

Gas flow sensors
For medical and industrial
applications



SENSIRION

High performance gas flow measurement

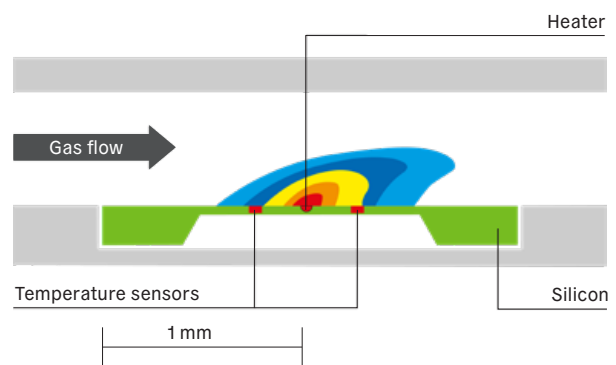
With our long history of designing mass flow solutions for medical technology and industrial automation, we are your ideal partner to support you in the development of new products. Sensirion offers gas flow sensors for diverse applications thanks to these key characteristics:

- Excellent repeatability
- Fast response time
- High sensitivity at low flows
- Wide dynamic range
- Reliability and robustness
- Bidirectionality

For more information, please visit: www.sensirion.com/gasflow

Unique measurement principle

Sensirion's gas flow sensors ensure fast, accurate and economical measurement of gas flow over a wide dynamic range. At the heart of every Sensirion flow sensor is a MEMS-based calorimetric microsensors, which measures the gas flow using the thermal measurement principle (see illustration). The sensor element is integrated with the signal conditioning electronics on a single chip. This unique technological approach – provided by innovative CMOSens® Technology – results in excellent performance and robustness at a very attractive cost. That is why today's leading manufacturers rely on Sensirion's highly sensitive flow meters.



Evaluation kits for fast and easy testing

The SEK-Flow Sensing evaluation kits are test sets for Sensirion's gas flow sensors. Precise test measurements can be made quickly and inexpensively with these ready-to-use kits. The evaluation kit consists of an adapter cable that allows you to connect the sensor directly to your computer. In some cases, our Sensirion sensor bridge multiplexer completes the kit. The viewer software can be downloaded from our website. The software allows measurements at various resolutions and displays mass flow in standard liters per minute (slm). Data can be logged and exported to Excel.



High performance gas flow measurement

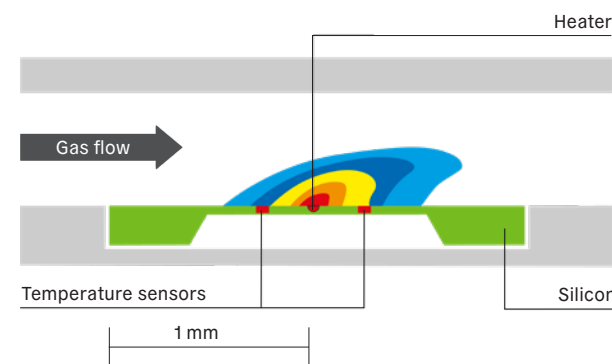
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Products



SFM3003

- Versatile digital flow meter
- Next generation flow meter (wider flow range and improved specifications)
- For high-volume and cost-sensitive applications



SFM3019/SFM3020

- Digital and analog versions for high-volume applications
- Low pressure drop
- Suitable for medical ventilation



SFM3100

- Versatile analog flow meter
- Additional temperature sensor
- Small form factor



SFM3119

- Versatile digital flow meter
- Compact form factor
- Low pressure drop



SFM3200/SFM3200-AW

- SFM3200 for inspiratory use in respiratory applications
- SFM3200-AW for expiratory use in respiratory applications
- Extremely good low-flow performance



SFM3300-AW/SFM3300-D

- Fully calibrated proximal flow sensor for respiratory applications
- Small dead space and low pressure drop
- Single-use and autoclavable/washable version



SFM3400-AW/SFM3400-D

- Neonatal proximal flow meter, fully calibrated
- Small dead space and low pressure drop
- Single-use and autoclavable/washable version



SFM4200

- Versatile digital flow meter
- Pressure stable up to 8 bar
- Downmount connector for manifold integration



SFM4300

- Compact size
- High precision and sensitivity (esp. for low flow rates)
- Flow range: 0 to 20 slm



SFM5300/SFM5400

- Versatile high-precision flow meters
- Metal body, pressure stable up to 10 bar
- Wide range of gas calibrations and flow ranges

