



## FINE SERIES

Small Size Plug-in Transducer  
Communication Unit

FCTT

## Monitoring Pressure, Flow, Temperature, Humidity, etc. via Communication Output

## ■ OUTLINE

This product is a plug-in type communication unit, which can isolate 2 circuits of DC current input or 2 circuits of DC voltage input to communication output. Usually used for monitoring analog signal of pressure, flow, temperature and humidity, etc. via RS-485 communication output (Modbus RTU).

## ■ FEATURE

- Withstanding voltage for input 1, input 2, communication output, aux. power and outer case is AC2000V (50/60Hz) in 1 minute insulating.
- Power supplied operation and communication operation can be checked by LED (green).
- Accuracy of converting is  $\pm 0.2\%$  and below.
- Standard socket is attached (Socket type name : FW11).



FCTT

23x76x125mm /180g

## ■ Type Name &amp; Specification Code

Type name		Specification Code				
F C T T		①	②	③	④	⑤
		① Input (Load resistance) <sup>(1)</sup>	② Output (Com. Protocol)	③ Transmission speed, Parity <sup>(2)</sup>	④ Auxiliary Power	⑤ Power fuse
0A2	DC0-50mV (approx. 1M $\Omega$ )	0C3	DC0-1mA (approx. 100 $\Omega$ )	0	F	1 No fuse
0A3	DC0-60mV (approx. 1M $\Omega$ )	0C4	DC0-5mA (approx. 100 $\Omega$ )	1		2 With fuse
0A4	DC0-100mV (approx. 1M $\Omega$ )	0C5	DC0-10mA (approx. 100 $\Omega$ )	2		
0A5	DC0-1V (approx. 1M $\Omega$ )	0C6	DC0-18mA (approx. 100 $\Omega$ )	3		
0A6	DC0-5V (approx. 1M $\Omega$ )	0C7	DC4-20mA (approx. 100 $\Omega$ )	4		
0A7	DC0-10V (approx. 1M $\Omega$ )			5		
0A8	DC1-5V (approx. 1M $\Omega$ )	0D4	DC $\pm$ 1mA (approx. 100 $\Omega$ )	6		
		0D5	DC $\pm$ 5mA (approx. 100 $\Omega$ )	7		
0B2	DC $\pm$ 50mV (approx. 1M $\Omega$ )	0D6	DC $\pm$ 10mA (approx. 100 $\Omega$ )	8		
0B3	DC $\pm$ 60mV (approx. 1M $\Omega$ )			Z		
0B4	DC $\pm$ 100mV (approx. 1M $\Omega$ )	ZZZ	Other than above <sup>(3)</sup>			
0B5	DC $\pm$ 1V (approx. 1M $\Omega$ )					
0B6	DC $\pm$ 5V (approx. 1M $\Omega$ )					
0B7	DC $\pm$ 10V (approx. 1M $\Omega$ )					

Note <sup>(1)</sup> Inputs of 2 circuits are the same.<sup>(2)</sup> Specify when ordering. Cannot change after purchase.<sup>(3)</sup> Please contact us if your required specifications are other than above.

## ■ COMMUNICATION OUTPUT

Items	Specification
Standard	TIA/EIA-485-A (2003)
Transmission method	2-wire half-duplex
Transmission synchronization	Asynchronous method
Transmission speed	9600bps/19200bps/38400bps (Specify when ordering)
Transmission code	NRZ
Start bit	1-bit
Data length	8-bit
Parity	NONE/ODD/EVEN (Specify when ordering)
Stop bit	1-bit
Error detection	CRC-16( $X^{16}+X^{15}+X^2+1$ )
Connection	By M3 screw (with FW11 socket)
Cable length	1000m (total length)
Address <sup>(4)</sup>	01-89(01H-59H) and 00(not communicate)
No. of connectable units	Max. 64 units <sup>(5)</sup> / 1 set
Transmission character	Parity
Termination resistor	Due to the short circuit of minus(-) and Ter. Terminals, resistor (100 $\Omega$ ) is connected in transmission route.

Note

<sup>(4)</sup> Even setting address as 00 or 90-99, there is no communication (communication not in use)<sup>(5)</sup> If connecting all with FCTT, only 32 units can be connected because each FCTT needs 2 connections (to 2 circuits). Maximum of connection is become less than 64.

