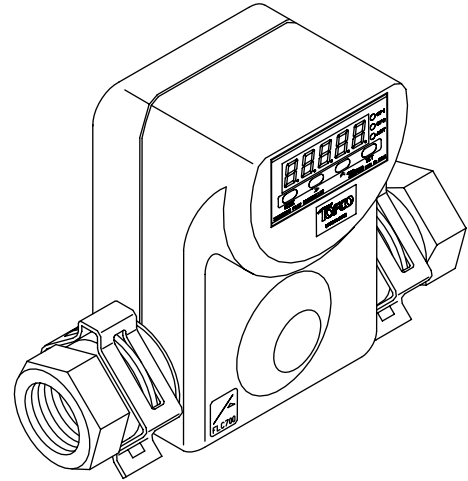


FLC700 Series Flow Controller (A type integrated with indicator) Instruction Manual

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



Specifications

Requirements	Contents	
Name of product	Flow Controller	
Types	FLC705	FLC710
Name of fluid	WATER	
S. gravity	1.0	
Viscosity	1.0mm ² /s(1.0cp)	
Ranges of flow control	5 – 50 L/min	10 – 100L/min
Flow accuracy	FS ± 5%	
Operating pressure	0.2 – 0.4 MPa(Gauge pressure)	
Withstand pressure	0.5 MPa(Gauge pressure)	
Operating control pressure	P=0.2 – 0.4 MPa(Gauge pressure)	
Operating fluid temperature	0 – 60 (No freezing and no condensation)	
Heat resistance	80	
Ambient temperature	0 – 50 (No freezing and no condensation)	
Pipe connection	Rc3/4, Rc1	
Materials for wetted part	PPS – GF30, POM – CF20, SUS304, SCS13, HNBR, FPM, Alumina and PTFE(Filling materials contained)	
Power output section	Stepping motor	
Flow sensor	Axial-flow fin rotary type(Type HF-40)	
Valve operating speed	Approx 3 sec. (Fully opened Fully closed)	
Analog input	4-20mA (Standard) Internal resistance:20 (35VDC 70mA at max)	
Analog output	4-20mA(Standard) Less than 300 in load resistance	
Alarm contact	Two contacts(Relay and one make-contact c), Upper/upper limits, Upper/lower limits and lower/lower limits 35VDC 0.1A at max (Life span of contact: More than 100 thousand times.	
Indication	Setting flowrate values or measured flowrate value or opening indication Red LED 7 segments and 5 digits	
Power supply	24VDC ± 10% Max 450mA (At the time of standby: Approx 100mA)	
Standard accessories	Accompanying cable (2m) AWG#26, 12 wires and cap tire cable with shield	
Dimensions	Valve	150x118x85(Pipe size: Rc1) 138x118x85(Pipe size: Rc3/4)
Weight	Rc 1 Rc 3/4	Approx 1.6 kg (Including cable) Approx 1.5 kg (Including cable)

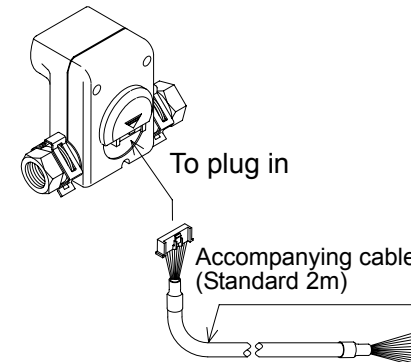
How to wire

- Connect cables as shown below.
- Plug the connector of the accompanying cable into the connector located at the back of the main body.



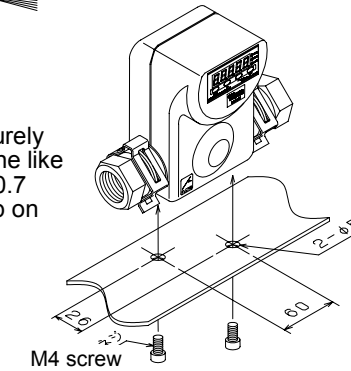
Warning

Make sure that power supply has been turned off before wiring. If not, it may cause an electric shock.



How to fix the main body

As shown in the drawing below securely fix the two places of the panel and the like with a metric coarse screw of M4 x 0.7 pitch of screw. (Thread is 9mm deep on the main body side.)



Feature description

Each mode function to set flowrate

For setting flowrate by parameter mode
(It controls over targeting the flowrate values entered on the display screen)
For setting flowrate by external analog input mode(Standard is 4-20mA)
(Setting flowrate is variable by external analog input and can be externally performed by remote control)
For setting flowrate by preset mode
(Easy switching can be made for maximum four kinds of setting flowrates that have been preset, through the connecting method of three pieces of terminals)

Functions of fully closing

Valve moves automatically to a fully closing side either by setting the flowrate to 0 L, or by setting the analog input to 4mA. (A fully closing also can be set by setting 0 L through the preset mode as well.)
Although [bASIC] is displayed on the screen during the move to fully closing, it does not denote abnormal in function.
Note that it does not warrant that water is fully stopped flowing, although the valve has been fully closed.

Alarm contact function

Turning ON/OFF can be carried out based on the preset flowrate(2 points) through the relay contact. In addition, hysteresis values is settable at its option in order to protect it from chattering.

Controlling ON/OFF function

Controlling ON/OFF function can be made by turning ON/OFF the preset terminal. It intends to function at high speed responses, such as is fully closed in conjunction with the electromagnetic valve and as repeating the setting flowrate. It is very efficient for the valve to be used very often and to improve the durability.

Analog output function

Through an analog output signal (4-20mA standardized) proportional to flowrates can the flowrate be externally monitored, and not only improving the yield of production, but it contributes to searching for a cause of failure.

