FLC-E

- Flow controller with built-in electromagnetic flow meter
- Stepper motor incorporated, enhancing reliability and durability
- PID control and unique valve structure ensure highly responsiveness and stability
- No clogging in the flow path and less frequent maintenance



Model number selection Base Fluid Flow rate Unit Connection 1/0 Display direction Max. flow Specialized item(s) name sizes type FLC-E 0 Bottom-to-top R Left-to-right Right-to-Left 4 - 20 mA 0 – 5 VDC 1 – 5 VDC Ν Rc1/4 02 Rc3/8 03 Rc1/2 04 Rc3/4 05 Rc1 Max. $\mbox{\it Max}.$ flow rate selected from the available flow range below В L/min Specialized unit Water Specialized fluid *1 9 Flow range Connection size Rc1/4, Rc3/8, Rc1/2 0.5 - 5 L/min 010 Rc3/8, Rc1/2 1 – 10 L/min $2-20\,L/min$ Rc1/2 5 – 50 L/min Rc3/4, Rc1 020 10 – 100 L/min Rc1





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 $^{*1:}$ Specify fluid name and flow rate unit at the end of Model number selection

Features

Electromagnetic flow meter

Electromagnetic flow meter has no moving parts in the flow path, cutting down maintenance time and avoiding a clogging problem, compared with turbine and vortex type flow meters. Air purge is also available.

Operation mode

1. Local mode (Hand-manual)

(Target flow rate can be selected on display)

2. Remote mode (Analog input signal) (Target flow rate can be selected with analog input)

3. Preset mode
(Up to 4 target flow rates can be selected in advance by using three wires)

Alarm tripping

2 of alarm outputs that you set in advance are available with relay turning ${\rm ON}$ / ${\rm OFF}$. In addition, hysteresis value can be set to prevent this product from chattering.

Flow output (analog signal)

Flow rate can be remotely monitored by having analog output signal that is proportional to flow rate. This output signal may help for root cause analysis.

Dead zone

This setting makes the valve life longer by suppressing valve behavior, improving durability and saving power. Dead zone range is selectable.

Flow control ON / OFF

Control can be activated or deactivated by using preset wires. This function helps when quick valve control is required, such as for operation that needs to repeat a cycle of valve shut-off and valve open, resulting in durability enhancement.

Specifications

ltem			FLC-E010			FLC-E020			
Flow range		0.5 – 5 L/min	1 – 10 L/min	2 – 20 L/min	5 – 50 L/min	10 – 100 L/min			
Orifice size		φ3.0	φ4.5	φ6.0	φ12.0	φ13.5			
Fluid name		WATER, cooling water, etc. (Cond	WATER, cooling water, etc. (Conductivity must be greater than 50 µs/cm)						
Flow accuracy		±5% of F.S.	±5% of F.S.						
Operating pressures		0.15 — 0.4MPa(G), Max. 0.5MPa(G	0.15 – 0.4MPa(G), Max. 0.5MPa(G), Required differential pressure: 0.15MPa						
Response time		Approx. 8s	Approx. 8s						
Fluid temperatures		0 – 60°C (Heat resistant temp: 80'	0 – 60°C (Heat resistant temp: 80°C) Non-condensing and freezing						
Operating temperatures		0 – 50°C (Non-condensing and fre	0 – 50°C (Non-condensing and freezing)						
Input		Selecting flow rate either with:	Selecting flow rate either with:						
	Setpoint	*4-20 mA (Input impedance: 20 Ω	*4-20 mA (Input impedance: 20Ω)						
	(Analog x1)	or	or						
		*0-5 VDC / 1-5 VDC (Input impeda	*0-5 VDC / 1-5 VDC (Input impedance: 1 $M\Omega$)						
		Selecting flow rate with preset wi	Selecting flow rate with preset wires.						
	Preset	(Up to 4 points available)							
		Turning Flow Control ON /OFF	Turning Flow Control ON /OFF						
Output	Flow	Measured flow rate: 4-20 mA (Loa	Measured flow rate: 4-20 mA (Load resistance: \leq 300 μ)						
	(Analog x1) *	0-5 VDC / 1-5	0-5 VDC / 1-5 VDC (Load resistance: \ge 1 k μ)						
	Alarm	Relay output: 2 outputs (upper / u	Relay output: 2 outputs (upper / upper limits, upper / lower limits, lower / lower limits) 35 VDC, max. 0.1 A						
Valve shut-off		Valve fully closes when selecting (Valve fully closes when selecting 0 L/min 💥						
Value on display		Instantaneous flow rate / selected	Instantaneous flow rate / selected flow rate						
Power source		24 VDC ±10%, Max. 450 mA (App	24 VDC ±10%, Max. 450 mA (Approx.100 mA on standby)						
Cable length		2 m	2 m						
Wetted materials		SCS13, SS304, SS316L, PPS, PTFE (SCS13, SS304, SS316L, PPS, PTFE (filled), FKM, HNBR						
Weight	Body		Approx. 1800 g Approx. 2400 g						
	Cable	Approx. 150 g	Approx. 150 g						

