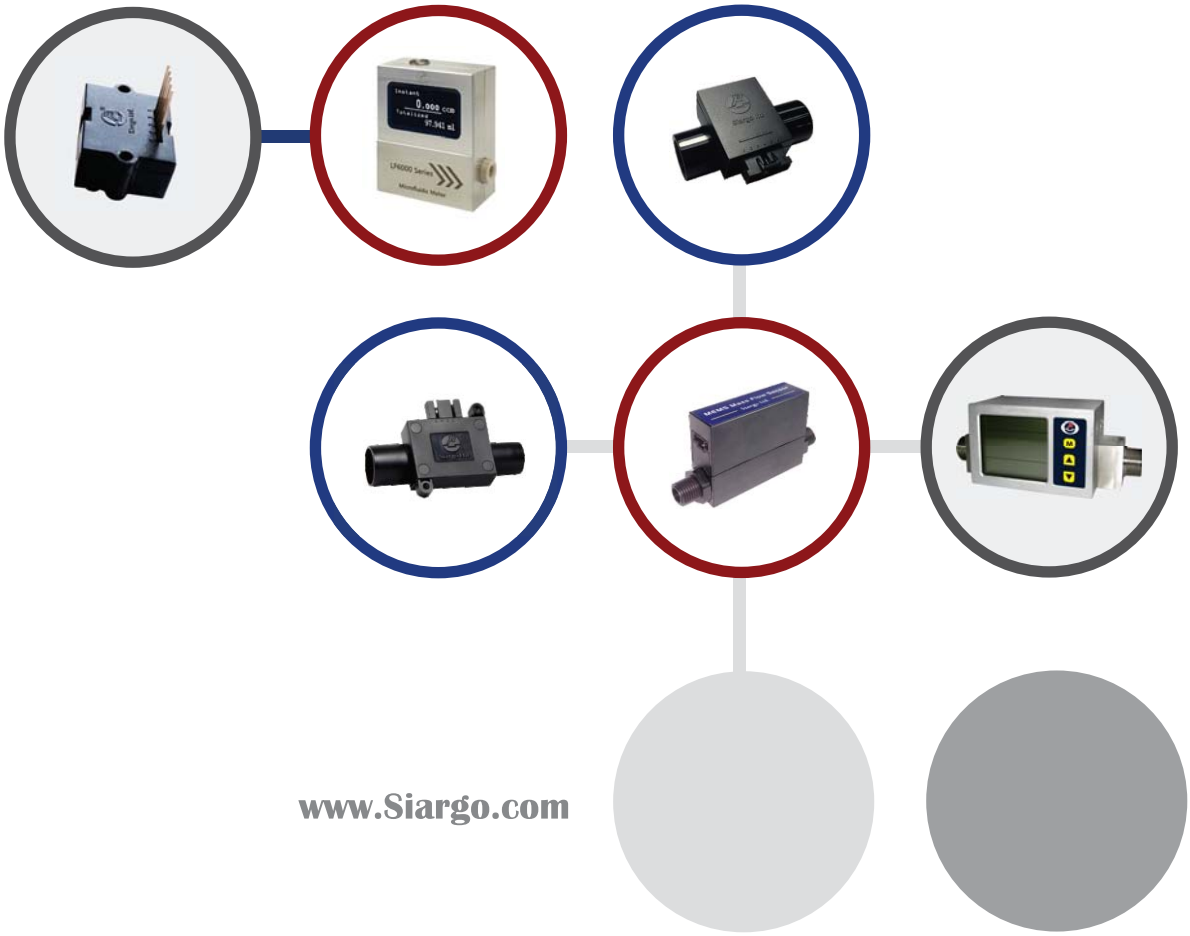
Siargo Ltd.

Product Catalog

DIGITIZE OUR PERCEPTION



www.Siargo.com

THE COMPANY

Established in 2004, Siargo is dedicated to MEMS sensing technology and manufactures MEMS flow, microfluidic, pressure and chemical sensors, modules, and system products that are shipped worldwide. Our global technical team is working 24/7 and ready to provide timely solutions to your even very special requirements.

Our patented low power thermal sensing (time-of-flight and calorimetry) and integrated system technology with IoT capabilities as well as know-hows excel in performance for many conventional and customized applications. We are committed to our customers' requirements and offer value-added features with the most efficient routes.

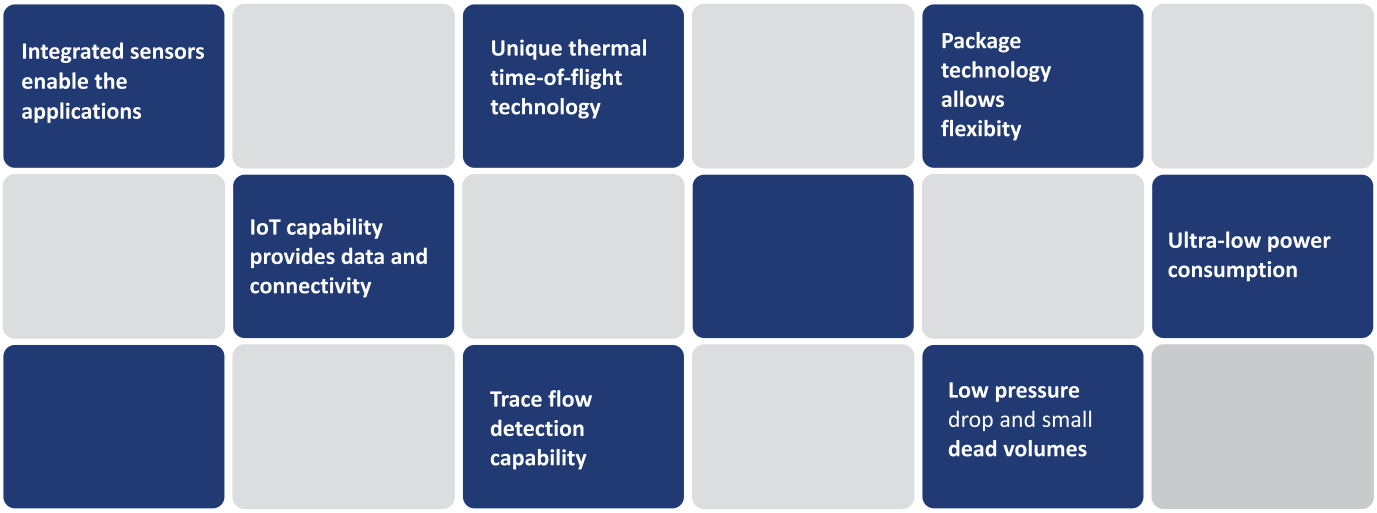
Our products have been deployed to medical, instrumentation, environmental, semiconductor, city utility gas metering, automation, and many others.

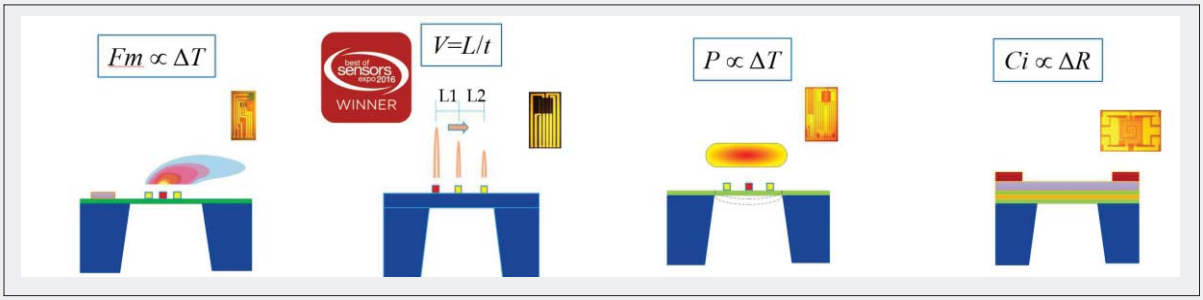
We are ISO9001:2015 and ISO13485 certified and we strictly implement the quality management requirements at every single step of our design, engineering and manufacture process.

Innovation the never stopped and top tasks for technology breakthrough

Quality reliability and performance embedded in every steps

Service timely response and customer satisfactions





The products are manufactured with Siargo's proprietary MEMS sensing technologies. Combined with the packaging and electronics, these products of mass flow, pressure, and chemical sensors/meters offer unique performance tailored for the multi-disipline medical and other industrial applications.

Siargo has been dedicated to develop state-of-the-art MEMS mass flow sensors as well as its package technology aiming to enhance the product performance, functions as well as reliability. Our sensors focus on the innovative integrations and product performance that enables various applications in many challenging circumstances. In addition to the stand-alone products that are highlighted in this catalog, we also offer a wide spectrum of customized products, we value the requirements of customers' applications.

Thermal time-of-flight sensing is a unique technology offered by the company. This technology addresses the current demands for microfluidic metrology. The large dynamic range as well as the precision and disposability enable the applications in medical, instrumentation as well as pharmaceutic and life sciences.

Our patented thermal field pressure sensing is specially effective in measurement of low pressures. It is developed for seamlessly integration with our other thermal sensing based sensors, that shall provide miniaturized package and performance meeting the requirements by many medical applications.

The company also offers a variety of sensor connectivity and IoT options. For a complete solution including Cloud Data and APPs, please contact the manufacturer for additional information and options.

MEMS technology for chemical sensors is also a focal product development by the company. In addition to the thermal conductivity detectors, thermal capacitance measurement as well as other chemical sensors such as pH-sensors shall be released recently. Please contact the manufacturer or visit www.Siargo.com for updates or further information.

Contents

Mass Flow Sensors

Mass Flow Meters

Microfluidic Flow Sensors

Differential Pressure Sensors

FS1015CL Series

Gas Flow Sensors

The Products

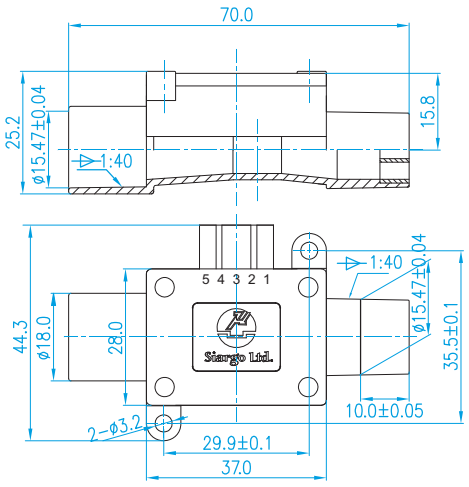
FS1015CL series mass flow sensors are specially designed for medical equipment flow monitor and control applications, and are made with Siargo's world leading proprietary MEMS mass flow sensors and the smart electronic control system. The sensors directly measure mass flow in the designed channel with a low pressure loss. The current models can be readily applied to ventilators and anesthesia equipments.

FS1015CL can measure a flow up to 150 SLPM. ISO-15mm connection is readily applicable to ventilators and/or anesthesia equipments.

Features and Applications

- MEMS thermal mass flow sensor
- Excellent rangeability with integrated multiple sensing elements
- High stability at null and full scale
- Fast response
- Low power consumption
- Low pressure loss

Mechanical Dimensions

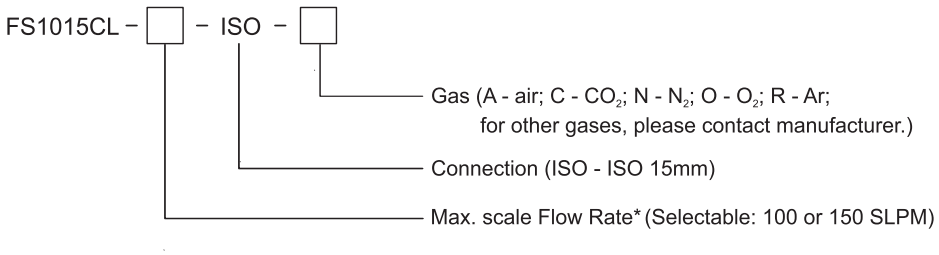


Specifications

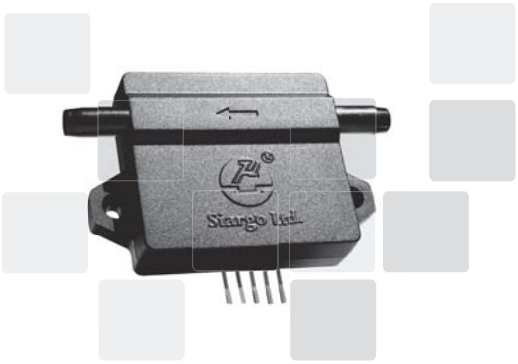
Parameter	FS1015CL	Unit
Flow Range	0 ~ 100; 0 ~ 150	SLPM
Accuracy	± (2.0 + 0.5 FS)	%
Repeatability	0.5	%
Response Time	8 (Max.)	msec
Power Supply	5 (± 5%)	Vdc
Output	Linear: Analog 0.5 ~ 4.5 Vdc	
Pressure Drop (Max.)	1300	Pa
Max. Working Pressure	0.2	MPa
Working Temperature	-10 ~ +55	℃
Storage Temperature	-20 ~ +65	℃
Humidity	< 95 %RH (No icing or condensation)	
Mechanical Connection	ISO - 15 mm	
Pins Out	5 Pins, NS-TECH CD R-5	
Calibration	Air @ 20 °C, 101.325 kPa	
Weight	21.5	g
Maximum Overflow	300	SLPM
Maximum Flow Change	40	SLPM/sec

Note: The above parameters are applicable at 20°C and 101.325kPa.

