

Pressure sensors SPAW with display

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Pressure sensors SPAW with display



Key features

At a glance



Product description

The SPAW is an extremely robust pressure sensor with display used for measuring media pressures in 9 measuring ranges from -1 ... 1 bar to 0 ... 100 bar. It can measure all media which do not corrode the stainless steel measuring cell and stainless steel housing. The switching outputs can be set quickly and easily using three buttons. The high-quality 14-segment LED display can be ro-

tated by 320° and the orientation of the lettering can be rotated by 180°. This ensures that the display is easily readable in every installation position. Different standard designs are available, e.g.:

- Internal thread G1/4 or external thread G1/2
- 2 x PNP or 2 x NPN
- 4 ... 20 mA or 0 ... 10 V

Main applications

The pressure sensor SPAW is suitable for standard pressure measurements at an increased mechanical load. It can be used in high pressure pneumatic systems and to monitor the pressure of liquid media (e.g. coolant/cooling circuits, etc.)

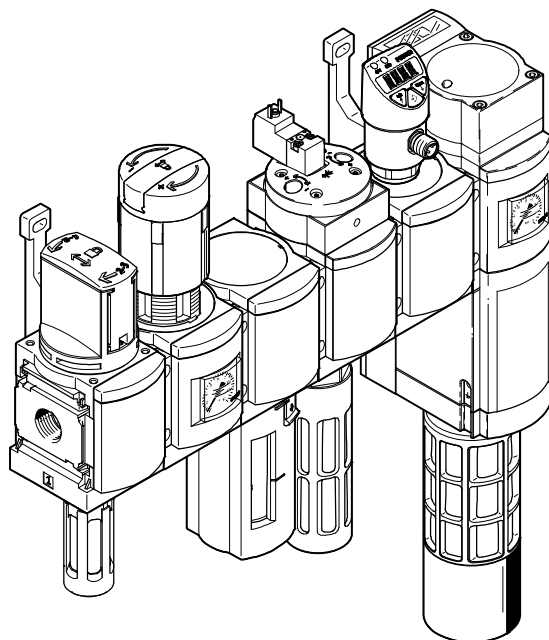
Pressure sensors SPAW with display

Key features

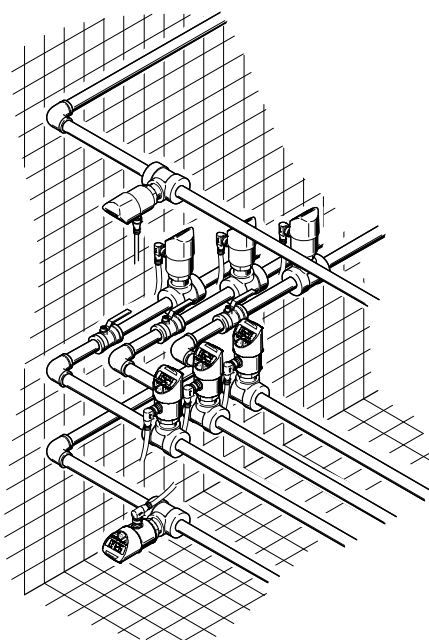
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Application examples

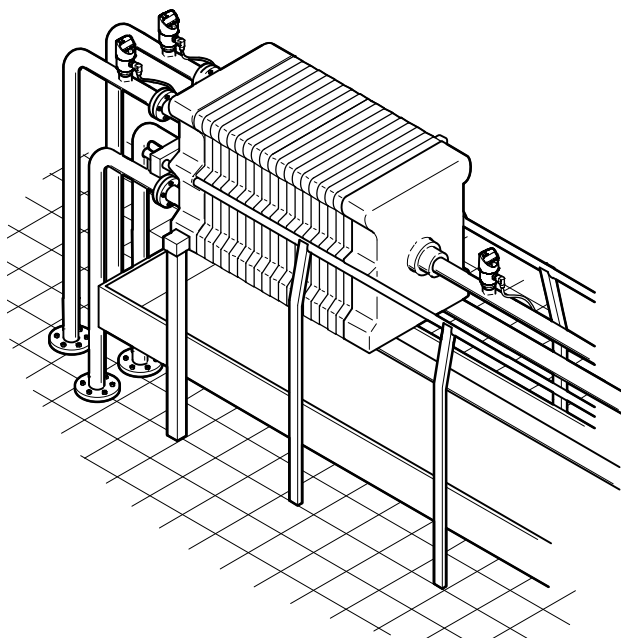
Pressure measurement in air preparation units



