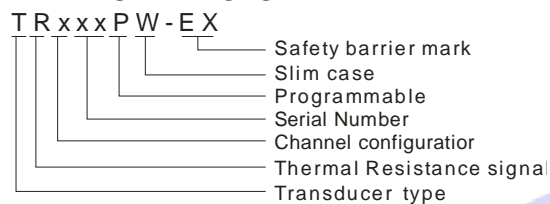


UL TRA-THIN PROGRAMMABLE ABNORMAL DETECTION THERMAL RESISTANCE ISOLATION SAFETY BARRIER

—TRxxxPW-EX Series



PART NUMBER SYSTEM



FEATURES

- Three-port electrical isolation between input, output and power supply
- 12.5mm slim case
- High accuracy (0.1% F.S.)
- High linearity (0.1% F.S.)
- Low temperature drift(50PPM/°C)
- Low-power dissipation
- Good EMC performance
- miniUSB port communication
- Input / Output range programmable
- High reliability(MTBF>500,000 hours)

GENERAL DESCRIPTION

The signal generated by the two-wire or three-wire RTDs in the hazardous area is picked up by this product, and converted to the standard analogue current or voltage signal which is isolated with hazardous field. While limiting the energy of intrinsically safe end string into hazardous area, to ensure that the system is intrinsically safe explosion-proof performance. The product has a Mini USB interface, It can be used for programming to configure the type and range of input and output signals. An independent power supply is needed for the product and the port of power supply, input and output are isolated from each other. The thickness is 12.5mm.

Connection of field devices and the regions: 2-wire, 3-wire thermal resistance amplifier.zone 0,zone 1,zone 2; IIA,IIB,IIC,T4~T6 hazardous area.

PRODUCT TYPE

Output type	1 input 1 output	1 input 2 output
Current output	TR100PW-EX	TR600PW-EX
Voltage output	TR140PW-EX	TR640PW-EX
Loop output	TR102PW-EX	TR602PW-EX
Input signal: programmable(2-wire system or 3-wire system input)		
Signal Type	Range	The minimum range
Pt100	-200~+850°C	50°C
Cu50	-50~+150°C	50°C
Cu100	-50~+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)	
Note:		
1. Customers need to choose the type of the input signal, output signal and range. We could also offer customer design for special input and output.		
2. You can get the USB Adapter T-01 for the isolator from MORNSUN free of charge if you need.		

ELECTRICAL CHARACTERISTICS

Power input parameters	Input voltage	18~30VDC (Typical values 24VDC)
	Power dissipation	1 input 1output<1.5W 1 input 2 output <1.8W
	Power protection	Reverse polarity protection
Hazardous Area	View Product Model input signal	
Safe Area	Load capacity	≤500Ω(Output current maximum)
		≥1MΩ(Output voltage maximum)
		≤ (Ue-4) / 0.02,20V≤Ue≤30V (Loop power supply)

Safe Area	Communication protocol	miniUSB port					
	Load capacity	See "MORNSUN Modbus Protocol Rules"					
	Fault output						
	Output type	4~20mA	0~20mA	1~5V	0~5V	2~10V	0~10V
	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	1.5V	10.5V
	Input over-range upper limit	22mA	22mA	5.5V	5.5V	11V	11V
	Break alarm	Each channel disconnection alarm corresponding indicator light(Red, Single-channel 1, Dual-channel 2)					
	Over-range alarm	When It is over-range, the corresponding indicator light					

TRANSMISSION CHARACTERISTICS

Zero Offset	0.1%F.S. or 0.5℃ greater(Sin = 0,100% load,@25℃)
Accuracy	0.1%F.S. or 0.5℃ greater(Full-scale range,100% load,@25℃)
Temperature drift	0.0050%/F.S./℃ (-25℃~+71℃ Operating temperature range)
Output signal rise time	< 0.5S (Output from the 10% point of full signal up to 90% of the full signal point)
Output signal fall time	< 0.5S (Output from the 90% point of full signal down to 10% of full signal point)

ISOLATION CHARACTERISTICS

Electrical Isolation	Hazardous area and safe area 2500VAC 1min ,leakage current ≤1mA
	Output and power supply, 2500VDC 1min ,leakage current ≤1mA
Insulation resistance	100MΩ, 500VDC (Signal input port, signal output port)

STANDARDS & CERTIFICATES

Explosion protection certificate mark	[Exia Ga]IIC
Explosion protection certification parameters	U _o =12V, I _o = 30mA, P _o = 90mW, C _o = 1uF, L _o =7mH, U _m =250VAC/DC
Explosion protection certification agency	CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS
Explosion qualified NO.	CNEx13.3055

EMC CHARACTERISTICS

EMI	CE	CISPR22/EN55022 CLASS A	
	RE	CISPR22/EN55022 CLASS A	
EMS	ESD	IEC/EN61000-4-2 Contact ±4KV/Air ±8KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 DC Power Port ±2KV	perf. Criteria B
		IEC/EN61000-4-4 I/O Signal Port ±1KV	perf. Criteria B
	Surge	IEC/EN61000-4-5 DC Power Port ±1KV/2KV	perf. Criteria B
		IEC/EN61000-4-5 I/O Signal Port ±1KV (Line to GND)	perf. Criteria B
CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A	

