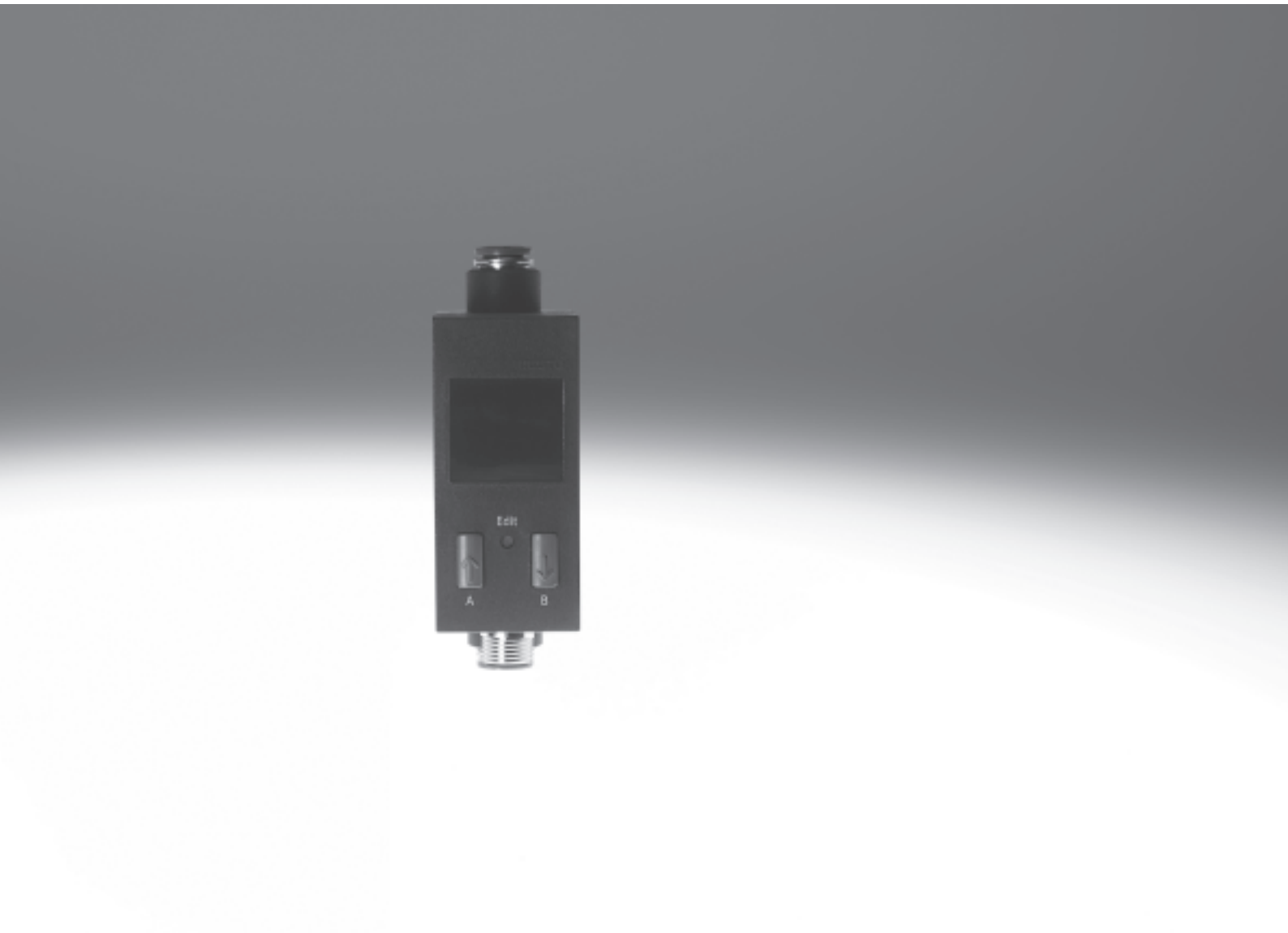
Flow sensors SFAB

FESTO



Flow sensors SFAB

Key features

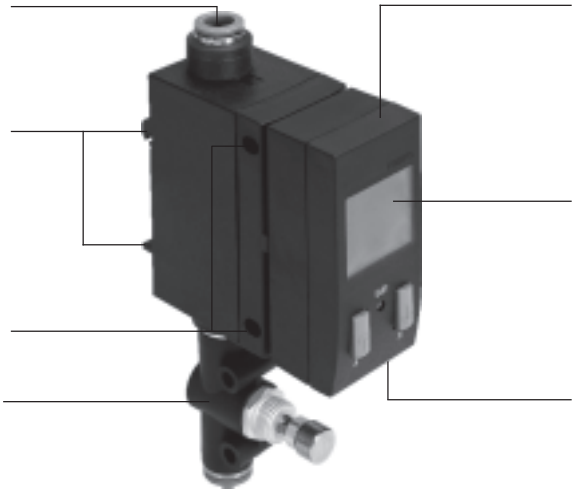
At a glance

Quick and secure installation thanks to QS fitting

Manifold assembly of the sensor via H-rail or individual assembly via adapter plate for wall mounting

Plate assembly of the sensor using mounting screws

Values up to 200 l/min, optional with integrated flow control valve/flow control element



Display can be rotated 270°

- High-contrast LCD display with blue background and white 9-segment display
- Bar graph visualises the current measured value
- Switching point-dependent colour change

Central electrical connection via M12 plug

Impressive, simple, reliable

Designed according to the attractive display and operation concept, the flow sensors have produced outstanding results in the areas of:

- Leakage detection in production
- Leakage tightness testing of end products
- Flow monitoring in parts feeding

The sensor supplies:

- Absolute flow rate information
  - with threshold values and
  - convenient switching point adjustment via a display
- Cumulative air consumption measurement
- Patented – adjustable consumption-based switching impulse for the cumulative air consumption measurement via the switching output

Easier to operate

- A large, illuminated LCD display increases the operational safety and makes the currently displayed flow rate or consumption values easy to read
- Measured values outside the measuring range are visualised: flow rate values are shown flashing
- Values falling below or above the threshold can also be detected remotely or, if the sensor is in an inaccessible location, by means of the display changing colour
