

# General Specifications

GS 77J01S07-01E

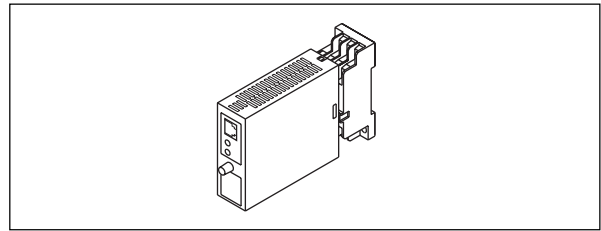
## Model VJS7 Potentiometer Converter (Isolated Single-output and Isolated Dual-output Types)

JUXTA

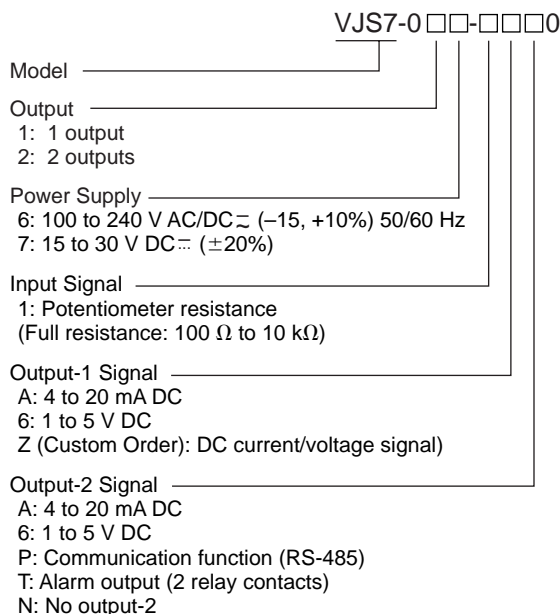
### General

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



### Input

Input signal: Potentiometer resistance change (3-wire type)  
Measuring range:  
Full resistance: 100 Ω to 10 kΩ  
Measurement span: 80 Ω to 10 kΩ  
Zero elevation: 50% of full resistance or less  
Measuring voltage: Approx. 0.5 V DC  
Permissible input conductor resistance: 50% of input span or less for each line  
(Resistance of 3 lines must be the same.)

### Output

#### 1. Output-1

Output Signal	Output Resistance	Permissible Load Resistance
1 to 5 V DC	1 Ω or less	2 kΩ or more
4 to 20 mA DC	500 kΩ or more	750 Ω or less

#### ● Custom Order Output Signal

2 to 10 mA DC, 1 to 5 mA DC, 0 to 20 mA DC,  
0 to 16 mA DC, 0 to 10 mA DC, 0 to 1 mA DC  
0 to 10 mV DC, 0 to 100 mV DC, 0 to 1 V DC,  
0 to 10 V DC, 0 to 5 V DC, -10 to +10 V DC

#### 2. Output -2

#### ● Analog Output

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

■ **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: ±0.1% of span  
However, accuracy is limited when the input span is lower than 50% of full resistance.  
Accuracy (%) =  $[\pm 0.1\% \times \text{full resistance } (\Omega)] / [2 \times \text{measurement span } (\Omega)]$
- Response Speed: 200 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.)

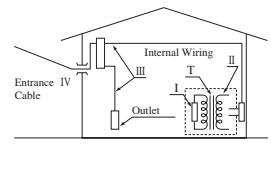
- Burnout: Up, Down, OFF  
Burnout time: Within 60 seconds
- Effect of Power Supply Voltage Fluctuation: ±0.1% or less of span for power supply voltage fluctuation of 85 to 264 V AC (47 to 63 Hz)/DC and 12 to 36 V DC.
- Effect of Ambient Temperature Change: ±0.2% or less of span for change of 10 °C

■ **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 15V-30VDC, 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%).

■ **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 2.5 W, 110 V DC 2.6 W  
100 V AC 5 VA, 200 V AC 6.7 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 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 environments as corrosive gas like hydrogen sulfide, 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 Output-2 is analog output.)  
 Connection Method: M3 screw terminal  
 External Dimension: 29.5×76×124.5mm (W×H×D)  
 Weight: Approx. 170 g

### ■ Standard Accessories

Tag number label: 1

### ■ Items to Specify When Ordering

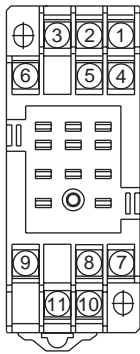
- Model and suffix codes  
 The input ranges and burnout are set as specified before shipment.

