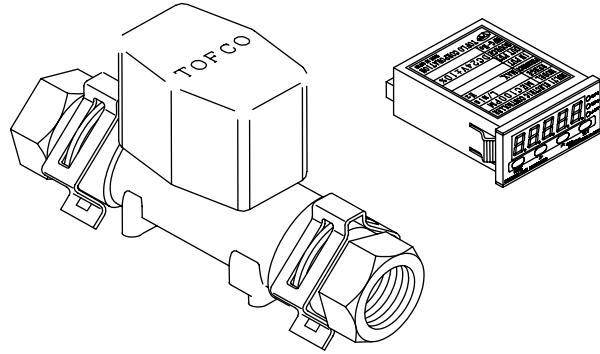


# FLC700 Series Flow Controller (Built-in type into devices)

## Instruction Manual

Before using the Flow Controller, please read this Instruction Manual with caution. Please always keep this Instruction Manual at hand for your quick reference when necessary.



### Specifications

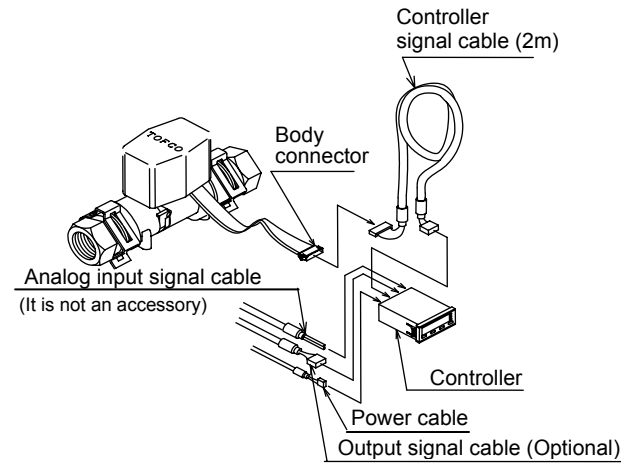
Requirements	Contents	
Name of product	Flow Controller	
Types	FLC705	FLC710
Name of fluid	WATER	
S. gravity	1.0	
Viscosity	1.0mm <sup>2</sup> /s(1.0cp)	
Control range of flow	5 - 50 L / min	10 - 100 L / min
Flow accuracy	FS ± 5%	
Operating pressure	0.2 - 0.4 MPa(Gauge)	
Pressure resistance	0.5 MPa(Gauge)	
Operating control pressure	P=0.2 - 0.4 MPa(Gauge)	
Operating fluid temperature	0 - 60 ( Non freezing and non condensing )	
Heat resistance	80	
Ambient temperature	0 - 50 (Non condensing and non freezing)	
Pipe connection	Rc 3/4 · Rc 1	
Wetted materials	PPS - GF30, POM, SUS304, SCS13, HNBR, FPM, Alumina, PTFE(Filler contained)	
Power part	Stepping motor	
Flow sensor	Axial-flow fin rotary type (HF-40 type)	
Valve operating speed	Approx 3 secs. ( Full opening full closing )	
Analog input	4-20mA (Standardized) Internal resistance:20 (35VDC 70mA at max)	
Analog output	4-20mA(Standardized) 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 (Contact life span: More than 100 thousand times)	
Display	Setting values of flowrate or measured value of flowrate or indication of the opening degree Red LED 7 segments, 5 digits	
Power supply	24VDC ± 10%, Maximum 450mA (At the time of standby: Approx 100mA)	
Standard accessories	Power cable ( 1 m ) Control signal cable ( 2 m ) Output signal cable ( 2 m, Option )	
Dimensions	Valve	150 x 93 x 54 (Pipe size : Rc 1) 138 x 93 x 54 (Pipe size : Rc 3/4 )
Weight	Rc 1	Approx 1.3 kg (Including option)
	Rc 3/4	Approx 1.2 kg (Including option)

### Wiring

- Connect cables as shown in the figures below.
- For output signal cable and analog signal cable, connect them where necessary.

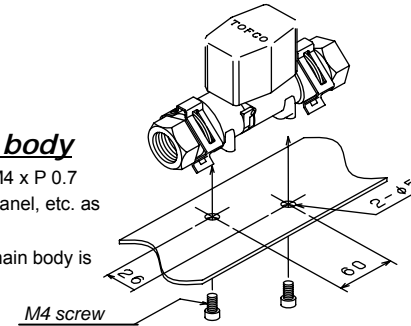
### Warning

Before connecting wires, make sure that power supply has been turned off. If not, it may cause an electric shock.