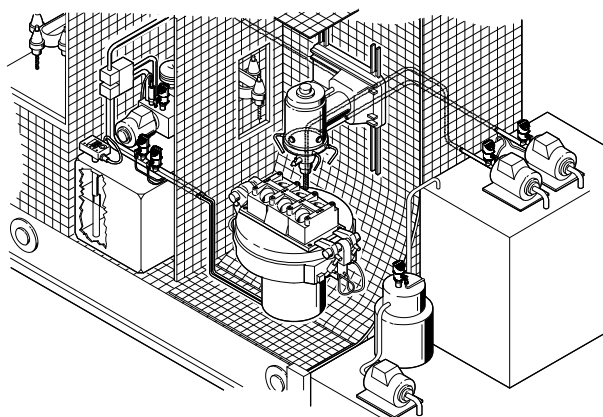
Pressure measurement in piping systems



Pressure measurement in filter systems

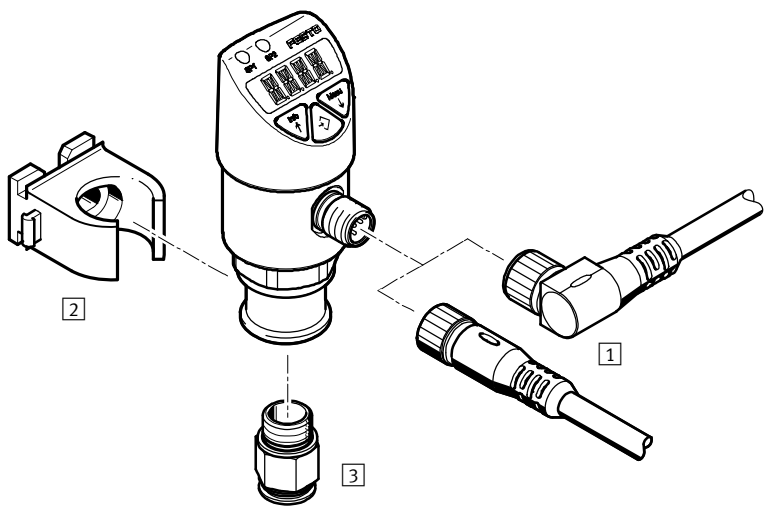


Pressure measurement for cutting oil supply and hydraulic applications



Pressure sensors SPAW with display

Peripherals overview



Mounting components and accessories		
	Brief description	→ Page/Internet
1 NEBU-M12	Connecting cable	12
2 PQ-RK-22-B	Pipe clamp, only for G1/4 with internal thread	12
3 QS-1/4	Push-in fitting, only for G1/4 with internal thread	12

Pressure sensors SPAW with display

Type codes

		SPAW	-	B2	R	-	G12	M	-	2P	-	M12
Type												
SPAW	Pressure sensor											
Pressure measuring range [bar]												
B2	-1 ... +1											
B11	-1 ... +10											
P2	0 ... 2											
P6	0 ... 6											
P10	0 ... 10											
P16	0 ... 16											
P25	0 ... 25											
P50	0 ... 50											
P100	0 ... 100											
Supply port												
R	Relative pressure											
Pneumatic connection												
G12	G1/2											
G14	G1/4											
Thread type												
F	Internal thread											
M	External thread											
Electrical output												
2P	2xPNP											
2 N	2xNPN											
2PA	2xPNP, 1 analogue output 4 ... 20 mA											
2PV	2xPNP, 1 analogue output 0 ... 10 V											
2NA	2xNPN, analogue output 4 ... 20 mA											
2NV	2xNPN, analogue output 0 ... 10 V											
Electrical connection												
M12	Plug M12, A-coded											

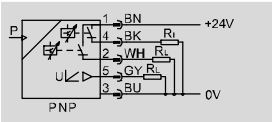
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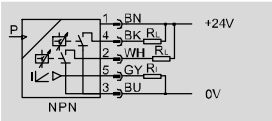
Technical data

