

Flow sensor SFAH

FESTO



Type code

001	Series	
SFAH	Air flow sensor	

002	Flow measuring range	
0.1	Max. 0.1 l/min	
0.5	Max. 0.5 l/min	
1	Max. 1 l/min	
5	Max. 5 l/min	
10	Max. 10 l/min	
50	Max. 50 l/min	
100	Max. 100 l/min	
200	Max. 200 l/min	

003	Flow input	
B	Bidirectional	
U	Unidirectional	

004	Pneumatic connection	
G18	G1/8	
G14	G1/4	
Q4	Push-in connector, 4 mm	
Q6	Push-in connector, 6 mm	
Q8	Push-in connector, 8 mm	

005	Thread type	
	Without	
F	Inside	

006	Outlet orientation	
S	Straight	
AR	Angled, rotatable	

007	Electrical output 1	
PNLK	PNP/NPN/IO-Link	

008	Electrical output 2	
PNVBA	PNP or NPN or 0 ... 10 V or 1 ... 5 V or 4 ... 20 mA	

009	Electrical connection	
L1	Plug, design L1	
M8	Plug M8, A-coded	

010	Mounting accessories	
	Without	
FP	Front panel mounting kit	
H	DIN rail attachment	
W	Wall mounting	

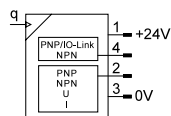
011	Electrical accessories	
	Without	
2.5A	Angled plug socket, cable 2.5 m	
2.5S	Straight socket, 2.5 m cable	
5A	Angled plug socket, cable 5 m	
5S	Straight socket, 5 m cable	

012	Protective devices	
	Without	
G	Safety guard	

013	Certificate	
	Without	
T	Test report	

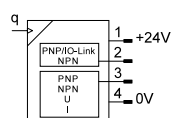
Datasheet

General technical data, M8 plug



Certification	RCM compliance mark, c UL us - Listed (OL)
CE marking (see declaration of conformity)	As per EU EMC directive, As per 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
LABS (PWIS) conformity	VDMA24364-B2-L

General technical data, L1 plug



Certification	RCM compliance mark, c UL us - Listed (OL)
CE marking (see declaration of conformity)	As per EU EMC directive, As per 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
LABS (PWIS) conformity	VDMA24364-B2-L

Input signal, measuring element

Flow measuring range end value ¹⁾	0.1 l/min	0.5 l/min	1 l/min	5 l/min	10 l/min	50 l/min	100 l/min	200 l/min
Flow measuring range start value ²⁾	0.002 l/min	0.01 l/min	0.02 l/min	0.1 l/min	0.2 l/min	1 l/min	2 l/min	4 l/min
Measured variable	Mass flow, Volumetric flow rate							
Flow direction	Bidirectional, Unidirectional							
Measuring principle	Thermal							
Method of measurement	Heat transfer							
Operating pressure	-0.9 ... 10 bar							
Operating medium	Argon, Compressed air as per ISO 8573-1:2010 [6:4:4], Nitrogen							
Temperature of medium	0 ... 50°C							
Ambient temperature	0 ... 50°C							
Nominal temperature	23°C							

1) For characteristic ...B-... The measuring range applies in positive and negative direction.

2) For flow measuring range start value 0.1 for low leakage requirements in the lower measuring range, use in connection with pneumatic connection G1/4 or G1/8 internal thread.

Output, general

Accuracy of flow rate	± (2% o.m.v. + 1% FS)
Zero point repetition accuracy in ± %FS	0.2 %FS
Repetition accuracy margin in ± %FS	0.8 %FS
Temperature co-efficient margin in ± %FS/K	typ. 0.15%FS/K
Pressure influence range in ± %FS	typ. 1%FS

Datasheet

Switching output

Switching output	2 x PNP or 2 x NPN switchable
Switching function	Window comparator, Threshold value comparator, Auto difference monitoring
Switching element function	N/C contact/N/O contact, switchable
Max. output current	100 mA

Analog output

Analog output	0 - 10 V, 4 - 20 mA, 1 - 5 V
Max. load resistance of current output	500 Ohm
Min. load resistance of voltage output	20 kOhm

Output, additional data

Short-circuit protection	Yes
Overload protection	Available

IO-Link® device according to IEC 61131-9

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 kBd)
IO-Link®, SIO mode support	Yes
IO-Link®, port class	A
IO-Link®, process data width IN	3 Byte
IO-Link®, process data content IN	1 bit BDC (volume monitoring), 14 bit PDV (flow measurement), 2 bit BDC (flow monitoring)
IO-Link®, service data contents IN	32 bit volume/mass measurement
IO-Link®, minimum cycle time	4 ms
IO-Link®, data memory required	0.5 KB

Electronics

DC operating voltage range	22 ... 26 V
Idle current	≤25 mA
Reverse polarity protection	for all electrical connections

Electromechanics

Electrical connection 1, type of mounting	Snap-locking, Screw-type lock, not rotatable
Electrical connection 1, type of mounting	Compatible with snap-locking, Compatible with rotatable screw-type lock
Electrical connection 1, connection type	Plug
Electrical connection 1, connection technology	Connection pattern L1J, M8x1 A-coded as per EN 61076-2-104
Electrical connection 1, number of pins/wires	4