- Simple checking of the current sensor settings in SHOW mode
- Simple switching between consumption and flow rate display
- An integrated flow control valve can be ordered as a flow control element via the modular product system for values up to 200 l/min

Flexible installation

This is enabled by the extremely compact design that does away with the need for an upstream and downstream smoothing section; the SFAB has an integrated stabilising flow channel.

Systematically more reliable

The sensor supplies precise information thanks to its very large measuring range, even in the case of fluctuating or unreliable flow rate conditions.

User-friendly

- Quick and easy menu navigation
- Integrated QS fittings
- Ultra-fast teach-in function as with the proven pressure sensor SDE1
- Secure connections with extremely short assembly times
- Manual consumption measurement with start/stop and reset functionality
- Rotatable display
- With or without flow control valve

Advantages

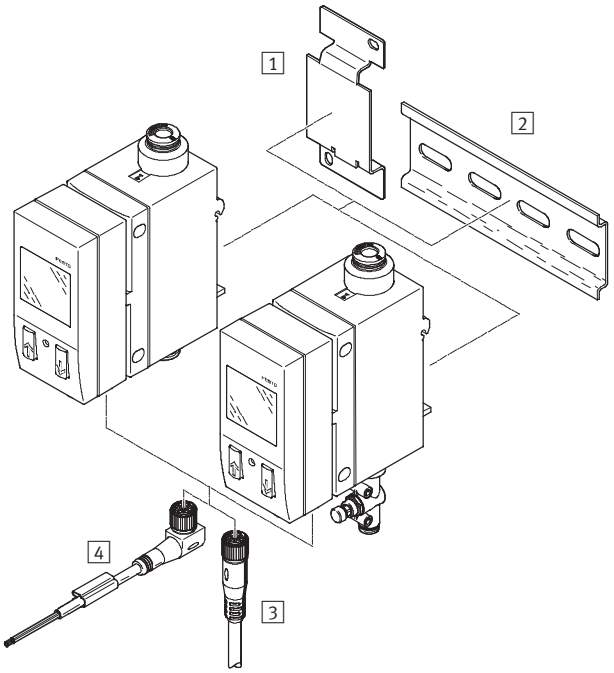
For the designer

- During design, minimal information is required regarding the applied flow rate
- Festo plug and work solution
- The same device can be used for different applications
- The sensor covers a large measuring range with a specified accuracy thanks to its high dynamic response of 1:100
- NPN/PNP switching via the software
- Minimal assembly times
- Alternatively with 4 ... 20 mA or 0 ... 10 V analogue output
- Flexible installation without restrictions imposed by smoothing sections, any installation position
- High pneumatic connection variance possible via the modular product system
- Design of more efficient machines

