General Specifications

GS 77J01A07-01E

Model VJA7
Distributor (Multi-function)
(Isolated Single-output and Dual-output Types)

JUXTA

■ General

This plug-in type distributor is used in combination with 2-wire type transmitter and converts 4 to 20 mA DC signal into isolated DC current or DC voltage signal.

- DC voltage signal, DC current signal, communication output (RS485), or alarm output (2 relay contacts) is selectable as output-2.
- Incorporation of microcomputer allows the selection of square root extraction function and I/O monitoring etc. through Handy Terminal (JHT200 etc.).
- "With square root extraction function" can be specified.

■ Specifications

VJA7-0□□-□□□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
A: 4 to 20 mA DC
(Transmitter power supply: 24 to 28 V DC)

Output-1 Signal
A: 4 to 20 mA DC
6: 1 to 5 V DC
Z: (Custom Order) DC current/voltage signal

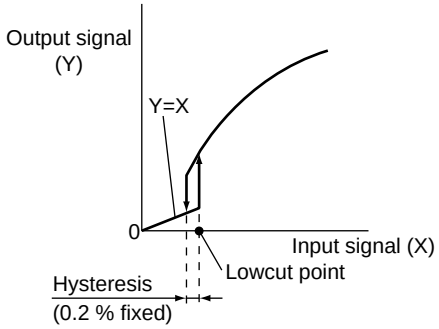
Output-2 Signal
A: 4 to 20 mA DC
6: 1 to 5 V DC
P: Communication function (RS485)
T: Alarm output (2 relay contacts)
N: No output-2

■ Input

Input Signal: 4 to 20 mA DC from 2-wire transmitter, 1 point
Input Resistance: 250 Ω
Transmitter Power Supply: 24 to 28 V DC
(with current limit circuit at 25 to 35 mA)
Permissible Conductance Resistance: RL≤ (19 - transmitter minimum operating voltage) V/0.02 A (Ω)
Permissible Input Current: 40 mA or less
Square Root Extraction Function: Outputted against the result of extracting square root of input.

$$Y=\left(\sqrt{\frac{X-(\text{input 0 \% value})}{\text{input span}}}\right)\times(\text{output span})+(\text{output 0 \% value})$$

Lowcut Function: Available only when the square root extraction function is specified.
Setting Range: 0 to 100 % of input, setting available by 0.1 % notch
Output lowcut point or less is cramped with straight line proportional to input.



■ 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 distributor can be connected to a personal computer, graphic panel, YOKOGAWA programmable controller FA-M3, or programmable controllers of other manufacturers.

Standards: EIA RS485
Maximum number of connectable units:
31 units
Maximum communication distance: 1200 m
Communication method: 2-wire half duplex, start-stop synchronization, non-procedural
Communication rate: 1200, 2400, 4800, 9600 bps

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4th Edition Apr. 2005 (KP)

Data length: 8, 7 bit
Stop bit: 1, 2 bit
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 personal computer, graphic panel, or UT link module of FA-M3
MODBUS communication: Communication protocol with a personal computer (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: Set the value added to alarm setting point at alarm release.
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 seconds 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 becomes 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 seconds to setting time to prevent wrong operation)
Alarm operation display: Front LED lights at excitation, 2 LEDs

■ Items Available to Be Set

The following items can be set through Handy Terminal:

Square root extraction, lowcut, address number, communication rate, parity, data length, stop bit, protocol, alarm operating direction, relay operating direction, alarm setting, hysteresis, alarm on-delay, alarm off-delay

■ Standard Performance

Accuracy Rating: ±0.1 % of span
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 lockup width are min.)
Effect of Power Supply Voltage Fluctuation: ±0.1 % or less of span for power supply voltage fluctuation of 15 to 30 V DC (±20 %), 100 to 240 V AC/DC.
Effect of Ambient Temperature Change: ±0.2 % or less of span for change of 10 °C

■ Safety and EMC Standards

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.

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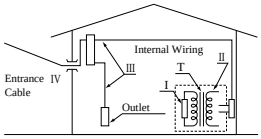


EMC standards: Complies with EN61326.
The above conformed instrument is only for voltage of 15 to 30 V DC.

