

Flow sensors SFAW



Flow sensors SFAW

Key features

General

The SFAW is intended for use in measuring and monitoring the flow, volume and temperature of liquid media in piping or in terminals in industry. The flow velocity is recorded in accordance with the vortex principle. The flow rate and the accumulated volume are

calculated from the flow velocity. An optional, integrated temperature sensor records the temperature of the media. Connection to higher-level systems is provided by 2 switching outputs, an analogue output and/or

an IO-Link interface, depending on the type. The outputs can be configured as appropriate to the application. The switching outputs can be configured to monitor a threshold value or a range. Either PNP or NPN and

either normally open (NO) or normally closed (NC) can be set for the outputs. Process values can be read out and parameters changed and transmitted to additional devices via the IO-Link interface.

Application

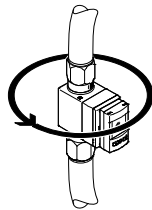
- Cooling circuit monitoring
- Monitoring for leaks and line breaks
- Process water monitoring
- Filling volume monitoring

Overview

An installation concept with short mounting and dismantling times that is easy to implement in all installation situations.

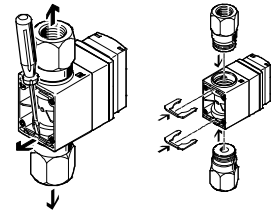
Mounting

The sensor can be rotated through 360° in the direction of flow, so that once it has been installed it can be aligned without the need for tools.



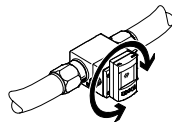
Dismounting

After the screwed-in locking plate (not shown) has been disconnected, it can be removed. The sensor can then be exchanged quickly by undoing the clips on the sensor body and removing them. The fluid connections can then be detached from the sensor body.



Display

A large, illuminated LCD display increases the operational safety and makes the currently displayed values for flow rate or medium temperature and the accumulated volume easy to read. The rotatable display ensures ease of readability and usability when mounted either horizontally or vertically.



Change in colour

Depending on the switching status (e.g. a flow threshold has not been achieved or media temperature exceeded) a change in colour to red can be set in the display for the switching

outputs. As a result, it is possible to reliably identify the system status from a large distance or in inaccessible areas.

Media connections

- Free choice of various media connections:
 - Threaded connection (female thread) (G, RC, NPT)
 - Clamped terminal connection to DIN 32676
 - Female hose connector
- Free choice of media connection type on sensor input and sensor output side
- Basic sensor body and media connections can be obtained separately
- Ultra-simple and fast mounting of media connections using clips
- Option of designing dedicated, application-specific connections

Electronics

Maximum versatility and reduced warehousing thanks to switchable electrical outputs:

- PNP/NPN
- NC/NO contact function
- Current output 4 ... 20 mA
- Voltage output 1 ... 5 V, 0 ... 10 V

Sensor signal monitoring

Flow signal monitoring to detect unstable flows. Possible causes for unstable flows include:

- Air in the line
- Line filling during start-up
- Turbulent flows as a result of unfavourable or incorrect installation

Flow sensors SFAW

Key features

FESTO

Operation

Monitoring and setting a flow threshold, a flow range, a temperature threshold and a temperature range using a teach-in function or by entering values.

- Flow indication, medium temperature indication, switching outputs and analogue value output for flow rates and temperature can be set on site in one device
- Fast commissioning of the flow sensor thanks to intuitive menu navigation
- Display colour red/blue as visual feedback that the flow rate or temperature thresholds have not been achieved or have been exceeded.
- Min./max. value memory for monitoring the flow and temperature (storage of flow and temperature peaks)
- To prevent undesirable switching status changes – an integrated adjustable filter damps the sensor signal generated by flow peaks
- Scaling the analogue output to increase the signal dynamics
- Switchable flow and volume units l/min, l/h, US gal/min, cfm, l, m³, US gal, cft
- Switchable temperature units °C, °F
- ECO function with option to set display switch-off
- Optional security code can be freely chosen (4-digit code)
- All settings that have been carried out on one sensor (master) can be transferred (replication) to other, identical sensors (device). This makes it possible to significantly shorten commissioning time.
- Recorder mode for manual volume measurements with start, stop and reset functionality
- Adjustable volume pulse

