# General Specifications

Model VJR6 JUXTA RTD Converter (Isolated Single-output and Isolated Dual-output Types)

# GS 77J01R06-01E

#### General

The VJR6 is a compact, plug-in type RTD converter that is connected to an IEC/JIS-standard resistance temperature detector (RTD) to convert temperature signals into isolated DC current or DC voltage signals. For the degree Fahrenheit, specify the option "/DF".

#### Model and Suffix Codes

		<u>VJR6</u> -0 □ □	]-[][		/
Model ——					
Output —— 1: 1 output 2: 2 outputs					
	by a				
	AC/DC (Operating r C (Operating range:		4 V)		
Input signal- 1: Pt100 (IT 2: JPt100 (J 3: Pt50 (JIS 4: Pt100 (IP Z: Custom o See Custo	S-90) IS '89) '81) TS-68)	ifications.			
	A DC     1:0 to 10 r       A DC     2:0 to 100       A DC     3:0 to 1 V       A DC     4:0 to 10 V       A DC     5:0 to 5 V       A DC     6:1 to 5 V	) mV DC DC V DC DC DC 10 V DC tage signal)			
	A DC 6: 1 to 5 V	tage signal)			
Burnout — U: UP D: DOWN N: OFF					
Option ——	ypass *	ot specified)			
cc ex Note 1: " op th	/hen option code /C0 onformity to the safety xcluded. CE marking '/C0" option: Polyuret ption does not guarar nough it is expected th or electric circuit is rein	y and EMC sta is not applicab hane coating. nteed the coatin nat the corrosic	ndards le. The "/C( ng effec on resist	is )" t ance	



#### Ordering Information

- Model and Suffix Code: e.g. VJR6-026-166U • Input range (required item): e.g. 0 to 400°C
- Note: The specified input range cannot be changed after the delivery.

#### Input/Output Specifications

Input signal: A three-wire RTD, among the IEC/JISstandard Pt100 (ITS-90), JPt100 (JIS'89), Pt50 (JIS'81) and Pt100 (IPTS-68) detectors Measuring unit: °C, K, °F <sup>(\*)</sup>

\* When specify the option code "/DF". Measuring range:

Input type	Measuring range
JIS C 1604, IEC 60751 (ITS-90) Pt100	-200 to 850°C
JIS C 1604: 1989, JPt100	-200 to 510°C
JIS C 1604: 1981, Pt50	-200 to 649°C
JIS C 1604: 1989, DIN (IPTS-68) Pt100	-200 to 660°C
JIS C 1604, IEC 60751 (ITS-90) Pt100: R0=100 JIS C 1604: 1989, JPt100: R0=100Ω, R100/R0 JIS C 1604: 1989, DIN (IPTS-68) Pt100: R0=10	=1.3916

#### Measuring span: 10°C or more Zero ellevation: Within 5 times the mesuring span Measuring current: Approx. 0.2 mA DC Allowable leadwire resistance: [Input span (°C) x 0.4 $\Omega$ ] or 10 $\Omega$ per leadwire, equal or less than whichever is smaller; if the converter is combined with a BARD-700, this value is that of a resistance that can be attached externally, aside from the internal resistance of the BARD-700. Output signal: DC voltage or DC current signal

Output variable range: -6 to 106 % (Both output 1 and output 2)

Allowable load resistance:

Output-1 Range	Allowable Load Resistance	Output-1 Range	Allowable Load Resistance
4 to 20 mA DC	750 Ω maximum	0 to 10 mV DC	250 kΩ minimum
2 to 10 mA DC	1500 Ω maximum	0 to 100 mV DC	250 kΩ minimum
1 to 5 mA DC	3000 Ω maximum	0 to 1 V DC	2 kΩ minimum
0 to 20 mA DC	750 Ω maximum	0 to 10 V DC	10 kΩ minimum
0 to 16 mA DC	900 Ω maximum	0 to 5 V DC	2 kΩ minimum
0 to 10 mA DC	1500 Ω maximum	1 to 5 V DC	2 kΩ minimum
0 to 1 mA DC	15 kΩ maximum	-10 to +10 V DC	10 kΩ minimum
Output-2 Range	Allowable Load Resistance	Output-2 Range	Allowable Load Resistance
4 to 20 mA DC	350 Ω maximum	1 to 5 V DC	2 kΩ minimum



submit coating test data.

