

Ultra-thin Programmable thermal resistance isolators



## FEATURES

- Isolation test voltage of 2000VAC for signal input to output and to power ports
- Ultra-slim 12.5mm case
- High accuracy (0.1% Full Scale)
- High linearity (0.1% Full Scale)
- Extremely low temperature coefficient (50PPM/°C)
- Mini USB port communication
- Good EMC performance
- Programmable Input / Output range
- Proven reliability with MTBF >500,000 hours

TRxxxPW series of thermal resistance isolators are mainly used in systems for industrial automation. They provide an isolated conversion of thermal resistance input signals from common industrial instruments into matching analog output signals for the DCS/PLC, by realizing acquisition and transmission of field signals.

An independent DC power source is required to supply the module that isolates the power ports from the signal input and output ports. This series of products contains a combination of 1 input with 1 output, 1 input with 2 outputs or 2 inputs with 2 outputs. The extremely compact design having a thickness of only 12.5mm, meets the demand for high density installations.

### Selection Guide

Output Type	Single input/single output	Double input/double output	Single input/double output
Current Output	TR100PW	TR200PW	TR600PW
Voltage Output	TR140PW	TR240PW	TR640PW

Input Signal: programmable (2-wire system or 3-wire system input)

Signal Type	Measuring range	Min. measuring range
Pt100	-200°C to +850°C	50°C
Cu50	-50°C to +150°C	50°C
Cu100	-50°C to +150°C	50°C

Output Signal:

Output Type	Output signal
Current Output	4-20mA / 0-20mA (programmable)
Voltage Output	0-5V / 0-10V / 1-5V / 2-10V (programmable)

Notes:

- The Customer must define type of input signal, measuring range and form of output signal when placing the order; customizations are available on request;
- The auxiliary USB adapter model is T-01; please contact our technical staff for specific information.

### Input Specifications

Item	Operating Conditions	Value
Power Supply Input	Power Supply	18-30VDC (Typical value 24VDC)
	Power Dissipation	single input/ single output <1.5W single input/double output & double input/double output <1.8W
	Power Supply Protection	Input reverse polarity protection
Field Area	Input Signal	See List of Product Models

### Output Specifications

Item	Operating Conditions			Value			
Control Area	Output Signal		See selection guide				
	Load Capacity		Output current maximum		$\leq 500 \Omega$		
			Output voltage maximum		$\geq 1M\Omega$		
	Communication Port		Mini USB port				
	Communication Protocol		See MORNSUN Modbus Bus Protocol Rules for details				
	Fault Output						
	Output Type	4-20mA	0-20mA	1-5V	0-5V	0-10V	2-10V
	Input Disconnection	About 23mA	About 23mA	About 5.75V	About 5.75V	About 11.5V	About 11.5V
	Input Over-range Lower Limit	3mA	21mA	0.75V	5.25V	10.5V	1.5V
	Input Over-range Upper Limit	22mA	22mA	5.5V	5.5V	11V	11V
	Disconnect Alarm	Corresponding channel's red LED channel disconnection					
	Over-range Alarm	Corresponding channel's red LED blinks					

### Transmission Specifications

Item	Operating Conditions	Value
Accuracy	Full-scale range, 100% load, @25°C	0.1% Full Scale or 0.5°C greater
Zero Offset	$Sin = 0$ , 100% load, @25°C	0.1% Full Scale or 0.5°C greater
Temperature Coefficient	Operating temperature range of -25°C to +71°C	50PPM/ °C
Output Signal Rise Time	Measured from 10% to 90% of the full signal amplitude	< 1.0s
Output Signal Fall Time	Measured from 90% to 10% of full signal amplitude	< 1.0s

### General Specifications

Item	Operating Conditions	Value
Electric Isolation	Electric strength test for 1 minute with a leakage current of $\leq 5mA$	Field area and control area 2000VAC
		Output and power supply 2000VAC
Isolation Resistance	Signal input terminal, signal output terminal	100MΩ at 500VDC
Operating Temperature		-25°C to +71°C
Transportation and Storage Temperature		-40°C to +85°C

### Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A	
	RE	CISPR32/EN55032 CLASS A	
Immunity	ESD	IEC/EN61000-4-2 Contact $\pm 4kV$ /Air $\pm 8kV$	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 power supply port $\pm 2kV$	perf. Criteria A
		IEC/EN61000-4-4 signal port $\pm 1kV$	perf. Criteria A
	Surge	IEC/EN61000-4-5 power supply port $\pm 1kV$	perf. Criteria B
		IEC/EN61000-4-5 signal port $\pm 1kV$ (line-to-ground)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A

### Mechanical Specifications

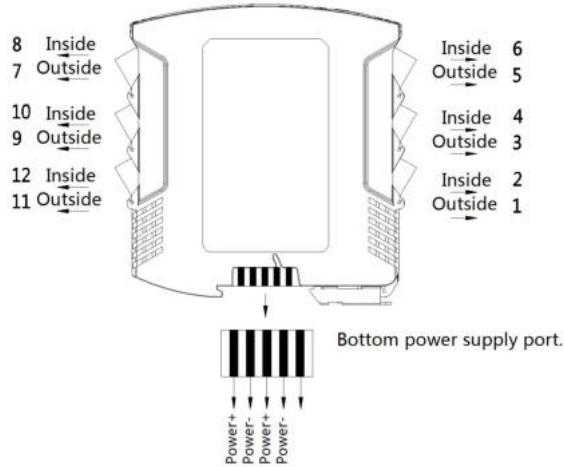
Case Material	Flame retardant material UL94 V-0
Safety Class	IP20(IEC60529 / EN60529)
Package Dimensions	35mm DIN-rail package: T-rail card package (DIN50022), pluggable connection pin, 12.5mm wide
Weight, Typical	100g / 128g (single input single output / single input double output & double input double output)
Cooling Method	Free air convection

## Application Precautions

1. Carefully read and follow the instructions before use; contact our technical support if you have any question;
2. Do not use the product in hazardous areas;
3. Use only DC power supply source for this product and 220V AC power supply is prohibited;
4. It is strictly forbidden to disassemble the product privately in order to avoid product failure or malfunction.

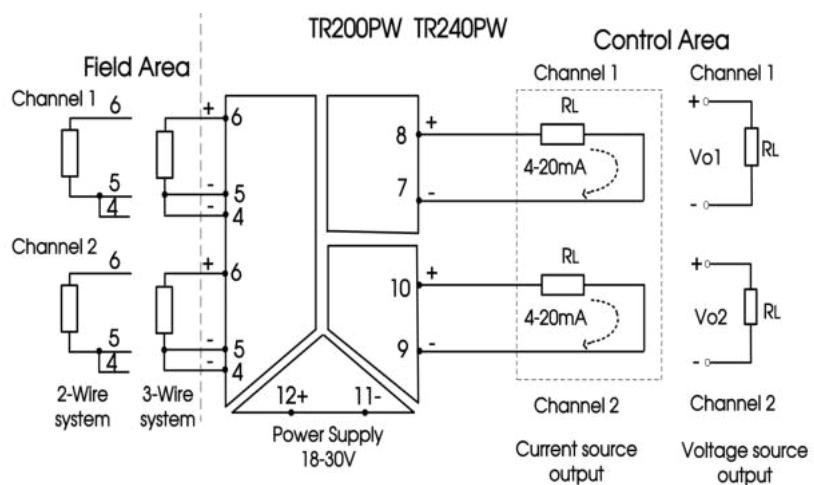
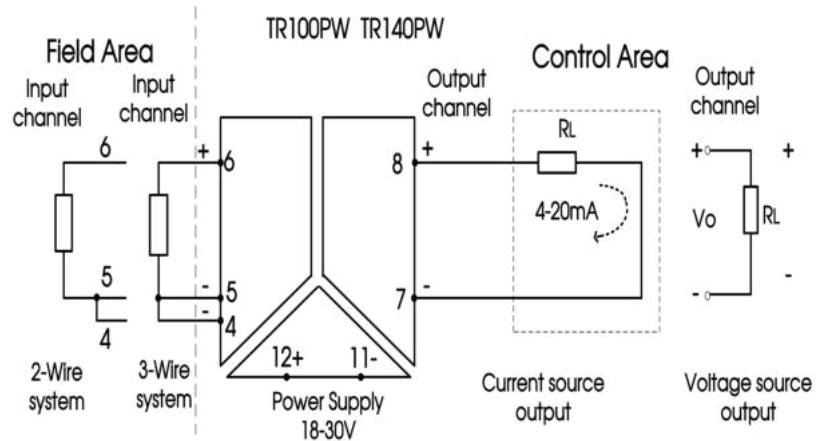
## Design Reference