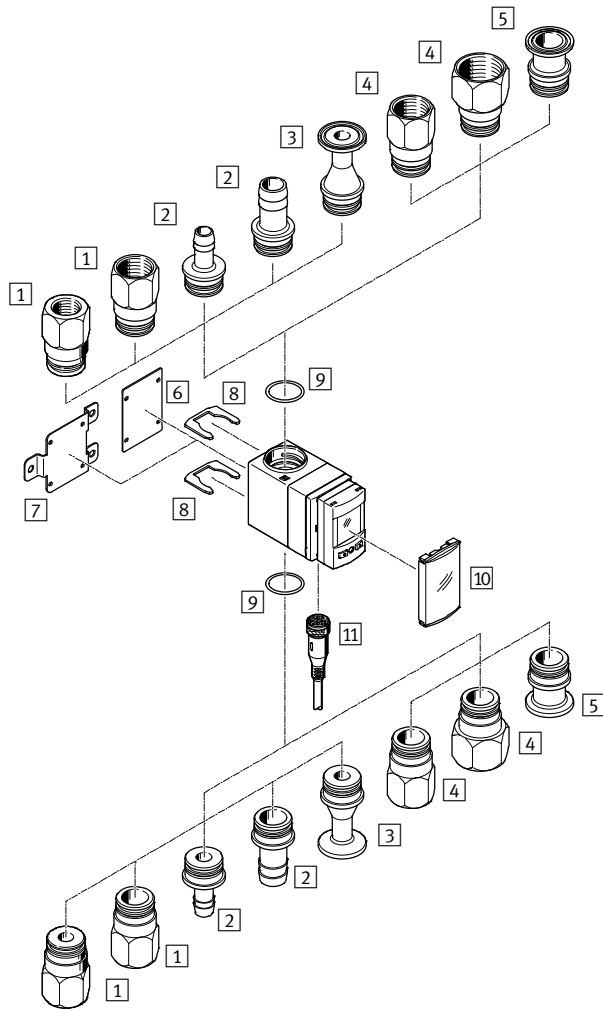
IO-Link

- Serial communication integrated using IO-Link 1.1
- Analogue process values are provided digitally
- The sensor can be parameterised and maintained remotely at control level using an IO-Link master
- Automatic parameterisation following sensor change: no need to repeat parameterisation and sensor settings after changing the sensor

Flow sensors SFAW

Peripherals overview

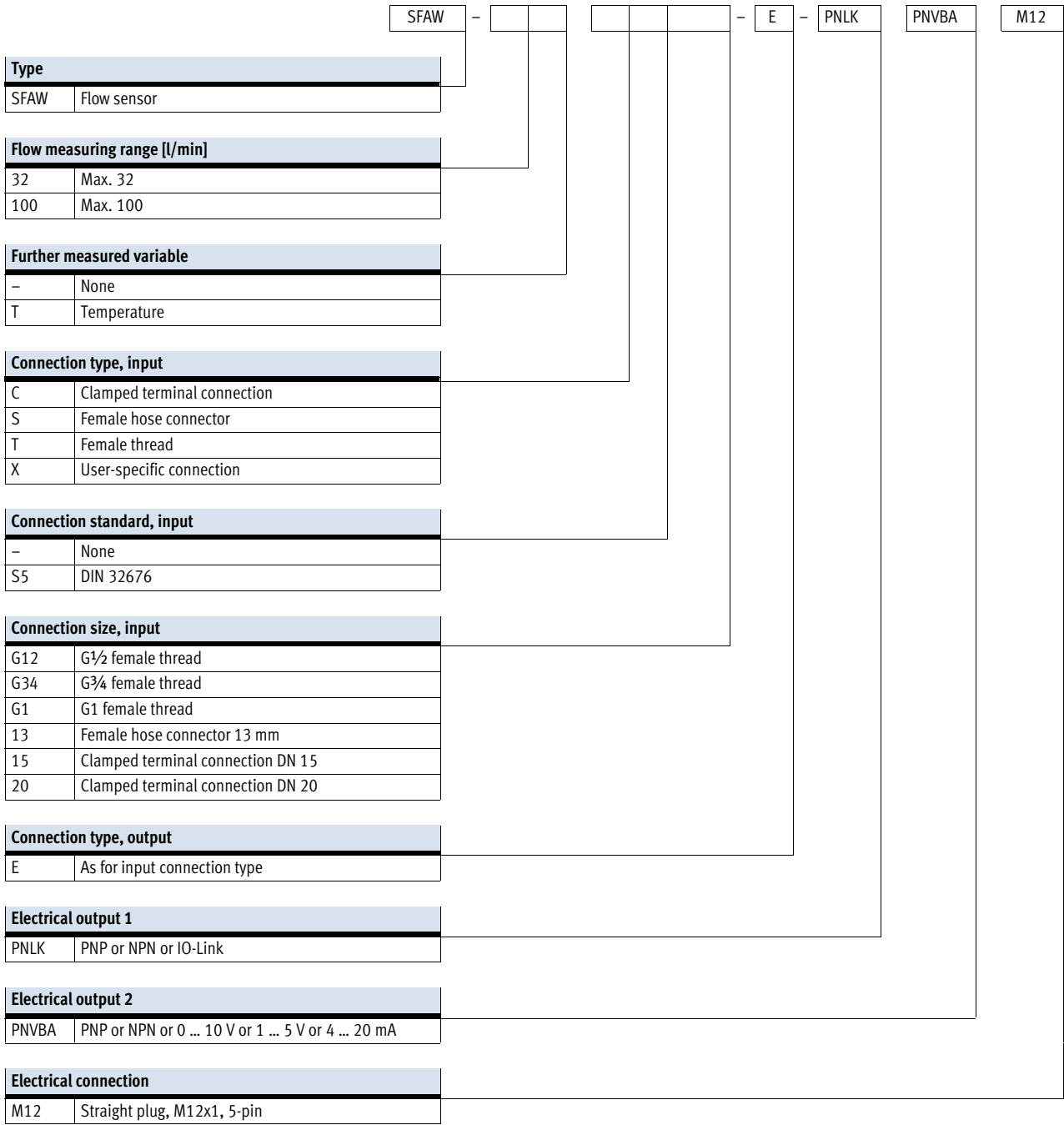
FESTO



Mounting components and accessories			
	Description	→ Page/Internet	
1	Connecting adapter SASA-FW-A-32-T...	Female thread for flow measuring range 32 with connection G $\frac{1}{2}$, G $\frac{3}{4}$, R $\frac{1}{2}$, R $\frac{3}{4}$, NPT $\frac{1}{2}$, NPT $\frac{3}{4}$	16
2	Connecting adapter SASA-FW-A-32-S...	Female hose connector for flow measuring range 32 with connection size 13 mm or 19 mm	16
3	Connecting adapter SASA-FW-A-32-CS5...	Clamped terminal connection for flow measuring range 32 with connection DN15	17
4	Connecting adapter SASA-FW-A-100-T...	Female thread for flow measuring range 100 with connection G $\frac{3}{4}$, G1, R $\frac{3}{4}$, R1, NPT $\frac{3}{4}$, NPT1	16
5	Connecting adapter SASA-FW-A-100-CS5...	Clamped terminal connection for flow measuring range 100 with connection DN20	17
6	Locking plate SFAW	For securing the clips (locking plate is screwed to the sensor body)	-
7	Wall mounting SAMH-FW-W	For wall or surface mounting of the flow sensor	14
8	Clip SAMH-FW-SB	For mounting the fluid connections on the body of the flow sensors	15
9	Seal SASF-FW-S-E	For sealing the fluid connections against the body of the flow sensors	14
10	Protective cover SACC-PU-G	For covering the display and control elements	15
11	Connecting cable NEBU	-	17