## ■ AUXILIARY POWER

Items	Specification
Power and consumption VA	AC80-264V 50/60Hz (Rated voltage AC100/110V 3.5VA, AC200/220V 5.0VA) DC80-264V (Rated voltage DC100/110V 3.0W, DC200/220V 3.0W). AC, DC dual use
Inrush current (Time constant)	Rated voltage AC110V 50/60Hz 1.7A or below (approx. 1.8ms) Rated voltage AC220V 50/60Hz 3.3A or below (approx. 1.8ms) Rated voltage DC110V 1.2A or below (approx. 1.8ms) Rated voltage DC220V 2.4A or below (approx. 1.8ms)
Fuse	Rated current 160mA (when specify "with fuse")

## ■ SWITCHES AND DISPLAY

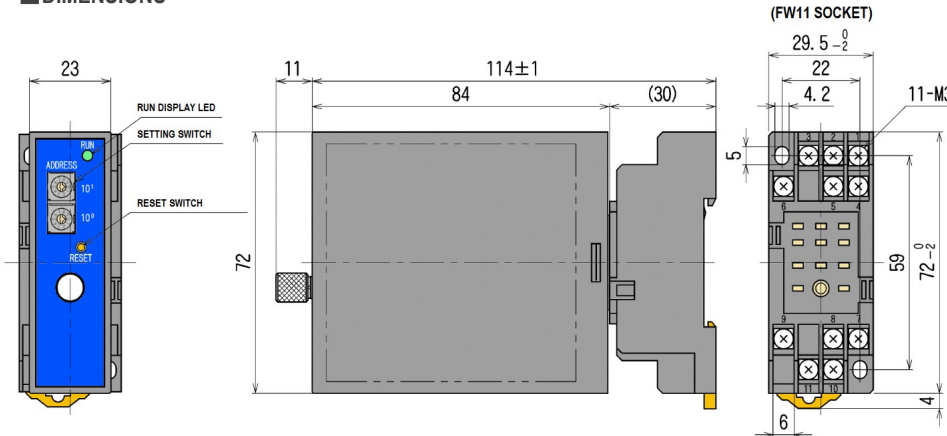
Items	Specification
Setting switches (10 <sup>1</sup> , 10 <sup>0</sup> )	Coded rotary switch type (2 digits) Address setting range : 1-89 (setting individually for tens and ones) Default setting when delivery: 00 (no communicate)
Reset switch	Software will be reset after pressing more than 3 sec.
RUN display (LED)	Light on Normal
	Light down in around 0.5sec One of below errors Transmission error, CRC error
	Light down on around 1sec Setting error (Change address while power is supplied)