OTHER CHARACTERISTICS

Temperature	Operating temperature:-25~+71℃
	Transport and storage temperature:-40~+85℃
Package	35mm DIN-rail package: T-rail card package (DIN50022), pluggable connection pin, thickness 12.5mm
Safety Class	IP20(IEC60529 / EN60529)
Weight	1 input 2 output: about 100g;1 input 1 output about 90g

CONNECTION

1. Removable terminal;
2. Cross section area of wiring: 0.5mm²~2.5mm²;
3. The length of bare wire is about 8mm, locked up by the M3 bolt.

Selection guidelines for intrinsically safety explosion protection system

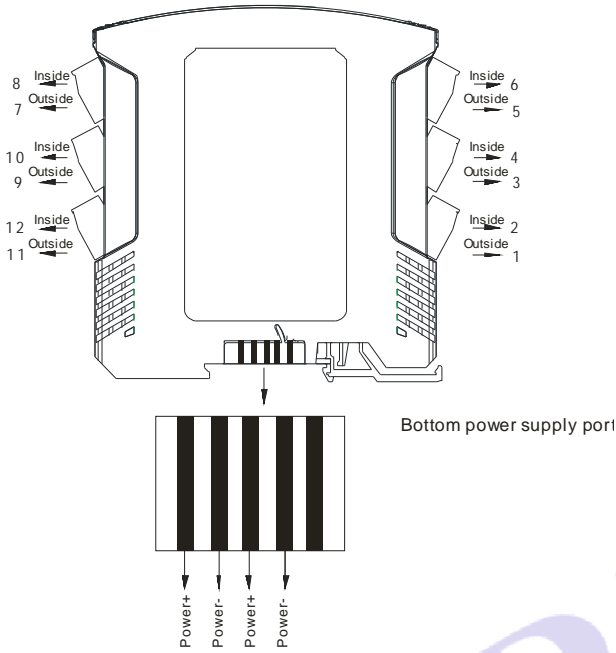
1. The explosion protection grade of the barrier must be not less than that of intrinsically safety explosion protection device in spot.
2. Take inconsideration of hazardous end output resistance and loop resistance make sure the barrier output voltage meets the minimum operation voltage requirement of intrinsically safety device in spot.
3. The safety parameters about intrinsically safety end meets:
 $U_o \leq U_i$, $I_o \leq I_{in}$, $P_o \leq P_{in}$
 $C_c \leq C_{o-Ci}$, $L_o \leq L_{o-Li}$

- Select suitable safety barrier which matches the intrinsically safety device in spot according to the power polarity, signal type and transmission mode about the device.
- Much more protection is required, which can avoid the influence of the leakage current generated by safety barrier on intrinsically safety device in spot.

Operation notes

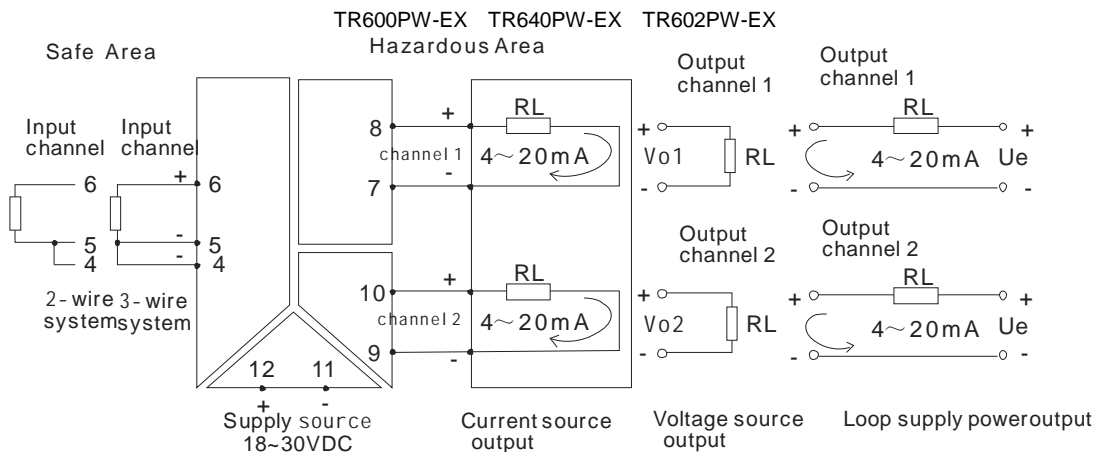
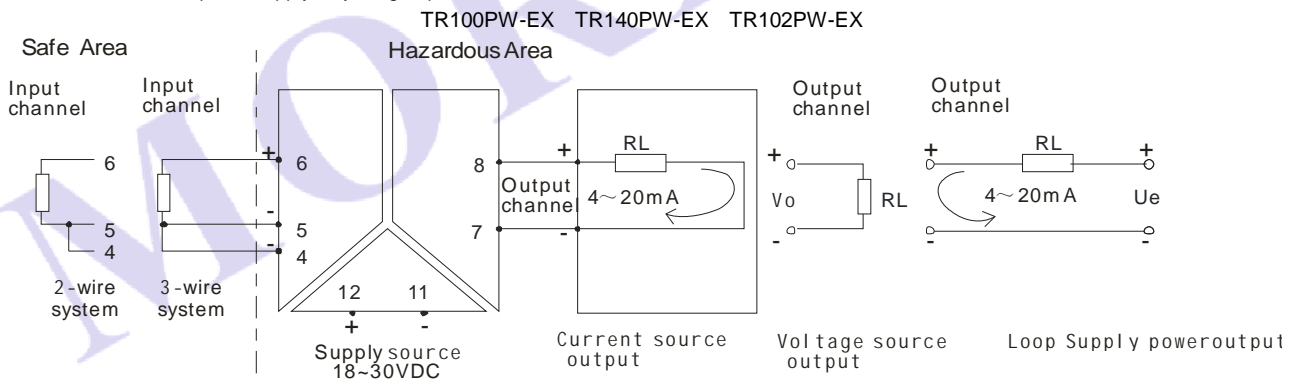
- Please read the user manual carefully before using. If any question, please contact our technical support department.
- Please don't use this product in hazardous area.
- The power supply of this product should be 24VDC power source. It is forbidden to use 220VAC power supply.
- To avoid void of explosion proof, or any failure, users disassemble this product is forbidden.
-

