

General Specifications

GS 77J01S07-01E

Model VJS7 Potentiometer Converter (Multi-function) (Isolated Single-output and Isolated Dual-output Types)

JUXTA

■ General

The VJS7 is a compact, plug-in potentiometer converter that is used in combination with an instrument to transmit information for displacement of valve, etc. by resistance change of potentiometer. It converts the resistance changes into isolated DC current or DC voltage signals.

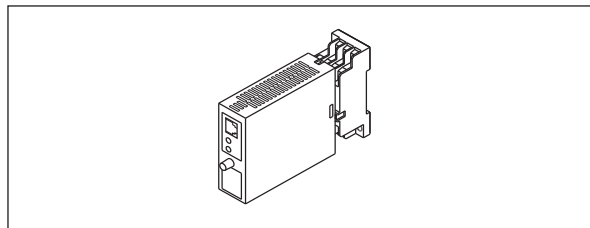
- Output-2 can be selected from DC voltage signal, DC current signal, communication output (RS-485), or alarm output (2 relay contacts).
- Various parameters such as input range can be set and modified using a PC (VJ77) or Handy Terminal (JHT200 or the like).

■ Model and Suffix Codes

Model	VJS7-0□□-□□□□0/□
Output	1: 1 output 2: 2 outputs
Power Supply	6: 100 to 240 V AC/DC \pm (-15, +10%) 50/60 Hz 7: 15 to 30 V DC \pm (\pm 20%)
Input Signal	1: Potentiometer resistance (Full resistance: 100 Ω to 10 k Ω) Z: Optional signals of resistance other than the code-1 resistance above
Output-1 Signal	A: 4 to 20 mA DC 1: 0 to 10 mV DC B: 2 to 10 mA DC 2: 0 to 100 mV DC C: 1 to 5 mA DC 3: 0 to 1 V DC D: 0 to 20 mA DC 4: 0 to 10 V DC E: 0 to 16 mA DC 5: 0 to 5 V DC F: 0 to 10 mA DC 6: 1 to 5 V DC G: 0 to 1 mA DC 7: -10 to +10 V DC Z (Custom Order): DC current/voltage signal)
Output-2 Signal	A: 4 to 20 mA DC 6: 1 to 5 V DC P: Communication function (RS-485) T: Alarm output (2 relay contacts) N: No output-2
Options	/SN: Without socket Blank: With socket

■ Input

Input signal: Potentiometer resistance change (3-wire type)
Measuring range:
Full resistance: 100 Ω to 10 k Ω
Measurement span: 50 Ω to 10 k Ω
Zero elevation: 50% of full resistance or less
Measuring voltage: Approx. 0.5 V DC
Permissible input conductor resistance: 50% or less of Full resistance or 1 k Ω per leadwire, equal or less than whichever is small (Resistance of 3 lines must be the same.)



■ Output

1. Output-1

Output Signal	Output Resistance	Permissible Load Resistance
4 to 20 mA DC	500 k Ω or more	750 Ω or less
2 to 10 mA DC		1500 Ω or less
1 to 5 mA DC		3000 Ω or less
0 to 20 mA DC		750 Ω or less
0 to 16 mA DC		900 Ω or less
0 to 10 mA DC		1500 Ω or less
0 to 1 mA DC	100 Ω or less	15 k Ω or less
0 to 10 mV DC		250 k Ω or more
0 to 100 mV DC		
0 to 1 V DC		2 k Ω or more
0 to 10 V DC		10 k Ω or more
0 to 5 V DC		2 k Ω or more
1 to 5 V DC	1 Ω or less	2 k Ω or more
-10 to +10 V DC		10 k Ω or more

2. Output -2

• Analog Output

Output Signal	Output Resistance	Permissible Load Resistance
1 to 5 V DC	1 Ω or less	2 k Ω or more
4 to 20 mA DC	500 k Ω or more	350 Ω or less

• Communication Function

This isolator 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 bits

Stop bit: 1, 2 bits

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

● Alarm Output

Signal type: Relay contact

Output signal: N. O. contact output (contact ON at excitation) 2 points, COM common

Contact capacity: 30 V DC, 1 A

Alarm operating direction: High limit alarm or low limit alarm

Relay operating direction setting: Excitation or non-excitation at normal status

Alarm setting range: 0 to 100% of input range

Setting resolution: 0.1%, 4 significant digits

Hysteresis setting range: 0 to 100% of input range

Setting resolution: 0.1%, 4 significant digits

Alarm on-delay setting: Delay time from alarm condition completion to output
(Ex. Outputted when alarm status continues for 1 second or more after input value is over alarm point in case of set value "1 second.")

Setting range: 0 to 999 seconds

Setting resolution: 1 second (however, add about 0.2 second to setting time to prevent wrong operation)

Alarm off-delay setting: Delay time from alarm normal condition completion to output
(Ex. Released when normal status continues for 2 seconds or more after input value comes back to normal status from alarm status in case of set value "2 seconds.")