For the machine operator

- Precise information is available even in the event of fluctuating pressure conditions
- Flow rates can be read easily and reliably
- Visualisation (colour change, flashing measured value) of deviations
- Easy operation without the need for training
- Greater system reliability
- Displayed values:
  - Can be displayed for flow rate and consumption for different standard conditions
  - Can be filtered/averaged with highly dynamic measuring independently of the analogue output
- Fast commissioning thanks to easy-to-use, intuitive teach-in function

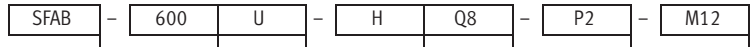
Peripherals overview



Mounting attachments and accessories		➔ Page/Internet
1	Adapter plate SDE1-...-W-... (included in the scope of delivery with SFAB-...-W...)	11
2	Mounting rail to DIN EN 60715	nrh
3	Connecting cable NEBU-M12G5, straight socket	11
4	Connecting cable NEBU-M12G5, angled socket	11

Flow sensors SFAB

Type codes



Type	
SFAB	Flow sensor

Flow measuring range [l/min]	
10	Max. 10
50	Max. 50
200	Max. 200
600	Max. 600
1000	Max. 1,000

Flow input	
U	Unidirectional

Type of mounting	
H	Via H-rail
W	Via wall bracket

Pneumatic connection	
Q6	Push-in connector 6 mm
Q8	Push-in connector 8 mm
Q10	Push-in connector 10 mm

Electrical output	
2SA	2x PNP or NPN, 1 analogue output 4 ... 20 mA
2SV	2x PNP or NPN, 1 analogue output 0 ... 10 V

Electrical connection	
M12	Straight plug, M12x1, 5-pin

Additional variants can be ordered using the modular system ➔ 10

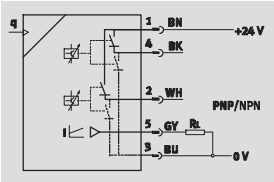
- Pneumatic connection
- Additional function (flow control element)
- Electrical accessories
- EU certification (ATEX)

Flow sensors SFAB

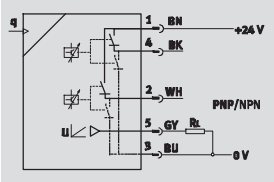
Technical data

Function

Current output 2SA



Voltage output 2SV

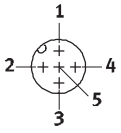


- Analogue output 0 ... 10 V, adjustable switching outputs 2x PNP or 2x NPN
- Analogue output 4 ... 20 mA, adjustable switching outputs 2x PNP or 2x NPN
- Freely selectable pulse output for consumption measurement
- Analogue filter for setting the rise time
- Digital filter for smoothing the display values
- Flow control element (flow control valve) for setting the flow rate

General technical data						
		-10U	-50U	-200U	-600U	-1000U
General						
Certification		C-Tick				
		c UL us - Recognized (OL)				
CE mark (see declaration of conformity)		To EU EMC Directive				
		In accordance with EU Explosion Protection Directive (ATEX)				
Note on materials		RoHS-compliant				
Input signal/measuring element						
Measured variable		Flow rate, consumption				
Direction of flow		Unidirectional P1 → P2				
Measuring principle		Thermal				
Flow measuring range	[l/min]	0.1 ... 10	0.5 ... 50	2 ... 200	6 ... 600	10 ... 1,000
Operating pressure	[bar]	0 ... 10				
Nominal pressure	[bar]	6				
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [6:4:4]		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
		Nitrogen		Nitrogen		
Temperature of medium	[°C]	0 ... 50				
Ambient temperature	[°C]	0 ... 50				
Nominal temperature	[°C]	23				

