

# SystempaK (Digital/Single Case)

## Resistance Temperature Device Conversion Module

### Model J-SRP 90/95

#### Introduction

The Resistance Temperature Device (RTD) Conversion Module (J-SRP) is a signal conversion module housed in a single case and accepts a change in resistance of Pt or Ni RTD corresponding to the measured temperature, and converts it into a linearized 1 to 5V DC or 4 to 20 mA DC signal. The RTD 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-SRP Module is available for one-output (J-SRP90) or two-output (J-SRP95). Kind of input, range, filter function changes, and such other Loader 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:
  - Resistance temperature device
  - Three-wire system; Pt 100 Ω (IEC 751 / JIS C 1604-1997), JPt 100 Ω (JIS C 1604-1989) Ni508.4 Ω, Pt 50 Ω, JPt 50 Ω (JIS C 1602-1989) (Note: Pt 50 Ω and JPt 50 Ω are half of Pt 100 Ω and JPt 100 Ω (JIS C 1604-1989) in values.)
  - Specify sensor type when ordering (unchangeable by user).
  - Between Pt 100 Ω ↔ JPt 100 Ω and Pt 50 Ω ↔ JPt 50 Ω are changeable.

- Measuring range/span:

RTD	Measuring range	Span
Pt100 Ω	-200 to +850 °C	More than 25 °C to less than 850 °C
Pt50 Ω	-200 to +510 °C	More than 50 °C to less than 510 °C
Pt100 Ω	-200 to +510 °C	More than 25 °C to less than 510 °C
Pt50 Ω	-200 to +510 °C	More than 50 °C to less than 510 °C
Ni508.4 Ω	-50 to +200 °C	More than 10 °C to less than 150 °C

- Measuring current:
  - Pt 100 Ω, JPt 100 Ω ; 1 mA or less
  - Ni 508.4 Ω; 500 μA or less
  - Pt 50 Ω, JPt 50 Ω; 2 mA or less
- Allowable wiring resistance:
  - Pt 100 Ω, JPt 100 Ω; 5 Ω
  - Ni508.4 Ω; 10 Ω
  - Pt 50 Ω, JPt 50 Ω: 5 Ω
 Values exceeding the above can be set by zero-span adjustment at the site (up to 150 Ω).
- 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)
- Output response: 160 msec at minimum, 0 to 90% response (Moving average and first-order lag filtering are not provided.)
- Startup time: 5 sec
- Accuracy (Including linearization accuracy)

sensor type	Input span	Full-scale set temperature	Accuracy (%FS)
			Both No. 1 and No. 2 outputs
Pt100 JPt100 Pt50 JPt50	100 °C or more	-	±0.20%
	25 °C to less than 100 °C	100 °C or more	±0.20% × Measurement full-scale set temperature [°C] / Set span temperature [°C] (However, ±0.2% when less than ±0.2%)
Ni508.4	50 °C or more	-	±0.20%
	10 °C to less than 50 °C	50 °C or more	±0.20% × Measurement full-scale set temperature [°C] / Set span temperature [°C] (However, ±0.2% when less than ±0.2%)
	Less than 100 °C	Less than 50 °C	±0.20% × 100 °C / Set span temperature [°C] (However, ±0.2% when less than ±0.2%)
	Less than 50 °C	Less than 50 °C	±0.20% × 50 °C / Set span temperature [°C] (However, ±0.2% when less than ±0.2%)

- Insulation resistance: 500V DC, 100 M $\Omega$  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°C  
Operation limit ; 0 to 50°C
- Ambient humidity: 0 to 90%RH (No condensation allowed)
- Mounting: Panel, wall, DIN rail mounting
- Front mask color: Black
- Weight: 400 g
- Operating influence:  
Supply voltage effect;  $\pm 0.1\%$ FS/24V DC  $^{+10}_{-15}$  %  
Temperature effect;  $\pm 0.15\%/10^\circ\text{C}$
- Loader settings:  
Module ID; 16 one-byte characters, 8 two-byte kanji characters  
Input type; Specify RTD type.  
Unit of temperature; °C, F  
Input range; Lo and Hi setting values  
Linearization table; 101 points  
Input filtering; Disabled/Enabled (moving average)  
Output zero-span adjustment; Adjustable between -20 and +120%FS  
First-order 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.