Function

e.g. switching output 2PV



e.g. switching output 2NA



- Pressure measuring range up to 100 bar
- For liquid media
- For gaseous media



General technical data	
General	
Certification	RCM trademark cULus listed (OL)
CE marking (see declaration of conformity) ¹⁾	To EU EMC Directive
Note on materials	Contains PWIS (paint-wetting impairment substances), RoHS-compliant

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: 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/measuring element									
SPAW-	B2R	P2R	P6R	P10R	B11R	P16R	P25R	P50R	P100R
Input signal/measuring element									
Measured variable	Relative pressure								
Method of measurement	Piezoresistive pressure sensor				Metal thin film pressure sensor				
Pressure measuring range starting value [bar]	-1	0	0	0	-1	0	0	0	0
Pressure measuring range final value [bar]	1	2	6	10	10	16	25	50	100
Overload pressure [bar]	2	4	12	20	20	32	50	100	200
Operating medium	Compressed air to ISO 8573-1:2010 [:-:-]								
	Liquid media ²⁾								
	Gaseous media ²⁾								
Temperature of medium [°C]	-20 ... 85								
Ambient temperature [°C]	0 ... 80								

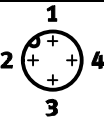
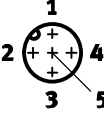
2) Please observe the resistance to media of parts that come into contact with the media

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Technical data

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Electrical data		
Output, general		
Accuracy	[±%FS]	1
Repetition accuracy	[±%FS]	0.15
Switching output		
Switching function		Freely programmable
Switching element function		Switchable
Max. output current	[mA]	250
Analogue output		
Rise time	[ms]	3
Output, additional data		
Protection against short circuit		Yes
Electronics		
Operating voltage range DC	[V]	15 ... 35
Protection against incorrect polarity		For operating voltage
Electromechanical components		
Electrical connection		4-pin Plug M12x1, 5 pin Plug M12x1
		To EN 60947-5-2
		Round design

Pin allocation to EN 60947-5-2		
Plug, 4-pin, only for sensors without analogue output		
M12x1	Pin	Allocation
	1	Operating voltage U_B
	3	0V
	4	Switching output SP1
	2	Switching output SP2
Plug, 5-pin, only for sensors with analogue output		
M12x1	Pin	Allocation
	1	Operating voltage U_B
	3	0V
	5	Analogue output A_{out}
	4	Switching output SP1
	2	Switching output SP2

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Technical data

Mechanical components	G14F	G12M
Mounting position	Any	
Type of mounting	With internal thread, with accessories	With external thread
Pneumatic connection	Internal thread G1/4 (EN 837)	External thread G1/2 (DIN 3852-E)
Product weight [g]	230	
Housing material information	ABS, high-alloy stainless steel	
Materials in contact with the medium ¹⁾	High-alloy stainless steel	
Seals	–	NBR

Display/operation	
Display type	LED display, 4-character alphanumeric
Displayable units	Bar
	Kg/cm ²
	kPa
	MPa
	Psi
Switching status display	Red LED
Setting options	Via display and keys
Protection against tampering	PIN code
Threshold value setting range [%]	0.5 ... 100
Hysteresis setting range [%]	0.5 ... 99.5

Immissions/emissions	
Protection class	IP65, IP67
Corrosion resistance class CRC ²⁾	4

1) CrNiMo group: Up to 6 bar 316 L, from a measuring range of 10 bar the membrane consists of 13-8-PH