Flow sensors SFAW

Type codes



Additional variants can be ordered using the modular product system → 12

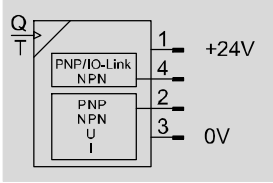
- Further connection options for input and output
- Electrical accessories
- Protective devices

Flow sensors SFAW

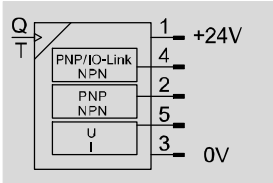
Technical data

Function

SFAW-...-PNLK-PNVBA



SFAW-...-PNLK-PN-VBA



- Maximum versatility and reduced warehousing owing to switchable electrical outputs:
 - PNP/NPN, switchable
 - N/C or N/O contact, switchable
 - Current output 4 ... 20 mA or voltage output 1 ... 5 V, 0 ... 10 V, switchable
- Pulse output for volume measurement can be freely selected
- Measuring signal filter for setting the rise time
- Additional filter for smoothing the display values



General technical data	
Certification	RCM mark c UL us - Listed (OL)
CE marking (see declaration of conformity)	To EU EMC Directive
Note on materials	RoHS compliant

Input signal, measuring element		
	-32	-100
Measured variable	Flow, temperature	
Direction of flow	Unidirectional P1 → P2	
Measuring principle for flow	Vortex	
Measuring principle for temperature	PT1000	
Flow measuring range [l/min]	1.8 ... 32	5 ... 100
Temperature measuring range [°C]	0 ... 90	
Operating pressure [bar]	0 ... 12; max. 12 bar at 40 °C, max. 6 bar at 100 °C	
Max. overload pressure [bar]	40	
Operating medium ¹⁾	Liquid media, neutral liquids, water	
Temperature of medium [°C]	0 ... 90	
Ambient temperature [°C]	0 ... 50	
Nominal temperature [°C]	23	

1) Media with a kinematic viscosity ≤ 1.8mm²/sec. [cSt]. Compatibility of the media with the substances in contact with the media must be ensured.

Flow sensors SFAW

Technical data

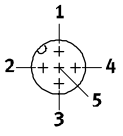
Electrical data			
		-32	-100
Output, general			
Accuracy of zero point Flow \leq 50% FS ¹⁾	[% FS]	± 2	
Accuracy of margin Flow \geq 50% FS ¹⁾	[% FS]	± 3	
Repetition accuracy of zero point Flow \leq 50% FS ²⁾	[% FS]	± 0.5	
Repetition accuracy of margin Flow \geq 50% FS ²⁾	[% FS]	± 1	
Accuracy of temperature	[°C]	± 2	
Temperature coefficient of margin	[% FS]	Typ. ± 0.05 % FS/K	
Switching output			
Switching output	2 x PNP or 2 x NPN or IO-Link, switchable		
Switching function	Threshold value comparator or window comparator, freely programmable		
Switching element function	N/C contact or N/O contact, switchable		
Switch-on time	[ms]	400 with filter time constant 150 ms (adjustable)	
Switch-off time	[ms]	300 with filter time constant 150 ms (adjustable)	
Max. output current	[mA]	100	
Voltage drop	[V]	Max. 1.5	
Pull-down / pull-up resistor	PNP: integrated; NPN: not integrated		
Inductive protective circuit	Present		
Analog output			
Characteristic curve for flow rate	[l/min.]	0 ... 32	0 ... 100
Characteristic curve for temperature	[°C]	0 ... 100	
Output characteristic curve for current	[mA]	4 ... 20	
Output characteristic curve for voltage	[V]	0 ... 10 or 1 ... 5, adjustable	
Rise time	[ms]	900 with filter time constant 150 ms (adjustable)	
Max. load resistance at current output	[Ohm]	500	
Min. load resistance at voltage output	[kOhm]	15	
Output, additional data			
Protection against short circuit	Yes		
Overload protection	Yes		
Electronic components			
Operating voltage range DC	[v]	18 ... 30	
Max. current consumption	[mA]	260	
Protection against incorrect polarity	For all electrical connections		
IO-Link, SIO mode support	Yes		
Electromechanical components			
Electrical connection	Straight plug, M12x1, 5-pin, A-coded		
Max. connecting cable length	[m]	30, for IO-Link operation 20	

- 1) Accuracy of flow value = $\pm 2\%$ FS for flow $\leq 50\%$ FS and $\pm 3\%$ o.m.v. for flow $\geq 50\%$ FS
 2) Repeat accuracy of flow value = $< \pm 0.5\%$ FS for flow $\leq 50\%$ FS $< \pm 1\%$ o.m.v. for flow $\geq 50\%$ FS

Flow sensors SFAW

Technical data

FESTO

Pin allocation		
	Pin	Meaning
Plug M12x1, 5-pin		
	1	Operating voltage: +24 V DC
	2	Switching output OutB or OutD or analogue output
	3	0 V
	4	Switching output OutA or OutC or IO-Link (C/Q line)
	5	Analogue output or not assigned

