

Thank you for purchasing the JUXTA Signal Conditioner.  
Please read through this manual before use for correct handling.

## CAUTIONARY NOTES FOR SAFE USE OF THE PRODUCT

This User's Manual should be carefully read before installing and operating the product. The following symbol is used on the product and in this manual to ensure safe usage.



**This symbol is displayed on the product when it is necessary to refer to the User's Manual for information on personal and instrument safety. This symbol is displayed in the User's Manual to indicate precautions to avoid danger to the operator, such as an electric shock.**

The following symbols are used only in this manual.



### NOTE

**Draws attention to essential information for understanding the operations and/or functions of the product.**

## CHECKING PRODUCT SPECIFICATIONS AND PACKAGE

### (1) Checking the Model and Product Specifications

Check that the model and specifications indicated on the nameplate attached to the main unit are as ordered.

### (2) Packaged Items

Check that the package contains the following items:

- FT5A or FT5V: 1
- Mounting block: 2
- Tag number and range label : 1 each
- Mounting screw (M4 x 0.7): 2
- User's Manual (this manual : IM 77J08T05-01E)

## GENERAL

The FT5A/FT5V is a free range type thermocouple converter that is connected to an IEC/JIS-standard thermocouple (TC), such as a Type K, T, E, J, R, S, B or N thermocouple to convert temperature signals into isolated

DC current or DC voltage signals.

- Selection of input type (sensor type), temperature unit (°C, K), I/O range setting, burnout setting, output adjustment, RJC on/off and I/O monitoring can be made using the optional Parameter Setting Tool (VJ77) or Handy Terminal (JHT200).

## MODEL AND SUFFIX CODES

Model	Suffix codes			Description			
FT5A	-□	□	*C	/□□	Thermocouple converter (Free Range Type)		
FT5V							
Input	-1				K (CA)		
	-2				T (CC)		
	-3				E (CRC)		
	-4				J (IC)		
	-5				R		
	-6				S		
	-7				B (RH)		
	-8				N		
	-0				Custom order		
	Output	A				4 to 20 mA DC	FT5A
B					2 to 10 mA DC		
C					1 to 5 mA DC		
D					0 to 20 mA DC		
E					0 to 16 mA DC		
F					0 to 10 mA DC		
G					0 to 1mA DC		
Z					Custom order		
1					0 to 10 mV DC	FT5V	
2					0 to 100 mV DC		
3				0 to 1 V DC			
4				0 to 10 V DC			
5				0 to 5 V DC			
6				1 to 5 V DC			
7				-10 to 10 V DC			
0				Custom order			
Style code		*C			Style C		
Burnout		/BU			Up		
		/BD			Down		
		/BN			None		
Temperature unit		/DF			Fahrenheit (°F) display function		

## 1. MOUNTING METHOD

### 1.1 Installing/Uninstalling the Mounting Block

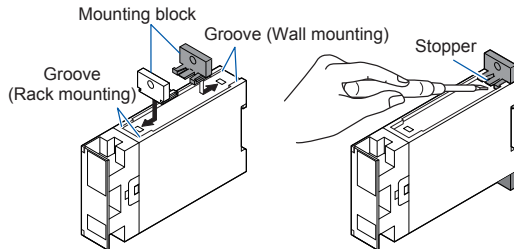
The mounting block is necessary for rack mounting or wall mounting.

#### Installing the mounting block

- Fit the mounting block into the grooves of the converter, and slide it in the direction of an arrow as shown below-left.

#### Uninstalling the mounting block

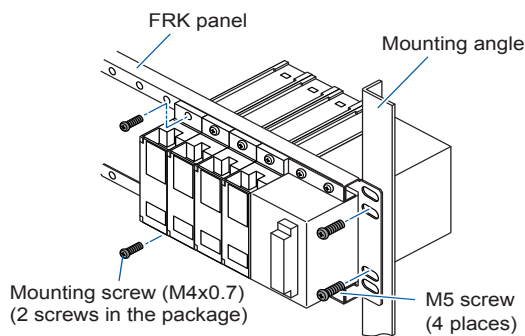
- Lift the stopper using a slotted screw-driver as shown below-right, and pull the mounting block to remove it.



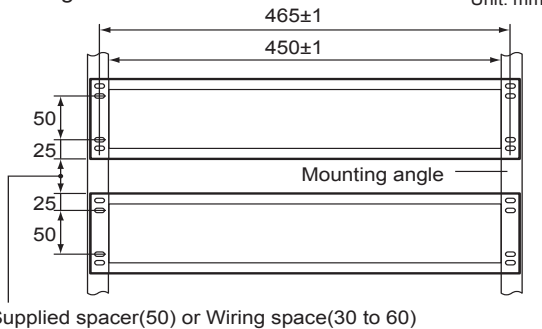
### 1.2 Rack Mounting

Take the FRK panel and install it on mounting angle as shown below.

