

Pressure sensor SPAW

FESTO



Characteristics

At a glance

The SPAW is an extremely robust pressure sensor with display for measuring media pressures in 9 measuring ranges from as small as –1 ... 1 bar up to 0 ... 100 bar. It can measure all media that do not affect the stainless steel measuring cell and the stainless steel housing. The switching outputs can be set quickly and conveniently using three buttons. The high-quality 14-segment LED display can be rotated 320° and the orientation of the writing can be rotated 180°. This ensures optimum readability in any mounting position. Different standard versions are available.

For example:

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

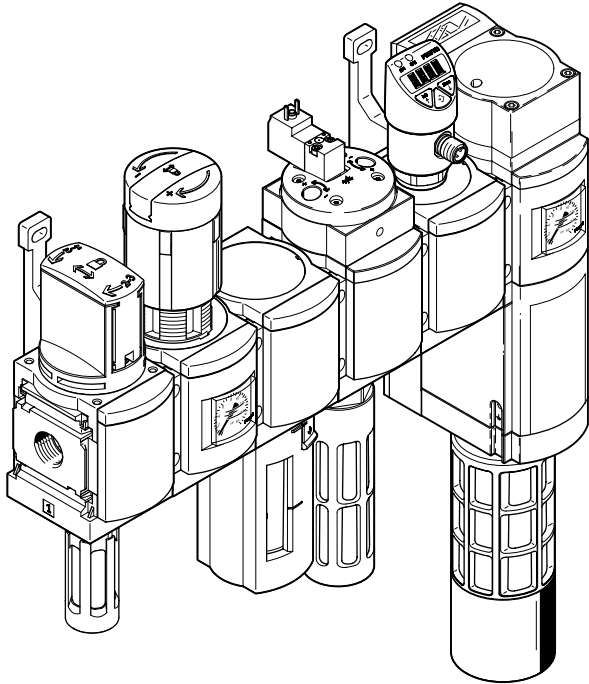
Overview



- 9 pressure ranges from –1 ... +1 bar to 0 ... +100 bar
- Protection class IP67
- Display can be rotated 320°
- Accuracy 1%, repeatability 0.15%
- Temperature of media –20 ... 85 °C
- Materials in contact with the medium: CrNiMo group: 316L, from a measuring range of 10 bar the membrane consists of 13-8-PH
- 4-digit LED display, easy to read, sturdy
- Display: bar, MPa, kPa, psi, kg/cm²
- Easy operation, protected by PIN code
- housing can be rotated 320°
- Electrical connection M12
- G1/4 female thread or G1/2 male thread

Characteristics

Application example



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

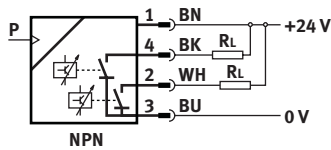
Type code

001	Series	
SPAW	Pressure sensor SPAW	
002	Pressure measuring range	
B2	-1 ... 1 bar	
B11	-1 ... 10 bar	
P2	0 ... 2 bar	
P6	0 ... 6 bar	
P10	0 ... 10 bar	
P16	0 ... 16 bar	
P25	0 ... 25 bar	
P50	0 ... 50 bar	
P100	0 ... 100 bar	
003	Pressure inlet	
R	Relative pressure	

004	Pneumatic connection	
G14	G1/4	
G12	G1/2	
005	Thread type	
F	Female	
M	Male	
006	Electrical output 1	
2N	2x NPN	
2NA	2x NPN, 1 analogue output 4 ... 20 mA	
2NV	2x NPN, 1 analogue output 0 ... 10 V	
2P	2x PNP	
2PA	2x PNP, 1 analogue output 4 ... 20 mA	
2PV	2x PNP, 1 analogue output 0 ... 10 V	
007	Electrical connection	
M12	Plug M12, A-coded	

Datasheet

General technical data G1/4



Plug, 4-pin, only for sensors without analogue output

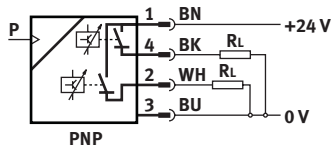
- 1 Operating voltage
- 2 Switching output SP2
- 3 0 V
- 2 Switching output SP2

Approval	RCM trademark, c UL us listed (OL)
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
LABS (PWIS) conformity	VDMA24364 zone III
Note on materials	RoHS-compliant

1) For information about the area of use, see the declaration of conformity at: www.festo.com/catalogue/sieh → 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.

