azbil Specification

SystempaK (Digital/Single Case)
Thermocouple Conversion Module
Model J-STP 90/95

Introduction

The Thermocouple Conversion (J-STP) Module is a signal conversion module housed in a single case and accepts an electromotive force of thermocouple input, and converts it into a 1 to 5V DC or 4 to 20 mA DC signal.
The Thermocouple Conversion Module provides a linearization function as a standard function to obtain a linear output proportional to the measured temperature, as well as a filter function to convert input and output signals in response to the application.
The J-STP is available for one-output (J-SMP90) or two-output (J-SMP95) model. Kind of thermocouple, range, filter function changes, and such other setting changes are easily done with the dedicated Loader Software, which operates on a general-purpose PC.
Complete isolation is employed between the power, input, and output circuits. In the two-output model, isolation is employed also between the two output circuits.

Specification

- Input signal:
  Thermocouples Types R, S, B, K, E, J, T, N (IEC 584-1 1995 / JIS C 1602-1995)
  WRe5-26 (ASTM-E988-96 (2002))
- Measuring range:

T/C type	Measuring range
R	-50 to 1760℃
S	-50 to 1760℃
B	0 to 1820℃
K	-200 to 1370℃
E	-200 to 1000 ℃
J	-210 to 1200℃
T	-200 to 400℃
N	-270 to 1300℃
WRe5-26	0 to 2700℃

  ±120% settable
- Span:
  Specifiable to a desired span within the measuring range.
  Contact us for ranges less than -200℃.
  (Because thermocouple electromotive changes are extremely small.)
- Burnout protection:
  Upscale/Downscale (Specify when ordering.)
- Burnout response:
  30 sec or less (Moving average available, first-order lag filtering: 0.1 sec)
- Output signal:
  No. 1 output; 1 to 5V DC or 4 to 20 mA DC
  No. 2 output; 1 to 5V DC (Between No. 1 and No. 2 outputs is isolated.)
  Edge connector output; 1 to 5V DC (No. 1 output must be 1 to 5V DC when connecting the signal with the A-MC I/O cable.)
- Output impedance:
  Voltage output; 250 Ω or less, Current output; 250 kΩ or more
- Output range: -20 to +120%FS
- Allowable load resistance:0 to 600 Ω (Current output: Up to +110%)
- Output update interval:
  5 msec (Output hardware filter: 0 to 90% response, 50 msec)
- Input/output response: 160 msec at minimum, 0 to 90% response
  (Moving average and first-order lag filtering are not provided.)
- Accuracy:

Input span	No. 1 and No. 2 output
10 mV or more	±0.15%FS
less than 10 mV	Input accuracy shown in separate table + CJC accuracy

  Cold junction compensation accuracy;
  ±0.5℃ at 23℃ (Other than R, WRe)
  ±1.0℃ at 23℃ (R, WRe)
- Insulation resistance: 500V DC, 100 MΩ min
  (Mutual between input - output - GND - power terminal)
- Withstand voltage: 1000V AC, 1 min
  (Mutual between input - output - GND - power terminal)
- Power supply: 24V DC $^{+10}_{-15}$ %
- Current consumption: 130 mA or less (at 24V DC)
- Ambient temperature:
  Normal operating condition; 5 to 45℃
  Operation limit; 0 to 50℃
- Ambient humidity: 0 to 90%RH (No condensation allowed)
- Mounting: Panel, Wall, DIN rail mounting
- Front mask color: Black
- Weight: 400 g
- Operating influence:
  Cold junction compensation accuracy;±0.5℃/10℃, 5 to 45℃
  Supply voltage effect; ±0.1%FS/24V DC $^{+10}_{-15}$ %
  Temperature effect; Input accuracy shown in separate table/10℃

- Loader settings:
  Module ID; 16 one-byte characters, 8 two-byte kanji characters
  Input type; Specify thermocouple type.
  Unit of temperature; ℃, F
  Input range; Lo and Hi setting values
  Linearization table; 101 points
  Input filtering; Disabled/Enabled (moving average)
  Zero-span adjustment; Adjustable between -20 and +120%FS
  First-lag filtering; Without/With (0 to 20.0 sec, 63% response time)

Note: Burnout protection (Upscale/Downscale) is specified by hardware.
Please specify it when ordering.
Default setting is “Upscale” unless specified otherwise.