Datasheet

Mechanical components

Pneumatic connection	Internal thread G1/8	Internal thread G1/4	For pneumatic tubing outside diameter 4 mm	For pneumatic tubing outside diameter 6 mm	For pneumatic tubing outside diameter 8 mm
Type of mounting	With accessories				
Mounting position	Any				
Pneumatic connection, outlet direction	Straight			Straight, Angled, adjustable	Straight
Product weight	90 g		60 g		
Housing material	PA-reinforced				
Materials in contact with the media	Wrought aluminum alloy, anodized, Epoxy, NBR, PA-reinforced, Silicon, Silicon nitride, high-alloy stainless steel				

Display/operation

Flow measuring range end value	0.1	0.5	1	5	10	50	100	200
Display type	Multi-color backlit LCD							
Displayable unit(s)	g, g/min, l, l/h, l/min, scft, scft/h			g, g/min, l, l/h, l/min, scft, scft/h, scft/min		g, g/min, l, l/min, scft, scft/h, scft/min		
Setting options	IO-Link®, Teach-in, Via display and keys							
Protection against tampering	IO-Link®, PIN code							

Immission/emission

Flow measuring range end value	0.1 l/min	0.5 l/min	1 l/min	5 l/min	10 l/min	50 l/min	100 l/min	200 l/min
Degree of protection ¹⁾	IP40							
Maximum permissible leakage	–							
Pressure drop ²⁾	<5 mbar					12 mbar	15 mbar	56 mbar
Protection class	III							
Corrosion resistance class (CRC) ³⁾	2 - Moderate corrosion stress							
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1							
Contamination level	3							

1) In combination with the protective hood, protection class IP54 is achieved when mounted horizontally as shown on page 3.

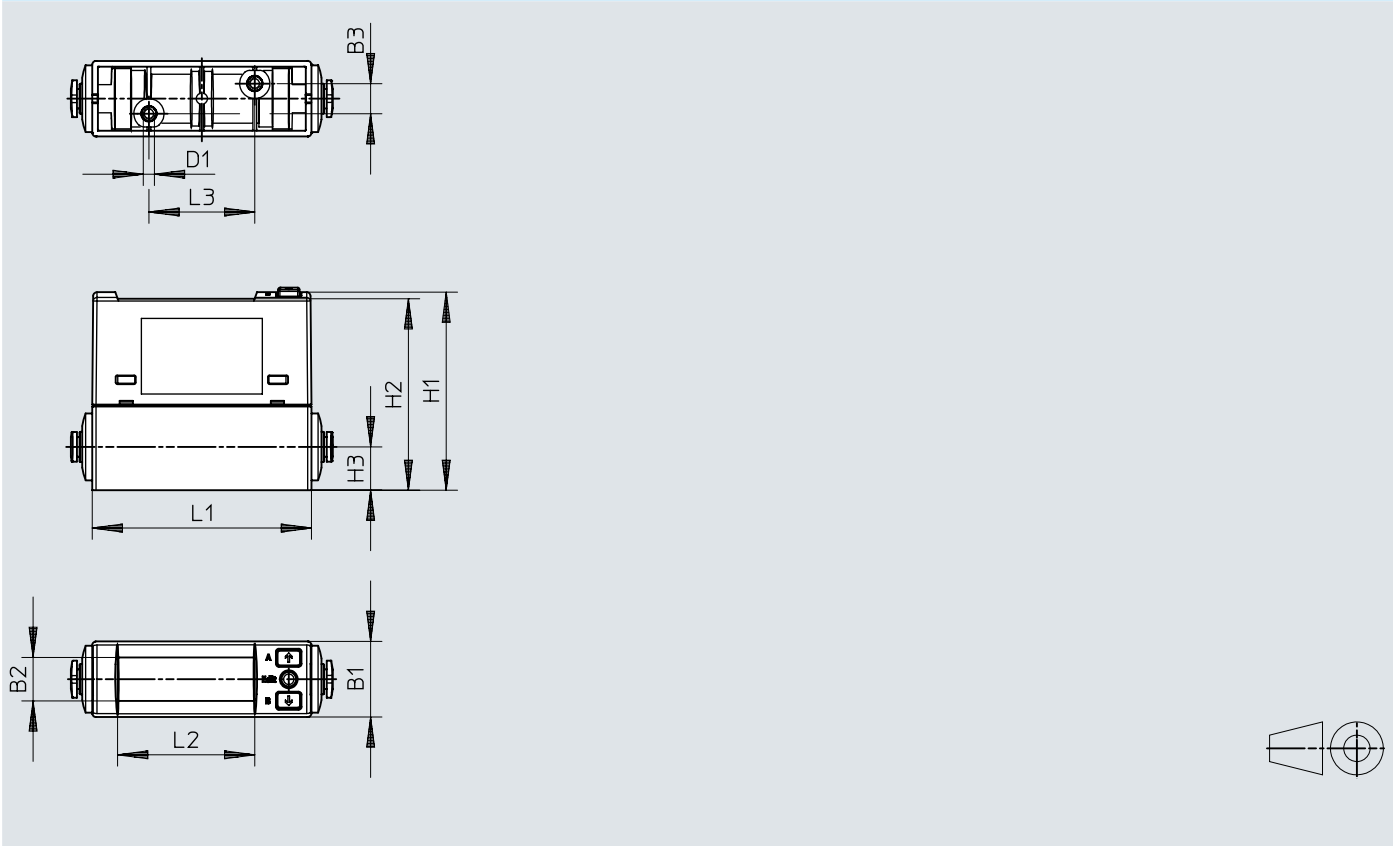
2) At 6 bar at the inlet and q max.

3) Corrosion resistance class CRC 2 according to Festo standard FN 940070

Moderate corrosion stress. Indoor applications where condensation could occur. External visible parts with primarily decorative surface requirements in direct contact with a normal industrial environment.

