

# Digital Mass Flow Controller (Standard gas, Low-Flow model) | MQV Series



The MQV series of advanced digital mass flow controllers employs our proprietary  $\mu$ F (Micro Flow) thermal flow rate sensor as the sensing element, combined with a proportioning solenoid valve and advanced actuator technology.

The result is a high-performance next-generation controller. Developed for general industrial use, the MQV series was designed with high-speed, wide-rangeability flow control needs in mind.



## Specifications

Model No.	MQV9005	MQV9020	MQV9200	MQV9500	MQV0002	MQV0005	MQV0020	MQV0050 (B,C)	MQV0100	
Standard full-scale flow rate*1	5.00 mL/min (standard)	20.0 mL/min (standard)	200 mL/min (standard)	0.500 L/min (standard)	2.00 L/min (standard)	5.00 mL/min (standard)	20.0 L/min (standard)	50.0 L/min (standard)	100.0 L/min (standard)	
Gas type	Air/nitrogen (N <sub>2</sub> ), oxygen (O <sub>2</sub> ), argon (Ar)		Air/nitrogen (N <sub>2</sub> ), oxygen (O <sub>2</sub> ), argon (Ar), carbon dioxide (CO <sub>2</sub> ), city gas 13 A (LNG: 45 MJ/m <sup>3</sup> ), city gas 13 A (LNG: 46 MJ/m <sup>3</sup> ), 100% methane (CH <sub>4</sub> ), 100% propane (C <sub>3</sub> H <sub>8</sub> ), 100% butane (C <sub>4</sub> H <sub>10</sub> )						Air/nitrogen (N <sub>2</sub> ), oxygen (O <sub>2</sub> ), argon (Ar), carbon dioxide (CO <sub>2</sub> )	
Response	0.5 s max. for the setting $\pm$ 2% FS (typ.)		0.3 s max. for setting $\pm$ 2% FS (typ.)							
Accuracy*2 (at standard temp. and diff. pressure, Q: flow rate)	$\pm$ 1% FS		(1) Standard product: $\pm$ 0.5% FS (0% FS $\leq$ Q $\leq$ 50% FS) $\pm$ 1% FS (50% FS < Q $\leq$ 100% FS) (2) High-accuracy product: $\pm$ 0.2% FS (0% FS $\leq$ Q < 20% FS) $\pm$ 1%SP (20% FS $\leq$ Q $\leq$ 100% FS)						$\pm$ 1% FS (0% FS $\leq$ Q $\leq$ 80% FS) $\pm$ 2% FS (80% FS < Q $\leq$ 100% FS)	
Standard differential pressure	100 kPa		200 kPa		150 kPa		200 kPa		300 kPa	
Operating differential pressure range	300 kPa or less									
Allowable inlet pressure*3	0.5 MPa (gauge)									
Rated power supply voltage	24 Vdc, current consumption: 300 mA max.									
Weight	Approx. 1.1 kg				Approx. 1.2 kg					

\*1. "L/min (standard)" indicates a value converted to volumetric flow per minute at 20 °C and 101.325 kPa (1 atmosphere). Also note that this is the full scale flow rate for air/nitrogen, and that the controllable flow rate range varies depending on the gas type. See "Control flow rate range and setting/display resolution" on the next page.

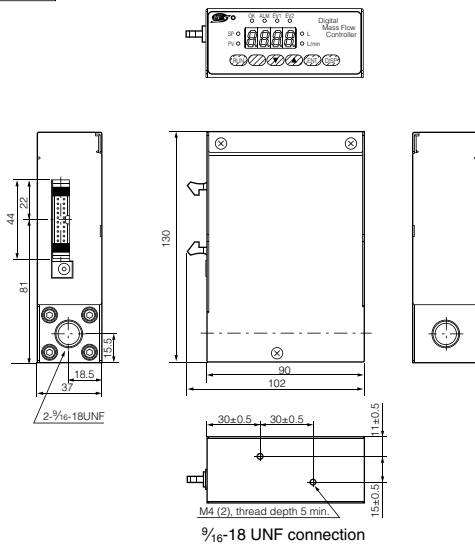
\*2. This shows the accuracy for air/nitrogen and oxygen (for models supporting oxygen gas).

