

General Specifications

Model VJP8 Pulse Rate Converter



GS 77J01P08-01E

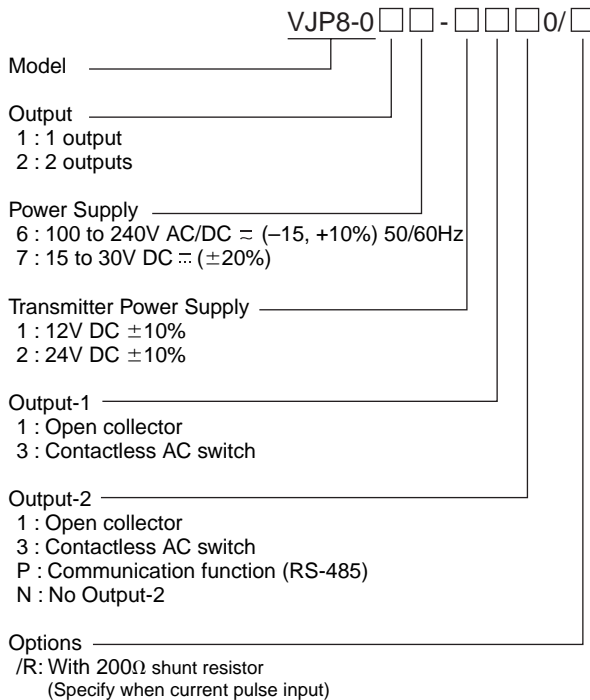
General

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:

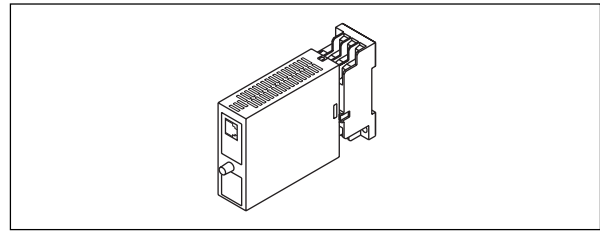
- Either pulse output or communication function (RS-485) is selectable as Output-2.
- Various parameters such as pulse rate can be set and modified through a PC (VJ77) or Handy Terminal (JHT200 and the like).

Model and Suffix Codes



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



Minimum input pulse width:

- When input frequency is below 10kHz: 30 μ s
- When input frequency is 10kHz or more: 30% of pulse interval

Input display unit: Either Hz or kHz is selectable.

Input Signal Type:

	Non-Voltage Contact	
	Voltage Pulse	Current Pulse (Note 1)
ON input	Contact resistance of 200 Ω or less	
OFF input	Contact resistance of 100k Ω or more	
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 200 Ω shunt resistor

Maximum permissible input voltage: 58V DC or less

Input resistance:

- Contact pulse or voltage pulse: 15k Ω or more
- Current pulse: 200 Ω (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 \pm 10% (for 4 to 30mA output), or 24V DC \pm 10% (for 4 to 30mA output)

(With current limit circuit: limited at 50mA)

Output

1. Output-1

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

Output pulse: Number of input pulse \times 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.

Pulse width time: Either 12.5, 50, 100 μ s, 12.5, 30, 50, or 100ms 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 (M&C electromagnetic counter SDC 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

The followings will be acquired.

Safety:

Conforms to IEC1010-1: 1990 and EN61010-11: 1993.

Certified for CSA1010

CSA1010 category: CAT II (IEC1010-1)

Certified for UL508

Non-Incendive Explosion-Proof:

CSA C22.2 No. 213 Class I, Division 2,

Groups A, B, C & D

FM No. 3611 Class I, Division 2, Groups A, B, C & D

The above certified/approved instrument is only for voltage of 15 to 30 V DC.

EMC Standards:

Conforms to the following EMC standards.

EN55011: 1991 Class A Group1 for EMI (emissions)

EN50082-2: 1995 for EMS (immunity)

The above conformed instrument is only for voltage of 15 to 30 V DC $\pm 20\%$; models that have contactless AC switch output are not CE certified.

■ 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 \approx

(-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 6.5 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.
 Installation altitude 2000m or less above sea level.