This method is suitable for high density mounting of the converters on a 19-inch rack panel.



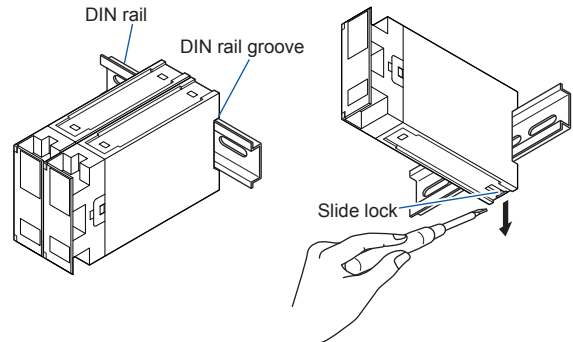
#### Mounting Dimensions



### 1.4 DIN Rail Mounting

Place the converter so that the DIN rail fits into the upper part of the DIN-rail groove at the rear of the socket, and fasten the socket using the slide lock located underneath the socket.

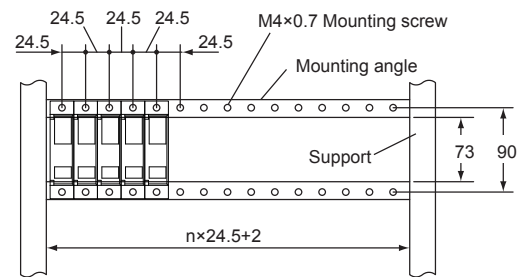
To remove the converter, pull down the slide lock using a slotted screw-driver.



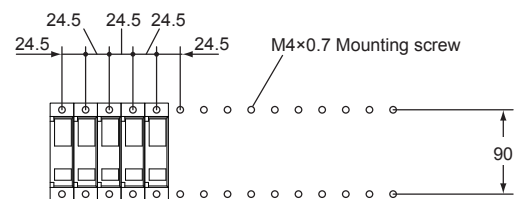
### 1.5 Mounting Dimensions

Unit: mm

#### Angle Mounting Dimensions



#### Wall Mounting Dimensions



## 2. INSTALLATION LOCATION

- Avoid the following environments for installation locations: Areas with vibration, corrosive gases, dust, water, oil, solvents, direct sunlight, radiation, a strong electric field, and/or a strong magnetic field, altitude of more than 2000m above sea level.
- If there is any risk of a surge being induced into the power line and/or signal lines due to lightning or other factors, a dedicated lightning arrester should be used as protection for both this converter and a field-installed device.
- Operating temperature/humidity range: 0 to 50C/5 to 90%RH (no condensation)

## 3. EXTERNAL WIRING

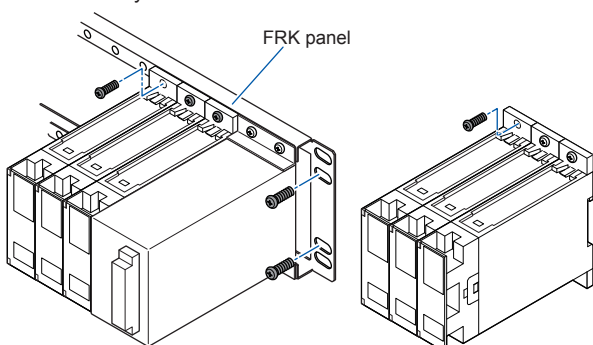


### WARNING

**Be sure to turn OFF the power supply before wiring to avoid the risk of electric shock. Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.**

### 1.3 Wall Mounting

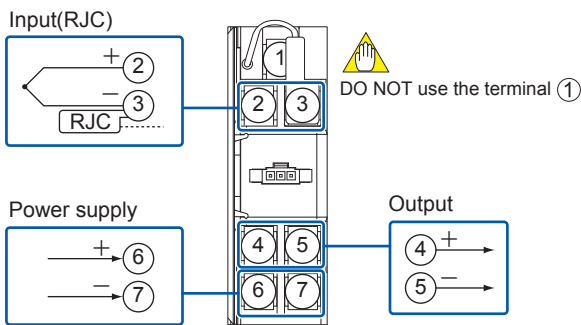
Mount the converter onto the FRK panel as shown below or mount it directly on the wall.



M4 screw terminals are provided for the connection of external signals. Attach a crimp-on lug to each wire for connection to the terminals.