Product Selection



* Max. flow rate number only, for example, 100 meaning full scale flow rate of 100 SLPM;
For CO_2, selectable: 100SLPM (without 150 SLPM).



FS4001 Series

Gas Flow Sensors

The Products

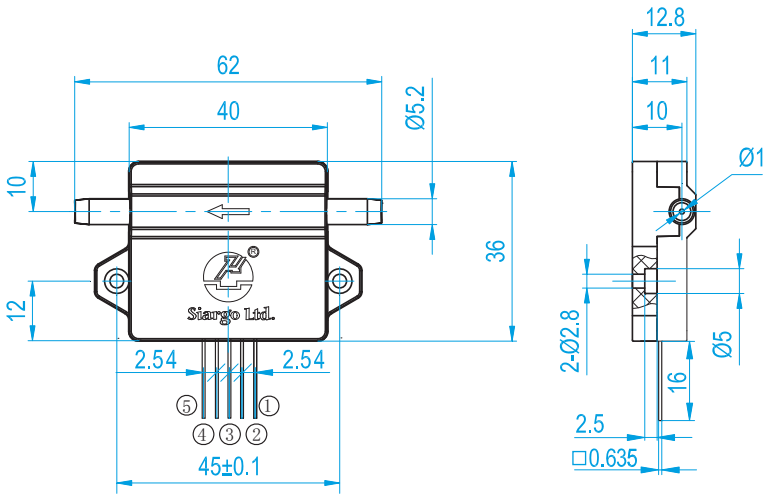
FS4001 series mass flow sensors are manufactured using Siargos proprietary MEMS flow sensor and package technology. The sensors are specially designed for low flow rate range applications from 0 ~ 30 sccm up to 0 ~ 1000 sccm. The maximum flow rate for each model is manufactured via specially designed package as well as smart electronics so that the optimal sensitivity would be achieved.

The packaging enclosure is made of the chemically inert and thermally stable polycarbonate material. The maximum over pressure rating is 5 bar (73 psi) that is benefitted from Siargos unique MEMS sensor chip structure, special packaging technology and the rugged sensor housing.

Features and Applications

- Low mass flow range from 0 ~ 30 sccm up to 0 ~ 1000 sccm
- Outstanding accuracy of ±1.5 %
- Fast response (4 ms selectable)
- Pressure rating up to 5 bar (73 psi)
- Analog and/or digital user interface
- Easy installation

Mechanical Dimensions

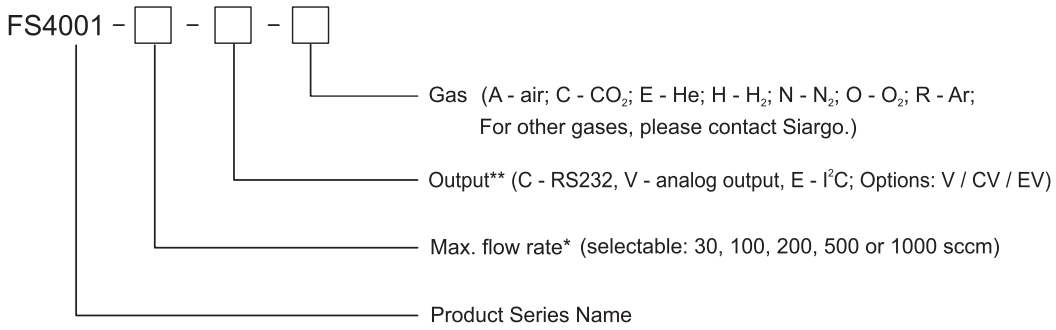


Specifications

Parameter	FS4001	Unit
Flow Range	0 ~ 30, 100, 200, 500, 1000	sccm
Turn-down Ratio	100:1	
Accuracy	± (1.5 + 0.5 FS)	%
Repeatability	0.25	%
Null Shift	± 30	mV
Output Shift	± 0.12	% / ℃
Response Time	65 (Default, 4, 8, 16, 33, 131 selectable)	msec
Power Supply	8 ~ 24 Vdc, 50 mA	
Output	Linear: RS232/I^{2}C, Analog 0.5 ~ 4.5 Vdc	
Pressure Drop (Max.)	350	Pa
Max. Working Pressure	0.5	MPa
Working Temperature	-10 ~ +55	℃
Storage Temperature	-20 ~ +65	℃
Humidity	<95 %RH (No icing or condensation)	
Calibration**	Air @ 20 ℃, 101.325 kPa	
Weight	15	g
Maximum Overflow	3000	sccm
Maximum Flow Change	500	sccm/sec

Notes: * The above parameters are applicable at 20°C and 101.325kPa;
** For other gases calibration, please contact Siargo.

Product Selection



* Max. flow rate number only, for example, 100 means max. flow rate of 100 sccm.
For CO_2, selectable: 30, 100, 200, 500 or 750 sccm (without 1000sccm);
** The sensor standard output is analog, while digital output is optional.

FS4003/08 Series

Gas Flow Sensors

The Products

FS4003/08 series mass flow sensors are designed for general purpose flow monitor and control applications, and are made with Siargo's world leading proprietary MEMS mass flow sensors and the smart electronic control system. The sensors directly measure mass flow in the designed channel with a low pressure loss. These sensors can be used for measuring various of gases, such as air, nitrogen, oxygen, argon, carbon dioxide, etc. These sensors can readily be applied for electronics flow meters for anesthesia equipments, clean room air flow or nitrogen flush monitor and control, environmental equipments such as air sampler, analytical instrumentation such as GC spectrometer.

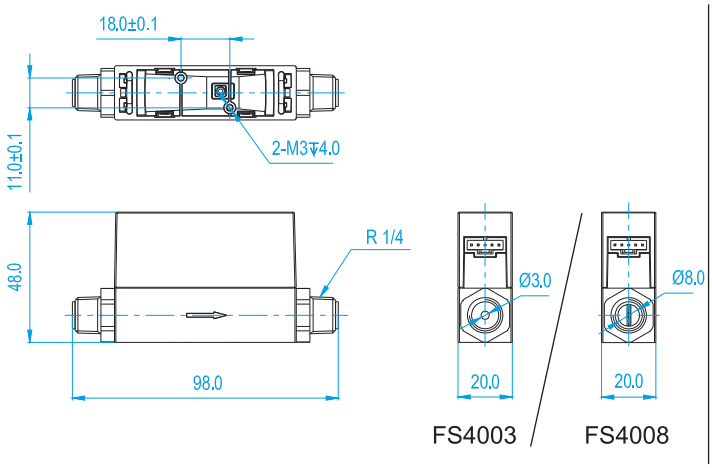
FS4003 has a flow channel diameter of 3 mm. This sensors have a very low pressure loss while it can measure air flow up to 5 SLPM. Applications include leakage detection, particle counter, and analytical instrumentation. FS4008 can be configured to measure flow up to 50 SLPM. It can be applied for gas flow measurement and/or control equipments. Applications include electronic flow meter for anesthesia equipments, clean room gas flow monitor, air sampler, and gas analyzer.

Features and Applications

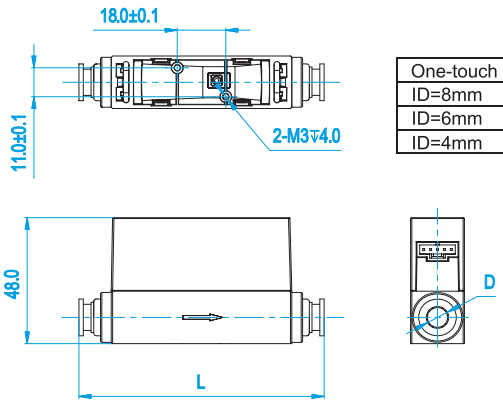
- Mass flow detectable from 0 ~ 2 SLPM to 0 ~ 50 SLPM
- Exchangeable connectors for easy installation
- Digital and analog output provide easy access for various communications
- Compact design ready for multiple channel assembly
- Excellent for electronic meters in anesthesia equipment
- Fast response and low power consumption
- Low pressure loss

Mechanical Dimensions

BSPT 1/4 (R 1/4) connection



One-touch connection



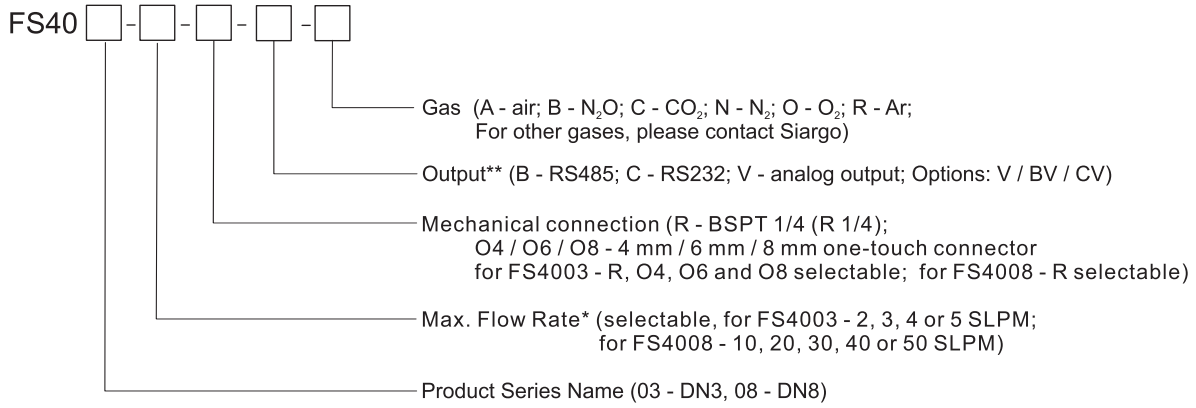
One-touch	L	D
ID=8mm	91.0	Φ8.0
ID=6mm	83.0	Φ6.0
ID=4mm	80.0	Φ4.0

Specifications

Parameter	FS4003	FS4008	Unit
DN	3	8	mm
Flow Range	0 ~ 2, 3, 4, 5	0 ~ 10, 20, 30, 40, 50	SLPM
Turn-down Ratio	100:1		
Accuracy	± (1.5 + 0.2 FS)		%
Repeatability	0.25		%
Null Shift	± 30		mV
Output Shift	± 0.12		% / ℃
Response Time	10 (default, 20, 50, 100, 200, 500, 1000 selectable)		msec
Power Supply	8 ~ 24 Vdc, 50 mA		
Output	Linear: RS485/RS232, Analog 0.5 ~ 4.5 Vdc		
Pressure Drop (Max.)	100	600	Pa
Max. Working Pressure	0.5		MPa
Working Temperature	-10 ~ +55		℃
Storage Temperature	-20 ~ +65		℃
Humidity	<95 %RH (No icing or condensation)		
Mechanical Connection	BSPT 1/4 (R 1/4), 4 mm / 6 mm / 8 mm One-touch	BSPT 1/4 (R 1/4)	
Pins Out	5 Pins, NS-TECH CD R-5		
Calibration*	Air @ 20 ℃, 101.325 kPa		
Weight	50(with BSPT 1/4 (R 1/4))		g
	69(with 4 mm / 8 mm One-touch), 66(with 6 mm One-touch)		
Maximum Overflow	30	200	SLPM
Maximum Flow Change	4	30	SLPM/sec

Notes: * The above parameters are applicable at 20°C and 101.325kPa;
** For other gases calibration, please contact Siargo.

