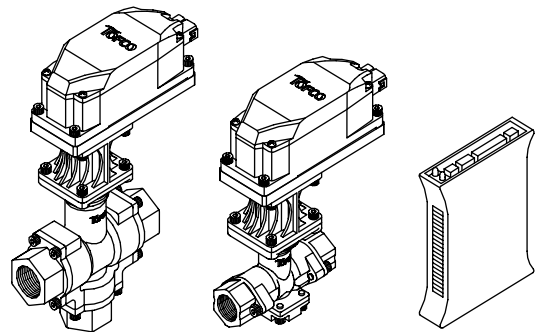


MCV-M/FCV-M Series Flow Controller

Instruction Manual

Before use, please read through this Instruction Manual with caution. Please always keep this Instruction Manual at hand for your quick reference when necessary.



To start with

MCV-M/FCV-M Series is a flow controller, employing a high performance stepping motor. (No oil applied specification) So many functions enables you to build up a versatile systems. This manual contains general descriptions, specifications and instructions for installation and wiring. Before operating the device, please read this manual with caution and use it with a good understanding. And also keep this manual at hand for your quick reference when necessary.

Safety precaution

Warning This is the safety-alert symbol which indicates the potential for suffering from the physical harm such as an electric shock, burn and such which might be caused, if not compliant with instructions described here.

Caution This is the safety-alert symbol which indicates the potential to cause a failure of product, if not compliant with instructions described here.

Caution

As to piping

- Blow air into pipe (Flashing) and make it clean in order fully to get rid of chip, oil contents, dirt deposited inside.
- When piping, prepare with two wrenches to make up pipe supporting, one for applying it to the hexagonal part of fitting, and other to the joint so as not to exert any additional force on the plastic resin of the main body.
- Do not blow air directly to the Flow Controller by using an air gun. (It may cause damage to the internal sensor.)
- Do not use in wrongly flow direction.
- Do not use in wrongly installed posture.

Caution

As to water source

- Install a strainer more than 100mesh to supply side near in the vicinity of this product.
- Do not flow fluid containing air bubbles at all times.
- Do not use in the environment where pulsates at all times.

Specifications

Requirements	Contents		
Number of Port	2 ports		3 ports (Mixing)
Model	FCV-M25	FCV-M32	MCV-M32
Orifice Size	3.0, 4.5, 6.5, 7.4	7.4, 9.5	10.0
Cv (Max)	0.36, 0.85, 1.68, 2.61	2.61, 4.63	3.71
Connection Size	Rc 1/4, Rc 3/8, Rc 1/2	Rc 1/2, Rc 3/4	Rc 3/4, Rc 1
Fluid Type	WATER and Other type of Fluid		
Fluid Temperature in Use	0 ~ +60 / 0 ~ +130 / -20 ~ +100 / -40 ~ +130 / 0 ~ +180		
Ambient Temperature	0 ~ +50 (Non condensing & No freezing at use of Inside installation)		
Ambient Humidity	30 ~ 85% RH (Non condensing & No freezing at use of Inside installation)		
Maximum Applied Differential Pressure for Shutoff	0.4 MPa		
Withstand Pressure	1.0 MPa (Gauge)		
Power Source	DC 24V ± 10%, Max 250mA		
I/O Signal	4 - 2.0 mA / 1 - 5 V / 1 - 10 V (Option)		
Input Impedance	20 (4 - 2.0 mA) / 1M (1 - 5 V / 1 - 10 V)		
Output Allowance Load Resistance	Below 300 (4 - 2.0 mA) / Over 1k (1 - 5 V / 1 - 10 V)		
Drive System	Stepping Motor		
Resolution (on valve motion)	3400		
Response time	6 sec (Opening 0 to 100%)		
Hysteresis	Below 1.5%		
Water & Dust Proofing	Equivalent to IP67		
Mounting Position	Vertical and Horizontal direction (Do not install actuator downward)		
wetted Material	SUS13, SUS304, PTFE (In-Filled), NBR/FPM/EPDM/Si		
Oil for wetted part	Grease Free (Standard)		
Accessories	Amplifier, Power cable (1m), Control signal cable (2m), I/O cable (2m)		
Weight	Valve	1500g	1700g, 1800g
	Amplifier	100g	
	cables	300g	

