MORNSUN®

Programmable thermal resistance isolators

RoHS

FEATURES

- 3-port electrical isolation between input, output and power supply(3kVDC)
- Ultra-slim 12.5mm case
- High accuracy (0.1% Full Scale)
- High linearity (0.1%Full Scale)
- Extremely low temperature coefficient (0.05℃/℃)
- Low-power dissipation
- Excellent EMC performance
- Mini USB port communication
- Input / Output range programmable
- Proven reliability with MTBF >500,000 hours

TR1x0PWE series thermal resistance isolator which are mainly applied in industrial automation systems can isolated convert thermal resistance input signal of the industrial field instruments to the matched analog output signal for the DCS/PLC, realizing the acquisition and transmission of field signal.

An independent power supply is needed for the product and the port of power supply, input and output are isolated from each other. This series of products contain combinations of 1 input 1 output , 1 input 2 output, 2 input 2 output and so on. The thickness of 12.5mm meet the need for high density field installation.

Connection of field devices and the regions:

2-wire, 3-wire thermal resistance

Selection Guide

Output Type	Single Input/Single Output
Current Output	TR100PW
	TR100PWE-WL
Voltage Output	TR140PW

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

Model	Signal Type	Measuring Range	Min. Measuring Range
TR100PWE	Pt100	-30℃ to +70℃	--
TR100PWE-WL		-60℃ to +120℃	--
TR140PWE	Pt100	-200℃ to +850℃	50℃
	Cu50	-50℃ to +150℃	50℃
	Cu100	-50℃ to +150℃	50℃

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

Notes:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order, customization is available for special requirements.
2. 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	Input Power		18-30VDC (Typical value 24VDC)
	Power Dissipation		Single input/ single output <1.2W
	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	⩽500Ω				
		Output voltage maximum	⩾1MΩ				
	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	0~0V	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
	Disconnection Alarm	Red light on					
	Over-range Alarm	Red light flash					

Transmission Specifications

Item	Operating Conditions	Value
Accuracy	Full-scale range, 100% load, @25℃	0.1%Full Scale or 0.5℃, take the larger one
Zero Offset	Sin = 0,100% load, @25℃	0.1%Full Scale or 0.5℃, take the larger one
Temperature Coefficient	Operating temperature range of -25 to + 71℃	0.05℃(Sampling deviation) / ℃(Ambient temperature)
Output Signal Rise Time	Measured from 10% to 90% of the full signal amplitude	<0.5s
Output Signal Fall Time	Measured from 90% to 10% of the full signal amplitude	<0.5s

General Specifications

Item	Operating Conditions	Value
Electric Isolation	1Min leakage current ⩽5mA	Field area and control area 2000VAC/3000VDC
		Output and power supply 3000VDC
Isolation Resistance	Signal input terminal, Signal output terminal	100MΩ, 500VDC
Operating Temperature		-25 to +71℃
Transportation and Storage Temperature		-40 to +85℃

Mechanical Specifications

Case Material	Retardant material UL94-V0
Safety Class	IP20(IEC60529 / EN60529)
Vibration Class	IEC61373:1999
Package Dimensions	35mm DIN-rail package: T-rail card package (DIN50022), pluggable connection pin, 12.5mm wide
Weight	88.0g.(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	GB/T24338.4-2009	0.15MHz~0.5MHz, QP limits 79dBμV, 0.5MHz~30MHz, QP limits 73dBμV
	RE	GB/T24338.4-2009	30MHz~230MHz, QP limits 40dBμV/m, 30MHz~1000MHz, QP limits 47dBμV/m
Immunity	ESD	GB/T24338.4-2009	Contact ±6KV/Air ±8KV perf. Criteria B
	RS	GB/T24338.4-2009	10V/m perf. Criteria A
	EFT	GB/T24338.4-2009	power supply port ±2KV, 5kHz perf. Criteria B
		GB/T24338.4-2009	signal port ±2KV, 5kHz perf. Criteria A
	Surge	GB/T24338.4-2009	power supply port ±2KV perf. Criteria B