General technical data G1/4



Plug, 4-pin, only for sensors without analogue output

- 1 Operating voltage
- 2 Switching output SP2
- 3 0 V
- 2 Switching output SP2

Approval	RCM trademark, c UL us listed (OL)
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
LABS (PWIS) conformity	VDMA24364 zone III
Note on materials	RoHS-compliant

1) For information about the area of use, see the declaration of conformity at: www.festo.com/catalogue/sieh → 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, measuring element

Pressure measuring range	-1 ... 1 bar	-1 ... 10 bar	0 ... 2 bar	0 ... 6 bar	0 ... 10 bar	0 ... 16 bar	0 ... 25 bar	0 ... 50 bar	0 ... 100 bar
Measured variable	Relative pressure								
Measurement method	Piezoresistive pressure sensor	Metal thin-film pressure sensor	Piezoresistive pressure sensor		Metal thin-film pressure sensor				
Start value for pressure measuring range	-0.1 MPa		0 MPa						
Start value for pressure measuring range	-1 bar		0 bar						
Start value for pressure measuring range	-14.5 psi		0 psi						
End value for pressure measuring range	0.1 MPa	1 MPa	0.2 MPa	0.6 MPa	1 MPa	1.6 MPa	2.5 MPa	5 MPa	10 MPa
End value for pressure measuring range	1 bar	10 bar	2 bar	6 bar	10 bar	16 bar	25 bar	50 bar	100 bar
End value for pressure measuring range	14.5 psi	145 psi	29 psi	87 psi	145 psi	232 psi	362.5 psi	725 psi	1,450 psi
Overload pressure	0.2 MPa	2 MPa	0.4 MPa	1.2 MPa	2 MPa	3.2 MPa	5 MPa	10 MPa	20 MPa
Overload pressure	2 bar	20 bar	4 bar	12 bar	20 bar	32 bar	50 bar	100 bar	200 bar
Overload pressure	29 psi	290 psi	58 psi	174 psi	290 psi	464 psi	725 psi	1,450 psi	2,900 psi
Operating medium ¹⁾	Compressed air to ISO 8573-1:2010 [:-:-], Liquid media, Gaseous media								
Media temperature	-20 ... 85°C								
Ambient temperature	0 ... 80°C								

1) Note media resistance of parts that come into contact with the media

Datasheet

General output	
Accuracy in ± % FS	1 %FS
Repetition accuracy in ± %FS	0.15 %FS

Switching output		
Switching output	2xNPN	2xPNP
Switching function	Freely programmable	
Switching element function	Switchable	
Max. output current	250 mA	

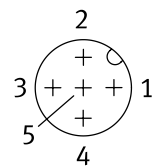
Analogue output	
Rise time	3 ms

Measured value display

Output, additional data	
Short circuit current rating	yes

Electronics	
Operational voltage range DC	15, 35
Reverse polarity protection	For operating voltage

Electrical connection G1/4



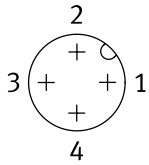
5-pin plug, only for sensors with analogue output

- 1 Operating voltage
- 2 Switching output SP2
- 3 0V
- 2 Switching output SP2
- 5 Analogue output AOut

Electrical connection 1, connection type	Plugs
Electrical connection 1, connector system	M12x1, A-coded to EN 61076-2-101
Electrical connection 1, number of connections/cores	4, 5
Electrical connection 1, used connections/cores	4, 5
Electrical connection 1, type of mounting	Screw-type lock, Not rotatable
Electrical connection 1, compatible type of mounting	Compatible with rotatable screw-type lock

Datasheet

Electrical connection G1/2



Plug, 4-pin, only for sensors without analogue output

- 1 Operating voltage
- 2 Switching output SP2
- 3 0V
- 2 Switching output SP2

Electrical connection 1, connection type	Plugs
Electrical connection 1, connector system	M12x1, A-coded to EN 61076-2-101
Electrical connection 1, number of connections/cores	4, 5
Electrical connection 1, used connections/cores	4, 5
Electrical connection 1, type of mounting	Screw-type lock, Not rotatable
Electrical connection 1, compatible type of mounting	Compatible with rotatable screw-type lock

Mechanical components

Pneumatic connection	Male thread G1/2	Female thread G1/4
Type of mounting	Via male thread	Via female thread, With accessories
Mounting position	optional	
Product weight	230 g	
Material housing	ABS, High-alloy stainless steel	
Material in contact with the medium ¹⁾	High-alloy stainless steel	
Material sealing ring	NBR	–