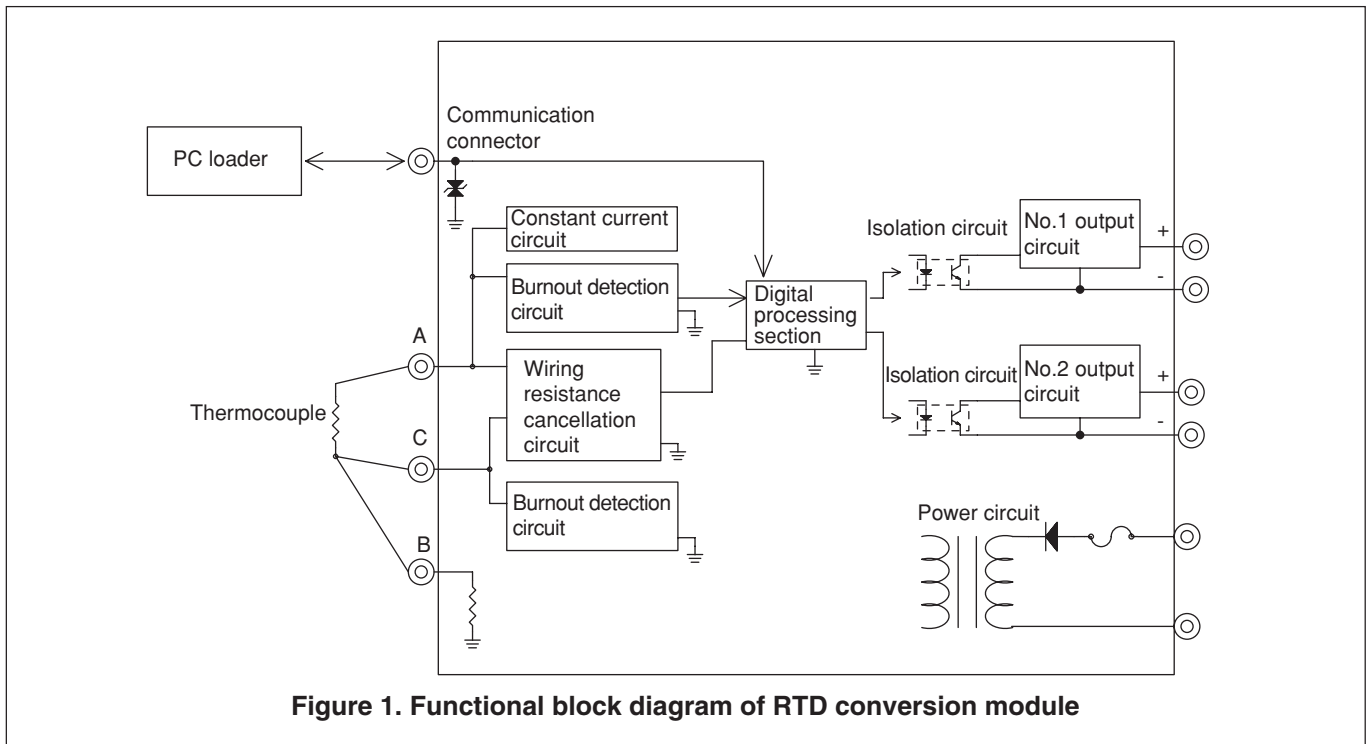


Figure 1. Functional block diagram of RTD conversion module

### Model Number Table

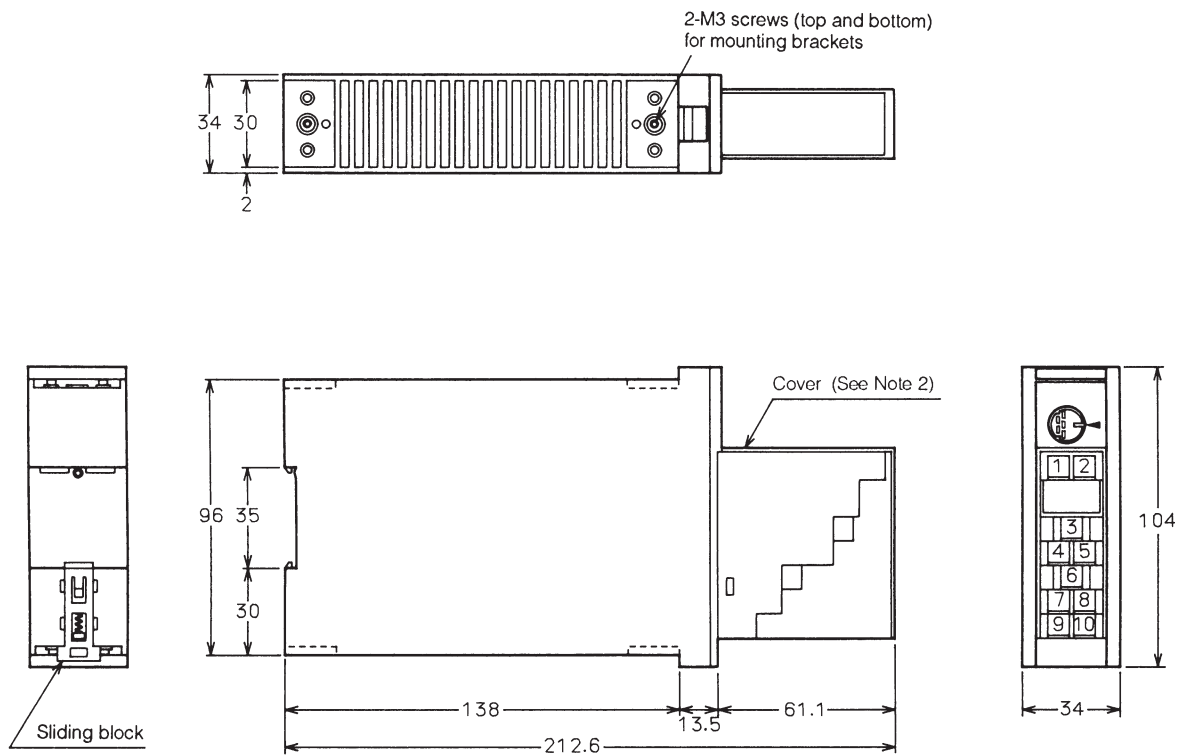
One-output model

Basic model number		Selections			Additions	Description
		I	II	III		
J-SRP90						RTD Conversion Module (1-output)
	X					No varnish coated
	C					Varnish coated
		-1				Input signal: RTD (Pt 100)
		-2				Input signal: RTD (JPt 100)
		-3				Input signal: RTD (Pt 50)
		-4				Input signal: RTD (JPt 50)
		-5				Input signal: RTD (Ni508.4)
			1			Output signal: 1 to 5V DC
			2			Output signal: 4 to 20 mA DC
				0		No zener barrier connected
				1		Zener barrier connected, Azbil Corporation 8907 series (Internal resistance: 66 Ω)
				2		Zener barrier connected, MTL (Internal resistance: 18 Ω)
				3		Zener barrier connected, Yokogawa Electric Corporation BARD series (Internal resistance: 130 Ω)
				-0		Without test report
			-1		With test report	

Two-output model