\*3. For the availability of the product at an inlet pressure of 0.5 MPa or more, please contact us.

## External dimensions

### Model with integrated display

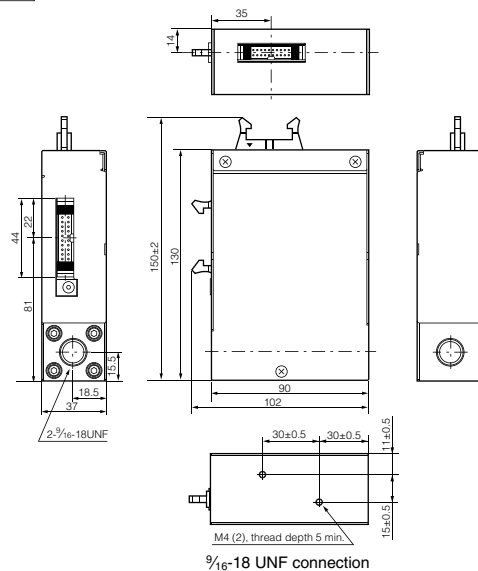
Main unit



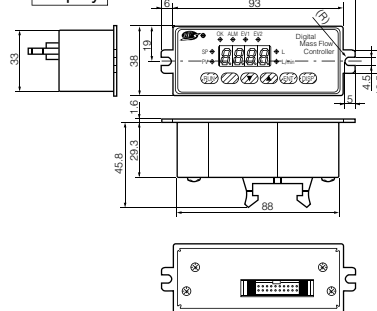
### Model with separate display

(Unit: mm)

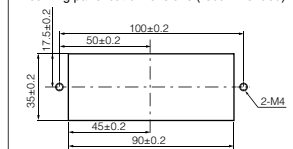
Main unit



Display



Mounting panel cut dimensions (recommended)



1

DIGITAL CONTROLLERS

2

RECORDERS, INDICATORS

3

CONVERTERS

4

FLAME SAFEGUARD SYSTEM

5

ACTUATORS

6

SENSORS

7

GAS FLOW MEASUREMENT AND CONTROL PRODUCTS

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## Model No. configuration

Ex.: MQV9005BSSN000000

Basic model No.	Flow rate range	Model	Material	Connection	Gas type	Option 1	Option 2	Option 3	Option 4	Option 5	Appended No.	Description	
MQV	9005											MQV digital mass flow controller	
												0.10 to 5.00 mL/min (standard)*1	
		9020											0.2 to 20.0 mL/min (standard)*1
		9200											2 to 200 mL/min (standard)*1
		9500											0.004 to 0.500 L/min (standard)*1
		0002											0.02 to 2.00 L/min (standard)*1
		0005											0.04 to 5.00 L/min (standard)*1
		0020											0.2 to 20.0 L/min (standard)*1
	0050												0.5 to 50.0 L/min (standard)*1
		B											Model with integrated display (flow path length: 90 mm)
	C												Model with separate display (flow path length: 90 mm)
			S										SUS316
					R								¼ Rc (not available for MQV9005 and MQV9020.)
					S								¼ Swagelok
					V								¼ VCR
					U								½-18 UNF (not available for MQV9005 and MQV9020.)
					N								Standard gas*2
					S								Oxygen*3
						0							None
							0						None
							1					RS-485 (CPL) communication function	
								0				None	
									0			None	
										1		Degreasing of gas-contacting parts	
											0	None	
											D	Inspection results	
											Y	Traceability certificate	
											0	Product version	

Ex.: MQV0100BSRN000000

Basic model No.	Flow rate range	Model	Material	Connection	Gas type	Option 1	Option 2	Option 3	Option 4	Option 5	Appended No.	Description	
MQV	0100											MQV digital mass flow controller	
													1.0 to 100.0 L/min (standard)*1
		B											Model with integrated display (flow path length: 90 mm)
		C											Model with separate display (flow path length: 90 mm)
				S									SUS316
						R							¼ Rc
						S							⅜ Swagelok
						U							½-18 UNF
					N								Air, nitrogen, argon, carbon dioxide
					S								Oxygen*3
						0							None
							0						None
								1					RS-485 (CPL) communication function
									0				None
										0			Degreasing of gas-contacting parts
											1		None
												D	Inspection results
												Y	Traceability certificate
												0	Product version

