

Flow sensors SFE3/SFET

Compact and versatile

FESTO

Absolute flow
information –
absolute economy



Info 314 →→

The new standard: Flow sensors SFE3/SFET

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Extremely compact ...

... while nonetheless offering everything that a sensor must: the SFE3 product family provides absolute flow information over a large measuring range. The threshold value and/or switching point can be adjusted either via an integrated or remote display.

Solves many problems

The SFE3 offers solutions for previously unresolved problems in the area of suction monitoring, flow monitoring, contact monitoring and leak checks.

Standardised range

Where previously time and cost-intensive in-house constructions were required, SFE3 and SFET now provide a standardized sensor program!

Flow rate sensors SFE3

Incredibly compact, extremely short response times and a broad measuring range: The perfect solution not only for the electronic, light assembly, optical and pharmaceutical industries.



Compact!



Slim!



Decentralised!

Measure flow – define threshold values – mark switching points

Always the right choice: flow sensors and transmitters SFE3/SFET. Designed for the electronics industry and/or small parts handling.

Advantages for designers

Universal compatibility

There are applications in the areas of suction monitoring, flow monitoring, contact monitoring and leak checks – with a wide measuring range of 0.05 ... 50 l/min.

Easier problem solving

Where previously complex solutions had to be constructed using pressure sensors, the SFE3 now provides an off-the-shelf solution.

Reduced design costs

The SFE3 is a ready-to-install component – and the integrated QS push-in connectors make connecting to Festo pneumatics child's play.

Advantages for users

Quick and easy commissioning

Thanks to the easy to understand display and control interface with handy 3-key operation and remote or integrated display.

Reliable

The SFE3 is a tested, standardized component, which you can just install and forget.

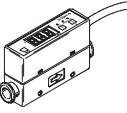
Shorter cycle times with simultaneously reliable suction monitoring

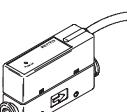
These make possible the ultra-fast response times as well as the extremely high signal strokes, in comparison to pressure sensors.

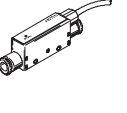
Flow sensors SFE...

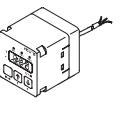
Product range overview

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Function	Design	Type	Operating pressure [bar]	Flow measuring range [l/min]	Switch output
Sensors with digital display		SFE3	-0.7 ... +7	0.05 ... 0.5 0.1 ... 1 0.5 ... 5 1 ... 10 5 ... 50	2xPNP
					2xNPN

Function	Design	Type	Operating pressure [bar]	Flow measuring range [l/min]	Switch output
Sensors with analogue output		SFET-F	-0.7 ... +7	0.05 ... 0.5 0.1 ... 1 0.5 ... 5 1 ... 10 5 ... 50	-

Function	Design	Type	Operating pressure [bar]	Flow measuring range [l/min]	Switch output
Sensors for vacuum with analogue output		SFET-R	-0.9 ... +2	-0.05 ... +0.05 -0.1 ... +0.1 -0.5 ... +0.5 -1 ... +1 -5 ... +5 -10 ... +10	-

Function	Design	Type	Operating pressure [bar]	Indicating range [l/min]		Switch output
				SFEV-F	SFEV-R	
Separate digital display for sensors SFET-F and SFET-R		SFEV-F SFEV-R	-	0.05 ... 0.5 0.1 ... 1 0.5 ... 5 1 ... 10 5 ... 50	-0.05 ... +0.05 -0.1 ... +0.1 -0.5 ... +0.5 -1 ... +1 -5 ... +5 -10 ... +10	2xPNP 2xNPN

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Product range overview

Type	Switching element function (NO/NC)	Switching function (Threshold value/Hysteresis)	Analogue output [V]	Free of copper, PTFE and silicone	➔ Page
SFE3	Switchable	Freely programmable	1 ... 5	–	8
	Switchable	Freely programmable		–	

Type	Switching element function (NO/NC)	Switching function (Threshold value/Hysteresis)	Analogue output [V]	Free of copper, PTFE and silicone	➔ Page
SFET-F	–	–	1 ... 5	–	10