Basic model number		Selections			Additions	Description
		I	II	III		
J-SRP95						RTD Conversion Module (2-output)
	X					No varnish coated
	C					Varnish coated
		-1				Input signal: RTD (Pt 100)
		-2				Input signal: RTD (JPt 100)
		-3				Input signal: RTD (Pt 50)
		-4				Input signal: RTD (JPt 50)
		-5				Input signal: RTD (Ni508.4)
			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		No zener barrier connected
				1		Zener barrier connected, Azbil Corporation 8907 series (Internal resistance: 66 Ω)
				2		Zener barrier connected, MTL (Internal resistance: 18 Ω)
				3		Zener barrier connected, Yokogawa Electric Corporation BARD series (Internal resistance: 130 Ω)
				-0		Without test report
			-1		With test report	

Example: J-SRP95X-212-0

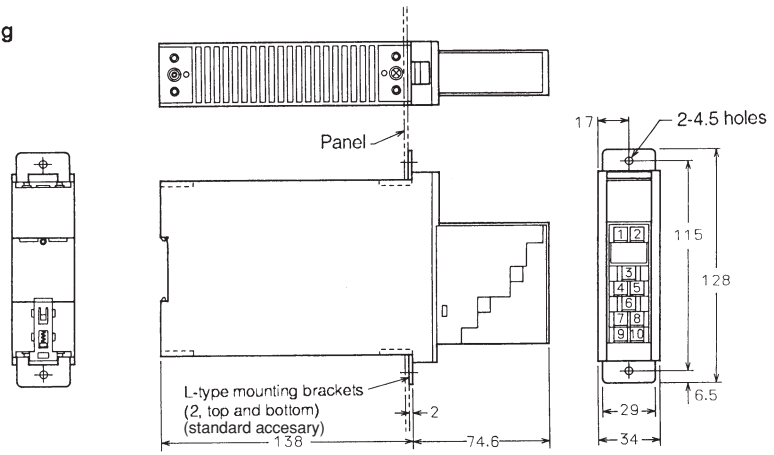


No.	Description
1	Thermobulb input C
2	Thermobulb input B
3	Thermobulb input A
4	No.1 output (+)
5	No.1 output (-)
6	No.2 output (+) (Note 1)
7	No.2 output (-) (Note 1)
8	24V (PS +)
9	GND
10	0V (PS -)