■ 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 3.6 W, 110 V DC 3.6 W
100 V AC 6.6 VA, 200 V AC 8.8 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 output-1 and output-2
1000 V AC / minute between input and output-2 at alarm output

■ Environmental Conditions

Temperature: 0 to 50 ℃ (40 ℃ or less for side-by-side close installation)
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
Installation altitude 2000m 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
Connection Method: M3 screw terminal
External Dimension: 29.5×76×124.5 mm (W×H×D)
Weight: Approx. 170 g

■ Accessories

Tag Number Label: 1 sheet

■ Instruction Required When Ordering

Shipped after setting the value of square root extraction, low cut point as specified.

- Model and suffix code: e.g. VJA7-026-AA60
- Square root: e.g. YES
- Low cut point (%): e.g. 0.5

*When specifying “Without square root”, the specification of low cut point (%) is unnecessary.

■ Factory Setting

Factory settings are as follows:

- Square root extraction: without square root extraction
- Low cut point (%): 0.6

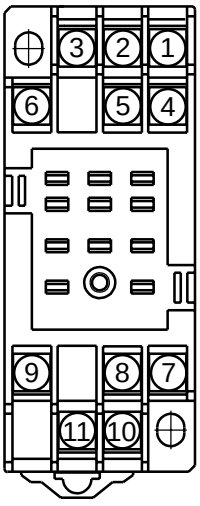
● **When output-2 is specified as communication output**

- Address No.: 01
- Communication rate: 9600 bps
- Parity: Even
- Data length: 8 bit
- 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)

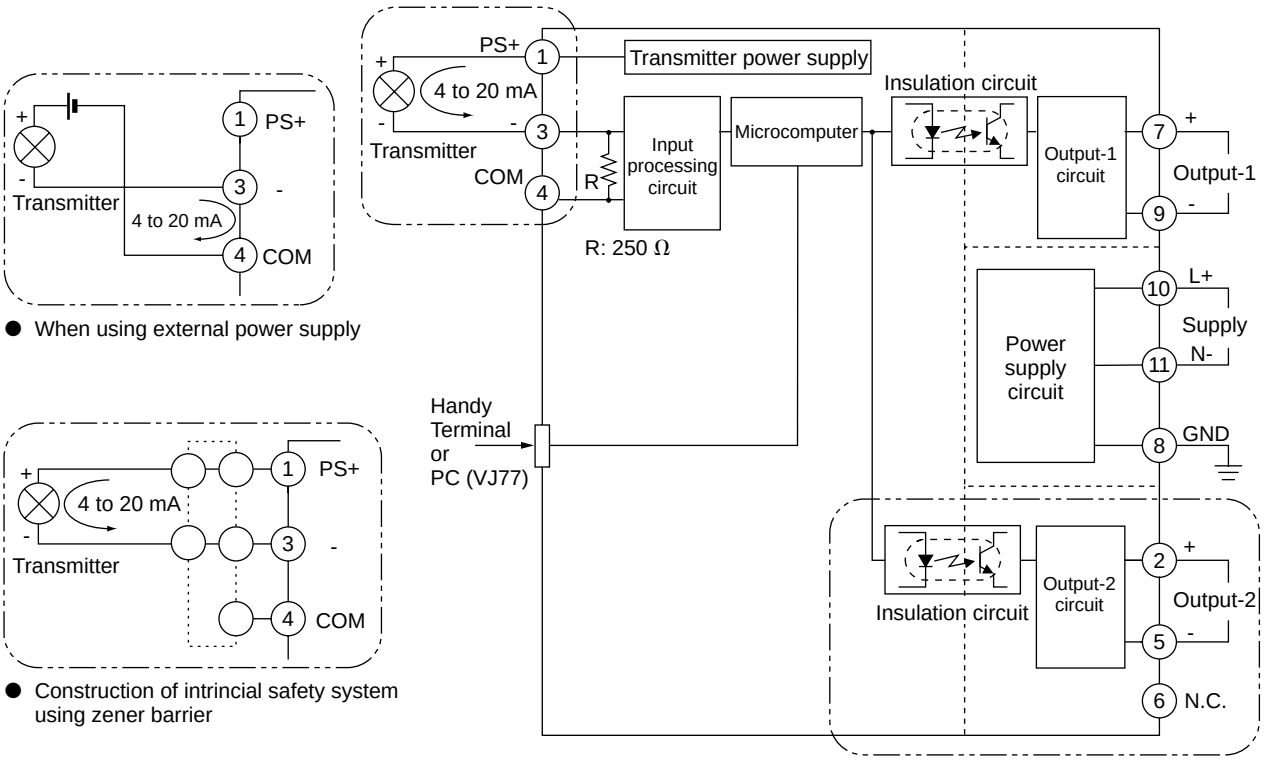
■ Terminal Arrangement & Terminal Connection