Table Input Accuracy

Thermocouple	Full-scale set temperature	Input accuracy % to span
K	250 ℃ or more	±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃]
	Less than 250 ℃	±0.15% × 250 ℃ / Set span range [℃]
J	200 ℃ or more	±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃]
	Less than 200 ℃	±0.15% × 200 ℃ / Set span range [℃]
T	250 ℃ or more	±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃]
	Less than 250 ℃	±0.15% × 250 ℃ / Set span range [℃]
E	200 ℃ or more	±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃]
	Less than 200 ℃	±0.15% × 200 ℃ / Set span range [℃]
R	1000 ℃ or more	±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃] (Measurement value less than 500 ℃ is not applied with the accuracy specification)
	Less than 1000 ℃	±0.15% × 1000 ℃ / Set span range [℃] (Measurement value less than 500 ℃ is not applied with the accuracy specification)
WRe5-26		±0.15% × Measurement full-scale set temperature [℃] / Set span range [℃] (Measurement value less than 700 ℃ is not applied with the accuracy specification)

CJC accuracy

	CJC base accuracy	Additional accuracy
Other than R, WRe	±0.5 ℃ (at 23 ℃)	CJC temperature effect ±0.5 ℃ / 10 ℃, 5 to 45 ℃
R, WRe	±1.0 ℃ (at 23 ℃)	CJC temperature effect ±0.5 ℃ / 10 ℃, 5 to 45 ℃