Electrical data						
		-10U	-50U	-200U	-600U	-1000U
Output, general[1), 2)]						
Accuracy of flow rate values		+/- (3% o.m.v. + 0.3% FS)				
Repetition accuracy of zero point ±FS	[%]	0.2				
Repetition accuracy of margin ±FS	[%]	0.8				
Temperature coefficient of margin ±FS/K	[%]	≤0.1				
Pressure dependence of margin ±FS/bar	[%]	0.5				
Switching output						
Switching output		2x PNP or 2x NPN, adjustable				
Switching function		Window comparator or threshold value comparator, adjustable				
Switching element function		N/C or N/O contact, adjustable				
Switch-on time		Adjustable (factory setting: approx. 80 ms)				
Switch-off time		Adjustable (factory setting: approx. 80 ms)				
Max. output current	[mA]	100				
Voltage drop	[V]	Max. 1.5				
Inductive protective circuit		Adapted to MZ, MY, ME coils				
Analogue output						
Characteristic flow rate curve	[l/min]	0 ... 10	0 ... 50	0 ... 200	0 ... 600	0 ... 1,000
Output characteristic curve for current	[mA]	4 ... 20				
Output characteristic curve for voltage	[V]	0 ... 10				
Rise time	[ms]	Possible settings: 15, 30, 60 (factory setting), 125, 250, 500, 999				
Max. load resistance at current output	[ohms]	500				
Min. load resistance at voltage output	[kohms]	10				
Output, additional data						
Protection against short circuit		Yes				
Protection against overloading		Yes				
Electronic components						
Operating voltage range DC	[v]	15 ... 30				
Protection against polarity reversal		For all electrical connections				
Electromechanical components						
Electrical connection		Straight plug, M12x1, 5-pin				
Max. length of connecting cable	[m]	<10				

1) Accuracy with nominal conditions (6 bar, 23 °C and horizontal installation position).
2) % FS = % of the measuring range final value (full scale).

Pin allocation		
Plug M12x1, 5-pin	Pin	Meaning
	1	Operating voltage +24 V DC
	2	Binary output B
	3	0 V
	4	Binary output A
	5	Analogue output C

Flow sensors SFAB

Technical data

Mechanical components						
		-10U	-50U	-200U	-600U	-1000U
Temperature dependence of the flow control valve setting[1] ±FS (0 … 50 °C)	[%]	8	8	2	–	–
Mounting position		Any				
Pneumatic connection[2]		QS6	QS6	–	–	–
		QS8	QS8	QS8		
		QS10	QS10	QS10	QS10	QS10
		QS12	QS12	QS12	QS12	QS12
		QS¼	QS¼	–	–	–
		QS5/16	QS5/16	QS5/16	–	–
		QS3/8	QS3/8	QS3/8	QS3/8	QS3/8
Product weight	[g]	160				
Material: Housing		PA reinforced				

1) The flow rate value set using the flow control valve is additionally dependent on the operating pressure. This means that the flow rate value changes if the operating pressure is changed, even if the flow control valve setting remains the same.

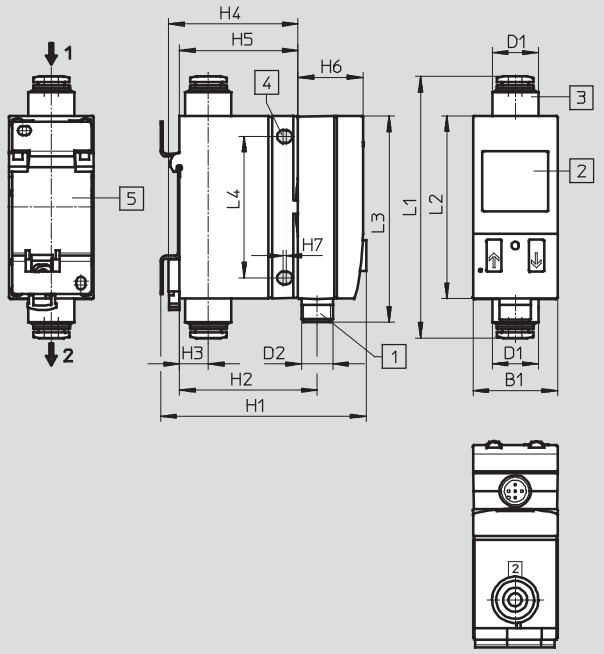
2) The pneumatic connections cannot be freely selected when configuring a sensor with flow control element, modular product system ➔ 10.

