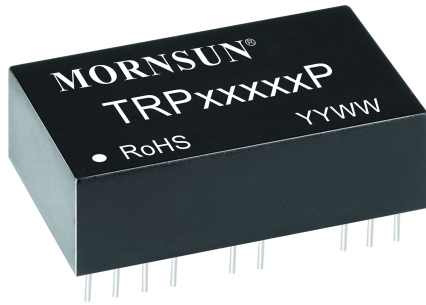


RTD detection type isolated module



RoHS



## FEATURES

- Two-wire, three-wire or four-wire Pt100/Cu50/Cu100 RTD signal input
- High accuracy (0.2% F.S.)
- High linearity (0.2% F.S.)
- Isolation voltage (2.0KVAC/60s)
- Low ripple & noise:  $\leq 30\text{mVp-p}$
- Extremely low temperature coefficient (50PPM/ $^{\circ}\text{C}$ , within  $-40$  to  $+85^{\circ}\text{C}$ .Typ.)
- Operating temperature range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Auxiliary power: 5V/12V/15V /24V DC power supply
- International standard signal output : 4~20mA/0~5V/0~10V etc.
- Low cost, Compact size, Convenient to use, High reliability
- Standard DIP24(31.6\*20.3\*10.2mm), UL94-V0 Package

TRP / C Series temperature signal isolation module is a hybrid integrated circuit, it is the RTD signal by the level of isolation of temperature converted into a standard linear with temperature signal. The circuit on the same chip integrates a set of multi-channel high isolated DC / DC power supply, Several high-performance signal isolators, and RTD linearization, long-term compensation, interference suppression circuit. Especially suitable for Pt100/Cu50/Cu100 RTD signal isolation converted into a standard signal isolation, Temperature signals transmission and remote without distortion, Temperature signal acquisition and isolated of DCS system or industrial site PLC.

Chip integrates a high-efficiency DC-DC, it can produce two groups were separated from each other to the internal power amplifier inputs, modulation circuit supply and Outputs of the demodulator circuit, Switching circuit, and filter circuit. SMD technology structure and new isolation technologies allow the device to achieve: power, signal input and signal output 2000VAC Three-terminal isolation. The product can meet the harsh operating environment requirements. Such as industrial grade temperature, humidity and vibration environment.

TRP / C Series temperature signal isolation module very convenient to use, with minimal external components to achieve Pt100/Cu50/ Cu100 RTD signal isolation transmitter. It can also achieve industrial site temperature control signal of 1 input 2 output and 1 input 4 output functions.

## Selection Guide

Part No.	Power Supply input (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
TRP16130P	24	Pt100 (0~200 $^{\circ}\text{C}$ )	4-20mA	None
TRP15130P	24	Pt100 (0~100 $^{\circ}\text{C}$ )	4~20mA	None
TRP18130P	24	Pt100 (-50~150 $^{\circ}\text{C}$ )	4~20mA	None
TRP15S30P-2.5	24	Pt100 (0~100 $^{\circ}\text{C}$ )	0~2.5V	None

Notes: Customization products are available if required.

## Input Specifications

Item	Operating Conditions	Value
Power input	Input voltage	24V $\pm 5\%$
	Input power	Signal, power full load
	Power supply protection	$\leq 1\text{W}$
Signal Input	Power supply protection	Reverse polarity protection
	Input signal	Pt100
	Input impedance	Reference selection guide

## Output Specifications

Item	Operating Conditions	Value	
Output signal	Output signal	Voltage output	0~2.5V
		Current output	4~20mA
	Load capacity	Voltage output	$\geq 10K \Omega$
		Current output @ 20mA	$\leq 500 \Omega$
	Load regulation		0.050%
Ripple & noise	20MHz bandwidth	$\leq 30mVpp$	

