General Specifications

Model JA12
Distributor (2-output Type)
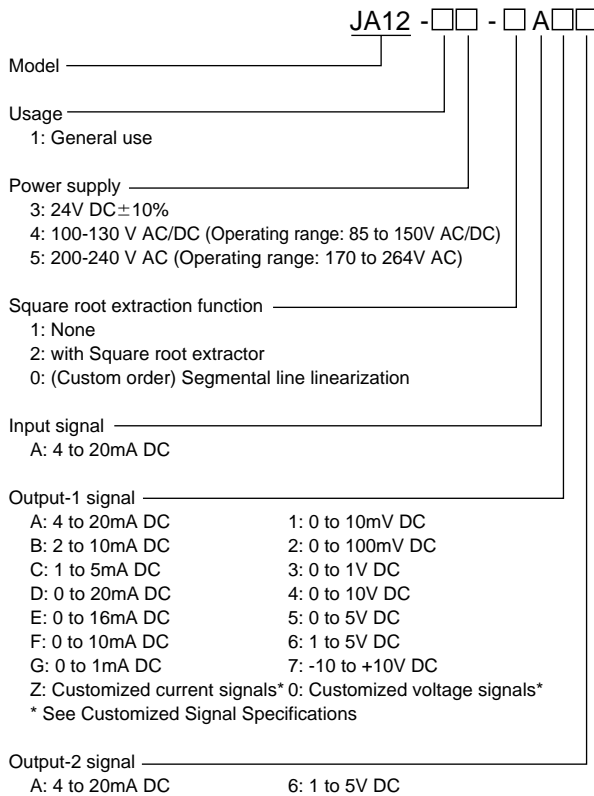(with Square Root Extractor)

JUXTA

GS 77J03A01-02E

■ General

The JA12 is a plug-in type distributor that is used in combination with a two-wire type transmitter to convert the transmitter's 4 to 20 mA DC signals into isolated DC current or DC voltage signals.

- Selection of square root extractor, I/O adjustment, I/O monitoring, and segmental point setting (for custom order only) can be made through a PC (VJ77) or Handy Terminal (JHT200).
- The operation indicating lamp shows the operating status, abnormal setting and the like.
- I/O adjustment can be made using a switch on the front of the JA12 without a setting tool such as Handy Terminal.

■ Model and Suffix Codes

JA12 -□□ - □ A□□

Model

Usage
  1: General use

Power supply
  3: 24V DC±10%
  4: 100-130 V AC/DC (Operating range: 85 to 150V AC/DC)
  5: 200-240 V AC (Operating range: 170 to 264V AC)

Square root extraction function
  1: None
  2: with Square root extractor
  0: (Custom order) Segmental line linearization

Input signal
  A: 4 to 20mA DC

Output-1 signal
A: 4 to 20mA DC	1: 0 to 10mV DC
B: 2 to 10mA DC	2: 0 to 100mV DC
C: 1 to 5mA DC	3: 0 to 1V DC
D: 0 to 20mA DC	4: 0 to 10V DC
E: 0 to 16mA DC	5: 0 to 5V DC
F: 0 to 10mA DC	6: 1 to 5V DC
G: 0 to 1mA DC	7: -10 to +10V DC
Z: Customized current signals*	0: Customized voltage signals*
* See Customized Signal Specifications	

Output-2 signal
A: 4 to 20mA DC	6: 1 to 5V DC

■ Items to be Specified when Ordering

- Model and Suffix Codes: e.g. JA12-14-2AA6
Specify a lowcut point when "with square root extractor" is required: e.g. Lowcut point 0.4%
The distributor will be shipped with a lowcut point of 0.6% if no specification of lowcut point.
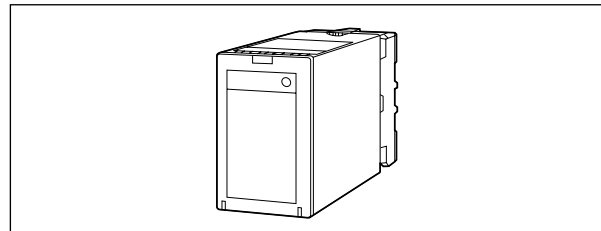
Specify segmental points (32 points) in Work Sheet when segmental line linearization is required.
The distributor will be shipped with proportional I/O if no specification of segmental points.