2) Corrosion resistance class 4 to Festo standard 940 070

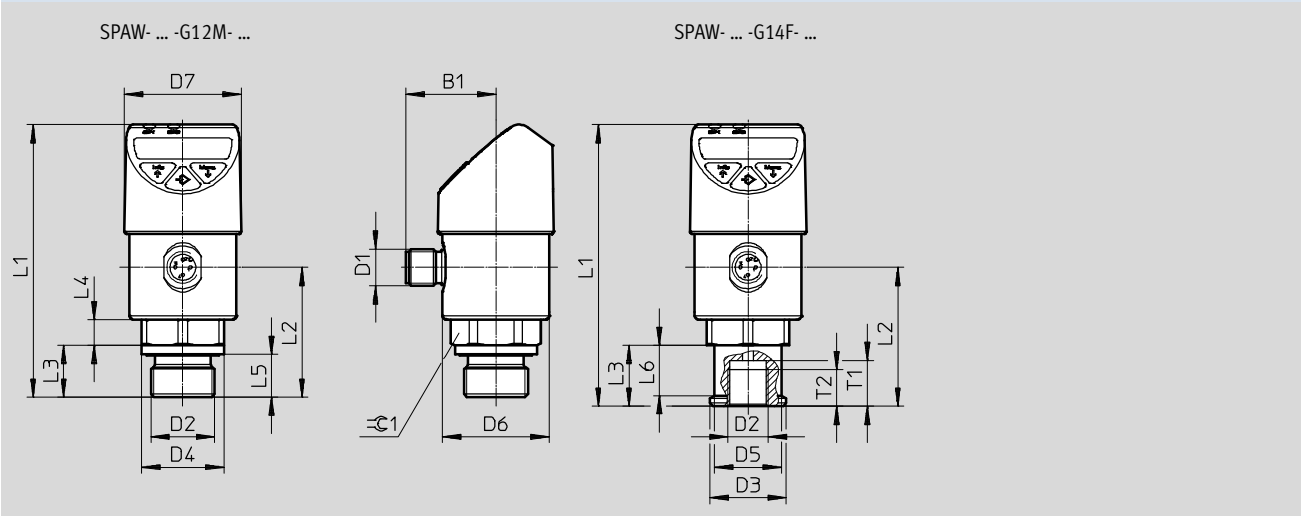
Components subject to particularly high corrosion stress. Parts used with aggressive media, e.g. in the food or chemical industry. These applications should be supported with special tests with the media if required.

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Technical data



Dimensions Download CAD data → www.festo.com



Type	B1	D1	D2	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D7 Ø	L1	L2	L3	L4	L5	L6	T1	T2	☞
SPAW- ... -G12M- ...	29.5	M12x1	G1/2	–	26.9	–	35	38	89.4	42.5	17	8.3	14	–	–	–	27
SPAW- ... -G14F- ...	29.5	M12x1	G1/4	25	–	22	35	38	92.4	45.5	20	8.3	–	16.5	15	12	27

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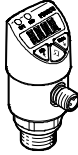
Technical data

