



## Gas Mass Flow Sensors Line

### Air Flowmeter

#### ■MCF



The MCF is a mass flowmeter specifically for compressed air or nitrogen use. It incorporates Yamatake's Micro Flow thermal mass-flow rate sensor. The MCF can measure mass flow with an accuracy of  $\pm 3\%$  FS over a 50:1 measurement range. Forward and reverse flow integration functions are provided. Measurement is possible at up to 2 times the standard range with an accuracy of  $\pm 10\%$  rdg.

### Gas Mass Flowmeter (Resin, SUS and SUS316)

#### ■CMS



The CMS is a highly reliable gas mass flowmeter that uses the  $\mu F$  (Micro Flow) sensor as its sensing element. The  $\mu F$  sensor is a MEMS thermal mass-flow sensor capable of measuring ultra-low flow rates. The integration of the  $\mu F$  sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.

### Gas Mass Flowmeter (Hydrogen and Helium)

#### ■CMS



The CMS is a highly reliable gas mass flowmeter that uses the  $\mu F$  (Micro Flow) sensor as its sensing element. The  $\mu F$  sensor is a MEMS thermal mass-flow sensor capable of measuring ultra-low flow rates. The integration of the  $\mu F$  sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.

### Gas Mass Flowmeter (Aluminum)

#### ■CMS1500



The CMS1500 is a highly reliable gas mass flowmeter that uses the  $\mu F$  (Micro Flow) sensor as its sensing element. The  $\mu F$  sensor is a MEMS thermal mass-flow sensor capable of measuring ultra-low flow rates. The integration of the  $\mu F$  sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.



#### Panel Mount Mass Flow Controller

##### ■MPC



The MPC is an ultrafast response flow rate sensor that utilizes proprietary technology. By integrating a Micro Flow sensor, an ultracompact proportional solenoid valve, a new flow channel system, and advanced control technology, Yamatake has developed a mass flow controller which can be mounted from the front of the control panel.

#### Gas Flow Monitor (Natural Gas and Air)

##### ■CMG



The CMG is a flowmeter designed to measure the fuel flow to a gas burner. Its sensing element is the Micro Flow sensor chip, a MEMS thermal massflow sensor.

The monitor displays instantaneous or totalized flow. Available outputs include alarm, instantaneous flow (analog output), totalizer pulse (NPN open collector) and event, for managing complex air/fuel ratio control and flow control.

#### Gas Flow Monitor (Butane and Propane)

##### ■CMG



The CMG is a flowmeter designed to measure the fuel flow to a gas burner. Its sensing element is the Micro Flow sensor chip, a MEMS thermal massflow sensor.

The monitor displays instantaneous or totalized flow. Available outputs include alarm, instantaneous flow (analog output), totalizer pulse (NPN open collector) and event, for managing complex air/fuel ratio control and flow control.

#### Micro Flow Vortex Gas Flowmeter

##### ■MVF



By using the high-sensitivity and high-speed response Micro Flow sensor for the detection of vortex frequency, the MVF is able to offer a wide rangeability of 100:1.

Temperature and pressure compensation functions are built in, so there is no need for costly external devices.



#### High-Flow Mass Flowmeter

##### ■CML



The CML is a high-flow gas mass flowmeter that uses the  $\mu\text{F}$  (Micro Flow) sensor as its sensing element.

The combination of an ultra-miniature precision sensor and advanced circuit design technology has enabled high accuracy and impressive 160:1 rangeability.

#### Chip Pickup Detection Mass-Flow Sensor

##### ■MCS100



The MCS100 is a mass flow sensor used to detect microcomponent pickup. It uses Yamatake's Micro Flow sensor and can be installed very close to the pickup nozzle. Its fast 5ms response is designed for detection in high-speed pickup applications, and its operation is not affected by fluctuations in suction pressure because of its mass-flow measurement principle.

#### Multi-Channel Indicator

##### ■MCW400A100



The MCW400A100 multi-channel indicator can be connected to as many as 4 MCS100 chip pickup detection mass-flow sensors, with a separate flow rate range set for each channel. It indicates instantaneous flow rate and provides switch signal output. Four different operation modes are available. This product is used with the MCS100 for functions such as micro-component pickup detection.

#### Digital Mass Flow Controller

##### Standard Gas Model (Low Flow Rate)

##### ■CMQ-V



The CMQ-V is a digital mass flow controller that combines Micro Flow thermal mass-flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance and low-cost next-generation controller. Developed for general industrial use, the CMQ-V was designed with high-speed, wide-rangeability flow control needs in mind.

#### Digital Mass Flow Controller

##### Standard Gas Model (Medium Flow Rate)

##### ■CMQ-V



The CMQ-V is a digital mass flow controller that combines Micro Flow thermal mass-flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance and low-cost next-generation controller. Developed for general industrial use, the CMQ-V was designed with high-speed, wide-rangeability flow control needs in mind.



Digital Mass Flow Controller  
Hydrogen/Helium Gas Model

■CMQ-V



The CMQ-V is a digital mass flow controller that combines Micro Flow thermal mass-flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance and low-cost next-generation controller. Developed for general industrial use, the CMQ-V was designed with high-speed, wide-rangeability flow control needs in mind.

- Low flow rate: MQV9020/9050/9500/0005/0010/0050/0200
- Medium flow rate: MQV0500/1000J,K

Digital Mass Flow Controller  
Special Gas Model (Low Flow Rate)

■CMQ-V



The CMQ-V is a digital mass flow controller that combines Micro Flow thermal mass-flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance and low-cost next-generation controller. Developed for general industrial use, the CMQ-V was designed with high-speed, wide-rangeability flow control needs in mind. This model with O-ring of EPM/EPDM is used for ammonia, acetylene and ethylene oxide gases.

Digital Mass Flow Controller  
Special Gas Model (Medium Flow Rate)

■CMQ-V



The CMQ-V is a digital mass flow controller that combines Micro Flow thermal mass-flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance and low-cost next-generation controller. Developed for general industrial use, the CMQ-V was designed with high-speed, wide-rangeability flow control needs in mind. This model with O-ring of EPM/EPDM is used for ammonia, acetylene and ethylene oxide gases.

Mist Separators and Filters  
■FC, MFF100, MFF300



FC, MFF100 and MFF300 filters protect products by filtering gas to remove foreign matter such as dust, oil mist, and welding fumes. There is a wide variety of available models, not only for compressed air and low pressure air applications, but also for natural gas, propane, and other flammable gases, carbon dioxide, and for inert gases like argon.

These filters fit Yamatake's Micro Flow product series: CMS, CMQ-V, CMG, CML, MPC, and MVF.