Dimensions

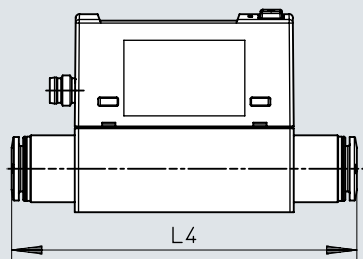
Dimensions – SFAH-... Download CAD data www.festo.com



	B1	B2	B3	D1	H1	H2	H3	L1	L2	L3
SFAH- ...	20	11,5	8	M3	~52,4	50,7	11,5	58	36,3	28

Dimensions

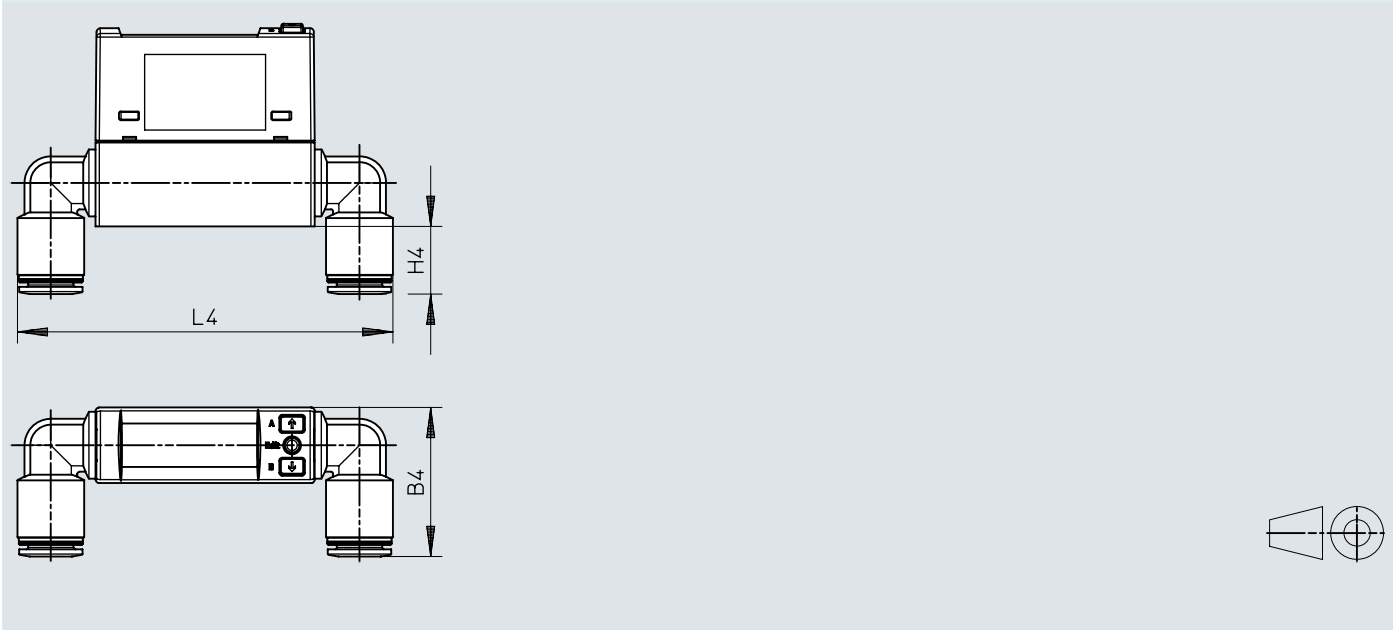
Dimensions – SFAH-...-Q...S-...

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	L4 max.
SFAH- ... -Q4S- ...	70
SFAH- ... -Q6S- ...	70
SFAH- ... -Q8S- ...	85

Dimensions

Dimensions – SFAH-...-Q...AR-... [Download CAD data](#) www.festo.com

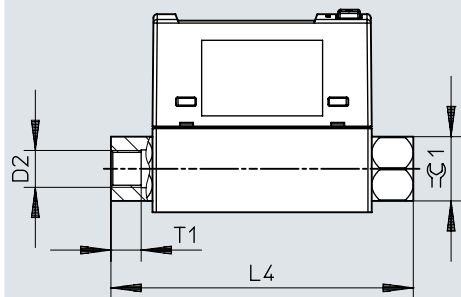


	B4 max.	H4 max.	L4 max.
SFAH- ... -Q4AR- ...	30	8	83
SFAH- ... -Q6AR- ...	31	9	88
SFAH- ... -Q8AR- ...	38	17	98

Dimensions

Dimensions – SFAH-...-G...FS-...