Product Selection



* Max. flow rate number only, for example, 5 meaning full scale flow rate of 5 SLPM;
For CO_2 and N_2O, selectable: 2, 3 or 4 SLPM (without 5 SLPM) for FS4003; 10, 20, 30 or 40 SLPM (without 50 SLPM) for FS4008;

** The sensor standard output is analog. Digital outputs are optional.

FS5001L Series

Gas Flow Sensors

The Products

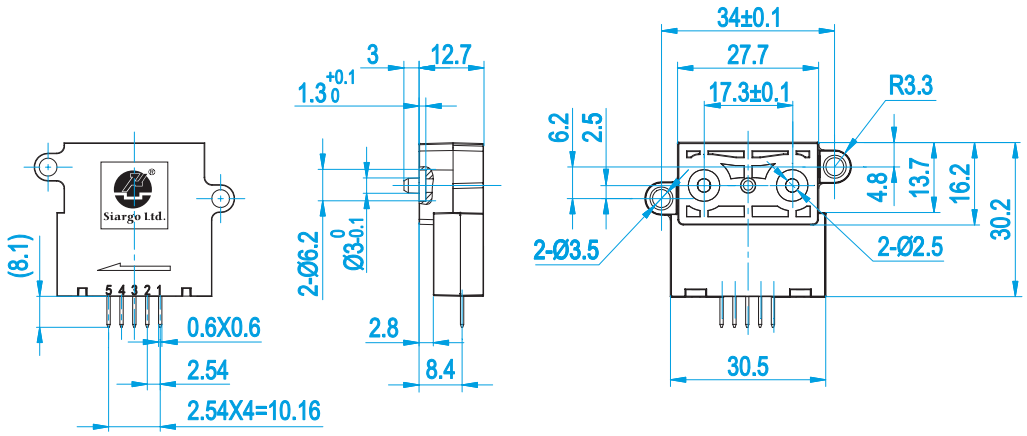
FS5001L series mass flow sensors are designed for general purpose flow monitoring and control applications. The sensors directly measure mass flow in the designed channel with trace flow detection capability. These sensors can readily be applied for manifold flow assembly, leak detection, HVAC control, clean room air flow or nitrogen flush monitoring and control, environmental equipments such as air sampler, analytical instrumentation such as GC spectrometer.

FS5001L can be configured to measure flow full scale from 200 sccm to 6000 sccm (6 SLPM). With a full spectrum of customizable adaptors, it can be plug-and-play in many applications.

Features and Applications

- Low mass flow detectable from 0 ~ 200 sccm up to 0 ~ 6000 sccm
- Outstanding accuracy of 2.0%
- Response time < 10 ms
- Pressure rating up to 5 bar (73 psi)
- Output: analog or both analog and digital

Mechanical Dimensions

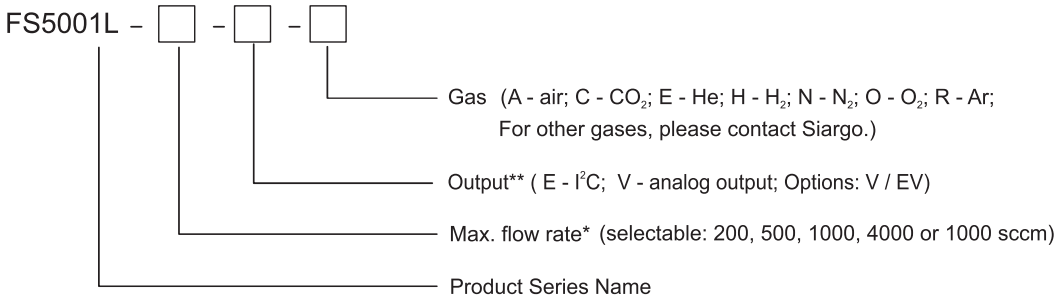


Specifications

Parameter	FS5001L		Unit
Flow Range	0 ~ 200, 500, 1000	0 ~ 4000, 6000	sccm
Turn-down Ratio	100:1		
Accuracy	± (2.0 + 0.5 FS)		%
Repeatability	0.5		%
Null Shift	± 30		mV
Output Shift	± 0.12		% / ℃
Response Time	10 (default, 5, 10, 20, 50, 100, 200, 500, 1000 selectable)		msec
Power Supply	8 ~ 24 Vdc, 50 mA		
Output	Linear: I^2C, Analog 0.5 ~ 4.5 Vdc		
Pressure Drop	<900	<3500	Pa
Working Pressure	-0.08 ~ +0.5		MPa
Working Temperature	-10 ~ +55		℃
Storage Temperature	-20 ~ +65		℃
Humidity	<95 %RH (No icing or condensation)		
Calibration**	Air @ 20 ℃, 101.325 kPa		
Maximum Overflow	3	18	SLPM
Maximum Flow Change	500	3000	sccm/sec

Notes: * The above parameters are applicable at 20°C and 101.325kPa;
** For other gases calibration, please contact Siargo.

Product Selection



* Max. flow rate number only, for example, 100 means max. flow rate of 100 sccm.
For CO_2, selectable: 200, 500, 750 or 4000 sccm (without 1000 and 6000 sccm);
** The sensor standard output is analog, while digital output is optional.

FS6122 Series

Medical (CPAP) Sensors

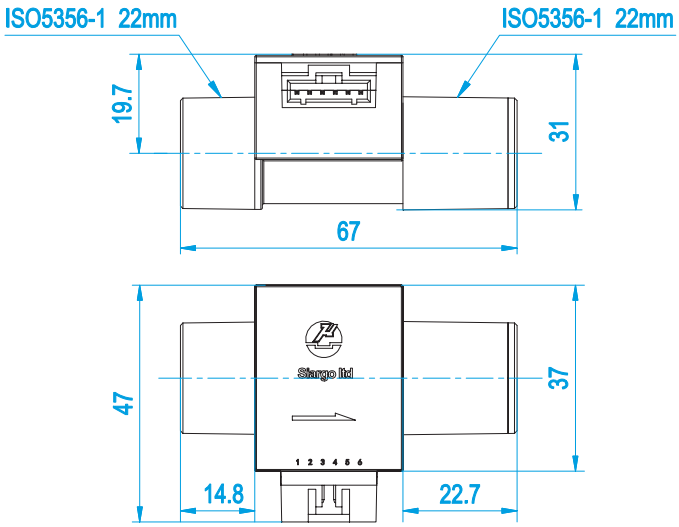
The Products

FS6122 series mass flow sensors are specially designed for personal ventilators for CPAP (continuous positive airway pressure). The sensor integrates MEMS mass flow sensor with a MEMS pressure sensor that provides the necessary information for the proper performance of the state-of-the-art CPAP ventilators. The miniature package not only provide space saving for the ventilator but also provides high accuracy and fast response for both mass flowrate measurement and gauge pressure data while with a very low pressure drop and small dead space.

Features

- Measures mass flow rate and gauge pressure
- Fast response time
- Highly sensitive in small flow rate
- Low power consumption
- Specially designed for medical equipment

Mechanical Dimensions

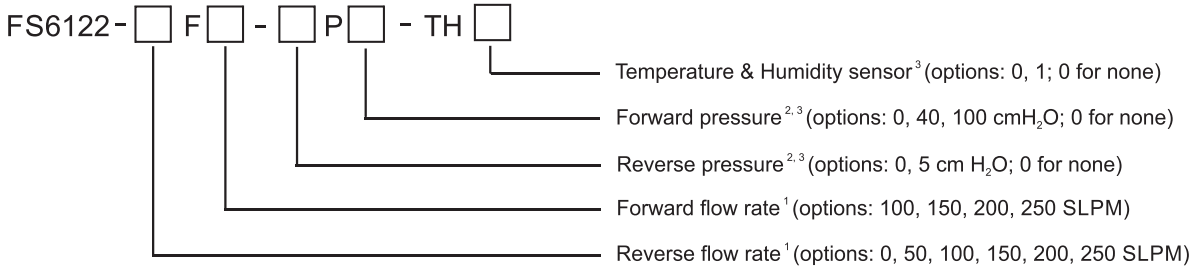


Specifications

Parameter	FS6122	Unit
Mass Flow Sensor		
Flow Range	-250 ~ +250	SLPM
Accuracy (Total Error Band)	± (2.5 + 0.5FS)	%
Output **	Linear, Analog/I^{2}C (14 bit)	
Analog Output Range	0.5 ~ 4.5	Vdc
Response Time	1.8	ms
Pressure Sensor		
Pressure Type	Gauge	
Pressure Range	-5 ~ +40 / -5 ~ +100	cmH_2O
Accuracy	± 1.0	%FS
Output **	Linear, Analog/I^{2}C (14 bit)	
Analog Output Range	0.5 ~ 4.5	Vdc
Response Time	1.8	ms
Temperature and Humidity Sensors		
Temperature Range	-10 ~ +60	℃
Temperature Accuracy	± 0.5	℃
Humidity Range	0~100 (No icing or condersation)	%RH
Humidity Accuracy	±2.0 (20~80%RH); ±5.0 max (other ranges)	%RH
Humidity Resolution	0.7	%RH
Humidity Response time (63%)	5.0 (25~75%RH)	sec
Humidity Stability	0.5	%RH/year
Other Specifiactions		
Gas Type	Air	
Supply Voltage	5.0 ± 5%	Vdc
Output Pin Shape	6 Pins, NS-TECH CD R-6	
Accuracy Compensated Temperature	-5 ~ +65	℃
Storage Temperature	-40 ~ +85	℃
Maximum Pressure ***	±30 / ±80	kPa
Warming Up Time	<50	ms

Notes: * The above parameters are applicable at 20°C and 101.325kPa;
** 14 bit for I^{2}C.
*** Base on the working pressure of the pressure sensor.

Product Selection

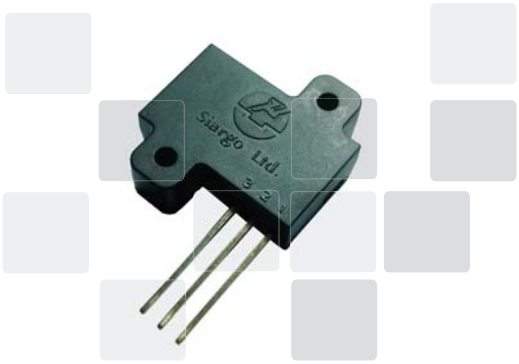


1 Numbers are for full scale flow rate, for example, 250 meaning full scale flow rate of 250SLPM. When reverse flow rate is 0, the sensor shall be configured as an uni-directional flow sensor.

2 Numbers are for full scale pressure, for example, 40 meaning full scale pressure rating of 40 cmH_2O. Other ranges are optional.

3 Pressure sensor, temperature sensor and humidity sensor are optional, "-0P0-TH0" means flow sensing only models.

4 For instance, FS6122-50F200-5P40-TH1, means flow rate of -50 to +200 SLPM, pressure rating of -5 to +40 cmH_2O and temperature and humidity sensors are integrated.



FS7002 Series

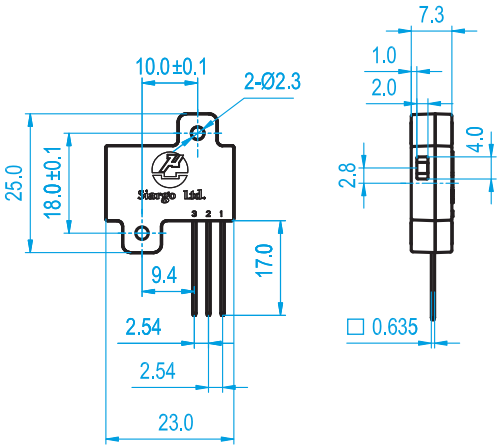
Mass Flow/Clog Sensors

The Products

FS7002 series mass flow/clog sensors can be used for open air space flow measurement or applied for clog sensing in an open space configuration. The sensor can measure air flow up to 10 m/sec with a fast response. The compact design make the installation an easy task. Examples are clog sensing in LCD projector; HVAC air flow monitoring, air fresher and fan status monitoring.