■ Input/Output Specifications

Input signal: 4 to 20 mA DC signal from two-wire type transmitter
Input resistance: 250 Ω
Transmitter power supply: 25.25±0.25 V DC (provided with a current limiter to keep the current between 25 and 35 mA)
Allowable conductor resistance (RL): Up to [(20 – transmitter's minimum operating voltage) V/0.02 A] Ω
Maximum allowable input current: 40 mA DC
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: 0.3 to 100 % of input, setting available by 0.1 % notch
Output for lowcut point or less is cramped with straight line proportional to input.

YOKOGAWA ◆
Yokogawa Electric Corporation
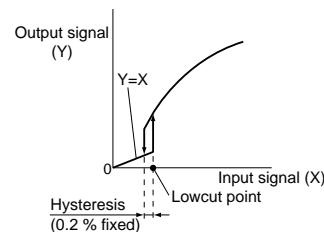
Output signal: DC voltage or DC current signal
Allowable load resistance:

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	15k Ω 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

Input adjustment: ±1% of span minimum (Zero/Span)
Output adjustment: ±5% of span minimum (Zero/Span)

■ Standard Performance

Accuracy rating: ±0.1% of span
> Accuracy is not guaranteed for output levels less than 0.1mA for the output codes D, E, and F, and for output levels less than 0.0125mA for the output code G. ±1% of span for the input from 1% to 2% when using square root extractor

Response speed: 200 ms, 63% response (10 to 90%)
Insulation resistance: 100 MΩ 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, output-2), power supply and grounding terminals mutually
> 1000 V AC for one minute between output-1, output-2 terminals mutually

Operating temperature range: 0 to 50°C
Operating humidity range: 5 to 90% RH (no condensation)
Supply voltage range: 24 V DC ±10%
> 100 to 130 V AC/DC (±15%)
> 200-240 V AC (-15%, +10%)

Effects of power line regulation: Up to ±0.1% of span
> for the regulation within allowable range of each supply voltage range

Effects of ambient temperature variations: Up to ±0.2% of span per 10°C
Power consumption:
> 3.9 W at 24 V DC; 3.7 W at 110 V DC;
> 7.1 VA at 100 V AC; 9.3 VA at 200 V AC

■ Mounting and Appearance

Material: Case body; ABS resin (black), UL94 V-0
> Socket; Modified polyphenylene oxide, including glass fiber (black), UL94 V-1

Mounting method: Wall or DIN rail mounting
> More than 5 mm interval is required for side-by-side close mounting.

Connection method: M3.5 screw terminals
External dimensions: 86.5 (H)×51 (W)×133 (D) mm (including a socket)
Weight: Approx. 200 g (main unit), approx. 80 g (socket)

■ Accessories

Spacer: One (used for DIN rail mounting)
Range labels: Two

■ Customized Signal Specifications

Customized output

|	Current Signal	Voltage Signal
Output range (DC)	0 to 20 mA	-10 to +10 V
Span (DC)	1 to 20 mA	10mV to 20 V
Zero elevation	0 to 150 %	-125 to +400 % *

* -50 to +25% for the span of 20 mV DC or less.

Customized segmental line linearization

Segmental points: 32 (Set I/O relation by percentage)
Settable range of segmental points: -6 to +106% for both of input and output

■ Front Panel

I/O adjustment is available using selection switch and adjustment switch.

