Siargo Ltd.



- Mass flow
- Microfluidics
- Pressure
- Gas/chemical




www.Siargo.com

Product catalog

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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 ready to provide timely solutions to your even very special requirements.

Our patented low power thermal sensing (time-of-flight and calorimetry with diffusivity detection) and integrated system technology with IoT capabilities excel in performance for many ready-to-ship and customized applications.

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

We are ISO9001:2015 and ISO13485:2016 certified and we strictly implement the quality management requirements at every single step of our design, engineering and manufacture process.

Innovation fundamental physics driven with smart MEMS process

Quality reliability and performance embedded in every product route

Service timely response and customer satisfactions

Proprietary thermal time-of-flight tech		Microfluidics with super dynamic range		Super low power with battery	
	Sensor fusion offers multi-parameters		IoT ready for connectivity /remote data		Low pressure loss saving energy
Thermal data for chemistry		Disposable option for medical appl.		Flexibility with package technology	

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-discipline medical and other industrial applications.

Siargo has been dedicated to developing state-of-the-art MEMS 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 fluidic and microfluidic metrology, as well as other gas sensing applications. 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 especially effective in the measurement of low pressures. It is developed for seamless integration with our other thermal sensing-based sensors, which shall provide a miniaturized package and performance meeting the requirements of 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, 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.

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FS1015E

Gas Mass Flow Sensor

Production description

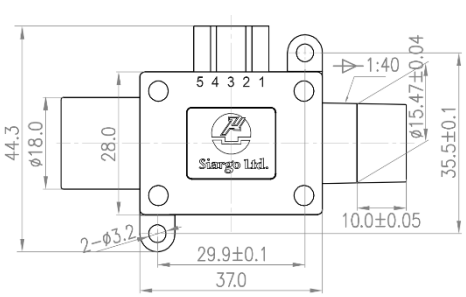
FS1015E series mass flow sensors are specially designed for medical equipment flow monitor and control applications and are manufactured with Siargo's proprietary MEMS (micro-electro-mechanical systems) calorimetry with diffusivity sensing technologies (***Thermal-D*** ®) that measures the calorimetry and diffusivity of the flow medium. The sensors directly measure mass flow in the designed channel with a very low pressure loss. The current models can be readily applied to ventilators, endoscopes, and anesthesia equipment.

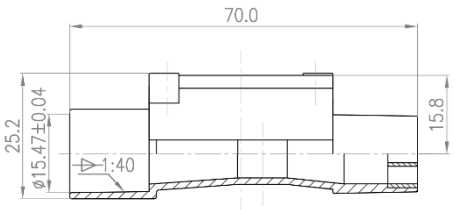
FS1015E can measure a flow up to 150 SLPM. ISO-15mm medical connection is ready plug-and-play for medical equipment.

Features

- MEMS calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- High stability at null and full scale
- Fast response time
- Low pressure loss
- Medical ISO-15mm connector

Mechanical dimensions





Specifications

Flow range	0 ~ 100, 150	SLPM
Accuracy	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time	8	msec
Power supply	5 (±5%)	Vdc
Output	Linear, Analog: 0.5 ~ 2.5 Vdc / Digital: I²C	
Pressure loss (max.)	1.3 kPa @ 150 SLPM	
Pressure rating	0.2	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	ISO-15mm	
Pinout	5 pins, AMPMODU MTE, or compatible	
Calibration	Air @ 20°C, 101.325 kPa	
Max. overflow	300	SLPM
Max. flow change	40	SLPM/sec
Weight	21.5 g with ISO connector	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

FS1015E - □ - □ - □ - □

- Gas: **A** – air, N_2, O_2, and Ar; **C** – CO_2. For other gases, please contact the manufacturer.
- Output: **E** – I²C; **V** – analog 0.5 ~ 4.5 Vdc. Option: **V** or **EV**.
- Connector: **ISO** – ISO-15mm; **N** – NPT ½"-male.
- Full scale flow rate: **100** or **150** SLPM; others optional.

Note 1. For CO_2, the max full-scale flow rate is 100 SLPM.
2. For connectors other than ISO, the total product length will be dependent on the specific connectors.

FS1100

Gas Mass Flow Sensor

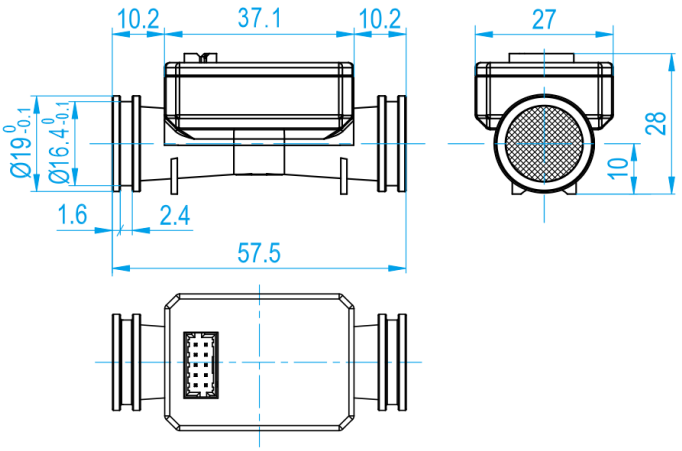
Production description

FS1100 series mass flow sensors are manufactured with Siargo's proprietary MEMS (micro-electro-mechanical systems) calorimetry with diffusivity sensing technologies (***Thermal-D*®**) that measures the calorimetry and diffusivity of the flow medium. This technology compared to conventional calorimetric sensing offers much better linearity in the full dynamic range, removes gas sensitivities for gases that have similar thermal diffusivities, and increases the measurement accuracy when used with a gas conversion factor. It also simultaneously outputs the instant flow medium temperature data and improves the temperature performance of the thermal sensing approach.

Features

- MEMS calorimetry with diffusivity (***Thermal-D*®**)
- Full scale up to 250 SLPM
- 100:1 dynamic range
- Temperature output

Mechanical dimensions



Specifications

Flow range	-250 ~ +250	SLPM
Accuracy (total error band)	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time	5	msec
Temperature range	-20 ~ +80	°C
Temperature accuracy (0 ~ 50 °C)	±2.5	°C
Power supply	5 (± 5%)	Vdc
Output	Linear, Analog: 0.5 ~ 2.5 Vdc / Digital: I²C	
Working temperature	-10 ~ +55	°C
Temperature coefficient	±0.12	%/°C
Pressure rating	0.2	MPa
Warm-up time	500	msec
Humidity	<95 (no condensation)	%RH
Analog null shift	±30	mVdc
Max. overflow	300	SLPM
Max. flow change	40	SLPM/sec

Note: Parameters specified at the calibration conditions: 20°C, 101.325kPa.

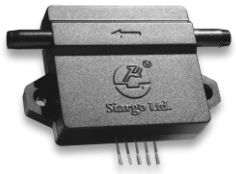
Product selection

FS1100 - □ F □ - □ - □

- Additional options.
- Gas: **A** – air, N_2, O_2, and Ar; **C** – CO_2.
  For other gases, please contact the manufacturer.
- Forward flowrate: **100**, **150**, **200** or **250** SLPM.
- Reverse flowrate: **0**, **50**, **100**, **150**, **200** or **250** SLPM.

Note 1. The default unit of the flow rate is SLPM. For other ranges, please contact the manufacturer.

2. Example: FS1100-50F250-A is a sensor that measures mass flow rate from reverse 50 to forward 250SLPM, air.



FS4001

Gas Mass Flow Sensor

Production description

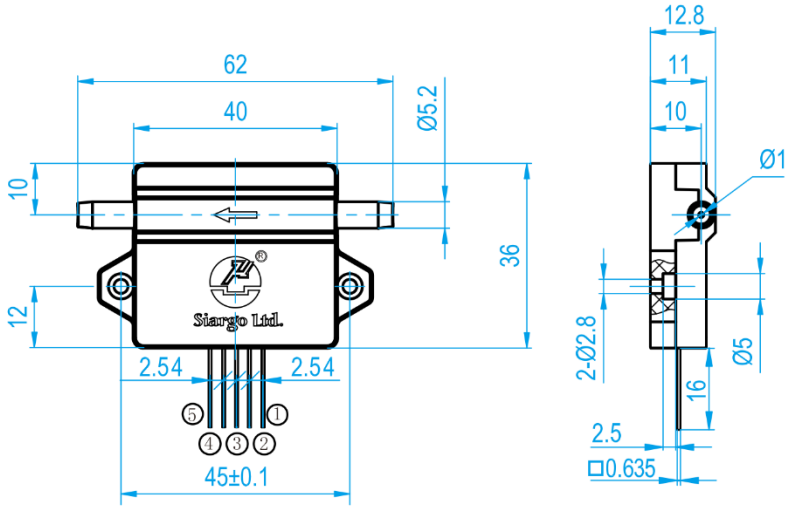
FS4001 series mass flow sensors are designed for instrumentation and process control and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The sensors directly measure mass flow at a sub-liter per minute flow range with high accuracy and fast response time. The current models can also be configured with a small LCD.

FS4001 can measure a full-scale flow as low as 30 sccm and up to 1000 sccm. The barbed connector is easy to connect with a soft tube.

Features

- MEMS thermal mass flow sensor
- Excellent rangeability 100:1 with integrated multiple sensing elements
- High stability at null and full scale
- Fast response time
- Pressure rating to 0.5 MPa (5 bar / 75 PSI)
- Easy installation

Mechanical dimensions



Specifications

Flow range	0 ~ 30, 100, 200	0 ~ 500, 1000	sccm
Accuracy	±(1.5+0.5FS)		%
Repeatability	(0.5+0.15FS)		%
Response time	65 (default; others: 4 / 8 / 16 / 33 / 131)		msec
Power supply	8 ~ 24 (50 mA)		Vdc
Output	Linear, Analog:0.5 ~ 4.5 Vdc / Digital: RS232 / I²C		
Pressure loss (max.)	20	30	Pa
Pressure rating	0.5		MPa
Temperature	-10 ~ +55		°C
Humidity	<95 (no condensation)		%RH
Mechanical connection	Barded		
Pinout	5 pins		
Calibration	Air @ 20°C, 101.325 kPa		
Max. overflow	3	1	SLPM
Max. flow change	0.5	1.5	SLPM/sec
Weight	15		g
Storage temperature	-20 ~ +70		°C

Note: Parameters specified at the calibration conditions.

Product selection

FS4001 - □ - □ - □

Gas: **A** – air; **C** – CO_2; **E** – He; **H** – H_2; **N** – N_2; **O** – O_2; **R** – Ar.
For other gases, please contact the manufacturer.

Output: **C** – RS232; **E** – I²C; **V** – analog 0.5 ~ 4.5 Vdc.
Option: **V**, **CV** or **EV**.

Full scale flow rate: **30**, **100**, **200**, **500** or **1000** sccm.

Note: For CO_2, the max full-scale flow rate is 750 sccm.

FS4308

Gas Mass Flow Sensor

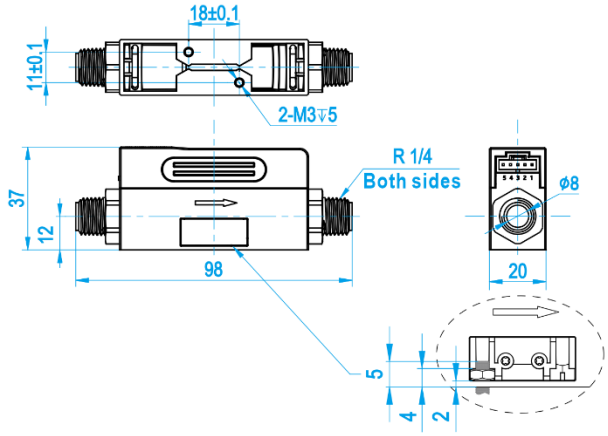
Production description

FS4300 series mass flow sensors are designed for general-purpose precise gas metering, processing monitoring, and/or control. The products have enhanced flow conditioning compared to the FS4008 series which allows more flexibility during installation. Consequently, the products will have a pressure loss about 5 times higher than that for FS4008, but still lower than most of the offers on the market for a similar dynamic range. FS4308 also has a smaller footprint compared to FS4008. It can be applied for pneumatic control, process automation, and other industrial applications where the pressure drop is not a critical parameter. The series covers a wide dynamic flow range with a working pressure rating of up to 0.8 MPa (10 bar or 117 PSI), and a compensated temperature ranging from -10 to +55°C.

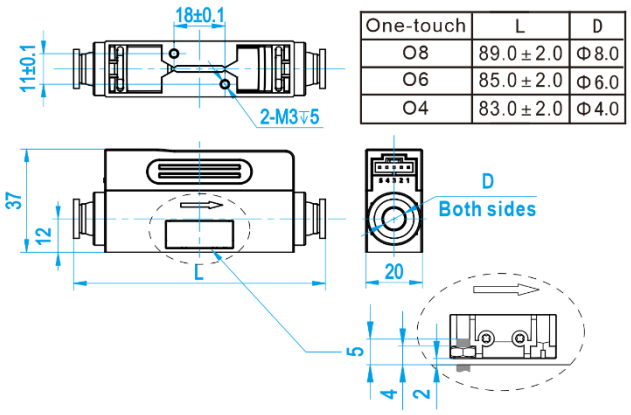
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Wide dynamic flow range
- High precision
- Working pressure rating up to 0.8 MPa
- RS232, RS485 and I²C interface

Mechanical dimensions



BSPT 1/4 connectors



One-touch	L	D
O8	89.0±2.0	Φ8.0
O6	85.0±2.0	Φ6.0
O4	83.0±2.0	Φ4.0

One-touch connectors

Specifications

Flow range	0 ~ 2, 3, 4, 5	0 ~ 10, 20	0 ~ 30, 40, 50	SLPM
Accuracy		±(1.5+0.15FS)		%
Repeatability		(0.5+0.05FS)		%
Response time		10		msec
Power supply		8 ~ 24 (50 mA)		Vdc
Output		Linear, Analog:1 ~ 5 Vdc / Digital: RS232, RS485, I²C		
Pressure rating		0.8		MPa
Temperature		-10 ~ +55		°C
Humidity		<95 (no condensation)		%RH
Mechanical connection		BSPT ¼" or One-touch 4 / 6 / 8mm		
Pinout		5 pins, AMPMODU MTE, or compatible		
Calibration		Air @ 20°C, 101.325 kPa		
Max. overflow	30	100	200	SLPM
Max. flow change	4	15	30	SLPM/sec
Weight		40 (with BSPT)		g
Storage temperature		-20 ~ +70		°C

Note: Parameters specified at the calibration conditions.

Product selection

FS4308 - □ - □ - □ - □

- Gas: **A** – air, N_2, O_2, and Ar; **B** – N_2O; **C** – CO_2.
  For other gases, please contact the manufacturer.
- Output: **B** – RS485; **C** – RS232; **E** – I²C; **V** – analog 1 ~ 5 Vdc.
  Option: **V**, **BV**, **CV** or **EV**.
- Connector: **R** – BSPT ¼"; **O4**/**O6**/**O8** – one touch; **X** – customized.
- Full scale flow rate: **2**, **3**, **4**, **5**, **10**, **20**, **30**, **40** or **50** SLPM.

FS5001E

Gas Mass Flow Sensor

Production description

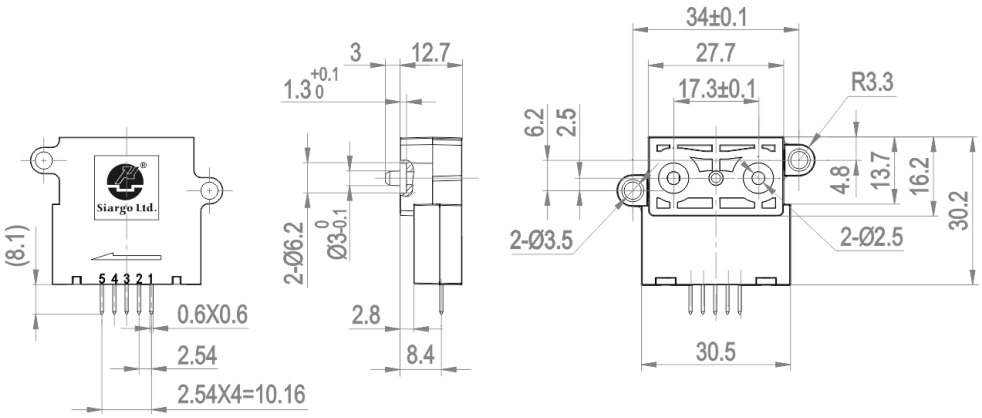
FS5001E series mass flow sensors are designed for general-purpose flow metering and control applications with manifold mounting and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The sensors directly measure mass flow. The current models can be readily applied to an analytical instrument such as gas chromatography; other applications such as air samplers; and many other process control applications.

FS5001E has two versions one for sub-liter per minute flow and another for up to 15 SLPM flow. It can also be used for bypass flow measurement.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- High stability at null and full scale
- Fast response time
- Pressure rating to 0.5 MPa (5 bar or 73 PSI)
- Manifold installation

Mechanical dimensions



Specifications

Flow range	0 ~ 200	0 ~ 500, 1000	0 ~ 4000, 6000	0 ~ 10000, 15000	sccm
Accuracy	±(2.0+0.5FS)				%
Repeatability	(0.5+0.15FS)				%
Response time	10 (default, others: 5 ~ 1000)				msec
Power supply	8 ~ 24 (50 mA)				Vdc
Output	Linear, Analog: 0.5 ~ 4.5 Vdc / Digital: I²C				
Pressure loss (max.)	0.5	0.9	3.5	10	kPa
Pressure rating	-0.08 ~ 0.5				MPa
Temperature	-10 ~ +55				°C
Humidity	<95 (no condensation)				%RH
Pinout	5 pins				
Calibration	Air @ 20°C, 101.325 kPa				
Max. overflow	1	3	18	30	SLPM
Max. flow change	150	500	3000	6000	sccm/sec
Weight	12.5				g
Storage temperature	-20 ~ +70				°C

Note: Parameters specified at the calibration conditions.