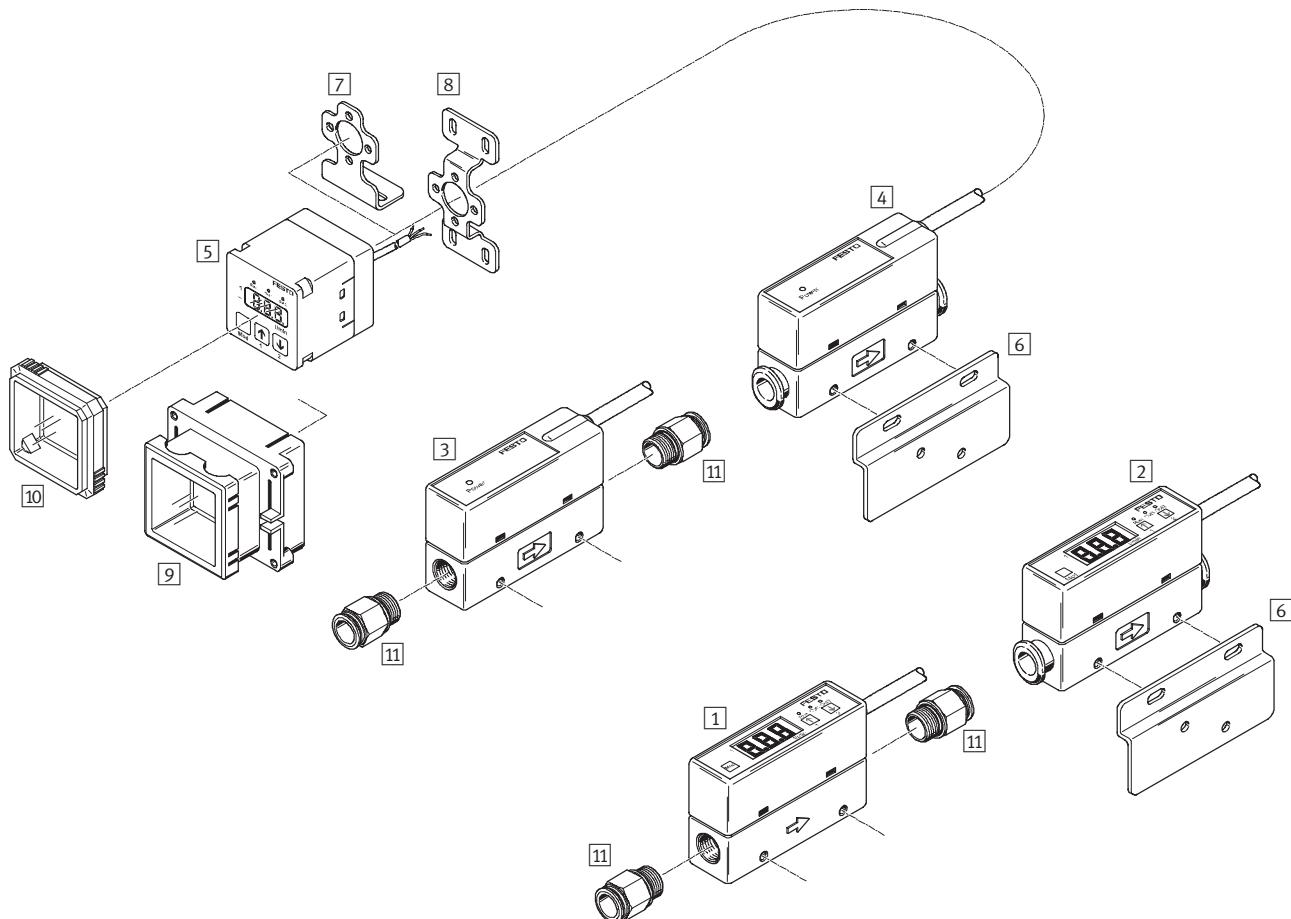
Type	Switching element function (NO/NC)	Switching function (Threshold value/Hysteresis)	Analogue output [V]	Free of copper, PTFE and silicone	➔ Page
SFET-R	–	–	1 ... 5	–	12

Type	Switching element function (NO/NC)	Switching function (Threshold value/Hysteresis)	Analogue output [V]	Free of copper, PTFE and silicone	➔ Page
SFEV-F SFEV-R	Switchable	Freely programmable	1 ... 5	–	14
	Switchable	Freely programmable		–	

Flow sensors SFE...

Peripherals overview

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Accessories	Brief description	→ Page
Flow sensors		
[1] SFE3-...-W18...	Flow sensors with integrated digital display, with female thread	8
[2] SFE3-...-WQ...	Flow sensors with integrated digital display, with push-in fitting QS	
[3] SFET-...-W18...	Flow transmitter without display, with female thread	10
[4] SFET-...-WQ...	Flow transmitter without display, with push-in fitting QS	
[5] SFEV...	Digital display for Flow transmitter	14
Mounting attachments		
[6] Wall mounting bracket SFEZ-BW1		16
[7] Wall mounting bracket SFEV-BW1		
[8] Wall mounting bracket SFEV-WH1		
[9] Front panel installation kit SFEV-FH1		
[10] Safety guard SFEV-SH1		
[11] Push-in fitting QS-1/8...		

Flow sensors SFE...