Mechanical system		
	-32	-100
Type of mounting	Wall bracket	
Mounting position	Any	
Materials in contact with the medium	ETFE, PA6T/6I reinforced, EPDM (perox.), stainless steel	
Materials		
Housing	PA reinforced	
Wall bracket	Stainless steel	
Protective cover	PA	
Key pad	TPE-O	
Inspection window	PA	
Sealing ring	EPDM	

Display/operation		
	-32	-100
Display type	Illuminated LCD, blue	
Displayable units	l/min, l/h, ft ³ /min, US gal/min, l, m ³ , ft ³ , US gal, °C, °F	
Switching status indication	Visual	
Setting options	Teach-in, IO-Link, via display and keys	
Tamper-proof	Electronic locking	
Setting range for threshold value	[l]	0.1 ... 1999.9
Volume pulse	[m ³]	0.01 ... 199.99
	[ft ³]	0.01 ... 199.9
	[US gal]	1 ... 19999
Adjustable hysteresis	[% FS]	0 ... 90

Immissions/emissions		
	-32	-100
Storage temperature	[°C]	-20 ... +80
Degree of protection	IP65	
Protection class	III	
Shock resistance	Shock test SG2 to FN/EN	
Vibration resistance	EN60068-2-6/2-200Hz/0.7 mm	
Corrosion resistance class CRC ¹⁾	3	
PWIS criterion	PWIS-free to FN 942010	

1) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional requirements for the surface and which are in direct contact with a normal industrial environment.

Flow sensors SFAW

Technical data

IO-Link	SFAW-...T-TG...-E-PNLK-...	SFAW-...-TG...-E-PNLK-...
Protocol	IO-Link	
Protocol version	Device V 1.1	
Profile	Smart sensor profile	
Function classes	Binary data channel (BDC)	
	Process data variable (PDV)	
	Identification	
	Diagnostics	
	Teach channel	
Communication mode	COM2 (38.4 kBaud)	
SIO mode support	Yes	
Port class	A	
Process data width OUT	0 bytes	
Process data width IN	5 bytes	3 bytes
Process data content IN	1 bit BDC (temperature monitoring)	-
	14 bit PDV (temperature measured value)	-
	14 bit PDV (flow measured value)	
	2 bit BDC (flow monitoring)	
	1 bit BDC (volume monitoring)	
IO-Link, service data contents IN	32 bit PDV (volume measured value)	
IO-Link, minimum cycle time	5 ms	
IO-Link, data memory required	0.5 KB	