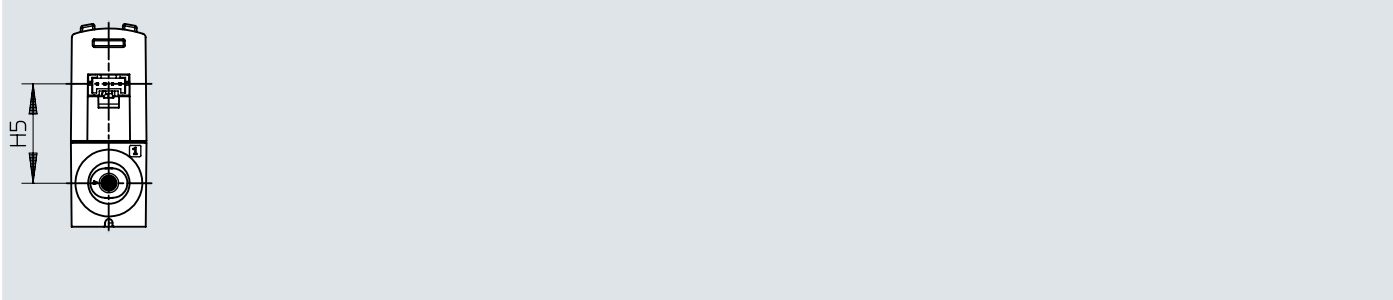
Download CAD data www.festo.com



	D2	L4	T1	⌀ 1
SFAH- ... -G14FS- ...	G1/4	80	12	17
SFAH- ... -G18FS- ...	G1/8	80	8	17

Dimensions

Dimensions – SFAH-...-L1 [Download CAD data](#) www.festo.com

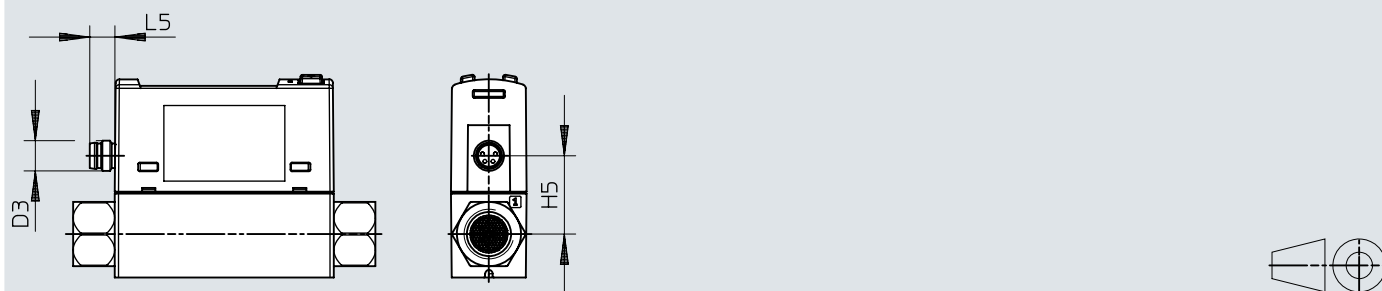


	H5
SFAH- ... -L1	26,3

Dimensions

Dimensions – SFAH-...-M8

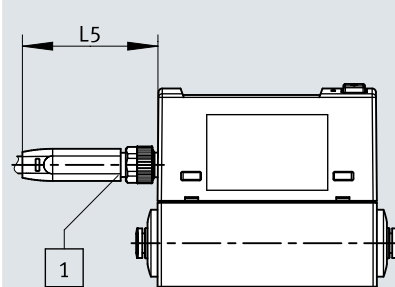
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	D3	H5	L5
SFAH- ... -M8	M8x1	20,7	~6,6

Dimensions

Dimensions – SFAH-...-M8 Download CAD data www.festo.com

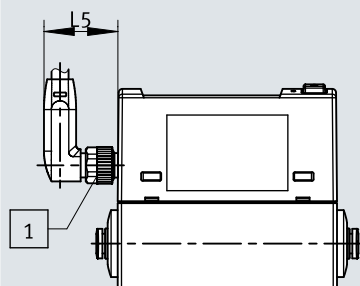


[1] NEBA-M8G4-...

	L5
SFAH- ... -M8	~35,9

Dimensions

Dimensions – SFAH-...-M8

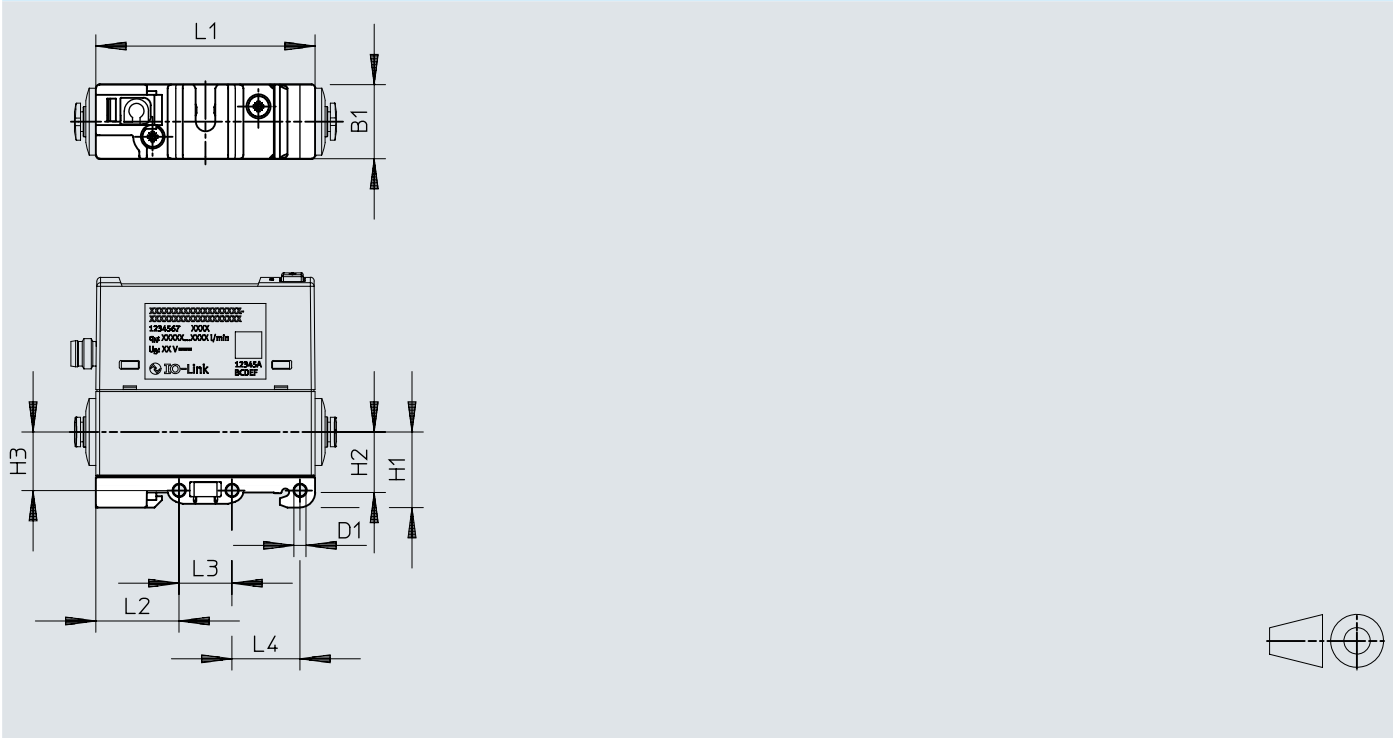
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[1] NEBA-M8W4-...

