Digital Mass Flow Controller
Further Notes on Semi-Standard Gas Models

This document provides further notes on Digital Mass Flow Controller semi-standard gas models.
Use this document together with the user's manual.
All information in this document supersedes the information in the user's manual.

⚠WARNING

Do not use this product for gases other than the ones shown below.
This product is equipped with ethylene-propylene rubber O ring seals. If it is used for gases other than the ones shown below, the O ring may be damaged.
Gas types: nitrogen (N_2), air, argon (Ar), carbon dioxide (CO_2), ammonia (NH_3)
acetylene (C_2H_2)

When ammonia gas is exposed to moisture in the air, it becomes a corrosive substance that causes malfunction.
When using ammonia gas, be sure to meet the requirements below.
(1) The dew-point temperature of the measured gas must be -20 ˚C or below. (The dew-point temperature of compressed gases from cylinders can be considered to be -40 ˚C or below.)
(2) Before introducing ammonia gas into the pipes, dry the gas-contacting parts by purging them with a gas like dry nitrogen.
(3) The pipes cannot be open to the air. (If they are, moisture from the air adheres to the gas-contacting parts by adsorption, leading to corrosion.)

■ How to use this product

If using this product for ammonia or acetylene gas, set the conversion factor (C.F.) as follows.

1. In the function setup, change the setting of C-18 (Gas type selection) to 0 (Conversion factor for each gas type set by the user).
2. In the parameter setup, change the user-specified conversion factor (C.F.) for the desired gas type and model according to the table below.

[Unit: mL/min (standard) for MQV9200, L/min (standard) for others]

	MQV9200			MQV9500			MQV0002		
Gas type	C.F. *	Control flow rate range	Resolution	C.F. *	Control flow rate range	Resolution	C.F. *	Control flow rate range	Resolution
Acetylene (C_2H_2)	0.560	1.0 to 120.0	0.5	0.560	0.003 to 0.300	0.001	0.560	0.010 to 1.200	0.005
Ammonia (NH_3)	0.760	2 to 160	1	0.760	0.004 to 0.400	0.002	0.760	0.02 to 1.60	0.01

	MQV0005			MQV0020			MQV0050B/C		
Gas type	C.F. *	Control flow rate range	Resolution	C.F. *	Control flow rate range	Resolution	C.F. *	Control flow rate range	Resolution
Acetylene (C_2H_2)	0.560	0.03 to 3.00	0.01	0.560	0.10 to 12.00	0.05	0.560	0.3 to 30.0	0.1
Ammonia (NH_3)	0.760	0.04 to 4.00	0.02	0.760	0.2 to 16.0	0.1	0.760	0.4 to 40.0	0.2

	MQV0200			MQV0500		
Gas type	C.F. *	Control flow rate range	Resolution	C.F. *	Control flow rate range	Resolution
Acetylene (C_2H_2)	0.560	1.0 to 120.0	0.5	0.610	4 to 400	2
Ammonia (NH_3)	0.760	2 to 160	1	0.770	4 to 400	2

* Since conversion factors for acetylene and ammonia are simply presumed values based on gas properties, the degree of assured accuracy given in the specifications is not applicable to these gases.
However, repeatability is the same as that in the specifications.
If flow rate accuracy is necessary, verify the conversion factor by testing before use.

! Handling Precautions

- For details on function setup and parameter setup, see Chapter 5, ADVANCED OPERATION, in the user's manual.

■ Model selection guide (Semi-standard gas models)

Basic model No.	Standard control flow rate range (Nitrogen equivalent)	Displayed flow path size	Gas-contacting material	Connection method	Gas type	Optional functions 1	2	3	4	5	Appended No.	Description
MQV												Digital mass flow controller
	9200											2 to 200 mL/min (standard) *
	9500											0.004 to 0.500 L/min (standard) *
	0002											0.02 to 2.00 L/min (standard) *
	0005											0.04 to 5.00 L/min (standard) *
	0020											0.2 to 20.0 L/min (standard) *
	0050											0.4 to 50.0 L/min (standard) *
		B										Integrated display model (body length 90 mm)
		C										Separate display model (body length 90 mm)
			S									SUS316
				R								Rc1/4"
				S								1/4" Swagelok
				V								1/4" VCR
					E							Semi-standard gas
						0						Without optional functions
							0					Without optional functions
							1					Model with RS-485 communications (CPL) function
								0				Without optional functions
									1			Oil-inhibiting treatment for gas-contacting parts
										0		Without optional functions
										D		Inspection certificate
										Y		Traceability certificate
											0	Product version

Basic model No.	Standard control flow rate range (Nitrogen equivalent)	Displayed flow path size	Gas-contacting material	Connection method	Gas type	Optional functions 1	2	3	4	5	Appended No.	Description
MQV												Digital mass flow controller
	0200											2 to 200 L/min (standard) *
	0500											4 to 500 L/min (standard) *
		J										Integrated display model (body length 150 mm)
		K										Separate display model (body length 150 mm)
			S									SUS316
				S								1/2" Swagelok
					E							Semi-standard gas
						0						Without optional functions
							0					Without optional functions
							1					Model with RS-485 communications (CPL) function
								0				Without optional functions
									1			Oil-inhibiting treatment for gas-contacting parts
										0		Without optional functions
										D		Inspection certificate
										Y		Traceability certificate
											0	Product version

* The notations mL/min (standard) and L/min (standard) indicate the volume flow rate per minute converted to 20 °C, 101.325 kPa (1 atm).
In addition, in function setup C-19, the reference temperature can be changed to 0, 25, or 35 °C.
Listed flow ranges are of air/nitrogen.
Refer to the table on page 1 for the flow range of each gas.

■ Specifications (Differences with standard models)

Other than the items shown below, the specifications are the same as those of standard models.
See Chapter 7, SPECIFICATIONS, in the user's manual.

	Semi-standard gas models	Standard models
Gas type	Nitrogen (N_2), air, argon (Ar), carbon dioxide (CO_2), acetylene (C_2H_2), ammonia(NH_3) (These gases must be dry gases whose dew-point temperature is -20 °C or below.)	Nitrogen, air, oxygen, argon, carbon dioxide (CO_2), natural gas 13A (LNG), 100% methane, 100% propane 100% butane
Gas-contacting material	SUS316, Teflon, ethylene propylene methylene linkage	SUS316, Teflon, Fluorine-containing rubber
Swagelok fitting No.	(1) MQV9200/9500/0002/0005/0020/0050: SS-400-1-6STAUSC11 (2) MQV0200/0500: SS-810-1-8STAUSC11	(1) MQV9200/9500/0002/0005/0020/0050: SS-400-1-6STSC11 (2) MQV0200/0500: SS-810-1-8STSC11
VCR fitting No.	MQV9200/9500/0002/0005/0020/0050: SS-4-VCR-1-00032-EP-SC11	MQV9200/9500/0002/0005/0020/0050: SS-4-VCR-1-00032SC11

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