General Specifications

Model JT12
Thermocouple Converter
(2-output, Free Range Type)

JUXTA

GS 77J03T01-02E

■ General

The JT12 is a plug-in type thermocouple converter that is connected to an IEC/JIS-standard thermocouple, converts the temperature signals into isolated DC current or DC voltage signals.

- Selection of thermocouple type, input setting, burnout setting, I/O adjustment, and I/O monitoring can be made through a PC (VJ77) or Handy Terminal (JHT200).
- The operation indicating lamp shows the operating status, abnormal setting and the like.
- The wiring resistance correction for long-distance input line is provided.
- Output adjustment,wiring resistance correction, and ON/OFF of RJC can be made using a switch on the front of the JT12 without a setting tool such as Handy Terminal.

■ Model and Suffix Codes

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        JT12 -□□ -□□□□
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)

Input signal ─────────
   1: K (CA)        6: S
   2: T (CC)        7: B
   3: E (CRC)       8: N
   4: J (IC)        0: Optional thermocouple
   5: R

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

Burnout function ─────────
   U: Up
   D: Down
   N: Off
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■ Items to be Specified when Ordering

- Model and Suffix Codes: e.g. JT12-14-1A6U
- Input Range: e.g. 0 to 500 °C

■ Input/Output Specifications

Input signal: An IEC/JIS-standard thermocouple (ITS-90)
Type K, T, J, E, B, R, S, N
Measuring range:

Code	Input Type	Measuring Range	Measuring Span
1	Type K	-270 to 1372°C	
2	Type T	-270 to 400°C	
3	Type E	-270 to 1000°C	
4	Type J	-210 to 1200°C	3 mV minimum
5	Type R	-50 to 1768°C	
6	Type S	-50 to 1768°C	
7	Type B	0 to 1820°C	
8	Type N	-270 to 1300°C	

Input resistance: 1 MΩ minimum; 10 kΩ minimum during power off
Allowable signal source resistance: 1 kΩ maximum
Allowable input level: -0.5 to +4.0 V DC
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)

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■ Standard Performance

Accuracy rating: ±0.1% of span; see the following
exceptions:

- ±0.1% of span or ±1°C, whichever is greater when
Type K, T and E < −200°C,
400°C ≤ Type B < 600°C,
Type E and J > 750°C, or
Type N >1200°C.

- ±0.1% of span or ±2°C, whichever is greater when
Type N < −200°C.

- Accuracy is not guaranteed when Type B is below
−400°C, or 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.

- The accuracy derived from the following expres-
sion is applied when the measuring span is below
10 mV in thermoelectromotive force.
10/measuring span (mV)×accuracy*
*Any of ±0.1%, ±1°C or ±2°C.

- For the measured temperatures less than -200°C
of Type K, E, T, and N, the accuracy is as follows;
Add the following coefficient (Te) to the accuracy
mentioned above.
Te [°C]=(−200 [°C] − measured temp. [°C]) / X
(X=10 for Type K, T, and E; X=5 for Type N)

Accuracy of reference junction compensation:
±1°C (0 to 50°C) for Type K, T, E, J, B and N
±2°C (0 to 50°C) for Type R and S thermocouples
For the measured temperatures less than 0°C,
multiply the accuracy mentioned above by K,
where K=(Thermocouple output change/°C near
0°C)/(Thermocouple output change/°C at mea-
sured temperature)

Response speed: 200 ms, 63% response (10 to 90%)

Burnout: Up, Down or Off; the maximum burnout
time is specified as 60 seconds.

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 and output-2

Operating temperature range: 0 to 50°C

Operating humidity range: 5 to 90% RH (no conden-
sation)

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

Effects of leadwire resistance variations: Up to ±15
μV per 100 Ω/wire

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
RJC sensor: One
Note) Be sure to use the supplied RJC sensor.

■ Customized Signal Specifications

	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.

■ Front Panel

Output adjustment, wiring resistance correction, and
On/Off of RJC are available using selection switch
and adjustment switch.
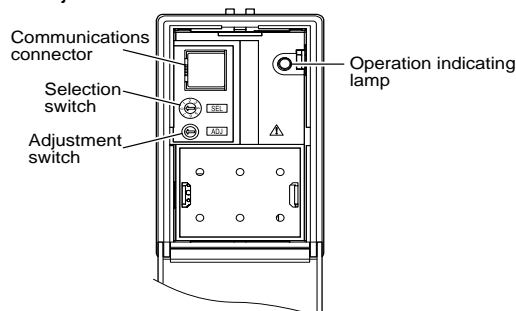
The position of a selection switch	Adjustment item
0	No function
1	Output-1 zero adjustment
2	Output-1 span adjustment
3	Output-2 zero adjustment
4	Output-2 span adjustment
5	Wiring resistance correction
7	ON/OFF of RJC