	L5
SFAH- ... -M8	~18,5

Dimensions

Dimensions – H-rail mounting SAMH-FH-H Download CAD data www.festo.com

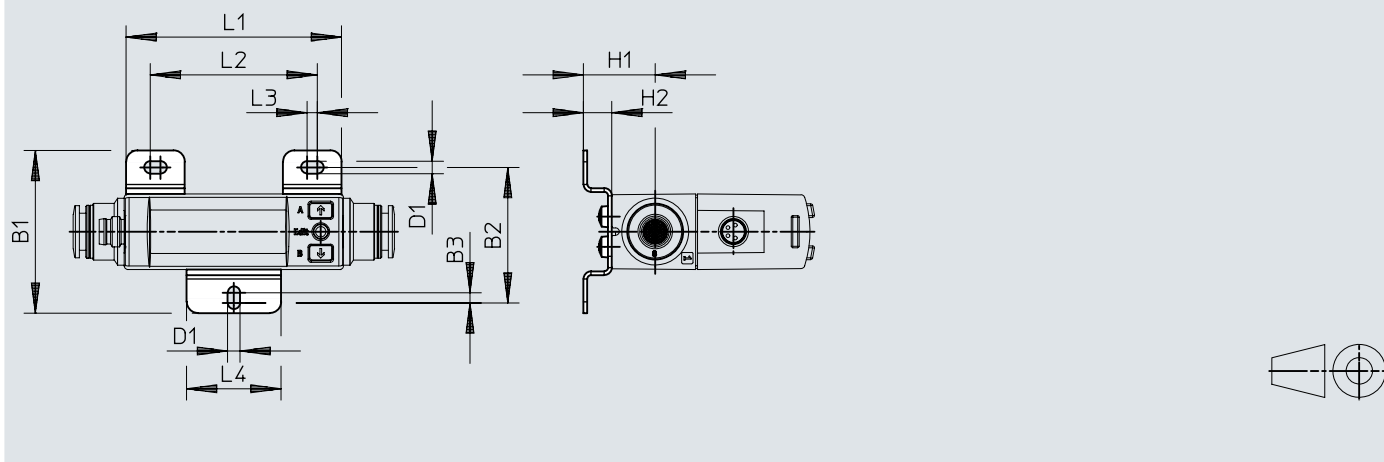


	B1	D1 Ø	H1	H2	H3	L1	L2	L3	L4
SAMH-FH-H	19,6	3,2	20	16	15,5	58	22	14	18

Dimensions

Dimensions – Wall mounting SAMH-FH-W

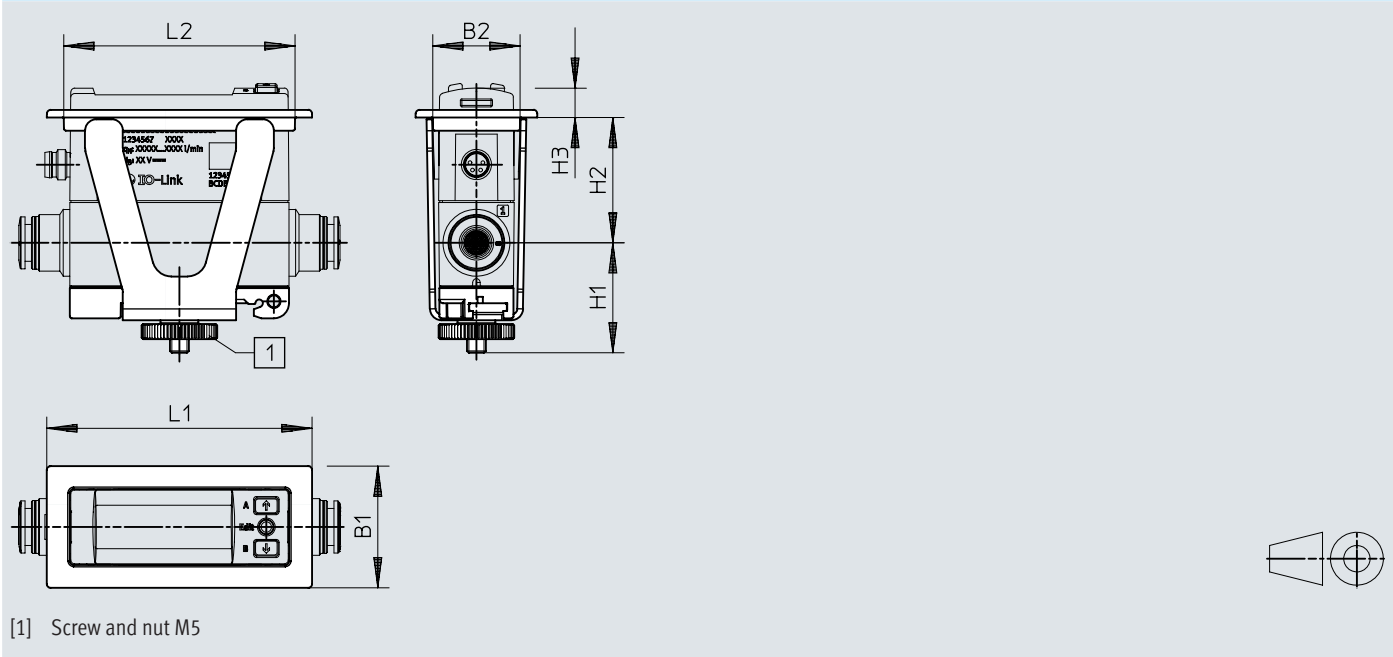
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	B1	B2	B3	D1	H1	H2	L1	L2	L3	L4
SAMH-FH-W	43,1	35,9	2,7	3,3	18,5	7,5	57	44,2	2,7	25

