General Specifications

GS 77J01P04-01E

VJP4
Pulse Rate Converter
(Isolated Single-output and Isolated Dual-output Types)

JUXTA

■ General

The VJP4 is a compact, plug-in pulse rate converter that receives contact, voltage or current pulse from a field, converts it pulse rate to a preset value, and transmits it as isolated transistor-contact pulse or contactless AC switch pulse.

- four isolated ports (input, output-1, output-2, power supply and grounding) on a dual-output model;
- two transmitter power supply - either a 12 V DC and 24 V DC supply;
- a withstanding voltage of 2000 V AC;
- a switch-selectable internal filter (10 ms time constant) for receiving signal that contains a large amount of chatter;
- a wide supply voltage range - supporting both 100 V and 200 V power lines of AC or DC; and
- close side-by-side mounting.

■ Model and Suffix Codes

VJP4-0 □ □ - □ □ □ 0/ □

Model

Output configuration
1: Single
2: Dual

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

Transmitter power supply
1: 12 (±10%) V DC
2: 24 (±10%) V DC

Output-1 signal
1: Open collector (30 V DC/200 mA)
2: Open collector (30 V DC/30 mA)
3: Contactless AC switch

Output-2 signal
1: Open collector (30 V DC/200 mA)
2: Open collector (30 V DC/30 mA)
3: Contactless AC switch
N: None

Options
/SN: Without socket
Blank: With socket

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● Items to be specified when ordering

- Model and Suffix Code: e.g. VJP4-026-1110
- Internal load resistor: e.g. 220 Ω
- Input frequency range: e.g. 0 to 2 kHz
- Output frequency range: e.g. 0 to 5 Hz

■ Input/Output Specifications

Input signal:

	Signal Form
	Voltage-free Contact
ON-state input	Contact resistance of 200 Ω maximum
OFF-state input	Contact resistance of 100 kΩ minimum

	Signal Form	
	Voltage Pulse	Current Pulse
High level	2 to 50 V DC	$2/R_L$ to $50/R_L$ mA
Low level	-1 to +8 V DC	$-1/R_L$ to $+8/R_L$ mA

Voltage pulse amplitude: 2 to 50 V DC
Maximum allowable input voltage: 58 V DC
R_L: Internal load resistor (kΩ)

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Input frequency: 10 kHz maximum
Input resistance: 15 kΩ minimum for contact and voltage pulses
Value of the load resistor for current pulse
Input pulse width: 40 μs minimum for both ON-state and OFF-state durations
Power supply for contact input signal: At least 15 V DC/15 mA
Input filter: Has an approx. 10 ms time constant, which can be turned on or off at the front panel (turned off at shipment).
Transmitter power supply: 12 V DC/30 mA or 24 V DC/30 mA (provided with a current limiter to keep the current between 40 and 60 mA)
Internal load resistor (R_L): None, 220 Ω, 510 Ω, or 1 kΩ (Select either of the three resistor values for the current pulse input and select “none” for the voltage pulse input and voltage-free contact input.)
Output frequency range: 0 to Fo_{100} (Hz), where $Fo_{100} \leq$ 16.6 Hz
Output signal form: Open collector or contactless AC switch, which can be selected separately for output 1 and output 2, provided that output 2 share the same pulse width and pulse rate with output 1.
Maximum allowable load: 30 V DC/200 mA for large-current open collector output
30 V DC/30 mA for small current open collector output
100 V AC/200 mA for contactless AC switch output

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Note: The VJP4 scaler is designed so that the user can input 10000 pulses to obtain the desired number of output pulses (from 0 to 9999). The scaler therefore 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.

■ Standard Performance

Formula for pulse rate calculation:
Pulse rate = Fo_{100}/ Fi_{100}
(where, the rate is rounded to four decimal places)

Maximum Pulse Rate Setpoints vs. Maximum Input Frequency Ranges (Fi_{100})

Maximum Input Frequency Range (Fi_{100})	Pulse Rate
0-16.6 Hz	No limit
16.7-33.3 Hz	0.4000 maximum
33.4-83.3 Hz	0.2000 maximum
83.4-166 Hz	0.1000 maximum
167-333 Hz	0.0400 maximum
334-833 Hz	0.0200 maximum
0.834-1.66 kHz	0.0100 maximum
1.67-3.33 kHz	0.0040 maximum
3.34-8.33 kHz	0.0020 maximum
8.34-10.0 kHz	0.0010 maximum

