User's Manual

Model VJCE-01A
VJ Mounting Base for Communication

IM 77J01C51-11E

Please read through this manual as well as the manual for respective instruments of JUXTA VJ series mounted on the VJ mounting base for correct handling. Please keep this manual carefully after use.

CAUTIONARY NOTES FOR SAFE USE OF THE PRODUCT

If this symbol is indicated on the product, the operator should refer to the explanation given in the user's manual in order to avoid injury or death to either themselves or other personnel, and/or damage to the instrument. The manual describes the special care the operator should exercise to avoid shock or other dangers that may result in injury or loss of life.

The following symbols are used only in this manual.

IMPORTANT

Indicates that operating the hardware or software in a particular manner may damage it or result in a system failure.

NOTE

Draws attention to information that is essential for understanding the operations and/or features of the products.

YOKOGAWA
Yokogawa Electric Corporation

Yokogawa Electric Corporation
Network Solutions Business Divisiion
2-9-32, Naka-cho Musashino-shi, Tokyo 180-8750 Japan
Phone: +81-422-52-7179 Facsimile: +81-422-52-6793

IM 77J01C51-11E
1st Edition July 2004

INTRODUCTION

The VJCE-01A has been manufactured under strict quality control and thoroughly tested at the factory before shipment. When you receive it, visually inspect it for damage.

(1) Model and Suffix Codes Check

Check that the model and suffix codes for VJ mounting base and VJ series signal conditioner are as ordered.

Model and Suffix Code	Input	Output-1	Output-2
VJCE-01A	Screw terminal	Screw terminal	RS-485 Communication terminal

List of Mountable Models

Signal Conditioners with Communication Function Model and Suffix Code	Signal Conditioners of Single Output Type Model and Suffix Code	Product Name
	VJC1 -01 N-❒❒N0	Loop Powered Isolator
	VJH1 -01❒-❒❒N0	Isolator
VJH7 -02❒-❒❒P0	**VJH7** -01❒-❒❒N0	Isolator (Multi-function)
	VJHF -01❒-❒❒N0	Isolator (Super Speed Response Type)
	VJHR -01❒-❒❒N0	Isolator (Reverse Output Type)
	VJA1 -01❒-❒❒N0	Distributor
	VJA4 -01❒-❒❒N0	Distributor (Non-isolated)
	VJA5 -01❒-❒❒N0	Distributor (with Square Root Extractor)
VJA7 -02❒-❒❒P0	**VJA7** -01❒-❒❒N0	Distributor (Multi-function)
	VJT6 -01❒-❒❒N❒	Thermocouple Converter
	VJR6 -01❒-❒❒N❒	RTD Converter
VJU7 -02❒-❒❒P0	**VJU7** -01❒-❒❒N0	Universal Temperature Converter
	VJS2 -01❒-❒❒N❒	Potentiometer Converter
VJS7 -02❒-❒❒P0	**VJS7** -01❒-❒❒N0	Potentiometer Converter (Multi-function)
	VJP1 -01❒-❒❒N0	Pulse Repeater
	VJP4 -01❒-❒❒N0	Pulse Rate Converter
VJP8 -02❒-❒❒P0	**VJP8** -01❒-❒❒N0	Pulse Rate Converter (Multi-function)
VJQ8 -02❒-❒❒P0	**VJQ8** -01❒-❒❒N0	Pulse to Analog Converter (Multi-function)
	VJQ2 -01❒-❒❒N0	Pulse to Analog Converter (Free Range Type)
	VJQ0 -01❒-❒❒N0	Analog to Pulse Converter
VJQ7 -02❒-❒❒P0	**VJQ7** -01❒-❒❒N0	Analog to Pulse Converter (Multi-function)
	VJF1 -01❒-❒❒N0	Pneumatic to Electrical Converter
	VJB1 -01❒-❒❒N❒	CT Converter (RMS)
	VJG1 -01❒-❒❒N0	PT Converter (RMS)
	VJB3 -01❒-❒❒N0	AC Converter (RMS)
	VJD1 -01❒-❒❒N0	Tachometer Converter
VJX7 -02❒-❒❒P0	**VJX7** -01❒-❒❒N0	Universal Computing Unit (Multi-function)
	VJXS -01❒-❒❒N0	Universal Computing Unit
VJET -01❒-1 0 0 0		Ethernet/RS-485 Converter

IMPORTANT

- ***Do not mount any signal conditioners other than the above. It may result in a communication failure or a malfunction. Be sure to confirm the model and suffix codes of each signal conditioner when mounting it.***
- ***The "❒" in Model and suffix codes differs depending on the models of signal conditioner. Refer to the general specifications for respective signal conditioners.***

(2) Related User's Manual

This manual dose not explain the details (handling, maintenance and the like) for signal conditioners mounted on VJCE-01A.
The lineup and User's Manual numbers of JUXTA VJ series signal conditioners are shown below.