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

Display, operation

Display type	4-place alphanumeric, LED indicator
Displayable units	MPa, bar, kPa, kg/cm ² , psi
Switching status indication	Red LED
Setting options	Via display and keys
Protection against tampering	PIN code
Setting range threshold value	0.5 ... 100%
Setting range hysteresis	0.5 ... 99.5%

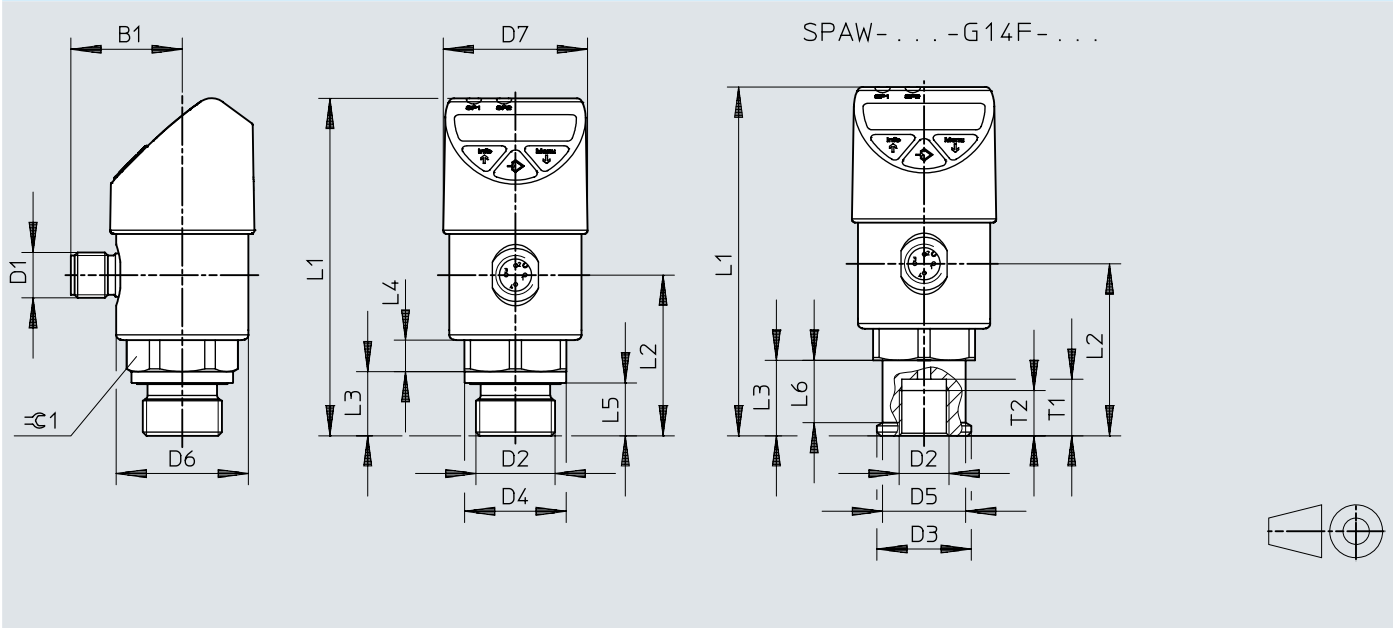
Immission, emission

Degree of protection	IP65, IP67
LABS (PWIS) conformity	VDMA24364 zone III
Corrosion resistance class CRC ¹⁾	4 - Very high corrosion stress