## Transmission Specifications

Item	Operating Conditions	Value
Zero Offset		None
Precision	External adjustable resistor is necessary	$\pm 0.2\%F.S.$ , Typ.(0.5%F.S.,Max.)
Temperature Coefficient	Operating temperature range: $-40^{\circ}C$ to $+85^{\circ}C$	50PPM/ $^{\circ}C$ , Typ.(100ppm/ $^{\circ}C$ , Max.)
Adjustable function	Full-scale regulation	External regulation resistor (10K)
	Zero regulation	External regulation resistor (10K)

## General Specifications

Item	Operating Conditions	Value
Electric Isolation		Input, output and power supply are mutually isolated from each other
Degree of Isolation	testing for 1 minute, leakage current $<5mA$ , humidity $<70\%$	2.0KVAC /60S
Insulation Resistance		100M $\Omega$ , 500VDC (signal input terminal, signal output terminal and power supply terminal)
Welding Temperature	Wave-soldering	$260 \pm 5^{\circ}C$ ; Welding time: 5~10s
	Manual-welding	$360 \pm 10^{\circ}C$ ; Welding time: 3~5s
Operating Temperature		$-40 \sim +85^{\circ}C$
Transportation and Storage Temperature		$-50 \sim +105^{\circ}C$
Max. Casing Temperature	Ta=25 $^{\circ}C$	$\leq 50^{\circ}C$
Application Environment		The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product

## Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic
Package	DIP24
Weight	10.4g(Typ.)
Cooling Method	Free air convection

## EMC Specifications

EMI	CE	CISPR22/EN55022	CLASS A (see Fig. 4 for recommended circuit)
	RE	CISPR22/EN55022	CLASS A (see Fig. 4 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 4KV$ perf. Criteria B
	EFT	IEC/EN61000-4-4	Power supply port $\pm 2KV$ (see Fig. 4 for recommended circuit) perf. Criteria B
	Surge	IEC/EN61000-4-5	Power supply port $\pm 1KV$ (line to line) (see Fig. 4 for recommended circuit) perf. Criteria B

## Application Precautions

1. Please read the instructions carefully before use; contact our technical support if you have any problem.
2. Do not use the product in hazardous areas.
3. Use DC power supply for the product and 220V AC power supply is prohibited.
4. Do not dismount and assemble the product without permission to avoid failure or malfunction of equipment.

### After-sales service

1. Ex-factory inspection and quality control have been strictly conducted for the product; if there occurs abnormal operation or possibility of failure of internal module, please contact the local representative or our technical support.
2. The warranty period for the product is 3 years as calculated from the date of delivery. If any quality problem occurs under normal use within the warranty period, the product can be repaired or changed for free.

### Applied circuit

See *Application Notes for Isolated Transmitter* for details.