Display/operation						
		-10U	-50U	-200U	-600U	-1000U
Indicator type		Illuminated LCD, blue				
Displayable units		l/min, l/h, scfm, l, m^3, scf			l/min, scfm, l, m^3, scf	
Setting range for flow rate threshold value		1% FS … 100% FS				
Setting range for consumption impulse threshold value	[l]	0.1 … 1,999.9	0.2 … 1,999.9	1 … 1,999.9	2 … 1,999.9	3 … 1,999.9
	[m^3]	0.01 … 199.99			0.1 … 1,999.9	1 … 19,999
	[scf]	0.01 … 199.99		0.03 … 199.99	0.1 … 1,999.9	
Hysteresis setting range		0% FS … 90% FS				

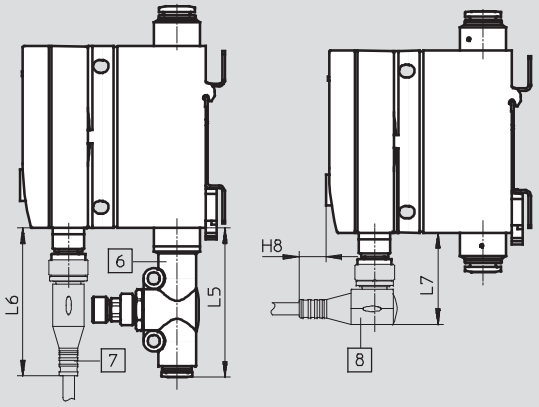
Immissions/emissions						
		-10U	-50U	-200U	-600U	-1000U
Storage temperature	[°C]	–20 … +80 (characteristic -D: –10 … +60)				
Degree of protection		IP65				
Pressure drop	[mbar]	<100				
Electrical protection class		III				

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

SFAB-...-H/-W



SFAB-...-D



1 Plug M12x1 to EN 60947-5-2
2 LCD display
3 Pneumatic connection
4 Hole for mounting screw M4
5 Adapter plate for wall mounting
6 Flow control element (rotatable)
7 Connecting cable, straight socket
8 Connecting cable, angled socket

Type	B1	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5	L6	L7
SFAB-...-HQ6	32.3	17.7	M12x1	–	52.5	11	49.4	45.2	24.8	1.1	11	95.6	69.8	78.9	54	–	56	35
SFAB-...-HQ6-...-D												–				57.1		
SFAB-...-HQ8												99.8				–		
SFAB-...-HQ8-...-D												–				59.2		
SFAB-...-HQ10		22										119.8				–		
SFAB-...-HQ12												124.4				–		
SFAB-...-WQ6	32.3	17.7	M12x1	79	52.5	11	49.4	45.2	24.8	1.1	11	95.6	69.8	78.9	54	–	56	35
SFAB-...-WQ6-...-D												–				57.1		
SFAB-...-WQ8												99.8				–		
SFAB-...-WQ8-...-D												–				59.2		
SFAB-...-WQ10		22										119.8				–		

Flow sensors SFAB

Technical data

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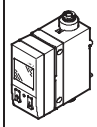
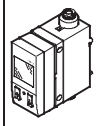
Ordering data				
Version	Electrical output	Flow measuring range [l/min]	Part No.	Type
H-rail mounting				
	2x PNP or NPN, 1 analogue output 4 ... 20 mA	0.1 ... 10	565385	SFAB-10U-HQ6-2SA-M12
		0.5 ... 50	565389	SFAB-50U-HQ6-2SA-M12
		2 ... 200	565393	SFAB-200U-HQ8-2SA-M12
		2 ... 200	565397	SFAB-200U-HQ10-2SA-M12
		6 ... 600	565401	SFAB-600U-HQ10-2SA-M12
		10 ... 1,000	565405	SFAB-1000U-HQ10-2SA-M12
	2x PNP or NPN, 1 analogue output 0 ... 10 V	0.1 ... 10	565386	SFAB-10U-HQ6-2SV-M12
		0.5 ... 50	565390	SFAB-50U-HQ6-2SV-M12
		2 ... 200	565394	SFAB-200U-HQ8-2SV-M12
		2 ... 200	565398	SFAB-200U-HQ10-2SV-M12
		6 ... 600	565402	SFAB-600U-HQ10-2SV-M12
		10 ... 1,000	565406	SFAB-1000U-HQ10-2SV-M12
Wall or surface mounting				
	2x PNP or NPN, 1 analogue output 4 ... 20 mA	0.1 ... 10	565387	SFAB-10U-WQ6-2SA-M12
		0.5 ... 50	565391	SFAB-50U-WQ6-2SA-M12
		2 ... 200	565395	SFAB-200U-WQ8-2SA-M12
		2 ... 200	565399	SFAB-200U-WQ10-2SA-M12
		6 ... 600	565403	SFAB-600U-WQ10-2SA-M12
		10 ... 1,000	565407	SFAB-1000U-WQ10-2SA-M12
	2x PNP or NPN, 1 analogue output 0 ... 10 V	0.1 ... 10	565388	SFAB-10U-WQ6-2SV-M12
		0.5 ... 50	565392	SFAB-50U-WQ6-2SV-M12
		2 ... 200	565396	SFAB-200U-WQ8-2SV-M12
		2 ... 200	565400	SFAB-200U-WQ10-2SV-M12
		6 ... 600	565404	SFAB-600U-WQ10-2SV-M12
		10 ... 1,000	565408	SFAB-1000U-WQ10-2SV-M12