1) More information www.festo.com/x/topic/crc

Dimensions

Dimensions – Pressure sensors SPAW, with display Download CAD data www.festo.com



	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

Ordering data

Ordering data G14 female thread

	Start value for pressure measuring range	End value for pressure measuring range	Switching output	Part no.	Type
	-1 bar	1 bar	2xNPN	8022830	SPAW-B2R-G14F-2NV-M12
				8022758	SPAW-B2R-G14F-2N-M12
				8022812	SPAW-B2R-G14F-2NA-M12
			2xPNP	8022776	SPAW-B2R-G14F-2PA-M12
				8022794	SPAW-B2R-G14F-2PV-M12
				8022740	SPAW-B2R-G14F-2P-M12
		10 bar	2xNPN	8022813	SPAW-B11R-G14F-2NA-M12
				8022831	SPAW-B11R-G14F-2NV-M12
				8022759	SPAW-B11R-G14F-2N-M12
			2xPNP	8022741	SPAW-B11R-G14F-2P-M12
				8022795	SPAW-B11R-G14F-2PV-M12
				8022777	SPAW-B11R-G14F-2PA-M12
	0 bar	2 bar	2xNPN	8022832	SPAW-P2R-G14F-2NV-M12
				8022814	SPAW-P2R-G14F-2NA-M12
				8022760	SPAW-P2R-G14F-2N-M12
			2xPNP	8022796	SPAW-P2R-G14F-2PV-M12
				8022742	SPAW-P2R-G14F-2P-M12
				8022778	SPAW-P2R-G14F-2PA-M12
		6 bar	2xNPN	8022761	SPAW-P6R-G14F-2N-M12
				8022815	SPAW-P6R-G14F-2NA-M12
				8022833	SPAW-P6R-G14F-2NV-M12
			2xPNP	8022779	SPAW-P6R-G14F-2PA-M12
				8022797	SPAW-P6R-G14F-2PV-M12
				8022743	SPAW-P6R-G14F-2P-M12
		10 bar	2xNPN	8022816	SPAW-P10R-G14F-2NA-M12
				8022762	SPAW-P10R-G14F-2N-M12
				8022834	SPAW-P10R-G14F-2NV-M12
			2xPNP	8022744	SPAW-P10R-G14F-2P-M12
				8022798	SPAW-P10R-G14F-2PV-M12
				8022780	SPAW-P10R-G14F-2PA-M12
		16 bar	2xNPN	8022817	SPAW-P16R-G14F-2NA-M12
				8022763	SPAW-P16R-G14F-2N-M12
				8022835	SPAW-P16R-G14F-2NV-M12
			2xPNP	8022745	SPAW-P16R-G14F-2P-M12
				8022799	SPAW-P16R-G14F-2PV-M12
				8022781	SPAW-P16R-G14F-2PA-M12
		25 bar	2xNPN	8022764	SPAW-P25R-G14F-2N-M12
				8022818	SPAW-P25R-G14F-2NA-M12
				8022836	SPAW-P25R-G14F-2NV-M12
			2xPNP	8022782	SPAW-P25R-G14F-2PA-M12
				8022746	SPAW-P25R-G14F-2P-M12
				8022800	SPAW-P25R-G14F-2PV-M12
		50 bar	2xNPN	8022819	SPAW-P50R-G14F-2NA-M12
				8022765	SPAW-P50R-G14F-2N-M12
				8022837	SPAW-P50R-G14F-2NV-M12
			2xPNP	8022747	SPAW-P50R-G14F-2P-M12
				8022783	SPAW-P50R-G14F-2PA-M12
				8022801	SPAW-P50R-G14F-2PV-M12
		100 bar	2xNPN	8022820	SPAW-P100R-G14F-2NA-M12
				8022766	SPAW-P100R-G14F-2N-M12
				8022838	SPAW-P100R-G14F-2NV-M12
			2xPNP	8022802	SPAW-P100R-G14F-2PV-M12

Ordering data

Ordering data G14 female thread					
	Start value for pressure measuring range	End value for pressure measuring range	Switching output	Part no.	Type
	0 bar	100 bar	2xPNP	8022784	SPAW-P100R-G14F-2PA-M12
				8022748	SPAW-P100R-G14F-2P-M12

