General Specifications

Model DT5
Thermocouple Converter
(Free Range Type)

JUXTA

GS 77J05T05-01E

■ General

The DT5 is DCS correspondence nest stored type signal conditioner that is connected to an IEC/JIS-standard thermocouple (TC), such as a Type K, T, E, J, R, S, B or N thermocouples to convert temperature signals into isolated DC current or DC voltage signals.

- Input type selection, unit selection, input range setting, zero/span adjustment, burnout selection, and I/O monitoring can be easily performed from the host system or the parameter setting tool (VJ77) via the communication interface card.
- For the Fahrenheit display, specify the option "/DF".
- Available for the combination with Safety barrier (BARD-600).

■ Model and Suffix Codes

DT5-□6□*B/B□/□□

Model

Input Signal
IEC/JIS specifications thermocouple
1 : K (CA)
2 : T (CC)
3 : E (CRC)
4 : J (IC)
5 : R
6 : S
7 : B (RH)
8 : N
0 : Custom order

Output-1 signal
6 : 1 to 5V DC

Output-2 signal
A : 4 to 20 mA DC
B : 2 to 10 mA DC
C : 1 to 5 mA DC
D : 0 to 20 mA DC
E : 0 to 16 mA DC
F : 0 to 10 mA DC
G : 0 to 10 mA DC
Z : 0 to 1 mA DC
(Custom order)
Current signal
(24 mA or less)

1 : 0 to 10 mV DC
2 : 0 to 100 mV DC
3 : 0 to 1 V DC
4 : 0 to 10 V DC
5 : 0 to 5 V DC
6 : 1 to 5 V DC
7 : -10 to +10 V DC
0 : (Custom order)
Voltage signal
(±10 V or less)

Burnout
U : UP
D : DOWN
N : OFF

Optional specification
DF : Fahrenheit display function

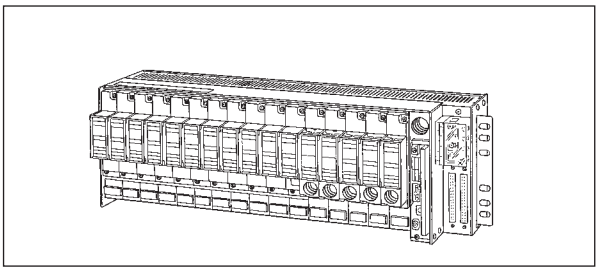
Power supply 24 V DC±10%

■ Ordering Information

Specify the following when ordering.

- Model and suffix codes :e.g. DT5-16A*B/BU
- Input range :e.g. 0 to 500°C

When the burnout is not specified, the product is manufactured as /BU.



■ Input/Output Specifications

Input signal: An IEC/JIS-standard thermocouple
(ITS-90, JIS C 1602: '95, IEC 584: '95)

Input type and Measuring range:

Code	Input Type	Measuring Range (°C)	Measuring Span	Zero Elevation
1	Type K	-270 to +1372	3 mV or more	Within 3 times of the measuring span or ±25 mV , whichever is smaller
2	Type T	-270 to +400		
3	Type E	-270 to +1000		
4	Type J	-210 to +1200		
5	Type R	-50 to +1768		
6	Type S	-50 to +1768		
7	Type B	0 to 1820		
8	Type N	-270 to +1300		

Input resistance : 1 MΩ or more (10kΩ or more when power off)
Burnout detective current : 0.1 μA
Permissible applied voltage : -0.5 to +4.0 V DC
Signal source resistance : 1 kΩ or less
Output-1 signal : 1 to 5 V DC
Output-2 signal : DC voltage or DC current signal
(In the case of current output , output is available only either from front terminals 3-4 or connector)

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GS 77J05T05-01E

2nd Edition Mar. 25,2022(YK)

Allowable load resistance:

Output Range	Allowable Load Resistance
4 to 20 mA DC	750 Ω or less
2 to 10 mA DC	1500 Ω or less
1 to 5 mA DC	3000 Ω or less
0 to 20 mA DC	750 Ω or less
0 to 16 mA DC	900 Ω or less
0 to 10 mA DC	1500 Ω or less
0 to 1 mA DC	15 kΩ or less
0 to 10 mV DC	250 kΩ or more
0 to 100 mV DC	250 kΩ or more
0 to 1 V DC	2 kΩ or more
0 to 10 V DC	10 kΩ or more
0 to 5 V DC	2 kΩ or more
1 to 5 V DC	2 kΩ or more
-10 to +10 V DC	10 kΩ or more

Input adjustment : ±1% of span(Zero/Span)
Output adjustment : ±10% of span(Zero/Span)
In the case of the output specification code 7, it is ±5% of span.

