



Standard Specifications Type: MS3001

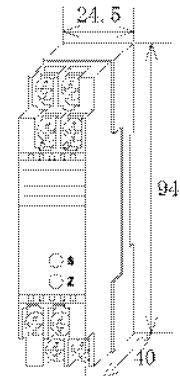
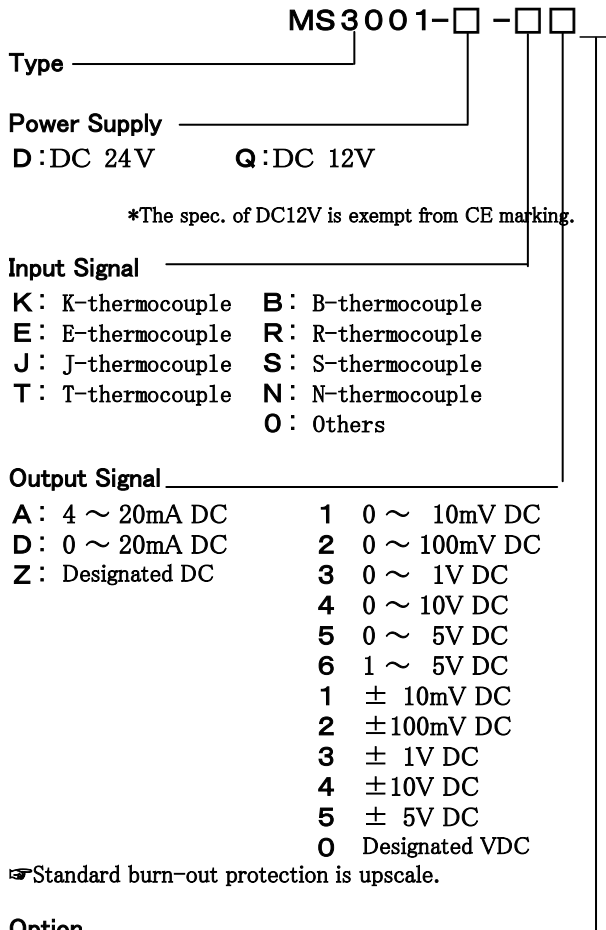
MS3000

Terminal Block Type Thermocouple Temperature Transmitter with an Isolated Single Output

Overview

MS3001 is a terminal block type thermocouple temperature transmitter with an isolated single output to convert thermocouple input signals into various DC signals as selected.

Ordering Format



Specifications

●Power Supply Section

Range of allowable voltages	DC24V : DC24V±10%
	DC12V : DC12V±20%

Power Sensitivity Within ±0.1% of Span for each power supply voltage.

Power Supply Fuse 250mA Fuse

Maximum Power Consumption

Power Supply	DC24V	DC12V
Single Output	50mA max. / 100mA max.	
Dual Output	35mA max. / 55mA max.	

*The above values apply when the rated supply voltage is used.

●Input Section

Input Resistance: 1MΩ min. With/without excitation

Signal Source Resistance Allowable: 1kΩ max.

Input Voltage Allowable: 30V DC max. continuous

Cold Junction Compensation: Temp. Sensitive Element

C.J.C. Accuracy: Within ±0.5°C (25°C±15°C)

Linearization: Analog mode Linearizer incorporated.(6 segments max.)

Range of Products Available

<Standard Specifications> (At 0% input=0°C)

K	Between 0~100°C & 0~1350°C in increments of 50°C (E.g. K 0~350°C)
E	Between 0~100°C & 0~1000°C in increments of 50°C (E.g. K 0~150°C)
J	Between 0~100°C & 0~ 800°C in increments of 50°C (E.g. K 0~550°C)
T	Between 0~100°C & 0~ 400°C in increments of 50°C (E.g. K 0~250°C)
B	Between 0~1200°C & 0~1800°C in increments of 100°C (E.g. K 0~1700°C)
R	Between 0~400°C & 0~1700°C in increments of 100°C (E.g. K 0~1400°C)

<Quasi-Standard Specifications>

T/C	Measuring Range (°C)	(+) Bias (x Input Span)	(-) Bias (x Input Span)
K	-200~+1370	up to 5 times	up to 5 times
E	-200~+1000	up to 3 times	up to 0.5 times
J	-200~+1200	up to 5 times	up to 0.5 times
T	-200~+ 400	up to 2 times	up to 0.5 times
B	0 ~+1820	up to 5 times	—
R	- 50~+1760	up to 10 times	unlimited
S	- 50~+1760	up to 10 times	unlimited
N	-200~+1300	up to 5 times	up to 0.5 times

(e.g.1) K-100~400°C⇒Input span 500°C, Bias x -0.2

(e.g.2) J 300~400°C⇒Input span 100°C, Bias x +3

☞Input Span: 3mV min.

