

# MORNSUN®

## PROGRAMMABLE RTDS DETECTION TYPE ISOLATION BARRIER

(Output loop produce power supply)

—— TRx02PI Series

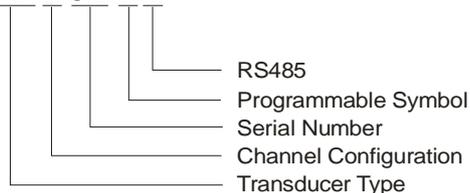


### FEATURES

- Three-port isolation (input, output and power supply)
- High accuracy (0.1% F.S.)
- Isolation voltage (2.5KVAC/60s)
- Low temperature drift (50PPM/°C)
- Digital bus (RS485)
- Input / Output range programmable
- High reliability(MTBF>500,000 hours)

### PART NUMBER SYSTEM

TRx02PI



### GENERAL DESCRIPTION

The signal generated by the two-wire or three-wire RTDs in the application field is picked up by this product, and converted to the standard analog current or voltage signal which is isolated with application field, and transmitted to the control cabinet. The product is armed with RS485 digital bus interface, which makes network configuration and the input or output configuration possible in PLC/DCS system. It is an intelligent product.

One independent power supply is required. Moreover, within the product power supply, input and output are mutually isolated. And have temperature over limit alarm and Off-line alarm

Field devices connected with this product:

Two-wire, three-wire RTDs (not to be used in intrinsically safe area);

### SELECTION GUIDE

Output type	1 IN 1 OUT	2 IN 2 OUT	1 IN 2 OUT
Current output	TR102PI	TR202PI	TR602PI
Input signal: programmable(2-wire system or 3-wire system input)			
TRx02PI	Description		
	Signal Type	Range	The minimum range
Input thermal resistance signal	Pt100	-200~+850°C	50°C
	Cu50	-50~+150°C	50°C
	Cu100	-5~+150°C	50°C
Output Signal	Current output	4~20mA	
	Current output	0~20mA	
<b>Note:</b> 1.The initial setting of the product is signal type:Pt100, measurement range: -200~+800°C., minimum range: 50°C, current output: 4~20mA. Customers can choose signal type and range, or program with the programming software. (Which can be downloaded at <a href="http://www.mornsun.cn">www.mornsun.cn</a> ).Modifying is also acceptable if there are special requirements. 2. You can get the USB Adapter T-01 for the isolator from MORNSUN free of charge if you need.			

### ELECTRICAL CHARACTERISTICS

Power Supply Parameter	Input Range	18~36VDC (Typ. : 24VDC)	
	Input Power	1 in 1 out	Abou1.5W
		1 in 2 out,2 in 2 out	Abou2.0W
	Power Protection	Reverse protection	
Application Field	Input Signal	Refer to product overview	
Control Cabinet	Output Signal	Refer to product overview	
	Load	≤ 500Ω (@maximum output current)	
	Communication Interface	RS485	
	Communication Protocol	Refer to "MORNSUN Science and Technology ModBus Protocol Rule"	

## TRANSMISSION CHARACTERISTICS

Offset	0.1%F.S.
Gain Error	0.1%F.S. (Maximum input range)
Accuracy	0.1%F.S. OR 0.5°C choose the Minimum
Temperature Drift	0.0050%F.S./°C (-25 ~ +71°C)

## ISOLATION CHARACTERISTICS

Galvanic isolation	2.5KVAC between input channels & power supply
	2.5KVAC between input channels & output channels
	1.5KVDC between output channels & power supply
	1.5KVDC between output channels (for multi-channel products)
Test conditions: testing for 1minute, humidity < 70%, leakage current < 1mA	

## ALARM FUNCTIONS

Off-line alarm	Channel 1 off-line, LED "O" flash with one pulse; Channel 2 off-line, LED "O" flash with dual pulses; Channel 1 & 2 all off-line, LED "O" is always on; When one of two channels is off-line, correspondingly, its output current is about 23mA.
Upper limit alarm	Channel 1 upper limit alarm, LED "H" flash with one pulse; Channel 2 upper limit alarm, LED "H" flash with dual pulses; Channel 1 & 2 all upper limit alarm , LED "H" is always on; When one of two channels is upper limit alarm, correspondingly, its output current is about 22mA.
Lower limit alarm	Channel 1 lower limit alarm, LED "L" flash with one pulse; Channel 2 lower limit alarm, LED "L" flash with dual pulses; Channel 1 & 2 all lower limit alarm , LED "L" is always on; When one of two channels is upper limit alarm, correspondingly, its output current is about 3mA (4~20mA) or 21mA(0~20mA).

## OTHER CHARACTERISTICS

Ambient temperature	Operation temperature: -25 ~ +71°C
	Transport and Storage temperature: - 50 ~ +105°C
Package	35mm DIN-rail package, pluggable connection terminal, thickness 22.5mm, Plastic UL94-V0
Safety Class	IP20(IEC60529 / EN60529)
Weight	1 input 2 output&2 input 2 output about 128g; 1input 1output about 100g
Note:	<ol style="list-style-type: none"><li>All specifications measured at TA=25°C, humidity&lt;75%, nominal input voltage and rated output load unless otherwise specified.</li><li>Only typical models listed, specifications of custom product may be different. Please contact our service people directly for certain conditions.</li><li>Communication protocol details refer to "MORNSUN Science and Technology Modbus Protocol Rule".</li><li>The MORNSUN Safety Barrier Configuration software can be downloaded free from the MORNSUN homepage <a href="http://www.mornsun.cn">www.mornsun.cn</a> or you can contact us to get it.</li></ol>

## CONNECTION

1. Removable terminal;
2. Cross section area of wiring: 0.5mm<sup>2</sup>~2.5 mm<sup>2</sup>;
3. The length of bare wire is about 8mm, locked up by the M3 bolt.
- 4.