■ Standard Performance

Accuracy rating :
Output-1: ±0.1% of span or ±10 μV, whichever is greater ;
see the following exceptions:
Accuracy is not guaranteed for less than 400°C of Type B
Type K, E, T and N: For the measured temperatures less than −200°C, multiply the input accuracy mentioned above by K, where

$$K = \frac{\text{(Thermocouple output change/°C near 0°C)}}{\text{(Thermocouple output change/°C at measured temperature)}}$$

Output-2: ±0.2% or less of relative error of span to the output-1.
Accuracy is not guaranteed for output level less than 0.5% of the span of a 0 to X mA output range type.
Accuracy of reference junction compensation:
Other than Type R and S: ±1°C (0 to 50°C)
Type R and S: ±2°C (0 to 50°C)
Reference junction compensation of Type B is not carried out.
Response speed: 200 ms, 63% response (10 to 90%)
Burnout: Up, Down or Off; the maximum burnout time is specified as 60 seconds.
Effect of power supply voltage fluctuations: ±0.1% of span or less for the fluctuation within the operating range of power supply voltage specification.
Effect of ambient temperature change: ±0.2% of span or less for a temperature change of 10°C.
Effect of leadwire resistance change: ±15 μV or less for a change of 100 Ω (Need adjustmet when combining with BARD-600).

■ Environmental conditions

Operating temperature range: 0 to 50°C
Operating humidity range: 5 to 90% RH (no condensation)
Avoid the following environments for installation locations:
Areas with vibration, corrosive gases, dust, water, oil, solvents, direct, sunlight, radiation, a strong electric field, and/or a strong magnetic field, altitude of more than 2000 m above sea level.

■ Power Supply and Isolation

Supply input voltage range: 24 V DC±10% (Ripple content 5% p-p or less)
Power Consumption: 24 V DC
75 mA (4 to 20 mA DC),
50 mA (1 to 5 V DC)
Insulation resistance: 100 MΩ minimum at 500 V DC between input, output and power supply mutually
Withstanding voltage: 1500 V AC for one minute between input, output and input, power supply. 500 V AC for one minute between output and power supply.

■ Mounting and Appearance

Mounting method: Store in exclusive nest
(Signal•power supply be connected through back board and connector)
Connection method: Connect to terminal M4 screw of input/output of exclusive nest
External dimensions: 130.6 (H) × 23.6 (W) × 126 (D) mm
Weight: Approx. 120 g