Ordering data G12 male thread					
	Start value for pressure measuring range	End value for pressure measuring range	Switching output	Part no.	Type
	-1 bar	1 bar	2xNPN	8022839	SPAW-B2R-G12M-2NV-M12
				8022767	SPAW-B2R-G12M-2N-M12
				8022821	SPAW-B2R-G12M-2NA-M12
			2xPNP	8022803	SPAW-B2R-G12M-2PV-M12
				8022785	SPAW-B2R-G12M-2PA-M12
				8022749	SPAW-B2R-G12M-2P-M12
		10 bar	2xNPN	8022840	SPAW-B11R-G12M-2NV-M12
				8022768	SPAW-B11R-G12M-2N-M12
				8022822	SPAW-B11R-G12M-2NA-M12
			2xPNP	8022804	SPAW-B11R-G12M-2PV-M12
				8022786	SPAW-B11R-G12M-2PA-M12
				8022750	SPAW-B11R-G12M-2P-M12
	0 bar	2 bar	2xNPN	8022823	SPAW-P2R-G12M-2NA-M12
				8022769	SPAW-P2R-G12M-2N-M12
				8022841	SPAW-P2R-G12M-2NV-M12
			2xPNP	8022787	SPAW-P2R-G12M-2PA-M12
				8022751	SPAW-P2R-G12M-2P-M12
				8022805	SPAW-P2R-G12M-2PV-M12
		6 bar	2xNPN	8022824	SPAW-P6R-G12M-2NA-M12
				8022842	SPAW-P6R-G12M-2NV-M12
				8022770	SPAW-P6R-G12M-2N-M12
			2xPNP	8022806	SPAW-P6R-G12M-2PV-M12
				8022788	SPAW-P6R-G12M-2PA-M12
				8022752	SPAW-P6R-G12M-2P-M12
		10 bar	2xNPN	8022771	SPAW-P10R-G12M-2N-M12
				8022825	SPAW-P10R-G12M-2NA-M12
				8022843	SPAW-P10R-G12M-2NV-M12
			2xPNP	8022789	SPAW-P10R-G12M-2PA-M12
				8022807	SPAW-P10R-G12M-2PV-M12
				8022753	SPAW-P10R-G12M-2P-M12
		16 bar	2xNPN	8022826	SPAW-P16R-G12M-2NA-M12
				8022844	SPAW-P16R-G12M-2NV-M12
				8022772	SPAW-P16R-G12M-2N-M12
			2xPNP	8022808	SPAW-P16R-G12M-2PV-M12
				8022790	SPAW-P16R-G12M-2PA-M12
				8022754	SPAW-P16R-G12M-2P-M12
		25 bar	2xNPN	8022827	SPAW-P25R-G12M-2NA-M12
				8022845	SPAW-P25R-G12M-2NV-M12