Model	Product Name [Document title]	User's Manual No.
VJCE-01A	VJ Mounting Base for Communication: This manual	**IM 77J01C51-11E**
VJA1	Distributor	**IM 77J01A01-01E**
VJA4	Distributor (Non-isolated)	**IM 77J01A04-01E**
VJA5	Distributor (with Square Root Extractor)	**IM 77J01A05-01E**
VJA7	Distributor	**IM 77J01A07-01E**
VJB1	CT Converter (RMS)	**IM VJB1-01E**
VJB3	AC Converter (RMS)	**IM VJB3-01E**
VJC1	Loop Powered Isolator	**IM VJC1-01E**
VJD1	Tachometer Converter	**IM VJD1-01E**
VJF1	Pneumaic to Electrical Converter	**IM VJF1-01E**
VJG1	PT Converter (RMS)	**IM VJG1-01E**
VJH1	Isolator	**IM 77J01H01-01E**
VJH7	Isolator (Multi-function)	**IM 77J01H07-01E**
VJHF	Isolator (Super Speed Response Type)	**IM VJHF-01E**
VJHR	Isolator (Reverse Output Type)	**IM 77J01H12-01E**
VJP1	Pulse Repeater	**IM VJP1-01E**
VJP4	Pluse Rate Converter	**IM VJP4-01E**
VJP8	Pluse Rate Converter (Multi-function)	**IM 77J01P08-01E**
VJQ0	Analog to Pulse Converter	**IM VJQ0-01E**
VJQ2	Pulse to Analog Converter (Free Range Type)	**IM VJQ2-01E**
VJQ7	Analog to Pulse Converter	**IM 77J01Q17-01E**
VJQ8	Pulse to Analog Converter (Multi-function)	**IM 77J01Q08-01E**
VJR6	RTD Converter	**IM 77J01R06-01E**
VJS2	Potentiometer Converter	**IM VJS2-01E**
VJS7	Potentiometer Converter (Multi-function)	**IM 77J01S07-01E**
VJT6	Thermocouple Converter	**IM 77J01T06-01E**
VJU7	Universal Temperature Converter	**IM 77J01U07-01E**
VJX7	Universal Computing Unit (Multi-function)	**IM 77J01X07-01E**
VJXS	Universal Computing Unit	**IM VJXS-01E**
VJET	Ethernet/RS-485 Converter	**IM 77J01E11-01E**
VJ77	Parameter Setting Tool	**IM 77J01J77-01E**
	VJ Series Communication Function	**IM 77J01J11-01E**

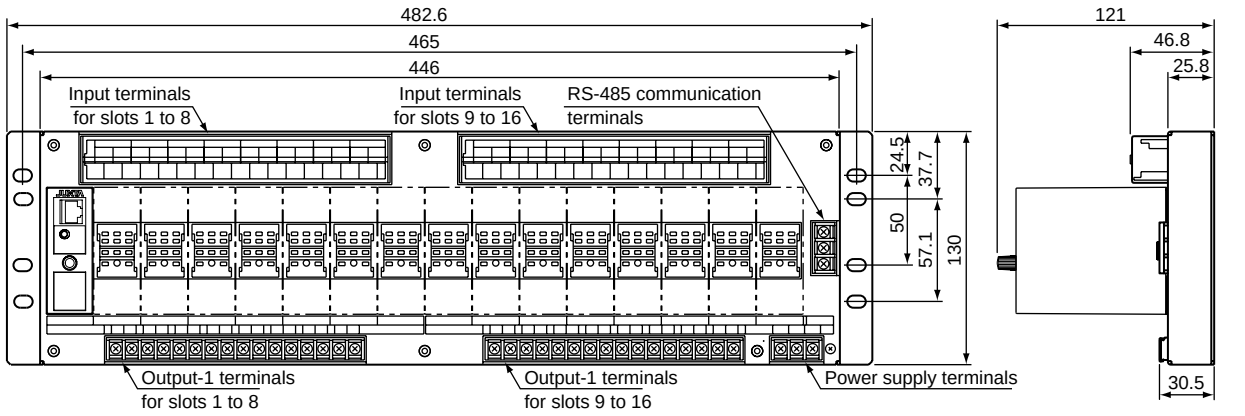
1. PRODUCT OVERVIEW

The VJCE-01A is a horizontally installed, side-by-side multiple mounting base that complies with the standard rack-mounting dimensions specified by the JIS/EIA standards. A maximum of 16 signal conditioners of JUXTA VJ series can be mounted on VJCE.

