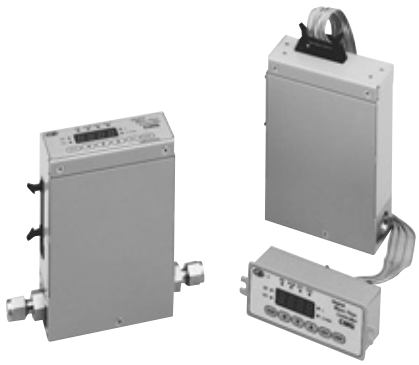
CMQ-V

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

The CMQ-V is a digital mass flow controller that combines Yamatake's 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.



Specifications

Model No.	MQV9005	MQV9020	MQV9200	MQV9500	MQV0002	MQV0005	MQV0020	MQV0050
Valve type	Proportional solenoid valve							
Standard full-scale flow rate *1	5mL/min (standard)	20mL/min (standard)	0.2L/min (standard)	0.5L/min (standard)	2L/min (standard)	5L/min (standard)	20L/min (standard)	50L/min (standard)
Gas types	Air/nitrogen, oxygen (oxygen model only), argon, carbon dioxide (CO_2), city gas 13A (LNG base, 45/46MJ/m^3), methane 100%, propane 100%, butane 100%. Gas must be dry and without corrosive components (chlorine, sulfur, acid, etc.). It must also be clean without dust or oil mist.							
Operating differential pressure range	300kPa max.							
Max. inlet pressure *2	0.5MPa (gauge)							
Pressure resistance	1MPa (gauge)							
No. of alarm/event outputs	Alarm: 1. Event: 2							
Flow rate setting methods	(1) Key input, (2) external analog input, (3) RS-485 communications (3-wire type), (4) PC loader communications (using a dedicated PC loader software)							
External analog input	0 to 5Vdc, 1 to 5Vdc, 0 to 20mAdc, or 4 to 20mAdc (selectable)							
No. of external switching inputs	3-way switching(OPEN/GND/5V): 1. External contact inputs (2-way switching): 3.							
Power	24Vdc							
Current consumption	300mA max.							
Mass	Approx. 1.2kg							

Notes: *1. "Standard" refers to the flow rate adjusted for 20°C, 101.325 kPa (1 atmosphere). The controllable flow rate range varies according to the gas type.
*2. When used at an inlet pressure higher than 0.5MPa (gauge), contact Yamatake Corporation.

Selection Guide

I II III IV V VI VII VIII IX X XI XII Example: **MQV9200BSRN000000**

Segment	Model No. selection		Description
I	Basic No.	**MQV**	Digital mass flow controller
II	Flow rate range	**9005**	5.00mL/min (standard) *1
		9020	20.0mL/min (standard) *1
		9200	0.2L/min (standard) *1
		9500	0.5L/min (standard) *1
		0002	2L/min (standard) *1
		0005	5L/min (standard) *1
		0020	20L/min (standard) *1
		0050	50L/min (standard) *1
III	Display	**B**	Integrated display
		C	Separate display (included)
IV	Material	**S**	SUS316, Teflon, Viton
V	Connection	**R**	Rc 1/4" (not selectable for MQV9005 and MQV9020)
		S	1/4" Swagelok
		V	1/4" VCR
		U	9/16-18 UNF (not selectable for MQV9005 and MQV9020)
VI	Gas type	**N**	Air/nitrogen (changeable to standard gases) *2
		S	Oxygen *3
VII	Option 1	**0**	Standard model
VIII	Option 2	**0**	None
		1	RS-485 (CPL) communications
IX	Option 3	**0**	None
X	Option 4	**0**	None
		1	Oil-inhibiting treatment for gas-contacting parts
XI	Option 5	**0**	None
		D	With inspection data
		Y	With traceability certification
XII	Design code	**0**	Product version

Notes: *1. "Standard" refers to the flow rate adjusted for 20°C, 101.325 kPa (1 atmosphere).
The reference temperature can be changed to 0°C, 25°C, or 35°C.
The controllable flow rate range varies according to the gas type.

*2. Although gas type is set to air/nitrogen at the factory, it can be changed to other standard compatible gas types (argon, CO_2, natural gas LNG (45MJ/m3, 46MJ/m3), methane 100 %, propane 100 %, butane 100 %).
The settings of MQV9005 and MQV9020 can be changed to air/nitrogen, oxygen, or argon only.

*3. When oxygen is selected, make sure to specify "1: Oil-inhibiting treatment for gas-contacting parts" of the optional function.

Accessories (sold separately)

Model No.	Name	Description
81446681-001	Cable with dedicated connector	2m 20-core flat cable
81446951-001	Cable with dedicated connector	5m 20-core shielded cable
81446957-001	AC adapter	Rating: 24Vdc, 650mA
81446683-002	Potentiometer for setting flow rate	Digital dial, 5kΩ, 10 turns
81446858-001	Front cover for separate display	Resin
MLP100A100	PC loader software	Dedicated software with cable

Control Flow Rate Range and Resolutions

The controllable flow rate range varies according to the gas type.