Features and Mechanical Dimensions

- Measure open space air flow up to 10 m/sec
- Fast response < 20 msec
- Compact miniature design
- Excellent sensitivity
- Bi-direction capability
- Additional customization available



Specifications

Parameter	FS7002 - B	FS7002 - C	Unit
Flow Range	0 ~ 5	0 ~ 10	m/sec
Repeatability	3%	2%	%FS
Response time	20		ms
Power Supply	5±5%		Vdc
Output	Nonlinear, Analog /Linear with I^2C		
Null Output	0.2~0.8		Vdc
Full Scale Output	2.5~3.3		Vdc
Working Temperature	-10 ~ +70		℃
Storage Temperature	-20 ~ +80		℃
Humidity	< 95%RH (No icing or condensation)		
Insulation Resistance	20MΩ between the package case and the lead terminals (under 500 Vdc)		

Note: the above parameters are applicable at 20°C and 101.325kPa.

FS8001 Series

Gas Flow Sensors

Features

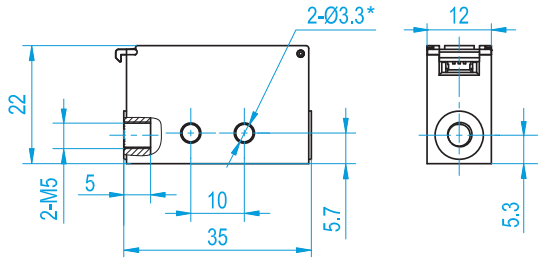
- High sensitivity
- Low pressure drop
- Miniature design for easy installation

Specification

Parameter	FS8001	Unit
Flow Range	0~500	sccm
Accuracy	±(2.0+0.5FS)	%
Repeatability	±1	%FS
Null Shift	<30	mV
Output Shift	±0.12%	%/℃
Response Time	5	ms
Power Supply	8 ~ 24	VDC
Output	Linear, analog voltage 0.5~4.5VDC/I^{2}C	
Max. Working Pressure	0.5	MPa
Working Temperature	0 ~ +55	℃
Storage Temperature	-20 ~ +65	℃
Humidity	<95%RH, no icing or condensation	
Mechanical Connection	M5	
Connector	SM05B-SRSS-TB (JST)	
Calibration	Air (20℃ , 101.325kPa)	

Note: the above parameters are applicable at 20°C and 101.325kPa.

Mechanical Dimensions



AM1000 Series

MEMS Environmental Meters

The Products

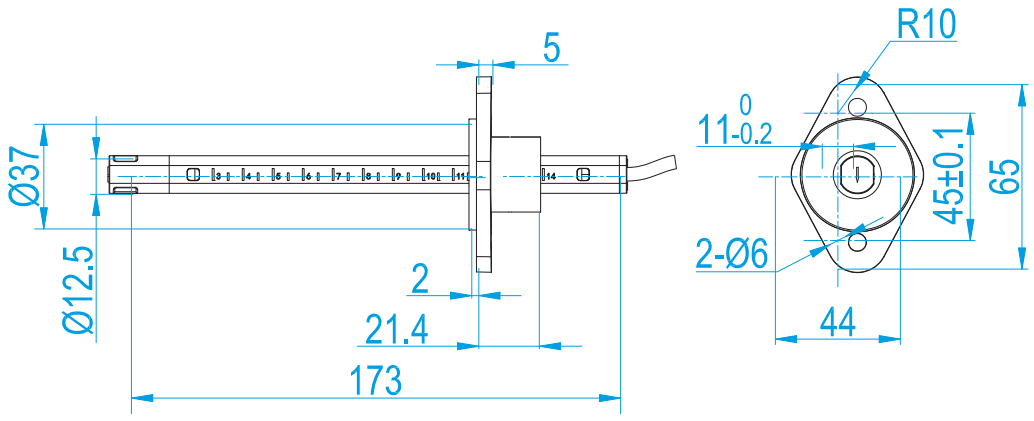
AM1000 series environmental meters are designed for air flow velocity measurement in a closed conduit or open space, with optional temperature and humidity sensing data. The sensing elements are made on a specially designed MEMS structure that enhances the measurement accuracy, response time and lowers the power consumption. The RS485 (Modbus) and I^2C options are ready for networking or remote communication. The formality is particularly in favor for residential HVAC or smart home applications.

The product is fully customizable for flow range and user interface and can be packaged into a complete meter with local display or with standalone battery power unit.

Features and Applications

- Measures velocity, humidity and temperature
- Highly sensitive
- Fast response time
- RS485 Modbus for remote date communication
- Easy installationl

Mechanical Dimensions

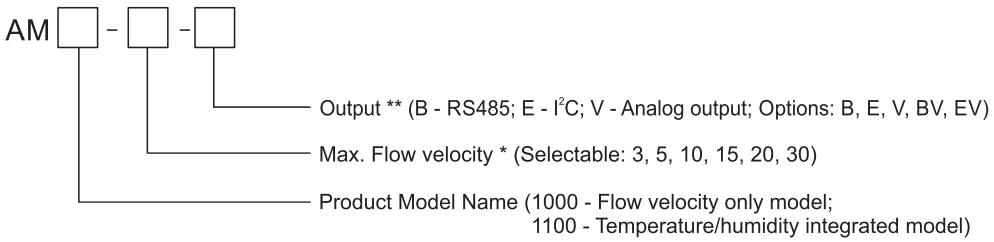


Specifications

Parameter		AM1000	AM1100	Unit
Air velocity	Range	0 ~ 3 / 5 / 10 / 15 / 20 / 30		m/sec
	Accuracy	± 2.5		% FS
	Repeatability	± 1.0		%
Humidity	Range		0 ~ 100	% RH
	Accuracy（20~80%RH）		± 2.0	% RH
	（0~20%RH, 80~100%RH）		± 5.0 (Max.)	% RH
	Resolution		0.7	% RH
	Response time（25~75%RH）		5	sec
	Long term drifting		0.5	%RH/year
	Temperature coefficient		-0.15	%/℃
Temperature	Range		-20 ~ +60	℃
	Accuracy		± 0.5	℃
Response time		20		msec
Output		Linear, 0.5 ~ 4.5 Vdc, RS485 (Modbus)		
Supply voltage		8 ~ 24		Vdc
Supply current		< 15		mA
Operating temperature		-20 ~ +95		℃
Storage temperature		-20 ~ +100		℃
Weight		30		g
Output pin		5 color-coded cable, 0.5 m		
Calibration		20 ℃, 101.325 kPa		

Notes: customizable flow range and others are available upon requests.

Product Selection



* Max. flow velocity number only, for example, 10 meaning maximum flow rate of 10 m/sec;
** The sensor shipped with analog RS485, 4~20mA, bluetooth LE and analog outputs are optional.

MF4000 Series Manifold

Gas Flow Meters

The Products

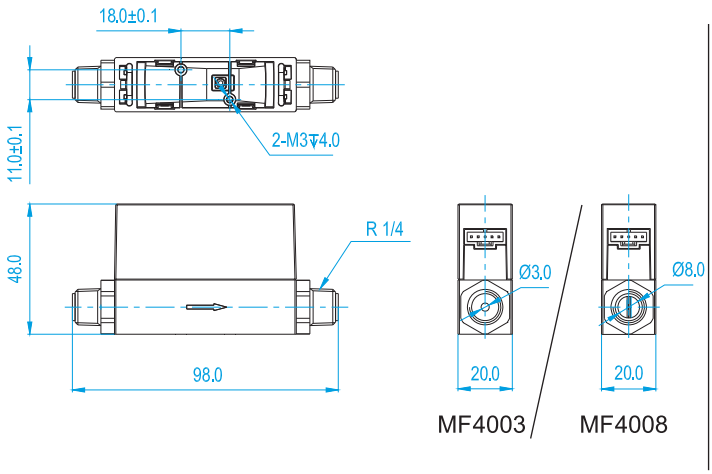
MF4000 series mass flow meters are designed for applications where manifold flow measurements. The standard flow channels are 3 mm and 8 mm in diameter, respectively. Plastic finishing with an easy change of the mechanical adaptors enables applications at a low cost and different environments. The meters can be used for process gas control, environmental samplers and many other industrial applications.

Features

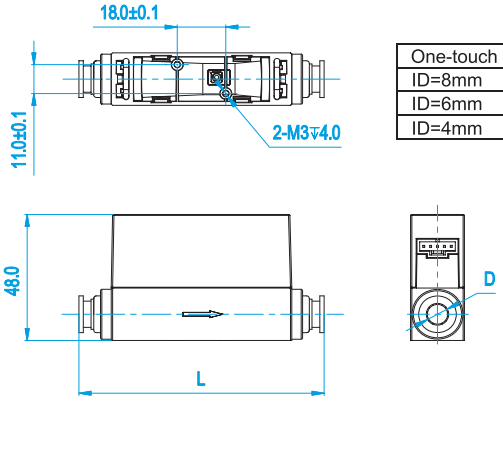
- Designed for low gas flow in fixed flow channel of 3 mm and 8 mm, with accumulated flow register
- Compact design ready for manifold assembly
- Fast response time for solutions of critical applications
- Excellent for manifold process gas monitor and control
- Exchangeable mechanical connectors for easy installation at different applications
- Intrinsic safe enclosure

Mechanical Dimensions

BSPT 1/4 (R 1/4) connection



One-touch connection



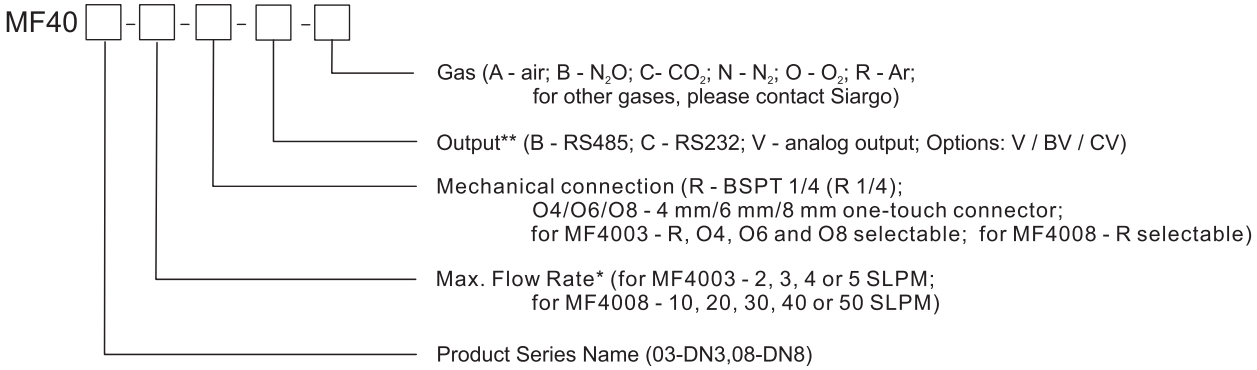
One-touch	L	D
ID=8mm	91.0	Φ8.0
ID=6mm	83.0	Φ6.0
ID=4mm	80.0	Φ4.0

Specifications

Parameter	MF4003	MF4008	Unit
DN	3	8	mm
Flowrate Range	0 ~ 2, 3, 4, 5	0 ~ 10, 20, 30, 40, 50	SLPM
Turn-down	100:1		
Accuracy	± (1.5 + 0.2 FS)		%
Repeatability	0.25		%
Null Shift	± 30		mV
Output Shift	± 0.12		% / ℃
Response Time	10 (default, 10, 20, 50, 200, 500, 1000 selectable)		msec
Power Supply	8 ~ 24 Vdc, 50 mA		
Output	Linear: Analog 0.5 ~ 4.5 Vdc; RS232, RS485		
Display	4 - digit, 7 - segment LED; 2 status LED		
Units	Instant flowrate: SLPM; Flow accumulation: SL		
Display Resolution	0.001, 0.01, 0.1 selectable	0.01, 0.1 selectable	SLPM
Pressure Drop	100	600	Pa
Max. Pressure	0.5		MPa
Working Teperature	-10 ~ +55		℃
Storage Teperature	-20 ~ +65		
Humidity	< 95%RH (No icing or condensation)		
Mechanical Connection	BSPT 1/4 (R 1/4), 4 mm / 6 mm / 8 mm One - touch	BSPT 1/4 (R 1/4)	
Keyboard	3 Keys		
Pins Out	5 Pins, NS-TECH CD R-5		
Calibration**	Air @ 20 ℃, 101.325 kPa		
Weight	55(with BSPT 1/4 (R 1/4)), 74(with 4 mm / 8 mm One-touch), 71(with 6 mm One-touch)		g

Notes: * The above parameters are applicable at 20°C and 101.325kPa.
** For other gases calibration, please contact Siargo.

