Instruction Manual

Model VJP8
Pulse Rate Converter (Multi-function)

JUXTA

IM 77J01P08-01E

1. CAUTIONARY NOTES FOR SAFE USE OF THE PRODUCT

For the correct use of this product, read through this manual before use. The following safety symbol is indicated on the product to ensure safe use.

If this symbol is indicated on the product, the operator should refer to the explanation given in the instruction manual in order to avoid personnel 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 symbol marks 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 product.

2. CHECKING PRODUCT SPECIFICATIONS AND THE CONTENTS OF PACKING

(1) Model Number and Specification Check
Check that the model number and specifications shown on the nameplate attached on the side of the product are as ordered.

(2) Contents of the Packing
Check that the packing contains the following items:

- VJP8 main unit, 1
- Instruction Manual (IM 77J01P08-01E), 1

Accessories:

- Tag number label, 1
- Range label, 1
- Shunt registor (when optional code/R is specified), 1

3. GENERAL

The VJP8 is a plug-in pulse rate converter that receives contact, voltage or current pulse from a field, and converts it into isolated transistor-contact pulse or contactless AC switch pulse at a preset pulse rate. The VJP8 can also be used as a pulse signal repeater by setting the pulse rate and pulse width type.
The VJP8 pulse rate scaler features:

- Either pulse output or communication function (RS-485) is selectable as Output-2.

Keep this manual in a safe place.

4. MOUNTING METHODS

4.1 Wall Mounting

Loosen the main unit-fixing screw of the converter to disconnect the main unit from the socket. Next, anchor the socket onto the wall with screws. Then, plug the main unit into the socket and secure the main unit with the main unit-fixing screw.

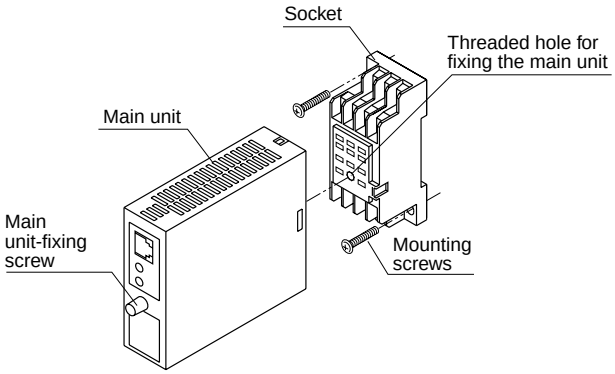


Fig. 4.1

4.1.1 Mounting Dimensions

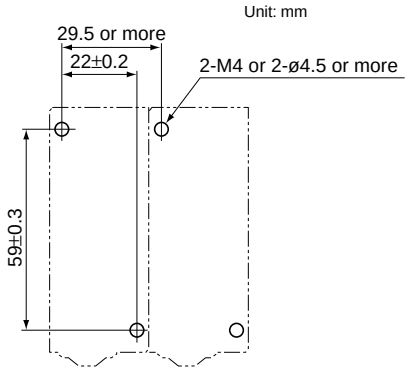


Fig. 4.2

4.2 DIN Rail Mounting

Locate 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 at the lower part of the socket.

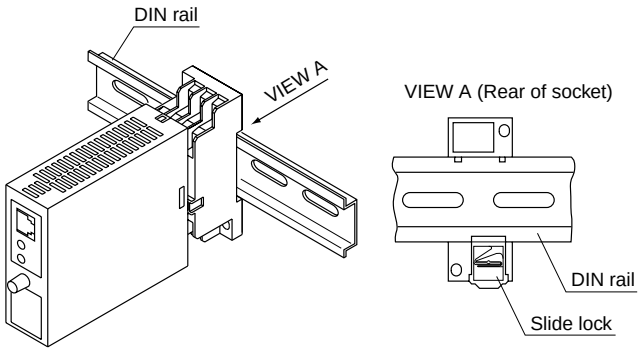


Fig. 4.3

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 77J01P08-01E
1st Edition Feb. 2000
2nd Edition June 2004

4.3 Mounting Using a Multi-mounting Base

For mounting using a multi-mounting base, see the Instruction Manual for VJCE (VJ Mounting Base).

4.4 Using Ducts

Wiring ducts should be installed at least 30 mm away from the top or bottom of the main unit.

4.5 In case of top-and-bottom close mounting

Transmitter should be mounted horizontally with its top and bottom slits being vertical. The top and bottom slits should not be covered.

The area for wiring is required above and below the transmitter (the area with slant lines).