- Different signal conditioners of VJ series can be mixed and housed in the same mounting base.
- The VJET Ethernet/RS-485 converter can be mounted.
- Multi-drop connection is used for output-2.

2. EXTERNAL DIMENSIONS

Unit : mm



3. INSTALLATION OF VJCE-01A

The VJCE-01A can be installed horizontally on 19 inches rack complies with JIS/EIA standards, or horizontally on the wall. Under the conditions mentioned in Article 3.2, a maximum of 5 mounting bases can be installed on one side of the cabinet.

3.1 Environmental Conditions

3.1.1 Ambient temperature and humidity

Ambient temperature and humidity during operation of the instruments would be as follows:
Temperature: 0 to 50°C, Humidity: 5 to 90% RH

3.1.2 Vibration condition

Vibration of installation place would be less than $2m/s^2$ at 10 to 150Hz

3.1.3 Air purification degree

Air dirty is desirous to be less than $0.2mg/m^3$. Also, corrosive gas such as hydrogen sulfide, sulfurous acid gas, chlorine and conductive dust such as iron and carbon are desirous to be as little as possible.

(Note) Permissible limit of hydrogen sulfide (H_2S) and sulfurous acid gas (SO_2) would be as standard of JEIDA-29 (1979) CLASS S1*.

JEIDA: Japan Electronic Industrial Development Association JEIDA-29 (1979) CLASS S1

H_2S: 0.01ppm or less, SO_2: 0.05ppm or less

(Ambient temperature: 25°C ± 5°C, ambient humidity: 40 to 80%RH)

3.2 Condition of Installation

NOTE

(1) Secure space for top and bottom to avoid heating.

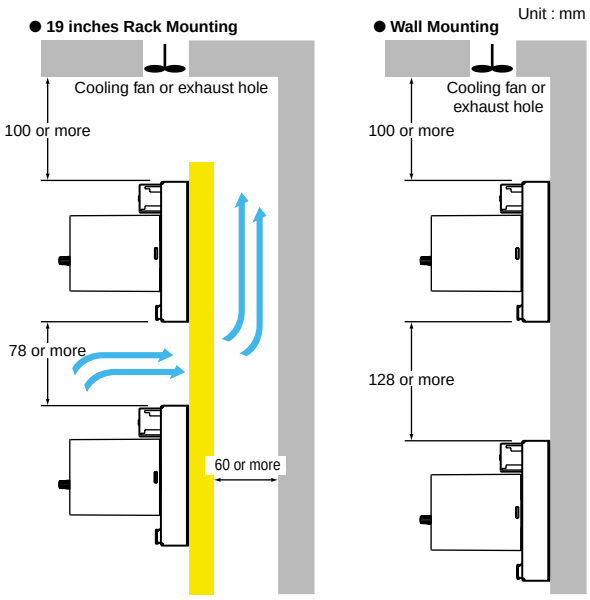
- ***Apart more than 100 mm from the floor board.***
- ***Apart more than 100 mm from panel top and make air exhaust hole or set cooling fan at panel upper.***
- ***If wall stands at back in case of rack mounting, apart more than 60mm from the wall for ventilation.***

(2) Take enough space for front and side faces so as not to interfere wiring, piping and maintenance area.

(3) In case storing in cabinet, air cooling is compulsorily required to prevent from raise of temperature.

(4) Do not install it on the heating materials.