Note 2: "/FB" option: The primary power supply fuse is deleted, short circuit and ship it.

Output resistance: Current output; 500 k $\Omega$  or more Voltage output other than below: 1  $\Omega$  or less 0 to 10 mV DC, 0 to 100 mV DC: 100  $\Omega$  or less Zero adjustment: -5 to +5% Span adjustment: 95 to 105%

#### Standard Performance

- Accuracy rating: ±0.1% of span or 0.1°C, whichever is greater; for Pt50, ±0.2% of span or 0.2°C, whichever is greater; accuracy is not guaranteed for output level less than 0.5% of the span of a 0 to X mA output range type.
- Response speed: 150 ms, 63% response (10 to 90%) Burnout function: One of the three options is selected
  - Up, Down or Off; the maximum burnout time is specified as 60 seconds.
- Effect of power supply voltage fluctuation: Within the accuracy range of span for power supply voltage fluctuation.
- Effect of ambient temperature change: ±0.15% of span for change of 10°C
- Effects of leadwire resistance variations:  $\pm 0.2^\circ C$  per 10  $\Omega/leadwire$

#### Safety and EMC Standards

CE:

- EMC directive EN 61326-1 Class A Table 2 <sup>\*1</sup> compliance EN 61326-2-3 compliance EN 61000-3-2 compliance EN 55011 Class A Group 1 compliance Low voltage directive: EN 61010-1, EN 61010-2-030 Overvoltage category II <sup>\*2</sup>, Pollution degree 2 <sup>\*3</sup>, Measurement category O (other)
- Measurement category O (other) CSA: CAN/CSA C22.2 No. 61010-1 CAN/CSA C22.2 No. 61010-2-030 Overvoltage category II <sup>12</sup>, Pollution degree 2 <sup>\*3</sup>, Measurement category O (other)
- UL: UL 61010-1 (CSA NRTL/C) UL 61010-2-030 (CSA NRTL/C) Overvoltage category II <sup>12</sup>, Pollution degree 2 <sup>+3</sup>, Measurement category O (other)
- RCM: EN 55011 Class A Group 1 compliance
- KC: Electromagnetic wave interference prevention standard, electromagnetic wave protection standard compliance
  - \*1 The instrument continues to operate at a measurement accuracy of within ±20% of the range during testing.
  - \*2 Overvoltage category II: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. "II" applies to electrical equipment which is supplied from the fixed installation like a distribution board.
  - \*3 Pollution degree 2: 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.

However, if optional code /C0 or /FB is specified, the conformity to the safety and EMC standards is excluded.

#### Environment Standard

EU RoHS directive: EN IEC 63000 (However, when option code /C0 or /FB is specified, CE marking is not applicable because the product does not comply with the Safety and EMC standards.)

#### Power Supply and Isolation

Power supply rated voltage: 100-240 V AC/DC = 50/60 Hz or 15-30 V DC ... Power supply input voltage: 100-240 V AČ/DC ≂ (-15, +10%) 50/60 Hz or 15-30 V DC ... (±20%) Power consumption: 2.2 W at 24 V DC ; 2.1 W at 110 V DC; 4.2 VA at 100 V AC; 6.1 VA at 200 V AC Insulation resistance: 100 M $\Omega$  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 and output-2), power supply and grounding terminals mutually; 1000 V AC for one minute between output-1 and output-2 terminals