Dimensions

Dimensions – Panel mounting kit SAMH-FH-F Download CAD data www.festo.com

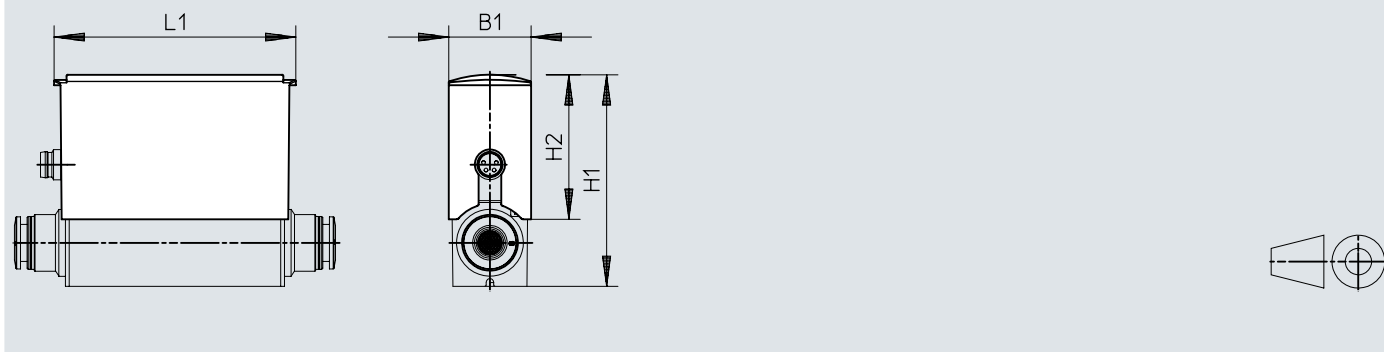


	B1	B2	H1 max.	H2	H3	L1	L2
SAMH-FH-F	32,2	23,1	30	33,2	7,7	70,2	61,2

Dimensions

Dimensions – Protective hood SACC-FH-G-S3

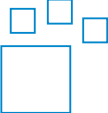
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	B1	H1	H2	L1
SACC-FH-G-S3	22,2	~56	38,3	64