Product selection

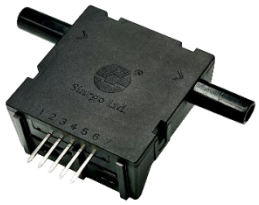
FS5001E - □ - □ - □

Gas: **A** – air; **C** – CO_2; **E** – He; **H** – H_2; **N** – N_2; **O** – O_2; **R** – Ar.
For other gases, please contact the manufacturer.

Output: **E** – I²C; **V** – analog. Option: **V** or **EV**.

Full scale flow rate: **200**, **500**, **1000**, **4000**, **6000**, **10000** or **15000** sccm.

Note: For CO_2, the full-scale flow rate is 80% of air.



FS5002

Gas Mass Flow Sensor

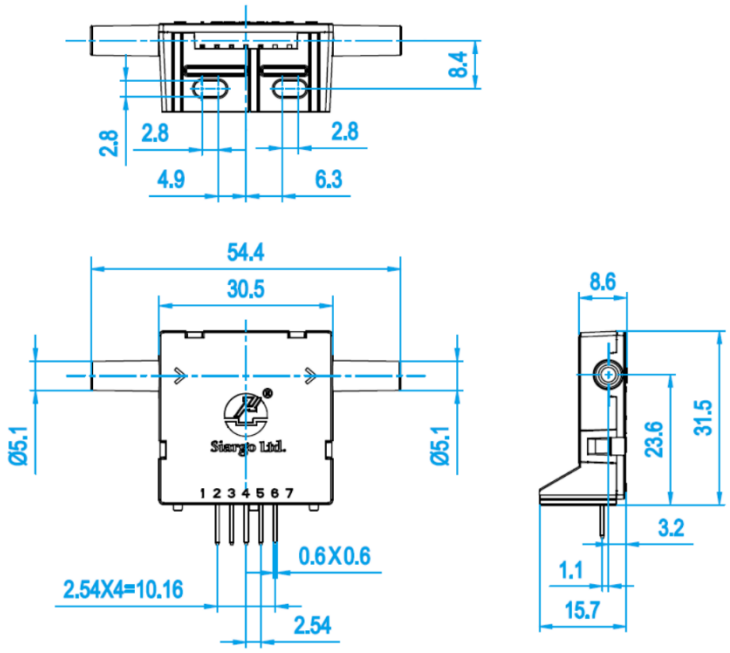
Production description

FS5002 series mass flow sensors are designed for general-purpose gas flow monitor and control applications with the full-scale mass flow rate from 10 to 1000 sccm and both analog and digital outputs. The series covers a wide dynamic flow range with a working pressure rating of up to 0.5 MPa (5 bar or 73 PSI) and a compensated temperature ranging from -10 to +55°C

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- High stability at null and full scale
- Fast response time
- Pressure rating to 0.5 MPa

Mechanical dimensions



Specifications

Flow range	0 ~ 10, 30, 50, 100, 200, 500, 1000	sccm
Accuracy	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time	5	msec
Power supply	**FS5002:** 8 ~ 15 Vdc **FS5002L:** 2.7 ~ 5.5 Vdc	Vdc
Output	**FS5002:** Linear, Analog 1 ~ 5 Vdc / Digital: I²C **FS5002L:** Linear, Analog 0.25 ~ 2.25 Vdc / Digital: I²C	
Pressure range	-0.08 ~ 0.5	MPa
Maximum pressure	0.5	MPa
Temperature range	-25 ~ +85	°C
Humidity	<95 (no condensation)	%RH
Pinout	5 pins	
Calibration	Air @ 20°C, 101.325 kPa	
Max. overflow	3000	SLPM
Max. flow change	5500	sccm/sec
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

FS5002 □ - □ - □ - □ - □ - □

- Additional options
- Gas: **A** – air, N2, O2, and Ar; **C** – CO_2;
  for other gases, please contact the manufacturer.
- Output [1] : **E** – I²C; **V** – Analog output ratiometric version;
  Vn – Analog output non-ratiometric version;
  Available: **E**, **V**, **Vn**, **EV**, **EVn**.
- Maximum full scale flow rate: **10**, **30**, **50**, **100**, **200**, **500** or **1000** sccm.
- Option: **A** – unidirectional; **B** – bidirectional.
- Model: **Null** – standard model; **L** – low power model.

FS6122

Gas Multi-parameter Sensors

Production description

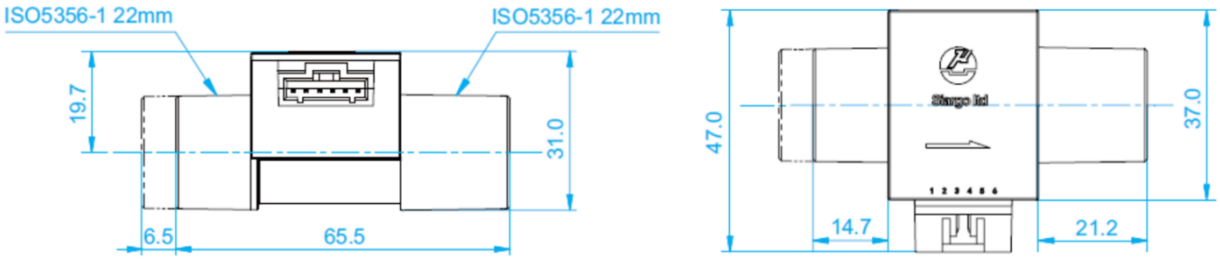
FS6122 series mass flow sensors offer a unique solution for multi-parameter flow measurement with mass flow, gauge pressure, temperature, and humidity. It is designed for medical respiratory equipment and can also be applied for general-purpose flow metering and control applications. The sensors were designed with a super-low pressure loss. The current models can be readily applied to medical applications such as a ventilator, respiratory analyzers, CPAP, and other applications such as environmental monitoring; and many process control applications.

FS6122 can measure a uni- or bi-directional flow up to 250 SLPM, and ±100 cmH2O gauge pressure, as well as temperature and relative humidity. The connectors can be fully customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- MEMS thermal mass flow, gauge pressure, and temperature/humidity sensors
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Very fast response time of 1.8 msec.
- Super-low pressure loss
- Compact form factor
- Fully customizable connectors

Mechanical dimensions



Specifications

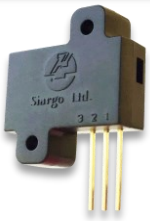
Flow	Range	±250 / 0 ~ 100, 150, 200, 250	SLPM
	Accuracy	±(2.5+0.5FS)	%
Pressure	Range	±100 / -5 ~ 100 / -5 ~ 40 (gauge)	cmH2O
	Accuracy	±1.0	%
Temperature	Range	-10 ~ 60	Vdc
	Accuracy	±0.5	%
Humidity*	Range	0 ~ 100 (no condensation)	%RH
	Accuracy	±2.0 (20 ~ 80%RH); ±5.0, others	%
	Humidity response	5.0 (25 ~ 75%RH)	sec
Other	Response time	1.8	msec
	Power supply	5.0 (±5%)	Vdc
	Compensation range	-5 ~ 60	°C
	Output	I²C / 0.5 ~ 4.5 Vdc linear flow or pressure	
	Mechanical	ISO22mm or adapters	
	Pinout	6 pins, AMPMODU MTE, or compatible	
	Calibration	Air @ 20°C, 101.325 kPa (flow, pressure)	
	Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions. For detailed specifications, refer to the manual. Humidity sensing may require long sensing stable time, not recommended for nonessential applications.

Product selection

FS6122 - ☐ F ☐ - ☐ P ☐ -TH ☐

- Temperature/humidity sensor: **0** or **1** (0 for null)
- Gas pressure: **0**, **40** or **100** cmH2O (0 for null)
- Vacuum pressure: **0**, **5** or **100** cmH2O (0 for null)
- Full scale flow rate: **100**, **150**, **200** or **250** SLPM
- Reverse full scale flow rate: **0**, **50**, **100**, **150**, **200** or **250** SLPM



FS7002

Gas Mass Flow Sensor

Production description

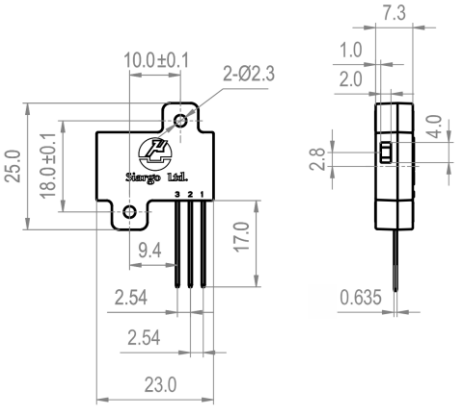
FS7002 series mass flow sensors are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The sensors directly measure mass flow with a very miniaturized package. The current models can be readily applied to vent passage monitor, fan or motor monitor, open space airflow, and clogging detection. It is also an enabler for applications for oxygen delivery and other gas delivery in a small space.

FS7002 has 2 versions, FS7002 is the nonlinear version with analog output, and FS7002L is the linear version with I²C output. FS7002 can measure a flow speed of up to 15 m/sec.

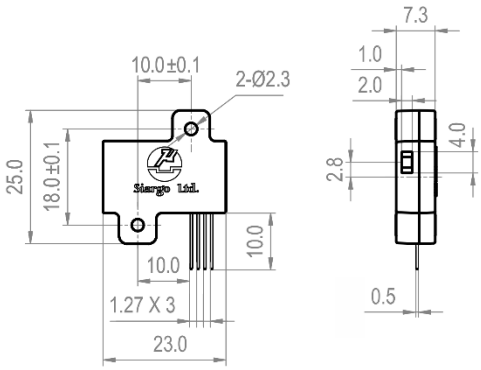
Features

- MEMS thermal mass flow sensor
- Excellent rangeability over 100:1
- Open space airspeed metering or monitoring
- Fast response time
- Linearized digital output
- Fully customizable connectors

Mechanical dimensions



FS7002



FS7002L

Specifications

Flow range	0 ~ 5, 10, 15	m/sec
Repeatability	±3 FS% (0 ~ 5 m/sec) / ±2FS% (0 ~ 10, 15 m/sec)	
Response time	20	msec
Power supply	5.0 (±5%)	Vdc
Output (FS7002) (FS7002L)	Analog, nonlinear Digital: I²C, linear	
Offset (FS7002)	0.2 ~ 0.8	Vdc
Full scale (FS7002)	2.5 ~ 3.3	Vdc
Working temperature	-10 ~ +70	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	Flat	
Pinout (FS7002) (FS7002L)	3 pins 4 pins	
Calibration (FS7002L)	Air @ 20°C, 101.325 kPa	
Weight	3	g
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

FS7002 □ - □

Full scale flow speed: **B** – 0 ~ 5 m/sec; **C** – 0 ~ 10 m/sec;
D – 0 ~ 15 m/sec.

Output: **FS7002** – nonlinear with analog output;
FS7002L – linear with I²C.

Note: The sensor can be customized for bi-directional flow sensing. Contact the manufacturer for details.

FS8000

Gas Mass Flow Sensor

Production description

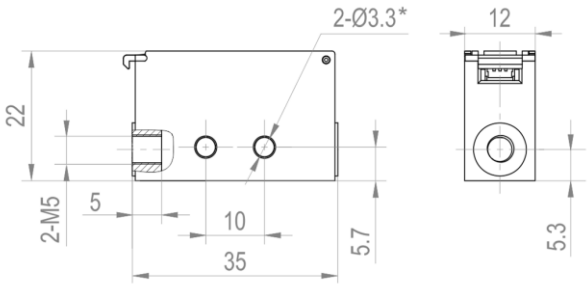
FS8000 series mass flow sensors are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The sensors directly measure mass flow with a very fast response time. The current models can be readily applied to high throughput automation equipment control such as a semiconductor die attachment; and other applications such as air samplers, leakage detection, and air sprayer.

FS8000 offers primarily the mass flow rate measurements of a full scale from 30 to 500 sccm with a dynamic range of 100:1 for FS8001E and up to 6 SLPM for FS8003E.

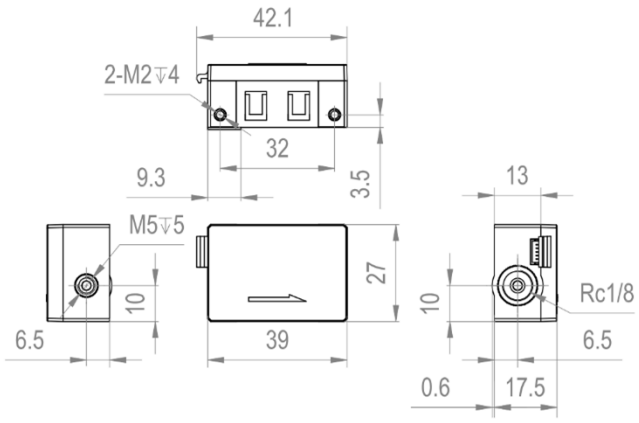
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Extreme fast response time
- Trace flow detection
- Compact form factor

Mechanical dimensions



FS8001E/FS8001N



FS8003E

Specifications

Flow range (FS8001E) (FS8001N) (FS8003E)	0 ~ 30, 100, 200, 500 sccm 0 ~ 500 sccm 0 ~ 4, 5, 6 SLPM	
Accuracy	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time (FS8001E/ FS8003E) (FS8001N)	5 msec 1 msec	
Power supply	8 ~ 24 (50 mA)	Vdc
Output (FS8001E/ FS8003E) (FS8001N)	Linear: 0.5 ~ 4.5 Vdc / Digital: I²C Nonlinear, Analog: 1.0 (±0.025) ~ 5.0 (±0.1) Vdc	
Pressure rating	0.5	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Null shift	<30	mV
Full span shift	±0.12	%/°C
Mechanical connection (FS8001E/FS8001N) (FS8003E)	 M5 BSPT 1/8" (inlet); M5 (outlet)	
Pinout (FS8001E /FS8003E) (FS8001N)	SM05B-SRSS-TB (JST) SM03B-SRSS-TB (JST)	
Calibration	Air @ 20°C, 101.325 kPa	
Weight	13.5	g
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

FS80 □ - □ - □ - □

- Gas: **A** – air, N_2, O_2, and Ar; **C** – CO_2; **E** – He; **H** – H_2. For other gases, please contact the manufacturer.
- Output: **E** – I²C; **V** – analog. Option: **V** or **EV**.
- Full scale flow rate: **FS8001E**: 30, 100, 200 or 500 sccm; **FS8003E**: 4, 5 or 6 SLPM
- **01E** or **03E**

Note: FS8001 nonlinear model does not have options, the model is named **FS8001N**.

AM1000

Station Gas Probe

Production description

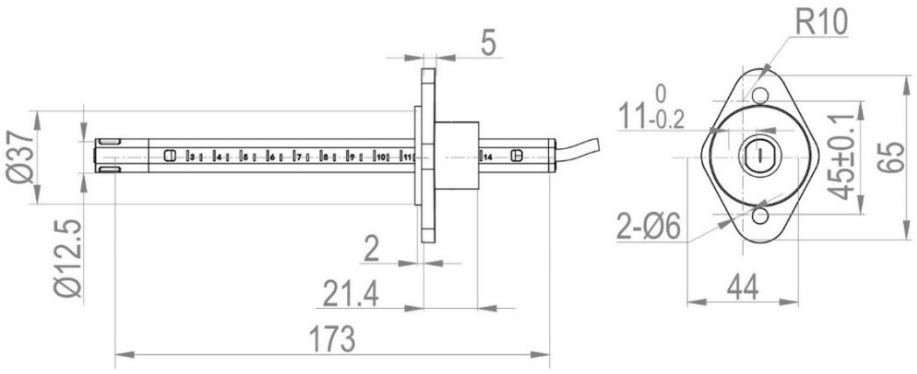
AM1000 series station gas probes are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The probe integrates the flow, temperature, and humidity sensors into a probe that can measure multiple parameters in an open space or inside a closed conduit with a large diameter. Applications include sports equipment, environmental station, HVAC, equipment server station, and others such as the insertion flow meter.

AM1000 can measure a flow speed of up to 30 m/sec with remote data and optional wireless data.

