SENSIRION SFC5400 Mass Flow Controllers User Guide

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SENSIRION SFC5400 Mass Flow Controllers

This selection guide will help you find the right Sensirion mass flow controller (MFC), depending on your requirements.

The heart of Sensirion mass flow controllers (MFCs) is a high-precision sensor element with state-of-the-art signal processing on a single chip. Thanks to this technology, Sensirion MFCs achieve unmatched ratings for speed, accuracy and dynamic range. Sensirion technology reaches superior accuracy and repeatability, especially at low flow rates. The devices show no drift and hence never require recalibration. All MFCs are also available in flow meter configurations (SFM series).

Performance line

Best performance and reconfigurability

SFC5500 and
SFC5400

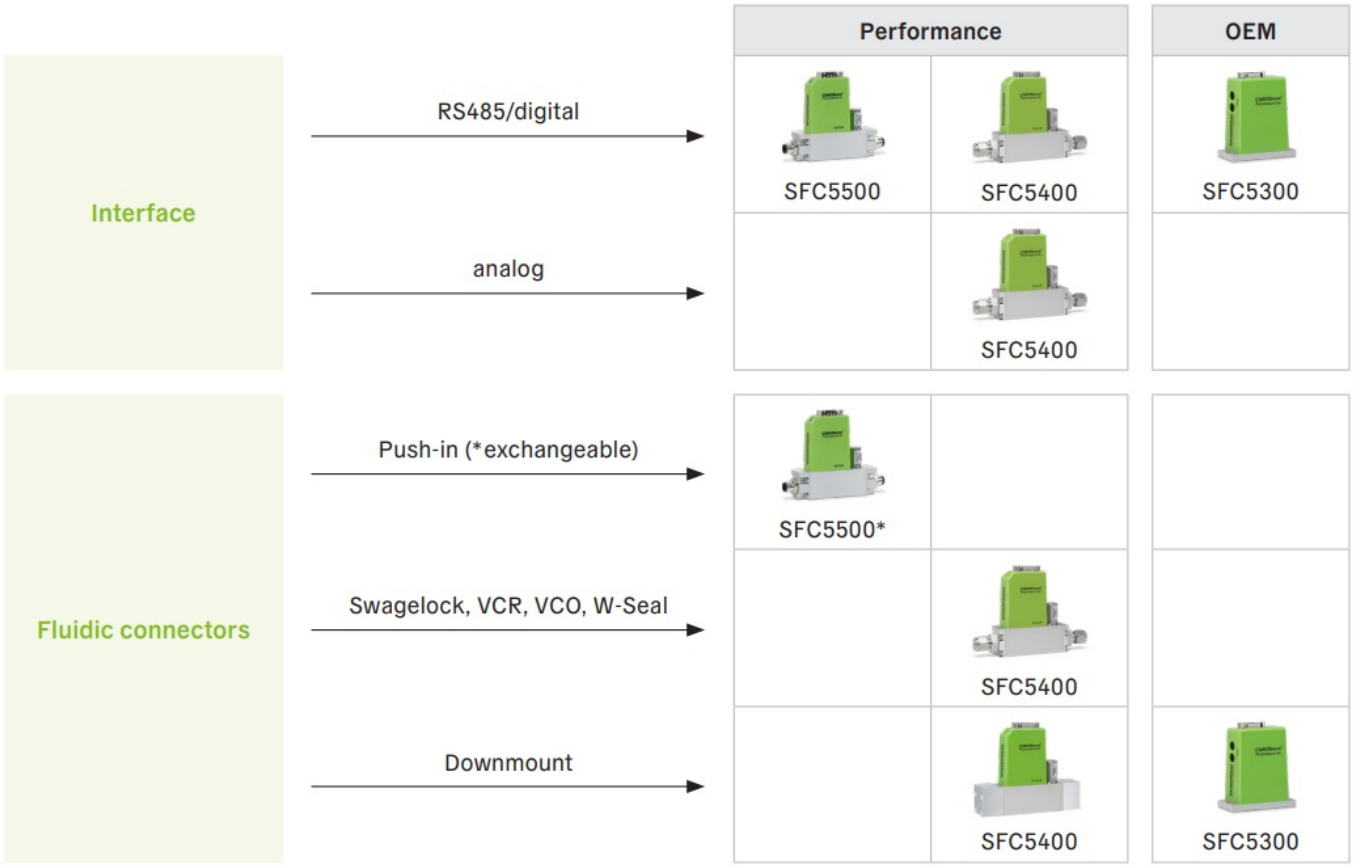
- Highest accuracy
- Choice of interfaces and fittings
- Samples available via online distribution

