General Specifications

GS 77J01P08-01E

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

JUXTA

■ 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).

■ Model and Suffix Codes

VJP8-0□□-□□□0/□

Model

Output
1 : 1 output
2 : 2 outputs

Power Supply
6 : 100 to 240V AC/DC ⎓ (–15, +10%) 50/60Hz
7 : 15 to 30V DC ⎓ (±20%)

Transmitter Power Supply
1 : 12V DC ±10%
2 : 24V DC ±10%

Output-1
1 : Open collector
3 : Contactless AC switch

Output-2
1 : Open collector
3 : Contactless AC switch
P : Communication function (RS-485)
N : No Output-2

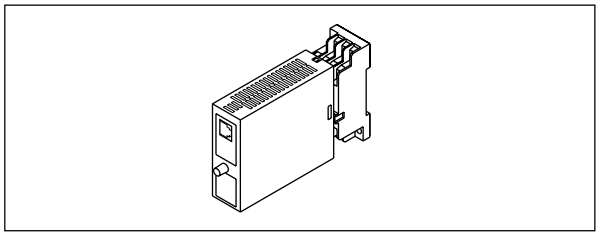
Options
/R: With 200Ω shunt resistor
(Specify when current pulse input)

■ 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: 30μ 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	
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 200Ω 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 contact

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 50mA)

■ Output

1. Output-1

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

Output pulse: Number of input pulse × 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

GS 77J01P08-01E

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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, 100μ 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.

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

“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: ±0.1% of span (however, an indicated value when monitoring input frequency through communication)
Pulse width time accuracy: ±10%
However, 25 to 30ms for 30ms (M&C electro-magnetic counter SIDC 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 ±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 ±0.2% or less.)

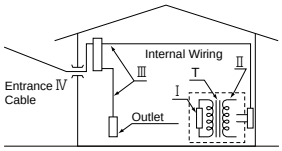
■ Safety and EMC Standards

The followings will be acquired.

Safety: Approved by CSA1010, approved by UL3121-1.

Installation category: CAT. II (CSA1010)
Pollution degree: 2 (CSA1010)
As for the apparatus authorized, power supply voltage is limited to 15 V to 30 V DC, and the circuit to connect is limited to a class 2. (UL3121-1)

Category	Description	Remarks
CAT. Ⅰ	For measurements performed on circuits not directly connected to MAINS.	
CAT. Ⅱ	For measurements performed on circuits directly connected to the low voltage installation.	Appliances, portable equipments, etc.
CAT. Ⅲ	For measurements performed in the building installation.	Distribution board, circuit breaker, etc.
CAT. Ⅳ	For measurements performed at the source of the low-voltage installation.	Overhead wire, cable systems, etc.



EMC Standards: Complies with EN61326.

The above conformed instrument is only for voltage of 15 to 30 V DC ⎓ (±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 ≃ 50/60 Hz
15 to 30 V DC ⎓
Power Supply Input Voltage: 100 to 240 V AC/DC ≃
(–15, +10%) 50/60 Hz
15 to 30 V DC ⎓ (±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 MΩ/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.

■ Factory Setting

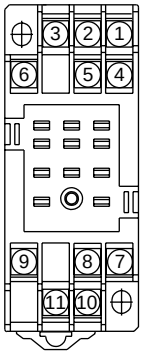
Factory settings are as follows:

• 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

■ Terminal Arrangement

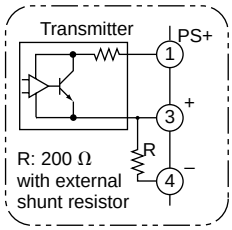


Terminal No.	Signal	Output-2 Pulse output	Output-2 Communication output
1	Input	(PS+)	
2	Output-2	(+)	B(+)
3	Input	(+)	
4	Input	(–)	
5	Output-2	(–)	A(–)
6	Output-2	N.C.	COM
7	Output-1	(+)	
8	GND	GND	
9	Output-1	(–)	
10	Supply	(L+)	
11	Supply	(N–)	

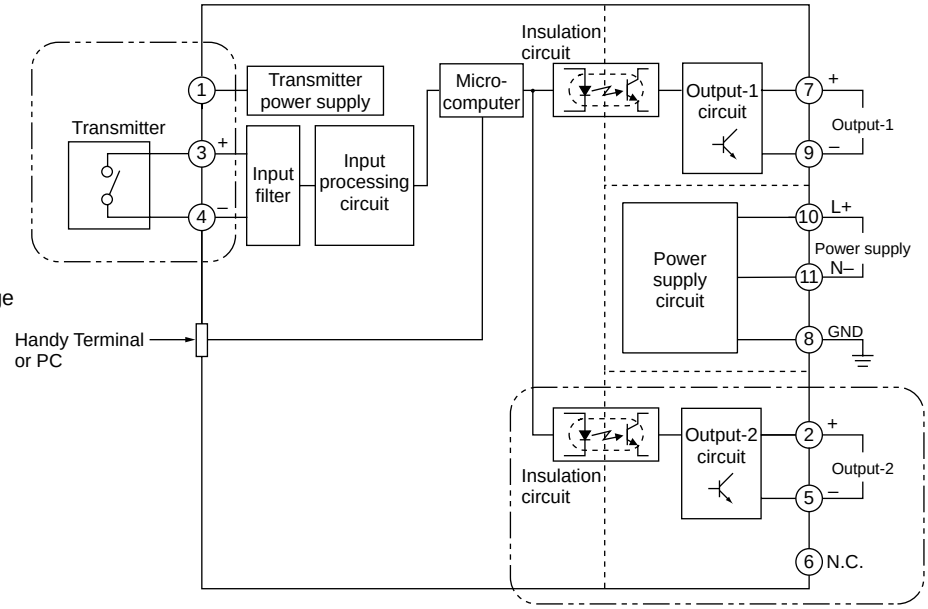
(Note3) With one-output type, terminals for Output-2 are not connected.

■ Block Diagram

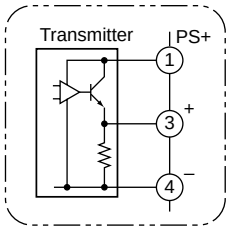
● When Receiving Current Pulse by Running a Transmitter on an Internal Power Supply



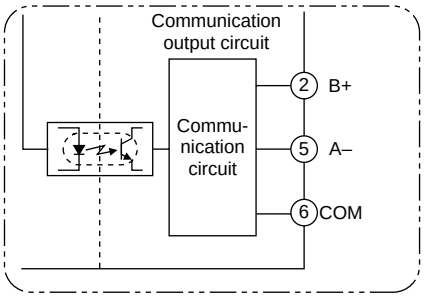
● When Receiving Non-Voltage Contact Signal or Voltage Pulses (where, terminal 3 is the positive input (+) and terminal 4 is the negative input (–) for voltage pulse)



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



● When output-2 is communication function



■ External Dimension

Unit: mm