Flow sensors SFAW

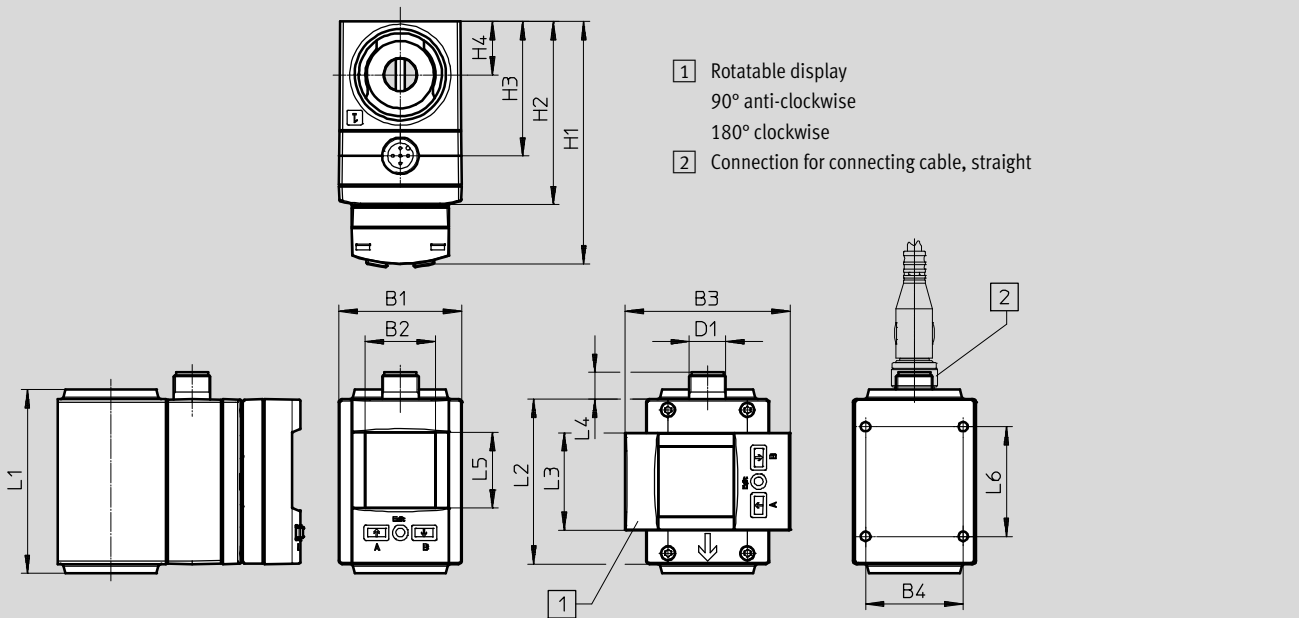
Technical data

FESTO

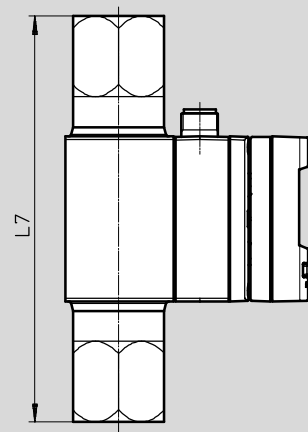
Dimensions

Download CAD data → www.festo.com

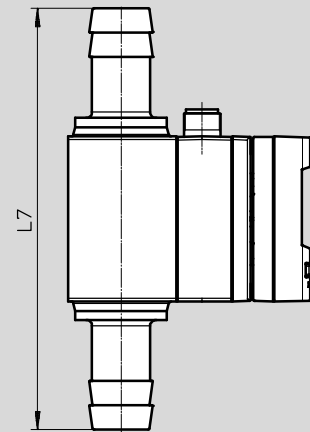
SFAW-...-PNLK-PNVBA-M12



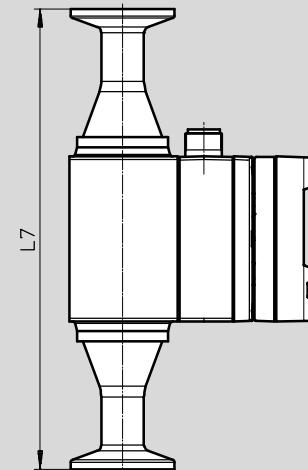
SFAW-...-T-...



SFAW-...-S-...



SFAW-...-C-...

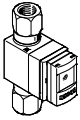
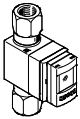


Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7											
SFAW-32...-X-E-PNLK-PNVBA-M12	40.3	23	54	32	M12x1	79.5	60	44	17.4	60.2	54	32	8.9	24.8	36	-											
SFAW-32...-T-E-PNLK-PNVBA-M12																133.2											
SFAW-32...-S-E-PNLK-PNVBA-M12																126.2											
SFAW-32...-C-E-PNLK-PNVBA-M12																151											
SFAW-100...-X-E-PNLK-PNVBA-M12						83.5	64	48	-							-	-	-	-	-	-	-	-	-	-	-	-
SFAW-100...-T-E-PNLK-PNVBA-M12																											133.2
SFAW-100...-S-E-PNLK-PNVBA-M12																											138.2
SFAW-100...-C-E-PNLK-PNVBA-M12																											111

Flow sensors SFAW

Technical data

FESTO

Ordering data					
Design	Flow measuring range [l/min.]	Measured variable	Connection type	Part No.	Type
	32	Without temperature measurement	Clamped terminal connection	8036883	SFAW-32-CS515-E-PNLK-PNVBA-M12
			Female hose connector	8036879	SFAW-32-S13-E-PNLK-PNVBA-M12
			Female thread	8036871	SFAW-32-TG12-E-PNLK-PNVBA-M12
				8036873	SFAW-32-TG34-E-PNLK-PNVBA-M12
			User-specific connection	8036887	SFAW-32-X-E-PNLK-PNVBA-M12
		With temperature measurement	Clamped terminal connection	8036884	SFAW-32T-CS515-E-PNLK-PNVBA-M12
			Female hose connector	8036880	SFAW-32T-S13-E-PNLK-PNVBA-M12
			Female thread	8036872	SFAW-32T-TG12-E-PNLK-PNVBA-M12
				8036874	SFAW-32T-TG34-E-PNLK-PNVBA-M12
			User-specific connection	8036888	SFAW-32T-X-E-PNLK-PNVBA-M12
	100	Without temperature measurement	Clamped terminal connection	8036885	SFAW-100-CS520-E-PNLK-PNVBA-M12
			Female thread	8036877	SFAW-100-TG1-E-PNLK-PNVBA-M12
				8036875	SFAW-100-TG34-E-PNLK-PNVBA-M12
			User-specific connection	8036889	SFAW-100-X-E-PNLK-PNVBA-M12
		With temperature measurement	Clamped terminal connection	8036886	SFAW-100T-CS520-E-PNLK-PNVBA-M12
			Female thread	8036878	SFAW-100T-TG1-E-PNLK-PNVBA-M12
				8036876	SFAW-100T-TG34-E-PNLK-PNVBA-M12
			User-specific connection	8036890	SFAW-100T-X-E-PNLK-PNVBA-M12

Flow sensors SFAW

Ordering data – Modular product system



Ordering table		Conditions	Code	Entry code
M	Module no.	8022000		
	Function	Flow sensor	SFAW	-SFAW
M	Flow measuring range l/min	Max. 32	-32	
		Max. 100	-100	
O	Further measured variable	None		
		Temperature	T	
M	Connection type, input	Female thread	-T	
		Clamped terminal connection	-C	
		Female hose connector	4 -S	
		User-specific connection	1 -X	
O	Connection standard, input	Not specified		
		DIN32676	2 3 S5	
	Connection size, input	Standard		
		Female thread G1/2	4 5 6 7 G12	
		Female thread G3/4	5 6 7 G34	
		Female thread G1	5 6 7 8 G1	
		Female thread R1/2	4 5 6 7 R12	
		Female thread R3/4	5 6 7 R34	
		Female thread R1	5 6 7 8 R1	
		Female thread NPT1/2	4 5 6 7 N12	
		Female thread NPT3/4	5 6 7 N34	
		Female thread NPT1	5 6 7 8 N1	
		Female hose connector 13 mm	4 5 9 10 13	
		Female hose connector 19 mm	4 5 8 9 10 19	
		Clamped terminal connection DN 15	11 15	
		Clamped terminal connection DN 20	12 20	
M	Connection type, output	As for input	13 -E	
		Female thread	-T	
		Clamped terminal connection	-C	
		Female hose connector	4 -S	
		User-specific connection	13 -X	
O	Connection standard, output	None		
		DIN32676	14 15 S5	
	Connection size, output	Standard		
		Female thread G1/2	16 17 18 G12	
		Female thread G3/4	16 17 18 G34	
		Female thread G1	16 17 18 G1	
		Female thread R1/2	16 17 18 R12	
		Female thread R3/4	16 17 18 R34	
		Female thread R1	16 17 18 R1	
		Female thread NPT1/2	16 17 18 N12	
		Female thread NPT3/4	16 17 18 N34	
		Female thread NPT1	16 17 18 N1	
		Female hose connector 13 mm	16 19 20 13	
		Female hose connector 19 mm	4 16 19 20 19	
		Clamped terminal connection DN 15	11 15	
		Clamped terminal connection DN 20	12 20	