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Pulse width for ON-state output: 30 (±3) ms
Insulation resistance: 100 MΩ minimum at 500 V DC between input, output-1, output-2, power supply and grounding terminals mutually
Withstanding voltage: 2000 V AC for one minute between input, (output-1, output-2), power supply and grounding terminals mutually;
1000 V AC for one minute between output-1 and output-2 terminals
Operating temperature range: 0 to 50°C
Operating humidity range: 5 to 90% RH (no condensation)
Supply voltage range: 100-240 V AC/DC ≂ (-15, +10%)
50/60 Hz or 15-30 V DC ⎓ (±20%)
Effects of power line regulation: Normal operation is guaranteed for a supply voltage range of 85 to 264 V AC (47 to 63 Hz), 85 to 264 V DC or 12 to 36 V DC.
Effects of ambient temperature variations: Normal operation is guaranteed over the rated operating temperature range.
Current consumption: 121 mA at 24 V DC
Power consumption: 5.5 VA at 100 V AC; 7.5 VA at 200 V AC

Conformance to EMC Standards

Applicable EMC standard: EN61326

CE-certified models mean those which are CE certified on condition that they be operated over a supply voltage range of 15-30 V DC ⎓ (±20%) only;
models that have contactless AC switch output are not CE certified.

Mounting and Appearance

Material: ABS resin (casing)
Mounting: Wall mounting, DIN rail mounting, or

mounting on a side-by-side multiple mounting base

Connection: Terminals with M3 size screws
External dimensions: 76 (H) × 29.5 (W) × 124.5 (D) mm
Weight: Main unit = approx. 120 g; socket = approx. 51 g

Accessories

Tag number label: One

Customized Signal Specifications

Manufacturable Ranges

Output frequency	Less than 10 kHz
ON-state output pulse width	40 μ s minimum

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These specifications are feasible as far as the output pulse width satisfies the following formula:
40 μ s ≤ ON-state output pulse width ≤ $1/Fi_{100} \times 0.5 \times \mathbf{n}$
where, **n** varies with the pulse rate applied.

Pulse Rate $\frac{Fo_{100}}{Fi_{100}}$	n
0.9999-0.4001	1
0.4000-0.2001	2
0.2000-0.1001	5
0.1000-0.0401	10
0.0400-0.0201	20
0.0200-0.0101	50
0.0100-0.0041	100
0.0040-0.0021	200
0.0020-0.0011	500
0.0010-0.0005	1000
0.0004-0.0003	2000
0.0002	5000
0.0001	10000

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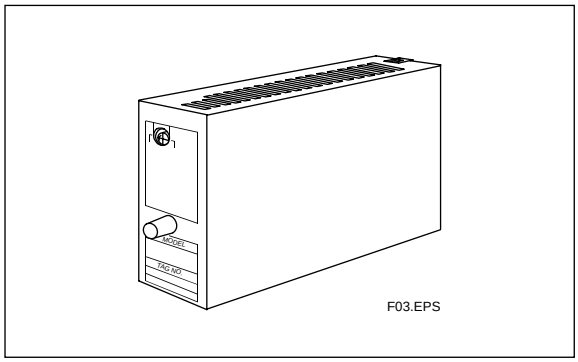

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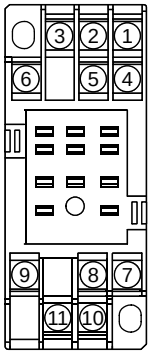
Terminal Assignments



1	INPUT	(PS+)
2	OUTPUT 2	(+)
3	INPUT	(+)
4	INPUT	(-)
5	OUTPUT 2	(-)
6	N.C.	
7	OUTPUT 1	(+)
8	GND	
9	OUTPUT 1	(-)
10	SUPPLY	(L+)
11	SUPPLY	(N-)

Note: For single-output models, OUTPUT2 is N.C.