Product Selection



* Max. flow rate number only, for example, 5 meaning full scale flow rate of 5 SLPM.
For CO_2 and N_2O, selectable: 2, 3 or 4 SLPM (without 5 SLPM) for MF4003; 10, 20, 30 or 40 SLPM (without 50 SLPM) for MF4008;

** The meter standard output is analog. Digital outputs are optional.

MF4600 Series

Gas Flow Meters

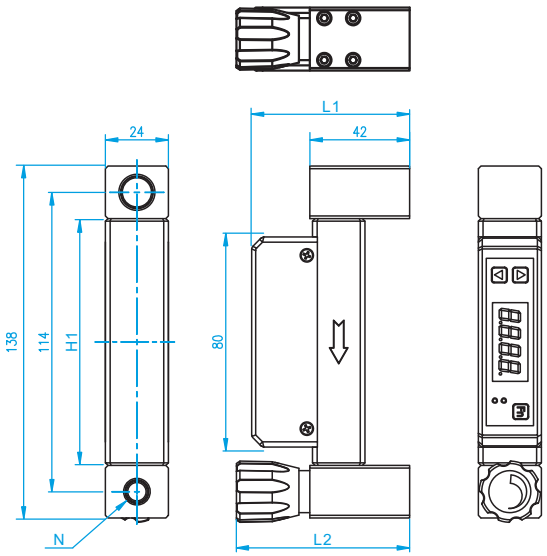
The Products

MF4600 series mass flow meters are made with Siargo's proprietary MEMS sensing technology. It applies for clean and dry gas metering and control. The meter is designed with the structure of a rotameter but with the full capability of a digital gas mass flow metrology and LED display. Both instant and accumulated flowrate can be read and displayed. The front buttons let user to access and adjust the parameters as well as stored data. The standard RS485 Modbus enables the remote access and integration.

Features

- Designed for low gas flow in fixed flow channel of 3 mm and 8 mm, with accumulated flow register
- Direct mass flow measurement with high accuracy
- Multiple sensing elements for extended rangeability over 100:1
- Easy remote accessible user interface with RS485 Modbus and/or linearized analog data
- Bright LED display for instant and accunulated flowrate with on-site access via front buttons
- Record flowrate patterns with over range indication
- Easy for remote communication and integration
- Compatible with traditional rotameter mechanical connections
- Flow range and mechanical dimensions can be fully customized

Mechanical Dimensions



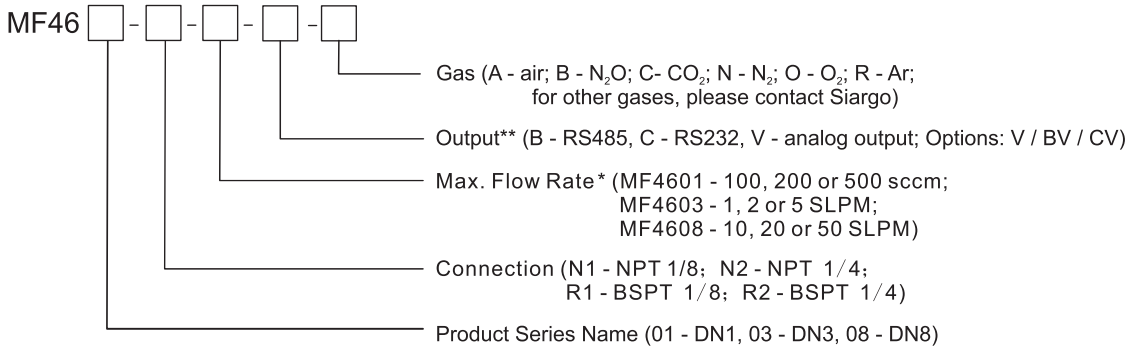
	L1	L2	H1	N
MF4601 (100, 200, 500 sccm)	60	66	94	2-NPT
MF4603 (1, 2, 5 SLPM)	60	66	94	or
MF4608 (10, 20, 50 SLPM)	64	70	90	2-BSPT

Specifications

Parameter	MF4601	MF4603	MF4608	Unit
Flowrate Range **	0 ~ 100, 200, 500			sccm
		0 ~ 1, 2, 5	0 ~ 10, 20, 50	SLPM
Turn-down	50:1			
Accuracy	± (2.5 + 0.5 FS)			%
Repeatability	± 0.8			%
Offset stability	0.1			%FS
Span stability	± 0.12			% / ℃
Response Time	10 (default, 10, 20, 50, 200, 500, 1000 selectable)			msec
Power Supply	8 ~ 24 Vdc, 50 mA			
Output	Linear: Analog 0.5 ~ 4.5 Vdc; RS232/RS485			
Display	4 - digit, 7 - segment LED; 2 status LED			
Units	Instant flowrate: sccm/SLPM; Flow accumulation: SL			
Display Resolution	0.001, 0.01, 0.1, 1 unit selectable			SLPM
Pressure Drop	100			Pa
Max. Pressure	0.5			MPa
Working Teperature	-10 ~ +55			℃
Storage Teperature	-20 ~ +65			℃
Humidity	< 95%RH (No icing or condensation)			
Mechanical Connection	NPT-F or BSPT-F			
Keyboard	3 Keys			
Pins Out	5 Pins, NS-TECH CD R-5			
Calibration***	Air @ 20 ℃, 101.325 kPa			

Notes: * The above parameters are applicable at 20°C and 101.325kPa.
** For other flowrate ranges, please contact Siargo.
*** For other gases calibration, please contact Siargo.

Product Selection



* Max. flow rate number only, for example, 100 meaning full scale flow rate of 100 sccm, 5 meaning full scale flow rate of 5 SLPM; For other flowrates ranges, please contact Siargo.
** The sensor shipped with standard analog output. RS232/RS485 is optional.

MF5000 Series

Gas Flow Meters

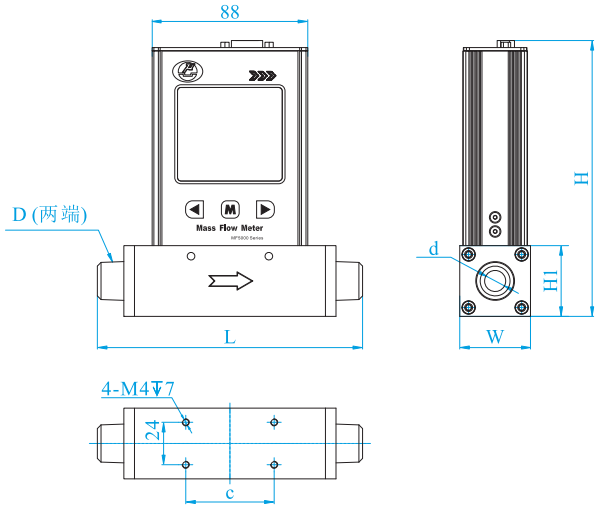
The Products

Mf5000 series mass flow meters are specially designed for small pipe flow monitoring and control. The series can measure gas flow in a pipe diameter as small as 3 mm, but not over 19 mm. With the self-flow conditioning feature of the MEMS sensor package, the meters feature an extremely low pressure loss compared to the traditional by-pass thermal mass flow meters in this application scope. The accuracy of the meters are generally ±(1.5+0.5FS)% or better depending on the requests. The meters can work at an environment of -20 to 60C and pressure up to 1.5 MPa. Applications include semiconductor gas process monitoring and control, hospital oxygen gas monitoring, etc.

Features

- Highly sensitive, measuring as low as 8 mm/sec, and as high as 65 m/sec with a single assembly
- Directly sense mass flow using thermal mass flow principle
- Proprietary MEMS sensor package design for better reliability
- Standard 12 ~ 24 Vdc power supply
- Low pressure loss forreducing energy cost
- Industrial standard Modbus protocol for easy networking and remote control

Mechanical Dimensions



Model	DN (mm)	D (NPT-M)	L	H	H1	W	d	c
MF5003	3.0	1/8"	118	144	28	38	Φ3	36
MF5006	6.0	1/4"	124	144	28	38	Φ6	36
MF5008	8.0	3/8"	124	151	35	38	Φ8	50
MF5012	12.0	1/2"	150	156	40	40	Φ12	50
MF5019	19.0	3/4"	182.5	156	40	40	Φ19	70

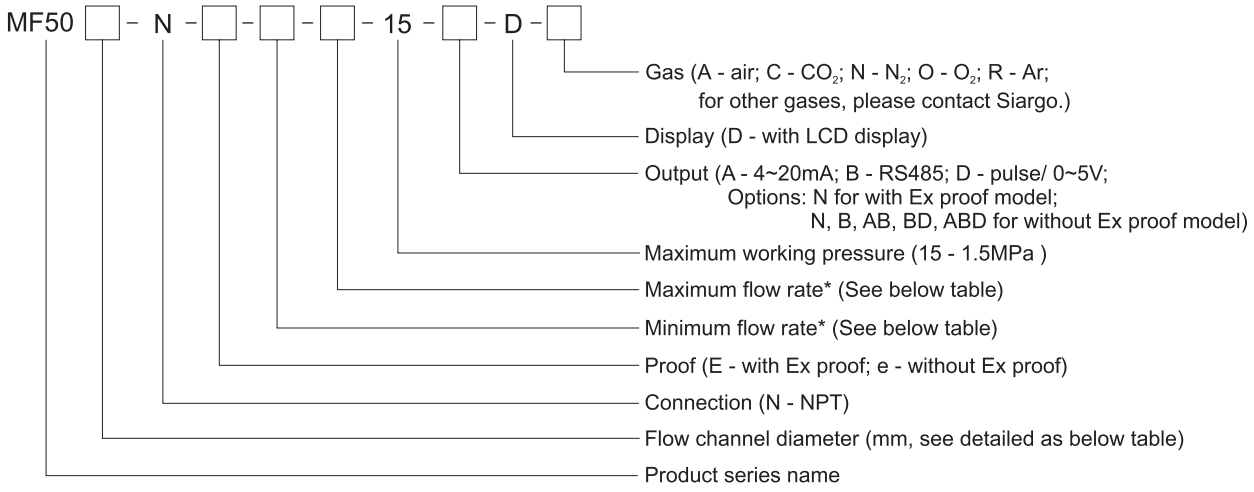
Specifications

Accuracy	±(1.5+0.5FS)%
Environment	Temperature: -20 ~ +60 °C
	Humidity: < 95 %RH (No icing or condensation)
Flow channel	3 ~ 19 mm
Display	Flowrate and accumulated flow
Interface	4 ~ 20 mA; RS485; Pulse
Calibration	Air @ 20 °C, 101.325 kPa
Protection	IP40
Ex Proof	Ex ia IIC T4

Note: the above parameters are applicable at 20°C and 101.325kPa.

Product Selection

In addition to the models listed, we can also provide customized products that are tailored to customers' very needs. For further information, please contact manufacturer. The meters are made by referencing to: ISO-14511; CE Directives: EN61000-6-1 EN61000-6-2



* There is flow rate number only for unit SLPM. If other unit is selected, there must be flow rate number with unit together.

Typical flow range:

Model	DN (mm)	Connection	Flow range*		
			sccm	SLPM	NCMH
MF5003	3	1/8"	150-15000	0.15-15	
MF5006	6	1/4"		0.5-50	0.03-3
MF5008	8	3/8"		1.2-120	0.072-7.2
MF5012	12	1/2"		3-300	0.18-18
MF5019	19	3/4"		8-800	0.48-48

* For CO_2, flow range are 0.15~10, 0.5~40, 1.2~80, 3~200 and 8~600 SLPM.