Features

- MEMS thermal mass flow sensor, with optional temperature and humidity data
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Insertion or open space measurement
- RS485 Modbus or optional wireless data
- Easy installation
- Fully customizable digital data interface

Mechanical dimensions

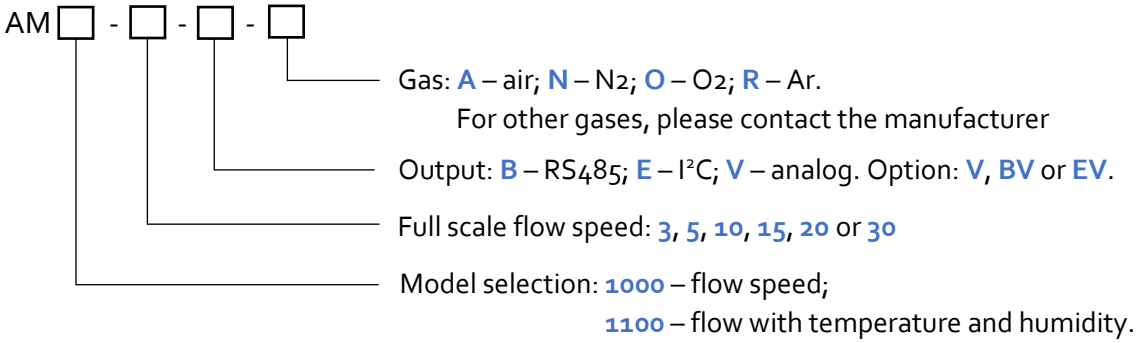


Specifications

Flow range	0 ~ 3, 5, 10, 15, 20, 30	m/sec
Accuracy	±2.5	%FS
Repeatability	0.8	%
Humidity	0 ~ 100	%RH
Humidity accuracy	±2.0 (20 ~ 80%RH), otherwise ±5.0	%RH
Humidity resolution	0.7	%RH
Response time (humidity)	5.0	sec
Temperature	-20 ~ +60	°C
Temperature accuracy	±0.5	°C
Response time (flow and temperature)	20	msec
Operation temperature	-20 ~ +65	°C
Output	Analog: 0.5 ~ 4.5 Vdc, linear / Digital: RS485; I²C	
Power supply	8 ~ 24 (15 mA)	Vdc
Power and data cable	5 color-coded cable, 1 m	
Weight	41	g
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection



Note: For the wireless data option, please contact the manufacturer.

MF3000

Gas Mass Flow Sensor

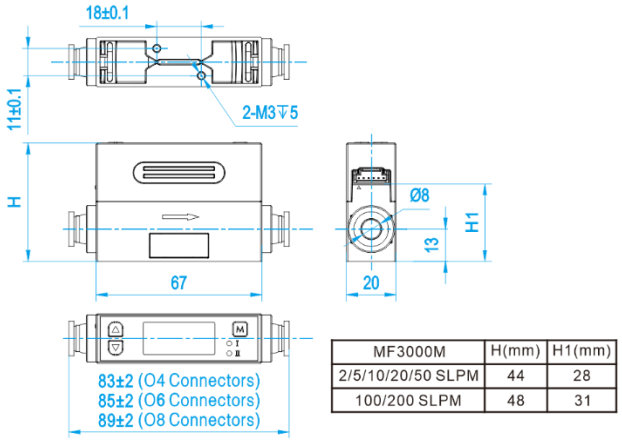
Production description

MF3000 series mass flow meters are designed for general-purpose precise gas metering, processing monitoring, and/or control. The products have enhanced flow conditioning which allows more flexibility during installation. It can be applied for pneumatic control, process automation, and other industrial applications where the pressure drop is not a critical parameter. The products are designed with an easy change of mechanical connectors. The standard connectors of 2 to 200 SLPM models is BSPT 1/4"-male or One-touch connector, of 500 to 1500 models is BSPT 1/2"-female, and other customized connectors are available upon request.

Features

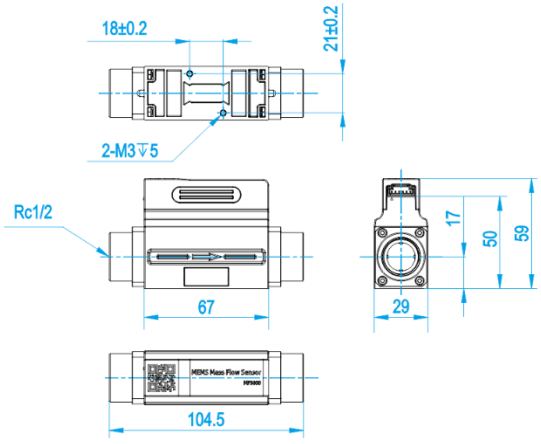
- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Wide dynamic flow range
- High precision
- Working pressure rating up to 0.8 MPa
- RS485 and I²C interface, NPN and PNP outputs

Mechanical dimensions



MF3000M	H(mm)	H1(mm)
2/5/10/20/50 SLPM	44	28
100/200 SLPM	48	31

MF3000M, full scale 2, 5, 10, 20, 50, 100, 200 SLPM



MF3000S, full scale 500, 1000, 1500 SLPM

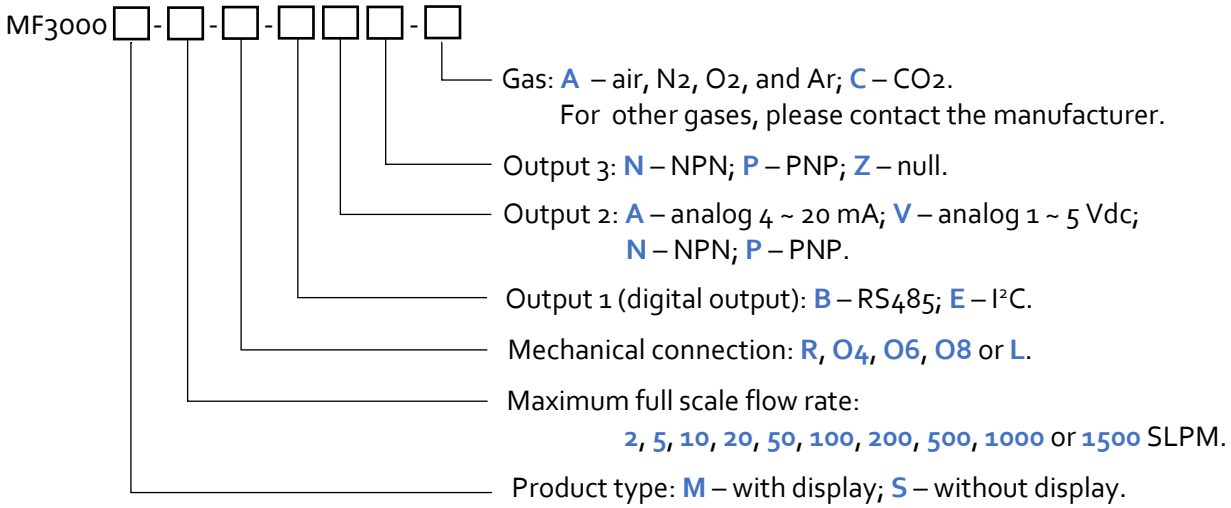
* For other models, please contact the manufacturer

Specifications

Flow range	2, 5, 10, 20, 50, 100, 200, 500, 1000 or 1500	SLPM
Accuracy	±(2.5+0.5FS)	%
Repeatability	(0.8+0.15FS)	%
Response time	10	msec
Power supply	8 ~ 24 (50 mA)	Vdc
Output 1 (digital output)	RS485 Modbus or I²C	
Output 2 & 3	Analog 4 ~ 20 mA, 1 ~ 5 Vdc, NPN, PNP	
Pressure rating	0.8	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	**2, 5, 10, 20, 50 SLPM:** BSPT 1/4"-male, 4mm / 6mm / 8mm One-touch connector, or L connector **100, 200 SLPM:** BSPT 1/4"-male, 8 mm One-touch connector or L connector **500, 1000, 1500SLPM:** BSPT 1/2"-female	
Pinout	6 pins, HRS:DF51K-6P-2DS	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection



MF4000

Gas Mass Flow Meter

Production description

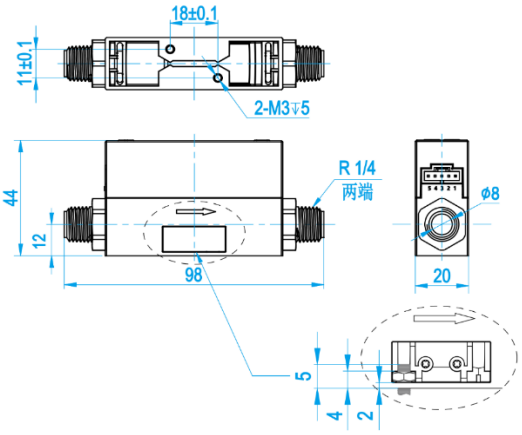
MF4000 series mass flow meters are designed for general-purpose precise industrial gas processing monitoring and/or control. It can be applied for medical equipment such as anesthesia application, endoscopes, and cancer treatment; industrial applications including welding machines, laser equipment, gas mixture; and many more. The series covers a wide dynamic flow range with a working pressure rating of up to 0.8 MPa (8 bar or 112 PSI), and a compensated temperature ranging from -10 to +55°C.

The products are designed with an easy change of mechanical connectors. The standard connectors are BSPT 1/4", and other customized ones are available upon request.

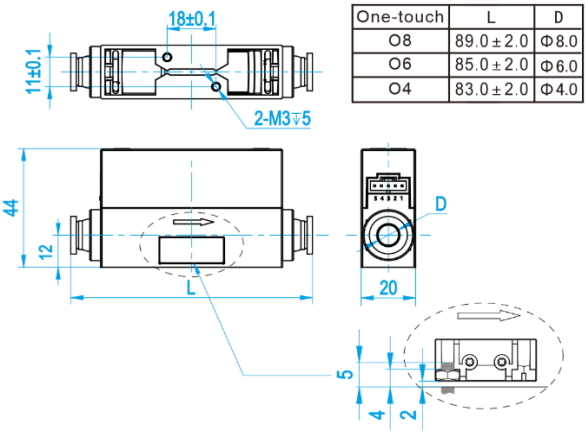
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Wide dynamic flow range
- High precision
- Working pressure rating up to 0.8 MPa
- RS485 and I²C interface

Mechanical dimensions



BSPT 1/4 connectors



One-touch	L	D
O8	89.0±2.0	Φ8.0
O6	85.0±2.0	Φ6.0
O4	83.0±2.0	Φ4.0

One-touch connectors

Specifications

	MF4003	MF4008	MF4008	
Flow range	0 ~ 2, 3, 4, 5	0 ~ 10, 20	0 ~ 30, 40, 50	SLPM
Accuracy		±(1.5+0.15FS)		%
Repeatability		(0.5+0.05FS)		%
Response time		10		msec
Power supply		8 ~ 24 (50 mA)		Vdc
Output		Linear: 1 ~ 5 Vdc / Digital: RS485, RS232, I²C		
Pressure loss (max.)		2.2 @ 50 SLPM (with BSPT)		kPa
Pressure rating		0.8		MPa
Temperature		-10 ~ +55		°C
Humidity		<95 (no condensation)		%RH
Mechanical connection		BSPT ¼" or One-touch 4 / 6 / 8mm		
Pinout		5 pins, AMPMODU MTE, or compatible		
Calibration		Air @ 20°C, 101.325 kPa		
Max. overflow	30	100	200	SLPM
Max. flow change	4	15	30	SLPM/sec
Weight		50 (with BSPT)		g
Storage temperature		-20 ~ +70		°C

Note: Parameters specified at the calibration conditions.

Product selection

MF40 □ - □ - □ - □ - □

Gas: **A** – air; N_2, O_2, and Ar; **B** – N_2O; **C** – CO_2.
For other gases, please contact the manufacturer.

Output: **B** – RS485; **C** – RS232; **E** – I²C; **V** – analog.
Option: **V**, **BV**, **CV** or **EV**.

Connector: **R** – BSPT 1/4"; **O4**/**O6**/**O8** – one touch.

Full scale flow rate: **2**, **3**, **4**, **5** (MF4003); **10**,**20**, **30**, **40**, **50** (MF4008).

DN: **03** – MF4003; **08** – MF4008.

MF4600

Gas Mass Flow Meter

Production description

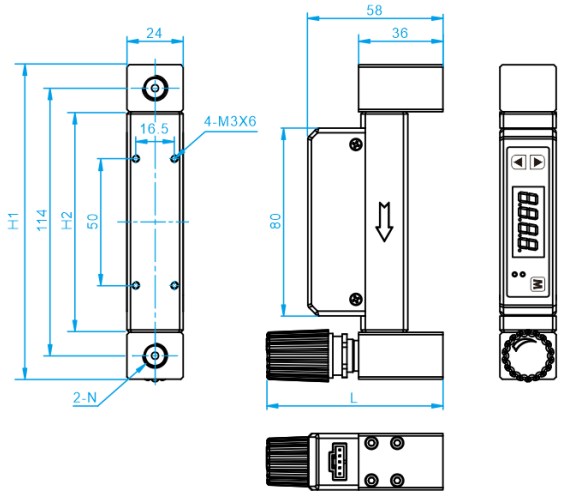
MF4600 series mass flow meters are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The meters directly measure mass flow with a very low pressure loss. The current models are dimensioned and built with a precision manual control valve that allows the seamless replacement of mechanical process control rotameters.

MF4600 can measure a flow up to 50 SLPM. The connectors can be fully customized.

Features

- MEMS thermal mass flow meter
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Built-in keyboard and manual control valve
- Fast response time
- Low pressure loss
- Fully customizable connectors

Mechanical dimensions



Model	DN (mm)	N *	L**	H1	H2
MF4601	1.0	NPT 1/8" ~ 1/4" BSPT 1/8" ~ 1/4"	88	138	90
MF4602	2.0	NPT 1/8" ~ 1/4" BSPT 1/8" ~ 1/4"	73 ~ 80	134	94
MF4603	3.0	NPT 1/8" ~ 1/4" BSPT 1/8" ~ 1/4"	73 ~ 80	134	94
MF4608	8.0	NPT 1/4" ~ 3/8" BSPT 1/4" ~ 3/8"	73 ~ 80	138	90

Specifications

	MF4601	MF4602	MF4603	MF4608	
Flow range	0 ~ 100, 200	0 ~ 500, 1000	0 ~ 2, 5	0 ~ 10, 20, 50	sccm SLPM
Accuracy	±(2.0+0.5FS)				%
Repeatability	(0.5+0.15FS)				%
Response time	10 (default, others: 20 ~ 1000)				msec
Power supply	8 ~ 24 (50 mA)				Vdc
Output	Linear: 4 ~ 20 mA / 0.5 ~ 4.5 Vdc / Digital: RS485				
Display	4 digits, 2 status LED				
Resolution	0.001 / 0.01 / 0.1 / 1.0				sccm/SLPM
Pressure rating	1.0				MPa
Temperature	-10 ~ +55				°C
Humidity	<95 (no condensation)				%RH
Mechanical connection	NPT-F or BSPT-F				
Pinout	5 pins, AMPMODU MTE, or compatible				
Calibration	Air @ 20°C, 101.325 kPa				
Max. overflow	2	6	30	200	SLPM
Max. flow change	0.3	1	4	30	SLPM/sec
Storage temperature	-20 ~ +70				°C

Note: Parameters specified at the calibration conditions.

Product selection

MF46□-□-□-□-□

- Gas: **A** – air; **B** – N_2O; **C** – CO_2; **N** – N_2; **O** – O_2; **R** – Ar.
  For other gases, please contact the manufacturer.
- Output: **B** – RS485; **V** – analog. Option: **V** or **BV**.
- Full scale flow rate
- Mechanical connection: **N1**, **N2**, **R1** or **R2** (MF4601/02/03);
  N2, **N3**, **R2** or **R3** (MF4608)
- DN: pipe diameter: **01**, **02**, **03** or **08**.

MF/FS4700

Gas Mass Flow Meter

Production description

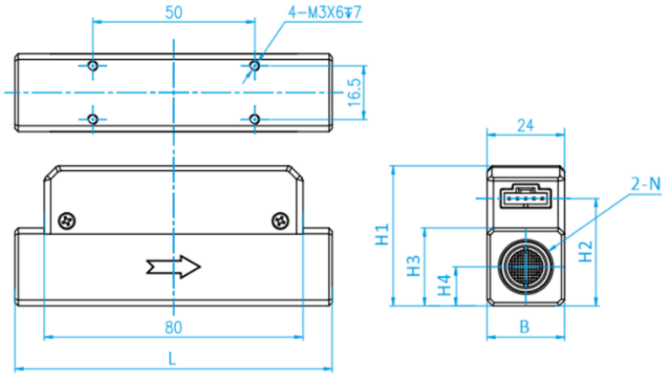
MF/FS4700 series mass flow meters are operated with Siargo's proprietary MEMS calorimetric mass flow sensors together with smart control electronics. The sensor surface is passivated with silicon nitride ceramic materials together with water/oilproof nano-coating for performance and reliability. The meter body is made of either aluminum alloy or stainless steel that is available for applications of most gases.

MF4700 is designed for general purpose precise industrial gas processing monitor, or control. The meter series cover a wide dynamic flow range with a working pressure rating of up to 1.0 MPa, and a temperature ranging from -10 to +55°C.