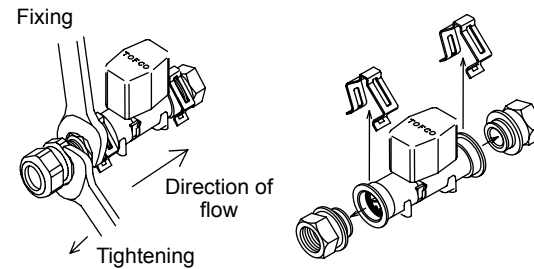
### How to fix the main body

Fix the two places with screws of M4 x P 0.7 (Metric coarse screw thread) to a panel, etc. as shown in the figures below.  
( Thread depth on the side of the main body is 9 mm deep.)

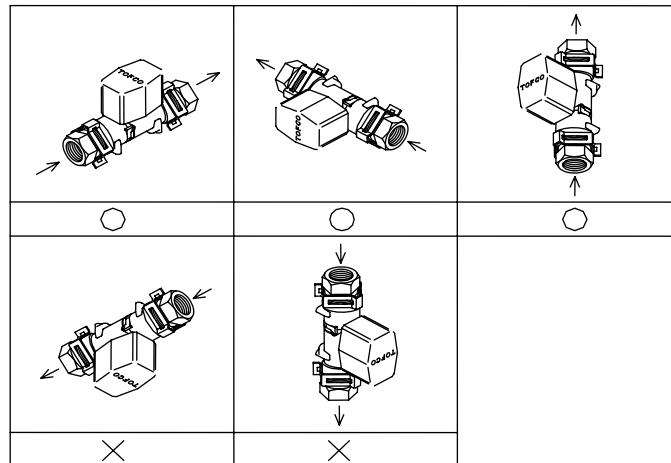


### How to make up pipe

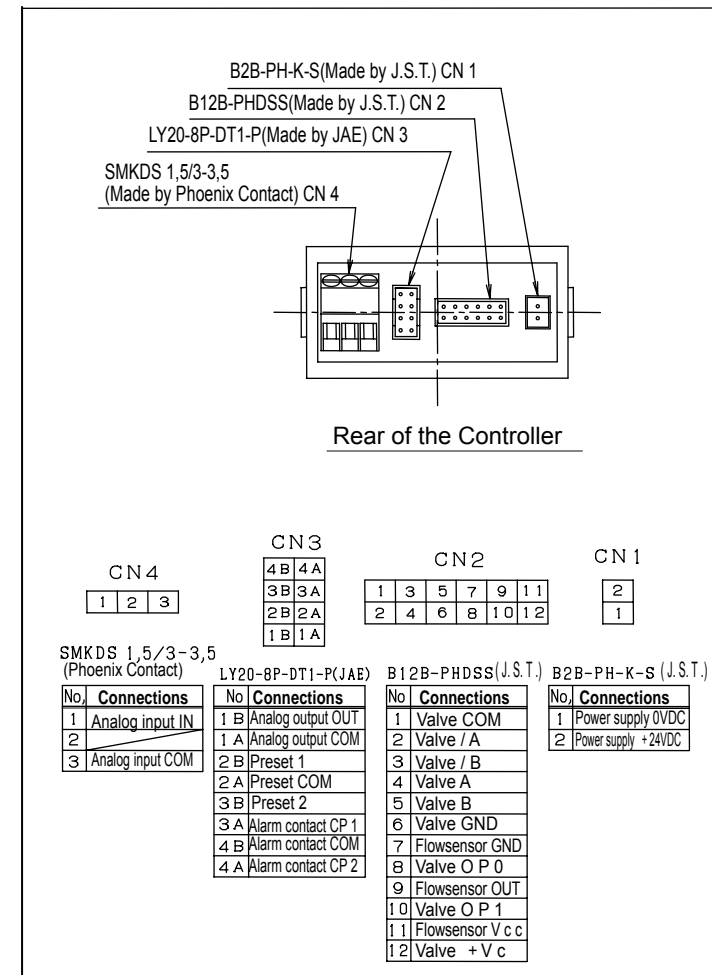
- When making up pipe and connecting couplings as shown in the figures below, it should be conducted with a double wrench so that it may not exert any additional forces on the plastic resin of the main body. If the work is hard to do so in relation to the work space, remove the adapters as shown in the figure below, and reconnect them to the main body in the disassembled sequences, after having made up pipe.
- Carefully connect the flow Controller to the pipe so as not to install in a wrong direction of flow.
- Using a sealing tape, wind the tape on the thread so that one and half or two screw heads can remain.