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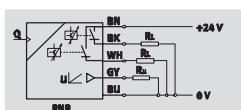
Type codes

SFE	3	-	F	100	-	L	-	W	Q6	-	2P	B	-	K1											
Type																									
SFE	Flow sensor																								
Construction																									
3	With integrated digital display																								
T	Flow transmitter																								
V	Separate digital display																								
Direction of flow																									
F	Mono-directional																								
R	Bi-directional																								
Flow measuring range [l/min]																									
Mono-directional																									
005	0.05 ... 0.5																								
010	0.1 ... 1																								
050	0.5 ... 5																								
100	1 ... 10																								
500	5 ... 50																								
Bi-directional																									
0005	-0.05 ... +0.05																								
0010	-0.1 ... +0.1																								
0050	-0.5 ... +0.5																								
0100	-1 ... +1																								
0500	-5 ... +5																								
1000	-10 ... +10																								
Calibration																									
L	Air																								
Mounting																									
W	Wall or surface mounting																								
Pneumatic connection																									
Q4	Push-in fitting QS-4																								
Q6	Push-in fitting QS-6																								
18	Female thread G1/8																								
Switch output																									
2P	2x PNP																								
2N	2x NPN																								
Analogue output																									
B	1 ... 5 V																								
D	3 ± 2 V																								
Length of the connecting cable																									
K1	1 m																								
K3	3 m																								

Flow sensors SFE3...

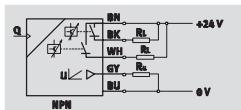
Technical data

Function¹⁾



- Switch output 2x PNP or 2x NPN
- Analogue output 1 ... 5 V
- 3-character digital display

1) Can be switched between analogue output and switch output 2xPNP



1) Can be switched between analogue output and switch output 2xNPN



General technical data

Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50					
Indicating range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50					
Type of display	3 1/2-character alphanumeric										
Reproducibility, analogue value FS	[%]	1									
Reproducibility, switching value FS	[%]	1									
Accuracy FS	[%]	8	5								
Pneumatic connection	QS-6										
Ready status display	-										
Type of mounting	Via through-holes										
Assembly position ¹⁾	Horizontal or vertical										

1) Measurement inaccuracies can occur if installed at an angle.

Electrical data

Switch output	2x PNP or 2x NPN						
Analogue output	[V]	1 ... 5					
Switching element function	Switchable						
Switching function	Freely programmable						
Operating voltage range	[V DC]	12 ... 24					
Load resistance	[kΩ]	50					
Response time	[ms]	50					
Electrical connection	Cable						
Cable length	[m]	1					
Protection class to EN 60 529	IP40						
CE symbol	89/336/EEC (EMC)						

Materials

Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50
Housing	Polyamide					Aluminium
Cable sheath	Polyvinyl chloride					
Material note	Contains PWIS (Paint wetting impairment substances)					

Operating and environmental conditions

Operating pressure	[bar]	-0.7 ... +7
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 0.01 µm	
Temperature of medium	[°C]	0 ... 50
Ambient temperature	[°C]	0 ... 50
Corrosion resistance class CRC ¹⁾	2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

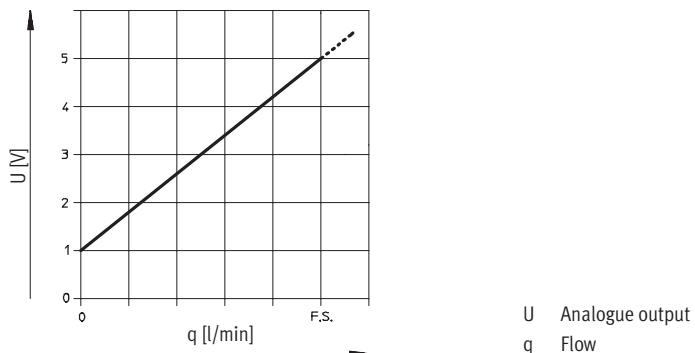
Flow sensors SFE3...

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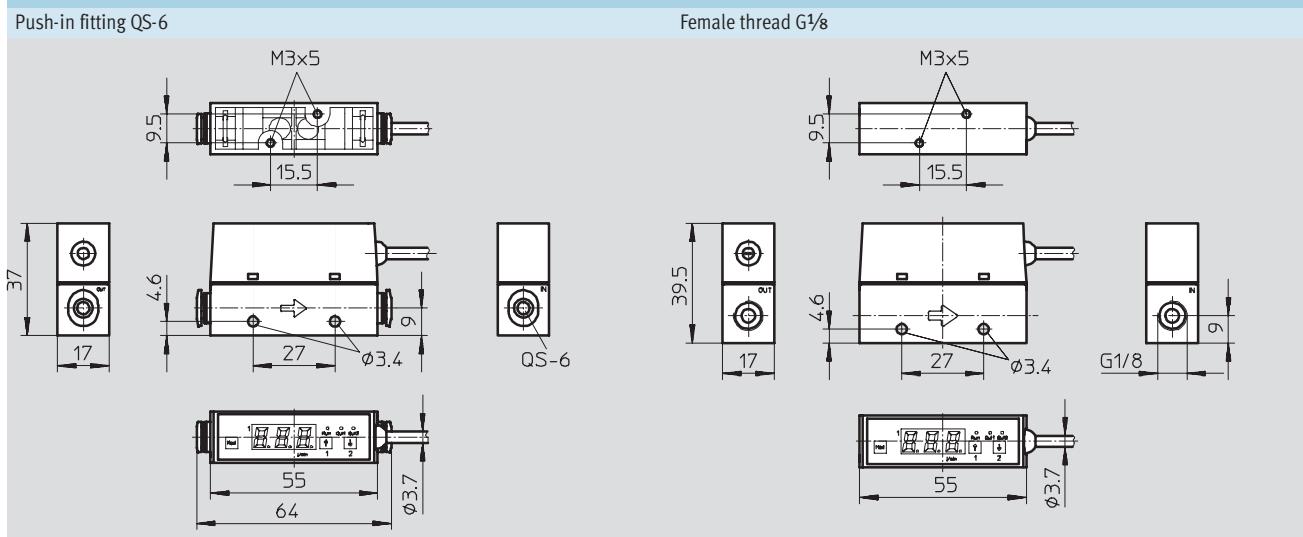
Technical data