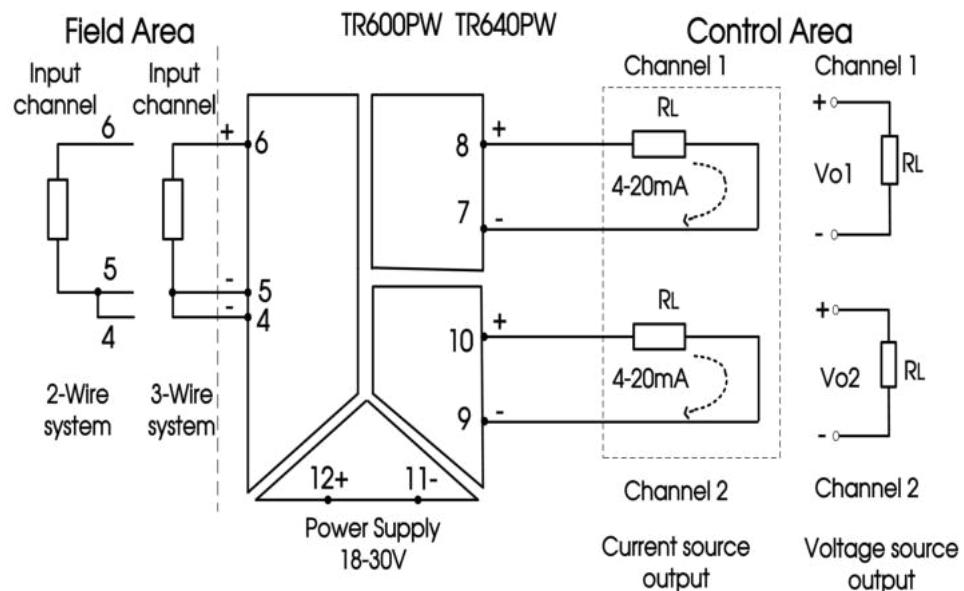
### 1. Wiring diagram and connection



PIN	Description (double input double output)
1	L2B Signal 2 input line B
2	L2A Signal 2 input line A
3	L2C Signal 2 input line C
4	L1C Signal 1 input line C
5	L1B Signal 1 input line B
6	L1A Signal 1 input line A
7	So1- Signal 1 output-
8	So1+ Signal 1 output+
9	So2- Signal 2 output-
10	So2+ Signal 2 output +
11	Power- power input-
12	Power+ power input+

Note: When use bottom power supply, anyone group or both is OK.





- ① Use dismountable terminals for instrument wiring, easy to operate;
- ② The sectional area of conductor is 0.5mm<sup>2</sup>-2.5mm<sup>2</sup>;
- ③ The length of conductor exposed is 8mm and is fastened by M3 bolts.

2. For additional information please refer to application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Installation & Removal