### Application in industry

In so many occasions, isolation barriers should not be installed in intrinsically safe area.

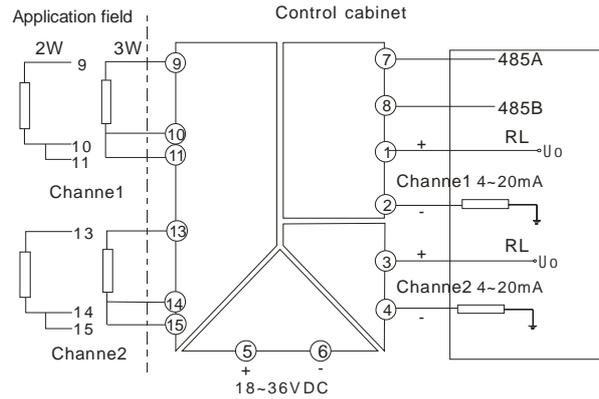
### Selection guidelines for isolation barrier

1. Pay more attention to output resistance and loop resistance and make sure the barrier output voltage meets the minimum operation voltage demand of field device.
2. Select suitable isolation barrier which matches the field device according to its power polarity, signal type and transmission mode.
3. Much more protection is required, which can avoid the influence of the leakage current generated by isolation barrier on field device.

### Notes:

1. Please read the user manual carefully before using. If any questions please contact our technical support department.
2. Please do not use this product in hazardous area.
3. The power supply of this product should be 24VDC power source. It is forbidden to use 220VAC power supply.
4. To avoid invalid explosion protection function, or any failure, users disassemble this product is forbidden.

## APPLICATION CIRCUIT DIAGRAM



Note:

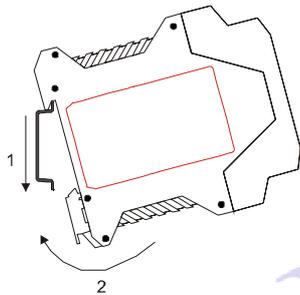
1. This diagram is for 2 channels input & 2 channels output model only. Channel 2 of input end is no connection for 1 channel input & 2 channels output model, and channel 2 of input and output end is no connection for 1 channel input & 1 channel output model.
2. For three-wire RTDs signal input, make sure the equal resistance of three wires as possible as you can;
3. For two-wire RTDs signal input, terminal 10 and 11, 14 and 15 must be short connected.

## INSTALLATION & DISASSEMBLY

### Installation

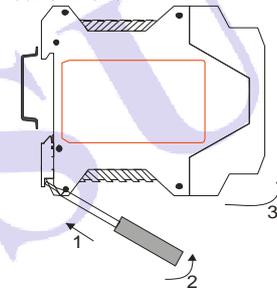
DIN35mm standard rail installation:

1. Insert the top of the instrument card in the rail;
2. Push the bottom of the instrument into the rail.

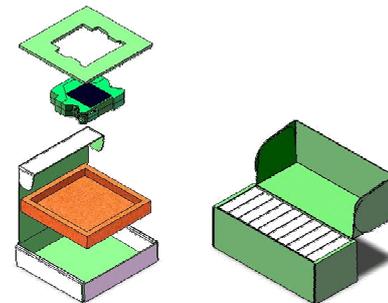
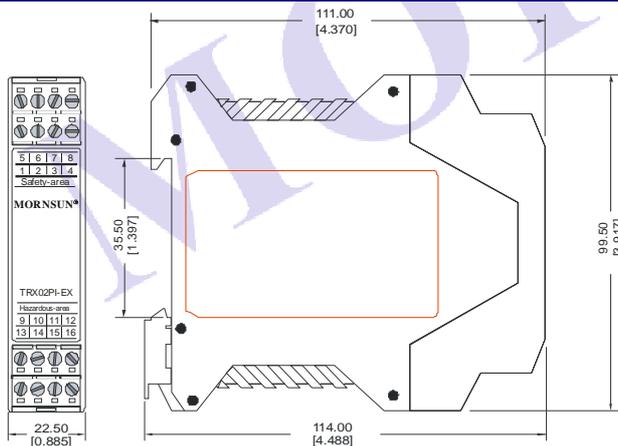


### Disassembly

1. Insert a screwdriver between the bottom of the card lock and the rail;
2. Pull up the screwdriver and press the card lock downwards;
3. Pull the instrument out of the rail.



## PACKAGING DIMENSION & PACKAGING DIAGRAM



Inner packaging box dimensions: L\*W\*H=165\*155\*40mm  
 Packaging Quantity: 2pcs  
 Outer packaging box dimensions: L\*W\*H=425\*175\*160mm  
 Packaging Quantity: 20 pcs

Note:

1. All specifications are measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test setup and methods are based on our corporate standards.
3. All characteristics are meant for listed model, non-standard models may perform differently, you can contact MORNSUN FAE for more details.
4. Contact us for your specific requirement.
5. Specifications are subject to change without prior notice.

### MORNSUN Science & Technology Co.,Ltd.

Address: No. 5, Kehui St. 1, Kehui development center, Science Ave., Guangzhou Science City, Luogang district, Guangzhou, P.R.China.

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: [info@mornsun.cn](mailto:info@mornsun.cn)

<http://www.mornsun-power.com>