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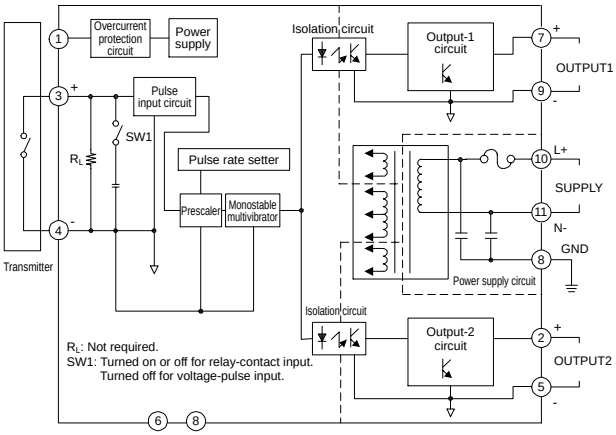
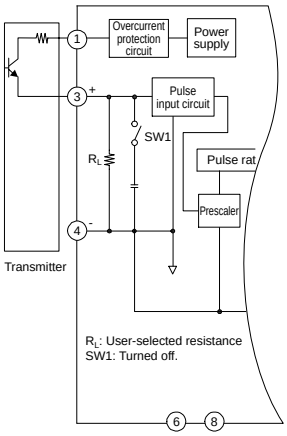
Block Diagrams

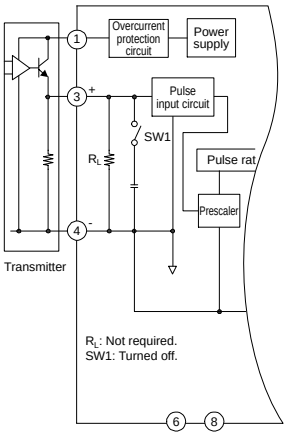
(1) When Receiving Voltage-free Contact Signal or Voltage Pulses (where, terminal 3 is the positive input (+) and terminal 4 is the negative input (-) for voltage pulse)



(2) When Receiving Current Pulse by Running a Transmitter on an Internal Power Supply



(3) When Receiving Voltage Pulse by Running a Transmitter on an Internal Power Supply



Note: Single-output models do not contain the output-2 circuit.

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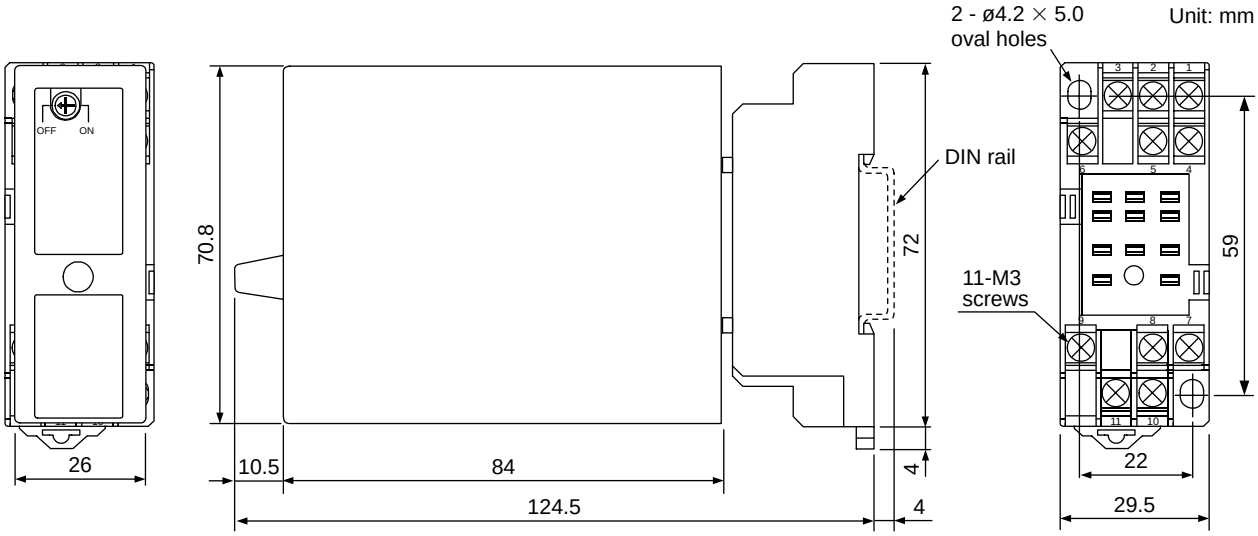
External Dimensions



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- The information covered in this document is subject to change without notice for reasons of improvements in quality and/or performance.