Setting range: 0 to 999 seconds

Setting resolution: 1 second (however, add about 0.2 second to setting time to prevent wrong operation)

Alarm operation display: Front LED lights at alarm, 2 LEDs

● Zero and Span adjustment:

Output Zero adjustment: $\pm 5\%$

Output Span adjustment: $\pm 10\%$ of Span

Output Span adjustment: $\pm 5\%$ of Span
(Output-1 Signal; ± 10 to $+10$ V DC)

■ Items Available to Be Set

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

Input range, burnout, address number, baud rate, parity, data length, stop bit, protocol, alarm operating direction, relay operating direction, alarm setting, hysteresis, alarm on-delay and alarm off-delay

■ Standard Performance

Accuracy rating: $\pm 0.1\%$ of span

However, accuracy is not guaranteed for output level less than 0.5% of the span of a 0 to X mA output range type.

Accuracy is a large-value, either of case 1) or case 2).

case 1) : Measurement span is under 50% of Full resistance

$$\text{Accuracy (\%)} = \frac{0.1\% \times \text{Full resistance (W)}}{2 \times \text{Measurement span (W)}}$$

case 2): Measurement span is under 80%

$$\text{Accuracy (\%)} = \frac{0.1\% \times 80 \text{ (W)}}{\text{Measurement span (W)}}$$

Response Speed: 150 ms, 63% response (10 to 90%)

Alarm output: 350 ms (input change 10 to 90%, alarm setting point 50%, time till alarm output, when alarm delay setting and hysteresis are minimum.)

Burnout: Up, Down, OFF

Burnout time: Within 60 seconds

Effect of Power Supply Voltage Fluctuation: $\pm 0.1\%$ or less of span for power supply voltage fluctuation of 85 to 264 V AC (47 to 63 Hz)/DC and 12 to 36 V DC.

Effect of Ambient Temperature Change: $\pm 0.2\%$ or less of span for change of 10 °C

■ Safety and EMC Standards

The followings will be acquired.

Safety: Approved by CAN/CSA C22.2 No.61010-1(CSA), approved by UL61010-1.

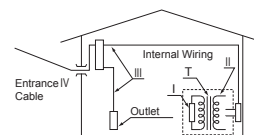
Installation category: CAT. II

Pollution degree: 2

As for the apparatus authorized, power supply voltage is limited to 15V-30VDC, and the circuit to connect is limited to a class 2.

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.

TOO.EPS



EMC standards:

Compliant with CE marking EN 61326-1.

KC marking: 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 conformed instrument is only for voltage of 15 to 30 V DC $\pm 20\%$.

■ 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 2.5 W, 110 V DC 2.6 W
 100 V AC 5 VA, 200 V AC 6.7 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 input and
 output-2 when alarm output
 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 environ-
 ments as corrosive gas like hydrogen sul-
 fide, dust, sea breeze and direct sunlight.
 Installation altitude 2000 m 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 mountings (only when Out-
 put-2 is analog output.)
 Connection Method: M3 screw terminal
 External Dimension: 29.5x76x124.5mm (WxHxD)
 Weight: Approx. 170 g

■ Standard Accessories

Tag number label: 1
 Range label: 1

■ Items to Specify When Ordering

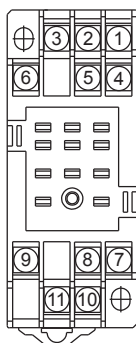
- Model and suffix codes
 The input ranges and burnout are set as specified
 before shipment.

■ Factory Setting

Factory settings are as follows:

- Full resistance: 1 k Ω
- Input range: 0 to 1 k Ω
- Burnout: OFF
- **When output-2 is specified as communication output**
 - Address No.: 01
 - Baud rate: 9600 bps
 - Parity: Even
 - Data length: 8 bits
 - Stop bit: 1 bit
 - Protocol: PCLINK
- **When output-2 is specified as alarm output**
 - Alarm operating direction: High limit alarm (alarm-1),
 low limit alarm (alarm-2)
 - Relay operating direction: Excitation at alarm (alarm-1 / 2)
 - Alarm setting: 100% (alarm-1), 0% (alarm-2)
 - Hysteresis: 3% (alarm-1 / 2)
 - Alarm on-delay: 0 second (alarm-1 / 2)
 - Alarm off- delay: 0 second (alarm-1 / 2)