Flow sensors SFAB

Ordering data – Modular products

FESTO

Ordering table						
			Conditions	Code		Enter code
M	Module No.	**563795**				
	Function	Flow sensor		**SFAB**		-SFAB
				-		
O	Medium	Compressed air		_		
M	Flow measuring range l/min	Max. 10		**10**		
		Max. 50		**50**		
		Max. 200		**200**		
		Max. 600		**600**		
		Max. 1,000		**1000**		
	Flow input	Unidirectional		**U**		U
	Type of mounting	H-rail mounting		**-H**		
		Wall mounting		**-W**		
	Pneumatic connection	Push-in connector 6 mm	1	**Q6**		
		Push-in connector 8 mm	2	**Q8**		
		Push-in connector 10 mm		**Q10**		
		Push-in connector 12 mm		**Q12**		
		Push-in connector for 1/4	1	**T14**		
		Push-in connector for 5/16	2	**T516**		
		Push-in connector for 3/8		**T38**		
	Electrical output	2x PNP or NPN, 1 analogue output 4 ... 20 mA		**-2SA**		
		2x PNP or NPN, 1 analogue output 0 ... 10 V		**-2SV**		
	Electrical connection	Plug M12, A-coded		**-M12**		M12
O	Additional function	Not specified				
		Control element	3	**-D**		
	Electrical accessories	Not specified				
		Angled plug socket, cable 2.5 m		**-2.5A**		
		Straight socket, cable 2.5 m		**-2.5S**		
		Angled plug socket, cable 5 m		**-5A**		
		Straight socket, cable 5 m		**-5S**		
	EU certification	Not specified				
		II 3GD		**-EX2**		

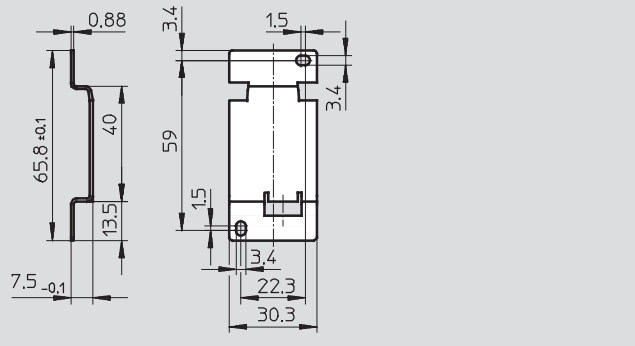
1 **Q6, T14** Not with flow measuring range 200; 600; 1,000
2 **Q8, T516** Not with flow measuring range 600; 1,000
3 **D** Only with flow measuring range 10, 50 in combination with pneumatic connection Q6
Only with flow measuring range 200 in combination with pneumatic connection Q8

Transfer order code

563795	SFAB	–		–		–	-U	–		–		–		–	M12	–		–		–	

Adapter plate SDE1-...-W...
for wall or surface mounting

Material:
Steel



Ordering data		
	Part No.	Type
Adapter plate[1)]	**194 297**	**SDE1-...-W...**

1) Included in the scope of delivery with SFAB-...-W...

Ordering data – Connecting cables			Technical data ➔ Internet: nebu	
	Number of wires	Cable length [m]	Part No.	Type
M12x1, straight socket				
	5	2.5	**541330**	**NEBU-M12G5-K-2.5-LE5**
		5	**541331**	**NEBU-M12G5-K-5-LE5**
M12x1, angled socket				
	5	2.5	**567843**	**NEBU-M12W5-K-2.5-LE5**
		5	**567844**	**NEBU-M12W5-K-5-LE5**

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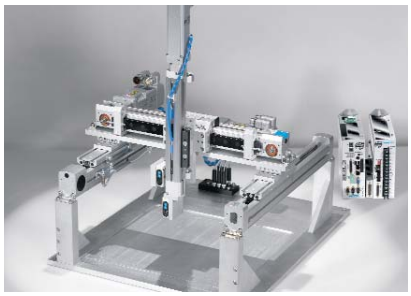

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