●Recommended cables: A nominal cross-sectional area of 0.5 mm<sup>2</sup> or thicker for signal cables, and that of 1.25 mm<sup>2</sup> or thicker for power cables.

### Wiring Diagram



### NOTE

- The power line and input/output signal lines should be installed away from noise-generating sources. Otherwise accuracy cannot be guaranteed.
- Adhere strictly to the specifications to avoid overheating or damage. Before turning on the power, ensure the following:
  - (a) Power supply voltage and input signal value applied to the product should meet the required specifications.
  - (b) The external wiring to the terminals and wiring to ground are as specifications.
- Do not operate the product in the presence of flammable or explosive gases or vapors.
- The product is sensitive to static electricity; exercise care when in operation. Before you operate the product, touch a nearby metal part to discharge static electricity.
- Connect the RJC sensor to the terminal ③ of the converter together with the input signal line so that the crimp-on lug of the input signal line overlaps the RJC sensor.
- Handle the RJC sensor lead wire with care to prevent disconnection.

### Power Supply and Isolation

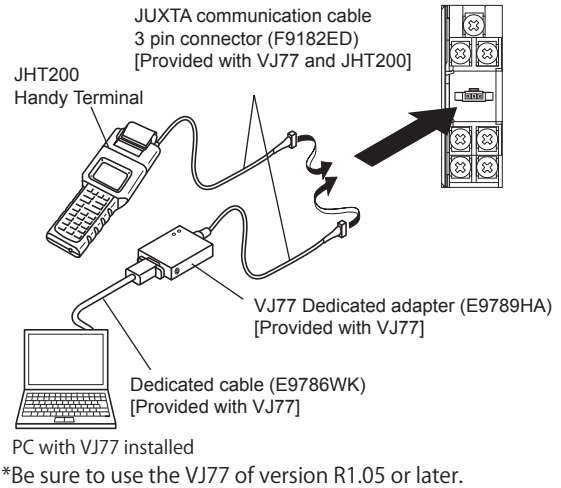
Power supply voltage: 24V DC ±10% (ripple: less than 5% p-p)  
 Current consumption: FT5A 65mA, FT5V 50mA  
 Insulation resistance: 100MΩ at 500V DC between input, output and power supply mutually  
 Withstand voltage: 1500V AC/minute between input-output, input-power supply  
 500V AC/minute between output-power supply

## 4. SETTING PARAMETERS

The parameters are set as you specified in your order. Refer to the following to change the default settings.

Set the parameters using a PC (VJ77 Parameter Setting Tool) or the Handy Terminal. Refer to "5. List of Parameters" in this manual and the User's Manual for VJ77 PC-based Parameters Setting Tool (IM 77J01J77-01E) or the User's Manual for JHT200 Handy Terminal (IM JF81-02E). Parameters are shown in brackets "[ ]".

### Connection of Setting Tools



### Setting Thermocouple Type

Set the thermocouple type to be connected to the input in [B06: TYPE].

Display	Measuring range	Measuring span
K TYPE	-270 to 1372°C	3mV or more
E TYPE	-270 to 1000°C	
J TYPE	-210 to 1200°C	
T TYPE	-270 to 400°C	
R TYPE	-50 to 1768°C	
S TYPE	-50 to 1768°C	
B TYPE	0 to 1820°C	
N TYPE	-270 to 1300°C	

### Setting Temperature Unit

Set the temperature unit of the input range in [B09: UNIT].



### NOTE

Do not set the "----" as the temperature unit, even if it is displayed during the setting. Otherwise it may cause the malfunction or damage.

### Setting Input Range

Set the zero percent value of input range in [B10: ZERO], and the span of input range in [B11: SPAN].

### Setting Burnout Action

Set the burnout action in [B12: BURN OUT].  
 Set "OFF", "UP", or "DOWN."



### NOTE

The wire resistance compensation should be applied when the setting of input range, burnout action direction or input wiring has been changed.

## 5. LIST OF PARAMETERS

Parameter Display		Items
<b>A</b>	<b>DISPLAY</b>	<b>Display</b>
A01	INPUT	Input value
A02	OUTPUT	Output value
A03	STATUS	Status (*1)
A04	REV NO	Revision number.
<b>B</b>	<b>SET</b>	<b>Setting</b>
B01	TAG NO.1	Tag number 1
B02	TAG NO.2	Tag number 2
B03	COMMENT1	Comment 1
B04	COMMENT2	Comment 2
B06	TYPE	Input type
B09	UNIT	Unit
B10	ZERO	Zero (0% of input range)
B11	SPAN	Span (Input span)
B12	BURN OUT	Burnout
<b>C</b>	<b>ADJUST</b>	<b>Adjustment</b>
C01	OUT 0%	Output 0% adjustment
C02	OUT 100%	Output 100% adjustment
C03	WIRING R	Wire resistance compensation
C04	ZERO ADJ	Input zero adjustment
C05	SPAN ADJ	Input span adjustment
C08	RJC	RJC on/off (*2)

\*1: This "STATUS" is for the customer's engineer to check the history.