Oring Selection Table

Materials	Temperature Range (Oring itself)	Temperature Zone (Symbol)	Feature (As reference)
NBR (Category 1 Type A)	-30 ~ +100	S/C A	Excel in oil and abrasion resistance
FPM (Category 4 Type D)	-15 ~ +200	S/H A/H B	Excel in oil chemical and heat resistance
EPDM	-45 ~ +130	S/H A/C A/C B	Excel in weather and ozone resistance
Si (Category 4 Type C)	-50 ~ +200	S/H A/H B/C A/C B	Excel in heat and cold resistance

Cv standard table

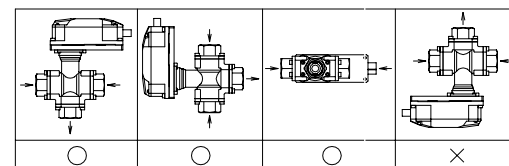
MCV-M	Differential Pressure				(L/min)
	0.1 MPa	0.2 MPa	0.3 MPa	0.4 MPa	
Cv	3.71	53.5	75.7	92.7	107.0

FCV-M	Differential Pressure				(L/min)
	0.1 MPa	0.2 MPa	0.3 MPa	0.4 MPa	
Cv	0.36	5.2	7.3	9.0	10.4
	0.85	12.3	17.3	21.2	24.5
	1.68	24.2	34.3	42.0	48.4
	2.61	37.6	53.2	65.2	75.3
	4.63	66.8	94.4	115.6	133.5

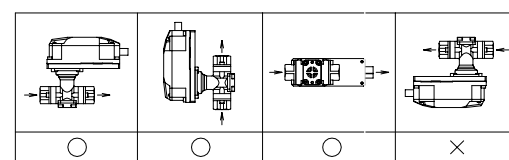
How to make up pipe

- When piping, prepare with two wrenches to make up pipe, one for applying it to the hexagonal part of fitting, and other to the joint so as not to exert any additional force on the plastic resin of the main body.
- Carefully connect the flow Controller to the pipe so as not to make a mistake about a flow direction.
- When using a sealing tape, wrap it on the thread so as to leave one and half or two thread heads.
- Installation postures call attention, when installing.

MCV-M



FCV-M

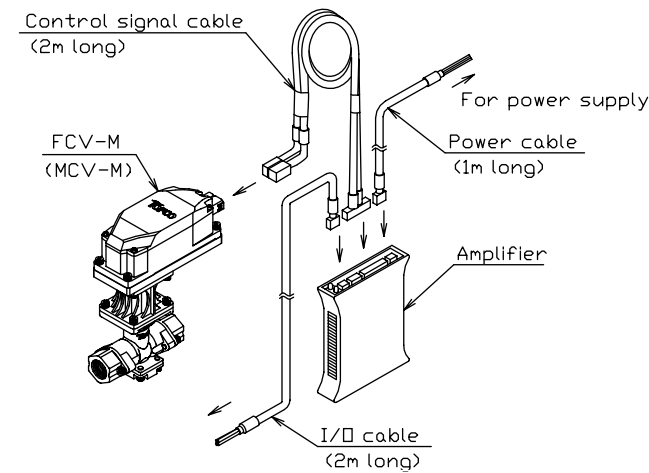


How to wire

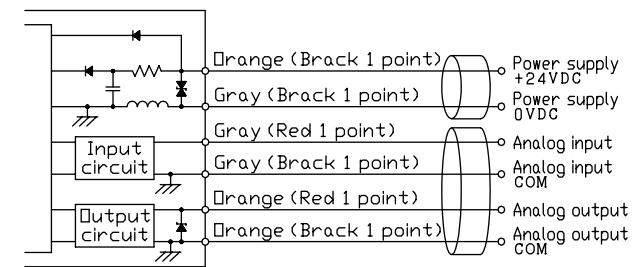
- Connect cables as shown below.
- For I/O cable, connect them where necessary.