Ordering data, G1/4 internal thread						
Pneumatic connection	Pressure measuring range [bar]	Switching output	Analogue output		Part No.	Type
			[mA]	[V]		
	-1 ... +1	2x PNP	-	-	8022740	SPAW-B2R-G14F-2P-M12
	-1 ... +10				8022741	SPAW-B11R-G14F-2P-M12
	0 ... +2				8022742	SPAW-P2R-G14F-2P-M12
	0 ... +6				8022743	SPAW-P6R-G14F-2P-M12
	0 ... +10				8022744	SPAW-P10R-G14F-2P-M12
	0 ... +16				8022745	SPAW-P16R-G14F-2P-M12
	0 ... +25				8022746	SPAW-P25R-G14F-2P-M12
	0 ... +50				8022747	SPAW-P50R-G14F-2P-M12
	0 ... +100				8022748	SPAW-P100R-G14F-2P-M12
	-1 ... +1	2x NPN	-	-	8022758	SPAW-B2R-G14F-2N-M12
	-1 ... +10				8022759	SPAW-B11R-G14F-2N-M12
	0 ... +2				8022760	SPAW-P2R-G14F-2N-M12
	0 ... +6				8022761	SPAW-P6R-G14F-2N-M12
	0 ... +10				8022762	SPAW-P10R-G14F-2N-M12
	0 ... +16				8022763	SPAW-P16R-G14F-2N-M12
	0 ... +25				8022764	SPAW-P25R-G14F-2N-M12
	0 ... +50				8022765	SPAW-P50R-G14F-2N-M12
	0 ... +100				8022766	SPAW-P100R-G14F-2N-M12
	-1 ... +1	2xPNP	4 ... 20	-	8022776	SPAW-B2R-G14F-2PA-M12
	-1 ... +10				8022777	SPAW-B11R-G14F-2PA-M12
	0 ... +2				8022778	SPAW-P2R-G14F-2PA-M12
	0 ... +6				8022779	SPAW-P6R-G14F-2PA-M12
	0 ... +10				8022780	SPAW-P10R-G14F-2PA-M12
	0 ... +16				8022781	SPAW-P16R-G14F-2PA-M12
	0 ... +25				8022782	SPAW-P25R-G14F-2PA-M12
	0 ... +50				8022783	SPAW-P50R-G14F-2PA-M12
	0 ... +100				8022784	SPAW-P100R-G14F-2PA-M12
	-1 ... +1	2xPNP	-	0 ... 10	8022794	SPAW-B2R-G14F-2PV-M12
	-1 ... +10				8022795	SPAW-B11R-G14F-2PV-M12
	0 ... +2				8022796	SPAW-P2R-G14F-2PV-M12
	0 ... +6				8022797	SPAW-P6R-G14F-2PV-M12
	0 ... +10				8022798	SPAW-P10R-G14F-2PV-M12
	0 ... +16				8022799	SPAW-P16R-G14F-2PV-M12
	0 ... +25				8022800	SPAW-P25R-G14F-2PV-M12
	0 ... +50				8022801	SPAW-P50R-G14F-2PV-M12
	0 ... +100				8022802	SPAW-P100R-G14F-2PV-M12
	-1 ... +1	2x NPN	4 ... 20	-	8022812	SPAW-B2R-G14F-2NA-M12
	-1 ... +10				8022813	SPAW-B11R-G14F-2NA-M12
	0 ... +2				8022814	SPAW-P2R-G14F-2NA-M12
	0 ... +6				8022815	SPAW-P6R-G14F-2NA-M12
	0 ... +10				8022816	SPAW-P10R-G14F-2NA-M12
	0 ... +16				8022817	SPAW-P16R-G14F-2NA-M12
	0 ... +25				8022818	SPAW-P25R-G14F-2NA-M12
	0 ... +50				8022819	SPAW-P50R-G14F-2NA-M12
	0 ... +100				8022820	SPAW-P100R-G14F-2NA-M12
	-1 ... +1	2x NPN	-	0 ... 10	8022830	SPAW-B2R-G14F-2NV-M12
	-1 ... +10				8022831	SPAW-B11R-G14F-2NV-M12
	0 ... +2				8022832	SPAW-P2R-G14F-2NV-M12
	0 ... +6				8022833	SPAW-P6R-G14F-2NV-M12
	0 ... +10				8022834	SPAW-P10R-G14F-2NV-M12
	0 ... +16				8022835	SPAW-P16R-G14F-2NV-M12
	0 ... +25				8022836	SPAW-P25R-G14F-2NV-M12
	0 ... +50				8022837	SPAW-P50R-G14F-2NV-M12
	0 ... +100				8022838	SPAW-P100R-G14F-2NV-M12