\*1. "L/min (standard)" indicates an air flow rate converted for conditions of 20 °C and 101.325 kPa (1 atmosphere). The MQV can also convert to air flow at 0 °C, 25 °C, and 35 °C. Also, note that the flow rate range differs depending on the gas type.  
 \*2. This is factory-set to air/nitrogen, but can be set to other standard gases (argon, carbon dioxide (CO<sub>2</sub>), city gas 13 A (LNG: 45 MJ/m<sup>3</sup>), city gas 13 A (LNG: 46 MJ/m<sup>3</sup>), 100% methane, 100% propane, and 100% butane). Note that on MQV9005 and MQV9020, the gas can be set to air/nitrogen, oxygen, and argon only.  
 \*3. If oxygen is selected for the gas type, "Degreasing of gas-contacting parts" is the standard specification. (Additional charges apply.)

### Control flow rate range and setting/display resolution

Note: The control flow rate range of this product varies depending on the type of gas used. When selecting a model, refer also to the tables below.

Model No.	MQV9005		MQV9020		MQV9200		MQV9500	
	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2
Gas type	[mL/min (standard)]							
Air, nitrogen	0.10 to 5.00	0.02	0.2 to 20.0	0.1	2 to 200	1	0.004 to 0.500	0.002
Oxygen	0.10 to 5.00	0.02	0.2 to 20.0	0.1	2 to 200	1	0.004 to 0.500	0.002
Argon	0.10 to 5.00	0.02	0.2 to 20.0	0.1	2 to 200	1	0.004 to 0.500	0.002
Carbon dioxide gas	-	-	-	-	1.0 to 120.0	0.5	0.003 to 0.300	0.001
City gas 13 A (LNG: 45 MJ/m <sup>3</sup> )	-	-	-	-	2 to 200	1	0.004 to 0.500	0.002
City gas 13 A (LNG: 46 MJ/m <sup>3</sup> )	-	-	-	-	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%)	-	-	-	-	0.4 to 50.0	0.2	1.0 to 120.0*1	0.5*1

Model No.	MQV0002		MQV0005		MQV0020		MQV0050		MQV0100	
	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2	Control flow rate range	Setting/display resolution*2
Gas type	[mL/min (standard)]									
Air, nitrogen	0.02 to 2.00	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	1.0 to 100.0	0.5
Oxygen	0.02 to 2.00	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	1.0 to 100.0	0.5
Argon	0.02 to 2.00	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	1.0 to 100.0	0.5
Carbon dioxide gas	0.010 to 1.200	0.005	0.03 to 3.00	0.01	0.10 to 12.00	0.05	0.3 to 30.0	0.1	1.0 to 80.0	0.5
City gas 13 A (LNG: 45 MJ/m <sup>3</sup> )	0.02 to 2.00	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	-	-
City gas 13 A (LNG: 46 MJ/m <sup>3</sup> )	0.02 to 1.60	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	-	-
Methane (100%)	0.02 to 2.00	0.01	0.04 to 5.00	0.02	0.2 to 20.0	0.1	0.4 to 50.0	0.2	-	-
Propane (100%)	0.006 to 0.600	0.002	0.02 to 1.60	0.01	0.06 to 60.0	0.02	0.2 to 16.0	0.1	-	-
Butane (100%)	0.004 to 0.400	0.002	0.010 to 1.200	0.005	0.04 to 4.00	0.02	0.1 to 10.00	0.05	-	-

\*1. If the gas type is set to 100% butane on MQV9500, the flow rate display unit will be mL/min.  
 \*2. When the setting is input and the flow rate is output using analog signals, the resolution improves greatly. If you plan to use analog signals, please contact us.

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