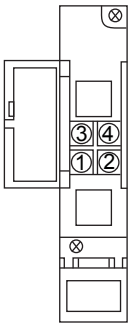
■ Accessories

Tag number label: 1
Range label:1
RJC sensor:1

■ Customized Signal Specifications

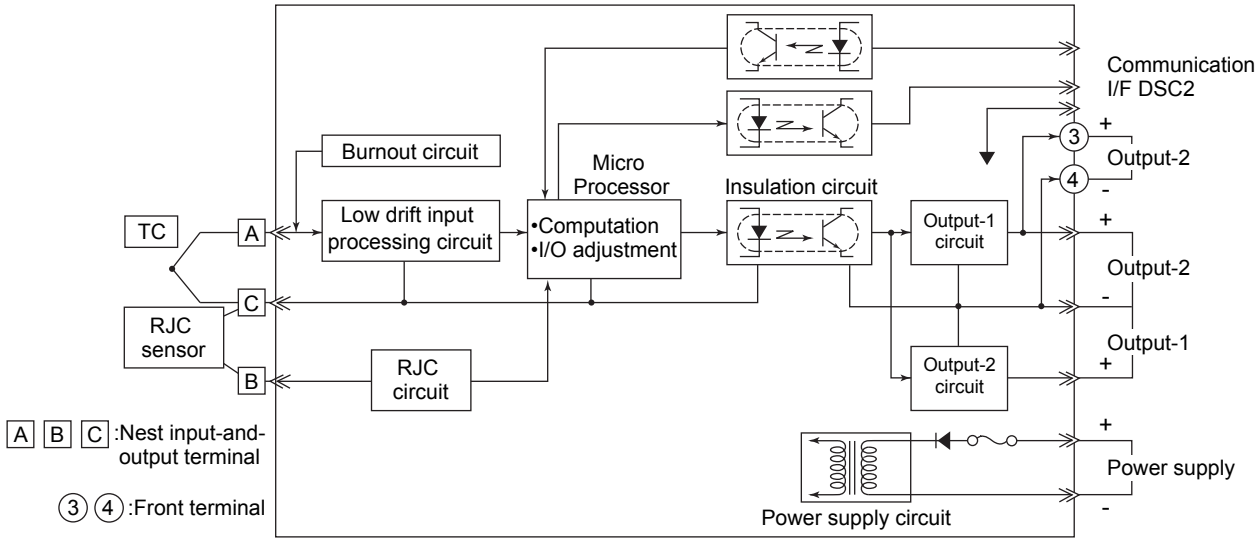
	Current Signal	Voltage Signal
Output range (DC)	0 to 24 mA	-10 to +10 V
Span (DC)	1 to 24 mA	10 mV to 20 V
Zero elevation	0 to 200%	-100 to +200%

■ Terminal Assignments

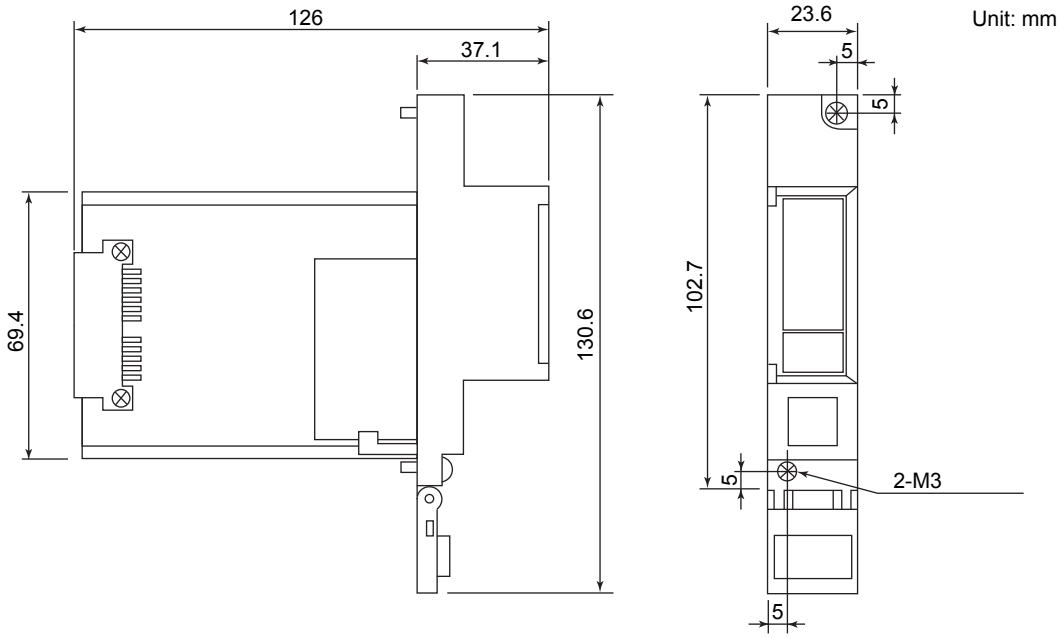


Terminal No.	Signal name
1	
2	
3	Output-2 (+)
4	Output-2 (-)

■ Block Diagram



■ External Dimensions



■ Basic Conditions and Individual Contracts at the Time of Purchase

The warranty for this product is defined in the basic conditions and individual contracts at the time of purchase. The individual conditions are as follows.

• Firmware warranty conditions

The warranty conditions for the firmware installed in this products are same as that of the hardware.

• Handling of non-conforming products

If Yokogawa verifies a non-conformity of the product that is attributable to Yokogawa within the warranty period, we will deliver an equivalent product.

Yokogawa can not provide a free evaluation of non-conforming products. The investigation of the non-conforming products will be performed at the expense of the customer.