### ■ Factory Setting

Factory settings are as follows:

- Full resistance: 1 kΩ
- Input range: 0 to 1 kΩ
- 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)

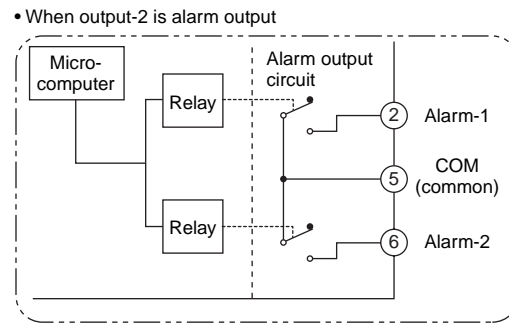
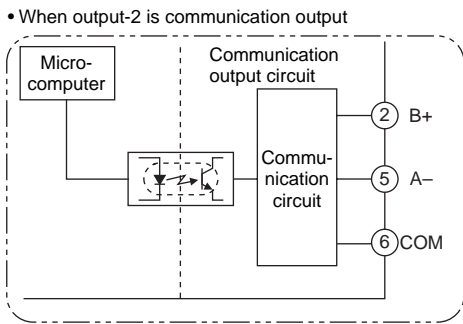
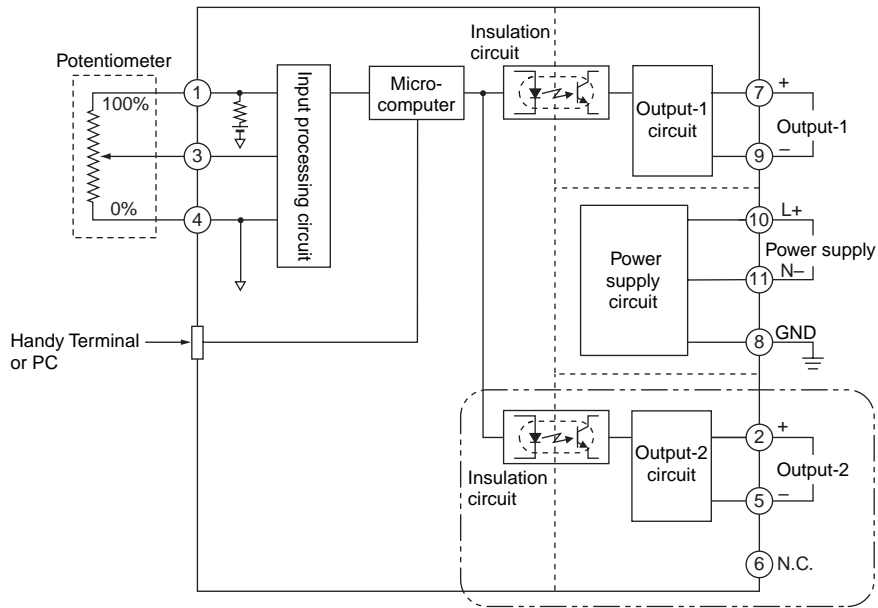
### ■ Terminal Arrangement



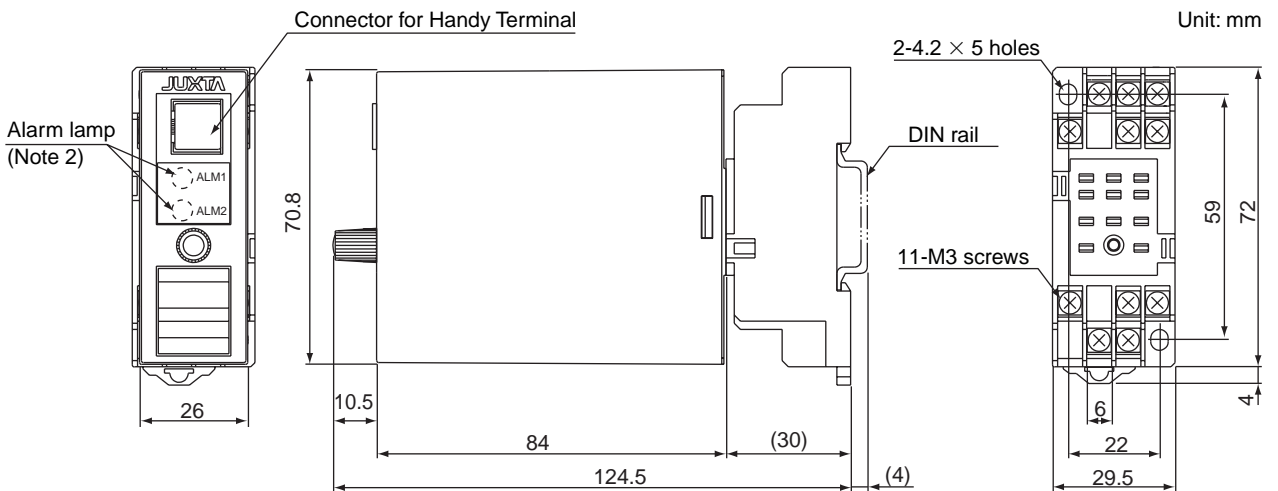
Terminal No.	Signal	Output-2 analog output	Output-2 communication output	Output-2 alarm output
1	Input	(100%)		
2	Output-2	(+)	B (+)	ALM1
3	Input	(CENTER)		
4	Input	(0%)		
5	Output-2	(-)	A (-)	COM
6	Output-2	Not connected	COM	ALM2
7	Output-1	(+)		
8	GND	GND		
9	Output-1	(-)		
10	Power supply	(L+)		
11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