Features

- MEMS thermal mass flow meter
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Built-in keyboard
- Aluminum alloy or stainless steel
- Fully customizable connectors

Mechanical dimensions



Model	L	B	H1	H2	H3	H4	N
FS4701/03	98	24	39	29	20	10	NPT 1/8", BSPT 1/8"
MF4701/03			43				
FS4708	98	24	43	33	24	12	NPT 3/8", BSPT 3/8"
MF4708			47				
FS4710	118	30	49	39	30	15	G 1/2" (BSPP 1/2")
MF4710			53				

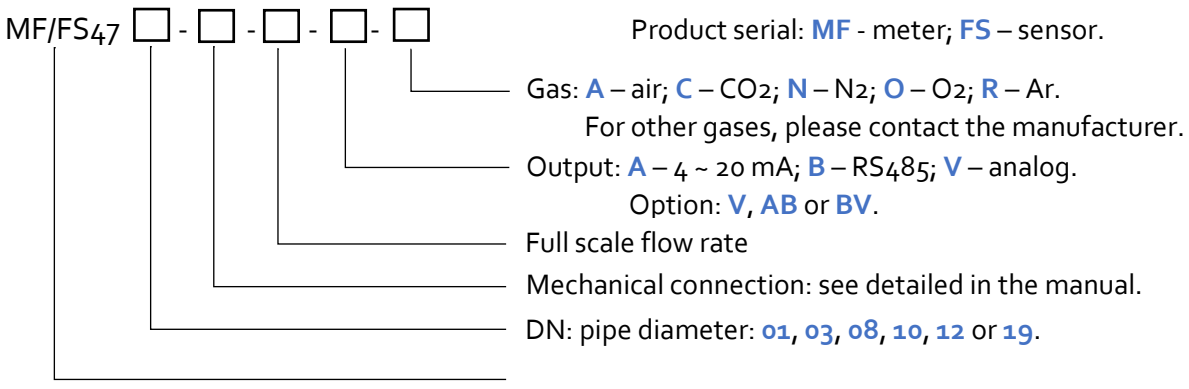
Note: For the mechanical diamensions of MF/FS4712 and MF/FS4719, please contact the manufacturer.

Specifications

	MF4701 FS4701	MF4703 FS4703	MF4708 FS4708	MF4710 FS4710	MF4712 FS4712	MF4719 FS4719	
Flow range	0 ~ 100, 200, 500	0 ~ 1, 2, 5	0 ~ 10, 20, 50	0 ~ 100	0 ~ 200, 300	0 ~ 500, 800, 1000	sccm sccm SLPM SLPM
Accuracy	±(2.5+0.5FS)						%
Repeatability	(0.5+0.15FS)						%
Response time	10 (default, others: 20 ~ 1000)						msec
Power supply	8 ~ 24 (50 mA)						Vdc
Output	Linear: 4 ~ 20 mA / 0.5 ~ 4.5 Vdc / Digital: RS485						
Display	4 digits, 2 status LED						
Resolution	0.001 / 0.01 / 0.1 / 1.0						sccm/SLPM
Pressure rating	1.0						MPa
Temperature	-10 ~ +55						°C
Humidity	<95 (no condensation)						%RH
Mechanical connection	NPT or BSPT						
Pinout	5 pins, AMPMODU MTE, or compatible						
Calibration	Air @ 20°C, 101.325 kPa						
Max. overflow	6	30	200	400	600	2000	SLPM
Max. flow change	1	4	30	60	100	300	SLPM/sec
Storage temperature	-20 ~ +70						°C

Note: Parameters specified at the calibration conditions.

Product selection



MF5000

Gas Mass Flow Meter

Production description

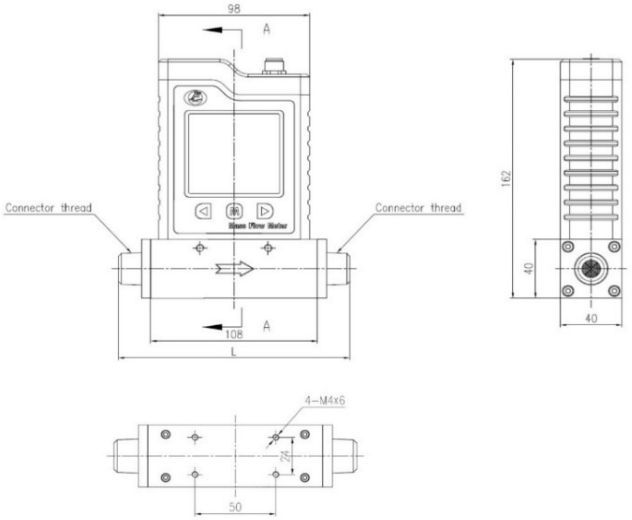
MF5000 series mass flow meters are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensing technology and smart electronic circuitry. The meters directly measure mass flow with a very low pressure loss. It has a wide spectrum of selections in pipe diameter, range, gas type, etc. The current models can be readily applied to industrial gas process and control, gas; and other applications in laboratory and test benches

MF5000 can measure a flow from 0.15 up to 800 SLPM. The connectors can be fully customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Fast response time
- Low pressure loss
- Fully customizable connectors

Mechanical dimensions



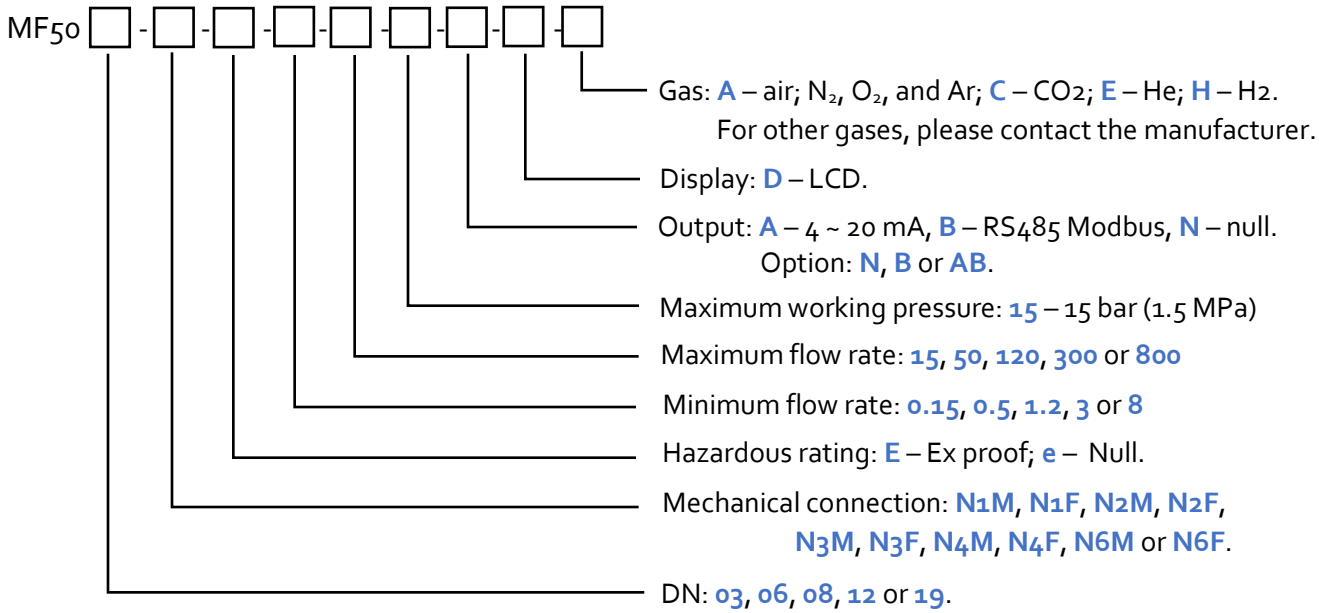
Model	DN (mm)	D (M or F)	L
MF5003	3	NPT 1/8"	138
MF5006	6	NPT 1/4"	144
MF5008	8	NPT 3/8"	144
MF5012	12	NPT 1/2"	150
MF5019	19	NPT 3/4"	182.5

Specifications

Flow range	0 ~ 15 (MF5003) / 0 ~ 50 (MF5006) / 0 ~ 120 (MF5008) / 0 ~ 300 (MF5012) / 0 ~ 800 (MF5019)	SLPM
Accuracy	±(1.5+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Power supply	12 ~ 24 (50 mA)	Vdc
Output	RS485 Modbus / 4 ~ 20 mA	
Pressure rating	1.5	MPa
Temperature	-20 ~ +60	°C
Humidity	<95 (no condensation)	%RH
Pinout	M12	
Calibration	Air @ 20°C, 101.325 kPa	
Hazardous rating	Ex ia IIC T4 Gb	

Note: Parameters specified at the calibration conditions.

Product selection



MF5100

Gas Mass Flow Meter

Production description

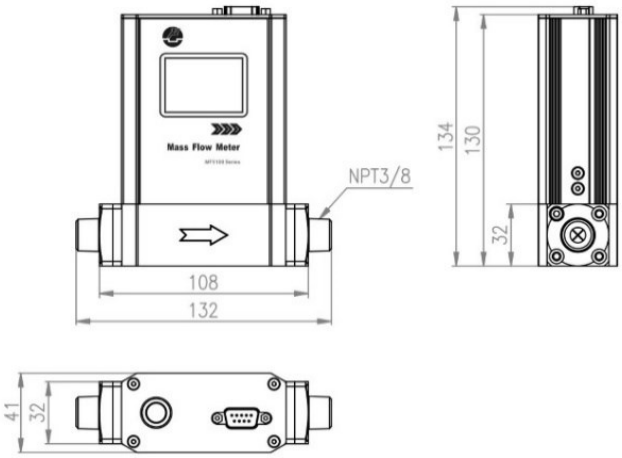
MF5100 series mass flow meters are designed for a large dynamic range (200:1) and high accuracy of 1.5% reading in flow metering and control applications. With Siargo's proprietary MEMS mass flow sensing technology, the meter can automatically recognize the registered gases and be powered with a lithium-ion battery for long-lasting operation. The current models can be readily applied to applications with multiple gas process control and flow efficiency calibration, as well as applications requiring mobile power.

MF5100 can measure a flow up to 100 SLPM. The connectors can be fully customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 200:1 with integrated multiple sensing elements
- High accuracy of 1.5% reading
- Fast response time
- Battery-powered with the long-lasting operation
- Fully customizable connectors

Mechanical dimensions



Note: The current three models have the identical mechanical dimensions.

Specifications

Flow range	0 ~ 30 (MF5106) / 0 ~ 50 (MF5108) / 0 ~ 100 (MF5110)	SLPM
Initial flow rate	0.01 / 0.01 / 0.02	SLPM
Accuracy	±1.5	%
Repeatability	0.5	%
Response time	250	msec
Long term stability	< 1.0	%/year
Power supply	D-Cell 19Ah lithium ion / 12 ~ 24 Vdc (external)	
Battery life	> 2	Year
Output*	LCD / Digital: RS485 / 4 ~ 20 mA / Pulse / Voltage 0 ~ 5 Vdc	
Pressure rating	1.0	MPa
Burst pressure	1.5	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Pinout	DB9	
Mechanical connection	NPT 3/8" - Male	
Calibration	Air @ 20°C, 101.325 kPa	
Weight	< 1.0	kg
Storage temperature	-20 ~ +70	°C

Note: 1. Parameters specified at the calibration conditions.

2. RS485 Modbus / pulse output requires an external power model. 4 ~ 20 mA and voltage output are optional.

Product selection

MF51 ☐-☐-☐-☐-☐-☐-☐-☐

Please contact the manufacturer.

MF5100V

Gas Mass Flow Meter

Production description

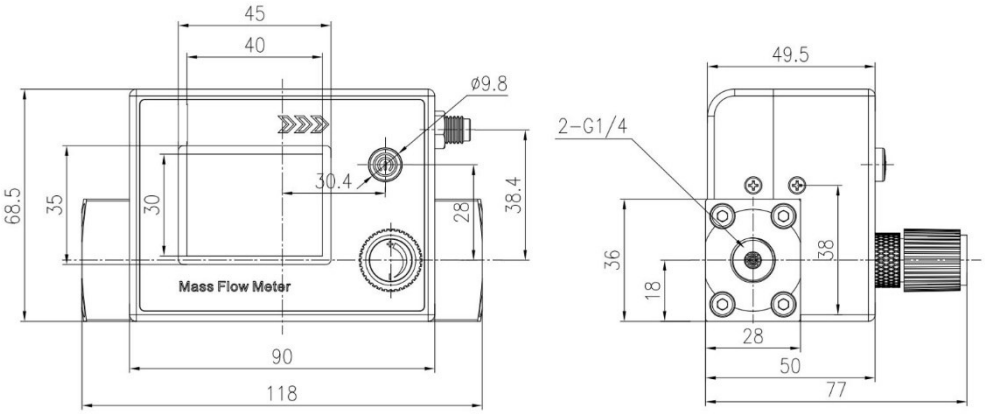
MF5100V series mass flow meters are designed for flow metering and control with mobile power applications and are made with Siargo's proprietary MEMS low-power mass flow sensors and smart electronic circuitry. The meters directly meter and control the mass flow with a very precise manual control valve. The current models can be readily applied to regulate such as gas cylinder delivery for medical purposes on an ambulance or other cases where direct power is not available. Other applications include laboratory and pharmaceutical process control.

MF5100V can measure a flow up to 50 SLPM. The connectors can be fully customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) with power management
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Mobile applications with long operation
- Fast response time
- Precise step or continuous control
- Customer programmable alarm and other functions

Mechanical dimensions

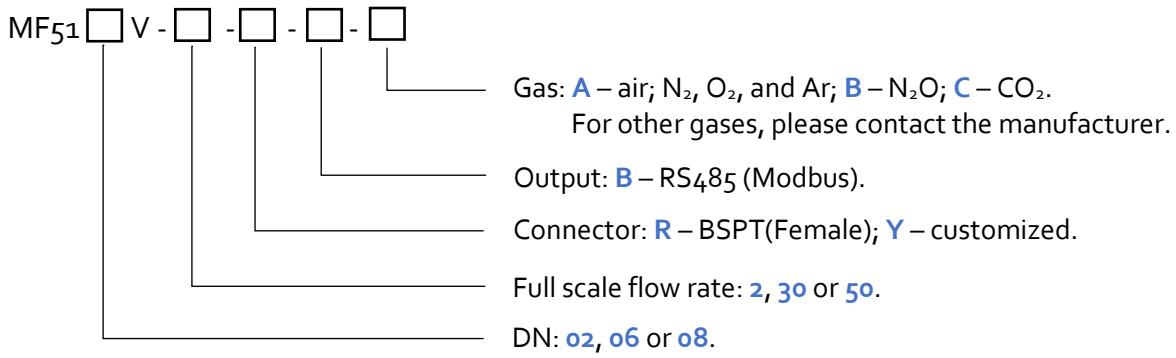


Specifications

Flow range	0 ~ 2, 30 or 50	SLPM
Accuracy	±(1.5+0.2FS)	%
Repeatability	(0.5+0.05FS)	%
Power supply	8 ~ 24 Vdc (50 mA) or Lithium-ion C-Cell 3.6Vdc, 9Ah	
Battery life	>3.0 (24 hours continuous working per day)	Years
Digital output	RS485 Modbus half-duplex	
Display	LCD	
Mechanical connection	BSPT or customized	
Gas ID	2 or more gases	
Storage temperature	-20 ~ +70	°C
Shock (drop, 6 axes)	100 g, peak	
Reference conditions	20°C, 101.325 kPa, air	
Weight	920	Grams
Fluid compatibility	Non-corrosive	
CE	EN61326-1; -2; -3	

Note: Parameters specified at the calibration conditions.

Product selection



MF5200E

Gas Mass Flow Meter

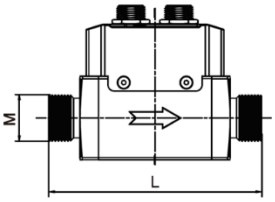
Production description

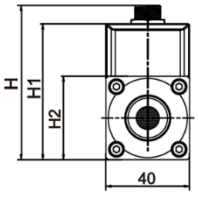
MF5200E series mass flow meters are designed with the Company's proprietary Thermal-D® (registered trademark) micromachined thermal sensing technology that combines calorimetry and diffusivity sensing. Compared with traditional calorimetric sensing, this proprietary sensing removes gas sensitivities for gases with the same diffusivity, improves the linearity when a gas conversion is applied, and extends the dynamic measurement range for some gases. Various wireless data options make the products ready for plug-and-play IoT applications. Typical applications include hospital gases (air, oxygen, nitrogen, carbon dioxide, argon, and nitrous oxide), industrial processing gas monitoring and management, and other applications. The design opts for applications where the display must be separately placed from the meter body or flow channel. In addition to gas mass flow, the products can also offer gas pressure and gas temperature measurements.

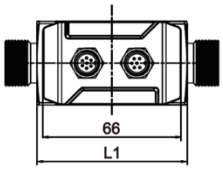
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Detachable meter head for distance data reading
- Fast response time
- Low pressure loss
- Fully customizable connectors

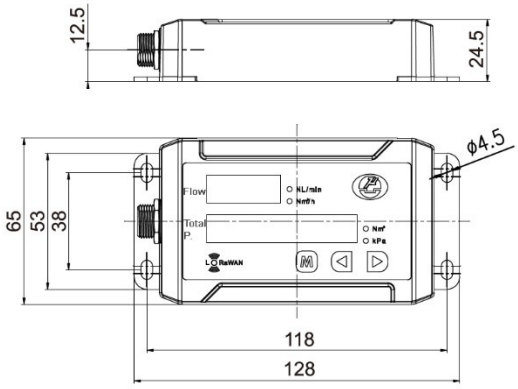
Mechanical dimensions







Model	L	L1	H	H1	H2	M
MF5212	108	78	74	65	40	M22X1.5
MF5219	136	98	79	70	46	M33X1.5



Specifications

Flow range	0 ~ 200, 300, 400 (MF5212E) / 0 ~ 600, 800, 1000 (MF5219E)	SLPM
Accuracy	±(1.5+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Turn-down ratio	30:1	
Power supply	8 ~ 24 (50 mA)	Vdc
Digital output	RS485 Modbus half-duplex / LoRaWAN	Digital output
Working temperature	-10 ~ +55	°C
Maximum pressure	1.0	MPa
Humidity	<95, no condensation	%RH
Mechanical connection	M22X1.5 (MF5212E) / M33X1.5 (MF5219E)	
Cable	Power/data cable 12M6-100; Detachable LED cable 12M7-100-12M7	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

MF52 □□-□-□-□-□

Pressure output: **P** – pressure sensor integrated;
null – pressure sensor not integrated.