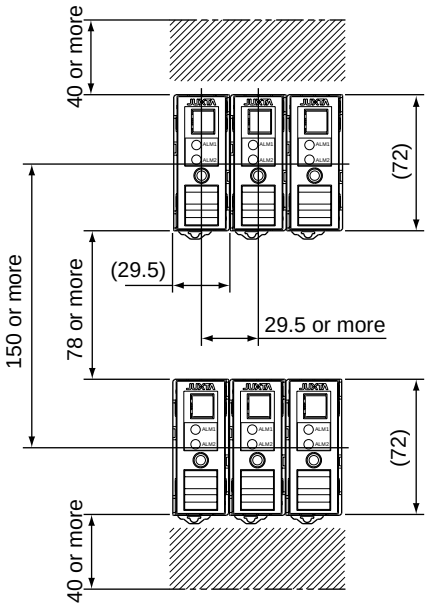


Fig. 4.4

5. INSTALLATION LOCATION

- For installation, avoid any location where the product may be subject to vibrations, corrosive gases, or large amounts of dust, or where the product is exposed to water, oil, solvents, direct sunlight, radioactive rays, or strong electric or magnetic fields.
- If there is a possibility that lightning could induce a high surge voltage on the power and signal lines, provide lightning arresters on the line between the field instrument and indoor instrument in order to protect the product. Install a dedicated arrester on the field side and another on the indoor side.

6. EXTERNAL WIRING

WARNING

Turn OFF the power supply and make sure that none of the cables are not in the hot-line state before carrying out the wiring to avoid the possibility of electric shock.

Wires are connected to the terminals of the isolator's socket. M3 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^2 or thicker for signal cables, and that of 1.25 mm^2 or thicker for power cables, and shielded twisted-pair cables (AWG24) for communication wiring cables.
- For mounting, use M3 screws and crimp-on terminals with insulating sleeves appropriate for the wires used.
  Tool of the crimp-on terminals to be used should be appropriate for the crimp-on terminals.
- Mount a breaker on the external place.
  Mount a switch or 5A circuit breaker on the place near by the instrument, within operator's reach. And attach the indication that it is for disconnecting the instrument.

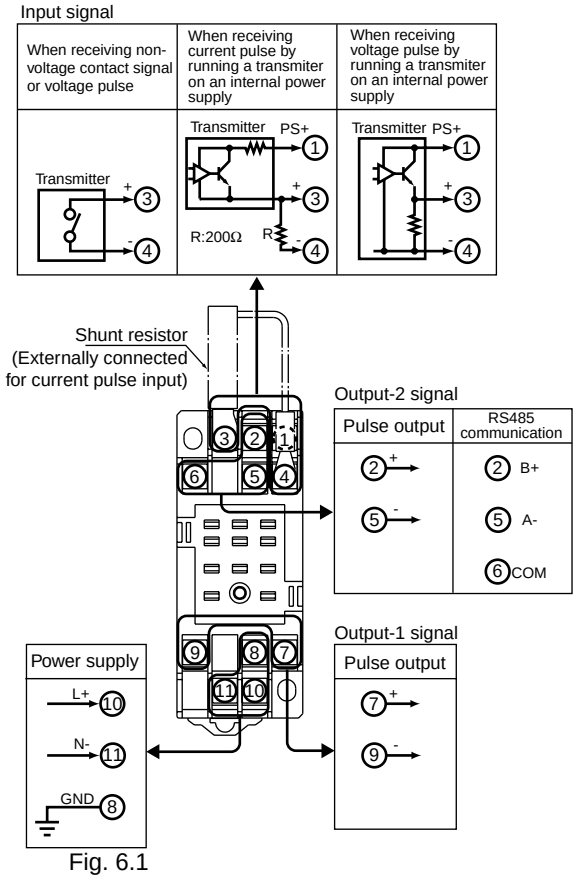


Fig. 6.1

NOTE

- Keep all sources of noise away from the power and signal cables. Otherwise, accuracy cannot be assured.
- Provide grounding to a grounding resistance of 100 Ω. The length of the grounding cable should be 20 m or less. Directly connect the lead from the ground terminal (terminal no. 8) of the isolator to the ground. Do not carry out daisy-chained inter-ground terminal wiring.
- ⎓ Direct Current
- "Overvoltage category (Installation category)" describes a number which defines a transient overvoltage condition. It implies the regulation for impulse withstand voltage. "II" applies to electrical equipment which is supplied from the fixed installation like distribution board.
- "Pollution degree" describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering. "2" applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs. Occasionally, however, temporary conductivity caused by condensation must be expected.
- Rated fuse of 125VDC, 1A is stored. However, operators can not replace the fuse.

