

General Specifications

GS 77J01P08-01E

Model VJP8 Pulse Rate Converter (Multi-function) (Isolated Single-output and Isolated Dual-output Types)

■ General

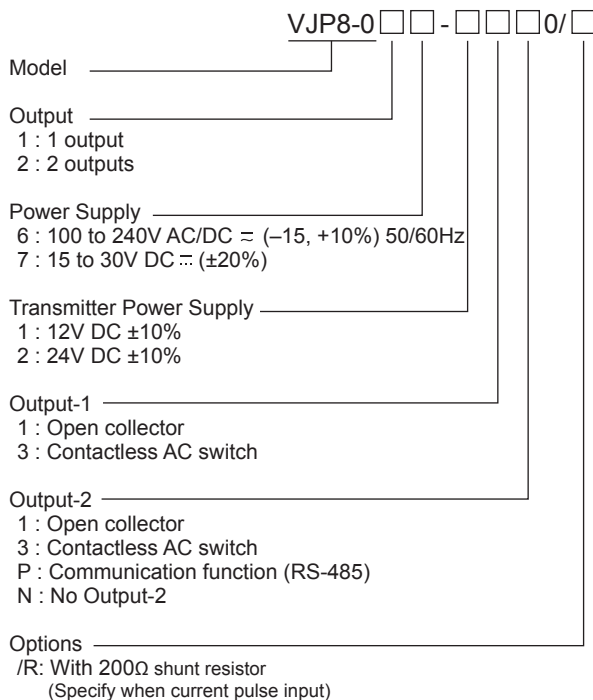
The VJP8 is a plug-in pulse rate converter that receives contact, voltage or current pulse from a field, and converts it into isolated transistor-contact pulse or contactless AC switch pulse at a preset pulse rate. The VJP8 can also be used as a pulse signal repeater by setting the pulse rate and pulse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

- Either pulse output or communication function (RS-485) is selectable as Output-2.
- Various parameters such as pulse rate can be set and modified through a PC (VJ77) or Handy Terminal (JHT200 and the like).



Input display unit: Either Hz or kHz is selectable.
Input Signal Type:

■ Model and Suffix Codes



| | Non-Voltage Contact | |
|------------------------|-------------------------------------|------------------------|
| ON input | Contact resistance of 200Ω or less | |
| OFF input | Contact resistance of 100kΩ or more | |
| | Voltage Pulse | Current Pulse (Note 1) |
| High level (OFF input) | 2 to 50V DC | 10 to 50mA DC |
| Low level (ON input) | -1 to +8V DC | -5 to +40mA DC |
| Pulse width | 2 to 50V DC | 10 to 50mA DC |

(Note1) Maximum permissible current is 50mA for 200V shunt resistor

Maximum permissible input voltage: 58V DC or less
Input resistance:

Contact pulse or voltage pulse: 15kΩ or more
Current pulse: 200Ω (with external shunt resistor: option)

Power supply for contact input signal: At least 15V DC/15mA

Input filter: Has an approx. 10ms time constant
Transmitter power supply: 12V DC ± 10% (for 4 to 30mA output), or 24V DC ± 10% (for 4 to 30mA output)
(With current limit circuit: limited at Max. 50mA)

■ Output

1. Output-1

Operation of Output-1 is same as that of Output-2.

Output pulse: Number of input pulse 3 pulse rate
Pulse rate = output frequency / input frequency

Output signal: Open collector or contactless AC switch

Output frequency:
Open collector: 0 to 100kHz
Contactless AC switch: 0 to 1kHz

Maximum permissible load:
Open collector: 30V DC/200mA
Contactless AC switch: 100V AC/200mA

Pulse rate setting range: 0.0001 to 2.0000 (settable to four decimal places)

When pulse width type is "through", effective range is 0.0001 to 1.0000.

Pulse width type: Either through (no change) or fixed on-state pulse width is selectable.

■ Input

Input signal:

2-wire type; ON/OFF contact, voltage pulse, or current pulse (transmitter power supply available)

3-wire type: Voltage pulse (transmitter power supply available)

Input frequency range: 0 to 100 kHz

When input filter is ON, input frequency; 100 Hz or less, minimum pulse width; 3 ms

Minimum input pulse width:

When input frequency is below 10kHz: 30 μs
When input frequency is 10kHz or more: 30% of pulse interval

Pulse width time: Either 12.5, 50, 100 μ s, 12.5, 30, 50, or 100 ms is selectable.

Input frequency limitation for fixed pulse width:
When the following conditions are not satisfied, number of output pulse is not guaranteed.

$$\text{Input frequency (Hz)} \leq \frac{1}{\text{Pulse width(s)} \times 2} \times n$$

"n" varies with the pulse rate applied.