Weights [g]					
Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10
		70			90

Analogue output as a function of flow



Dimensions

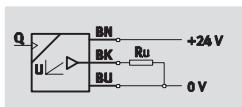


Ordering data	Switch output	Analogue output [V]	Flow measuring range [l/min]	Pneumatic connection		Part No.	Type
				Push-in fitting QS-6	Female thread G1/8		
Pressure range -0.7 ... +7 bar							
2x PNP	1 ... 5	0.05 ... 0.5	■	-	538 519	SFE3-F005-L-WQ6-2PB-K1	
		0.1 ... 1	■	-	538 520	SFE3-F010-L-WQ6-2PB-K1	
		0.5 ... 5	■	-	538 521	SFE3-F050-L-WQ6-2PB-K1	
		1 ... 10	■	-	538 522	SFE3-F100-L-WQ6-2PB-K1	
		5 ... 50	-	■	538 523	SFE3-F500-L-W18-2PB-K1	
2x NPN	1 ... 5	0.05 ... 0.5	■	-	538 524	SFE3-F005-L-WQ6-2NB-K1	
		0.1 ... 1	■	-	538 525	SFE3-F010-L-WQ6-2NB-K1	
		0.5 ... 5	■	-	538 526	SFE3-F050-L-WQ6-2NB-K1	
		1 ... 10	■	-	538 527	SFE3-F100-L-WQ6-2NB-K1	
		5 ... 50	-	■	538 528	SFE3-F500-L-W18-2NB-K1	

Flow sensors SFET-F...

Technical data

Function¹⁾



1) With analogue output

- Analogue output 1 ... 5 V
- To connect a separate digital display SFEV-F...



General technical data

Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50
Indicating range	[l/min]	–	–	–	–	–
Type of display		–	–	–	–	–
Reproducibility, analogue value FS	[%]	1			3	
Reproducibility, switching value FS	[%]	–			–	
Linearity error FS	[%]	8	5			
Accuracy FS	[%]	–	–	–	–	–
Pneumatic connection		QS-6			Female thread G1½	
Ready status display		LED				
Type of mounting		Via through-holes				
Assembly position ¹⁾		Horizontal or vertical				

1) Measurement inaccuracies can occur if installed at an angle.

Electrical data

Switch output	–	–	–	–	–	–
Analogue output	[V]	1 ... 5				
Switching element function		–	–	–	–	–
Switching function		–	–	–	–	–
Operating voltage range	[V DC]	12 ... 24				
Load resistance	[kΩ]	50				
Response time	[ms]	50				
Electrical connection		Cable				
Cable length	[m]	1				
Protection class to EN 60 529		IP40				
CE symbol		–				

Materials

Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50
Housing		Polyamide			Aluminium, polyamide	
Cable sheath		Polyvinyl chloride				
Material note		Contains PWIS (Paint wetting impairment substances)				

Operating and environmental conditions

Operating pressure	[bar]	-0.7 ... +7	–	–	–	–
Operating medium		Compressed air, filtered, unlubricated, grade of filtration 0.01 µm				
Temperature of medium	[°C]	0 ... 50				
Ambient temperature	[°C]	0 ... 50				
Corrosion resistance class CRC ¹⁾		2				

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

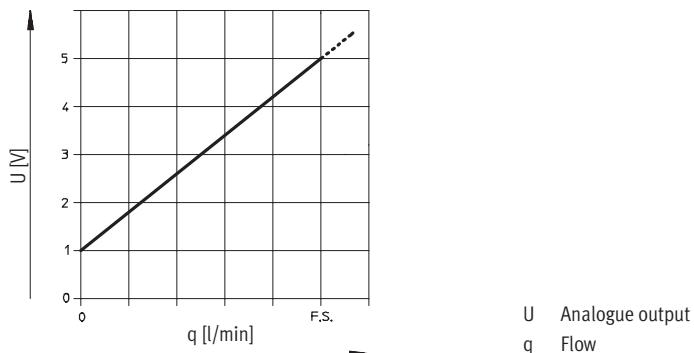
Flow sensors SFET-F...