APPLICATION CIRCUIT DIAGRAM & PIN DESCRIPTION



PIN	Description (2 input 2 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	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.

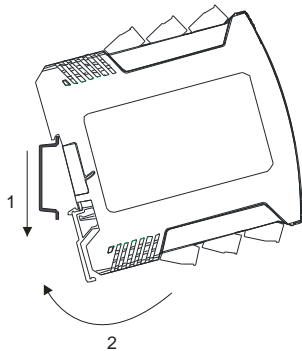


INSTALLATION & DISASSEMBLY

Installation

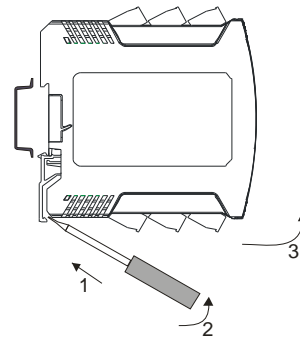
DIN35mm standard rail installation:

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

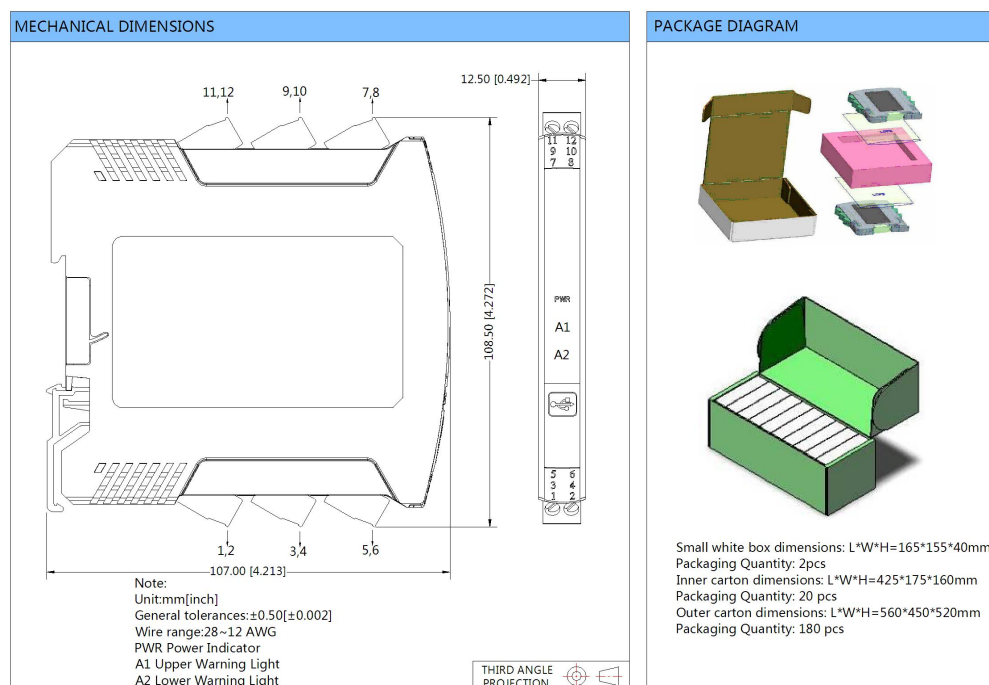


Disassembly

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



Note:

1. All specifications measured at $T_a=25^{\circ}\text{C}$, 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

[Http://www.mornsun-power.com](http://www.mornsun-power.com)