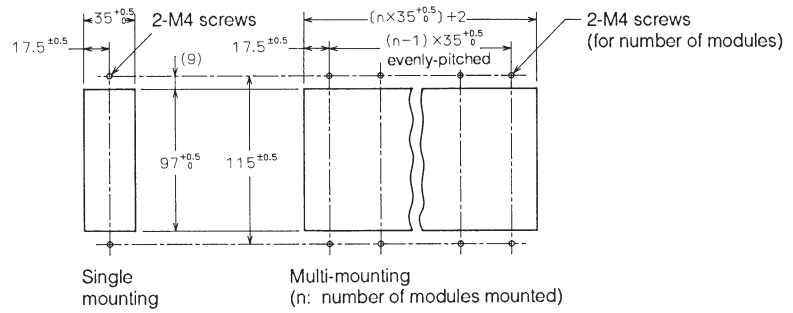
- Notes: 1) For two-output model  
 2) Operate the Module with a cover.  
 3) Terminal screws: M3.5  
 4) Use the crimping terminals with insulation sheath.

**Figure 2. Dimensions and wiring diagram**

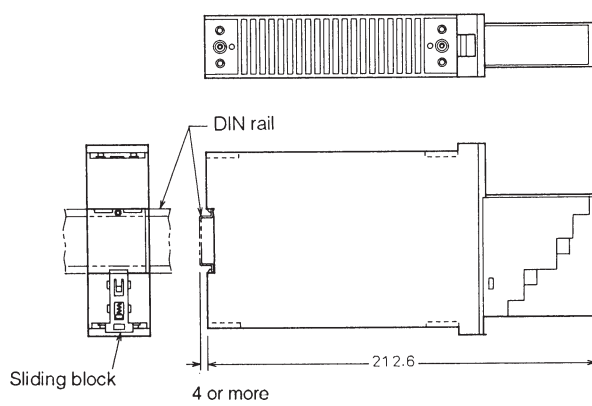
**Panel-mounting**



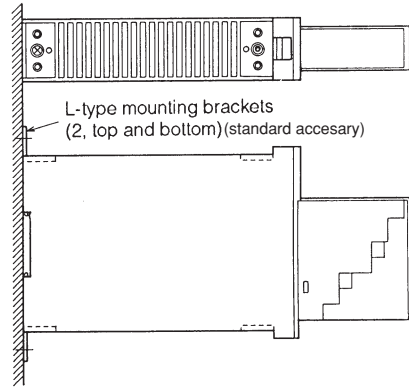
**Panel-cutout**



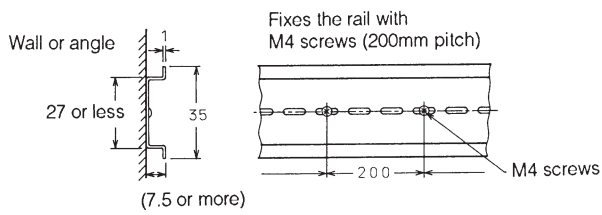
**DIN rail mounting**



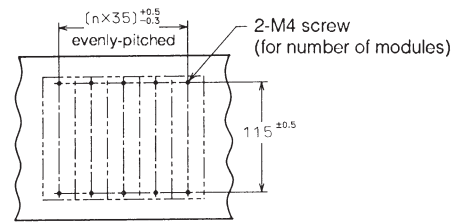
**Wall-mounting**



**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

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Note: RTD (Type Pt50 and JPt50) and intrinsic safety barrier connection will become available for sale at timings that differ from those of others. When ordering, please check with our sales representative.

When ordering, please specify:

- 1) Tag number
- 2) Input range\* [Default setting differs depending on RTD type.]
- 3) Burnout protection(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 °C
02	0 to 100 °C
03	0 to 150 °C
04	0 to 200 °C
05	0 to 300 °C
06	0 to 400 °C
07	0 to 500 °C
08	0 to 600 °C
09	0 to 700 °C
10	0 to 800 °C

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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