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Technical data

Weights [g]					
Flow measuring range	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10
		70			90

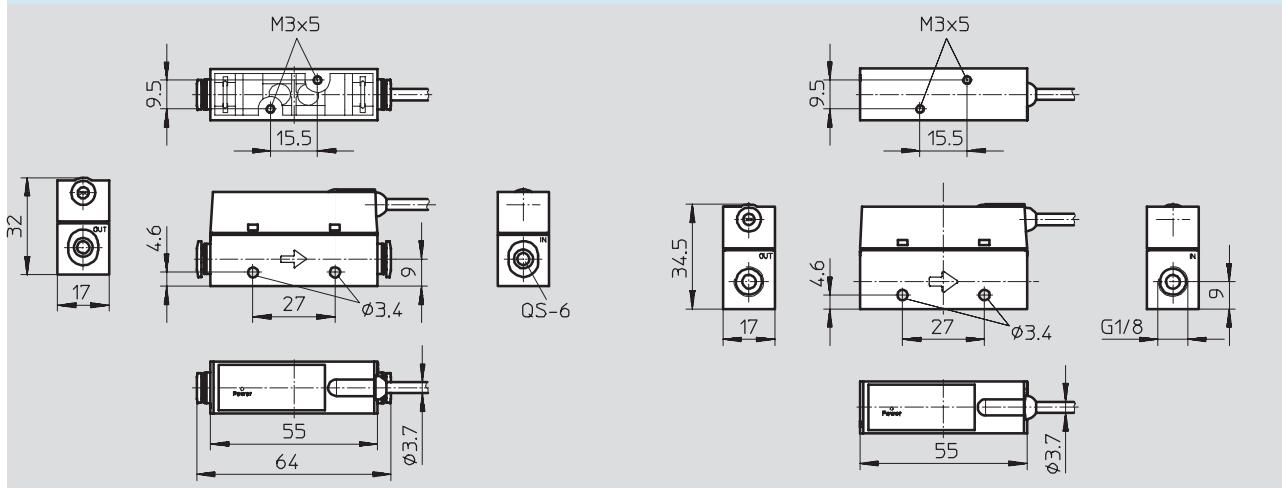
Analogue output as a function of flow



Dimensions

Push-in fitting QS-6

Female thread G1/8



Ordering data

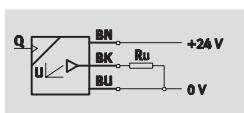
Switch output	Analogue output [V]	Flow measuring range [l/min]	Pneumatic connection		Part No.	Type
			Push-in fitting QS-6	Female thread G1/8		
Pressure range -0.7 ... +7 bar						
-	1 ... 5	0.05 ... 0.5	■	-	538 529	SFET-F005-L-WQ6-B-K1
		0.1 ... 1	■	-	538 530	SFET-F010-L-WQ6-B-K1
		0.5 ... 5	■	-	538 531	SFET-F050-L-WQ6-B-K1
		1 ... 10	■	-	538 532	SFET-F100-L-WQ6-B-K1
		5 ... 50	-	■	538 533	SFET-F500-L-W18-B-K1

Flow sensors SFET-R...

Technical data

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Function¹⁾



1) With analogue output

- Suitable for vacuum
- Bi-directional flow
- Analogue output 1 ... 5 V
- To connect a separate digital display SFEV-R...



General technical data

Flow measuring range	[l/min]	-0.05 ... +0.05	-0.1 ... +0.1	-0.5 ... +0.5	-1 ... +1	-5 ... +5	-10 ... +10
Indicating range	[l/min]	-					
Type of display		-					
Reproducibility, analogue value FS	[%]	1			2		
Reproducibility, switching value FS	[%]	-					
Linearity error FS	[%]	5					
Accuracy FS	[%]	-					
Pneumatic connection		QS-4					
Ready status display		LED					
Type of mounting		Via through-holes					
Assembly position ¹⁾		Horizontal or vertical					

1) Measurement inaccuracies can occur if installed at an angle.

Electrical data

Switch output	-
Analogue output	[V]
	1 ... 5
Switching element function	-
Switching function	-
Operating voltage range	[V DC]
	12 ... 24
Load resistance	[kΩ]
	50
Response time	[ms]
	5
Electrical connection	Cable
Cable length	[m]
	3
Protection class to EN 60 529	IP40
CE symbol	89/336/EEC (EMC)

Materials

Housing	Polyamide
Cable sheath	Polyvinyl chloride
Material note	Contains PWIS (Paint wetting impairment substances)

Flow sensors SFET-R...

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Technical data

Operating and environmental conditions

Operating pressure	[bar]	-0.9 ... 2
Operating medium		Compressed air, filtered, unlubricated, grade of filtration 0.01 µm
Temperature of medium	[°C]	0 ... 50
Ambient temperature	[°C]	0 ... 50
Corrosion resistance class CRC ¹⁾		2