Specifications / Gas type	MQV9005 Control flow rate range	MQV9005 Setting/display resolution*2	MQV9020 Control flow rate range	MQV9020 Setting/display resolution*2
	mL/min(standard)		mL/min(standard)	
Air, nitrogen	0.10 to 5.00	0.02	0.2 to 20.0	0.1
Oxygen	0.10 to 5.00	0.02	0.2 to 20.0	0.1
Argon	0.10 to 5.00	0.02	0.2 to 20.0	0.1
Carbon dioxide	–	–	–	–
City gas 13A (LNG: 45MJ/m^3)	–	–	–	–
City gas 13A (LNG: 46MJ/m^3)	–	–	–	–
Methane 100%	–	–	–	–
Propane 100%	–	–	–	–
Butane 100%	–	–	–	–

Specifications / Gas type	MQV9200 Control flow rate range	MQV9200 Setting/display resolution*2	MQV9500 Control flow rate range	MQV9500 Setting/display resolution*2
	mL/min(standard)		L/min(standard)	
Air, nitrogen	2 to 200	1	0.004 to 0.500	0.002
Oxygen	2 to 200	1	0.004 to 0.500	0.002
Argon	2 to 200	1	0.004 to 0.500	0.002
Carbon dioxide	1.0 to 120.0	0.5	0.003 to 0.300	0.001
City gas 13A (LNG: 45MJ/m^3)	2 to 200	1	0.004 to 0.500	0.002
City gas 13A (LNG: 46MJ/m^3)	2 to 200	1	0.004 to 0.500	0.002
Methane 100%	2 to 200	1	0.004 to 0.500	0.002
Propane 100%	0.6 to 60.0	0.2	0.002 to 0.160	0.001
Butane 100% *1	0.4 to 50.0	0.2	1.0 to 120.0	0.5

Specifications / Gas type	MQV0002 Control flow rate range	MQV0002 Setting/display resolution*2	MQV0005 Control flow rate range	MQV0005 Setting/display resolution*2
	L/min(standard)		L/min(standard)	
Air, nitrogen	0.02 to 2.00	0.01	0.04 to 5.00	0.02
Oxygen	0.02 to 2.00	0.01	0.04 to 5.00	0.02
Argon	0.02 to 2.00	0.01	0.04 to 5.00	0.02
Carbon dioxide	0.010 to 1.200	0.005	0.03 to 3.00	0.01
City gas 13A (LNG: 45MJ/m^3)	0.02 to 1.60	0.01	0.04 to 5.00	0.02
City gas 13A (LNG: 46MJ/m^3)	0.02 to 1.60	0.01	0.04 to 5.00	0.02
Methane 100%	0.02 to 2.00	0.01	0.04 to 5.00	0.02
Propane 100%	0.006 to 0.600	0.002	0.02 to 1.60	0.01
Butane 100%	0.04 to 0.400	0.002	0.010 to 1.200	0.005

Specifications / Gas type	MQV0020 Control flow rate range	MQV0020 Setting/display resolution*2	MQV0050 Control flow rate range	MQV0050 Setting/display resolution*2
	L/min(standard)		L/min(standard)	
Air, nitrogen	0.2 to 20.0	0.1	0.4 to 50.0	0.2
Oxygen	0.2 to 20.0	0.1	0.4 to 50.0	0.2
Argon	0.2 to 20.0	0.1	0.4 to 50.0	0.2
Carbon dioxide	0.10 to 12.00	0.05	0.3 to 30.0	0.1
City gas 13A (LNG: 45MJ/m^3)	0.2 to 20.0	0.1	0.4 to 50.0	0.2
City gas 13A (LNG: 46MJ/m^3)	0.2 to 20.0	0.1	0.4 to 50.0	0.2
Methane 100%	0.2 to 20.0	0.1	0.4 to 50.0	0.2
Propane 100%	0.06 to 6.00	0.02	0.2 to 16.0	0.1
Butane 100%	0.04 to 4.00	0.02	0.10 to 10.00	0.05

Notes: *1. When the gas type of MQV9500 is set to butane 100%, the flow rate unit is mL/min.

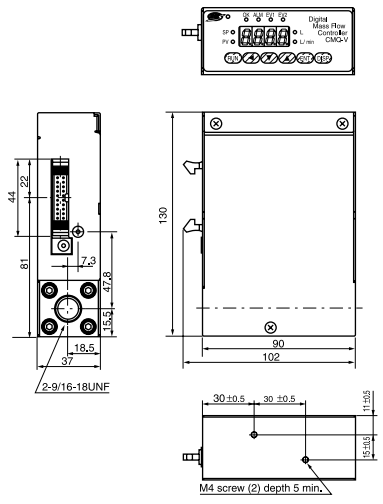
*2. If an analog signal is applied to the setting input and the flow rate output, the resolution will increase greatly. Contact Yamatake for more infomation.

Dimensions

(Unit: mm)

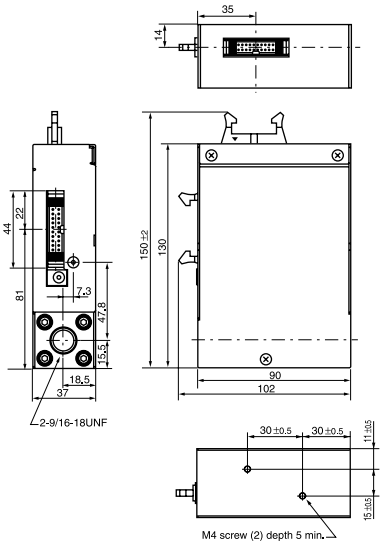
• Models with integrated display

Body

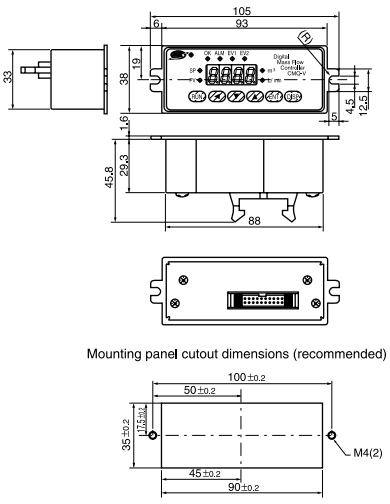


• Model with separate display

Body



Separate display unit



Mounting panel cutout dimensions (recommended)