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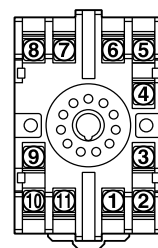
1	OUTPUT-1	(+)
2	OUTPUT-1	(−)
3	N.C.	
4	INPUT	RJC reverse side
5	INPUT	(+)
6	INPUT	RJC (−)
7	SUPPLY	(L+)
8	SUPPLY	(N−)
9	GND	
10	OUTPUT-2	(+)
11	OUTPUT-2	(−)

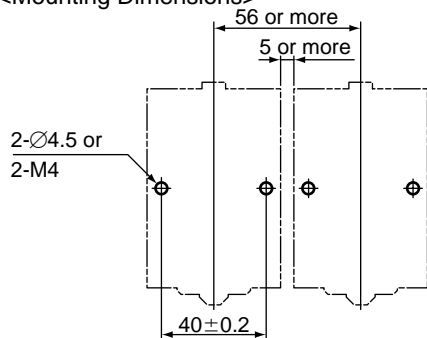# ■ Block Diagrams

■ External Dimensions

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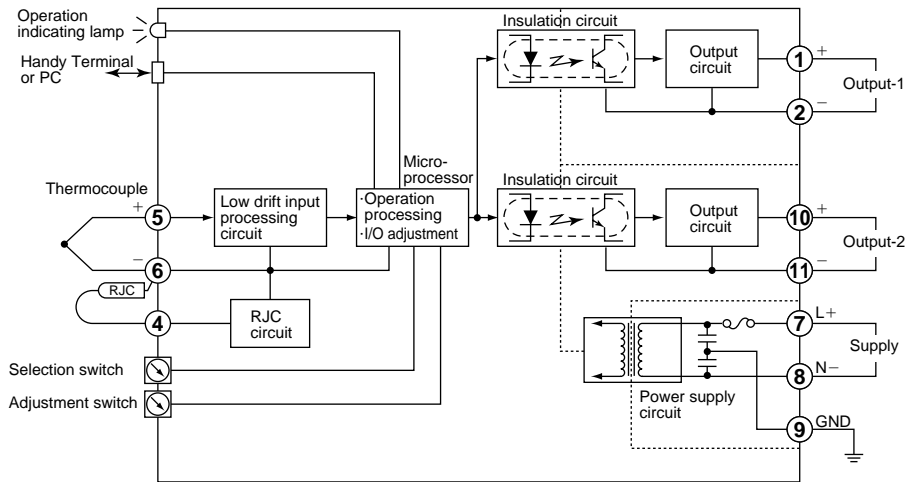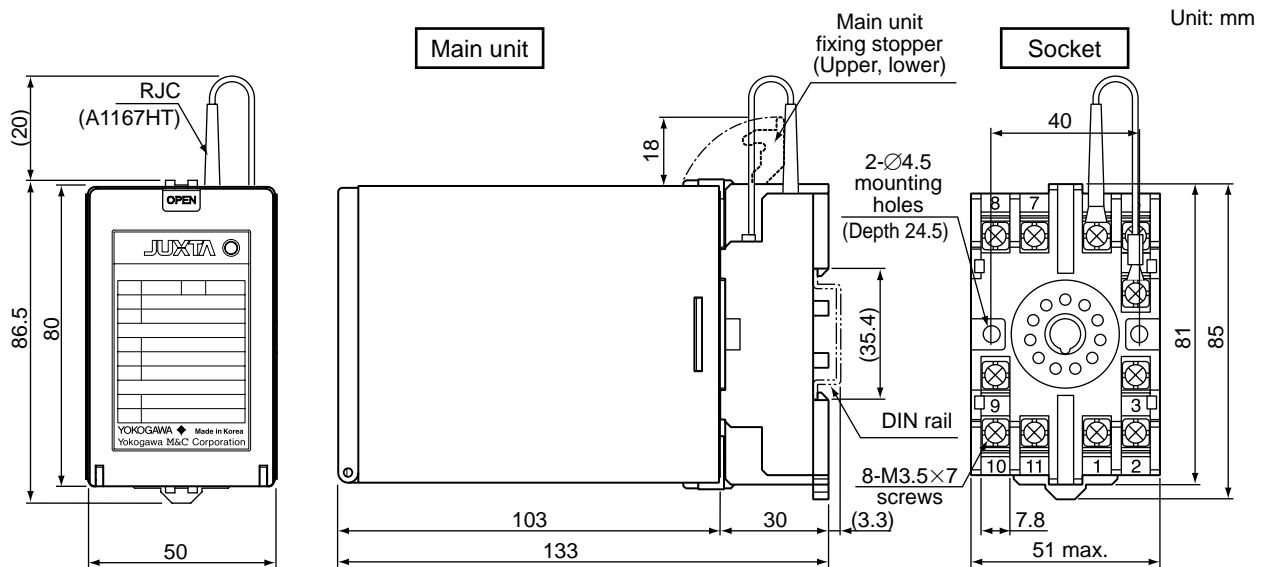
(1) More than 5 mm interval is required for side-by-side close mounting.
(2) Use the supplied spacer for DIN rail mounting to keep 5 mm interval.

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