Display: **C** – with LED display, type C;
D – with LED display, type D;
E – with LED display, type E;
N – without LED display.

Maximum full scale flow rate: **200**, **300**, **400** (MF5212E);
600, **800**, **1000** (MF5219E).

Mechanical connection: **Q** – Spherical compression fitting.
For other connections, please contact the manufacturer.

Output: **E** – RS485 Modbus; **L** – RS485 Modbus and LoRaWAN.

DN: **12** (mm) or **19** (mm)

MF5600

Gas Mass Flow Meter

Production description

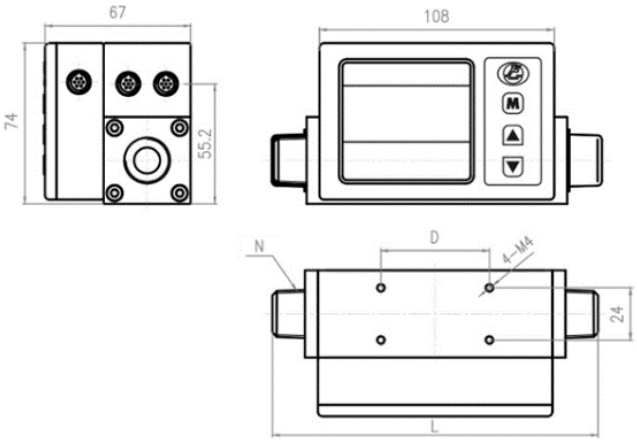
MF5600 series mass flow meters are designed for general-purpose flow metering and control applications where a detachable meter heat is required for some distance data reading. The meters directly measure mass flow with a very low pressure loss. The current models can be readily applied to hospital oxygen delivery management, industrial process monitoring, and gauge; and other applications such as welding gas equipment, and food and beverage process.

MF5600 can measure a flow up to 800 SLPM. The connectors can be fully customized.

Features

- MEMS thermal mass flow meter
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Detachable meter head for distance data reading
- Fast response time
- Low pressure loss
- Fully customizable connectors

Mechanical dimensions



	D	L	N
MF5612	50	150	NPT1/2"
MF5619	70	182.5	NPT3/4"

Specifications

Flow range	0 ~ 200, 300 (MF5612) / 0 ~ 600, 800 (MF5619)	SLPM
Initial flow rate	0.3 (MF5612) / 0.8 (MF5619)	SLPM
Accuracy	±(1.5+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Power supply	12 ~ 24 (50 mA)	Vdc
Output	RS485 / 4 ~ 20 mA / Pulse	
Pressure rating	1.0	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	NPT-M 1/2" (MF5612) / NPT-M 3/4" (MF5619)	
Cable	LCD cable/data cable	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

MF56 □ - □ - □ - □ - □ - □

- Gas: **A** – air; **C** – CO_2; **N** – N_2; **O** – O_2; **R** – Ar.
  For other gases, please contact the manufacturer.
- Display: **D** – LCD; **N** – no display.
- Output: **A** – 4 ~ 20 mA; **B** – RS485; **D** – Pulse.
- Full scale flow rate: **200**, **300** (MF5612); **600**, **800** (MF5619).
- Connection: **N** – NPT; **X** – Customized.
- DN: **12** – MF5612; **19** – MF5619.

Note 1. For CO_2 and N_2O, the full-scale flow rate is 80% of air.

2. Cable order code: **IC7 -150** – data cable; IC**7-30-IC7** / **IC7 -200-IC7** – detachable display cable. Numerical is the length of the cable in cm.

MF5700

Gas Mass Flow Meter

Production description

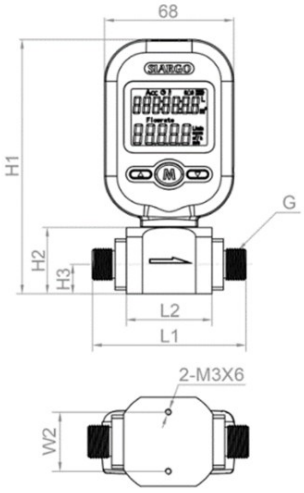
MF5700 series mass flow meters are designed for general-purpose flow metering and control applications enabled by IoT or wireless data while having the mobile power option. With Siargo's proprietary MEMS mass flow sensing technology and smart electronic circuitry, the products offer unprecedented cost-effectiveness with performance. The sensors directly measure mass flow with a very low pressure loss, opt with various wireless transmissions, and control the ON/OFF valve. The current models can be readily applied to many process applications.

MF5700 can measure a flow up to 500 SLPM. The mechanical connectors can be fully customized.

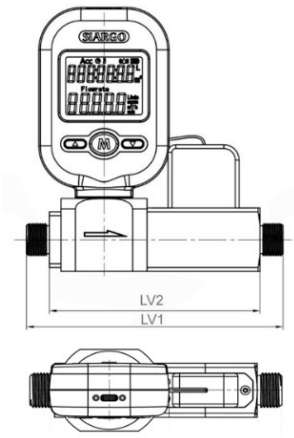
Features

- MEMS thermal mass flow meter enabled with IoT
- Excellent rangeability 80:1 with integrated multiple sensing elements
- Control ON/OFF valve
- User programmable functions
- Mobile power option by 4-AA batteries
- Fully customizable mechanical connectors

Mechanical dimensions



MF5706/08/12/19



MF5706V/08V/12V

	Connector, G	L1	L2	LV1	LV2
MF5706	BSPP ¼"	61	34	95.5	123
MF5708	BSPP 3/8"	81	45	110	134
MF5712	BSPP ½"	90	50	115	143
MF5719	NPT ¾"	102	56	-	-

	W1	W2	H1	H2	H3
MF5706	34	25	127	28	12.5
MF5708	45	30	134	35	15.5
MF5712	45	30	141	42	19.5
MF5719	56	30	149	50	22.0

Specifications

Flow range	0 ~ 20 (MF5706, MF5706V) / 0 ~ 100 (MF5708/MF5708V) / 0 ~ 250 (MF5712), 0 ~ 150 (MF5712V) / 0 ~ 500 (MF5719)	SLPM
Accuracy	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time	< 2.0 on battery	sec
Power supply	4-AA batteries (LR6) / 5 ~ 24 Vdc with AC adapter	
Output	RS485 Modbus	
Wireless	LoRa / WIFI / NB-IoT / BT LE	
Pressure rating	0.8	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	BSPP or NPT	
Data interface	USB Type-C	
User program	Front face, 3 keys, or via Modbus	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

MF57□□-□-□-□-□

- Gas: **A** – air; **C** – CO_2; **N** – N_2; **O** – O_2; **R** – Ar.
  For other gases, please contact the manufacturer.
- Output: **Digital: B** – RS485 Modbus.
  Wireless: L – LoRa, **M** – CAT-M, **N** – NB-IoT, **T** – Bluetooth, **W** – WiFi.
  Available: **B**, **L**, **M**, **N**, **T**, **W**, **BL**, **BM**, **BN**, **BT** or **BW**.).
- Full scale flow rate: **20** (MF5706, MF5706V); **100** (MF5708, MF5708V); **250** (MF5712); **150** (MF5712V); **500** (MF5719).
- Connector: **G** – BSPP; **N** – NPT.
- Valve: **V** – valve integrated (MF5706/MF5708/MF5712) , **Null** – No valve.
- DN: **06** – MF5706; **08** – MF5708; **12** – MF5712; **19** – MF5719

Note: Only one of the wireless options can be selected for each model.

MF5900

Gas Mass Flow Meter

Production description

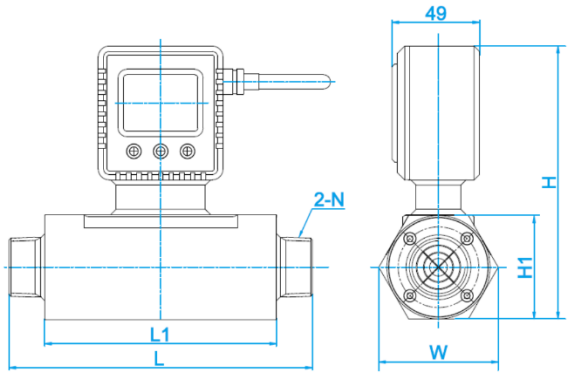
MF5900 series mass flow meters are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS thermal time-of-flight sensing technology and smart electronic circuitry. The meters will measure mass flow while having very high sensitivity at low flow, meter selective gases without requiring the gas transfer data. The current models allow the user to program various functions and can be readily applied to low-flow natural gas and process metering, and other process control applications.

MF5900 can measure a flow up to 5000 SLPM with a 2" pipe. The connectors can be customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Multi-gas capability
- Fast response time
- User programmable functions
- Fully customizable connectors

Mechanical dimensions



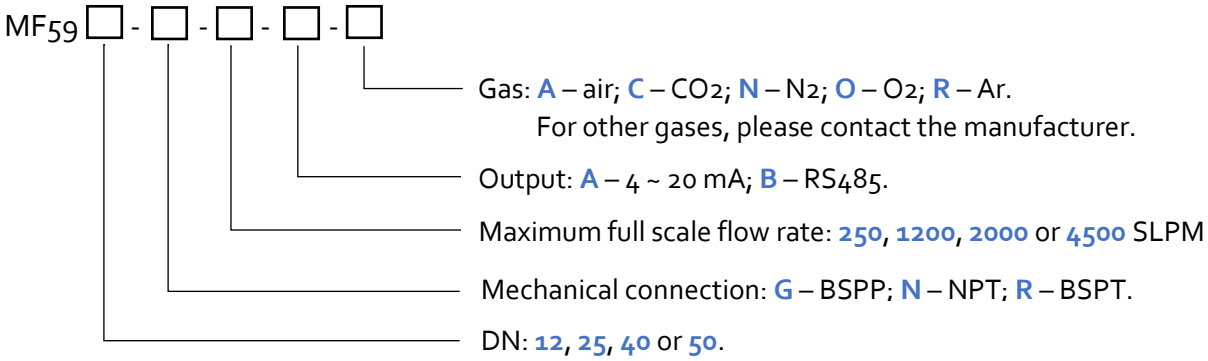
	L1	L1	W	H	H1	N
MF5912	160	120	60	150	55	NPT 1/2"
MF5925	160	120	60	150	55	NPT 1"
MF5940	180	130	76	169	70	NPT 1-1/2"
MF5950	200	150	76	169	70	NPT 2"

Specifications

Flow range	0 ~ 250 (MF5912) / 0 ~ 1200 (MF5925) / 0 ~ 2500 (MF5940) / 0 ~ 4500 (MF5950)	SLPM
Accuracy	±(1.5+0.25FS)	%
Repeatability	(0.5+0.08FS)	%
Response time	200	msec
Power supply	8 ~ 24 (50 mA)	Vdc
Output	RS485 Modbus / 4 ~ 20 mA	
Pressure loss (max.)	<2.0 @ 1200 SLPM (MF5725)	kPa
Pressure rating	0.8	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	NPT-F	
Pinout	M12	
Protection	IP66 (NEMA 4x)	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection



Note: For CO_2, the full-scale flow rate is 80% of air.

MF6600

Gas Mass Flow Meter

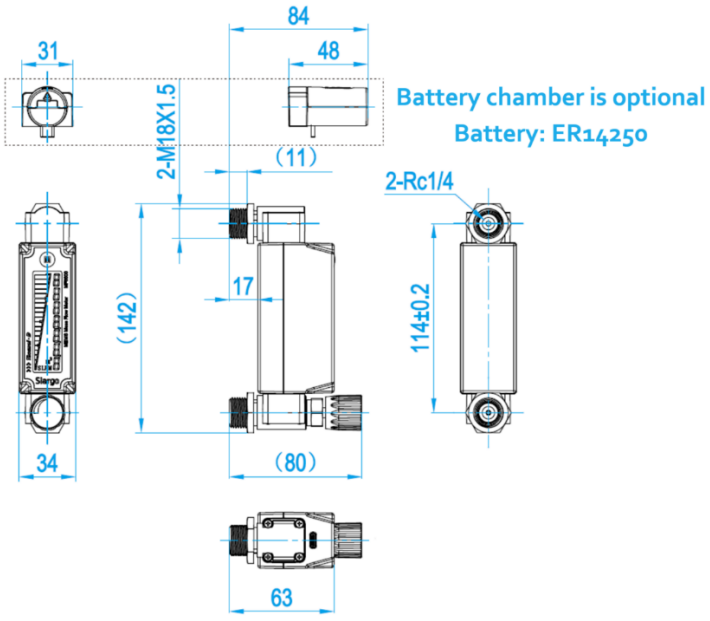
Production description

MF6600 series mass flow meters are designed for general-purpose flow metering and control applications and are made with Siargo's proprietary MEMS mass flow sensors and smart electronic circuitry. The meters can be used to replace the mechanical rotameters where digital data and/or remote control are required. The meter series cover a wide dynamic flow range with a working pressure rating of up to 1.0 MPa, and a temperature ranging from -10 to +55°C.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Built-in keyboard and manual control valve
- Fast response time
- Low pressure loss
- Fully customizable connectors

Mechanical dimensions



Specifications

Flow range	0 ~ 1, 2, 5, 10, 20, 50, or 70	SLPM
Turn-down ratio	30:1	
Accuracy	±2.0	%FS
Repeatability	0.5	%FS
Working temperature	-10 ~ +55	°C
Maximum pressure	1.0	MPa
Humidity	<95, no condensation	%RH
Power supply	3.6 ~ 24 (50 mA) / lithium-ion battery ER14250	Vdc
Digital output	RS485 Modbus half-duplex / I²C	
Electrical connector	USB Type-C	
MENU access	1 function key / digital	
Display	Instant flow rate, accumulated or totalized flow rate	
Control	Manual	
Mechanical connection	BSPT 1/4-Female	
Protection	IP40	
Storage temperature	-20 ~ +65	°C
Reference conditions	20°C, 101.325 kPa, air	
Fluid compatibility	Non-corrosive	
CE	EN61326-1; -2; -3	

Note: Parameters specified at the calibration conditions.

Product selection

MF6600 - □ - □ - □ - □

- Gas: **A** – air, N_2, O_2, and Ar; **C** – CO_2.
  For other gases, please contact the manufacturer.
- Output: **B** – RS485; **E** – I²C.
- Maximum full scale flow rate: **1**, **2**, **5**, **10**, **20**, **50**, or **70**.
  The unit is SLPM, if the unit is not SLPM, the unit needs to be specified here.
- Mechanical connection: **R2** – BSPT 1/4-Female.

MF5806-G

Gas Cylinder Mass Flow Meter

Production description

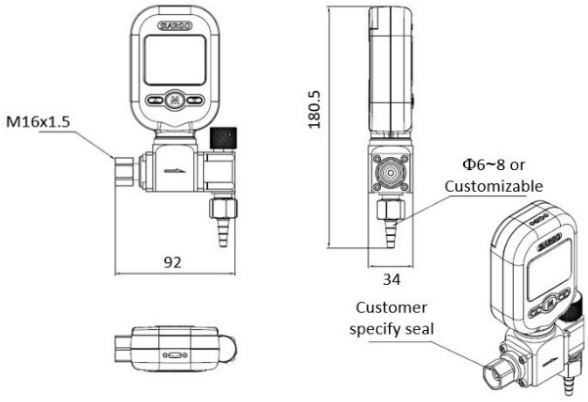
MF5806-G series gas cylinder mass flow meters are designed for gas cylinder management that is enabling smart IoT data management for cylinder status and logistics. The meters are directly engaged to a gas cylinder pressure regulator streaming the gas usage data and locations to the designated Cloud. The current models can be readily applied to medical oxygen cylinders for home care, industrial gases for a semiconductor process, construction welding processes, fast-food chain stores, and many more.

MF5806-G can be configured with various IoT networks, and other parameters can also be fully customized.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) with IoT
- Excellent rangeability 100:1 for precise usage metering
- Fast response time
- Mobile power options
- Fully customizable meter design

Mechanical dimensions



Note: The example shown here is a design for a medical oxygen cylinder meter for homecare. Other cylinder or customer specified application will have different dimensions.

Specifications

Flow range	0 ~ 20, 50 or customer specified	SLPM
Accuracy	±(2.0+0.5FS)	%
Repeatability	(0.5+0.15FS)	%
Response time	< 2.0 (on battery)	sec
Power supply	4 – AA batteries (LR6) or 5 ~ 24 Vdc adapter	
Battery life	2300 hours continuous without wireless	
Output	RS485 Modbus with external power	
Wireless data	LoRa / WIFI / NB-IoT / BT LE	
Pressure rating	0.8	MPa
Temperature	-10 ~ +55	°C
Humidity	<95 (no condensation)	%RH
Pressure loss	< 500	Pa
Mechanical connection	Optional pressure regulator, regional version	
Data pinout	USB Type-C	
User program	3 keys on the meter or wired / wireless	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

MF5806-G-□ - □ - □ - □

- Gas: **A** – air; **C** – CO_2; **N** – N_2; **O** – O_2; **R** – Ar.
  For other gases, please contact the manufacturer.
- Output: **B** – RS485; **L** – LoRa; W – WiFi; **N** – NB-IoT; **T** – BT.
- Full scale flow rate: **20**, **50** or customer specified
- Mechanical connection to regulator: **G** – BSPP; **N** – NPT

Note: For CO_2, the full-scale flow rate is 80% of air.

