MORNSUN®

Thermocouples Isolation Barrier

TC100PI (1 IN 1 OUT)
TC100PI-SP (1 IN 1 OUT)
TC600PI (1 IN 2 OUT)
TC600PI-SP (1 IN 2 OUT)

DESCRIPTION

The thermocouples or mV-level signal from the hazardous field is picked up by this product, and converted to the standard current or voltage signal which is isolated with application field and transmitted to the control cabinet, PLC, DCS, display etc.. The product is equipped with cold junction compensation. Furthermore, it is armed with RS485 digital bus interface, which makes network configuration and the input or output configuration possible in many application fields. It is an intelligent isolation barrier, and the type or range of the RTDs can be set through the host computer, moreover, cold junction compensation does work automatically.

One independent power supply is required. Moreover, within the product power supply, input and output are mutually isolated.

FEATURES

- Three-port isolation (input, output and power supply)
- High accuracy (0.1% F.S.)
  (Accuracy is lower with the range narrower)
- High linearity (0.1% F.S.)
- Isolation voltage
  (Between application field and control cabinet: 2.5kVAC)
- Low temperature drift (35PPM/°C)
- Digital bus (RS485)
- Input / Output range programmable
- Alarm indications
- High reliability(MTBF>500,000 hours)

SELECTION

TCxxxPI-SP

- Surge protection symbol
- RS485
- Programmable Symbol
- Serial Number
- Channel Type
- Transducer Type

PRODUCT OVERVIEW

TCx00PI-/ TCx00P-SP-	x	x	Description		
			Signal Type	Range	Minimum range
Input Signal	0		R	-40~+1700°C	600°C
	1		S	-40~+1700°C	600°C
	2		K	-150~+1370°C	120°C
	3		J	-80~+900°C	100°C
	4		T	-160~+390°C	100°C
	5		B	320~+1820°	780°C
	6		E	-80~+700°C	500°C
	7		mV	-60~+60mV	10mV
Output Signal		0	Current	4~20mA	
		1	Current	0~20mA	

Note: The initial setting is TC100PI-EX-SP-70. Of course self-programming is permitted. Thus users can choose the signal type and range.

ELECTRICAL CHARACTERISTICS

Power Supply Parameter	Power Supply	18~36VDC (Typ. : 24VDC)
	Input Power	About 2.0W
	Power Protection	Reverse protection
Hazardous Area	Input Signal	Refer to product overview
	Cold junction compensation	Compensation range: -25 ~ +75°C (Every 20°C error of 1°C)
		Compensation mode: Internal compensation
Safe Area	Output Signal	Refer to product program
	Load	≤ 500Ω (@maximum output current)
		≥ 10KΩ (@maximum output voltage)
	Communication Interface	RS485 Physical Bus Interface
	Communication protocol	Refer to "MORNSUN Science and Technology Modbus Protocol Rule"

TRANSMISSION CHARACTERISTICS

Offset	0.1%F.S.
Gain Error	0.1%F.S.
Plus Error	0.1%F.S.
Temperature Drift	0.0035%F.S./°C (-25 ~ +71°C)

ISOLATION CHARACTERISTICS

Galvanic isolation	2.5kVAC between control cabinet and application field (Tested for 1 minute and leakage current ≤1mA)
	1.5kVDC between power supply and output (Tested for 1 minute)
EMC	EN6126

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SURGE PROTECTION CHARACTERISTICS (–SP SERIALS)

Maximum continuous operation voltage	30VDC
Rated discharge current	5KA (Line-to-ground, line-to-line)
Maximum discharge current	10KA (Line-to-ground)
Standard	GB18802. 21-2004

ELECTROMAGNETIC COMPATIBILITY CHARACTERISTICS (–SP SERIALS)

Standard	GB/T 18268 (IEC61326-1)
Electrostatic	Air discharge 8KV(Level 4)
Pulse group	4KV (Power supply-to-ground); 2KV (Signal-to-ground, Level 4)
Surge	4KV (Line-to-ground); 2KV (line-to-line, Level 4)
RF	10V/m(Level 3)

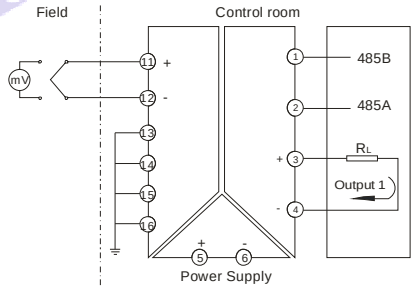
OTHER CHARACTERISTICS

Lower limit alarm	Below its lower limit of -5°C (temperature signal) or -2mV (mV signal), output current about 3mA (4~20mA) or 21mA (4~20mA), light " L" on
Upper limit alarm	Exceeding its upper limit of +5°C (temperature signal) or +2mV (mV signal), output current about 22mA, light " H" on
Break coupling alarm	Break coupling or input signal ≥ 70mV, output current about 23mA, light "O" on
Ambient temperature	Operation temperature: -25 ~ +60°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	About 123g