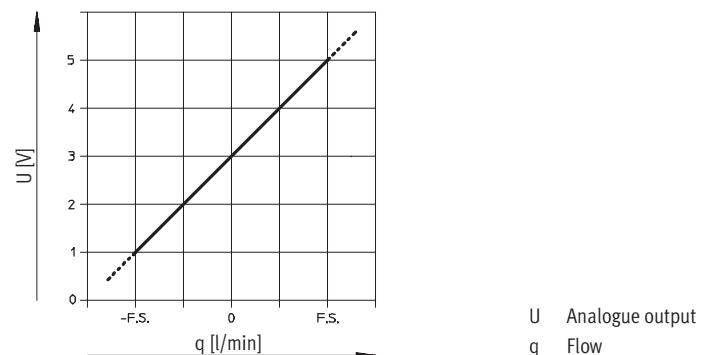
1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

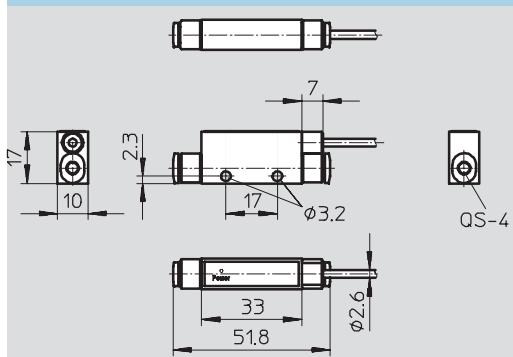
Weights [g]

25

Analogue output as a function of flow



Dimensions



Ordering data

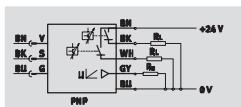
Switch output	Analogue output [V]	Flow measuring range [l/min]	Pneumatic connection	Part No.	Type
Pressure range -0.9 ... +2 bar					
-	1 ... 5	-0.05 ... +0.05	■	538 534	SFET-R0005-L-WQ4-D-K3
		-0.1 ... +0.1	■	538 535	SFET-R0010-L-WQ4-D-K3
		-0.5 ... +0.5	■	538 536	SFET-R0050-L-WQ4-D-K3
		-1 ... +1	■	538 537	SFET-R0100-L-WQ4-D-K3
		-5 ... +5	■	538 538	SFET-R0500-L-WQ4-D-K3
		-10 ... +10	■	538 539	SFET-R1000-L-WQ4-D-K3

Flow sensors SFEV-...

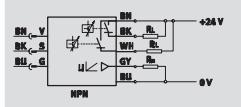
Technical data

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Function¹⁾



- 1) Can be switched between analogue output and switch output 2xPNP



- 1) Can be switched between analogue output and switch output 2xNPN

- Switch output 2x PNP or 2x NPN
- Analogue output 1 ... 5 V
- 3-character digital display
- Separate display for connection with flow sensors SFET-F... or SFET-R...



General technical data

Indicating range For SFET-F...	[l/min]	0.05 ... 0.5	0.1 ... 1	0.5 ... 5	1 ... 10	5 ... 50	-
For SFET-R...	[l/min]	-0.05 ... +0.05	-0.1 ... +0.1	-0.5 ... +0.5	-1 ... +1	-5 ... +5	-10 ... +10
Type of display	3 1/2-character alphanumeric						
Reproducibility, analogue value FS	[%]						
Reproducibility, switching value FS	[%]						
Linearity error FS	[%]						
Accuracy FS	[%]						
Pneumatic connection	-						
Ready status display	-						
Type of mounting	With mounting bracket						
Assembly position	-						

Electrical data

Switch output	2x PNP or 2x NPN
Analogue output [V]	1 ... 5
Switching element function	Switchable
Switching function	Freely programmable
Operating voltage range [V DC]	12 ... 24
Load resistance [kΩ]	50
Response time [ms]	-
Electrical connection	Cable
Cable length [m]	1
Protection class to EN 60 529	IP40
CE symbol	-

Materials

Housing	Polyamide
Cable sheath	Polyvinyl chloride
Material note	Contains PWIS (Paint wetting impairment substances)

Operating and environmental conditions

Operating pressure [bar]	-
Operating medium	-
Temperature of medium [°C]	-
Ambient temperature [°C]	0 ... 50
Corrosion resistance class CRC ¹⁾	2

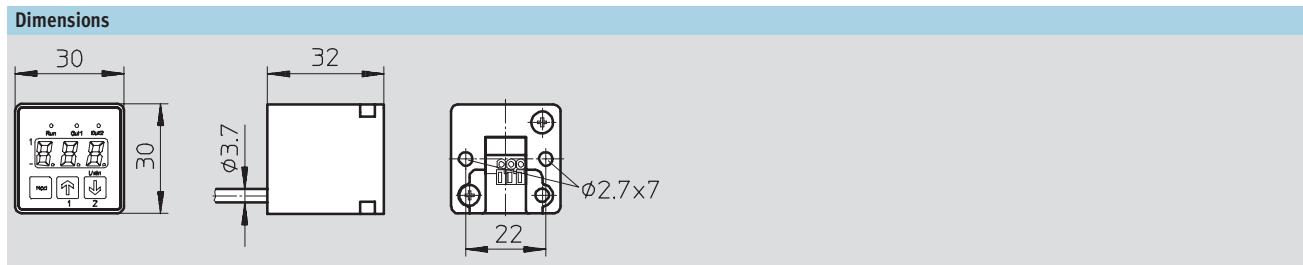
1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Flow sensors SFEV--...