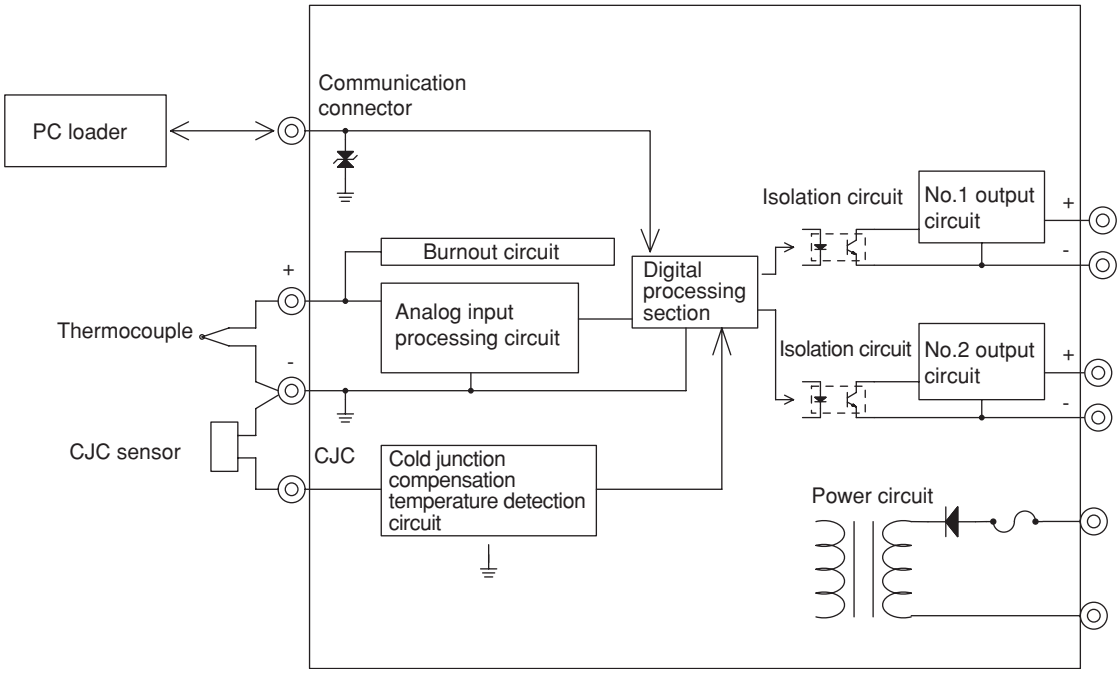


Figure 1. Functional block diagram of thermocouple conversion module

Model Number Table

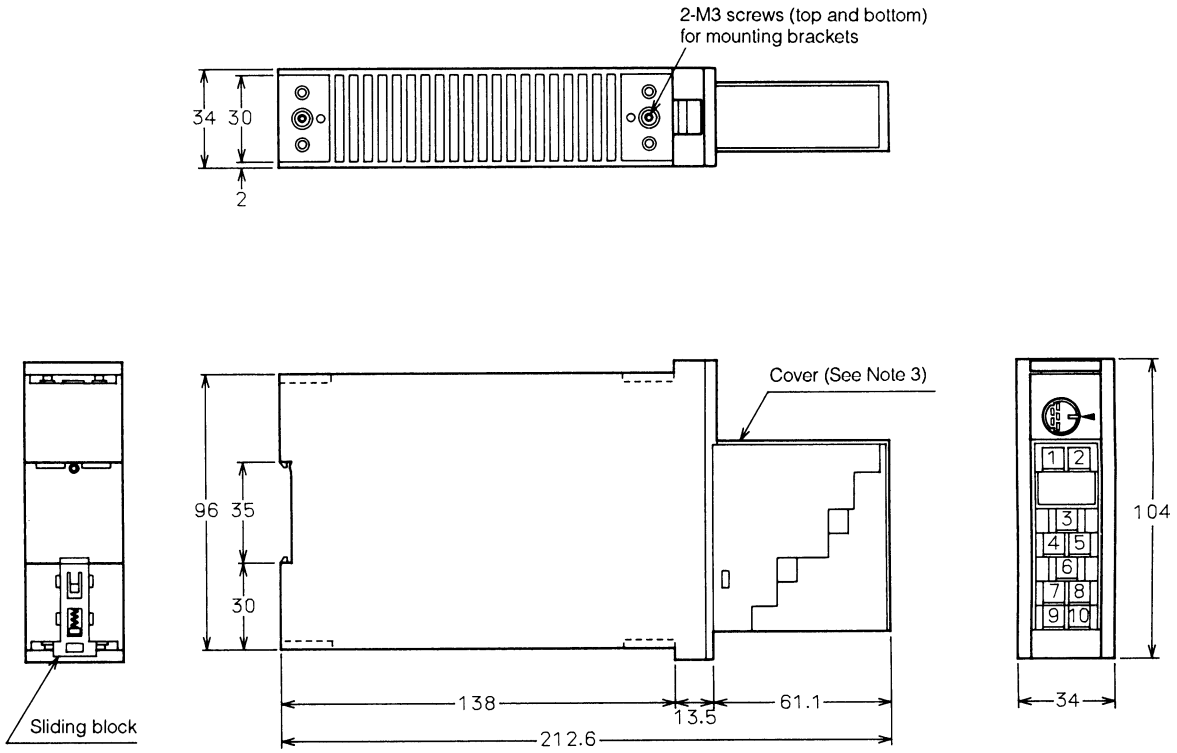
One-output model

Basic model number		Selections		Additions	Description
		I	II	I	
J-STP90					Thermocouple Conversion Module (1-output)
	X				No varnish coated
	C				Varnish coated
		-T			Input signal: Thermocouple (Type T)
		-J			Input signal: Thermocouple (Type J)
		-K			nput signal: Thermocouple (Type K)
		-E			Input signal: Thermocouple (Type E)
		-R			Input signal: Thermocouple (Type R)
		-S			Input signal: Thermocouple (Type S)
		-B			Input signal: Thermocouple (Type B)
		-N			Input signal: Thermocouple (Type N)
			1		Output signal: 1 to 5V DC
			2		Output signal: 4 to 20 mA DC
				-0	Without test report
				-1	With test report

Two-output model

Basic model number		Selections		Additions	Description
		I	II	I	
J-STP95					Thermocouple Conversion Module (2-output)
	X				No varnish coated
	C				Varnish coated
		-T			Input signal: Thermocouple (Type T)
		-J			Input signal: Thermocouple (Type J)
		-K			Input signal: Thermocouple (Type K)
		-E			Input signal: Thermocouple (Type E)
		-R			Input signal: Thermocouple (Type R)
		-S			Input signal: Thermocouple (Type S)
		-B			Input signal: Thermocouple (Type B)
		-N			Input signal: Thermocouple (Type N)
			1		No. 1 output signal: 1 to 5V DC, No. 2 output signal: 1 to 5V DC
			2		No. 1 output signal: 4 to 20 mA DC, No. 2 output signal: 1 to 5V DC
				-0	Without test report
				-1	With test report

Example: J-STP95X-J1-1

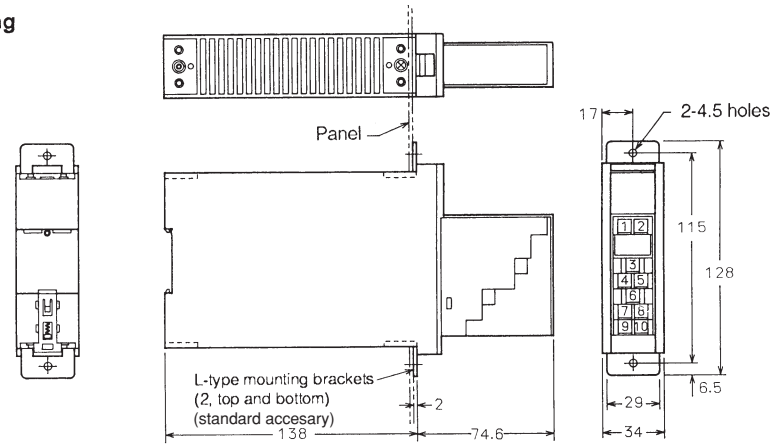


No.	Description
1 (Note 2)	———
2 (Note 2)	T/C input (–)
3	T/C input (+)
4	No.1 output (+)
5	No.1 output (–)
6	No.2 output (+) (Note 1)
7	No.2 output (–) (Note 1)
8	24V (PS +)
9	GND
10	0V (PS –)