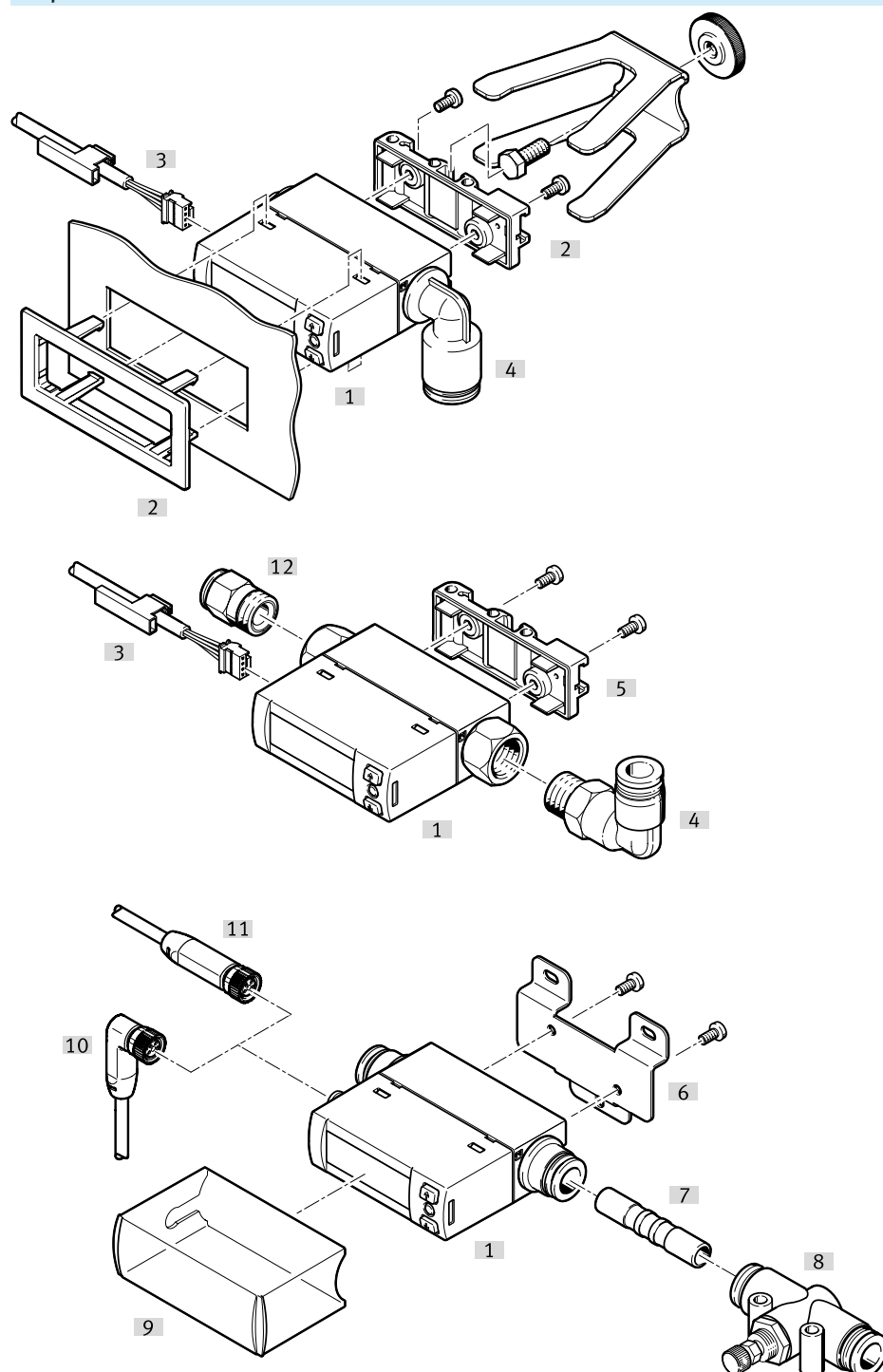
Ordering data

Ordering data				
	Flow measuring range end value	Pneumatic connection	Part no.	Type
	0.1 l/min	Internal thread G1/8	8158411	SFAH-0.1U-G18FS-PNLK-PNVBA-M8
			8159375	SFAH-0.1U-G18FS-PNLK-PNVBA-L1
			8158427	SFAH-0.1B-G18FS-PNLK-PNVBA-M8
	0.5 l/min	For pneumatic tubing outside diameter 4 mm	8058461	SFAH-0.1U-Q4S-PNLK-PNVBA-L1
			8058462	SFAH-0.1U-Q4S-PNLK-PNVBA-M8
			8158412	SFAH-0.5B-Q4S-PNLK-PNVBA-M8
		For pneumatic tubing outside diameter 6 mm	8058463	SFAH-0.5U-Q4S-PNLK-PNVBA-L1
			8058464	SFAH-0.5U-Q4S-PNLK-PNVBA-M8
			610916	SFAH-0.5U-Q6S-PNLK-PNVBA-M8
	1 l/min	For pneumatic tubing outside diameter 4 mm	8158413	SFAH-1B-Q4S-PNLK-PNVBA-M8
			8058466	SFAH-1U-Q4S-PNLK-PNVBA-M8
			8058465	SFAH-1U-Q4S-PNLK-PNVBA-L1
		For pneumatic tubing outside diameter 6 mm	8158418	SFAH-1U-Q6S-PNLK-PNVBA-M8
	5 l/min	Internal thread G1/8	8158425	SFAH-5U-G18FS-PNLK-PNVBA-M8
			8158414	SFAH-5B-Q6S-PNLK-PNVBA-M8
			8058467	SFAH-5U-Q6S-PNLK-PNVBA-L1
			8058468	SFAH-5U-Q6S-PNLK-PNVBA-M8
			8058469	SFAH-10U-Q6S-PNLK-PNVBA-L1
			610783	SFAH-10B-Q6S-PNLK-PNVBA-M8
	10 l/min	For pneumatic tubing outside diameter 6 mm	8058470	SFAH-10U-Q6S-PNLK-PNVBA-M8
			8158423	SFAH-10U-Q6AR-PNLK-PNVBA-M8
			8058473	SFAH-50U-G18FS-PNLK-PNVBA-M8
			8158415	SFAH-50B-Q6S-PNLK-PNVBA-M8
			8158419	SFAH-50U-Q6S-PNLK-PNVBA-M8
			8158426	SFAH-50U-Q6AR-PNLK-PNVBA-L1
	50 l/min	For pneumatic tubing outside diameter 8 mm	8158424	SFAH-50U-Q6AR-PNLK-PNVBA-M8
			8058472	SFAH-50U-Q8S-PNLK-PNVBA-M8
			8058471	SFAH-50U-Q8S-PNLK-PNVBA-L1
			8158416	SFAH-100B-G14FS-PNLK-PNVBA-M8
		For pneumatic tubing outside diameter 6 mm	8058476	SFAH-100U-G14FS-PNLK-PNVBA-M8
			8158422	SFAH-100U-G14FS-PNLK-PNVBA-L1
		For pneumatic tubing outside diameter 8 mm	8158420	SFAH-100U-Q6S-PNLK-PNVBA-M8
			8058474	SFAH-100U-Q8S-PNLK-PNVBA-L1
		For pneumatic tubing outside diameter 8 mm	8058475	SFAH-100U-Q8S-PNLK-PNVBA-M8
			8058479	SFAH-200U-G14FS-PNLK-PNVBA-M8
	200 l/min	Internal thread G1/4	609555	SFAH-200U-G14FS-PNLK-PNVBA-L1
			8158417	SFAH-200B-G14FS-PNLK-PNVBA-M8
			8158421	SFAH-200U-Q6S-PNLK-PNVBA-M8
		For pneumatic tubing outside diameter 6 mm	8058478	SFAH-200U-Q8S-PNLK-PNVBA-M8
			8058477	SFAH-200U-Q8S-PNLK-PNVBA-L1
		For pneumatic tubing outside diameter 8 mm		