OEM line

OEM applications

SFC5300

- Optimized OEM performance
- Digital and downmount (manifold)
- From 50 pcs/year



Full-scale flows available

Comparison Table

	Models	Special feature	Availability	Accuracy/ repeatability	Full-scale flow rates	Fluidic connectors	Settling time
Performance line	 SFC5500	Most versatile	via distributors	0.8%/ 0.08% set point	50 sccm 0.5 slm 2 slm 10 slm 200 slm	Push-in Exchangeable fittings	<100 ms
	 SFC5400	Most customizable	Contact Sensirion		50 sccm 100 sccm 200 sccm 500 sccm 1 slm 2 slm 5 slm 10 slm 20 slm 50 slm 100 slm	Downmount (manifold) Swagelock VCR VCO	
	 SFC5460	Lowest profile	Contact Sensirion, MOQ: 50 pcs/yr				
OEM line	  SFC5300 SFC5330	Smallest size		2%/ 0.2% set point	50 sccm 100 sccm 200 sccm 500 sccm 1 slm 2 slm 5 slm	Downmount (manifold)	

Evaluation kit EK-F5x for the SFX5xxx series

- Fastest and most convenient way to evaluate the SFC5XXX and SFM5XXX families
- Ideal for evaluation starting with SFC5500
- Available via distributors
- Kit contains a power supply and connection cable + plug-and-play SFC Viewer software
- RS485 USB interface

Additional information

	SFC5500	SFC5400	SFC5460	SFC5300	SFC5330
Size 1 W H L	**29 91 115 mm**	**25 91 126 mm**	**29 51 105 mm**	**25 80 70 mm**	**25 66 48 mm**
Weight	**270 g**	**280 g**	**255 g**	**170 g**	**95 g**
Electrical connector	**DB9**	**DB9**	**JST 4-pin**	**DB9**	**JST 4-pin**
Communication interface	**RS485** **IO-Link Device Net**	**RS485** **Analog voltage Analog current IO-Link DeviceNet**	**RS485**		
Calibration gas 4	**He, H2, Ar, O2, N2, air, CO2, N2O, CH4**	**non-aggressive gases 2 3**			
Dynamic range	**1000:1 (100% to 0.1% of full-scale flow)**				
Pressure resistance	**up to 10 bar**				

1. Size depends on the fittings. See datasheet for exact dimensions.
2. Configured with different gasses/flow ranges: see MOQ in datasheet.
3. The gases used should be compatible with the wetted parts of the sensor. Typically, it should not be used with gases that attack silicon, or sealing materials. A detailed overview of wetted materials is available as a table in the datasheet.
4. A software tool is provided to manually calibrate the MFC for non-standard gases.

Definitions

Pressure drop is generated when a gas passes through a mass flow controller. It is important to verify that at the maximum required flow rate for a given gas, the inlet pressure is higher than the pressure drop; otherwise the desired maximum flow rate cannot be reached. Increasing the valve size lowers the pressure drop, trading off against the low flow accuracy/resolution. See the definition for valve size.
Valve size is selected by Sensirion based on the desired gas and flow range. However, Sensirion can take into account specific customer wishes, e.g. if a certain pressure drop has to be achieved. Valve size selection is a trade-off between low-flow control, pressure resistance and pressure drop across the MFC. A smaller valve allows for better flow control at low flow rates, but induces a higher pressure drop across the MFC. On the other hand, a large valve induces a lower pressure drop across the MFC, but has worse flow control at low flow rates. In addition, smaller valves are more robust against differential pressure across the MFC (inlet vs outlet pressure).
Calibration gases can have different accuracies. For example, the SFC5500 sensor is factory-calibrated with air/N2, He and CO2, while the calibration of the remaining gases is derived from a gas property simulation (model). The accuracy for the calibrated gases is higher than for those derived from a model. More information can be found in the datasheet of each product or by contacting your sensor expert. A software tool is also provided to manually calibrate the MFC for gases that are not included in the library.

www.sensirion.com

Documents / Resources

	**SENSIRION SFC5400 Mass Flow Controllers** [pdf] User Guide SFC5400, Mass Flow Controllers, SFC5400 Mass Flow Controllers, Flow Controllers, Controllers

References

- **Smart sensor solutions**