- Installing attitude calls attention, when installing.



### Wiring diagram



### Feature description

#### Each mode function to set flowrate

For setting flowrate by parameter mode (It controls over targeting the flowrate entered on the display screen)  
For setting flowrate by external analog input mode (4-20mA standardized) (A variable setting flowrate by means of external analog input and can be externally remote-controlled.)  
For setting flowrate by preset mode (Maximum four points ( 3 + 1 ) of the setting flowrates which have been preset beforehand can be easy to change over depending on the connecting method of three pieces of terminals)

#### Fully closing function

If setting the flowrate to 0 L, or setting the analog input to 4m, a valve moves automatically to a fully closing side. ( A full closing is can be also made, if the preset mode has been set the 0 L in the same manner. )  
Although [bASIC] is displayed on the screen during moving to a fully closing, it does not denote abnormal in function.

#### Alarm contact function

Based upon the preset flowrate(2 points), turning ON/OFF can be made at the preset value by means of a relay contact. In addition, hysteresis values are settable arbitrarily in order to protect them from chattering.

#### ON/OFF function on the control

ON/OFF on the control can be conducted by means of ON/OFF of the preset terminal. It intends to function at such high speed responses as is fully closing and repeating the setting flowrates in combination with the electromagnetic valve. It is useful in improvement of such durability as a valve is operated very often.

#### 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 also dedicating to search for a cause of failure.

#### Function of valve dead zone

It functions not to let the valve move more than necessary. It dedicates to improve a valve durability and to save power. In addition the range of the dead zone is adjustable arbitrarily.

#### Calibrating function of input/output

A fine adjustment can be made arbitrarily in the input and output.  
For more details about the functions, see instruction manual of the instantaneous flow adjustable indicator in the separate volume.

### To start with

FLC700 Series is a flow controller for cooling water, which employs a high performance stepping motor and a type with internal flowsensor. So many built-in functions enable you to build up a versatile systems. This manual contains a general description, specification, installation and how to connect regarding the (FLC700 Series Flow Controller).  
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

The instructions given here in this manual are provided in order to use the Flow Controller properly and safely and to prevent you and any other people from personal injury and property damage. Be sure to comply with them.

**Warning** Failure to comply with these instructions included here in this manual may result in suffering from personal injury (Electric shock or burns, etc.).

**Caution** Failure to comply with these instructions included here in this manual may result in leading to malfunction of the product.

### Caution

#### Piping

- Blow pipe interior (Flushing) away foreign matter such as grinding chip, oil content, dust, etc., or make it clean fully so that they may not enter into the pipe.
- When piping, making up pipe should be conducted with a double wrench so that it may not exert any additional forces on the plastic resin of the main body.
- Do not blow air directly to the Flow Controller by an air gun, etc.. (It may cause damage to the internal flowsensor.)
- Do not use the Flow Controller in wrong direction of flow.
- Do not use the Flow Controller in wrongly installing attitude.

### Caution

#### Water supply

- Install a strainer more than 100mesh to the supply side in the vicinity of this product.
- Do not flow the fluid in which air bubbles are contained at all times.
- Do not use the Flow Controller in the environment where pulsation occurs at all times.

### Error display

Error No.	Contents	Remedy
E r 02	Failure of memory which performs to backup 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 considerable sea breeze and corrosive gas will occur.
- Storing in a location where it is subjected to direct sunlight.
- Storing for a long period in any locations other than temperature between 5 and 35 and humidity between 45% and 85%.

#### Installation location

- Install in a location where it is not splashed with water.
- Install in locations where it is not subjected to sea breeze and direct sunlight.
- Install in locations where humidity is between 45% and 85% and where condensation of humidity will not occur.
- Install in a location where corrosive gas will not occur.
- Install in a location where mechanical vibrations are minimal.

### Warning

#### Handling

- In no event should the Flow Controller be used in excess of the max operating temperature and pressure resistance.
- Use the Flow Controller in which the serial number of the Controller and the valve are the same.
- Operate in the environment where it is free from freezing.
- Use power supply of more than 24VDC ± 10% and 0.45A.
- In no event should it be disassembled.(If disassembled, it shall not covered by warranty).
- Do not let foreign materials mix into fluid (Such as sealing tape, etc..).