Communications connector
Selection switch
Adjustment switch
Operation indicating lamp
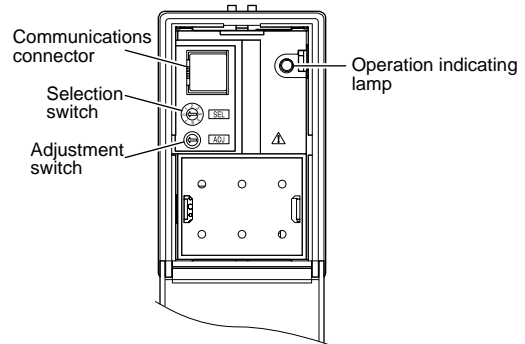
The position of a selection switch	Adjustment item
0	No function
1	Output-1 zero adjustment
2	Output-1 span adjustment
3	Output-2 zero adjustment
4	Output-2 span adjustment
5	Input zero adjustment
6	Input span adjustment

■ Terminal Assignments
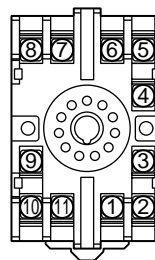
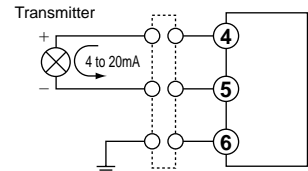| 1	OUTPUT-1	(+)
2	OUTPUT-1	(−)
3	N.C.	
4	INPUT	(PS+)
5	INPUT	(−)
6	INPUT	(COM)
7	SUPPLY	(L+)
8	SUPPLY	(N−)
9	GND	
10	OUTPUT-2	(+)
11	OUTPUT-2	(−)