MF5806E1

Oxygen Mass Flow Meter

Production description

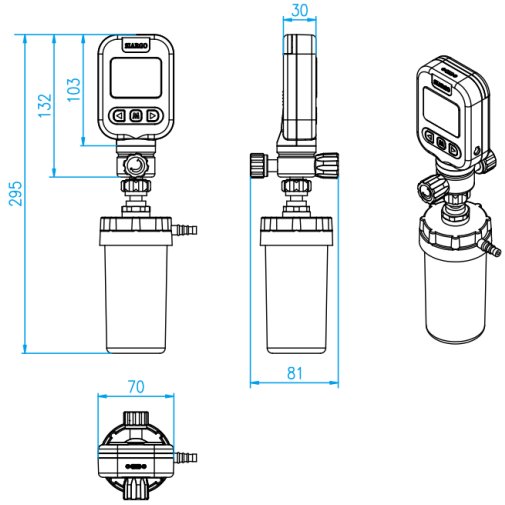
MF5806E1 oxygen mass flow meters are designed to replace the mechanical rotameter used in hospital or homecare oxygen therapy. The meter integrates the SpO2 sensor and an electrically actuated ON/OFF valve providing the ultimate solution for oxygen therapy that automatically controls the oxygen delivery with remote data. It also helps to significantly reduce the probability of cross-infection during medical staff attendance.

MF5806E1 can measure a flow up to 20 SLPM, with parameters fully customizable.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Fully automatic oxygen therapy enabler
- Remote data and remote controllable procedure
- Mobile power option with long life
- Cross infection prevention
- Fully customizable key parameters.

Mechanical dimensions



Specifications

Flow range	0.3 ~ 15	SLPM
Accuracy	±2.0	%FS
Repeatability	0.5	%FS
Response time	< 2.0 (on battery)	sec
Power supply	3-AA rechargeable batteries / 8 ~ 24 Vdc	
Battery life	3000 hours continuous without wireless	
Output	RS485 Modbus with external power	
Wireless data	LoRa	
Maximum pressure	0.5	MPa
Working temperature	-5 ~ +55	°C
Humidity	<95%RH, no condensation	
Pressure loss	5.7 kPa (@10 SLPM)	
Mechanical connection	DISS or customer specified	
Valve	Manual control valve	
User program	3 keys on the meter or wired / wireless	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

MF-GD

Utility Gas Mass Flow Meter

Production description

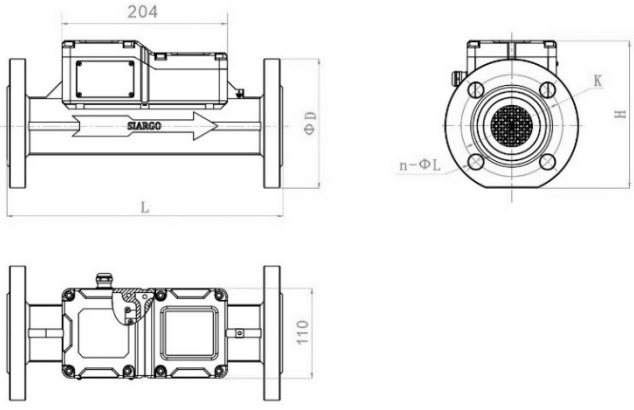
MF-GD series utility gas mass flow meters were first introduced in 2009 and the current version is the 3rd generation of the company's MEMS utility gas meters designed for city natural gas metering. The current upgrades include automatic gas recognition, a new mechanical design with a flanged connection, better power management, and enhanced long-term reliability. The products are also deployed for control and improvement of burner efficiency using natural gases.

MF-GD covers most of the models for commercial city gas metering applications.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) with temperature and pressure compensation
- Excellent rangeability >100:1 with integrated multiple-sensing elements
- Automatic gas recognition
- Remote data or IoT ready
- Mobile power enabled
- Enhanced mechanical strength

Mechanical dimensions



Model	L	H	ΦD	n-ΦL	ΦK
MF25GD	300	156	115	4-Φ14	85
MF40GD	320	175	150	4-Φ18	110
MF50GD	340	181	165	4-Φ18	125
MF80GD	340	215	200	8-Φ18	160

Specifications

Accuracy	±(1.5+0.25FS)	%
Repeatability	(0.5+0.08FS)	%
Turn-down ratio	100:1	
Working temperature	-20 ~ +55	°C
Maximum pressure	0.6	MPa
Humidity	<95, no condensation	%RH
Power supply*	2 x D-Cell lithium-ion, 19Ah (L3338B)	
Battery life	> 36	Month
Real-time clock life	>10	Years
Digital output	RS485 Modbus half-duplex / Pulse	
Mechanical**	Flanged, ASME B16.5-2099 MOD	
Protection	IP66 (NEMA 4x)	
Hazardous rating	Ex ia IIC T4 Gb	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C

Note 1. Due to air freight restrictions, battery assembly is required with the manufacturer-provided parts.
2. Also in compliance with EN1092-1-2007, MOD

Product selection

Model	DN (mm)	Max. flowrate (Nm^3/h)	Min. flowrate (Nm^3/h)
MF25GD10/16/25/40	25.0 (1")	10 / 16 / 25 / 40	0.10 / 0.16 / 0.25 / 0.40
MF40GD25/40/65	40.0 (1-1/2")	25 / 40 / 65	0.25 / 0.40 / 0.65
MF50GD40/65/80	50.0 (2")	40 / 65 / 80	0.40 / 0.65 / 0.80
MF80GD100/160	80.0 (3")	100 / 160	1.0 / 1.6

Note: For other gases and flow ranges, please contact the manufacturer. For example, if applied to CO_2 measurement, a model selection can be MF25GD30-B-C: 30 is the maximum flow rate (80% of air); and B for RS485 Modbus; C for CO_2.

MF-HD

LPG Mass Flow Meter

Production description

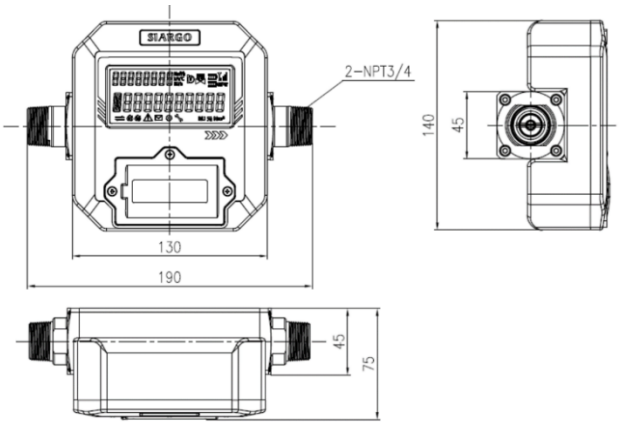
MF-HD series LPG mass flow meters are designed for LPG cylinder fuel metering for city commercial or residential applications. The meters are powered by a battery and directly measure the mass flow of the consumed fuel in a cylinder and transmit the data wirelessly to a designated Cloud or data center. It facilitates the supplier's logistics and manufacturing process while preventing the shortage for the users.

MF-HD can measure a flow up to 16 m^3/h (600 SCFH).

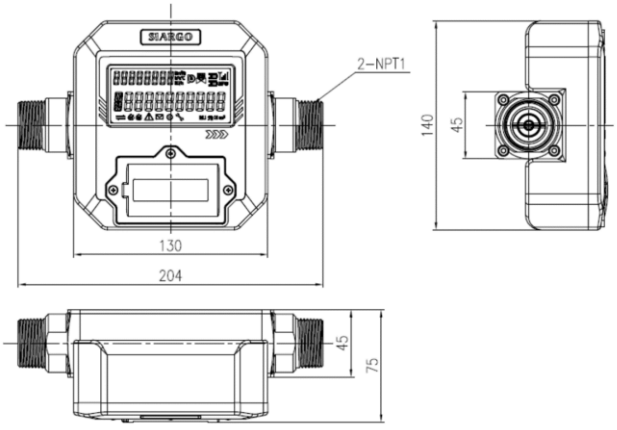
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) for LPG or similar applications
- Excellent rangeability 150:1
- Mobile power enabled
- NB-IoT or other wireless data
- Low pressure loss

Mechanical dimensions



MF19HD



MF25HD

Specifications

	LPG	Other gases	Unit
Flow range	**MF19HD-G1.6:** 0.016 ~ 2.5 m^3/h	**MF19HD-6:** 0.06 ~ 6 m^3/h	
	MF25HD-G2.5: 0.025 ~ 4.0 m^3/h **MF25HD-G4:** 0.04 ~ 6.0 m^3/h **MF25HD-G6:** 0.06 ~ 10 m^3/h **MF25HD-G10:** 0.10 ~ 16 m^3/h	**MF25HD-10:** 0.10 ~ 10 m^3/h **MF25HD-15:** 0.15 ~ 15 m^3/h **MF25HD-24:** 0.24 ~ 24 m^3/h **MF25HD-36:** 0.36 ~ 36 m^3/h	
Turn-down ratio	160:1	100:1	
Accuracy	Class 1.5	±(1.5+0.25FS)%	
Working temperature	-40 ~ +60		°C
Working pressure	50 ~ 150		kPa
Burst pressure	300		kPa
Humidity	<95 (no condensation)		%RH
Power supply*	Lithium-ion battery, 3.6V, 19AH, or External power supply 8 ~ 24 Vdc		
Data interface	RS485 Modbus, Bluetooth LE, or customized		
Mechanical	MF19HD: NPT 3/4" or BSPT 3/4" MF25HD: NPT 1" or BSPT 1"		
Protection	IP66		
Hazardous rating	Ex ib IIB T4 Gb		
Calibration	Air @ 20°C, 101.325 kPa		
Storage temperature	-30 ~ +70		°C

Product selection

For LPG

MF☐HD ☐ - ☐ - ☐ - ☐

- Gas: **LPG**; **X** – others.
- Output: **B** – RS485 Modbus.Wireless: **T** – Bluetooth.
  Available: **B**, **T** or **BT**
- Mechanical connection: **N** – NPT; **R** – BSPT
- Full scale flow rate: **G1.6**, **G2.5**, **G4**, **G6** or **G10**.
- DN: **19** or **25**

For other gases, please contact the manufacturer.

CF2300

Smart Fuel Cylinder Valves

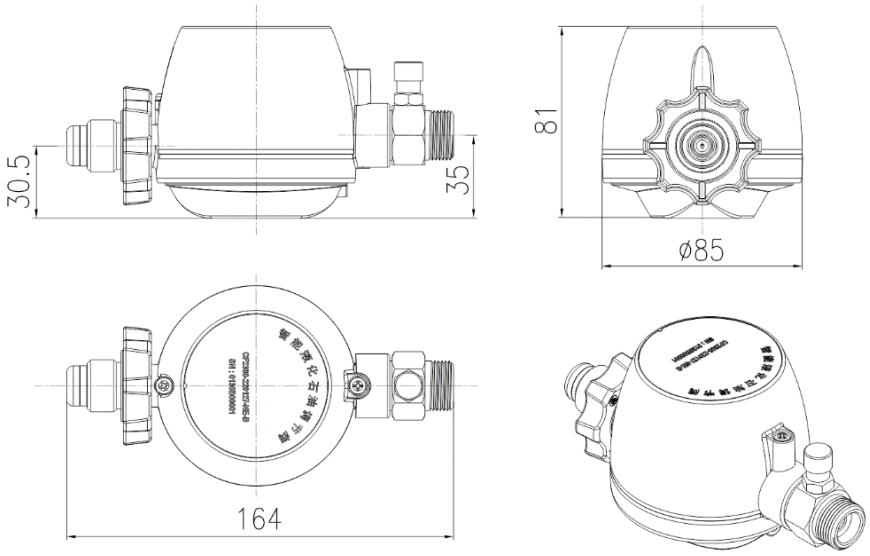
Production description

CF2300 smart fuel cylinder valves are integrated with a smart mass flow sensor and designed for cylinder fuel metering for city residential applications. The smart valves are powered by a battery and directly measure the mass flow of the consumed fuel in a cylinder and transmit the data wirelessly to a designated Cloud or data center. It facilitates the supplier's logistics and manufacturing process while preventing the shortage for the users.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) for LPG or similar applications
- Excellent rangeability over 100:1
- Battery powered
- NB-IoT /LoRaWAN or other wireless data
- Low pressure loss

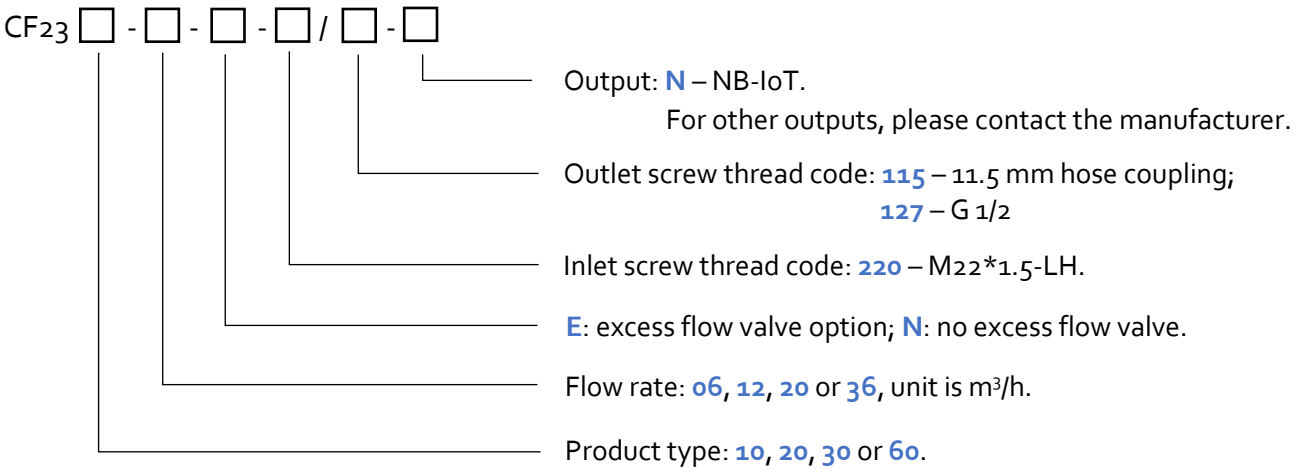
Mechanical dimensions



Specifications

	Value	Unit
Flow range	0 ~ 0.6, 1.2, 2.0, 3.6	m^3/hr
Accuracy	± 2.0	%FS
Repeatability	0.5	%FS
Turn-down ratio	100:1	
Response time*	200	msec
Temperature range	-20 ~ +55	°C
Inlet screw thread	M22*1.5-LH	
Inlet pressure	0.03 ~ 1.56 (LPG, Methane)	MPa
Outlet screw thread	11.5 mm hose coupling or G 1/2	
Outlet pressure	2.8 (typ) , 5.0, 120	kPa
Leakage detection	<0.5	L/hr
Humidity	<95, no condensation	%RH
Power supply	Lithium-ion C-cell: 3.6V, 9 or 8.5Ah	
Output	NB-IoT, or customized	
Calibration	Air @ 20°C, 101.325 kPa	
Storage temperature	-20 ~ +70	°C
Compliance	RoHS	
CE	IEC 61000-4-2; 4-8, CNS7088	

Product selection



MFC2000

Gas Mass Flow Controller

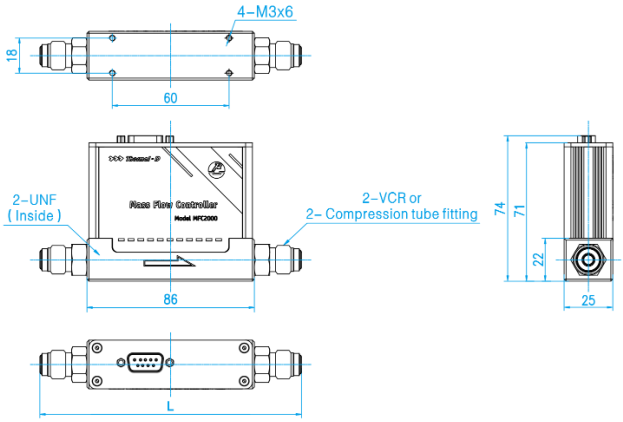
Production description

MFC2000 series of gas mass flow controllers are designed for non-corrosive gas flow control applications with the full-scale mass flow rate of from 50 mLn/min up to 200 Ln/min, and both analog set point or RS485 Modbus interface for the mass flow control. The product performance, maintenance, and troubleshooting as well as the information for product orders, technical support, and repair are also included. Other standard communication options such as DeviceNet, ProfiNet, EtherNet, EtherCat, IO-Link, etc. are available by contacting the manufacturer and will become standard offers in due course. These interfaces can also be further customized upon request.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Wide dynamic flow range
- High precision
- Fast response time
- Various of communication

Mechanical dimensions



Maximum full-scale flow rate	Mechanical connection	L
0...50 mLn/min 0...100 mLn/min 0...200 mLn/min 0...500 mLn/min 0...750 mLn/min 0...1000 mLn/min / 0...1 Ln/min 0...2000 mLn/min / 0...2 Ln/min 0...5000 mLn/min / 0...5 Ln/min	**U7** - 7/16-20UNF	86
	K1 - Double ferrule compression tube fitting 1/8"	133
	K2 - Double ferrule compression tube fitting 1/4"	138
	K3M - Double ferrule compression tube fitting φ3mm	132
	K6M - Double ferrule compression tube fitting φ6mm	138
	VCR2 - VCR 1/4"	134
0...10 Ln/min 0...20 Ln/min	**U9** - 9/16-18UNF	86
	K2 - Double ferrule compression tube fitting 1/4"	138
	K3 - Double ferrule compression tube fitting 3/8"	141
	K4 - Double ferrule compression tube fitting 1/2"	145
	K6M - Double ferrule compression tube fitting φ6mm	138
	K10M - Double ferrule compression tube fitting φ10mm	141
	K12M - Double ferrule compression tube fitting φ12mm	150
	VCR2 - VCR 1/4"	134
	VCR4 - VCR 1/2"	142

up to 20 Ln/min, for other models, please contact the the manufacturer

Specifications

Flow range	0 ~ 50, 100, 200, 500, 750, 1000, 2000, 5000 mLn/min 0 ~ 1, 2, 5, 10, 20, 50, 100, 200 Ln/min	
Accuracy	± 1.0% (20 ~ 100% of full scale), ±0.2%FS (<20% of full scale)	
Repeatability	± 0.3% (20 ~ 100% of full scale), ±0.06%FS (<20% of full scale)	
Turn-down ratio	100:1	
Control pressure range	0.1 ~ 0.8	MPa
Maximum operating diff. pres.	0.4	MPa
Setpoint source (input signal)	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA; Digital: RS485	
Settling time	100	msec
Working temperature	0 ~ +55	°C
Humidity	<95, no condensation	%RH
Burst pressure	1.5	MPa
Max pressure loss	120 (100 Ln/min models)	kPa
Power supply	8 ~ 24	Vdc
Output signal	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA; Digital: RS485	
Electrical connector	DB9	
Mechanical connection	7/16-20UNF ~ 9/16-18 UNF, Compression tube fitting 1/8" ~ 1/2", or VCR 1/4" ~ 1/2"	
Reference conditions	0 °C, 101.325 kPa, air	

Note: Parameters specified at the calibration conditions.

