General Specifications

Model VJS7
Potentiometer Transmitter

JUXTA

GS 77J01S07-01E

■ General

This plug-in type transmitter is used in combination with transmitters which send displacement information of regulator valves by resistance change signals from a potentiometer, and converts the resistance change 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

VJS7-0□□-□□□0

Model

Output
1: 1 output
2: 2 outputs

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

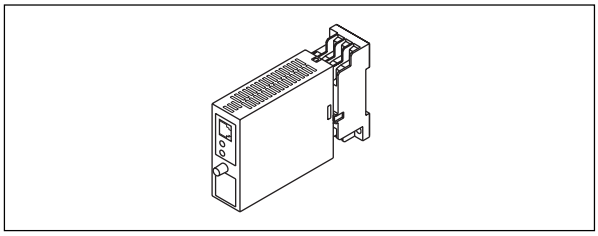
Input Signal
1: Potentiometer resistance
(Full resistance: 100 Ω to 10 kΩ)

Output-1 Signal
A: 4 to 20 mA DC
6: 1 to 5 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

■ 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

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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 (%) = [±0.1% × full resistance (Ω)] / [2 × measurement span (Ω)]
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 minimun.)
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:

Conforms to IEC1010-1: 1990 and EN61010-11: 1993.
Certified for CSA1010
CSA1010 category: CAT II (IEC1010-1)
Certified for UL508

EMC Standards:

Conforms to the following EMC standards.
EN55011: 1991 Class A Group1 for EMI (emissions)
EN50082-2: 1995 for EMS (immunity)
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.

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■ 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

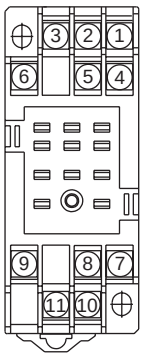
● **When output-2 is specified as communication output**

• 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.

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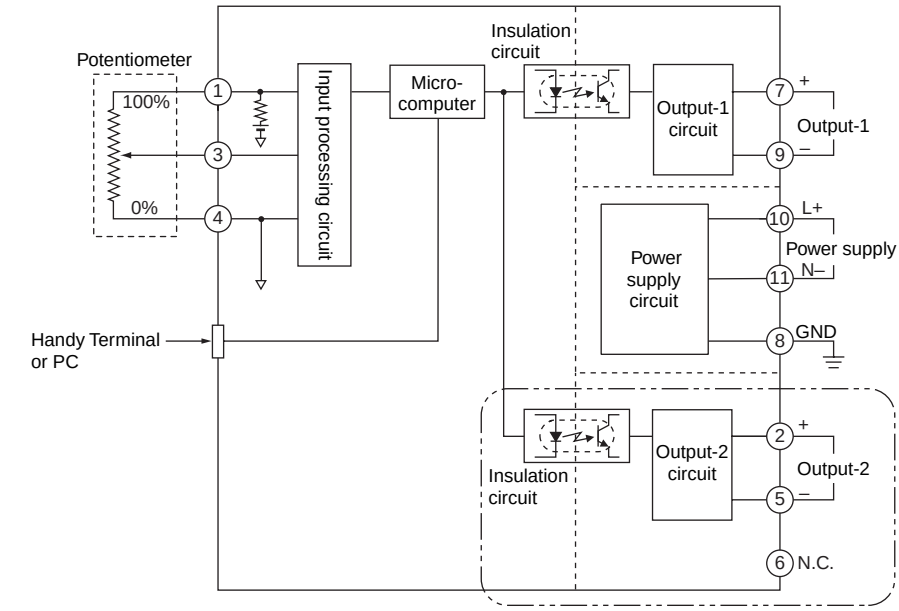
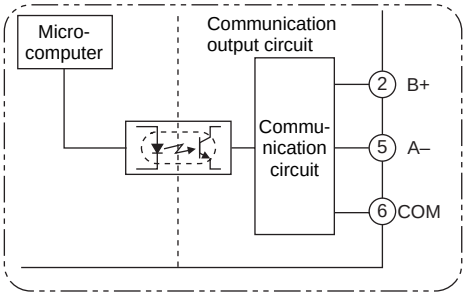
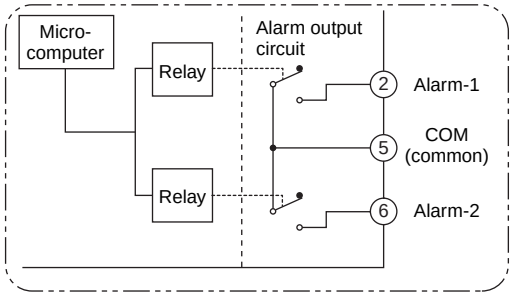
■ Block Diagram



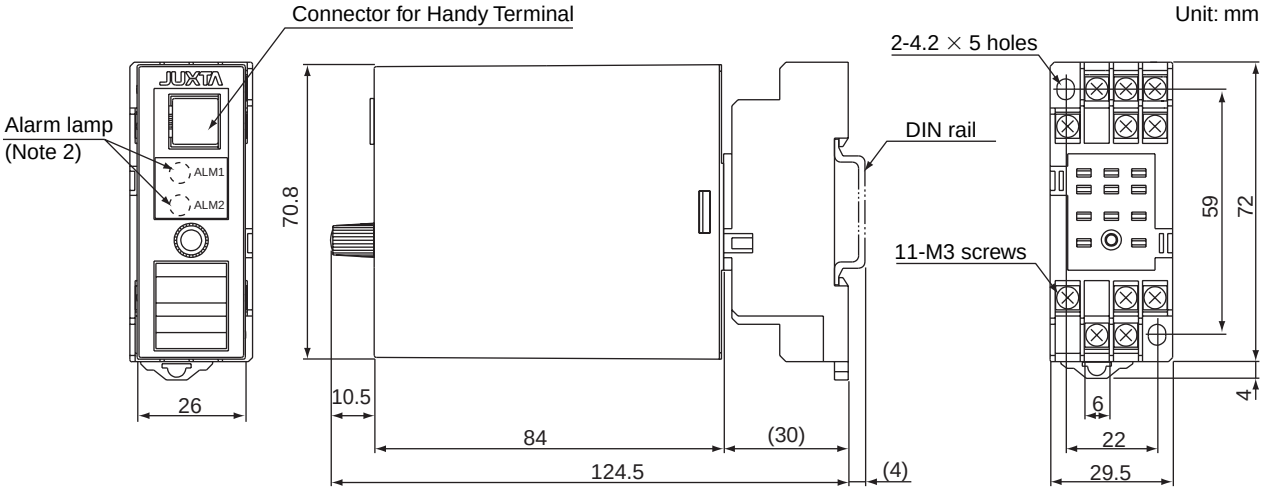
• When output-2 is communication output



• When output-2 is alarm output



■ External Dimensions



Note 2: Only when output-2 is alarm output

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