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Technical data

Ordering data, G $\frac{1}{2}$ with external thread					
Pneumatic connection	Pressure measuring range [bar]	Switching output	Analogue output		Part No. Type
			[mA]	[V]	
	-1 ... +1	2x PNP	-	-	8022749 SPAW-B2R-G12M-2P-M12
	-1 ... +10				8022750 SPAW-B11R-G12M-2P-M12
	0 ... +2				8022751 SPAW-P2R-G12M-2P-M12
	0 ... +6				8022752 SPAW-P6R-G12M-2P-M12
	0 ... +10				8022753 SPAW-P10R-G12M-2P-M12
	0 ... +16				8022754 SPAW-P16R-G12M-2P-M12
	0 ... +25				8022755 SPAW-P25R-G12M-2P-M12
	0 ... +50				8022756 SPAW-P50R-G12M-2P-M12
	0 ... +100				8022757 SPAW-P100R-G12M-2P-M12
	-1 ... +1	2x NPN	-	-	8022767 SPAW-B2R-G12M-2N-M12
	-1 ... +10				8022768 SPAW-B11R-G12M-2N-M12
	0 ... +2				8022769 SPAW-P2R-G12M-2N-M12
	0 ... +6				8022770 SPAW-P6R-G12M-2N-M12
	0 ... +10				8022771 SPAW-P10R-G12M-2N-M12
	0 ... +16				8022772 SPAW-P16R-G12M-2N-M12
	0 ... +25				8022773 SPAW-P25R-G12M-2N-M12
	0 ... +50				8022774 SPAW-P50R-G12M-2N-M12
	0 ... +100				8022775 SPAW-P100R-G12M-2N-M12
	-1 ... +1	2xPNP	4 ... 20	-	8022785 SPAW-B2R-G12M-2PA-M12
	-1 ... +10				8022786 SPAW-B11R-G12M-2PA-M12
	0 ... +2				8022787 SPAW-P2R-G12M-2PA-M12
	0 ... +6				8022788 SPAW-P6R-G12M-2PA-M12
	0 ... +10				8022789 SPAW-P10R-G12M-2PA-M12
	0 ... +16				8022790 SPAW-P16R-G12M-2PA-M12
	0 ... +25				8022791 SPAW-P25R-G12M-2PA-M12
	0 ... +50				8022792 SPAW-P50R-G12M-2PA-M12
	0 ... +100				8022793 SPAW-P100R-G12M-2PA-M12
	-1 ... +1	2xPNP	-	0 ... 10	8022803 SPAW-B2R-G12M-2PV-M12
	-1 ... +10				8022804 SPAW-B11R-G12M-2PV-M12
	0 ... +2				8022805 SPAW-P2R-G12M-2PV-M12
	0 ... +6				8022806 SPAW-P6R-G12M-2PV-M12
	0 ... +10				8022807 SPAW-P10R-G12M-2PV-M12
	0 ... +16				8022808 SPAW-P16R-G12M-2PV-M12
	0 ... +25				8022809 SPAW-P25R-G12M-2PV-M12
	0 ... +50				8022810 SPAW-P50R-G12M-2PV-M12
	0 ... +100				8022811 SPAW-P100R-G12M-2PV-M12
	-1 ... +1	2xNPN	4 ... 20	-	8022821 SPAW-B2R-G12M-2NA-M12
	-1 ... +10				8022822 SPAW-B11R-G12M-2NA-M12
	0 ... +2				8022823 SPAW-P2R-G12M-2NA-M12
	0 ... +6				8022824 SPAW-P6R-G12M-2NA-M12
	0 ... +10				8022825 SPAW-P10R-G12M-2NA-M12
	0 ... +16				8022826 SPAW-P16R-G12M-2NA-M12
	0 ... +25				8022827 SPAW-P25R-G12M-2NA-M12
	0 ... +50				8022828 SPAW-P50R-G12M-2NA-M12
	0 ... +100				8022829 SPAW-P100R-G12M-2NA-M12
	-1 ... +1	2xNPN	-	0 ... 10	8022839 SPAW-B2R-G12M-2NV-M12
	-1 ... +10				8022840 SPAW-B11R-G12M-2NV-M12
	0 ... +2				8022841 SPAW-P2R-G12M-2NV-M12
	0 ... +6				8022842 SPAW-P6R-G12M-2NV-M12
	0 ... +10				8022843 SPAW-P10R-G12M-2NV-M12
	0 ... +16				8022844 SPAW-P16R-G12M-2NV-M12
	0 ... +25				8022845 SPAW-P25R-G12M-2NV-M12
	0 ... +50				8022846 SPAW-P50R-G12M-2NV-M12
	0 ... +100				8022847 SPAW-P100R-G12M-2NV-M12