MF5100 Series

Gas Flow Meters

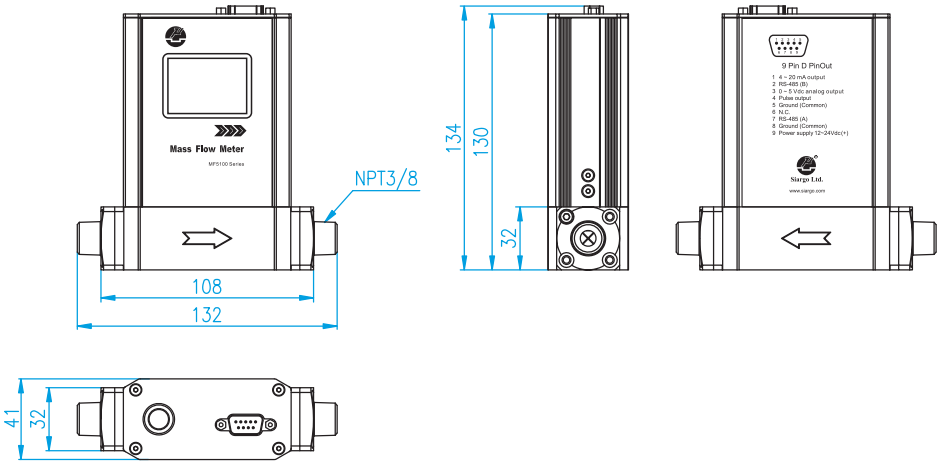
The Products

MF5100 series mass flow meters are designed with the state-of-the-art electronics and software that allows a large dynamic range with high metrology precision. It further opts for auto-gas recognition that significantly differentiate it from the traditional thermal mass flow technology. It can also be battery powered and it is incompliance with UL/CSA Class 1 Division 1 Gas B/C/D and T3 safety requirements.

Features

- Large dynamic range over 200:1
- High precision of reading accuracy
- Auto-Gas identified and auto calibration switch with different gases, option.
- LCD showing both Instant/Accumulated flow
- Standard 4 ~ 20 mA, 0~5Vdc or RS485 for remote data communication
- Hygienic stainless steel body

Mechanical Dimensions



Specifications

Parameter	MF5106	MF5108	MF5110	Unit
Flowrate Range	0 ~ 30	0 ~ 50	0 ~ 100	SLPM
Accuracy		± 1.5		%Reading
Repeatability		± 0.5		%Reading
Turn-down Ratio		100 : 1		
Initial Flow Reading	0.01	0.01	0.02	SLPM
Response Time		250		msec
Pressure Rating		0 ~ 1.0		MPa
Proof Pressure		1.2		MPa
Burst Pressure		1.5		MPa
Working Temperature		-10 ~ +55		℃
Humidity		< 95%RH (No icing or condensation)		
Storage Temperature		-10 ~ +65		℃
Long Term Stability		< 1.0		%/year
Wetted Materials		Staiinless steel, silicon nitride		
Power Supply		D cell lithium ion battery		
Battery Life Time		> 2		years
Output		Instant/Accumulated flow(LCD), Pulse for instant flow (3V)		
		RS485 (Modbus) with 12 ~ 24 Vdc ext power		
		4 ~ 20 mA and 0 ~ 5 Vdc analog output with 12 ~ 24 Vdc ext power		
Calibration**		Air @ 20 ℃, 101.325 kPa		
Mechanical Connection		NPT-M 3/8		
Weight		< 1.0		kg
Dimensions		132(L) x 41(B) x 134 (H)		mm^3

Notes: * The above parameters are applicable at 20°C and 101.325kPa.

MF5600 Series with Detachable Display

Gas Flow Meters

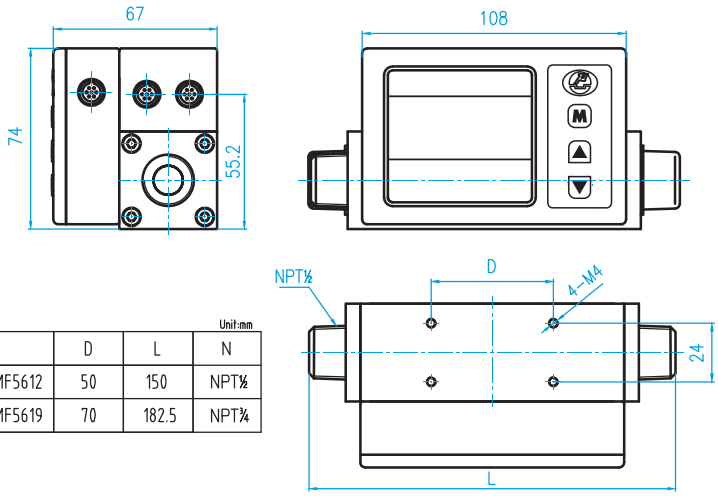
The Products

MF5600 series mass flow meters are specially designed for applications where the display is often required to be placed separated away from the flow channel or meter body, such as the oxygen metering system in a hospital. These meters are opted with the standard industrial user interfaces (RS485 and 4 ~ 20mA), and user defined alarm functions for better monitoring or control over the network. The off-the-shelf products (MF5612 and MF5619) are for gas flow measurement of 0 ~ 300 SLPM and 0 ~ 800 SLPM, respectively.

Features

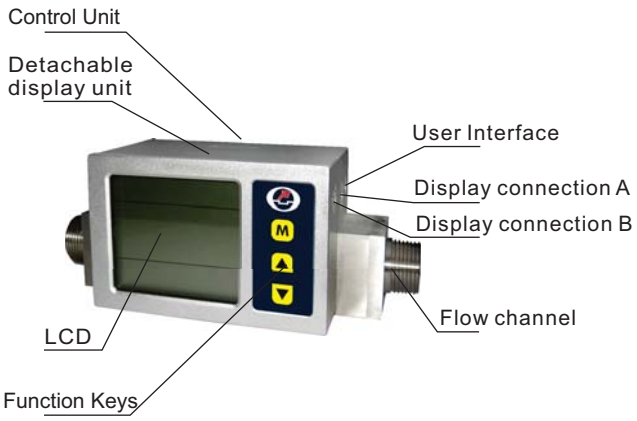
- Detachable display that can be placed away from the flow channel via a specially designed cable
- Standard 4 ~ 20 mA or RS485 for remote data communication
- Hygienic stainless steel body ready for oxygen metering
- Extended rangeability for accurate flow monitoring and control
- Intrinsic safe enclosure

Mechanical Dimensions



Unit:mm

	D	L	N
MF5612	50	150	NPT½
MF5619	70	182.5	NPT¾



Specifications

Parameter	MF5612	MF5619	Unit
DN	12	19	mm
Max. Flowrate	200, 300	600, 800	SLPM
Min. Flowrate	0.3	0.8	SLPM
Turn-down ratio	30:1		
Accuracy	± (1.5 + 0.5 FS)		%
Repeatability	± 0.5		%
Max. Pressure	1.0		MPa
Operating Temperature	-10 ~ +55		°C
Humidity	< 95 %RH (No icing or condensation)		
Power Supply	12 ~ 24 Vdc, 50 mA		
Output	4 ~ 20 mA; RS485; Pulse		
Mechanical Connection	NPT 1/2	NPT 3/4	
Calibration	Air @ 20 °C, 101.325 kPa		

Note: the above parameters are applicable at 20°C and 101.325kPa.

Product Selection

MF □-□-□-□-□-□

- Gas (A - air; C- CO_2; N - N_2; O - O_2; R - Ar, for other gases, please contact Siargo)
- Display (D - LCD; N - No display)
- Output (A - 4~20mA; B - RS485; D - Pulse. Options: B, AB, BD, ABD)
- Maximum flow rate* (Selectable: for MF5612, 200 and 300SLPM, for MF5619, 600 and 800SLPM, See below table for other Units.)
- Connection (N - NPT; Y-Customer specified)
- DN (Pipe inner diameter, 5612 - DN12mm; 5619 - DN19mm)

* There is flow rate number only for unit SLPM. If other unit is selected, there must be flow rate number with unit together. For CO_2, selectable: 200 SLPM (without 300 SLPM) for MF5612; 600 SLPM (without 800 SLPM) for MF5619.

Typical flow range:

Model	DN	Connection	Flow Range		
			SLPM	SCFM	NCMH
MF5612	12mm	1/2″	200	7	12
			300	10.5	18
MF5619	19mm	3/4″	600	21	36
			800	28	48

Accessaries

Cable 1: User interface cable
(Part Number: IC7-150, length: 1.5 m;)

Cable 2: LCD cable
(Part Number: IC7-30-IC7, length: 30 cm;
Part Number: IC7-200-IC7, length: 2 m)

MF5700 Series Portable

Gas Flow Meters

The Products

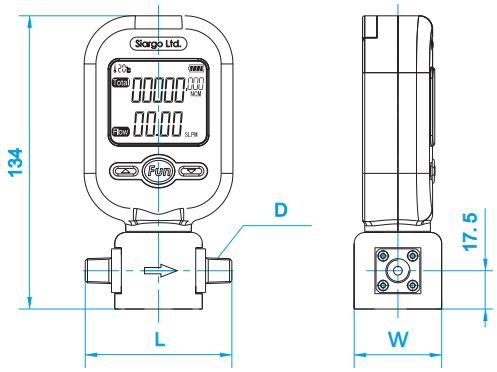
MF5700 series mass flow meters feature cost effective ultra low power operating on 4 AA batteries. The portable design has excellent exchangeable mechanical adaptors, easy data accessible and user programmable capabilities. The internal data storage can also help for many industrial on-site applications. The meters can be customized for various general purpose flow applications.

Mechanics | Food | Tobacco | Chemistry | Beverage | Glass | Agriculture | Research | Pharmacetics | Instrumentation

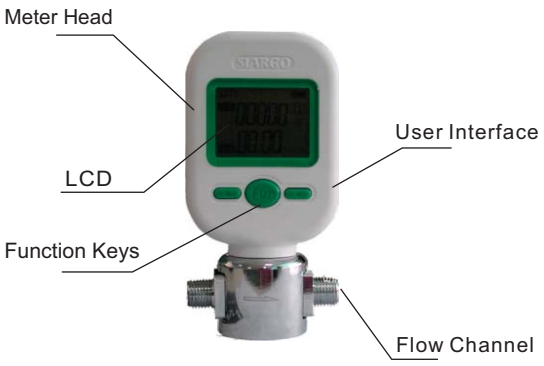
Features

- Ultra low power by batteries or optional external AC adaptor
- Potable design with rotatable meter head and easy exchangeable mechanical adaptors
- Customizable flow range with over 30:1 turn-down
- RS485 Modbus protocol ready for networking
- User programmable range alarm for safety and other monitoring/control functionality
- Internal data storage for additional data safety
- Hygienic and oxygen safe copper body for various fluids

Mechanical Dimensions



	L	W	D
MF5706	67	40	NPT 1/4
MF5712	98	50	NPT 1/2



Specifications

Parameter	MF5706	MF5712	Unit
Flow Range	0 ~ 10 , 25	0 ~ 200	SLPM
Turn-down ratio	30:1		
Accuracy	± (2.0+0.5FS)		%
Repeatability	0.5		%
Response Time	≤2		sec
Power Supply	4 AA batteries (LR6) / 6 ~ 15 Vdc (with 220 Vac adaptor)		
Output	RS 485 (Optional)		
Display	LCD		
Display Units	Instant flow rate: SLPM; Flow accumlation: NCM		
Instant Flow Rate Resolution	0.01		SLPM
Flow Accumlation Resolution	0.001		NCM
Continuous Working time	> 60 days (with batteries)		
Max. Pressure	≤0.8		MPa
Working Temperature	-10 ~ +55		°C
Storage Temperature	-20 ~ +65		°C
Humidity	< 95%RH (No icing or condensation)		
Keyboard	3 keys		
User Interface	miniUSB		
Calibration	Air @ 20 °C,101.325 kPa		
DN	6	12	mm
Mechanical Connection	NPT 1/4	NPT 1/2	
Weight	350		g

Note: the above parameters are applicable at 20°C and 101.325kPa.

Product Selection

MF □ - N - □ - □ - □

- Gas** (A - air; C- CO_2; N - N_2; O - O_2; R - Ar, for other gases, please contact Siargo)
- Output (B - RS485; N - None)
- Maximum flow rate* (Selectable: for MF5706, 10 or 25 SLPM; for MF5712, 200SLPM, See below table for other Units.)
- Connection (N - NPT)
- DN (Pipe inner diameter, 5706 - DN6mm; 5712 - DN12mm)

* There is flow rate number only for unit SLPM. If other unit is selected, there must be flow rate number with unit together. For CO_2, selectable: 10 or 20 SLPM (without 25 SLPM) for MF5706; 150 SLPM (without 200 SLPM) for MF5712.