Warning

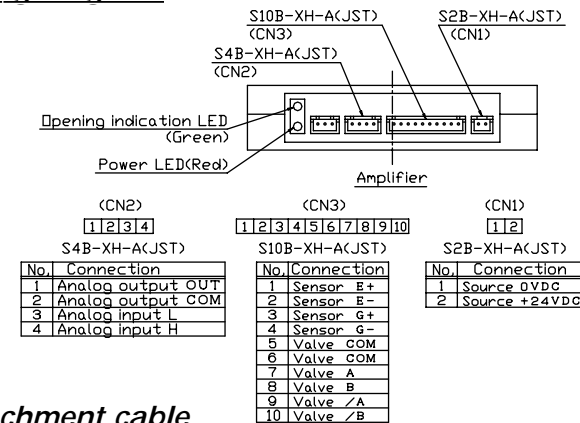
Make sure that power source has been turned off before wiring. Otherwise it may cause an electric shock.



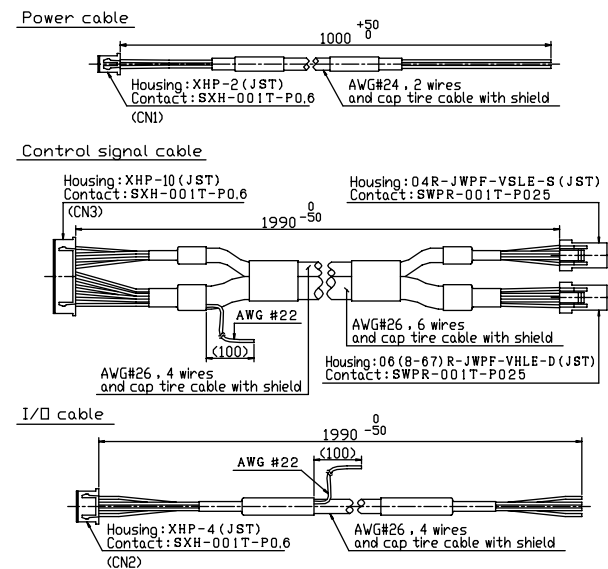
I/O circuit



Wiring diagram



Attachment cable



Feature description

Functions of fully closing

Valve moves automatically to a fully closing side by setting the analog input to 4mA.

Analog output function

By using analog output signal (4-20mA standardized) proportional to flowrates, the flowrate can be externally monitored, and not only improves it the yield of production, but dedicating to search for a cause of failure.

LED display

Power LED (Red)

Power supply on, off, and the error are displayed.

Display	Cycle	Lighting time	Contents
Turned off			Power supply off
All lighted			Power supply on
Long blinking	2.0 sec	1.0 sec	Overcurrent error
Short blinking	0.25 sec	0.01 sec	Memory error

Opening indication LED (Green)

Open times are displayed.

Display	Contents
Turned off	Full closed
Early blinking	Approx. 5.0%
All lighted	Full opened

Caution

Storage location

Avoid storing under the following environment.

- Storing in locations where are filled fully with sea breeze and corrosive gas.
- Storing in a location where is subjected to direct sunlight.
- Storing for a long period in locations where is other than at 5 - 35 temperature and 45 - 85% in humidity.

As to installation

- Install in a location where does not splash water.
- Install in locations where are not subjected to direct sunlight and sea breeze.
- Install in locations where is 45 - 85% in humidity and where condensation will not occur.
- Install in a location where corrosive gas does not exist.
- Install in a location where is less mechanical vibration.

Warning

As to handling

- In no event shall flow controller use at more than max operating temperature and pressure resistance.
- Serial number of the Amplifier and the valve must be the same.
- Operate in the environment where condensation will not occur.
- Use power source more than 24VDC ± 10% and 250mA.
- In no event shall it be disassembled. (If disassembled, it shall not covered by warranty).
- Do not let foreign materials mix into fluid (Such as sealing tape).