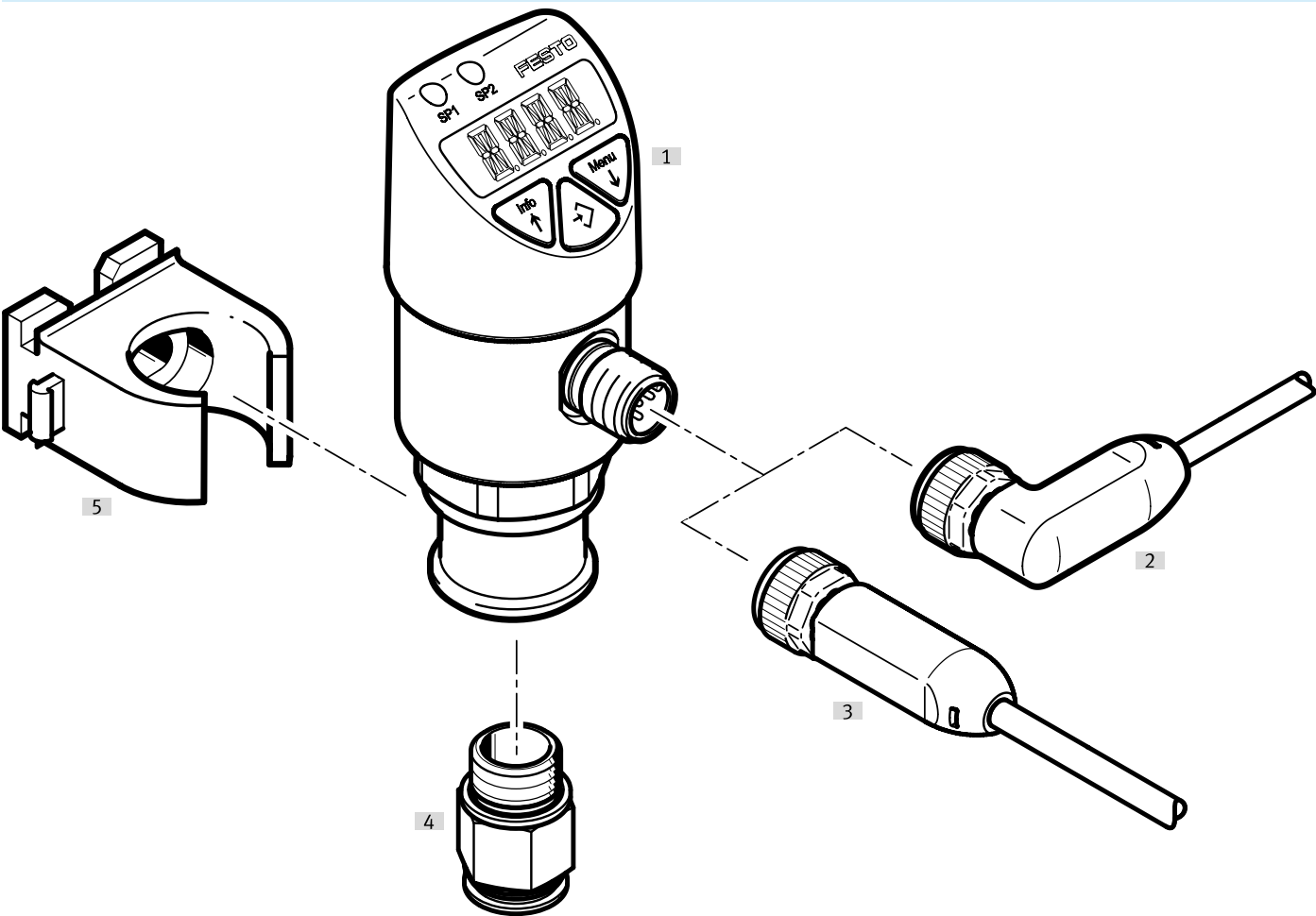
Ordering data

Ordering data G12 male thread

	Start value for pressure measuring range	End value for pressure measuring range	Switching output	Part no.	Type
	0 bar	25 bar	2xNPN	8022773	SPAW-P25R-G12M-2N-M12
			2xPNP	8022791	SPAW-P25R-G12M-2PA-M12
				8022809	SPAW-P25R-G12M-2PV-M12
				8022755	SPAW-P25R-G12M-2P-M12
		50 bar	2xNPN	8022828	SPAW-P50R-G12M-2NA-M12
				8022774	SPAW-P50R-G12M-2N-M12
				8022846	SPAW-P50R-G12M-2NV-M12
			2xPNP	8022810	SPAW-P50R-G12M-2PV-M12
				8022756	SPAW-P50R-G12M-2P-M12
				8022792	SPAW-P50R-G12M-2PA-M12
		100 bar	2xNPN	8022847	SPAW-P100R-G12M-2NV-M12
				8022829	SPAW-P100R-G12M-2NA-M12
				8022775	SPAW-P100R-G12M-2N-M12
			2xPNP	8022811	SPAW-P100R-G12M-2PV-M12
				8022757	SPAW-P100R-G12M-2P-M12
				8022793	SPAW-P100R-G12M-2PA-M12

Peripherals

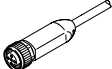
Peripherals overview



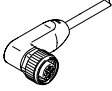
Accessories			→ Link
Type/order code	Description		
[1]	Pressure sensor SPAW	with display	spaw
[2]	Connecting cables NEBA	Angled socket	13
[3]	Connecting cables NEBA	Straight socket	13
[4]	Push-in fitting	only for G1/4 with female thread	13
[5]	Pipe clamp	only for G1/4 with female thread	13

Accessories

Connecting cable M12x1, straight socket

	Cable structure	Cable length	Product weight	Part no.	Type
	3 x 0.25 mm ²	2.5 m	55 g	8078236	NEBA-M12G5-U-2.5-N-LE3
		5 m	102 g	8078237	NEBA-M12G5-U-5-N-LE3
	4 x 0.25 mm ²	2.5 m	72 g	8078239	NEBA-M12G5-U-2.5-N-LE4
		5 m	134 g	8078240	NEBA-M12G5-U-5-N-LE4
	5 x 0.25 mm ²	2.5 m	85 g	8078242	NEBA-M12G5-U-2.5-N-LE5
		5 m	142 g	8078243	NEBA-M12G5-U-5-N-LE5

Connecting cable M12x1, angled socket

	Cable structure	Cable length	Product weight	Part no.	Type
	3 x 0.25 mm ²	2.5 m	56 g	8078245	NEBA-M12W5-U-2.5-N-LE3
		5 m	103 g	8078246	NEBA-M12W5-U-5-N-LE3
	4 x 0.25 mm ²	2.5 m	73 g	8078248	NEBA-M12W5-U-2.5-N-LE4
		5 m	135 g	8078249	NEBA-M12W5-U-5-N-LE4

Push-in fittings

	Pneumatic connection, port 2 ¹⁾	Pneumatic connection, port 1	Type of mounting	Part no.	Type
	For tubing outside diameter of 4 mm	Male thread R1/4	External hexagon, size 14 mm	190644	QS-1/4-4
	For tubing outside diameter of 6 mm			153003	QS-1/4-6
	For tubing outside diameter of 8 mm			153005	QS-1/4-8

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

Pipe clamp

	Nominal size	Ambient temperature	Product weight	Size of pack	Part no.	Type
	22 mm	-25 ... 85 °C	5.1 g	10	550598	PQ-RK-22-B