(5) In case of installing the VJCE-01A one above another to up and down direction, take installation space as shown in the figure on the right. (78 mm for rack mounting, 128 mm for wall mounting)



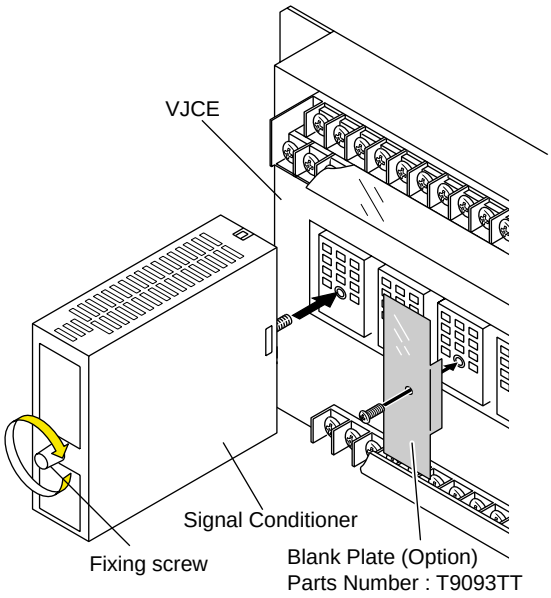
3.3 Installation

3.3.1 Installation of VJCE-01A

Use four (4) M5 screws for installation.

3.3.2 Installation of signal conditioners

Connect the pin on the back of the signal conditioner to the VJCE-01A connector as shown in the figure on the right. Then tighten the fixing screw on the front of the signal conditioner.

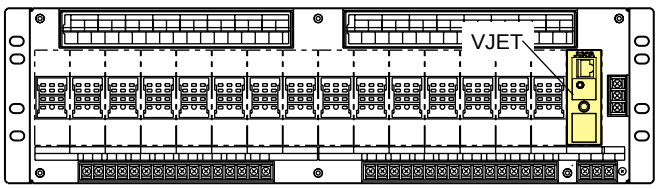


NOTE

Insert and pull out the signal conditioner vertically to VJCE. Inserting and pulling it out slantwise may make the pin bent and cause a failure such as a bad contact.

IMPORTANT

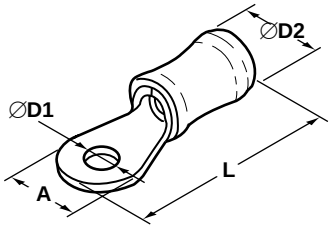
Only one VJET can be mounted in slot 16 of VJCE-01A. Do not mount it in other slots.



4. EXTERNAL WIRING

4.1 Field Side Wiring and Wiring of Power Supply and Ground

Flexible twisted cable and durable round crimp-on terminals of good contact are recommended to use.



Cross sectional area	Screw	∅D1 Hole dia. (mm)	A Terminal out dia. (mm)	L Terminal length (mm)	øD2 Insulation coating (mm)
0.75 mm^2 0.9 mm^2 1.25 mm^2 2.0 mm^2	M3.5	3.7 or more	6.9 or less	About 19	3.2 or more

4.1.1 Signal cable

Nominal cross-sectional area of conductor: 0.75 to 2 mm^2
Example of suitable cable: Vinyl code (VSF) twisted cable (JIS C3306)

4.1.2 Power cable

Nominal cross-sectional area of conductor: 1.25 to 2 mm^2
Example of suitable cable: 600V vinyl code (IV) twisted cable (JIS C3307)
Vinyl insulated cable (KIV) (JIS C3316)

4.1.3 Ground cable

Nominal cross-sectional area of conductor: 2 mm^2
Example of suitable cable: 600 V vinyl code (IV) twisted cable (JIS C3307)
Vinyl insulated cable (KIV) (JIS C3316)

4.2 Field Side Input/Output Terminals, Piping and System Side Wiring

Assignment of Input/Output Terminals on and after page 7 shows relation between VJCE-01A field side input/output terminals and signal conditioner input /output signal at the terminals. Field side input/output terminals are M3.5 screws.
Connect input air pressure signal of VJF1 to connecting hole of front face of signal conditioner directly.
Connect power and ground cables to power terminals of VJCE-01A. Power would internally be distributed to respective signal conditioners.

WARNING

It is recommended that CT protector (CTG-5) be attached to the current input terminals connected to the secondary side of the CT when mouning VJB1 (CT transmitter) on VJCE-01A. Since a high potential develops over the secondary side, the CT may burn and break if you unplug the VJB1 from the VJCE-01A while the VJB1 is turned on and it has no CT protector.