☞ In case the measuring temperature range starts from below 0°C, the accuracy may partially be affected.

☞ The specifications where the measuring temperature range or the bias condition deviates from the above spec. shall be made to special order.

Please specify upon ordering

•Product Model Number (Measuring Temperature Range)
 (Example) MS3001-D-K6 (0~500°C)

*Specify the temperature range by a unit of 10°Cmin.

Other items to be specified:

- For input "0": MS3001-D-0A (WRe5-26 0~2000°C)
- For output "0": MS3001-D-K0 (0~1000°C/Output 2~5V)
- For option "X": MS3001-D-KA/X (0~600°C/without linearizer)
- For more than one option: Enter Option Codes in succession (/KX).

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●Output Section

Maximum Output Load		
Voltage Output (DC)	1V Span min. 10mV 100mV	2mA max. 10kΩ min. 100kΩ min.
Current Output (DC)	550Ω max.	
Zero Adjustment Range	Approx. ±2.5% of Span (Adjustable by Trimmer on front panel.)	
Span Adjustment Range	Approx. ±2.5% of Span (Adjustable by Trimmer on front panel.)	
Burn-out Protection	Upscale (standard) (Downscale is optional.)	
Range of Products Available		
	Current Signal	Voltage Signal
Output Range (DC)	0~20mA	-10~10V
Output Span (DC)	4~20mA	10mV~20V
Output Bias	0~100%	-100~100%

*For current output smaller than 0.1mA, the accuracy is not guaranteed.

(e.g.1) 4~20mA⇒Output Span 16mA, Bias 25%

(e.g.2) -1~4V⇒Output Span 5V, Bias -20%

●Standard Performance

Conversion Accuracy

Within $\pm[0.1\%/F.S.+0.5^\circ\text{C}(\text{Temp. Element} + \text{Linearization Accuracy})]$ (@25°C±5°C)

* Linearization Accuracy is subject to change depending on the Input Span. (0.1%/F.S. typ.)

Input Span	Accuracy(%)	Input Span	Accuracy(%)
JIS K 0~300°C	0.1	JIS K 0~600°C	0.15
JIS J 0~200°C	0.1	JIS E 0~200°C	0.15
JIS E 0~600°C	0.1	JIS R 0~1600°C	0.15
JIS S 0~1000°C	0.15	JIS T 0~300°C	0.15

Temp. Characteristics	Within±0.2% of Span with every 10°C variation
Response Time	160msec max. (0~90%) with 100% step input
C M R R	100dB min. (500V AC, 50/60Hz)
Signal Isolation	Between Input-Output-Power Supply-Ground
Isolation	100MΩ min. (@500V DC)
Resistance	Between Input-Output-Power Supply-Ground
Dielectric	Between Input-Output-Power Supply-Ground
Strength	:1500V AC Shut Down Current 0.5mA for 1 min.
Measures against SWC	Conformed to ANSI/IEEE C37.90.1-1989
Operating Environment	Temperature : -5~55°C Humidity : 5~90%RH (Non-Condensing)
Storage Temp.	-10~60°C

●Installation / Physical Specifications

Installation	DIN-rail mounting
Wiring	M3.5 screw terminal connection (Screw drop-protection)
Screw Tightening Torque	0.8~1[N·m] Recommendable
Outer Dimension	W24.5×H94.0×D40.0mm
Mass	90g max.

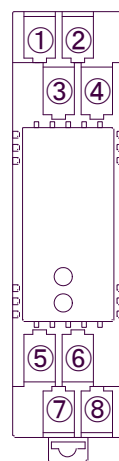
●Materials

Housing	ABS Resin (UL-94V-0)
Terminal Screws	Iron/Nickel-plated
P. C. Board	Glass-Epoxy (FR-4:UL-94V-0)
Moisture-proof Coating	HumiSeal Coating :HumiSeal 1A27NS(Polyurethane Resin)

●Compatible Standard

Compatible EC Directive	EMC Directive (2004/108/EC) EN61326-1:2006 Class A
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Terminal Arrangement / Signal Assignment



①	INPUT +
②	INPUT -
③	N. C
④	N. C
⑤	OUTPUT +
⑥	OUTPUT -
⑦	+ 供給
⑧	- 電源

Block Diagram