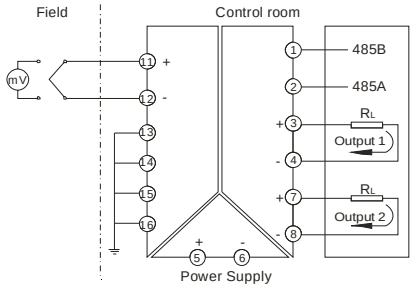
Note:
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. Only typical models listed, specifications of custom product may be different. Please contact our service people directly for certain conditions.
3. Communication protocol details refer to "MORNSUN Science and Technology Modbus Protocol Rule".
4. The MORNSUN Safety Barrier Configuration software can be downloaded free from the MORNSUN homepage www.mornsun.cn or you can contact us to get it.

APPLICATION DIAGRAM

TC100PI-SP



TC600PI-SP



Note: No surge protection products (without the suffix-SP), no pin 13,14,15,16.

CONNECTION

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

Application about Surge Protector

Connect the ground of protected equipment or case, and ground of surge protectors directly, and connecting wire is as short as possible. Single point grounding can make surge protectors avoid high-voltage between surge protectors and the ground, which makes protection more effectively.

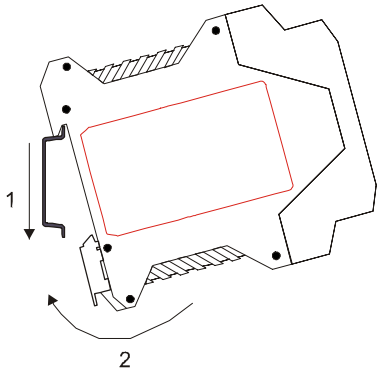
Operation notes

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. Power supply of this product should be 24VDC. 220VAC is prohibited.
4. To avoid explosion protection function invalid or any failure, disassembling the product is forbidden.

INSTALLATION

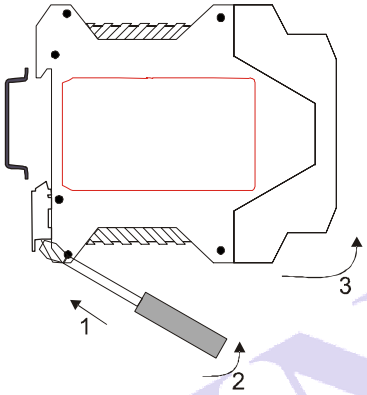
DIN35mm standard rail installation:

1. Upside of the instrument card in the rail;
2. Push underside of the instrument into the rail.

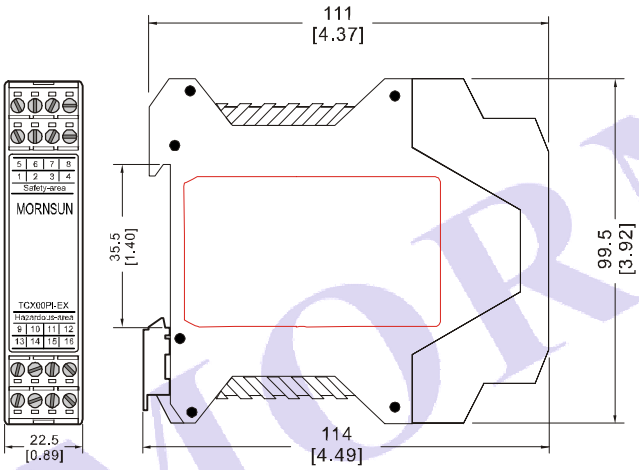


DISASSEMBLY

1. Use a screwdriver (Width of edge ≤ 6mm), cut in the metal card lock from the underside;
2. Boost up the screwdriver and prize the metal card lock downwards;
3. Pull the instrument out of the rail.



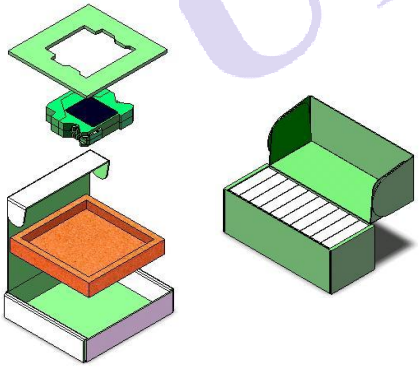
OUTLINE DIMENSIONS



Unit: mm [inch]

Tolerance: ±0.5mm

PACKAGING DIAGRAM



Inner packaging box dimensions:
L*W*H=165*155*40mm
Packaging quantity: 1pc
Outer packaging box dimensions:
L*W*H=425*175*160mm
Packaging quantity: 10pcs