Product selection

MFC2000 - □ - □ - □ - □ - □

- Gas: **A** – air, N_2, O_2, Ar.
  For other gases, please contact the manufacturer.
- Default setpoint source: **0** – analog; **1** – digital.
- Setpoint source and output: **Digital: B** – RS485;
  Analog: A – 4 ~ 20 mA; **V** – 0 ~ 5 Vdc.
  Available: **A, B, V, AB** or **BV**.
- Mechanical connection, please contact the manufacturer.
- Maximum full scale flow rate: **50** ~ **5000** mLn/min; **1** ~ **200** Ln/min.

MFC4000

Gas Mass Flow Controller

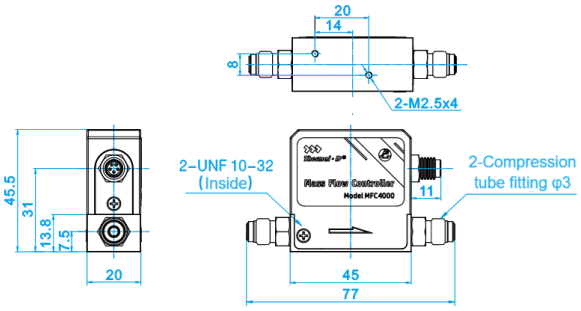
Production description

MFC4000 series of gas mass flow controllers are designed for non-corrosive gas flow control applications with the full-scale mass flow rate of from 50 mLn/min up to 1000 mLn/min, and both analog set point or RS485 Modbus interface for the mass flow control. This product is specially designed for instrumentation applications with a very small form factor. The product performance, maintenance, and troubleshooting as well as the information for product orders, technical support, and repair are also included. Other standard communication options can be further customized upon request

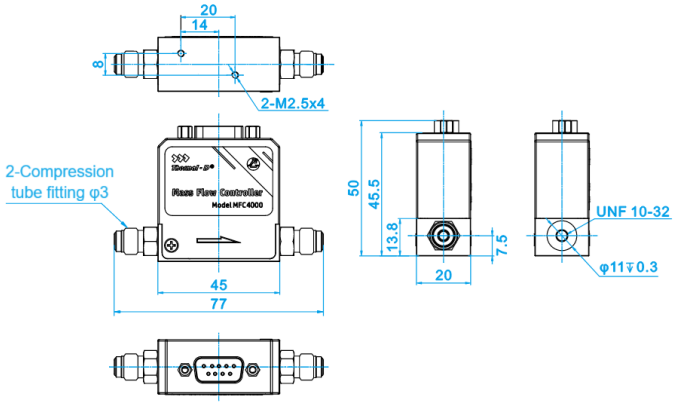
Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Wide dynamic flow range
- High precision
- Fast response time
- Various of communication

Mechanical dimensions



MFC4010 / MFC4020



MFC4090

Specifications

Flow range	0 ~ 50, 100, 200, 500, 750, 1000 mLn/min	
Accuracy	± 1.0% (20 ~ 100% of full scale), ±0.2%FS (<20% of full scale)	
Repeatability	± 0.3% (20 ~ 100% of full scale), ±0.06%FS (<20% of full scale)	
Turn-down ratio	100:1	
Control pressure range	0.1 ~ 0.8	MPa
Maximum operating diff. pres.	0.4	MPa
Setpoint source (input signal)	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA; Digital: RS485	
Settling time	100	msec
Working temperature	0 ~ +55	°C
Humidity	<95, no condensation	%RH
Burst pressure	1.5	MPa
Max pressure loss	10	kPa
Power supply	8 ~ 24	Vdc
Output signal	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA; Digital: RS485	
Electrical connector	M8 or DB9	
Mechanical connection	UNF 10-32-female, or compression tube fitting φ3mm	
Reference conditions	0 °C, 101.325 kPa, air	

Note: Parameters specified at the calibration conditions.

Product selection

MFC40□-□-□-□-□-□

- Gas: **A** – air, N_2, O_2, Ar.
- Default setpoint source: **0** – analog; **1** – digital.
- Setpoint source and output: **Digital: B** – RS485;
  Analog: A – 4 ~ 20 mA; **V** – 0 ~ 5 Vdc.
  Available: MFC4010: **B**; MFC4020: **A** or **V**; MFC4090: **BA** or **BV.**
- Mechanical connection: **U2** or **K3M**.
- Maximum full scale flow rate: **50** ~ **1000** mLn/min
- Models: **10**, **20** or **90**

LF3000

Microfluidic Meters & Sensors

Production description

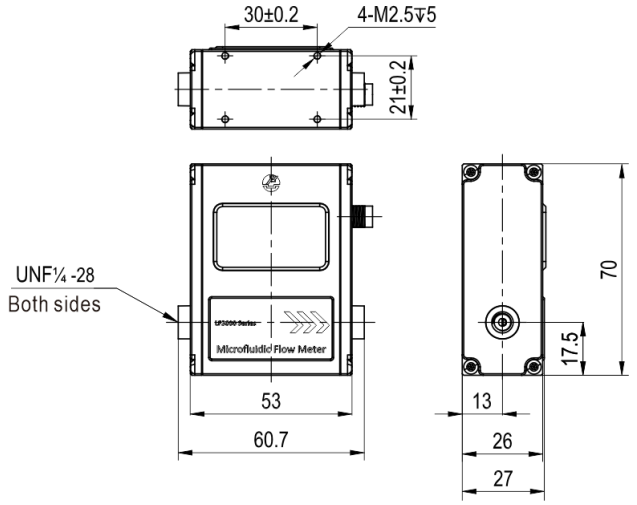
LF3000 series microfluidic flow meters and sensors are designed for general-purpose microfluidic flow metering and control applications and are made with Siargo's proprietary MEMS thermal time-of-flight sensing technology and smart electronic circuitry that offers excellent reliability and rangeability. The current models can be readily applied to medicine, bioscience, health care, pharmaceutic process, fuel cells, and many others. Disposable options are available upon contacting the manufacturer.

LF3000 can measure a flow from 500 nL/min up to 500 mL/min (sccm).

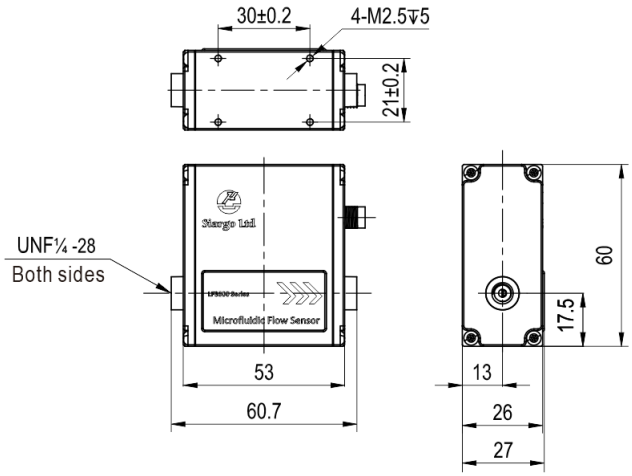
Features

- MEMS thermal time-of-flight sensing technology
- Large rangeability over 100:1 with integrated multiple-sensing elements
- Excellent reliability
- Fast response time
- Alternative sensing for other parameters
- Disposable alternative design

Mechanical dimensions



LF3000M



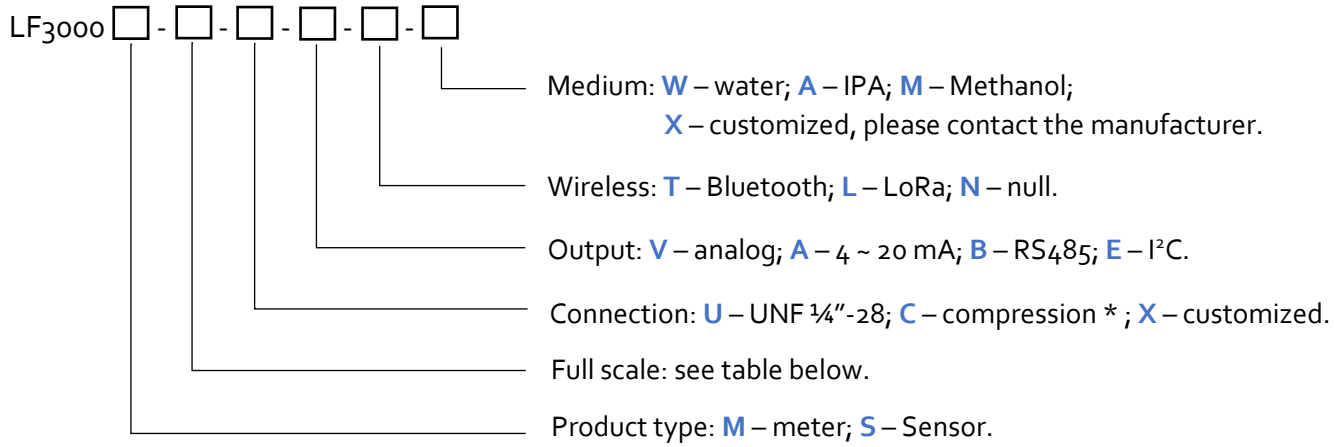
LF3000S

Specifications

Flow range	0 ~ 0.5, 5, 50, 100, 200, 500	mL/min
Turn-down ratio	100:1 or 50:1	
Accuracy	±(2.0+0.5FS)	%
Response time	200 (others programmable)	msec
Working temperature	+5 ~ +50	°C
Working pressure	0.8	MPa
Power supply	8 ~ 24	Vdc
Electrical interface	I²C / 0.5 ~ 4.5 Vdc / RS485 / 4 ~ 20 mA	
Wireless interface	Bluetooth / LoRa	
Display (meter only)	OLED, instant, and totalized flowrate	
Mechanical connection	UNT ¼" -28 (0 ~ 50 mL/min); NPT or customized	
Wetted materials	PEEK, SiNx, PPS	
Reference conditions	20°C, 101.325 kPa, DI water	
Storage temperature	-10 ~ +70	°C
Weight	230 (meter); 75 (sensor)	g
Protection	IP67	
Fluid compatibility	Non-corrosive	
CE	EN61326-1; -2; -3	

Note: Parameters specified at the calibration conditions.

Product selection



CS3001

Liquide Concentration Sensor

Production description

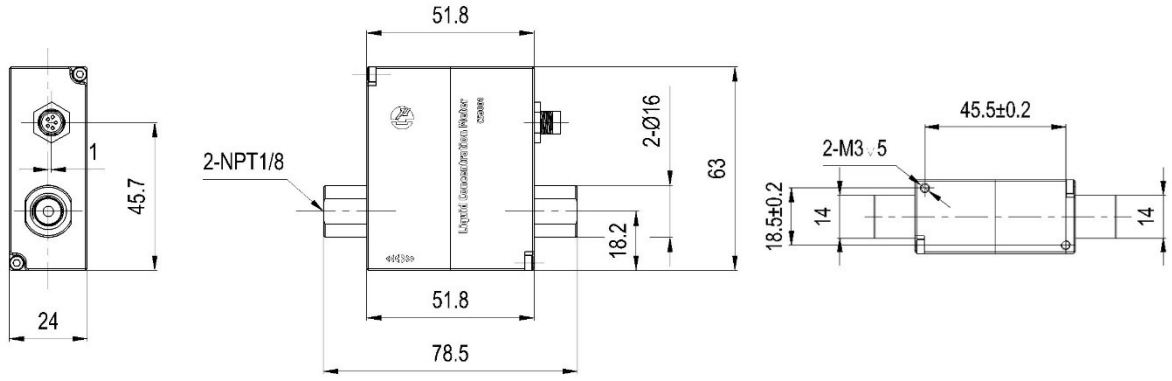
CS3001 liquid concentration sensors are designed for general-purpose liquid concentration measurement and control applications and are made with Siargo's proprietary MEMS thermal sensing technology and smart electronic circuitry. The sensors measure the liquid concentration of a two-fluid mixture. The current models can be readily applied to a methanol fuel cell, food and beverage process monitor, and other chemicals, agriculture, and diesel applications.

CS3001 can measure 0 ~ 100%wt. or 0 ~ 100%Vol. with high precision.

Features

- MEMS thermal time-of-flight sensing technology
- Extended rangeability covering 0 ~ 100%
- Excellent reliability and stability
- Fast response time
- Long lifetime
- Fully customizable packages

Mechanical dimensions



Specifications

Concentration range	0 ~ 100	%wt.
Accuracy	±2.0	%
Repeatability	0.5	%
Response time	100	msec
Power supply	8 ~ 24 (50 mA)	Vdc
Output	Linear: 0.5 ~ 4.5 Vdc / Digital: I²C / RS485	
Pressure rating	0.8	MPa
Temperature	+5 ~ +60	°C
Mechanical connection	NPT-F ¼" or customized	
Pinout	M5	
Protection	IP67	
Wetted materials	SS 304, silicon nitride	
Calibration	20°C, 101.325 kPa	
Weight	300	g
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

CS3001 -□ -□ -□ -□

Medium: **M** – methanol; **E** – ethanol; **U** – urea
For other liquids, please contact the manufacturer.

Output: **E** – I²C; **B** – RS485; **V** – analog.

Connector: **N** – NPT-F ¼"; **O** – one touch; **X** – customized.

Full scale: **10** ~ 100 %wt.

LM1100

Liquid Flow Meter

Production description

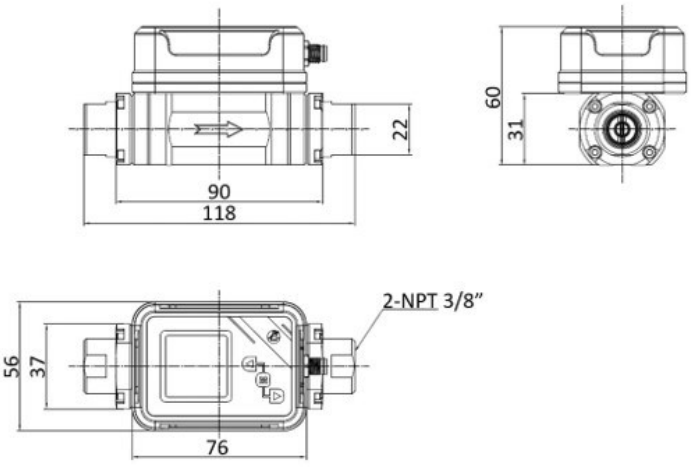
LM1100 liquid flow meters are designed for general-purpose liquid flow measurement and control applications and are made with Siargo's proprietary MEMS thermal time-of-flight sensing technology and smart electronic circuitry. The sensors measure the liquid flow rate and temperature with the possibility of a future upgrade for liquid property monitoring. The current models can be readily applied to a variety of applications.

LM1100 can measure 0 ~ 5 up to 50 LPM with high precision.