\*2: The RJC returns to ON after the power is turned off and then on again.

## 6. MAINTENANCE

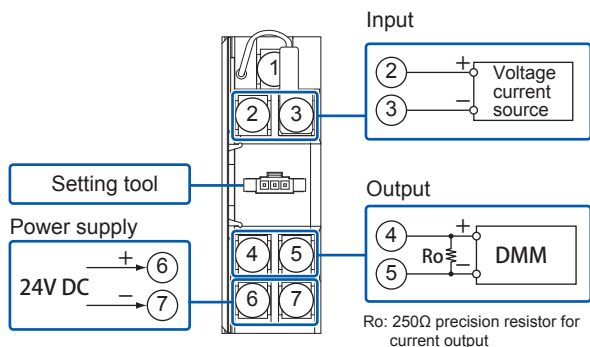
The product starts running immediately when the power is turned on; however, it needs 10 to 15 minutes of warm-up before it meets the specified performance.

### 6.1 Calibration Apparatus

- A voltage current source (Yokogawa 7651 or equivalent)
- A digital multimeter (Yokogawa 7561 or equivalent)
- A precision resistor of  $250\ \Omega \pm 0.01\%$ , 1W
- A setting tool for adjustment (Refer to "4. Setting Parameters" in this manual.

### 6.2 Calibration Procedure

1. Connect the instruments as shown below.



2. Turn off the RJC using the setting tool.
  3. Use the voltage current source and apply the electromotive force equivalent to 0, 25, 50, 75, and 100% of the measuring range to the converter.
  4. Verify that the corresponding output voltages are 0, 25, 50, 75, and 100% respectively and within the specified accuracy rating. ( $R_o$  is used for current output.)
- Use the setting tool (VJ77 Parameter Setting Tool or JHT200 Handy Terminal) to adjust the input/output signals.

### Turning the RJC on/off

- (1) Read the parameter [C08: RJC].
- (2) Select "ON" or "OFF" in the parameter [C08: RJC].



### NOTE

*The RJC returns to "ON" after the power is turned off and then on again.*

### Input Adjustment Procedure

- (1) Input the value equivalent to 0% value of the input range to the converter.
- (2) Read the parameter [C04: ZERO ADJ] and check the input value.
- (3) Select "INC" or "DEC" in the parameter [C04: ZERO ADJ] to adjust.  
INC: Increase (Adjusts the increased value of the input [voltage] value)  
DEC: Decrease (Adjusts the decreased value of the input [voltage] value)  
RST: Reset of the adjustment value
- (4) Input the value equivalent to 100% value of the input range to the converter.
- (5) Read the parameter [C05: SPAN ADJ] and check the input value.
- (6) Adjust the span in the same way as (3).

### Output Adjustment Procedure

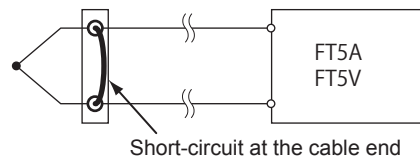
When adjusting 0% value of output:

- (1) Set the adjustment value 0% in the parameter [C01: OUT 0%].  
•The value equivalent to 0% of the output range will be output, irrespective of the input.
- (2) Check the output value via digital multimeter, and adjust it in the parameter [C01: OUT 0%].  
•If it slips out to the (+) side, set (-) value equivalent to slipout; if it slips out to the (-) side, set (+) value equivalent to slipout for adjusting the output value to 0%.

\*: The 100% value of output can be adjusted by the same operation as the above in [C02: OUT 100%].

### Wire Resistance Compensation

- (1) Short-circuit at the sensing end of the field side.



- (2) Read the parameter [C04: ZERO ADJ] and make sure the setting is "RESET".  
(If the setting is "EXECUTE", select "RESET". The compensation value will be reset.)
- (3) If "EXECUTE" is selected in the parameter [C03: WIRING R], the wire resistance compensation will be done automatically.

For adjustment using a setting tool, refer to the User's Manual for each setting tool and "5. List of Parameters" in this manual.

User's Manual for VJ77 [Document No.: IM 77J01J77-01E]; however, use the VJ77 of version R1.05 or later.

User's Manual for JHT200 [Document No.: IM JF81-02E]