAB-B2R-R18-PB-L1
	2x PNP	–	8000046	SPAB-B2R-R18-2P-L1
	1x NPN	1 … 5 V	8000055	SPAB-B2R-R18-NB-L1
	2x NPN	–	8000049	SPAB-B2R-R18-2N-L1
0 … 10	1x PNP	1 … 5 V	8000064	SPAB-P10R-R18-PB-L1
	2x PNP	–	8000058	SPAB-P10R-R18-2P-L1
	1x NPN	1 … 5 V	8000067	SPAB-P10R-R18-NB-L1
	2x NPN	–	8000061	SPAB-P10R-R18-2N-L1
Male thread NPT⅛-27				
−1 … +1	1x PNP	1 … 5 V	8000053	SPAB-B2R-N18-PB-L1
	2x PNP	–	8000047	SPAB-B2R-N18-2P-L1
	1x NPN	1 … 5 V	8000056	SPAB-B2R-N18-NB-L1
	2x NPN	–	8000050	SPAB-B2R-N18-2N-L1
0 … 10	1x PNP	1 … 5 V	8000065	SPAB-P10R-N18-PB-L1
	2x PNP	–	8000059	SPAB-P10R-N18-2P-L1
	1x NPN	1 … 5 V	8000068	SPAB-P10R-N18-NB-L1
	2x NPN	–	8000062	SPAB-P10R-N18-2N-L1
Female thread M5				
−1 … +1	1x PNP	1 … 5 V	8000071	SPAB-B2R-F-PB-L1
	2x PNP	–	8000069	SPAB-B2R-F-2P-L1
	1x NPN	1 … 5 V	8000072	SPAB-B2R-F-NB-L1
	2x NPN	–	8000070	SPAB-B2R-F-2N-L1
0 … 10	1x PNP	1 … 5 V	8000075	SPAB-P10R-F-PB-L1
	2x PNP	–	8000073	SPAB-P10R-F-2P-L1
	1x NPN	1 … 5 V	8000076	SPAB-P10R-F-NB-L1
	2x NPN	–	8000074	SPAB-P10R-F-2N-L1

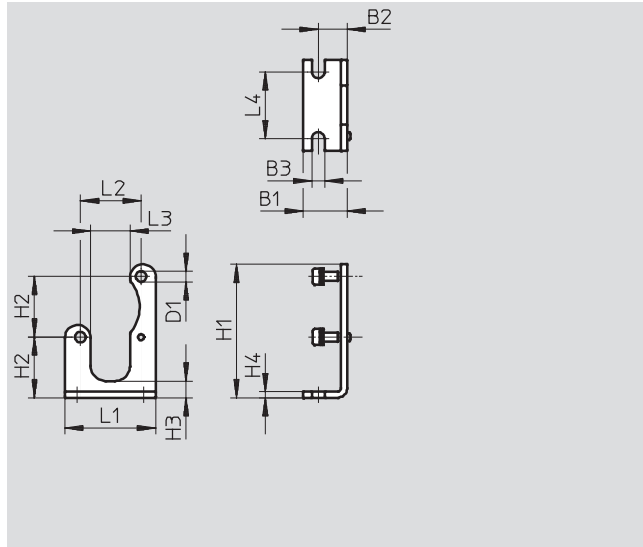**Mounting bracket SAMH**

Material:
Galvanised chromated steel

Note on materials:
RoHS-compliant

Dimensions and ordering data													
B1	B2	B3	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	Part No.	Type
14.5	9.5	4.2	3.5	~44	20	5.5	2	30	20	13	22	**552376**	SAMH-P4-A

Front panel installation kit SAMH

Materials:
PC, POM

Note on materials:
RoHS-compliant

1 Front panel thickness 1 … 6 mm
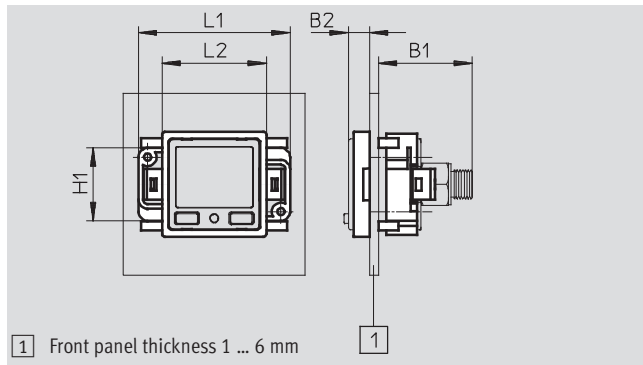
Ordering data						
B1	B2	H1	L1	L2	Part No.	Type
~31	7	24	50	34.5	**552377**	SAMH-P4-F