Features

- MEMS thermal time-of-flight sensing technology
- Extended rangeability of 50:1
- Excellent reliability and stability
- Fast response time with customer-programmable options
- Low pressure loss
- Fully customizable interfaces

Mechanical dimensions



Specifications

Flow range	0 ~ 5, 10, 20, 30, 50	L/min
Accuracy	± 2.5% (20 ~ 100% of full scale), ±0.5%FS (<20% of full scale)	%
Dynamic range	50:1	
Response time	500 (others programmable)	msec
Power supply	8 ~ 24 (50 mA)	Vdc
Output	RS485 Modbus / 4 ~ 20 mA /NPN or PNP	
Switch voltage	28	Vdc
Pulse	0.1 L, programmable	
Pressure rating	1.0	MPa
Temperature rating	+5 ~ +60	°C
Temperature resolution	±0.1	°C
Display	Instant flowrate, totalized, temperature	
Pinout	M5	
Protection	IP65	
Wetted materials	SS 304, silicon nitride	
Calibration	20°C, 101.325 kPa	
Fluidic compatibility	Non-corrosive	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

LM11 □ - □ - □ - □ - □

Medium: **W** – water; **A** – IPA; **M** – Methanol;
X – customized, please contact the manufacturer.

Calibration: **R** – real fluidics; **A** – fluidic independent

Output: **V** – analog; **A** – 4 ~ 20 mA; **B** – RS485; **E** – I²C.

Full-scale flow rate (L/min)

DN: **08** – 3/8" (5 to 20L/min); **12** – 1/2" (30 L/min);
19 – 3/4" (50L/min).

LR1100

Ultrasonic Water Flow Meter

Production description

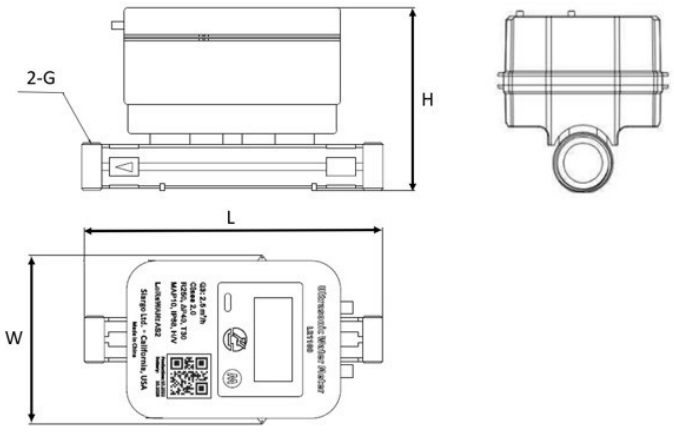
LR1100 ultrasonic water flow meters are designed for city residential water metering applications and are made with state-of-the-art ultrasonic phase-difference sensing technology and smart electronic circuitry. The product is fully compatible with the international standard ISO4064-1:2014 and other relevant regulatory requirements. The meter is enabled with various IoT data transmissions including LoRaWAN, NB-IoT, Bluetooth-LE, CAT-M, and other options.

The products can also be applied for non-corrosive liquid flow monitor or measurement.

Features

- State-of-the-art ultrasonic phase difference sensing technology
- Extended rangeability
- Excellent reliability and stability
- Leakage detection
- Battery powered
- Fully customizable packages

Mechanical dimensions

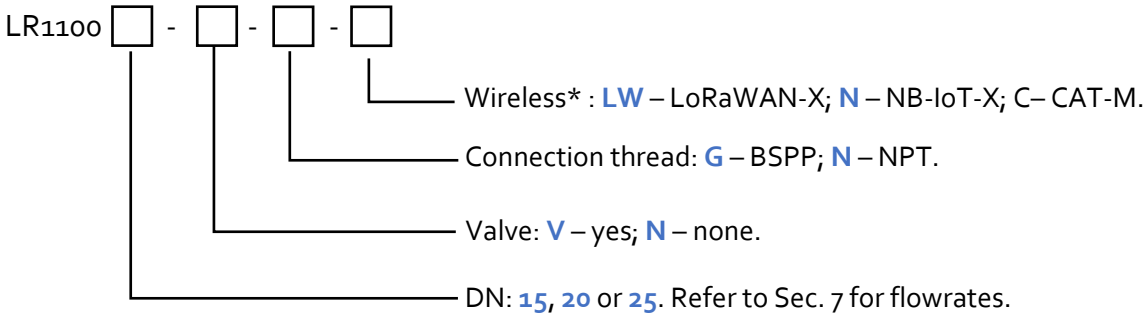


Specifications

Accuracy	Level 2	
Range ratio	R200/R400	
Pipe size	15/20/25	mm
Pressure rating	1.0	MPa
Working environment	Class A	
Temperature range	T30 (default) or T50	
Upstream sensitivity	U3	
Downstream sensitivity	D0	
Safety class	Grade C	
EMC	Level E2	
Communication	LoRaWAN / Infrared / NB-IoT	
Power supply	Lithium-ion battery C-cell (3.6 Vdc)	
Protection	IP68	
Display	Totalizer, instant flow rate, status, or alarms	
Data storage	EEPROM, 24 months' totalized flow	

Note: Parameters specified at the calibration conditions.

Product selection



Note – For wireless communication, "X" indicates the country/region where the products will be installed. For LoRaWAN, please refer to the following web for frequency/band information:
https://www.thethingsnetwork.org/docs/lorawan/frequencies-by-country/

FSP1000

Gas Differential Pressure Sensor

Production description

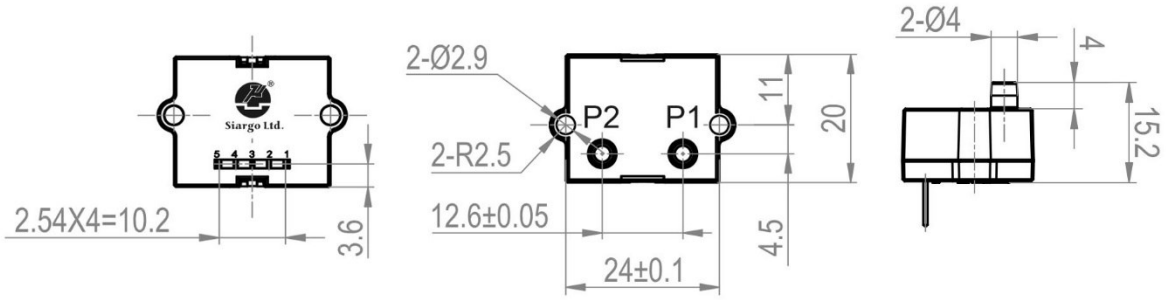
FSP1000 differential pressure sensors are designed for low differential pressure measurements and are made with Siargo's proprietary MEMS sensing technology. The sensors measure uni- or bi-directional differential pressure with flow passing through. The current models can be readily applied to medical applications such as CPAP ventilators, HVAC control, and many others.

FSP1000 can measure as low as 2 Pa, and up to 500 Pa differential pressure.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®)
- Highly sensitive at a very low differential pressure
- Small form factor
- Fast response time
- Cost-effective with bidirectional sensing

Mechanical dimensions



Specifications

Pressure range	+/± (2 ~ 50)	+/± (2 ~ 100)	+/± (5 ~ 250/500)	Pa
Accuracy	±(2.0+0.8FS)	±(2.0+0.5FS)	±(2.0+0.5FS)	%
Repeatability	(0.5+0.25FS)	(0.5+0.15FS)	(0.5+0.15FS)	%
Response time		20		msec
Power supply		3.0 ~ 3.6 (10 mA)		Vdc
Output		Linear: 0.4 ~ 2.4 Vdc / Digital: I²C		
Output resolution		Analog – 12bit / Digital – 14 bit		
Pressure rating		0.2		MPa
Temperature		-5 ~ +65		°C
Humidity		<95 (no condensation)		%RH
Altitude correction		Not required		
Mechanical connection		Barbed		
Pinout		5 pins		
Pneumatic flow resistance		<95mL/min @500 Pa		
Vibration		20gMIL-STD-883E, Method 2002.4		
Calibration		Air @ 20°C, 101.325 kPa		
Storage temperature		-20 ~ +70		°C

Note: Parameters specified at the calibration conditions.

Product selection

FSP1000 - ☐ - ☐ - ☐

- Measurement option: **U** – unidirectional; **B** – bidirectional.
- Output: **E** – I²C; **V** – analog. Option: **E** or **EV**.
- Pressure range: **50**, **100**, **250**, **500**.

Note: Default output is I²C; analog is optional.

FSP2000

Gas Dual Pressure Sensor

Production description

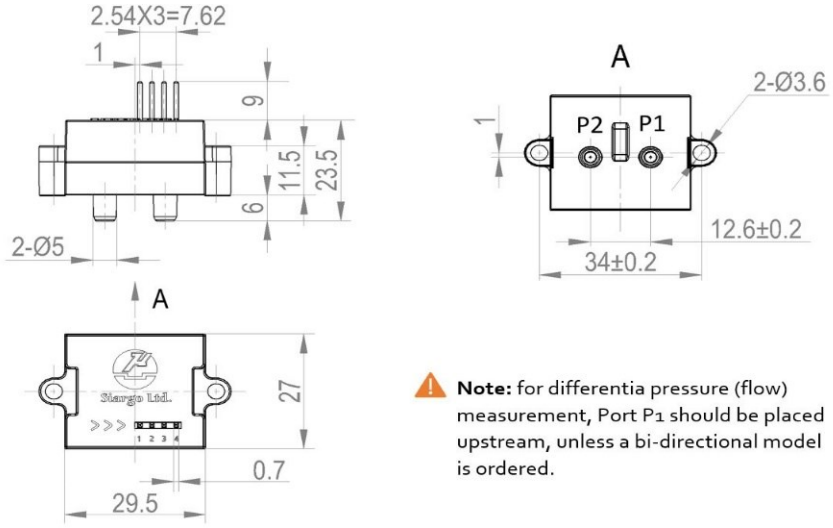
FSP2000 series dual pressure sensors offer the unique combination of a differential and a gauge pressure sensor utilizing the MEMS thermal and piezo sensing technology with smart electronic circuitry. The designed sensing ranges allow it can be readily applied to medical applications such as a CPAP ventilator for both flow and gauge pressure measurement with a small footprint per the direction of the CPAP development.

FSP2000 offers a differential pressure range from 250 to 500 Pa and gauge pressure ±100cmH_2O.

Features

- MEMS thermal calorimetry with diffusivity (***Thermal-D*** ®) and piezo sensing technology
- Excellent form factor with integrated multiple sensing elements
- High stability at null and full scale
- Fast response time
- High sensitivity at low pressure

Mechanical dimensions



Note: for differentia pressure (flow) measurement, Port P1 should be placed upstream, unless a bi-directional model is ordered.

Specifications

Differential pressure	250 / 500 / ±250 / ±500	Pa
Gauge pressure	-5 ~ 100 / ±100	cmH_2O
Accuracy, differential pressure*	±(2.0+0.5FS)	%
Accuracy, gauge pressure	±1.0FS	%
Response time	1.8	msec
Repeatability, differential pressure	(0.5+0.15FS)	%
Compensated temperate range	-5 ~ +65	°C
Pressure rating	50	kPa
Altitude correction	Fully compensated	
Warm-up time (max)	10	sec
Humidity	0 ~ 100 (no condensation)	%RH
Power supply, voltage	3.0 ~ 5.5	Vdc
Power supply, minimal current	10	mA
Pneumatic flow resistance	<95	sccm@500Pa
Output	Linear, I^2C	
Vibration	20g; MIL-STD-883E, Method 2002.4.	
Storage temperature	-20 ~ +75	°C

Note: Parameters specified at the calibration conditions.

Product selection

FSP2000-☐D☐-☐P☐-☐

- **E** – no cable; **C** – cable added.
- Gauge pressure, full scale: **100** cmH_2.
- Gauge vacuum pressure, full scale: **5**, **100** cmH2O.
- Differential pressure, full scale: **250**, **500** Pa.
- Differential pressure, reverse full scale: **0**, **250**, **500** Pa.

HMF2000

Portable Gas Mass Flow Meter

Production description

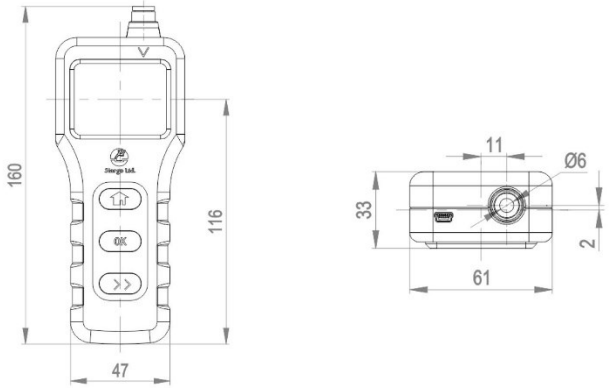
HMF2000 series portable mass flow meters are designed for general-purpose flow metering and control/adjustment applications and are made with Siargo's proprietary MEMS mass flow sensing technology and smart electronic circuitry. The meters directly measure mass flow with built-in multi-gas parameters. The current models can be readily applied to the on-site service of a spectrometer and other equipment.

HMF2000 can measure a flow up to 1000 sccm for air, O_2, N_2, Ar, He, and H_2.

Features

- MEMS thermal mass flow sensor
- Excellent rangeability 100:1 with integrated multiple sensing elements
- Multi-gas parameters with dual channels
- Fast response time
- Mobile power
- Support data storage and download

Mechanical dimensions



Specifications

Flow range	0 ~ 1000	sccm
Accuracy	±(2.0+0.5FS)	%
Repeatability	0.5	%
Response time	8.0	msec
Power supply	6F22 battery or external power 6 ~ 12 Vdc	
Data port	RS485 / I²C /BT LE	
Display	Dual channels, LCD	
Pressure rating	0.4	MPa
Temperature	0 ~ +50	°C
Humidity	<95 (no condensation)	%RH
Mechanical connection	One-touch	
Pinout	mini USB	
Programmable functions	3 key front face	
Calibration	Air @ 20°C, 101.325 kPa	
Weight	200	g
Protection	IP40	
Storage temperature	-20 ~ +70	°C

Note: Parameters specified at the calibration conditions.

Product selection

HMF2000 -☐ - ☐ -☐

Gas: **A** – air; **C** – CO_2; **E** – He; **H** – H_2; **N** – N_2; **O** – O_2; **R** – Ar.
For other gases, please contact the manufacturer.

Output: **B** – RS485; **E** – I²C; **T** – BT LE.

Connector: **O** – one touch; **N** – NPT; **R** – BSPT.

CON

Product Evaluation Kit

Production description

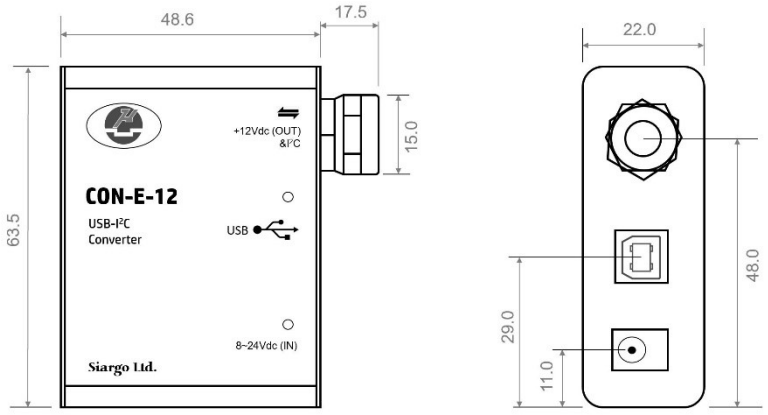
CON series converters convert the digital output (RS485, RS232, and I²C) output of Siargo's current products into a format that can be directly read by a Microsoft Windows-based personal computer via the USB. And the software that allows the user to evaluate the performance and basic functions of the specific product. For some simple applications, this Kit provides a plug-and-play option.

This series of Kits are matching to the complete product family.

Features

- For an easy evaluation of the product's basic performance and functions
- Plug-and-play for simple applications
- Microsoft Windows-based software
- All cables are included
- Work with multiple devices
- Limited customization optional

Mechanical dimensions



Specifications

Input	RS485 / RS232 / I²C
Output	USB
Power supply	PC USB or external 8 ~ 24 Vdc
Software	Microsoft Windows 8.0 and above compatible, downloadable
USB cable for data	Included, 1.5m.
Cable for product	Included, 0.5 ~ 2 m, depending on the product cable
Power adapter	110 ~ 240 Vac to 8 ~ 24 Vdc included.

Product selection

CON - ☐ - ☐ - ☐

- Siargo products
- Output voltage: **3** – 3 / 3.3 Vdc; **5** – 5 Vdc; **12** – 8 ~ 24 Vdc.
- Input signal: **B** – RS485; **C** – RS232; **E** – I²C.

Model	Applicable product(s)			
CON-B-12	FS4308 (RS485); AM1000 (RS485); MF3000 (RS485); MF4000 (RS485); MF4600; MF4700;	MF5000; MF5100; MF5100V; MF5600; MF5700; MF5900;	MF5806-G; MF5806E1; MF6600 (RS485); MF-GD; MF-HD; MFC2000;	MFC4000; LF3000 (RS485); CS3001 (RS485); LM1100 (RS485); HMF2000 (RS485).
CON-C-12	FS4001 (RS232); FS4308 (RS232);	MF4000 (RS232)		
CON-E-3	FSP1000; FSP2000.			
CON-E-5	FS1100; FS5002L;	FS6122; FS7002L;	FSP2000; MF6600 (I²C).	
CON-E-12	FS1015E; FS4001 (I²C); FS4308 (I²C); FS5001E;	FS5002; FS8001; FS8003E; AM1000 (I²C);	MF3000 (I²C); MF4000 (I²C); MF6600 (I²C); LF3000 (I²C);	CS3001 (I²C); LM1100 (I²C); HMF2000 (I²C).

Note: Please make sure your product's configuration, and select the correct model for your order.

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