# Small Size Plug-in Transducer Communication Unit FCTT

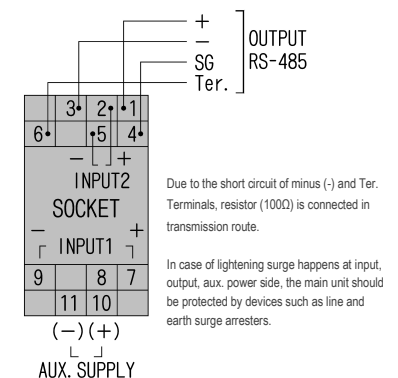
## ■ SPECIFICATIONS

Items	Conditions and Accuracy	
Conversion accuracy	$\pm 0.2\%$ (% against span)	
Effect of accident heat	$\pm 0.2\%$ (% against span)	Output difference between operating 1-3min and 30-35min
Effect of temperature	$\pm 0.2\%$ (% against span)	Output difference when temperature changes within $23 \pm 10^\circ\text{C}$
Effect of Aux. power	$\pm 0.1\%$ (% against span)	Output difference when aux. power is same as rated voltage and when same as upper/lower limits of operation range.
Response of Input circuits	0.1sec or below (The time that output of filter amplifier in input part is reaching 90% final stationary value)	
Insulation resistance	Between electric circuit and outside box	DC500V 50M $\Omega$ or more
	Between input, com. output and aux. power	
	Between input circuits	
Withstand voltage	Between electric circuit and outside box	AC2000V (50/60Hz) 1 min No electrical and mechanical damages
	Between input, com. output and aux. power	
	Between input circuits	
Overload withstand	Input	No electrical damage
	Aux. power	Full accuracy when back to standard test mode
Lightning impulse voltage capacity test	Between electric circuit (except communication) and outside box	No electrical damage
	5kV 1.2/50 $\mu\text{s}$ (+) & (-) sides, 3 times/each	Full accuracy when back to standard test mode
	Between input terminal and communication terminal: 3kV 1.2/50 $\mu\text{s}$ (+)&(-) sides, 3 times/each	
Vibration	Positive scale only 0.15mm, 10-55-10Hz, 1 octave/min, 5 times sweep	No mechanical damage Accuracy is percentage (within 100%) of difference of output around testing against basic value, when back to standard test mode
Shock	294m/s <sup>2</sup> X,Y,Z direction, 3 times for each	No mechanical damage Accuracy is percentage (within 100%) of difference of output around testing against basic value, when back to standard test mode
Oscillatory surge voltage	<ul style="list-style-type: none"> <li>1-1.5MHz, 1/2 attenuation time, 6<math>\mu\text{s}</math> or more</li> <li>Repeat frequently 50 times(or more)/s, applied in 30 sec. in 3 times.</li> <li>Peak voltage: 2kV</li> <li>Input (common), Power (normal/common)</li> </ul>	Outputs change within 10% and no malfunction, No effect to communication (no error, no halt)
Square-wave impulse noise	<ul style="list-style-type: none"> <li>Pulse width: 1<math>\mu\text{s}</math> and 100ns</li> <li>Repeat circle: 20ms or more, applied voltage: <math>\pm 1\text{kV}</math></li> <li>Pulse beginning time: 1ns<math>\pm 30\%</math></li> <li>Input (common), communication output (combine inductive and capacitive characteristics), aux. power (normal/common)</li> </ul>	Outputs change within 10% and no malfunction, No effect to communication (no error, no halt)
Wave noise	<ul style="list-style-type: none"> <li>Transceiver output: 144MHz, 430MHz</li> <li>Electric field strength: 10V/m</li> <li>irradiated direction : X, Y, Z</li> </ul>	Outputs change within 10% and no malfunction, No effect to communication (no error, no halt)
Static noise	Contact discharge $\pm 4\text{kV}$ (charging) Test level 2	Output changes 0.2% after test
	Air discharge $\pm 8\text{kV}$ (charging) Test level 3	No damage happens after test
Screw for socket terminal	M3 $\times$ 8 metal screw (FW11 socket)	
Material of case	Main unit: flame retardant ABS (V-0), FW11 socket: flame retardant PPO resin (V-1)	
Out-looking color	Black (Munsell N1.5)	
Weight	Main unit : approx. 130g, socket: approx. 50g	
Accessory	FW11 socket 1 unit	
Operating Temperature/ Humidity Range	$-10 \sim +55^\circ\text{C}$ 、5 ~ 90% RH (no condensation)	
Storage Temperature Range	$-20 \sim +70^\circ\text{C}$	
Protection class	IP30	
Altitude	1000m or lower	

## ■ DIMENSIONS



## ■ CONNECTION



## ■ ORDER INFORMATION

Type name	For Ex: FCTT—0C7M2F10	1 pc
• Specification code	Input : 4~20mA	Socket is attached (no fee caused) (Type name : FW11)
• Quantity	Output : Modbus RTU communication output	
	Transmission speed, Parity : 9600bps, parity: even	
	Aux. power : AC-DC80~264V	
	Power fuse : without fuse	



## CAUTION

- \* To ensure safety, connections are to be performed by an electrical engineer qualified in wiring.
- \* Please check the connection diagrams carefully before performing connections.
- \* Do not work with live wires. there is a risk of electric shock. which may lead to malfunction. fire or burnout.

## DAIICHI ELECTRONICS CO., LTD

Hard Office:  
11-13, Hitotsuya 1-chome, Adachi-ku,  
Tokyo, 121-8639 Japan  
Tel: +81-3-3885-2411  
Fax: +81-3-3858-3966

<http://www.daiichi-ele.co.jp>