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Accessories



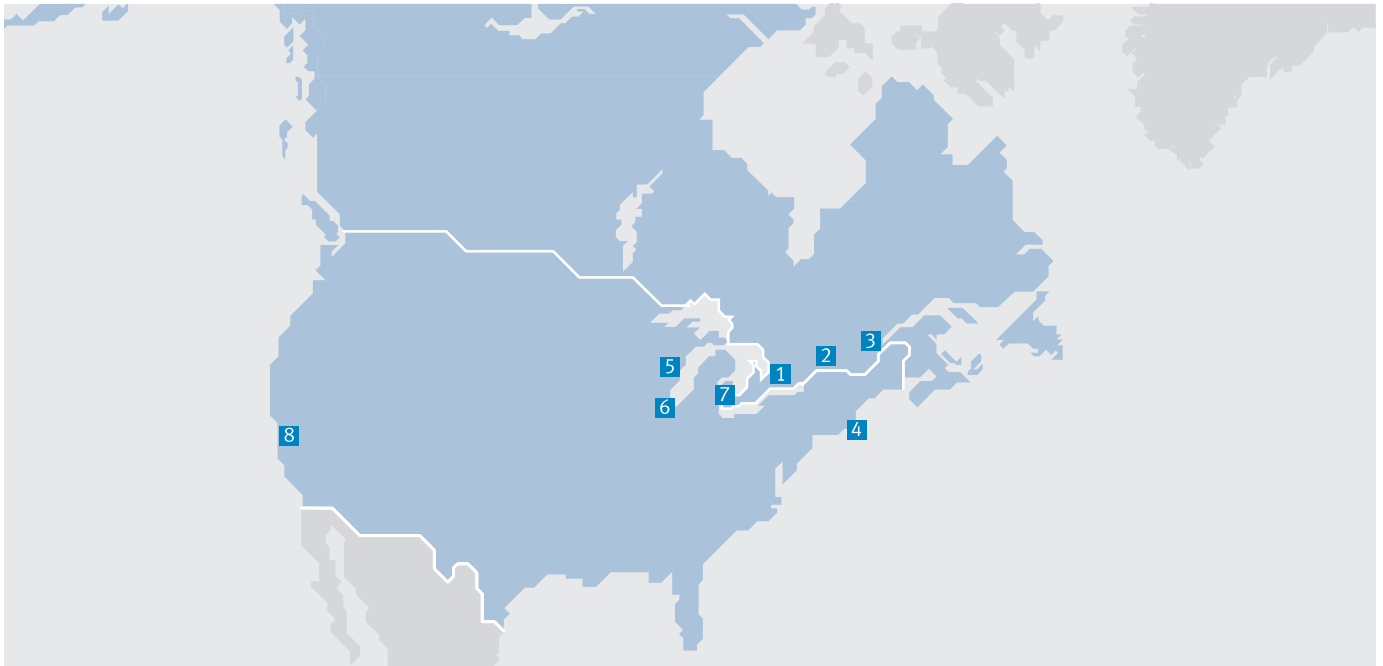
Ordering data – Connecting cables				Technical data → Internet: nebu	
	Number of wires/pins	Cable length [m]	Part No.	Type	
M12x1, straight socket, open end					
	4	2.5	550326	NEBU-M12G5-K-2.5-LE4	
		5	541328	NEBU-M12G5-K-5-LE4	
	5	2.5	541330	NEBU-M12G5-K-2.5-LE5	
		5	541331	NEBU-M12G5-K-5-LE5	
M12x1, angled socket, open end					
	4	2.5	550325	NEBU-M12W5-K-2.5-LE4	
		5	541329	NEBU-M12W5-K-5-LE4	

Ordering data – Push-in fittings ¹⁾				Technical data → Internet: qs	
	For tubing O.D. Ø	Part No.	Type		
	4 mm	190644	QS-1/4-4 ¹⁾		
	6 mm	153003	QS-1/4-6 ¹⁾		
	8 mm	153005	QS-1/4-8 ¹⁾		

1) Temperature-dependent operating pressure –0.95 ... 14 bar

Ordering data – Pipe clamp				Part No.	Type
				550598	PQ-RK-22-B

Festo North America



**1 Festo Canada
Headquarters**
Festo Inc.
5300 Explorer Drive
Mississauga, ON
L4W 5G4

2 Montréal
5600, Trans-Canada
Pointe-Claire, QC
H9R 1B6

3 Québec City
2930, rue Watt#117
Québec, QC
G1X 4G3



**4 Festo United States
Headquarters**
Festo Corporation
395 Moreland Road
Hauppauge, NY
11788

5 Appleton
North 922 Tower View Drive, Suite N
Greenville, WI
54942

7 Detroit
1441 West Long Lake Road
Troy, MI
48098

6 Chicago
85 W Algonquin - Suite 340
Arlington Heights, IL
60005

8 Silicon Valley
4935 Southfront Road, Suite F
Livermore, CA
94550

Festo Regional Contact Center

Canadian Customers

Commercial Support:
Tel: 1 877 GO FESTO (1 877 463 3786)
Fax: 1 877 FX FESTO (1 877 393 3786)
Email: festo.canada@ca.festo.com

Technical Support:
Tel: 1 866 GO FESTO (1 866 463 3786)
Fax: 1 877 FX FESTO (1 877 393 3786)
Email: technical.support@ca.festo.com

USA Customers

Commercial Support:
Tel: 1 800 99 FESTO (1 800 993 3786)
Fax: 1 800 96 FESTO (1 800 963 3786)
Email: customer.service@us.festo.com

Technical Support:
Tel: 1 866 GO FESTO (1 866 463 3786)
Fax: 1 800 96 FESTO (1 800 963 3786)
Email: product.support@us.festo.com

Subject to change

Internet: www.festo.com/us