Modular product system – ordering information				
	Flow measuring range end value	Pneumatic connection	Part no.	Type
	0.1 ... 200 l/min	Internal thread G1/8, Internal thread G1/4, For pneumatic tubing outside diameter 4 mm, For pneumatic tubing outside diameter 6 mm, For pneumatic tubing outside diameter 8 mm	8035300	SFAH-

Peripherals overview

Peripherals overview

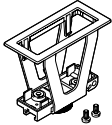


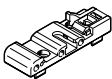
Accessories		→ Page/Internet
Type/order code	Description	
[1] Flow sensor SFAH	–	sfah
[2] Panel mounting kit SAMH-FH-F	–	21
[3] Connecting cable NEBS-L1G4-...	–	21
[4] Push-in fitting QSL	–	22
[5] H-rail mounting SAMH-FH-H	–	21
[6] Wall mounting SAMH-FH-W	–	21
[7] Push-in sleeve QSH	–	qsh
[8] One-way flow control valve GRO-QS-...	–	22
[9] Protective hood SACC-FH-G-S3	only in combination with electrical connection M8	21

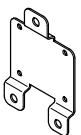
Peripherals overview

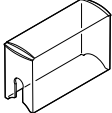
Accessories		→ Page/Internet
Type/order code	Description	
[10] Connecting cable NEBU-M8W4-...	Angled socket	22
[11] Connecting cable NEBA-M8G4-...	Straight socket	21
[12] Push-in fitting QS	–	22

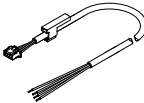
Accessories

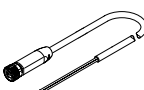
Panel mounting kit SAMH-FH-F				
	Type of mounting	Information on materials	Part no.	Type
	Front panel mounting	PA, high-alloy stainless steel	8058459	SAMH-FH-F

H-rail mounting SAMH-FH-H				
	Type of mounting	Information on materials	Part no.	Type
	On H-rail with accessories	PA, POM	8058460	SAMH-FH-H

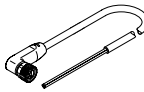
Wall mounting SAMH-FH-W				
	Type of mounting	Information on materials	Part no.	Type
	With through-hole and screw	high-alloy stainless steel	8036910	SAMH-FH-W

Protective hood SACC-FH-G-S3				
	Type of mounting	Information on materials	Part no.	Type
	Snap-in	PA	8069031	SACC-FH-G-S3

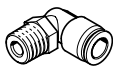
Connecting cables socket, rectangular design L1				
	Electrical connection 1, number of pins/wires	Cable length	Part no.	Type
	4	2.5 m	572576	NEBS-L1G4-K-2.5-LE4

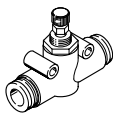
Connecting cables M8x1, straight socket				
	Electrical connection 1, number of pins/wires	Cable length	Part no.	Type
	4	2.5 m	8078227	NEBA-M8G4-U-2.5-N-LE4

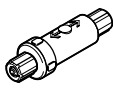
Accessories

Connecting cables, M8x1, socket angled				
	Electrical connection 1, number of pins/wires	Cable length	Part no.	Type
	4	2.5 m	8078233	NEBA-M8W4-U-2.5-N-LE4

Push-in fittings, connection straight				
	Pneumatic connection 1	Pneumatic connection 2	Part no.	Type
	External thread G1/8	for pneumatic tubing outside diameter 4 mm	186095	QS-G1/8-4
		for pneumatic tubing outside diameter 6 mm	186096	QS-G1/8-6
		for pneumatic tubing outside diameter 8 mm	186098	QS-G1/8-8
	External thread G1/4	for pneumatic tubing outside diameter 6 mm	186097	QS-G1/4-6
		for pneumatic tubing outside diameter 8 mm	186099	QS-G1/4-8
		for pneumatic tubing outside diameter 10 mm	186101	QS-G1/4-10

Push-in fittings, 90° connection				
	Pneumatic connection 1	Pneumatic connection 2	Part no.	Type
	External thread G1/8	for pneumatic tubing outside diameter 4 mm	186116	QSL-G1/8-4
		for pneumatic tubing outside diameter 6 mm	186117	QSL-G1/8-6
		for pneumatic tubing outside diameter 8 mm	186119	QSL-G1/8-8
	External thread G1/4	for pneumatic tubing outside diameter 6 mm	186118	QSL-G1/4-6
		for pneumatic tubing outside diameter 8 mm	186120	QSL-G1/4-8
		for pneumatic tubing outside diameter 10 mm	186122	QSL-G1/4-10

One-way flow control valve GRO-QS-...				
	Pneumatic connection 1	Pneumatic connection 2	Part no.	Type
	QS-3	QS-3	193971	GRO-QS-3
	QS-4	QS-4	193972	GRO-QS-4
	QS-6	QS-6	193973	GRO-QS-6

Vacuum filter				
	Nominal width	Pneumatic connection	Part no.	Type
	2 mm	PK-3 with union nut	535883	VAF-PK-3
	3 mm	PK-4 with union nut	15889	VAF-PK-4
	4.6 mm	PK-6 with union nut	160239	VAF-PK-6