Transfer order code

8022000 SFAW - [] - [] - [] - [] - [] - [] - [] - []

Flow sensors SFAW

Ordering data – Modular product system

Ordering table		Conditions	Code	Entry code
	Type of mounting	None		
		Wall mounting	-W	
M	Electrical output 1	PNP or NPN or IO-Link	-PNLK	
	Electrical output 2	PNP or NPN	[21]	
		PNP or NPN or 0 ... 10 V or 1 ... 5 V or 4 ... 20 mA	-PNVBA	
O	Electrical output 3	None		
		0 ... 10 V or 1 ... 5 V or 4 ... 20 mA	[22]	
M	Electrical connection	M12 plug, A-coded	-M12	M12
O	Electrical accessories	None		
		Straight socket, 2.5 m cable	+2.5 S	
		Straight socket, 5 m cable	+5S	
	Protective devices	None		
Protective cover		G		

- [1] X Not in combination with connection standard input and not connection size input
- [2] S5 Mandatory specification in combination with connection type, input, C
- [3] S5 Not in combination with connection type, input, S, T, X
- [4] G12, N12, R12, 10, 13, 19, S Not in combination with flow measuring range 100
- [5] G1, N1, R1, G12, G34, N12, N34, R12, R34, 13, 19 Not in combination with connection type, input, X, C
Not in combination with connection standard, input, S5
- [6] G1, N1, R1, G12, G34, N12, N34, R12, R34 Not in combination with connection type, input, S
- [7] G1, N1, R1, G12, G34, N12, N34, R12, R34 Mandatory specification in combination with connection type, input, T
- [8] G1, N1, R1, 20 Not in combination with flow measuring range 32
- [9] 13, 19 Not in combination with connection type, input, T
- [10] 13, 19 Mandatory specification in combination with connection type, input, S
- [11] 15, 15 Mandatory specification in combination with flow measuring range 32 and C
- [12] 20, 20 Mandatory specification in combination with flow measuring range 100 and C
- [13] E, X Not in combination with connection standard output and not connection size output
- [14] S5 Mandatory specification in combination with connection type, output, C
- [15] S5 Not in combination with connection type, output, E, T, X, S
- [16] G1, N1, R1, G12, G34, N12, N34, R12, R34, 13, 19 Not in combination with connection type, output, E, X, C
Not in combination with connection standard, output S5
- [17] G1, N1, R1, G12, G34, N12, N34, R12, R34 Not in combination with connection type, output, S
- [18] G1, N1, R1, G12, G34, N12, N34, R12, R34 Mandatory specification in combination with connection type, output, T
- [19] 13, 19 Not in combination with connection type, output, T
- [20] 13, 19 Mandatory specification in combination with connection type, output, S
- [21] PN Mandatory specification only in combination with VBA (electrical output 3)
- [22] VBA Not in combination with electrical output 2, PNVBA

Transfer order code

- [] - [] - [] - [] - M12 - [] - [] - []

Flow sensors SFAW

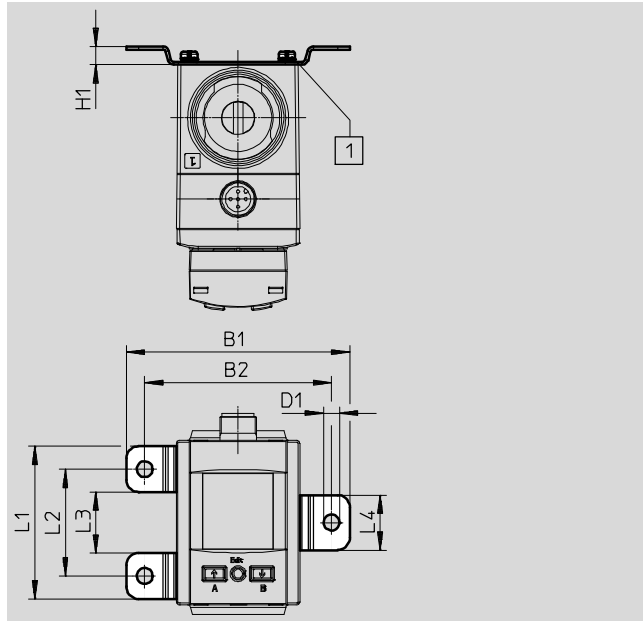
Accessories



Wall mounting SAMH-FW-W

For wall or surface mounting

Materials:
Stainless steel

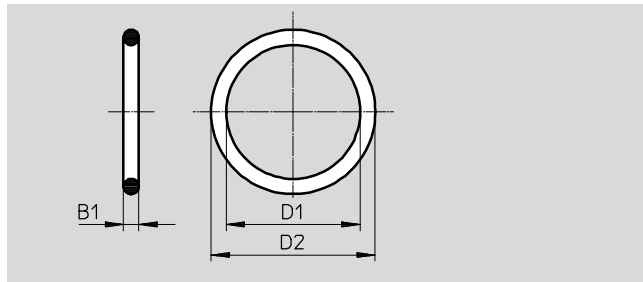


Dimensions								
Type	B1	B2	D1 ∅	H1	L1	L2	L3	L4
SAMH-FW-W	73.2	61.2	5.2	6	50	35	20	18