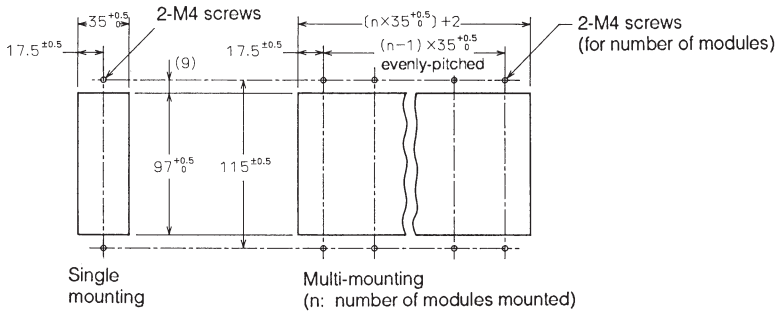
Notes: 1) For two-output model
2) Used for cold junction resistor.
3) Operate the Module with a cover.
4) Terminal screws: M3.5
5) Use the crimping terminals with insulation sheath.

Figure 2. Dimensions and wiring diagram

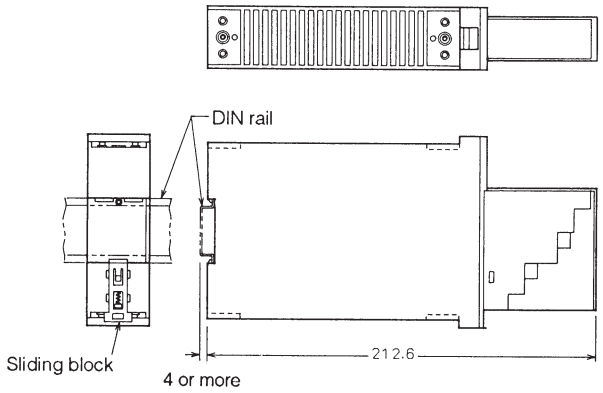
Panel-mounting



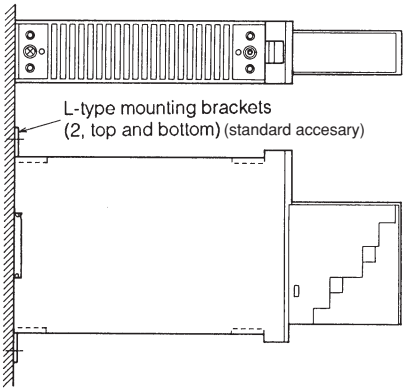
Panel-cutout



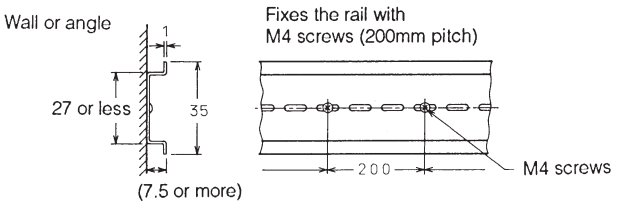
DIN rail mounting



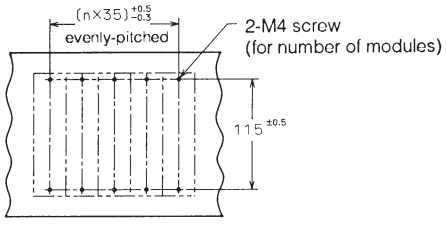
Wall-mounting



DIN rail mounting



Wall-mounting
(n: number of modules mounted)



Recommended DIN rail and end fittings Rail : DAS-4 [Toyo Giken made]
End fittings : ATO-29 [Toyo Giken made]

Figure 3. Mounting method

MEMO

Note: Thermocouple Types S, B, and N will become available for sale at timings that differ from those of other types. When ordering, please check with our sales representative.

When ordering, please specify:
1) Tag number
2) Input range* [Default setting differs depending on thermocouple type.]
3) Burnout (Upscale, Downscale) [Set to Upscale by default]

The following are also set by default:
a) Input filtering: Moving average available
b) First-order lag filtering: Available, 0.1 sec

* Use the quick list below when specifying the range. Ranges other than those below are also accepted.

Code No.	Input range
01	0 to 50 ℃
02	0 to 100 ℃
03	0 to 150 ℃
04	0 to 200 ℃
05	0 to 300 ℃
06	0 to 400 ℃
07	0 to 500 ℃
08	0 to 800 ℃
09	0 to 1000 ℃
10	0 to 1200 ℃

Please read the "Terms and Conditions" from the following URL before ordering or use:

http://www.azbil.com/products/bi/order.html

Specifications are subject to change without notice.

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