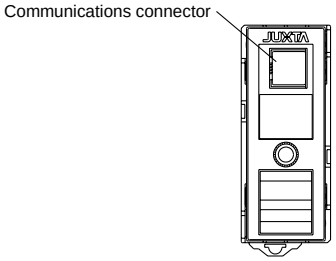
IMPORTANT

- If this instrument is used in a manner not sepecified in this manual, the protection provided by this instrument may be impaired.
- If the product is operated by a power supply exceeding the specifications, the product may become extremely hot and, as a result, damaged. To prevent this, ensure the following before turning on the power.
  (a) The voltage of the supplied power and the input signal level meet the specifications of the product.
  (b) External wires are connected to the correct terminals (refer to Chapter 5).
- Do not operate the product in the presence of flammable or explosive gases or vapors. To do so is highly dangerous.
- The product is sensitive to static electricity; exercise care in operating it. Before you operate the product, touch a nearby metal part to discharge static electricity.

7. DESCRIPTION OF FRONT PANEL AND CONNECTION OF SETTING TOOLS

7.1 Front Panel

The communications connector in the front panel is used for setting up parameters through a PC (VJ77 PC-based Parameters Setting Tool) or the Handy Terminal.



* The LEDs are provided only when output-2 is specified for contact output.

Fig. 7.1 Front Panel

7.2 Connecting the Setting Tools

Connect the modular jack-to-connector adapter (E9786WH) to the JUXTA communication cable with 5-pin connector (F9182EE) and then connect this adapter to the communication connector of JUXTA.

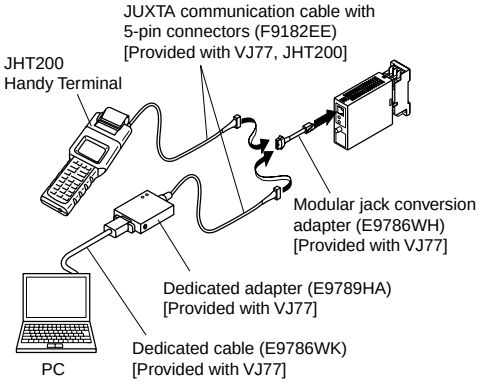


Fig. 7.2 Connecting the Setting Tools

8. SETTING PARAMETERS

Set the parameters using a PC (VJ77 PC-based Parameters Setting Tool) or the Handy Terminal. Refer to the list of parameters in this manual and the Instruction Manual for Handy Terminal (IM JF81-02E) and VJ77 PC-based Parameters Setting Tool (IM 77J01J77-01E).

8.1 Settings Related to inputs and outputs

8.1.1 Input Display Unit

The input display unit is used for referring the input signal. Select and set "Hz" or "kHz" in D10: UNIT.

8.1.2 Pulse Rate

Set the pulse rate within the numerically specified range in D41: PULSE RATE.

Setting range: 0.0001 to 2.0000(settable up to 4 decimal places)

When the pulse width type is set to "THROUGH" (no change), effective range is 0.0001 to 1.0000.

8.1.3 Pulse Width Type

Select and set "THROUGH" or "ON PULSE" in D42: PULSE TYPE..

THROUGH: Outputs ON-state pulse time of frequency as it is.

ON PULSE: Outputs ON-state pulse time after chang ing it to the set value.

When the instrument is used as a pulse signal repeater, set the pulse width type to "THROUGH", and the pulse rate to "1."

8.1.4 Pulse Width Time

The pulse width time is set when the pulse width type is set to "ON PULSE."

Select and set "12.5μs", "50μs", "100μs", "12.5ms", "30ms", "50ms", or "100ms" in D43: PULSE WIDTH.

8.1.5 Input Filter

When the chattering noise is generated in input, the input filter is used to restrain the influence.

Select and set "ON" in D50: INPUT FILTER, then the input filter for time constant of about 10ms will be connected.

8.2 Settings Related to Communication Function

Set the following parameters when output-2 is specified for communication function. For more information on the communication function, see the Instruction Manual for VJ Series Communication Function (IM 77J1J11-01E).

8.2.1 Communication Protocol

Set the communication protocol by selecting from among PC-LINK, PC-LINK WITH SUM, MODBUS ASCII, MODBUS RTU, and LADDER in F01: PROTOCOL.

8.2.2 Communication Address

Set the address number of the isolator numerically in a range of 1 to 99 in F02: ADDRESS.

8.2.3 Baud Rate

Set the baud rate by selecting from among 1200, 2400, 4800, and 9600 bps in F03: BAUD RATE.

8.2.4 Parity

Select and set NONE, EVEN, or ODD in F04: PARITY.

8.2.5 Data Length

Select and set 7 bits or 8 bits in F05: DATA LEN.

