

CMQ9500/0002

Digital Mass Flow Controllers (Low Flow Type)

The CMQ series is a high-performance digital mass flow controller using a thermal flow speed sensor, a μ F (micro flow) sensor developed by Yamatake as a sensing element and a proportioning solenoid valve with high-level actuator technology. The CMQ is a high-performance low-cost next-generation type controller developed for a general industry by incorporating the future-oriented, high-speed, wide-range flow control needs into the design.



Specifications

Item	Contents	
	CMQ9500	CMQ0002
Valve type	Proportioning solenoid valve	
Valve operation	Normally closed (N.C)	
Standard full scale flow rate (Nitrogen conversion value)	0.5L/min (standard)	2.0L/min (standard)
Gas type	Nitrogen, air, oxygen, argon, CO ₂ , Gas (LNG), Methane 100%, Propane 100%, Butane 100% (gases must be dry and exclude rusting components - chlorine, sulfur or acid)	
Control range	1 to 100%FS	
Response time	0.5s max. to reach set point ($\pm 2\%$ FS)	
Valve output renewable cycle	10ms	
Accuracy	$\pm 2\%$ FS	$\pm 1\%$ FS
Reference differential pressure	9.8kPa	98kPa
Pressure resistance (maximum)	980kPa	
Operating temperature	-10 to +60°C	
Humidity	10 to 90%RH (no condensation allowed)	
Flow rate Setting	Setting method	① Key operation (indicator model) ② External setting voltage input ③ Communication (RS-485 model)
	Setting input voltage range	0 to 5V/1 to 5Vdc (functional setting changeable by external changeover input)
Flow Rate Indication (indicator model)	Indication method	7-segment LED, 4-digit
	Indication accuracy (as standard temperature and pressure differential)	$\pm 2\%$ FS ± 1 digit $\pm 1\%$ FS ± 1 digit
Integration Function (Indicator model)	Indication and setting range	0.01 to 999,999.99L 0.1 to 9,999,999.9L
	Indication and setting resolution	0.01L 0.1L
Flow Rate Output	Standard voltage range	0 to 5V/1 to 5Vdc (changeable by functional setting – external input)
	Accuracy	$\pm 0.5\%$ FS (Input impedance of a connected device must be 100k Ω min.)
Alarm and Event Output	Alarm output: 1 Event output: 2 30Vdc 30mA max. (Open collector non-insulation type output)	
External Change-over Input	External 3-step change-over input (OPEN/GND/5V): 1 point External switch input: 3 points	
Reference Voltage Output	5.0Vdc $\pm 5\%$ 5mA max.	
Power Supply	15 to 24Vdc, consumption current 300mA max.	
Material in gas flow passage	SUS316, Teflon, viton	
Weight	Approx. 1.2kg	

Selection Guide

Example: CMQ9500BSUN000000

Table	Selection			Description
	CMQ	↓	↓	
I Basic Model No.	CMQ			Mass flow controller
II Flow rate range	9500	<input type="radio"/>	<input type="radio"/>	0 to 0.5L/min (standard)
	0002	<input type="radio"/>	<input type="radio"/>	0 to 2.0L/min (standard)
III Indication	B	<input type="radio"/>	<input type="radio"/>	With indicator
	C	<input type="radio"/>	<input type="radio"/>	With separated indicator
IV Material	S	<input type="radio"/>	<input type="radio"/>	SUS316
	U	<input type="radio"/>	<input type="radio"/>	9/16-18UNF
	S	<input type="radio"/>	<input type="radio"/>	1/4 Swagelok
VI Gas	N	<input type="radio"/>	-	Air, Nitrogen (Setting changeable to standard applicable gases)
	S	-	<input type="radio"/>	Oxygen
VII Option (1)	0	<input type="radio"/>	<input type="radio"/>	None
VIII Option (2)	0	<input type="radio"/>	<input type="radio"/>	None
IX Option (3)	1	<input type="radio"/>	<input type="radio"/>	RS-485 communication (CPL)
	0	<input type="radio"/>	-	None
X Option (4)	0	<input type="radio"/>	<input type="radio"/>	None
	1	<input type="radio"/>	<input type="radio"/>	Oil elimination process used on gas passage material
XI Option (5)	0	<input type="radio"/>	<input type="radio"/>	None
	D	<input type="radio"/>	<input type="radio"/>	With test data
XII Design code	0	<input type="radio"/>	<input type="radio"/>	Product version

Control Flow Range and Resolutions [Unit: L/min (standard)]

Type of Gas	CMQ9500		CMQ0002	
	Control flow range	Setting/indication resolution	Control flow range	Setting/indication resolution
Air, Nitrogen	0.004 to 0.500	0.002	0.02 to 2.00	0.01
Argon	0.004 to 0.500	0.002	0.02 to 2.00	0.01
CO ₂	0.003 to 0.300	0.001	0.01 to 1.20	0.005
Oxygen	0.004 to 0.500	0.002	0.02 to 2.00	0.01
City gas (13A)	0.004 to 0.500	0.002	0.02 to 2.00	0.01
Methane 100%	0.004 to 0.500	0.002	0.02 to 2.00	0.01
Propane 100%	0.002 to 0.160	0.001	0.006 to 0.6	0.002
Butane 100%	0.002 to 0.160	0.001	0.006 to 0.6	0.002

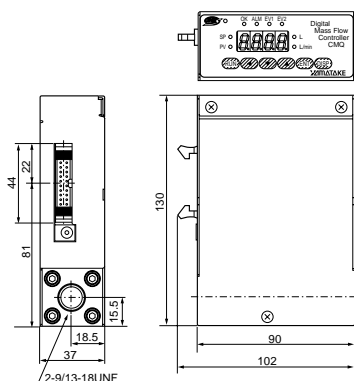
Optional Parts

Part No.	Description
81446681-001	Dedicated cable with connectors
81446682-001	AC adapter
81446683-001	Flow rate setting potentiometer

Dimensions

(unit:mm)

• Model with/without indicator



• Cable 81446681-001