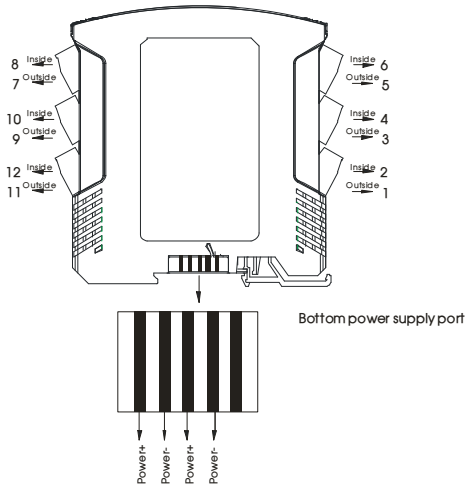
		GB/T24338.4-2009 signal port ±2KV (line-to-ground)	perf. Criteria B
	CS	GB/T24338.4-2009 10 Vr.m.s	perf. Criteria A

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.

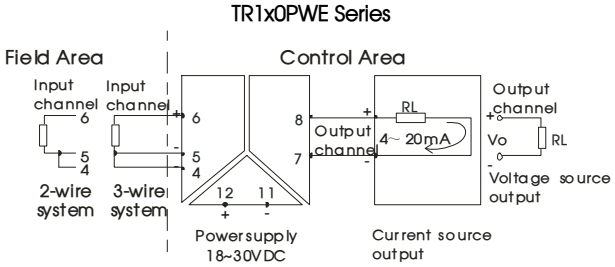
Design Reference

1. Wiring diagram for product application



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

PIN	Description (double input double output)
1	NC
2	NC
3	NC
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	NC
10	NC
11	Power- power input-
12	Power+ power input+



① Use dismountable terminals for instrument wiring, easy to operate;
② The sectional area of conductor is 0.5mm²-2.5 mm²;
③The length of conductor exposed is 8mm and is fastened by M3 bolts.

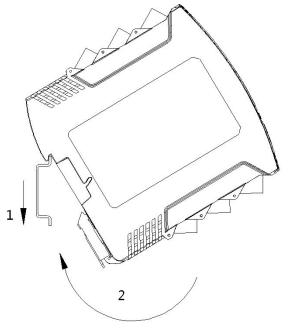
2. For additional information please refer to application notes on www.mornsun-power.com

Installation & Removal

Installation

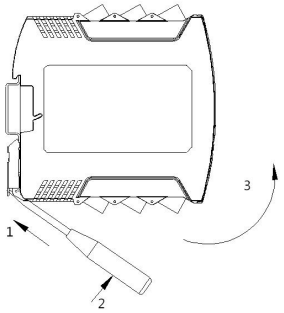
Standard 35mm DIN rail installation:

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

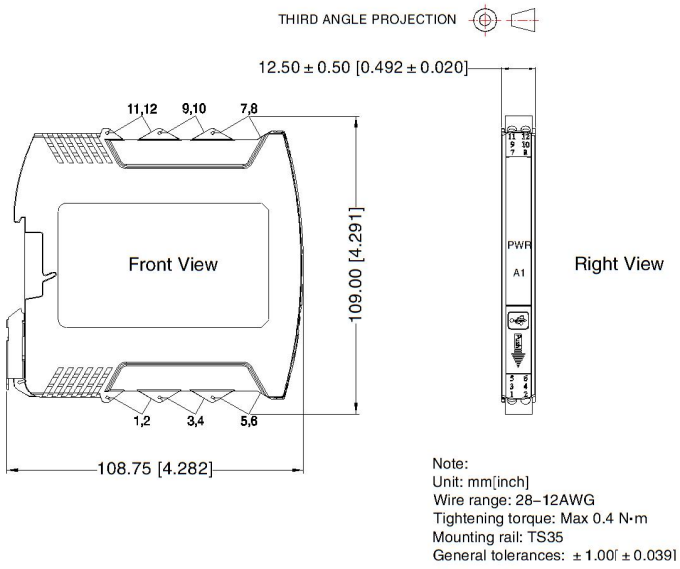


Removal

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 out of the guide rail.



Dimensions



Note:
Unit: mm[inch]
Wire range: 28–12AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35
General tolerances: ± 1.00[± 0.039]

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. The Packaging bag number: 58240007;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, 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

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