## Design Reference

### 1. Product structure diagram

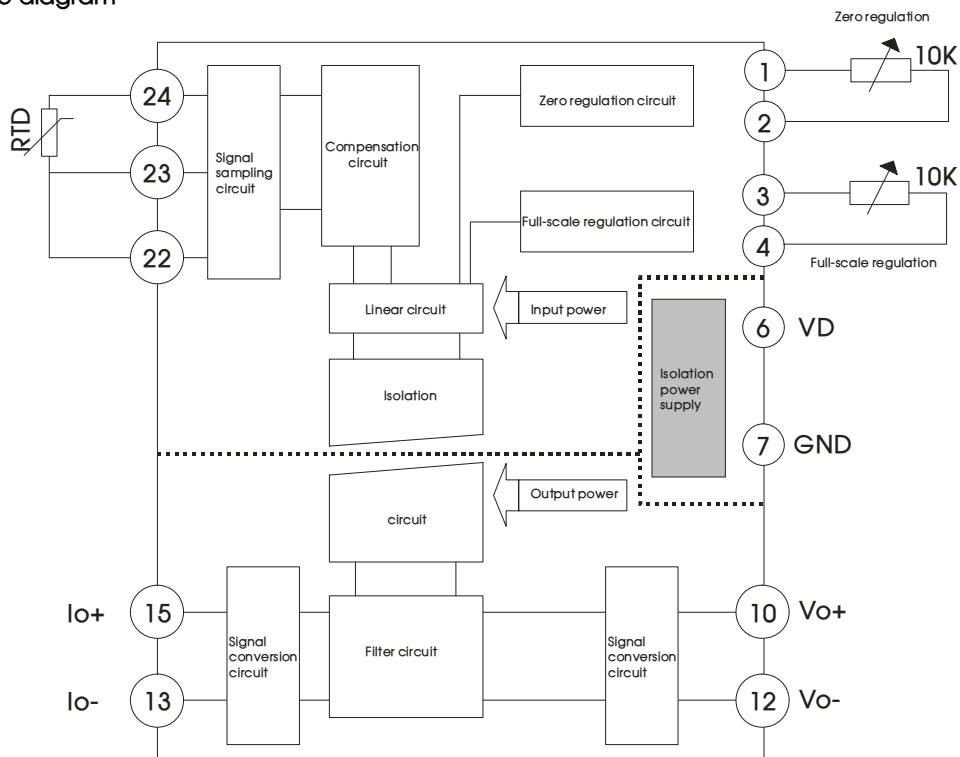


Fig. 1

## 2. Typical application

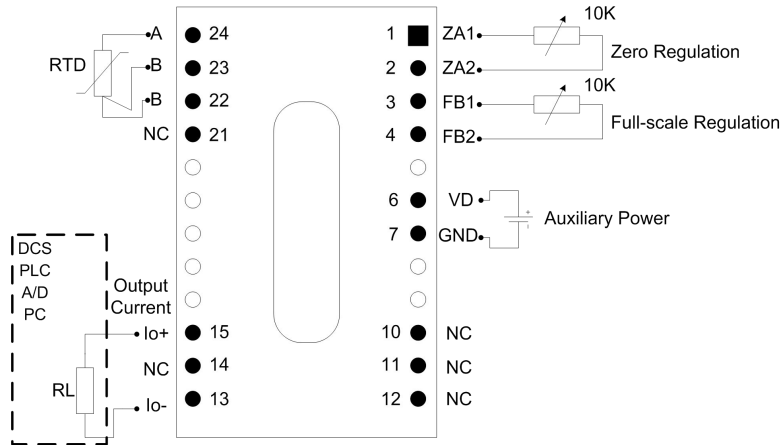


Fig. 2 Wiring diagram for product application of Current output

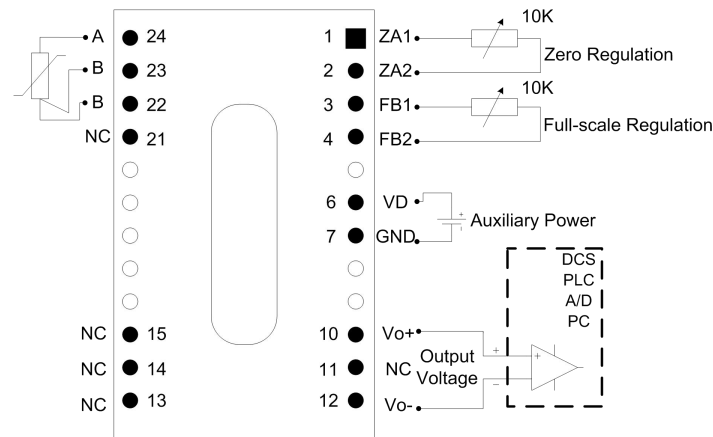


Fig. 3 Wiring diagram for product application of Voltage output

Notes: NC: Not available for electrical connection

## 3. Product calibration

Calibration Equipment: the 0.01 accuracy resistance box, The DC power, Four and a half multimeter.

Calibration steps:

- 1) Accordance with the application diagram to wiring, or install the product into the circuit board which has been designed.
- 2) According to the value of the auxiliary power supply , connect the power, Install adjustment potentiometer; the output of product is connected with the multimeter.
- 3) According to the temperature range of input to query the indexing table corresponding resistance value range(Rlow~Rhigh).
- 4) Turn on the power 15 minutes (Recommended value).
- 5) The resistance box is set to equal the value of the resistance Rlow, adjust the Zero potentiometer so that the output value corresponding to zero (eg. 4mA).
- 6) The resistance box is set to equal the value of the resistance Rhigh, adjust the Amplitude potentiometer so that the output corresponding to Full-Degree (eg. 20mA).
- 7) In order to calibrate the output value of the product, please repeat several steps 5 and 6.
- 8) Calibration finished.