Ordering data		Part No.	Type
Wall mounting		8036909	SAMH-FW-W

Seal SASF-FW-S-E

For sealing the fluid connections
against the body of the flow sensors



Dimensions			
Type	B1	D1 ∅	D2 ∅
SASF-FW-S-E	2.5	22	27

Ordering data		Part No.	Type
Seal		8036907	SASF-FW-S-E

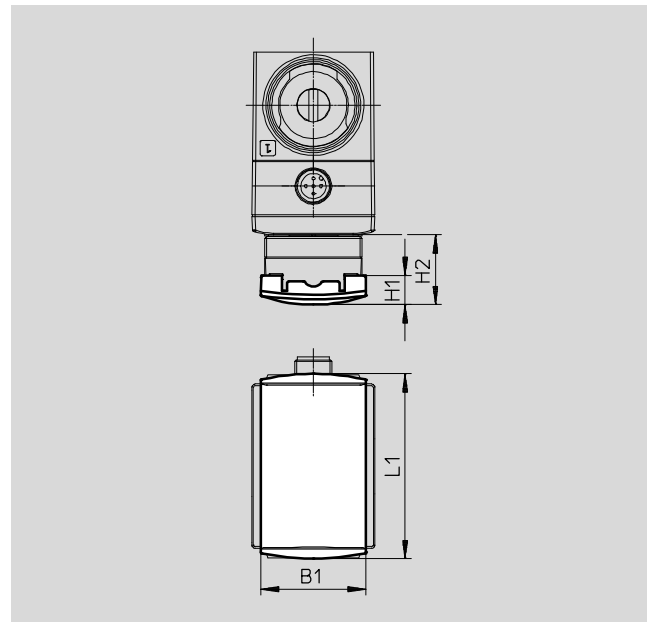
Flow sensors SFAW

Accessories

FESTO

Protective cover SACC-PU-G

For covering the display and control elements

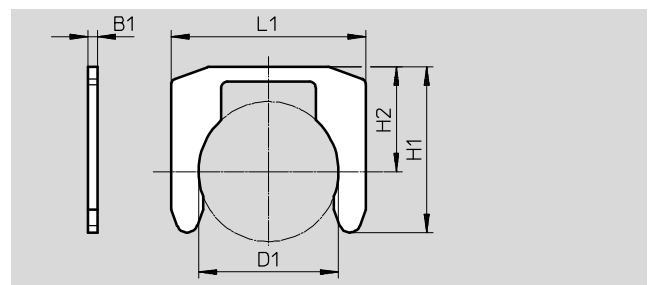


Dimensions				
Type	B1	L1	H1	H2
SACC-PU-G	34.5	60.8	9.6	23

Ordering data		Part No.	Type
Protective cover		8003353	SACC-PU-G

Clip SAMH-FW-SB

For mounting the fluid connections on the body of the flow sensors



Dimensions					
Type	B1	D1 Ø	H1	H2	L1
SAMH-FW-SB	1.5	23	27.2	17.2	32

Ordering data		Part No.	Type
Clip		8036908	SAMH-FW-SB

Flow sensors SFAW

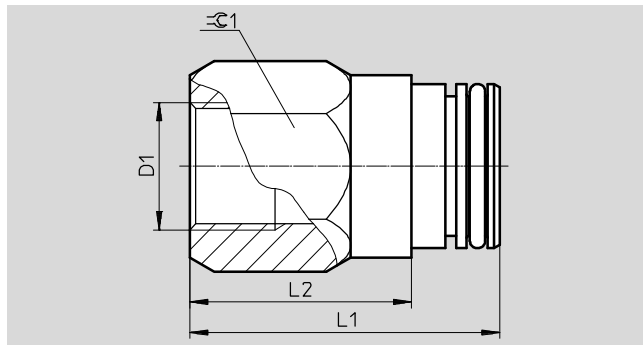
Accessories

FESTO

Fluid connection set

SASA-FW-A- ...

Connection type female thread

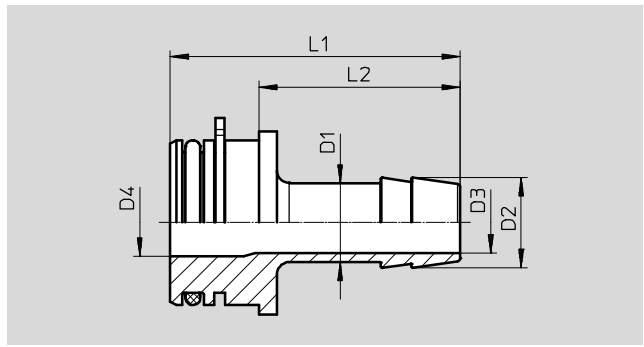


Dimensions and ordering data							
Type	Flow measuring range [l/min.]	D1 ∅	L1	L2	R1	Part No.	Type
SASA-FW-A-32-TG12	32	G1/2	51	36.5	30	8036891	SASA-FW-A-32-TG12
SASA-FW-A-32-TG34		G3/4				8036892	SASA-FW-A-32-TG34
SASA-FW-A-32-TR12		R1/2				8036895	SASA-FW-A-32-TR12
SASA-FW-A-32-TR34		R3/4				8036896	SASA-FW-A-32-TR34
SASA-FW-A-32-TN12		1/2" NPT				8036899	SASA-FW-A-32-TN12
SASA-FW-A-32-TN34		3/4" NPT				8036900	SASA-FW-A-32-TN34
SASA-FW-A-100-TG34	100	G3/4	51	36.5	30	8036893	SASA-FW-A-100-TG34
SASA-FW-A-100-TG1		G1			36	8036894	SASA-FW-A-100-TG1
SASA-FW-A-100-TR34		R3/4			30	8036897	SASA-FW-A-100-TR34
SASA-FW-A-100-TR1		R1			36	8036898	SASA-FW-A-100-TR1
SASA-FW-A-100-TN34		3/4" NPT			30	8036901	SASA-FW-A-100-TN34
SASA-FW-A-100-TN1		1NPT			36	8036902	SASA-FW-A-100-TN1