8.2.6 Stop Bit

Select and set 1 bit or 2 bits in F06: STOP BIT.

8.2.7 Input Decimal Point Position

Namber of digits of decimal places can be set.

Select and set among 0 to 5 digits in F07: INPUT DEC PT.

9.LIST OF PARAMETERS

No.	Item	Display	Remarks	No.	Item	Display	Remarks
01	Model	MODEL					
02	Tag No.	TAG NO					
03	Self-check result	SELF CHK					
Display items							
A	Display1	DISPLAY1		B	Display2	DISPLAY2	
A01	Input value	INPUT1		B01	Input value	INPUT1	
A33	Temporary memory 1	T1		B31	Integrating counter 1	COUNTER1	
A34	Temporary memory 2	T2		B32	Integrating counter 2	COUNTER2	
A54	Temporary memory 3	T3		B33	Integrating counter 3	COUNTER3	
A55	Temporary memory 4	T4		B34	Integrating counter 4	COUNTER4	
A54	Status	STATUS	*1	B60	Self-check result	SELF CHK	
A56	Rev. no	REV NO		*1 The Status is displayed for service personnel to see history records.			
A58	MENU REV	MENU REV					
A60	Self-check	SELF CHK					
Setting items							
D	Setting (I/O)	SET(I/O)		F	Setting (communication)	SET (COM)	
D01	Tag no. 1	TAG NO.1		F01	Communication protocol	PROTOCOL	
D02	Tag no. 2	TAG NO.2		F02	Address	ADDRESS	
D03	Comment 1	COMMENT1		F03	Baud rate	BAUD RATE	
D04	Comment 2	COMMENT2		F04	Parity	PARITY	
D10	Range unit	UNIT		F05	Data length	DATA LEN	
D41	Pulse rate range	PULSE RATE		F06	Stop bit	STOP BIT	
D42	Pulse width type	PULSE TYPE		F07	Decimal point position of input	INPUT DEC PT	
D43	Pulse width time	PULSE TIME		F60	Self-check result	SELF CHK	
D50	Input filter	INPUT FILTER		There are items not displayed depending on what output-2 is specified.			
D60	Self-check result	SELF CHK					
Adjusting items							
P	Adjustment	ADJUST1					
P60	Self-check result	SELF CHECK					

10.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.
For cleaning the instrument, use a soft and dry cloth.

10.1 Calibration Apparatus

Pulse generator (Yokogawa FG100 or the equivalent): 1
A counter(Yokogawa TC100 or the equivalent) or oscilloscope (Yokogawa DL1540 or the equivalent): 1
A precision resistor (1kΩ, 1.6 kΩ): 1 each
6V battery: 1

10.2 Calibration Procedure

Connect the instruments as shown in Fig.10.1. First adjust the output-1 signal and then the output-2 signal.
Produce a rectangular pulse of any frequency from the pulse generator to measure the value using a counter or oscilloscope. (Connect the counter or oscilloscope as the broken line shown in figure 10.1.)
Next, connect the counter to the terminals 7 and 9, or terminals 2 and 5, then check that the frequency (input frequency x set rate) is output.
When using a oscilloscope, the wave shaping of output pulse can be confirmed.

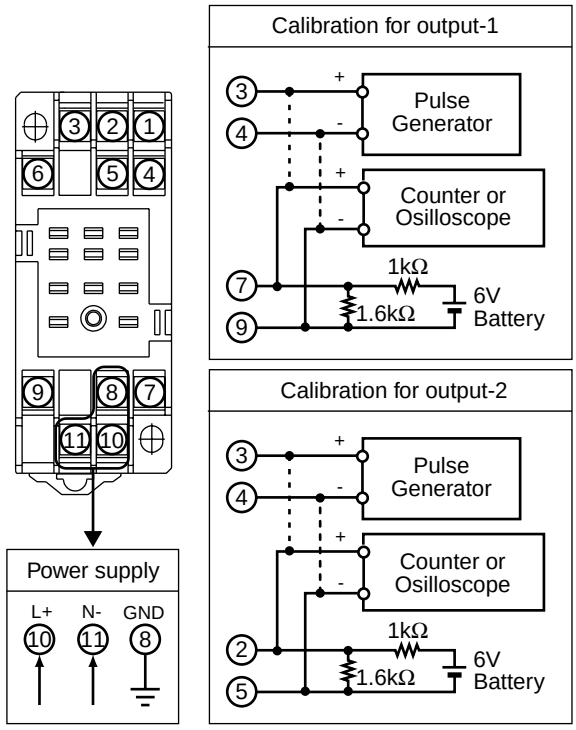


Fig. 10.1