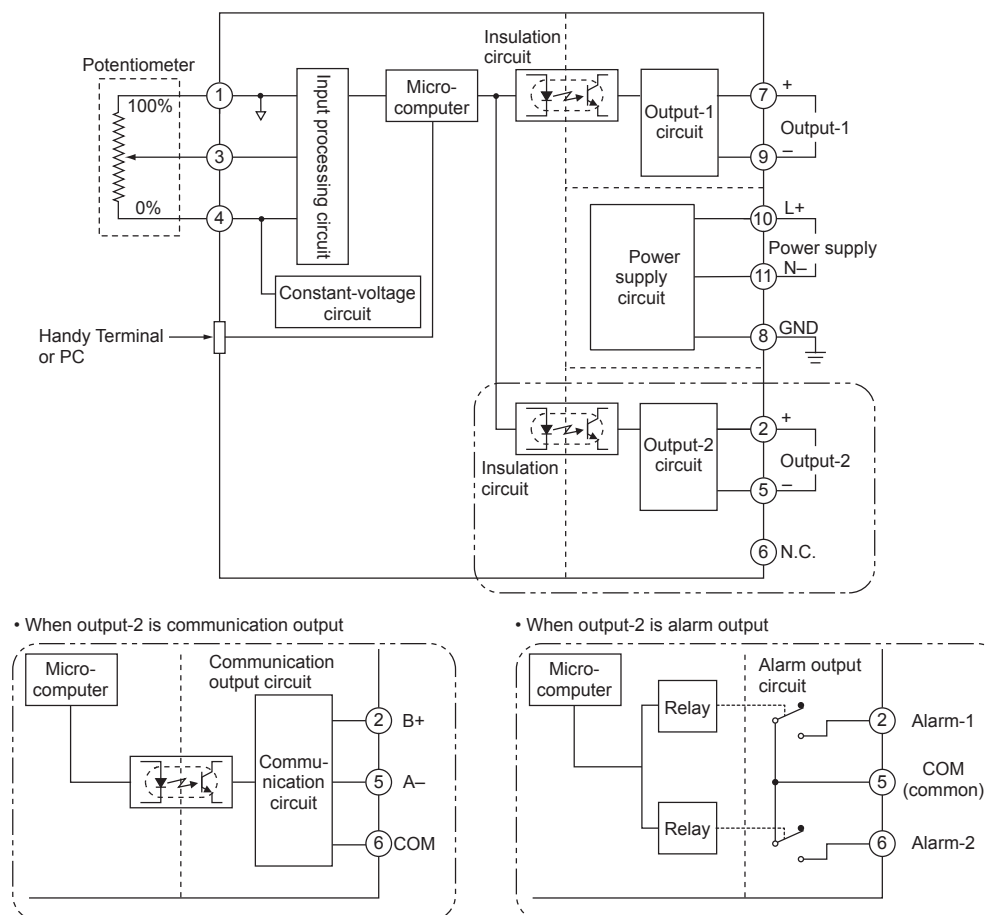
■ Terminal Arrangement



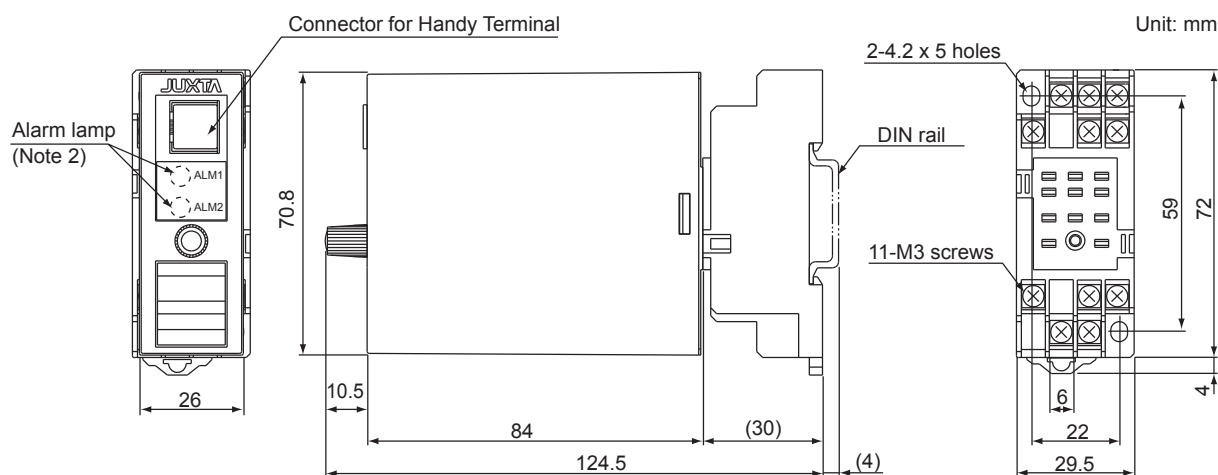
Terminal No.	Signal	Output-2 analog output	Output-2 communication output	Output-2 alarm output
1	Input	(100%)		
2	Output-2	(+)	B (+)	ALM1
3	Input	(CENTER)		
4	Input	(0%)		
5	Output-2	(-)	A (-)	COM
6	Output-2	Not connected	COM	ALM2
7	Output-1	(+))		
8	GND	GND		
9	Output-1	(-)		
10	Power supply	(L+)		
11	Power supply	(N-)		

Note 1: With one-output type, terminals for Output-2 are not connected.

■ Block Diagram



■ External Dimensions



Note 2: Only when output-2 is alarm output