

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

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## CAUTIONARY NOTES FOR SAFE USE OF THE PRODUCT

This User's Manual should be carefully read before installing and operating the product. Please keep this User's Manual for future reference. 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:

- FM1A or FM1V: 1
- Mounting block: 2
- Tag number label and Range label: 1 each
- Mounting screw (M4 x 0.7): 2
- User's Manual (this manual : IM 77J08M01-01E)

## GENERAL

The FM1A/FM1V is a compact, front terminal connection type isolator that converts mV signals into isolated DC current or DC voltage signal.

- Input range setting, burnout setting, zero/span adjustment, 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		
FM1A	-□	□	*C /□□	Isolator (mV DC Input, Free Range Type)		
FM1V						
Input	-1			DC potential difference signals -100 to +150 mV, Span: 3 mV or more		
Output	A			4 to 20 mA DC	FM1A	
	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 1 mA DC		
	Z			(Custom order) DC current signal		
	1			0 to 10 mV DC		FM1V
	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) DC voltage signal			
Style code		*C		Style C		
Burnout		/BU		Up		
		/BD		Down		
		/BN		None		

## 1. MOUNTING METHOD

### 1.1 Installing/Uninstalling the Mounting Block

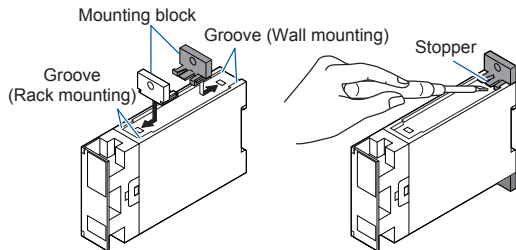
The mounting block is necessary for rack mounting or wall mounting.

#### 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

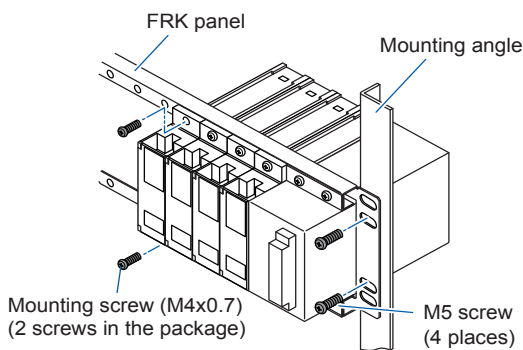
- Lift the stopper using a slotted screw-driver as shown below-right, and pull the mounting block to remove it.



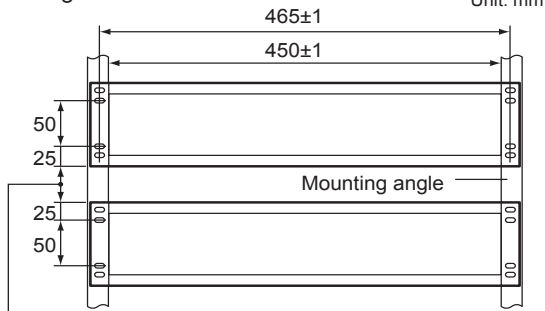
### 1.2 Rack Mounting

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

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



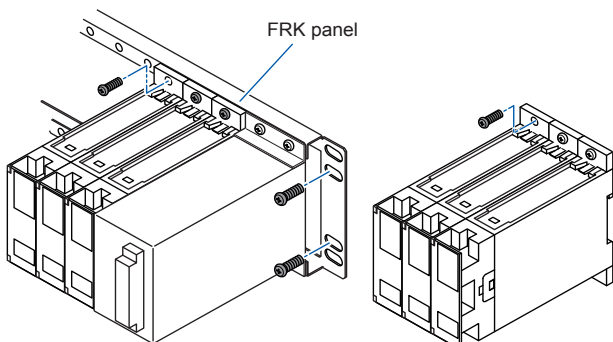
#### Mounting Dimensions



Supplied spacer(50) or Wiring space(30 to 60)

### 1.3 Wall Mounting

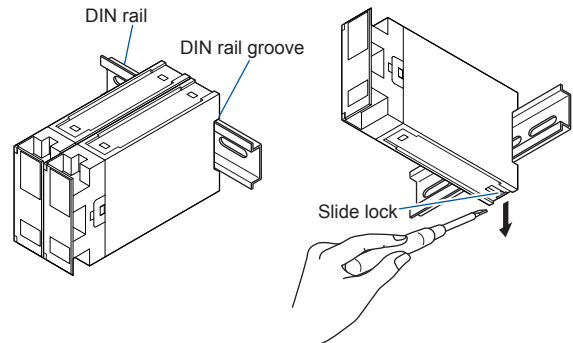
Mount the converter onto the FRK panel as shown below or mount it directly on the wall.



### 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 converter, and push until it clicks. The converter is fixed by a slide lock (at the lower part on the rear side of the converter).

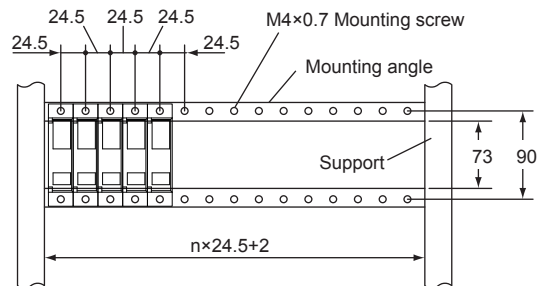
To remove the converter, pull down the slide lock using a slotted screw-driver.



