General Specifications

Model JH12
Isolator (2-output, Free Range Type)
(with Square Root Extractor)

JUXTA

GS 77J03H01-02E

■ General

The JH12 is a plug-in type isolator that converts DC current or DC voltage signals into isolated DC current or DC voltage signals.

- Selection of square root extractor, input setting, 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 JH12 without a setting tool such as Handy Terminal.

■ Model and Suffix Codes

JH12 -□□ - □□□□

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

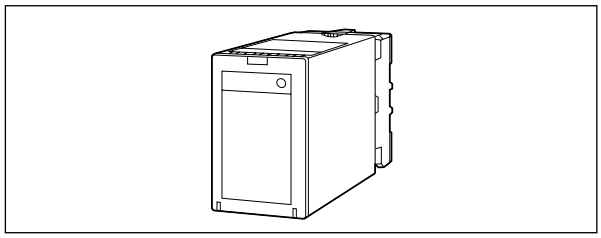
Input signal
A: 4 to 20mA DC
B: 2 to 10mA DC
C: 1 to 5mA DC
D: 0 to 20mA DC
E: 0 to 16mA DC
F: 0 to 10mA DC
G: 0 to 1mA DC
Z: Customized current signals*
3: 0 to 1V DC
4: 0 to 10V DC
5: 0 to 5V DC
6: 1 to 5V DC
7: -10 to +10V DC
0: Customized voltage signals*
* See Customized Signal Specifications

Output-1 signal
A: 4 to 20mA DC
B: 2 to 10mA DC
C: 1 to 5mA DC
D: 0 to 20mA DC
E: 0 to 16mA DC
F: 0 to 10mA DC
G: 0 to 1mA DC
Z: Customized current signals*
1: 0 to 10mV DC
2: 0 to 100mV DC
3: 0 to 1V DC
4: 0 to 10V DC
5: 0 to 5V DC
6: 1 to 5V DC
7: -10 to +10V DC
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. JH12-14-1AAA



Specify a lowcut point when “with square root extractor” is required: e.g. Lowcut point 0.4%
The isolator 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 isolator will be shipped with proportional I/O if no specification of segmental points.

■ Input/Output Specifications

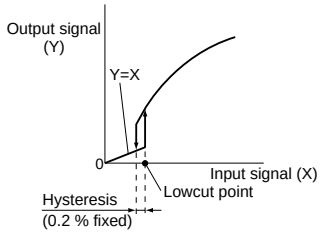
Input signal: DC voltage or DC current signal
Input resistance: Attach an external resistor for current input.

Input Range	Input Resistance	Input Range	Input Resistance
4 to 20mA DC	250Ω	0 to 1V DC	1 MΩ during power on 10 kΩ during power off
2 to 10mA DC			
1 to 5mA DC			
0 to 20mA DC		0 to 10V DC	1 MΩ during power on 800 kΩ during power off
0 to 16mA DC		0 to 5V DC	
0 to 10mA DC		1 to 5V DC	
0 to 1mA DC	1kΩ	-10 to +10V DC	

Allowable input level:
Voltage input: Within ±15 V DC
Current input: 40mA or less for input resistance of 250Ω
10mA or less for input resistance of 1kΩ
Square Root Extraction Function: Outputted against the result of extracting square root of input.

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

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

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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:

Input conditions	Accuracy
When the input range is between -2.5 and +2.5V DC, and the span is 1V or more	±0.1% of span
When the input range is between -2.5 and +2.5V DC, and the span is less than 1V	$\frac{(0.1\ [\%] \times 1\ [\text{V DC}])}{\text{Input span [V DC]}}$ [%]
When the input range is between -10 and +10V DC, and the span is 4V or more	±0.1% of span
When the input range is between -10 and +10V DC, and the span is less than 4V	$\frac{(0.1\ [\%] \times 4\ [\text{V DC}])}{\text{Input span [V DC]}}$ [%]

When current input, apply [input range × input resistance] to the above, and add the resistance error of ±0.1%.
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:
2.6 W at 24 V DC; 2.5 W at 110 V DC;
5.0 VA at 100 V AC; 7.0 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
Resistor: One (attached for current input)

■ Customized Signal Specifications

Customized output

	Current Signal	Voltage Signal
Input range (DC)	-50 to +50 mA	-300 to +300 V
Span (DC)	0.1 to 100 mA	0.1 to 600 V
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 % *

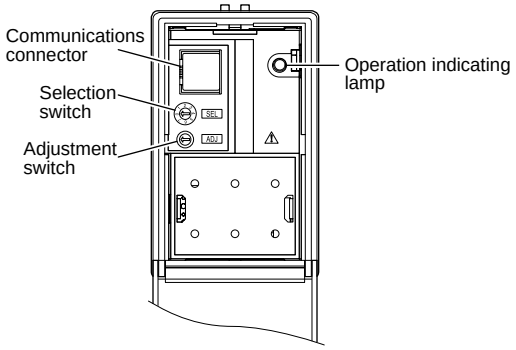
* -50 to +25% for the span of 20 mV DC or less.