Protective cover SACC

Material:
PC

Note on materials:
RoHS-compliant
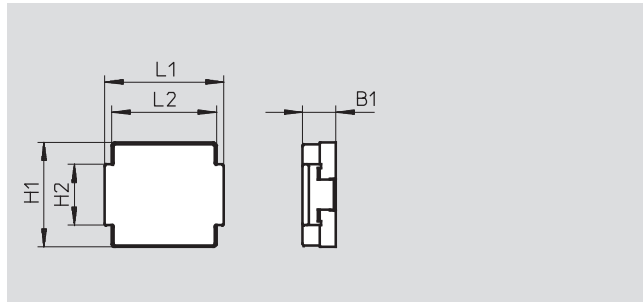
Dimensions and ordering data						
B1	H1	H2	L1	L2	Part No.	Type
~28	34.5	20	39.3	34.5	**552378**	SACC-P4-G

Pressure sensors SPAB, with display

Accessories

Electric adapter SASC

Material:
Housing: PA-reinforced
Plug housing: Nickel plated brass

Note on materials:
RoHS-compliant

1 2x screw M3
Tightening torque Ma = 0.5 ± 20%
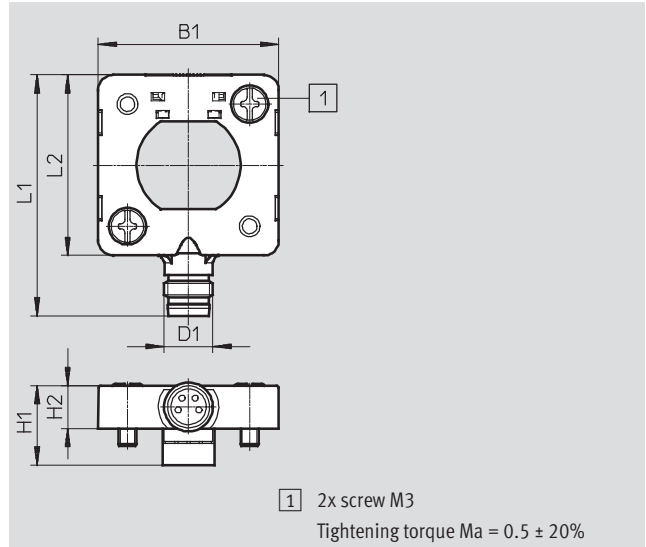
Dimensions and ordering data								
B1	D1 ∅	H1	H2	L1	L2	CRC[1]	Part No.	Type
29.6	M8x1	13	7	39.5	29.6	2	**8000326**	**SASC-P4-A-M8-A** ⌾

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Electric adapter SASC

Material:
Housing: PA-reinforced
Plug housing: Nickel plated brass

Note on materials:
RoHS-compliant

1 2x screw M3
Tightening torque Ma = 0.5 ± 20%
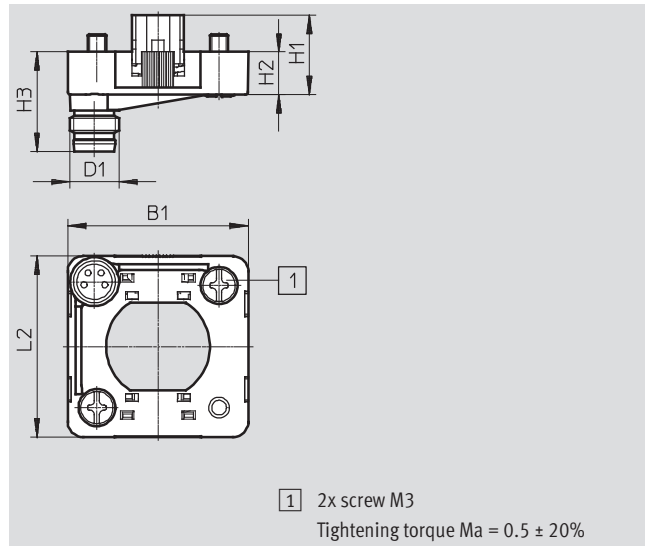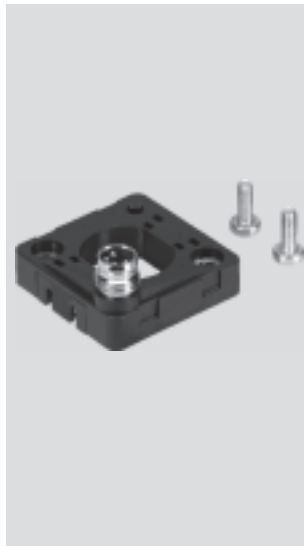
Dimensions and ordering data								
B1	D1 ∅	H1	H2	H3	L2	CRC[1]	Part No.	Type
29.6	M8x1	13	7	16.3	29.6	2	**8000327**	**SASC-P4-A-M8-S** ⌾