## 4.Recommended EMC circuit

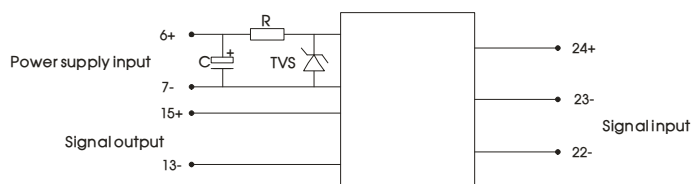
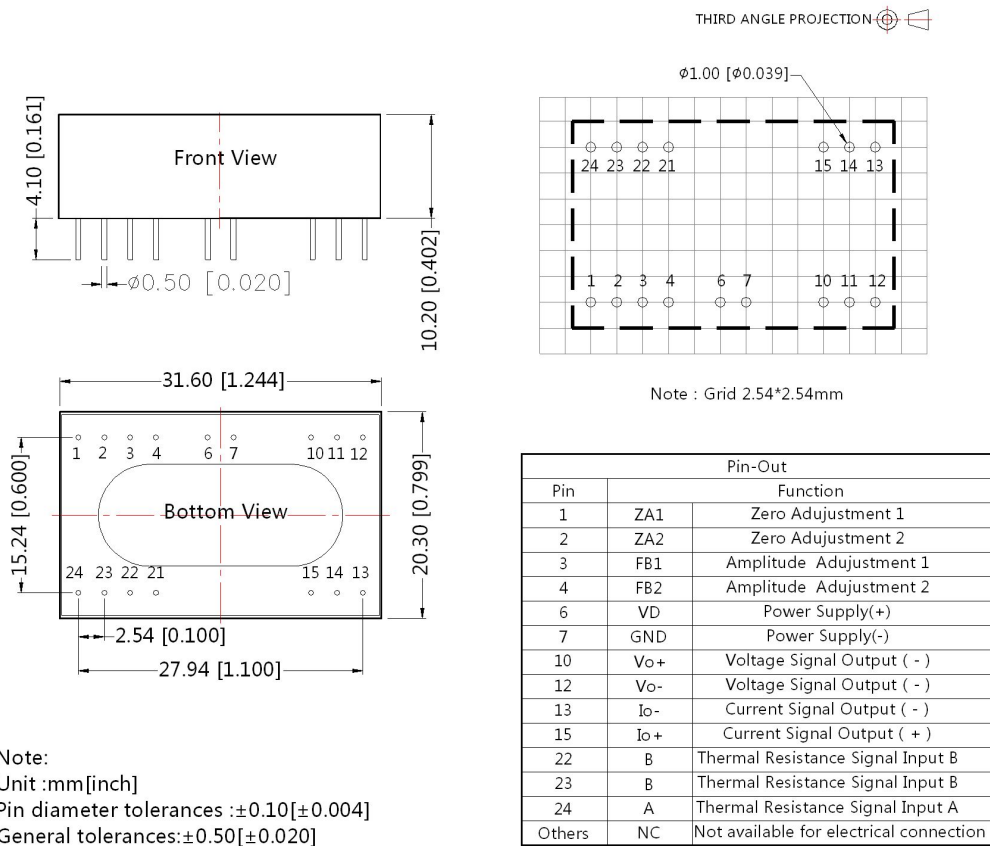


Fig. 4

Components	Recommended parameters
TVS	SMCJ30A
R	12Ω 2W Wirewound
C	220 μ F/35V

5.For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout



**Notes:**

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58210008;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°C, humidity<75% when inputting nominal voltage and outputting rated load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this datasheet are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

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