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

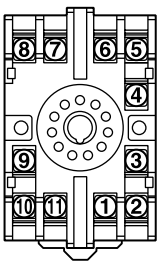
■ Front Panel

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



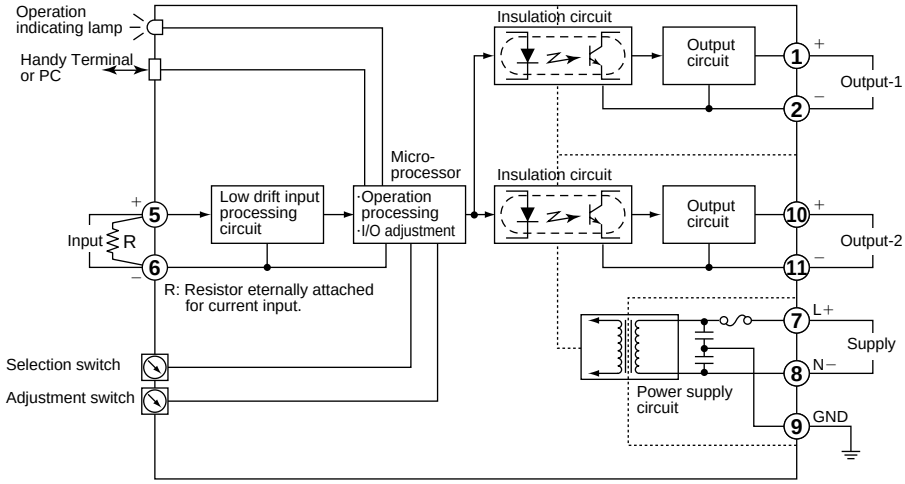
The position of a selection switch	Adjustment item
0	No function
1	Output-1 zero adjustment
2	Output-1 span adjustment
3	Output-2 zero adjustment
4	Output-2 span adjustment
5	Input zero adjustment
6	Input span adjustment

■ Terminal Assignments

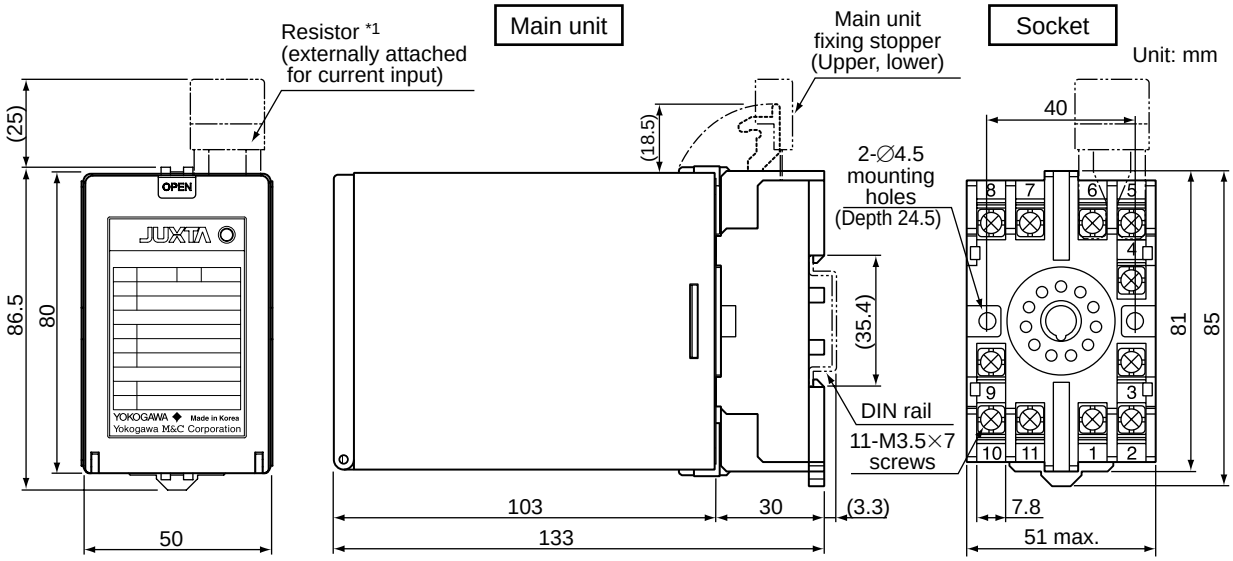


1	OUTPUT-1	(+)
2	OUTPUT-1	(−)
3	N.C.	
4	N.C.	
5	INPUT	(+)
6	INPUT	(−)
7	SUPPLY	(L+)
8	SUPPLY	(N−)
9	GND	
10	OUTPUT-2	(+)
11	OUTPUT-2	(−)

■ Block Diagrams

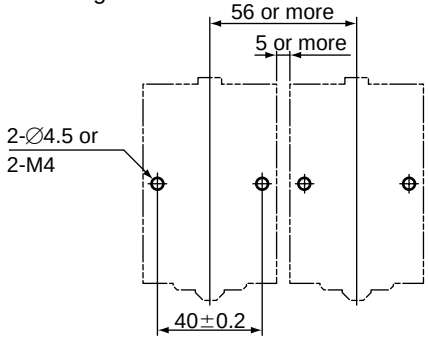


■ External Dimensions



*1: RES-250 (250 Ω) is attached for the input codes A to F, and RES-01K (1kΩ) for the input code G.

<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%≦X0<X1<X2< ····· Xn-1<Xn≦106.0%

Output conditions: -6.0%≦ (Y0 to Yn) ≦106.0%

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