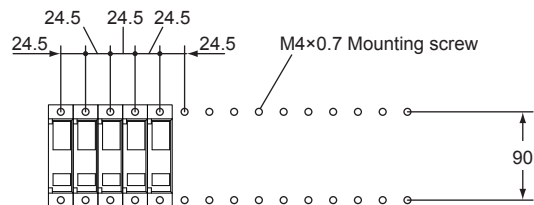
### 1.5 Mounting Dimensions

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 50°C/5 to 90%RH (no condensation)

### 3. EXTERNAL WIRING



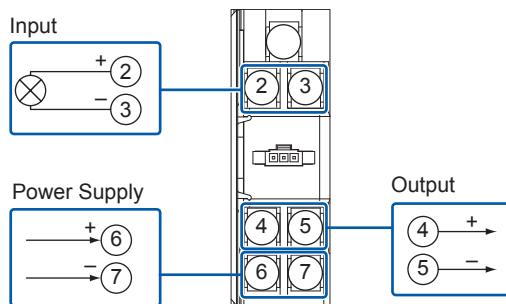
#### WARNING

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.

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

- Do not connect anything to the terminals that are not used in the wiring diagram. Otherwise it may cause the malfunction or damage.
- 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.
- This product is sensitive to static electricity; exercise care in handling. Before you operate the product, touch a nearby metal part to discharge static electricity.

#### Power Supply and Isolation

Power supply voltage: 24 V DC  $\pm$ 10% (percentage ripple: less than 5% p-p)

Current consumption: FM1A 65 mA, FM1V 50 mA

Insulation resistance: 100 M $\Omega$  at 500 V DC between input and output, output and power supply, and input and power supply.

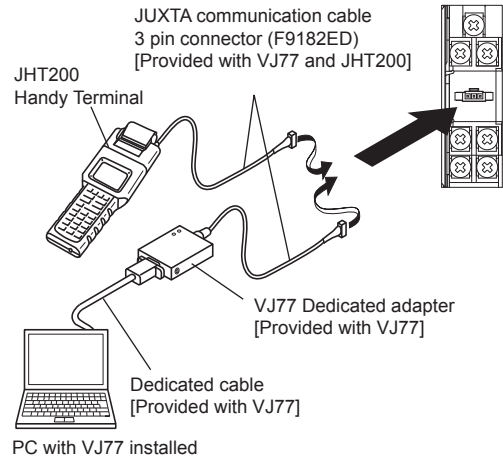
Withstand voltage: 1500 V AC/min. between input and (output and power supply)  
500 V AC/min. between output and power supply

### 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



\*Be sure to use the VJ77 of version R1.05 or later.

#### Setting Input Range

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

Setting range: -100 to +150 mV DC, span 3 mV or more (However, the accuracy is limited if the span is less than 10 mV.)

#### Setting Burnout Action

Set the burnout operation in [B12: BURN OUT].

Set "OFF", "UP", or "DOWN."



#### NOTE

Wire resistance compensation should be applied when the input wiring, the setting of input range, or burnout operation has been changed.

### 5. LIST OF PARAMETERS

Parameter Display	Items
<b>A</b>	<b>DISPLAY</b>
A01	INPUT
A02	OUTPUT
A03	STATUS
A04	REV NO
<b>B</b>	<b>SET</b>
B01	TAG NO.1
B02	TAG NO.2
B03	COMMENT1
B04	COMMENT2
B10	ZERO
B11	SPAN
B12	BURN OUT
<b>C</b>	<b>ADJUST</b>
C01	OUT 0%
C02	OUT 100%
C03	WIRING R
C04	ZERO ADJ
C05	SPAN ADJ

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

## 6. MAINTENANCE

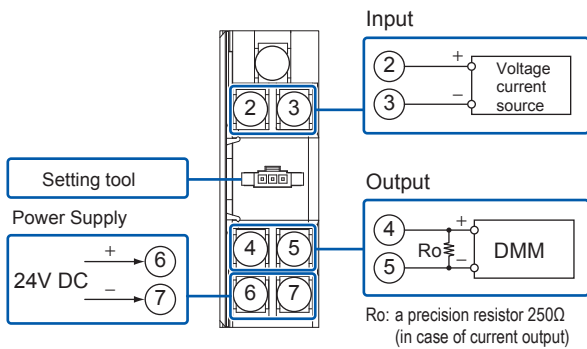
The product starts running immediately when the power is turned on; however, it needs 10 to 15 minutes of warm-up before it meets the specified performance.

### 6.1 Calibration Apparatus

- A voltage current source (Yokogawa 7651 or equivalent)
- A digital multimeter, DMM (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 Use the voltage current source and apply signals equivalent to 0, 25, 50, 75, and 100% of the input range to the isolator.
3. Verify that the corresponding output voltages are 0, 25, 50, 75, and 100% respectively and within the specified accuracy rating. (Ro is used for current output.)
- Use the setting tool (VJ77 Parameter Setting Tool or JHT200 Handy Terminal) to adjust the input/output signals.

#### Input Adjustment Procedure

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

#### Output Adjustment Procedure

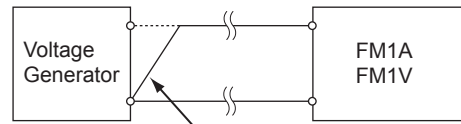
When adjusting 0% value of output:

- (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 the indicating value of DMM deviates to the (+) side, set (-) value equivalent to the deviation; if it deviates to the (-) side, set (+) value equivalent to the deviation for adjusting the output value to 0%.

\*: The 100% value of output can be adjusted by the same operation as the above in **[C02: OUT100%]**

#### Wire Resistance Compensation Procedure

- (1) Make the connections as shown below.



Connect two signal lines together to the output terminal of the voltage source.

- (2) Read the parameter **[C03: WIRING R]**, 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.

Use the VJ77 of version R1.05 or later.

User's Manual for the VJ77 [Document No.: IM 77J01J77-01E]

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