Fluid connection set

SASA-FW-A- ...

Connection type female hose connector



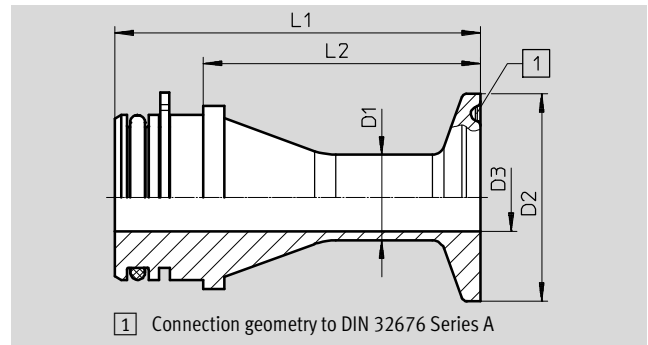
Dimensions and ordering data									
Type	Flow measuring range [l/min.]	D1 ∅	D2 ∅	D3 ∅	D4 ∅	L1	L2	Part No.	Type
SASA-FW-A-32-S13	32	13	14.8	10	11	47.5	33	8036903	SASA-FW-A-32-S13
SASA-FW-A-32-S19		19	20.8	15	19	53.5	39	8036904	SASA-FW-A-32-S19

Flow sensors SFAW



Accessories



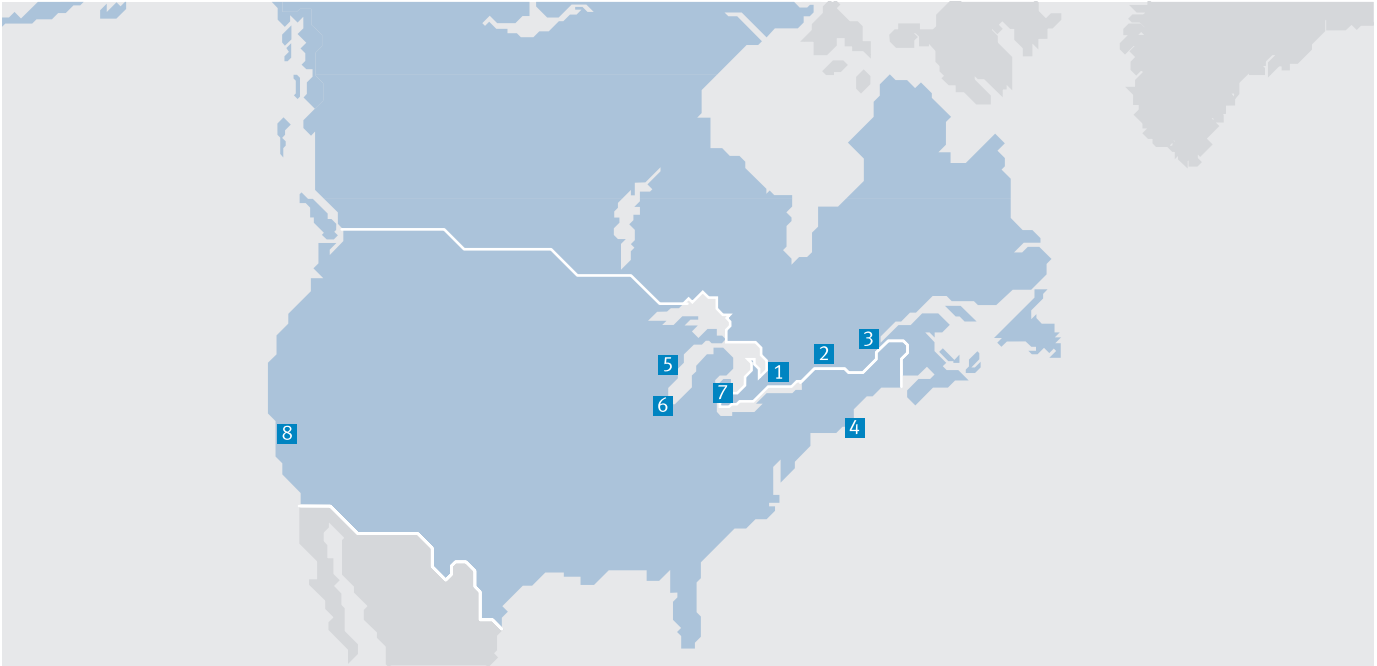
Fluid connection set
SASA-FW-A- ...
 Connection type clamped terminal
 connection



Dimensions and ordering data								
Type	Flow measuring range [l/min.]	D1 ∅	D2 ∅	D3 ∅	L1	L2	Part No.	Type
SASA-FW-A-32-CS515	32	14	34	11	59.9	45.4	8036905	SASA-FW-A-32-CS515
SASA-FW-A-100-CS520	100	23	34	19	39.9	25.4	8036906	SASA-FW-A-100-CS520

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

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