	SFM3003	SFM3019/SFM3020	SFM3100	SFM3119	SFM3200/SFM3200-AW	SFM3300-AW/SFM3300-D	SFM3400-AW/SFM3400-D	SFM4200	SFM4300	SFM5300/SFM5400
Autoclavable/Washable	No	No	No	No	Yes (SFM3200-AW) No (SFM3200)	Yes (SFM3300-AW) No (SFM3300-D)	Yes (SFM3400-AW) No (SFM3400-D)	No	No	No
Flow range¹	-30 to 300 slm (-150 to 300 slm available)	SFM3019: -10 to 240 slm SFM3020: -10 to 160 slm	-24 to 240 slm	-10 to 240 slm	-100 to 250 slm	-250 to 250 slm	-33 to 33 slm	0 to 160 slm	0 to 20 slm or 0 to 50 slm	Various flow ranges 0 to 50 sccm to 0 to 100 slm
Accuracy, offset	0.05 slm	0.05 slm	0.02 slm	0.02 slm	0.05 slm	0.1 slm	0.02 slm	0.04 slm	0.005 slm	0.1% FS
Accuracy, % of MV	2% (< 200 slm) 2.5% (< 300 slm)	3% (< 0 slm) 2% (> 0 slm)	2.5% (< 60 slm) 3.5% (< 150 slm) 4.5% (< 240 slm)	2% (< 100 slm) 3% (< 160 slm) 5% (rest)	2% (-40 to 80 slm) 3% (-60 to 100 slm) 7% (-100 to 250 slm)	3% (-100 to 100 slm) 7% (-250 to 250 slm)	3%	2.5% (< 80 slm) 5% (> 80 slm)	2% (O ₂ , air) 3% (CO ₂ , N ₂ O)	1%
Repeatability/Noise										
Low flow range	++	++	+++	+++	+++	++	+++	+++	+++	+++
High flow range	++	++	++	+	++	+	na ²	++	na ²	+++
Pressure drop	< 5 mbar @ 200 slm	< 5 mbar @ 200 slm	< 16 mbar @ 200 slm	< 16 mbar @ 200 slm	< 1 mbar @ 60 slm	< 1.8 mbar @ 60 slm	< 1 mbar @ 5 slm	< 20 mbar @ 60 slm	< 25 mbar @ 20 slm	Depending on flow range
Fluidic interface	Medical cone (22 mm), O-ring	Medical cone (22 mm), O-ring	O-ring	O-ring	Medical cone (22 mm), O-ring	Medical cone (22 mm)	Medical cone (15 mm)	Downmount	Downmount, Legris, O-rings	Downmount, Swagelock, VCR, VCO, Legris, UNF thread
Interface	Digital, I ² C	Digital, I ² C (SFM3019), analog (SFM3020)	Analog	Digital, I ² C	Digital, I ² C	Digital, I ² C	Digital, I ² C	Digital, I ² C	Digital, I ² C	Digital (RS485, IO-Link, DeviceNet), analog
Sampling time	0.5 ms	SFM3019: 0.5 ms	-	0.5 ms	0.5 ms	0.5 ms	0.5 ms	0.5 ms	0.5 ms	1 ms
Calibrated for	O ₂ , air and mixtures of air/O ₂ , heliox in option	Air, O ₂ (SFM3019: and mixtures of air/O ₂)	Air, N ₂ , formula for O ₂	Air, O ₂ and mixtures of air/O ₂	Air, N ₂ , formula for O ₂	Air, N ₂ , formula for O ₂	Air, N ₂ , formula for O ₂	Air, N ₂ formula for O ₂	Air, O ₂ , N ₂ O, O ₂ and mixtures of O ₂ /air, O ₂ /N ₂ O, O ₂ /CO ₂	Air, N ₂ , O ₂ , Ar, CO ₂ , He, H ₂ , other gases on request
Power supply	2.7 V–5.5 V	2.7 V–5.5 V	5 V	2.7 V–5.5 V	5 V	5 V	5 V	5 V	3.0 V–5.5 V	14 V–26 V
Max. working pressure	1.3 bar	1.3 bar	1.1 bar	1.3 bar	1.07 bar	1.1 bar	1.1 bar	8 bar	6 bar	10 bar

¹ slm = standard liters per minute

² na = not applicable

What we offer



Expert first contact

- Specialized and experienced sales force
- Worldwide presence with a global distribution network

Lifetime support

- Reliable and flexible production
- Sustainable product innovation roadmap to meet your future needs

Fast and easy product evaluation


- Comprehensive product portfolio
- Easy-to-use evaluation kits for effortless measurement during sensor evaluation
- Technical documents – data sheets, sample codes, application notes

Customized solutions

- Various flow rates
- A variety of gases (multigas option)
- Special form factor requirements

Design-in support

- Assistance with integrating Sensirion's sensors into your application
- Proven best practices to ensure that your production concept accommodates the requirements of our gas flow sensors



Technology at heart,
future in mind.