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Adapter plate SASF

for pressure sensor SPAB-…-F
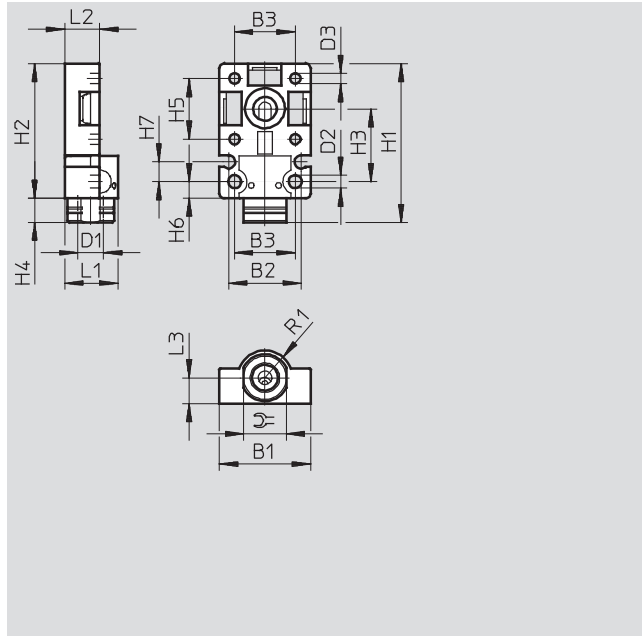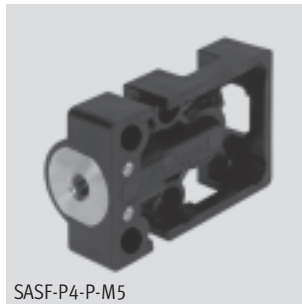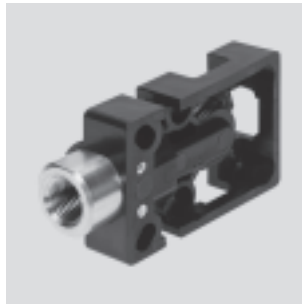
Materials:
PBT-reinforced
High-alloy stainless steel
HNBR

Note on materials:
Contains PWIS (paint wetting
impairment substances)
RoHS-compliant

SASF-P4-P-M5

Note

To differentiate the adapter plates
R⅛, G⅛ and NPT⅛, they are
identified as follows at the
pneumatic connection:

– R⅛ No line
– NPT⅛ One line
– G⅛ Two lines

Dimensions and ordering data

| B1	B2	B3	D1	D2 $\varnothing$	D3 $\varnothing$	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3	R1	⌒	Part No.	Type
30	24	20	R⅛	4.3	3.4	52.5	44.5	24	8	20	5.5	6.5	17.5	11.5	8.5	9	14	570801	SASF-P4-P-R18
			G⅛															570802	SASF-P4-P-G18
			NPT⅛															570803	SASF-P4-P-N18
30	24	20	M5	4.3	3.4	–	44.5	24	–	20	5.5	6.5	17.5	11.5	8.5	9	–	570804	SASF-P4-P-M5

1) Corrosion resistance class 2 according to Festo standard 940 070
   Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data – Connecting cables

	Designation	Number of wires	Cable length [m]	Part No.	Type
				Technical data ➔ Internet: nebu	
M8x1					
	Straight socket	4	2.5	**541342**	**NEBU-M8G4-K-2.5-LE4**
			5	**541343**	**NEBU-M8G4-K-5-LE4**
	Angled socket	4	2.5	**541344**	**NEBU-M8W4-K-2.5-LE4**
			5	**541345**	**NEBU-M8W4-K-5-LE4**
Circuit board plug connector					
	Socket, rectangular design L1	4	2.5	**572576**	**NEBS-L1G4-K-2.5-LE4**
			5	**572577**	**NEBS-L1G4-K-5-LE4**

Ordering data – Push-in fittings

	Pneumatic connection	For tubing O.D. [mm]	Part No.	Type
			Technical data ➔ Internet: quick star	
	M5	4	**153304**	**QSM-M5-4**
		6	**153306**	**QSM-M5-6**

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.

Custom Automation Components
Complete custom engineered solutions

Custom Control Cabinets
Comprehensive engineering support and on-site services

Complete Systems
Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.

Electromechanical
Electromechanical actuators, motors, controllers & drives

Pneumatics
Pneumatic linear and rotary actuators, valves, and air supply

PLCs and I/O Devices
PLC's, operator interfaces, sensors and I/O devices

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Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.

Printed on recycled paper at New Horizon Graphic, Inc., FSC certified as an environmentally friendly printing plant.

Festo North America

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