IMPORTANT

- ***Ensure the followings before turning on the power. Use of signal conditioners of VJ series ignoring the specifications may cause overheating or damage to VJCE-01A and signal conditioners.***
  - ***Power supply voltage and input signal value applied to VJCE-01A and signal conditioners should meet the required specifications.***
  - ***The external wiring to the terminals is as specifications.***
- ***Do not operate the product in the presece of flammable or explosive gases or vapors. To do so is highly dangerous.***
- ***Many semi-conductor integrated circuit parts are used for signal conditioners. Take care of static electricity trouble at the maintenance or change of setting for the signal conditioners.***
- ***The grounding resistance must be 100 Ω (JIS Class D grounding). The length and thickness of the grounding cable should be as short and thick as possible. Directly connect the lead from the ground terminal of the product to the ground. Do not carry out daisy-chained inter-ground terminal wiring.***

5. ASSIGNMENT OF INPUT/OUTPUT TERMINALS AND POWER SUPPLY TERMINALS

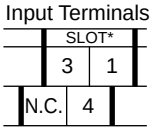
Only the signal conditioners of single-output type and the signal conditioners of dual-output type with output-2 for communication (RS-485) can be mounted. Be sure to check not only the model but also suffix codes of the signal conditioner to be mounted. (Refer to List of Mountable Models on page 2.)

5.1 Assignment of Input/Output Terminals

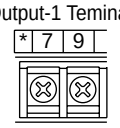
"N.C." in the table denotes unassigned terminals.

Mountable Signal Conditioners		Input Terminal 1	Input Terminal 3	Input Terminal 4	Output-1 Terminal 7	Output-1 Terminal 9
VJH1, VJH7, VJHF, VJHR VJQ0, VJQ7 VJXS, VJX7		+	−	N.C.	+	−
		(*2)				
VJC1 (*1)		Channel-1		N.C.	Channel-1	
		+	−		+	−
VJT6 VJU7 (TC or mV input)		+	−		+	−
		RJC				
VJR6 VJU7 (RTD input)		A	B	B	+	−
VJS2, VJS7		100%	CENTER	0%	+	−
VJA1 VJA5 VJA7	When using internal power supply	PS+	−	N.C.	+	−
	When using external power supply (When used as an isolator)	N.C.	+	−	+	−
VJA4 (*1)		Channel-1		N.C.	Channel-1	
		+	−		+	−
VJB1		A	±	N.C.	+	−
VJG1		V	±	N.C.	+	−
		L N				
VJB3		A/V	±	N.C.	+	−
VJD1		V	±	N.C.	+	−
VJP1 VJP4 VJP8 VJQ2 VJQ8	Non-voltage contact / Voltage contact	N.C.	+	−	+	−
	Internally powered current pulse (two-wire system)	PS+	+	−		
				(*2)		
	Internally powered voltage pulse (three-wire system)	PS+	+	−		
VJF1		N.C.	N.C.	N.C.	+	−
		Input through one-touch fitting ∅6 of the VJF1.				
VJET (*3)		N.C.	N.C.	N.C.	N.C.	N.C.

Input Terminals

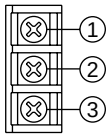


Output-1 Teminals



"*" in the figure above denotes a slot number. Slots are numbered from 1 to 16, beginning with the left-most slot, when viewed from the VJCE-01A front.

Assignment of RS-485 communication terminals (Output-2 terminals)

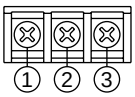


Terminal Number	Signal Symbol
①	RS-485 B (+)
②	RS-485 A (−)
③	RS-485 COM

* The terminal for output-2 is multidrop-connected to the output-2 of all slots.

*1: Only 1-channel type of VJC1 and VJA4 can be mounted.
*2: When receiving current input (current pulse), external shunt resistor (receiving resistor) is required.
*3: Only one VJET can be mounted in slot 16 of VJCE-01A. Do not mount it in other slots.

5.2 Assignment of Power Supply Terminals



Terminal Number	Signal Symbol
①	SUPPLY L(+)
②	SUPPLY N(−)
③	GND ⏚

CAUTION

Ensure that the power supply voltage for VJCE-01A matches that for the signal conditioner to be mounted on VJCE-01A. Supply of different power supply voltage may damage VJCE-01A and signal conditioners.

6. CALIBRATION

Refer to the User's Manual of respective signal conditioners for how to calibrate and the equipment required for calibration.

6.1 Items to Check before Power on

- Supply power rating is 12 to 36 V DC or 85 to 246 V AC / DC.
- Wiring of signal cables
- Installation, ambient temperature, humidity, dust and vibration

Please power on after checking the above items.

The VJCE-01A would be in operational status upon power on. However, 10 to 15 minutes are required to satisfy its specifications and performance