■ Block Diagrams

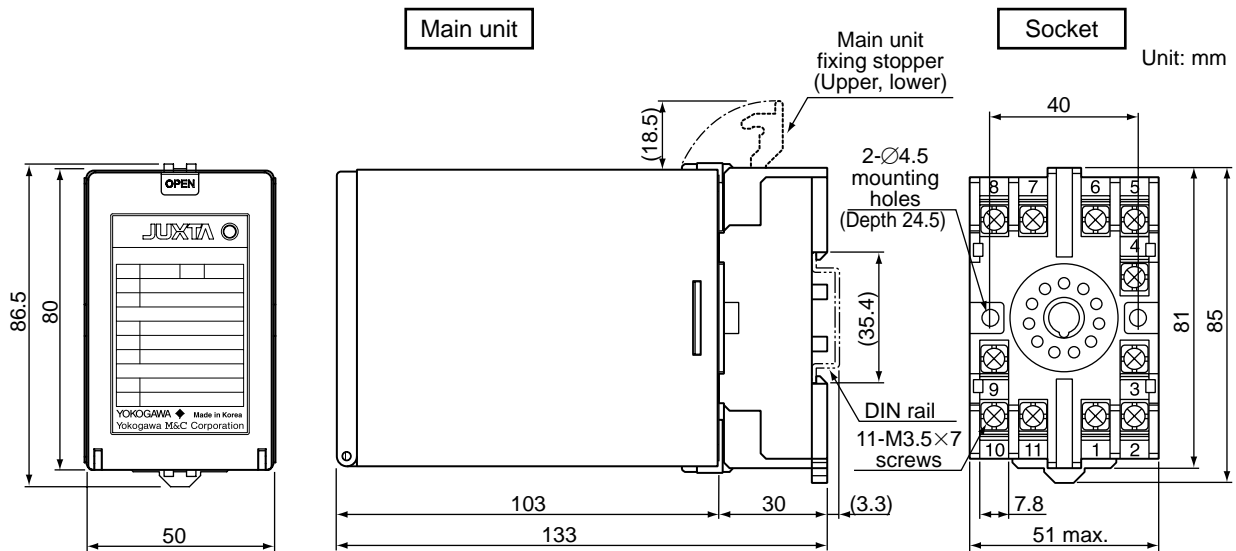(1) Combination with two-wire type transmitter using internal power supply
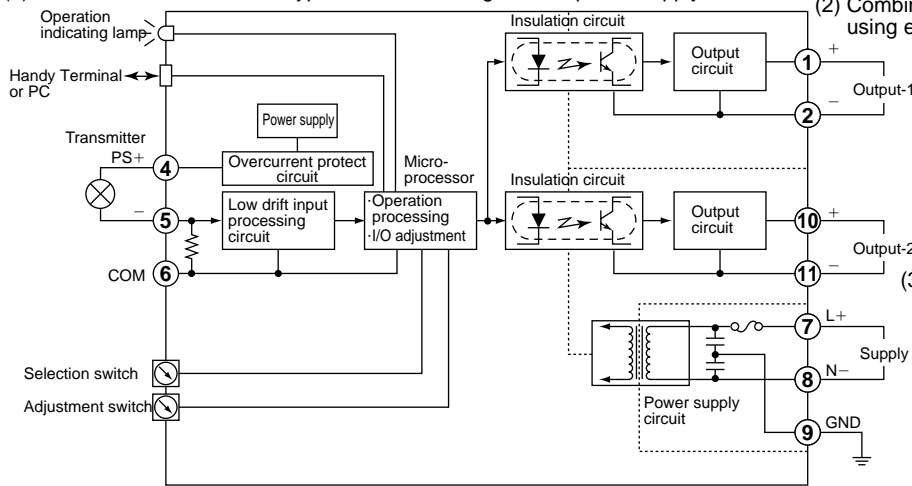
(2) Combination with two-wire type transmitter using external power supply
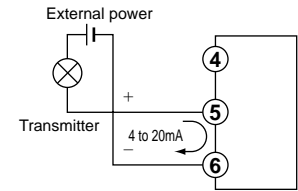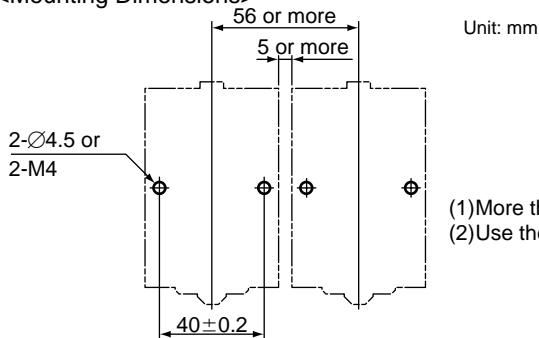
(3) Example to construct Intrinsically Safe System using Zener Barrier

■ External Dimensions

<Mounting Dimensions>

Unit: mm

(1) More than 5 mm interval is required for side-by-side close mounting.
(2) Use the supplied spacer for DIN rail mounting to keep 5 mm interval.

■ Work Sheet

Model and Suffix Codes

Write at least 2 points for input and output segmental points data.

Input (%)					Output (%)					Input (%)					Output (%)				
X0					Y0					X16					Y16				
X1					Y1					X17					Y17				
X2					Y2					X18					Y18				
X3					Y3					X19					Y19				
X4					Y4					X20					Y20				
X5					Y5					X21					Y21				
X6					Y6					X22					Y22				
X7					Y7					X23					Y23				
X8					Y8					X24					Y24				
X9					Y9					X25					Y25				
X10					Y10					X26					Y26				
X11					Y11					X27					Y27				
X12					Y12					X28					Y28				
X13					Y13					X29					Y29				
X14					Y14					X30					Y30				
X15					Y15					X31					Y31				

(Specification conditions)
Input conditions: $-6.0\% \leqq X0 < X1 < X2 < \cdots\cdots Xn-1 < Xn \leqq 106.0\%$
Output conditions: $-6.0\% \leqq (Y0 \text{ to } Yn) \leqq 106.0\%$

• The information covered in this document is subject to change without notice for reasons of improvements in quality and/or performance.