#### Environmental Conditions

- Temperature: -10 to 55 °C (45 °C or less for side-byside close installation\*)
  - \* If the previous model (style S3'xx earlier) is installed together, the ambient temperature is 0 to 40°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.
- Magnetic field: 400 A/m or less.
- Continuous vibration (at 5 to 9 Hz) Half amplitude of 3 mm or less (at 9 to 150 Hz) 4.9 m/s2 or less, 1 oct/min for 90 minutes each in the 3-axis directions.
- Impact: 98 m/s2 or less, 11 msec, 3-axis 3 times each in 6 directions.
- Altitude: 2000 m or less.
- Installation location: Indoors

Warm-up time: At least 30 minutes after power on.

### Transport and Storage Conditions

Ambient temperature: -25 to 70 °C Temperature change rate: 20 °C per hour or less Ambient humidity: 5 to 95 %RH (no condensation)

### Mounting and Appearance

Construction: Compact plug-in type Material: Modified polyphenylene oxide (casing) Mounting method: Wall, DIN rail or dedicated VJ mounting base (VJCE) mounting Connection method: M3 screw terminals External dimensions: 76 (H) x 29.5 (W) x 124.5 (D) mm (including a socket)

	(including a socker)
Weight:	Main unit; 100 g or less
0	Socket; 50 g or less

#### Accessories

Tag number label: 1 sheet

#### Customized Signal Specifications

#### Input custom specification

Special RTD with temperature table. The measuring range is between 0 and 2000  $\Omega$  in resistance value.

- Note: The conformity to the safety standards, EMC standards, and environmental standards is excluded. However, the following specifications conform to safety standards, EMC standards, and environmental standards.
- Input signal: A three-wire Copper Resistance Thermometer
  - Standard resistance (R0): 10  $\Omega,$  25  $\Omega,$  50  $\Omega,$  53  $\Omega,$  100  $\Omega$

Standard temperature (T0): 0°C, 20°C, 25°C Temperature coefficient (α): 0.00350 to 0.00464 Measuring range:

Temperature range: -50 to 200°C

Resistance value range (reference): 0 to 190  $\Omega$ Minimum span: 50°C

Measuring current: 0.881 mA (except Cu100) 0.546 mA (Cu100)

Leadwire resistance: max. 5  $\Omega$ 

Effect of leadwire resistance: ±0.3% of span

Accuracy rating: ±0.3% of span or 0.3°C, whichever is greater

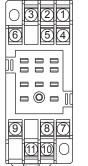
#### Output custom specification

	Current Signal	Voltage Signal
Output range (DC)	0 to 24 mA	-10 to +10 V
Span (DC)	1 to 24 mA	10 mV to 20 V
Zero elevation	0 to 200%	-100 to +200%

Note: Customized specifications for the output-1 signal within 0 to 20 mA DC or within -10 to +10 V DC comply with safety standards, EMC standards, and environmental standards.

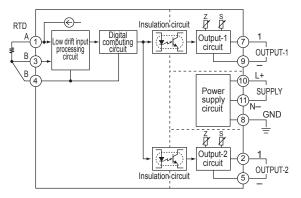
- The above note is limited to the standard specification of output-2.
- Other customized specifications do not conform to these standards.

## Terminal Assignments



1	Input	(A)
2	Output-2	(+)
3	Input	(B)
4	Input	(B)
5	Output-2	(-)
6	Do not use	
7	Output-1	(+)
8	GND	
9	Output-1	(-)
10	Supply	(L+)
11	Supply	(N-)
Do not	use output-2	for the single
output	type.	•

#### Block Diagram



#### 2 - ø4.2 × 5.0 Unit: mm holes (depth: 6) $\bigcirc$ DIN rail $\bigcirc$ $\bigcirc$ 70.8 6 20 72 11 - M3 = 0 = screws 4 6 10.5 84 (30)26 22 Main unit-fixing screw 124.5 (4) 29.5

# External Dimensions