



Standard Specifications Type: MS3101

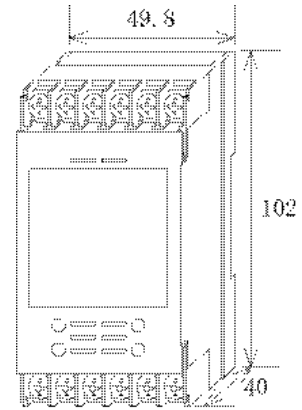
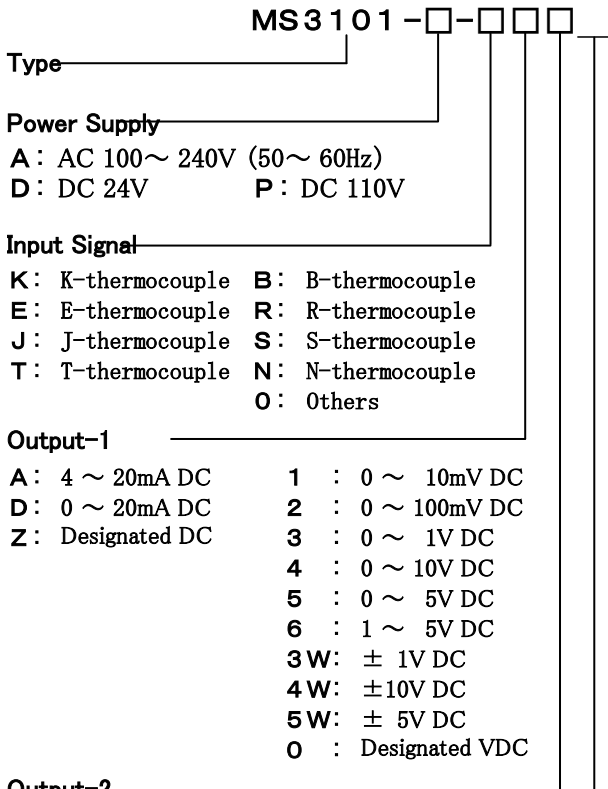
MS3100

Terminal Block Type Thermocouple Temperature Transmitter with Isolated Single/Double Output

Overview

MS3101 is a terminal block type thermocouple temperature transmitter with isolated single/double output to convert thermocouple input signals into various DC signals as selected.

Ordering Format



Specifications

● Power Supply Section

Range of Allowable Voltages	AC100~240V : AC85~264V (47~63Hz) DC24V : DC24V ± 10% DC110V : DC90~121V
Power Sensitivity	Within ± 0.1% of Span for each power supply voltage.
Power Supply Fuse	160mA Fuse
Maximum Power Consumption	
Power Supply	AC100-240V DC24V DC110V
Single Output	Approx. 5.5VA / Approx. 1.5W / Approx. 6.0W
Dual Output	Approx. 6.5VA / Approx. 1.8W / Approx. 6.0W

● 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 incorporated.
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) MS3101-A-KA6 (0~500°C)

*Specify the temperature range in units of 10°C min.

Other items to be specified:

- For input "0" : MS3101-A-0AA (WRe5-26 0~2000°C)
- For output "0" : MS3101-A-K60 (0~500°C/Output 2~5V)
- For option "X" : MS3101-A-K60/X (0~500°C/Burnout Time 500msec max)
- 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.	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4~20mA Single output	750Ω max.
	4~20mA Dual output	Out-1 550Ω max.
		Out-2 350Ω max.

Zero Adjustment Range	Approx. ±5% of Span (Adjustable by Trimmer on front panel)	
Span Adjustment Range	Approx. ±5% of Span (Adjustable by Trimmer on front panel)	
Burnout	Upscale (standard)	
Protection	("Downscale" is optional.)	

Range of Products Available		
	Current Signal	Voltage Signal
Output Range (DC)	0~20mA	-10~10V
Output Span (DC)	4~20 mA	10mV~20V
Output Bias	0~100%	-100~100%

*For current output e 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 ±[0.1%/F.S.+0.5°C{ Temp. Element
 + 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 - Out1-Out2-Power Supply-Ground
Isolation Resistance	100MΩ min. (@500V DC) Between Input-Out1-Out2-Power Supply-Ground
Dielectric Strength	Between Input-[Out1,Out2]-[Power Supply, Ground] :200V AC, Shut Down Current 0.5mA for 1 minute Between Power Supply - Ground :200V AC, Shut Down Current 5mA for 1 minute Between Out1 - Out2 :500V AC, Shut Down Current 0.5mA for 1 minute

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	W49.8×H102.0×D40.0mm (incl. DIN rail.)
Mass	140g max.

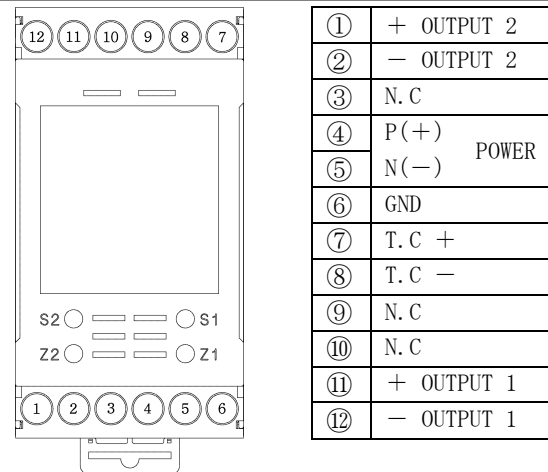
● **Materials**

Housing	ABS Resin (UL-94V-0)
Terminal Screws	Iron/Nickel-plated
P. C. Board	Glass-Epoxy (FR-4:UL-94V-0)
Moisture-proof	HumiSeal Coating
Coating	:HumiSeal IA27NS(Polyurethane Resin)

● **Compatible Standards**

Compatible EC Directive	EMC Directive (2004/108/EC) EN61326-1:2006
	Low Voltage Directive (2006/95/EC) IEC61010-1/EN61010-1 Installation category II, Pollution degree 2, Max. operating voltage 300V Reinforced insulation between [Input·Output·GND]- Power Supply

Terminal Arrangement / Signal Assignment



Block Diagram