■ 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: 29.5×76×124.5mm (W×H×D)
 Weight: Approx. 170 g

■ Accessories

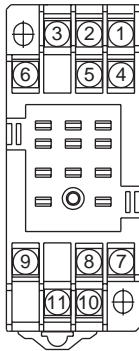
Tag Number Label: 1 sheet
 Shunt Resistor: 1 (when optional code/R is specified)

■ Items to Specify When Ordering

- Model and Suffix Code

Shipped after setting the input filter ON/OFF, input display unit, pulse rate, pulse width type, pulse width time as specified.

■ Terminal Arrangement



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

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

■ Factory Setting

Factory settings are as follows:

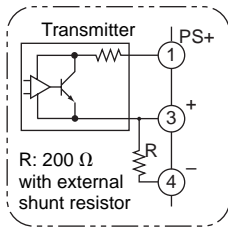
- Input display unit: kHz
- Input frequency: 0 to 100kHz
- Input filter: OFF
- Output frequency: 0 to 100kHz
- Pulse rate: 1.0000
- Pulse width type: Through
- Pulse width time: 30ms

● **When output-2 is specified as communication output**

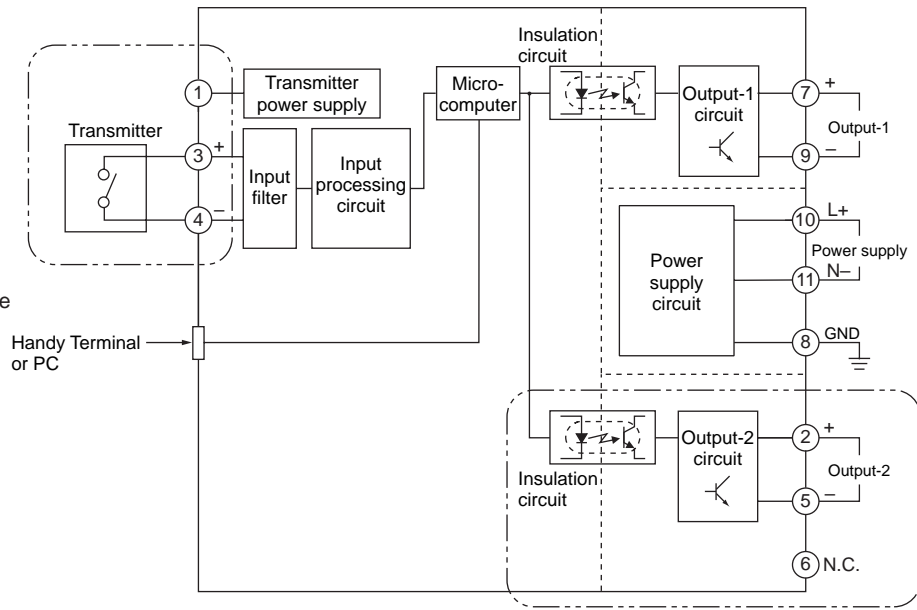
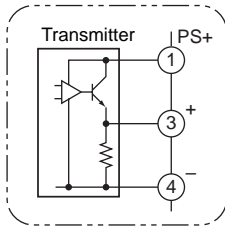
- Address No.: 01
- Baud rate: 9600 bps
- Parity: Even
- Data length: 8 bit
- Stop bit: 1 bit
- Protocol: PCLINK

Block Diagram

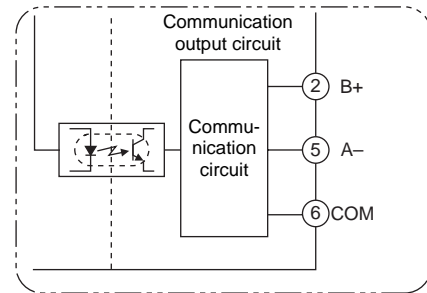
- When Receiving Current Pulse by Running a Transmitter on an Internal Power Supply
- When Receiving Non-Voltage Contact Signal or Voltage Pulses (where, terminal 3 is the positive input (+) and terminal 4 is the negative input (-) for voltage pulse)



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



- When output-2 is communication function



External Dimension