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Technical data

Weights [g]	70
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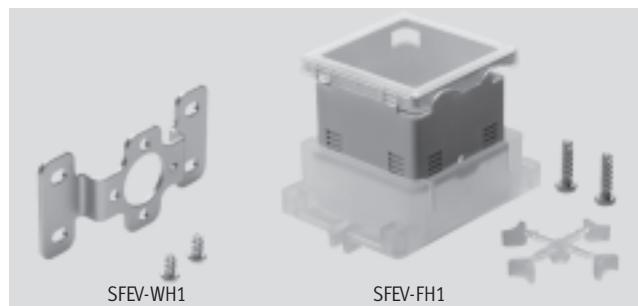
Switch output	Analogue output [V]	Indicating range [l/min]	Part No.	Type
For sensors SFET-F with analogue output				
2x PNP	1 ... 5	0.05 ... 0.5	538 540	SFEV-F005-L-2PB-K1
		0.1 ... 1	538 541	SFEV-F010-L-2PB-K1
		0.5 ... 5	538 542	SFEV-F050-L-2PB-K1
		1 ... 10	538 543	SFEV-F100-L-2PB-K1
		5 ... 50	538 544	SFEV-F500-L-2PB-K1
2x NPN	1 ... 5	0.05 ... 0.5	538 545	SFEV-F005-L-2NB-K1
		0.1 ... 1	538 546	SFEV-F010-L-2NB-K1
		0.5 ... 5	538 547	SFEV-F050-L-2NB-K1
		1 ... 10	538 548	SFEV-F100-L-2NB-K1
		5 ... 50	538 549	SFEV-F500-L-2NB-K1
For sensors SFET-R with analogue output				
2x PNP	1 ... 5	-0.05 ... +0.05	538 550	SFEV-R0005-L-2PD-K1
		-0.1 ... +0.1	538 551	SFEV-R0010-L-2PD-K1
		-0.5 ... +0.5	538 552	SFEV-R0050-L-2PD-K1
		-1 ... +1	538 553	SFEV-R0100-L-2PD-K1
		-5 ... +5	538 554	SFEV-R0500-L-2PD-K1
		-10 ... +10	538 555	SFEV-R1000-L-2PD-K1
2x NPN	1 ... 5	-0.05 ... +0.05	538 556	SFEV-R0005-L-2ND-K1
		-0.1 ... +0.1	538 557	SFEV-R0010-L-2ND-K1
		-0.5 ... +0.5	538 558	SFEV-R0050-L-2ND-K1
		-1 ... +1	538 559	SFEV-R0100-L-2ND-K1
		-5 ... +5	538 560	SFEV-R0500-L-2ND-K1
		-10 ... +10	538 561	SFEV-R1000-L-2ND-K1

Flow sensors SFE...