** MF5712 can't choose O, as the flow channel material of MF5712 is aluminum, it is not suitable for O2 measurement.

Typical flow range:

Model	DN	Connection	Flow Range		
			SLPM	SCFM	NCMH
MF5706	6mm	1/4″	10	0.35	0.6
			25 (20*)	0.88 (0.7*)	1.5
MF5712	12mm	1/2″	(1.2*)		

* The flow range for CO_2.

MF5806 Series

Oxygen Flow Meters

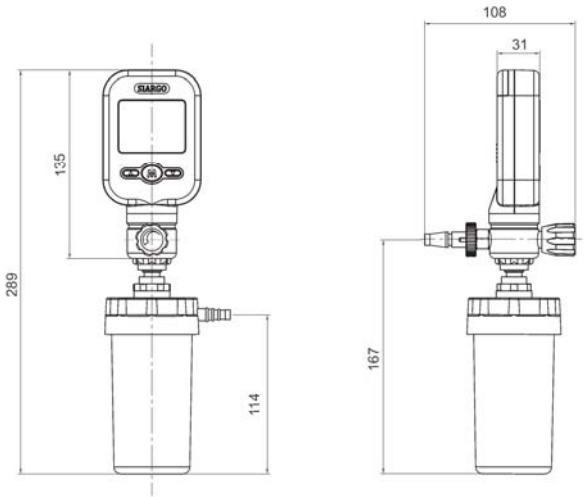
The Products

MF5806 series oxygen flow meters are specially designed for hospital individual oxygen therapy applications. it provides precise measurement of instant oxygen intake rate and accumulated oxygen dosage for the individual oxygen delivery system. the design provides low power consumption that make it possible for operation on battery when power is an concern. the meter can be directly connected to the central station via RS485 that can provide remote monitoring and control which will reduce the risk of oxygen over dosing.

Features

- Plug-and-paly hospital oxygen deliver design for easy usage
- Mass flow technology provide precise instant rate and accumulated dosage
- Historical data storage and retrieval
- Password protected access
- Instant rate and accumulated dosage alarm
- Excellent repeatability and accuracy
- Low power design with stand-alone operation by battery

Mechanical Dimensions



Specifications

Parameter	MF5806	Unit
Flow range	0~30	SLPM
Accuracy	±(1.5+0.5FS)	%
Repeatability	0.5	%
Response time	≤ 2	Sec
Power supply	2 x AA batteries(LR6) or AC adapter (6 ~ 24 Vdc)	
Power consumption	≤ 5	mW
Digital Output	RS485 (Modbus)	
Wireless output	Bluetooth LE 4.2; GPRS (optional); WIFI (optional)	
Display	LCD	
Display information	Instant flow: SLPM; Totalized flow: m^3; Time: hhHmm	
Display resolution	Instant flow: 0.01 SLPM; Totalized flow: 0.001 m^3; Time: 00H01	
Keyboard	1 key	
User function	Password; alarm limit; totalized flow; offset reset	
Max. pressure	0.6	MPa
Working temperature	-10 ~ +55	°C
Pressure loss	≤500	Pa
Battery life	800 hrs - continuous operation; 2300 hrs - meter continuous operation with BT off	
Calibration	Air @ 20 °C,101.325 kPa	
Pin out	miniUSB (optional)	
Mech. connection	Medical oxygen nozzle (customizable)	
Weight	~270	g

Notes: * The above parameters are applicable at 20°C and 101.325kPa.
** Meter head can be rotated 180 degree for convenience at installation and reading.

MF5806-G Series

Smart Gas Cylinder Meters
with IOT Technology

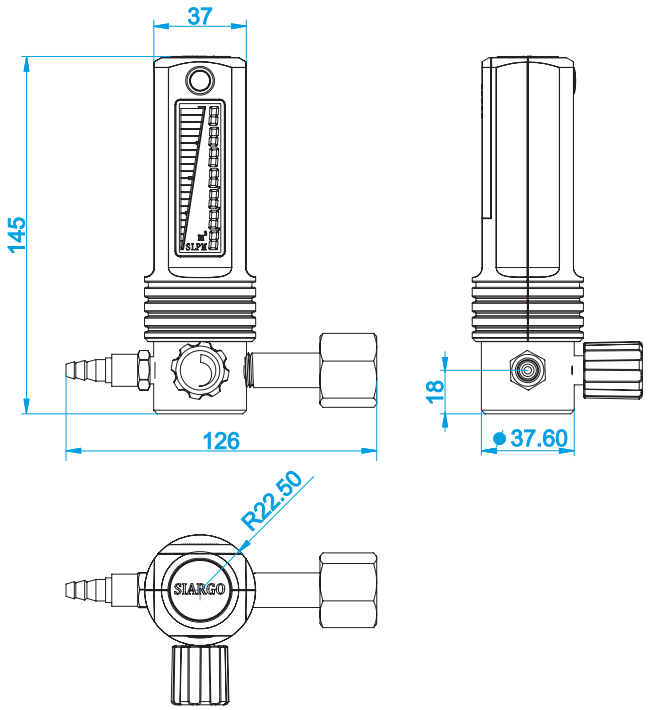
The Products

MF5806-G series smart gas cylinder meters provides a complete solution to smart manage a gas cylinder for its usage, inventory and production via the proprietary MEMS sensors and the state-of-the-art IOT (internet of things). The pressure regulator is fully customizable.

Features

- Gas consumption and instant flowrate
- Battery powered BT LE or GPRS data transmission
- Gas consumption high/low alarm
- User friendly APP provides interactions and data
- Cloud computing eases the inventory, dispatch & production

Mechanical Dimensions



Specifications

Parameter	MF5806-G-20/50	Unit
Flow range	0 ~ 20 / 0 ~ 50	SLPM
Accuracy	±(2.0+0.5FS)	%
Repeatability	0.5	%
Response time	≤ 2	Sec
Power supply	2 x AA batteries(LR6) or AC adapter (6 ~ 24 Vdc)	
Power consumption	≤ 0.5	mW
Wireless output	Bluetooth LE 4.2; GPRS (optional); WIFI (optional)	
Display	LCD	
Display information	Instant flow: SLPM; Totalized flow: m^3; Time: hhHmm	
Display resolution	Instant flow: 0.01 SLPM; Totalized flow: 0.001 m^3; Time: 00H01	
Keyboard	1 key	
User function	Password; alarm limit; totalized flow; offset reset	
Max. pressure	0.5	MPa
Working temperature	-10 ~ +55	°C
Pressure loss	≤500	Pa
Battery life	800 hrs - continuous operation; 2300 hrs - meter continuous operation with BT off	
Calibration	Air @ 20 °C,101.325 kPa	
Pin out	miniUSB (optional)	
Mech. connection	Gas cylinder connection (customizable)	
Weight	~350	g

Notes: * The above parameters are applicable at 20°C and 101.325kPa.
** Meter head can be rotated 180 degree for convenience at installation and reading.

MF-GD Series Low Pressure

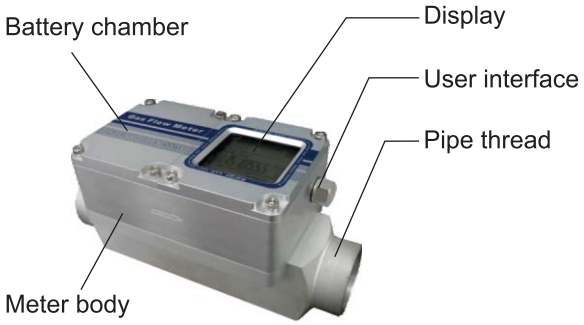
Mass Flow Meters

The Products

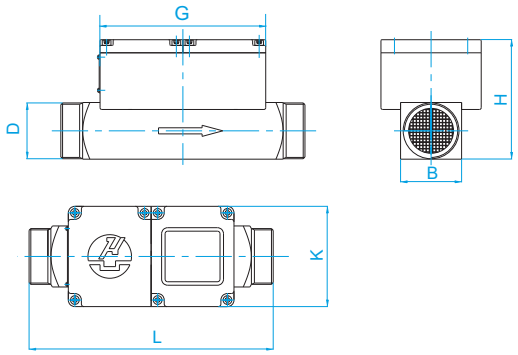
MF-GD series low pressure mass flow meters are designed for all low pressure industrial gas metering and control. The meters substantially reduce the installation cost as well as other logistical cost. In addition, the all electronic meters provide easy data access as well as remote data networking capabilities.

Features

- Automatical compensation for temperature and pressure variations
- Integrated MEMS sensors for extended rangeability
- Proprietary low power technology ensures the long lasting battery life
- Small form factors reduce logistical and installation cost
- Large data storage for easy historical data download and analysis
- All electronic meters ready for data access and networking



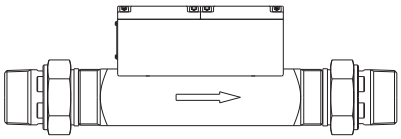
Mechanical Dimensions



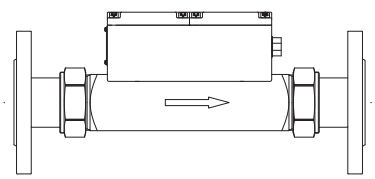
	D	B	L	H	K	G
MF32GD	M48X2	70	280	132	115	188
MF50GD	M64X2	70	280	137	115	188
MF65GD	M80X2	90	360	162	115	188
MF80GD	M100X2	100	360	172	115	188

Please contact Siargo to get detailed information on the meters with BSPT or flange connectors.

With BSPT connectors



With flanges



Specifications

Model	DN（mm）	Max. Flow rate（Nm^3/h）	Min. Flow rate（Nm^3/h）
MF32GD	32	10, 16 or 25	0.25
MF50GD	50	40 or 65	0.65
MF65GD	65	100	1.0
MF80GD	80	160	1.6

Accuracy	±(1.5+0.5FS)%
Turn-down Ratio	100:1
Max. Working Pressure	0.2 MPa
Environment Temperature	-20 ~ +60℃
Medium Temperature	-10 ~ +55℃
Humidity	< 95%RH (No icing or condensation)
Power Supply	3.6V battery (L3638A)
Battery life	36 months
Real time clock life	10 years
Output	RS485
LCD display	Flowrate; Accumulated flowrate; Battery status
Calibration	Air @ 20℃,101.325kPa
Mechanical	M-Thread (BSPT-Thread or flange with mechanical connector)
Protection	IP66
Ex Proof	Ex ia IIC T4

Note: the above parameters are applicable at 20°C and 101.325kPa.

Product Selection

MF□GD－□－□－□－□

- Gas (A - air; C - CO_2; N - N_2; O - O_2; R - Ar; for other gases, please contact Siargo.)
- Output** (N- No output, B-RS485, D-Pulse. Options: N, B, D, BD)
- Connection (M - M thread; R - With BSPT connectors; F - With Flanges)
- Maximum flow rate* (Nm^3/hr. see detailed in specifications)
- DN (pipe inner diameter, mm. Options: 32, 50, 65, 80)

HMF2000 Series

Handheld Mass Flow Meters

The Products

HMF2000 series handheld mass flow meters are designed and manufactured for onsite measurement for gas flowrate with multiple gas options and large dynamic range using the proprietary MEMS mass flow sensing technology. The product is particularly suitable for applications in instrumentation and inline gas monitor where the multiple gas measurements specially the low flowrate measurement is required. For further customization or other product related questions, please contact the manufacturer.

Features

- Multiple gas mass flow measurement a handheld form factor
- Gas selection with front key board for Air, O_2, Ar, H_2 and He
- Excellent for instrumentation testing and onsite gas flow rate monitor
- MEMS mass flow sensing technology with temperature and pressure compensation
- High sensitivity for low flow measurement, and models cover different flowrate applications
- Instant flowrate, totalizer, and via easily accessible interface
- Split gas ration for gas chromatography mass spectrometers
- Record, data access with front keyboard for data safety
- Portability design with battery operation

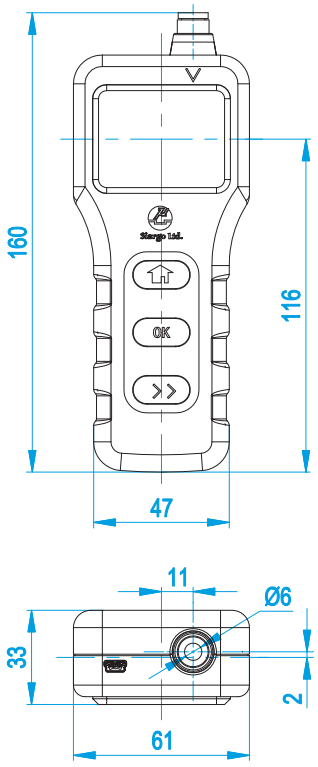
Description

Specifications

Parameter	HMF2000	Unit
Mass Flow Rate	0 ~ 1000	sccm
Accuracy	±(2+0.5FS)	%
Response time	8	msec
Turn-down ratio	>100:1	
Power supply	6F22 battery or External 6 ~ 12 Vdc	
User interface	Front keyboard	
Operational temperature	0 ~ 50	°C
Storage temperature	-10 ~ 80	°C
Max. Working Pressure	0.4	MPa
Safety rating	IP40	
Dimension	160×61×33	mm^3
Weight	200	g

Note: the above parameters are applicable at 20°C and 101.325kPa.