When pulse rate is 0.0000 to 1.0000,

$$n = \frac{1}{\text{pulse rate}}$$

(integer after omitting the figures below the decimal place)

When pulse rate is 1.0001 to 2.0000, n=0.5.

(Note2) When pulse rate except for "1" is set, the scaler does not always deliver the same speed of output pulses as the number of input pulses multiplied by the given pulse rate. Be fully aware of this fact when using the scaler.

2. Output-2

● Pulse Output

Same as Output-1 specifications

● Communication Function

This converter can be connected to a PC, graphic panel, YOKOGAWA programmable controller FA-M3, or programmable controllers of other manufacturers.

Standards: EIA RS-485

Maximum number of connectable controllers:
31 controllers

Maximum communication distance: 1200 m

Communication method: 2-wire half duplex, start-stop synchronization, non-procedural

Baud rate: 1200, 2400, 4800, 9600 bps

Data length: 8, 7 bit

Stop bit: 1, 2 bit

Parity: Even parity, odd parity, or none

Communication protocol: PC-link, PC-link with SUM, MODBUS ASCII, MODBUS RTU, or LADDER

PC-link communication: Communication protocol with a PC, graphic panel, UT link module of FA-M3

MODBUS communication: Communication protocol with a PC (SCADA).

Ladder communication: Communication protocol with ladder communication module of FA-M3 and programmable controller of other manufacturers

■ Items Available to Be Set

The following items can be set through a PC (VJ77 PC-based parameters setting tool) or Handy Terminal:

Input filter, pulse rate, pulse width type, pulse width time, address number, baud rate, parity, data length, stop bit, protocol

■ Standard Performance

Accuracy rating: $\pm 0.1\%$ of span (however, an indicated value when monitoring input frequency through communication)

Pulse width time accuracy: $\pm 10\%$

However, 25 to 30ms for 30ms (Electromagnetic counter SICD operation is available.)

Effect of power supply voltage fluctuation: 85 to 264V AC (47 to 63Hz) / DC, no wrong operation for each power supply voltage of 12 to 36V DC

(However, when monitoring input frequency through communication, the indicated value is $\pm 0.1\%$ or less.)

Effect of ambient temperature change: No wrong operation for change of 10°C (However, when monitoring input frequency through communication, the indicated value is $\pm 0.2\%$ or less.)

■ Safety and EMC Standards

CSA: CAN/CSA C22.2 No.61010-1
Overvoltage category I, Pollution degree 2, Measurement category O(other)

UL: UL 61010-1
Overvoltage category I, Pollution degree 2, Measurement category O(other)

RCM: EN 55011 Class A Group 1 compliance

KC: Electromagnetic wave interference prevention standard, electromagnetic wave protection standard compliance.
The instrument continues to operate at a measurement accuracy of within $\pm 20\%$ of the range during testing.

The above standards are compliant with the 15-30 V DC rated power supply specifications only. However, models with contactless AC switch outputs are not compliant.

■ Power Supply and Isolation

Power Supply Rated Voltage:
100 to 240 V AC/DC \approx 50/60 Hz
15 to 30 V DC \approx

Power Supply Input Voltage: 100 to 240 V AC/DC = (-15, +10%) 50/60 Hz
15 to 30 V DC \approx ($\pm 20\%$)

Power Dissipation: 24 V DC 3.7 W, 110 V DC 3.7 W
100 V AC 6.5 VA, 200 V AC 8.6 VA

Insulation Resistance: 100 M Ω /500 V DC between input, output-1, output-2, power supply and ground mutually

Withstand Voltage: 2000 V AC / minute between input, (output-1, output-2), power supply, and ground mutually
1000 V AC / minute between output-1 and output-2

■ Environmental Conditions

Temperature: 0 to 50 °C

Humidity: 5 to 90% RH (no condensation)

Ambient Condition: Avoid installation in such environments as corrosive gas like sulfide hydrogen, dust, sea breeze and direct sunlight.

Altitude: 2000 m or less.

Installation location: Indoors

■ Mounting and Appearance

Construction: Compact plug-in type

Material: Modified Polyphenylene Oxide (Case body)

Mounting Method: Wall, DIN rail, or dedicated VJ mounting base (only when Output-2 is analog output) mountings

Connection Method: M3 screw terminal

External Dimension: 29.5x76x124.5mm (WxHxD)

Weight: Approx. 170 g

■ Accessories

Tag Number Label: 1 sheet

Shunt Resistor: 1 (when optional code/R is specified)

■ Items to Specify When Ordering

- Model and Suffix Code

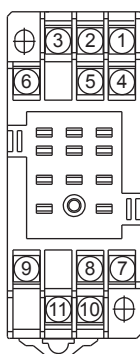
Shipped after setting the input filter ON/OFF and pulse width time as specified.