Accessories

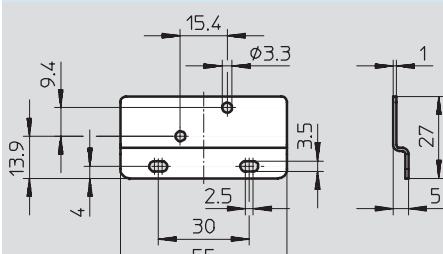
FESTO

Mounting components

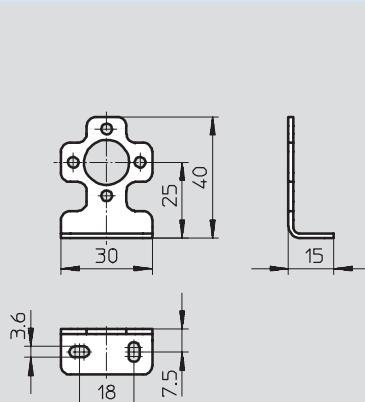


Dimensions

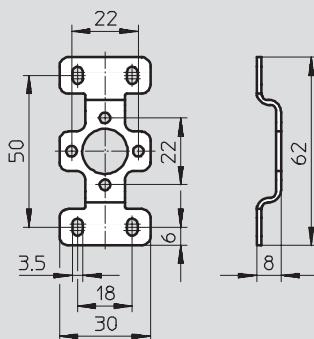
SFEZ-BW1



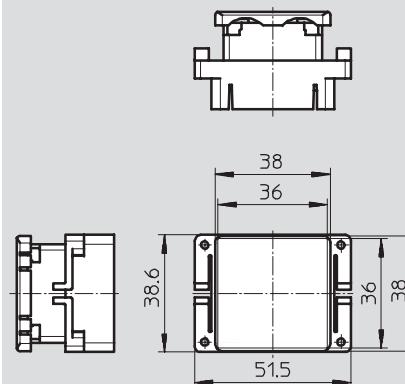
SFEV-BW1



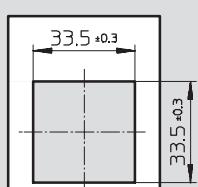
SFEV-WH1



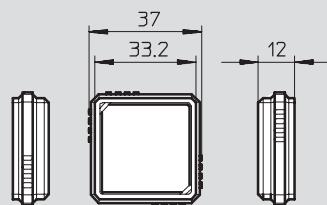
Front panel installation kit SFEV-FH1



Installation aperture



Safety guard SFEV-SH1



Ordering data

Designation	Use	Material	Weight [g]	Free of copper, PTFE and silicone	Part No.	Type
Wall mounting bracket	Flow sensors SFE3, SFET	Steel, nickel-plated	17	■	538 562	SFEV-BW1
	Digital display SFEV		16	■	538 563	SFEV-BW1
			16	■	538 564	SFEV-WH1
Front panel installation kit	Digital display SFEV	Polyamide, reinforced	18	■	538 565	SFEV-FH1
Safety guard			6	■	538 566	SFEV-SH1

What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.

When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.

When Festo components are used in safety-oriented applications, the user shall ensure that all applicable

national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed. Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible. Festo does not accept any liability for resulting damages. You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

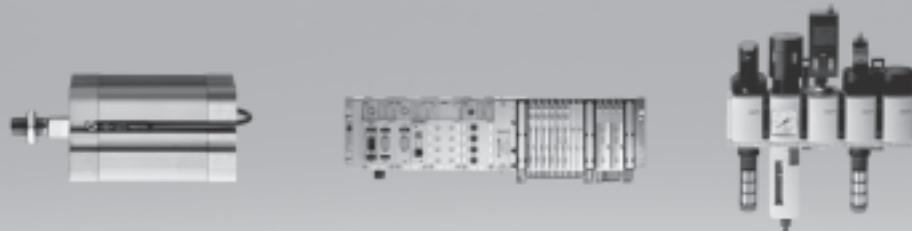
All technical data applies at the time of going to print.

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Products and services – everything from a single source

Products incorporating new ideas are created when enthusiasm for technology and efficiency come together. Tailor-made service goes without saying when the customer is the focus of attention.



Pneumatic and electrical drives

- Pneumatic cylinders
- Semi-rotary drives
- Handling modules
- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers

Valves and valve terminals

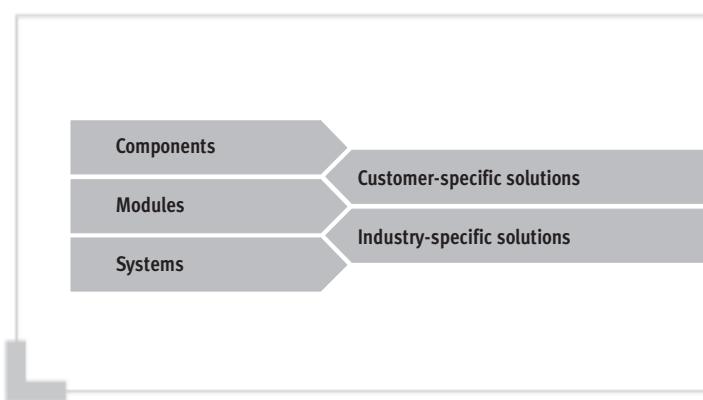
- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
- On-off and soft-start valves
- Dryers
- Pressure amplifiers
- Accessories for compressed air preparation

Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX



Services from Festo to increase your productivity – across the entire value creation sequence



Engineering – for greater speed in the development process

- CAD models
- 14 engineering tools
- Digital catalogue
- FluidDRAW®
- More than 1,000 technical consultants and project engineers worldwide
- Technical hotlines



Supply chain – for greater speed in the procurement process

- E-commerce and online shop
- Online order tracking
- Euro special manufacturing service
- Logistics optimisation



Gripping and vacuum technology

- Vacuum generators
- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
- Standard grippers
- Micro grippers
- Precision grippers
- Heavy-duty grippers

Sensors and monitoring units

- Proximity sensors
- Pressure and flow sensors
- Display and operating units
- Inductive and optical proximity sensors
- Displacement encoders for positioning cylinders
- Optical orientation detection and quality inspection

Controllers/bus systems

- Pneumatic and electropneumatic controllers
- Programmable logic controllers
- Fieldbus systems and accessories
- Timers/counters
- Software for visualisation and data acquisition
- Display and operating units

Accessories

- Pipes
- Tubing
- Pipe connectors and fittings
- Electrical connection technology
- Silencers
- Reservoirs
- Air guns

All in all, 100% product and service quality

A customer-oriented range with unlimited flexibility: Components combine to produce ready-to-install modules and systems. Included in this are special designs – since at Festo, most industry-specific products and customer-specific solutions are based on the 23,000 plus catalogue products. Combined with the services for the entire value creation sequence, the end result is unbeatable economy.



Assembly – for greater speed in the assembly/commissioning process

- Prepack
- Preassembly
- Turnkey pneumatics
- Handling solutions



Operation – for greater speed in the operational process

- Spare parts service
- Energy saving service
- Compressed air consumption analysis
- Compressed air quality analysis
- Customer service