Function of valve dead zone

It functions not to make the valve move more than necessary.
It serves to improve a valve durability and to save power. In addition the range of the dead zone is adjustable at its option.

Calibrating function of input/output

A fine adjustment can be made in the input and output at its option.
For more information about the functions, see instruction manual of instantaneous flow adjustable indicator attached separately.

To start with

FLC-700 Series is a flow controller for cooling water with internal flowsensor, employing a high performance stepping motor. (Consult us with your specification with no oil applied.) So many functions enables you to build up a versatile systems. This manual contains general descriptions, specifications and instructions about installation and how to connect. Before operating the Flow Controller, 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 Failure to heed the instructions described here in this Manual can result in serious physical injury, such as an electric shock and burn injury, etc.

Caution Failure to heed the instructions described here in this Manual can result in leading to the failure of the product.

Caution

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 flowsensor.)
- Do not use in wrongly flow direction.
- Do not use in wrongly installed posture.

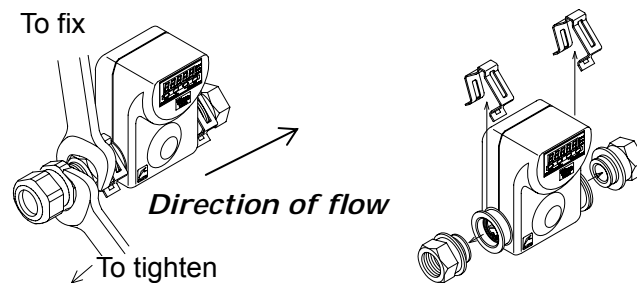
Caution

Water source

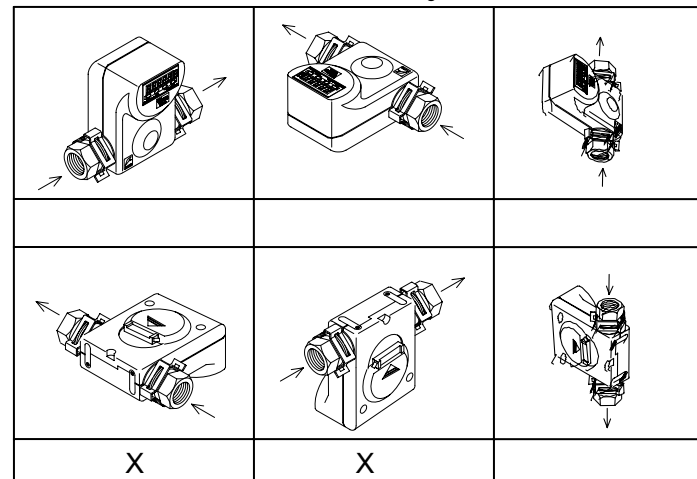
- Install a strainer more than 100mesh to supply side near in the vicinity of this product.
- Do not flow fluid containing air bubbles at all times.
- Do not use in the environment where pulsates at all times.

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.

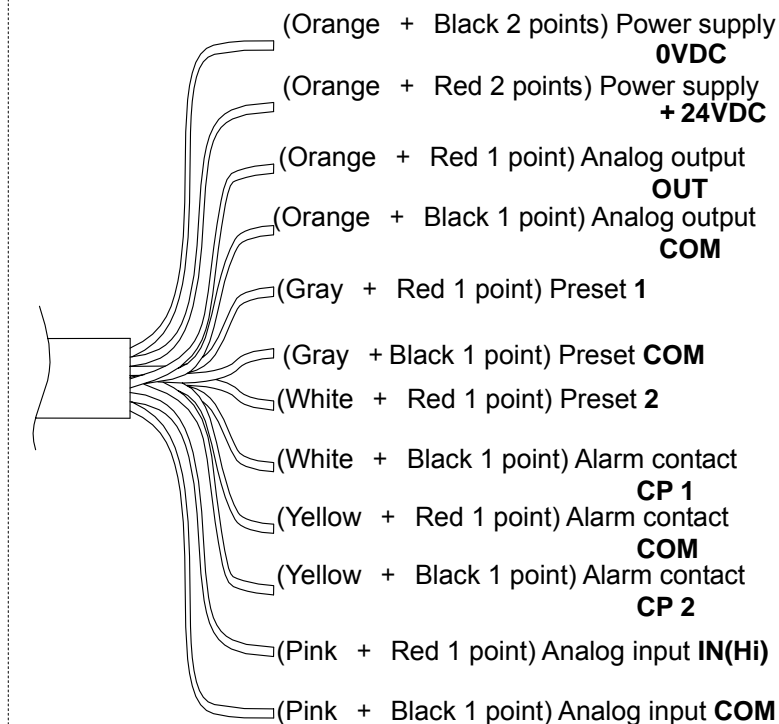


- Installation attitudes call attention, when installing.



Note) No mixing of air bubbles shall be caused.

Wiring diagram



Error display

Error No.	Contents	Measures to take and action to be done
E r 02	Failure of the memory to back up the setting contents	It is needed to repair hardware or to replace it.

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 of temperature and 45 – 85% in humidity.

Installation

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

Warning

Handling

- In no event shall flow controller be used at more than maximum operating temperature and pressure resistance.
- The same serial number of the both, the Controller and the valve must be used.
- Operate the Flow Controller in the environment where is free from freezing.
- Use power supply more than 24VDC ± 10% and 0.45A.
- 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 and processed burr).

TOFCO CORPORATION

TOFCO

Headquarters/ Tel:81-42-593-8811
Tokyo Sales Office/Tel:81-42-592-6111
Osaka Sales Office/Tel:81-64-809-0411
Fukuoka Sales Office/Tel:81-92-482-2101
Sendai Sales Office/Tel:81-22-218-2451