■ Factory Setting

Factory settings are as follows:

- Input filter: OFF
- Pulse width time: 30ms
- **When output-2 is specified as communication output**
 - Address No.: 01
 - Baud rate: 9600 bps
 - Parity: Even
 - Data length: 8 bit
 - Stop bit: 1 bit
 - Protocol: PCLINK

■ Terminal Arrangement



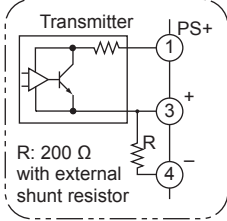
| Terminal No. | Signal | Output-2 Pulse output | Output-2 Communication output |
|--------------|----------|-----------------------|-------------------------------|
| 1 | Input | (PS+) | |
| 2 | Output-2 | (+) | B(+) |
| 3 | Input | (+) (A(+)) | |
| 4 | Input | (-) (A(-)) | |
| 5 | Output-2 | (-) | A(-) |
| 6 | Output-2 | N.C. | COM |
| 7 | Output-1 | (+) (B(+)) | |
| 8 | GND | GND | |
| 9 | Output-1 | (-) (B(-)) | |
| 10 | Supply | (L+) | |
| 11 | Supply | (N-) | |

(Note3) With one-output type, terminals for Output-2 are not connected.

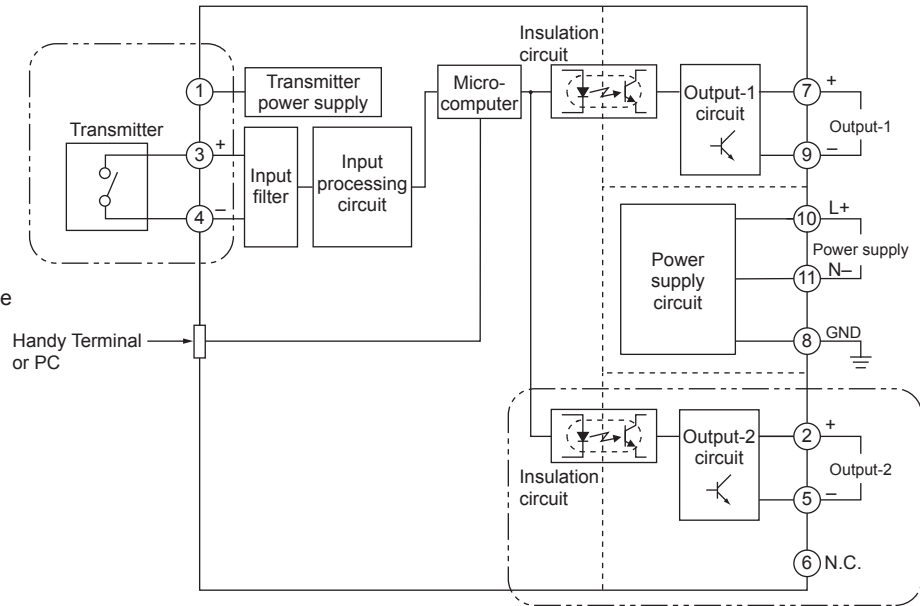
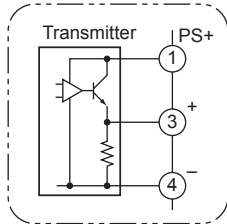
Note: This instrument may output a pulse when the power is turned on/off.
Depending on the connected devices, this pulse output is counted as "one pulse."

Block Diagram

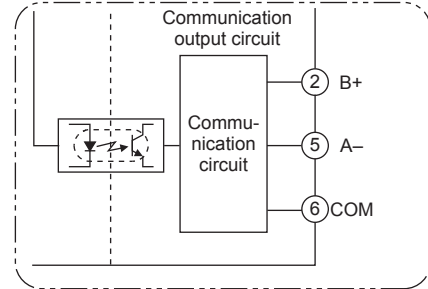
- When Receiving Current Pulse by Running a Transmitter on an Internal Power Supply
- When Receiving Non-Voltage Contact Signal or Voltage Pulses (where, terminal 3 is the positive input (+) and terminal 4 is the negative input (-) for voltage pulse)



- When Receiving Voltage Pulse by Running a Transmitter on an Internal Power Supply



- When output-2 is communication function



External Dimension