Terminal No.	Signal	Output-2 Analog output	Output-2 Communication output	Output-2 Alarm output
1	Input	(PS+)		
2	Output-2	(+)	B (+)	ALM1
3	Input	(-)		
4	Input	COM		
5	Output-2	(-)	A (-)	COM
6	Output-2	N.C.	COM	ALM2
7	Output-1	(+)		
8	GND	GND		
9	Output-1	(-)		
10	Supply	(L+)		
11	Supply	(N-)		

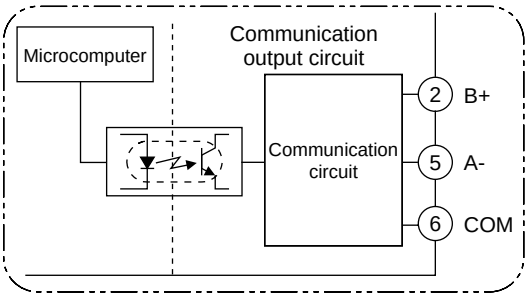
Note 1: In case of one output type, output-2 is N.C.

■ Block Diagram

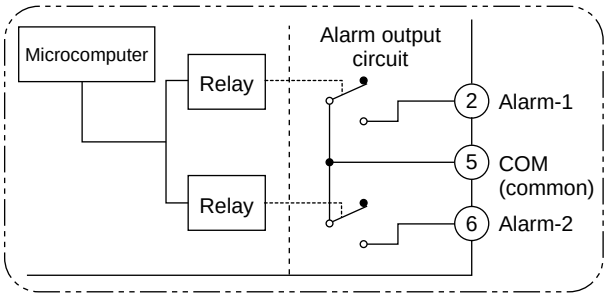


● When using external power supply

● Construction of intrincial safety system using zener barrier

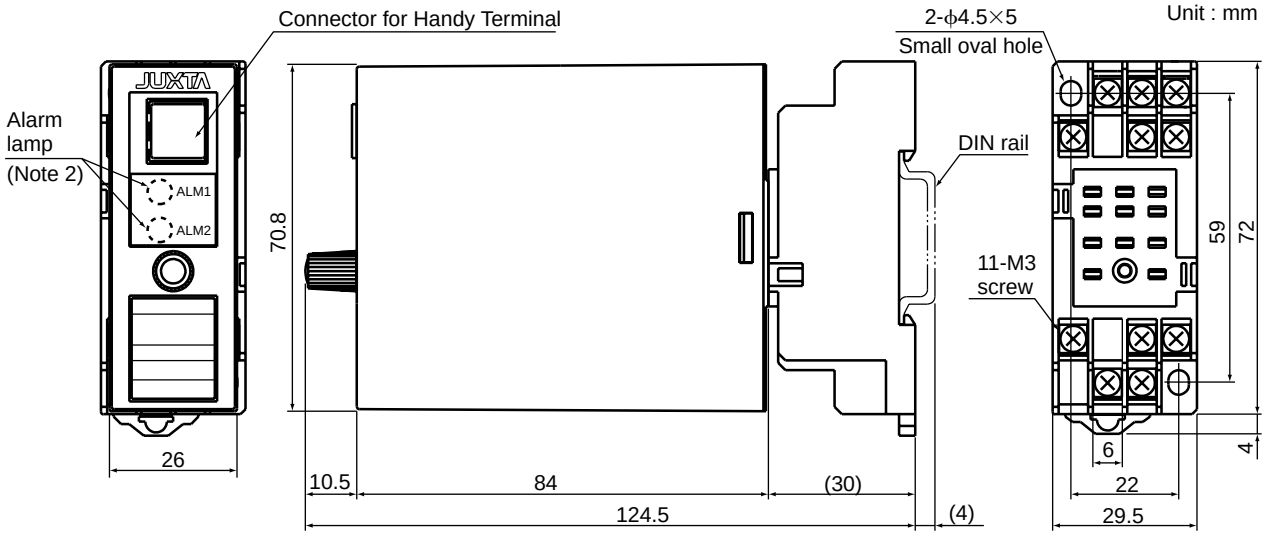


● When output-2 is communication output



● When output-2 is alarm output

■ External Dimensions



Note 2: Only when output-2 is alarm output