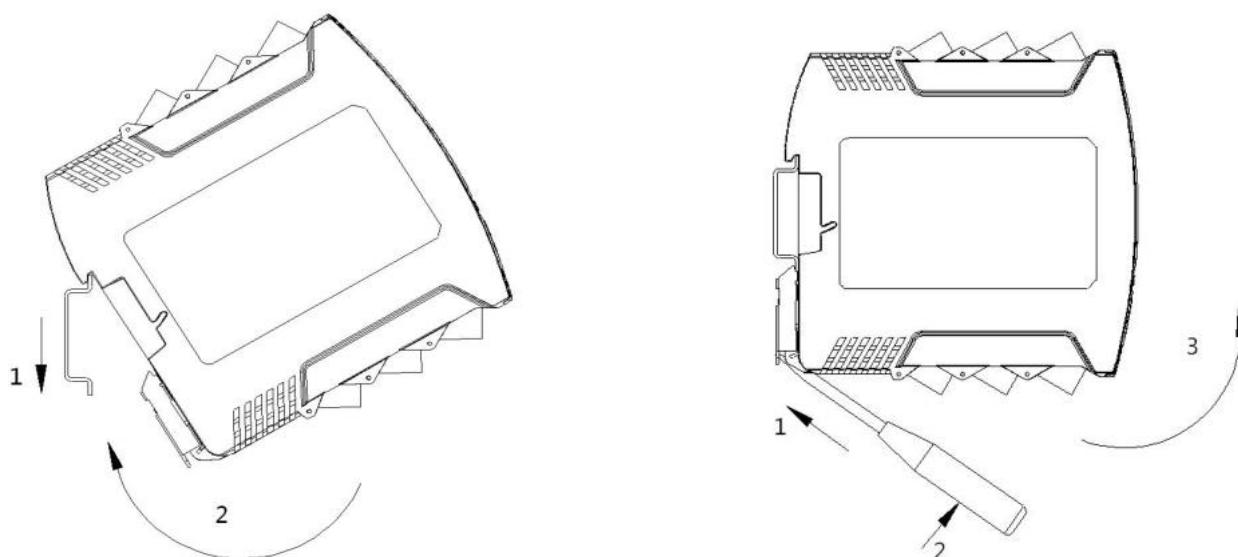
### Installation

Standard 35mm DIN rail installation:

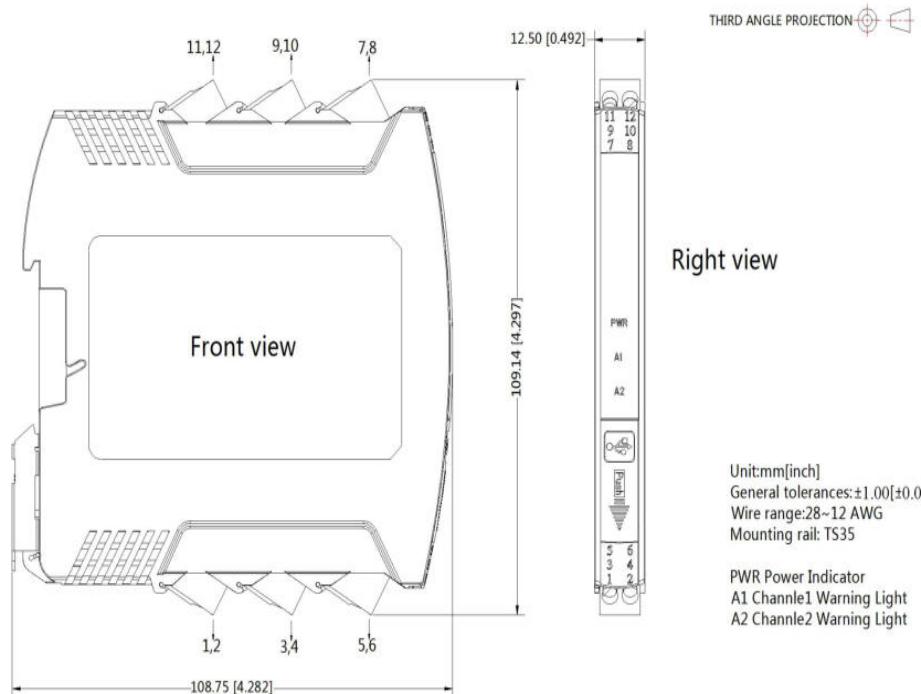
1. Insert top of Module into DIN rail;
2. Push bottom of Module into rail until it snaps in.

### Removal

1. Insert screw driver on the lower end of Module to release clamp (tool edge width ≤6mm);
2. Push screw driver up towards Module to slide clamp out;
3. Pull Module up and out of guide rail.



Dimensions



Notes:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). The Packaging bag number: 58040010;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on company corporate standards;
4. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

**MORNSUN Guangzhou Science & Technology Co., Ltd.**

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China  
Tel: 86-20-38601850      Fax: 86-20-38601272      E-mail: [info@mornsun.cn](mailto:info@mornsun.cn)      [www.mornsun-power.com](http://www.mornsun-power.com)