Mechanical Dimensions



LF6000 Series

Microfluidic Flow Meters

The Products

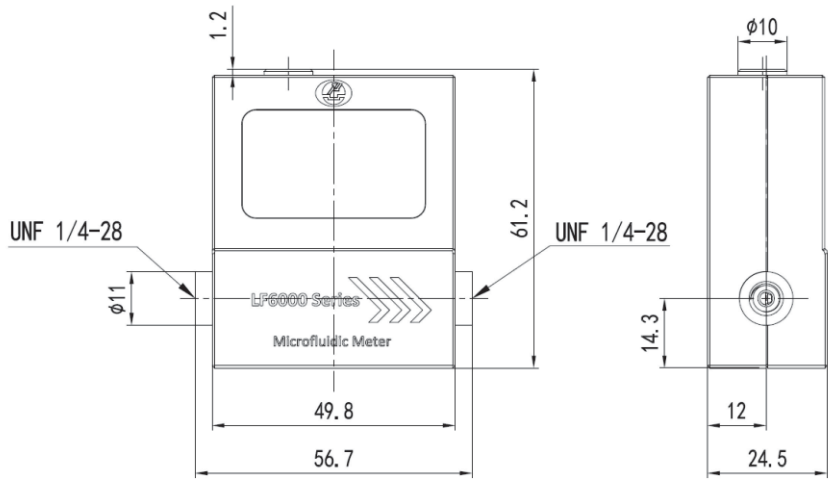
F6000 series microfluidic flow meters are manufactured using Siargo's proprietary MEMS thermal time-of-flight (TTOF) flow sensing and package technology. It provides the large dynamic range, with high precision and reliability.

The packaging enclosure is made of the chemically inert and thermally stable PEEK materials. The maximum over pressure rating is 10 bar (145 psi). Applications include general purpose microfluidic flow metering, instrumentation, pharmaceutical process control; precise chemical dosing, genetic sequencing, laboratory & research as well as medical automation.

Features

- MEMS Thermal time-of-flight technology
- Large dynamic range over 100:1
- Excellent temperature performance
- UNF 1/4"-28 for plug-and-play
- Small dead volume less than 7mL
- Bluetooth LE enabled with Cloud data option

Mechanical Dimensions



Specifications

	Value	Unit
Full scale flow range*	2 ... 50 / 100 ... 400	mL/min
Turn-down	100:1	
Accuracy	±(2.0+0.5FS)	%
Working temperature	5 ~ 50	℃
Temperature effects	< 0.02	%/°C
Pressure rating	8	bar
Maximum pressure	10	bar
Dead volume	< 7.0	μL
Power supply	3.6 ~ 6.0	Vdc
Electrical interface	I2C/ 0.25~2.75 Vdc/IO-Link optional	
Wireless	Bluetooth 4.2 with APP and optional cloud data	
Response time	<100	msec
Display	OLED	
Mechanical connection	1/4" - 28 (0~50mL/min); NPT or customized (0~400mL/min)	
Wetted materials	Polyphenylsulfone, PEEK, SiNx, and stainless steel	
Reference conditions	20°C, 1013 mbar; DI water	
Storage temperature	-10 ~ +70	℃
Weight	<230	gram
Protection	IP40	
CE/RoHS	EN61326-1; -2;-3	

*Note: The minimal flowrate measurable is 50μL/min.

Pin Definition

Yellow	I^2C: SCL
Black	GND
Red	Vin (3.6~6.0Vdc)
Green	Vout (0.25~2.75Vdc)
Blue	I^2C: SDA

Product Selection

LF6000 - □ □ □ □

- Medium type (W - water; A - IPA (Isopropyl Alcohol); S - special liquid)
- Electrical interface (V - 0.25~2.75Vdc; I - I^2C; O - IO-Link)
- Connection (U (1/4"-28) for 2... 50mL/min; N-NPT for 100...400mL/min)
- Full scale (minimum 2 mL/min; maximum 400 mL/min); Maximum turn-down 100:1. For example, if one choose full scale, 30mL/min, the minimum flowrate shall be 0.3mL/min

LFD1000 Series

Microfluidic Dispenser

The Products

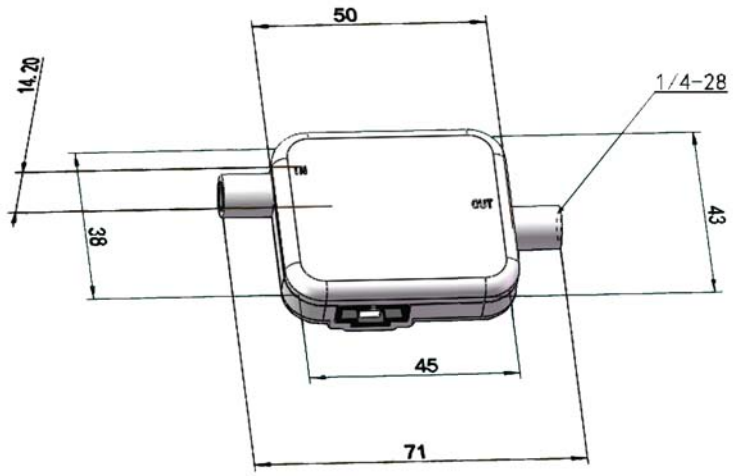
LFD1000 series microfluidic dispenser is the first commercially available thermal time-of-flight (TTOF) liquid flow sensors integrated with a micropump. The flow sensor provides the precise feedback that controls the pump for a reproducible delivery of the microfluid. For the water based microfluidic dispensing, the product has a resolution up to 20μL/min with a turn-down better than 10:1.

It can be applicable for both liquid and gas.

Features

- General purpose fluid dispensing
- Precisely controlled with microfluidic flow sensor
- Resolution better than 20μL/min
- Dynamic ranges over 10:1
- Optional mechanical and electrical interfaces
- Long pump lifetime

Mechanical Dimensions



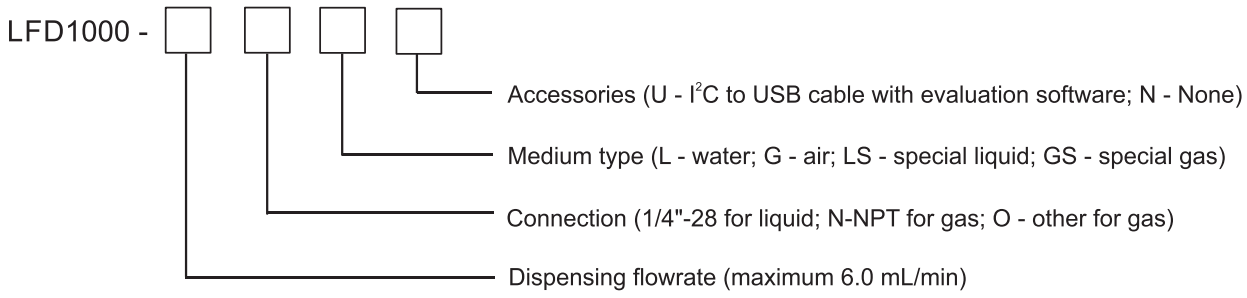
Specifications

	Value	Unit
Dispensing Range		
- Liquid	0.5 ~ 6.5	mL/min
- Gas	2.0 ~ 20.0	mL/min
Resolution [1]	± 0.05	mL/min
Accuracy	±3% or ±0.05mL/min, which ever is greater	
Pressure rating	2.0	bar
Back pressure	0.6 (liquid); 0.1(gas)	bar
Temperature rating	0 ~ 60	℃
Humidity (for gas)	0~90%RH and no icing or condensation	
Power supply	5 (±10%)	Vdc
Warming up time	200	msec
Settle time [2]	<20 (liquid); <5 (gas)	sec
Interface for control	I²C	
Mechanical connection	1/4" - 28 (liquid); NPT or customized (gas)	
Wetted materials	Polyphenylsulfone, PEEK, SiNx, and stainless steel or aluminum alloy	
Reference conditions	20°C, 1013 mbar; DI water (liquid) or air (gas)	
Storage temperature	-10 ~ +70	℃
Pump lifetime	5000	Hours
Protection	IP50	
CE/RoHS	EN61326-1; -2;-3	

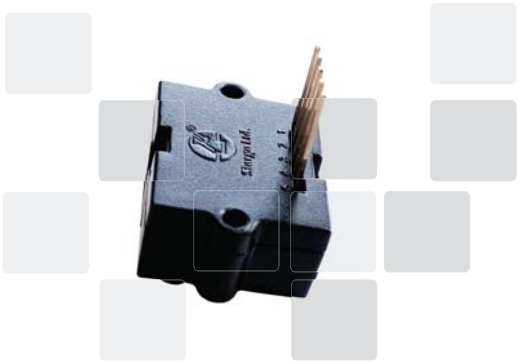
1. 0.02mL/min achievable for a stable flow.
2. Settle time is dependent on the requirements of a stable flow dispensing. If an larger than the specified errors allowed, a faster dispensing can be achieved.

Product Selection

The product part number is composed of the model number and suffixes indicating the full scale flow rate for dispensing, as well as the other parameters. Refer to the followings for details.



Note: for special liquid or gas other than water or air, please contact the manufacturer.



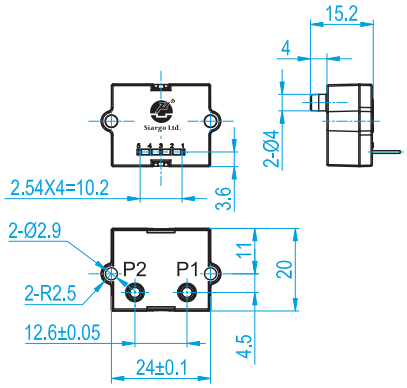
FSP1000 Series

Differential Pressure Sensors

Features

- Designed for applications in HVAC and CPAP equipment
- High sensitivity at low differential pressure
- Temperature compensated and altitude independent
- Digital and analog linear output with fast response time
- Small form factor and low power consumption

Mechanical Dimensions



Specifications

Parameter	FSP1000			Unit
Pressure range	2 ~ 50 or ±(2 ~ 50)	2 ~ 100 or ±(2 ~ 100)	5 ~ 250/500 or ±(5 ~ 250/500)	Pa
	0.008 ~ 0.2 or ±(0.008 ~ 0.2)	0.008~0.4 or ±(0.008~0.4)	0.02 ~ 1.0/2.0 or ±(0.02 ~ 1.0/2.0)	inch H_2O
Supply voltage	(3.0 ~ 3.6) Vdc, 10 mA			
Output	Linear, Analog/ I^2C			
Output volatage	0.4 ~ 2.4			Vdc
Output resolution	Analog - 12 bit, I^2C - 14 bit			
Output pin	5 Pin header			
Response time	20			msec
Pneumatic flow resistance	<95 ml/min @500Pa			
Span accuracy	±(2.0+0.8FS)	±(2.0+0.5FS)	±(2.0+0.5FS)	%
Span repeatability	±0.5			
Span temperature shift	<1.6			% /10ºC
Compensated temperature	-5 ~ +65			ºC
Offset tolerance	±0.5			Pa
Offset long term stability	0.1			Pa/year
Offset repeatability	±0.1			Pa
Altitude correction	Null, fully compensated			
Storage temperature	-40 ~ +85			ºC
Pressure rating	2.0			bar
Humidity	0 ~ 100 (no condensation)			%RH
Warming up time	<500			msec
Vibration	20g; MIL-STD-883E, Method 2002.4.			
Compliance	RoHS and REACH			

Note: customizable flow range and others are available upon requests.

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