^{*} Flow output signal is proportional to flow rate. e.g. 4 mA: 0 L/min, 20 mA: Max. flow rate. (Flow accuracy is ensured for the above specified flow ranges)

^{* 100%} complete shut off is not guaranteed.

Display and key panel



① **Display** Measured (Instantaneous) value / Setting menus and parameters / Error messages, etc indicated

(2) CP1 LED Turned on when CP1 alarm is tripped

③ CP2 LED Turned on when CP2 alarm is tripped

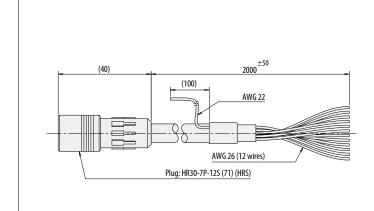
4 ACT LED Blinked with different speed, depending on sensing status of the flow meter

⑤ Mode Key Used when moving from Measurement mode to Setting mode

(6) Right arrow Key Used when moving between digits Used when changing values.

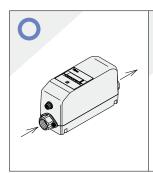
(8) Set Key Used when changing setting items

Cable



Wire color	Function		
Black	Power source 0 VDC		
Red	Power source 24 VDC		
Orange	Analog Output		
Green	Analog Output COM		
Yellow	Preset 1		
Gray	Preset COM		
Purple	Preset 2		
Peach	Alarm 1		
White	Alarm COM		
Magenta	Alarm 2		
Brown	Analog Input		
Blue	Analog Input COM		

Installation orientation



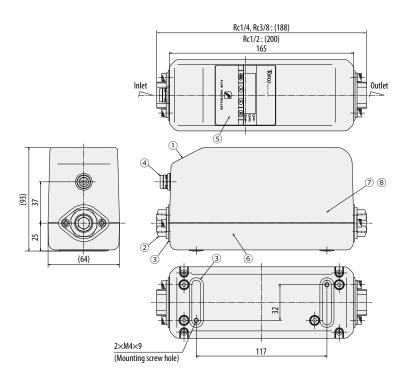




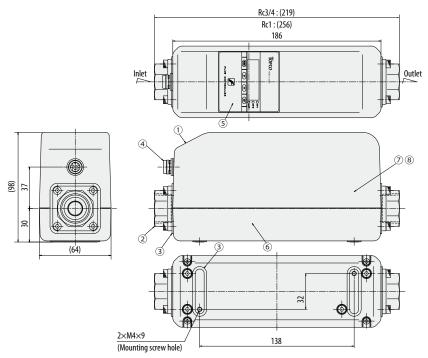




FLC-E010



FLC-E020



Materials

No.	Part name	Material	Note
1	Cover	ZDC2	Wine red metallic colored
2	Fitting	SCS13	SS304 Equivalent
3	Splash-proof gasket	NBR	
4	Water-proof connector	PPS etc.	
5	Controller	PC etc.	
6	Electromagnetic flow meter	PPS etc.	
7	Stepper motor	POM etc.	
8	Ball valve	SCS13 etc.	SS304 equivalent, etc.

Panel cut-out

