MORNSUN

Programmable RTD/Thermocouple Temperature Signal Input Alarms

TR103PI(RTD temperature signal input)

TC103PI(Thermocouple temperature signal input)

DESCRIPTION

Programmable RTD / Thermocouple temperature signal input alarms, receiving data from the scene of the 2-wire, 3-wire, 4-wire RTD signal or from the scene of the thermocouple, mV signals, isolate and transmit the signal to the control room PLC and DCS. There is 2 channel relay alarm output to the control room when the temperature is higher or lower than the limit, the alarm method can be set up normally open or normally closed and high temperature alarm or low temperature alarm. The device also has a RS485 digital bus interface. It is intelligent, configure the scope range and the type of the RTD/thermocouple by computer.

This series of products require an independent power supply, and are mutually isolated among power supply, input and output.

Field devices connected:

Two-Wire, three-wire, four-wire RTD;

Thermocouple, mV signals.

FEATURES

- Three-port isolation (input, output and power supply)
- High accuracy (0.1% F.S.)
- High linearity (0.1% F.S.)
- Isolation voltage(2500VAC)
- Low temperature drift (35PPM/°C)
- Digital bus (485)
- Input / Output range programmable
- High reliability(MTBF>500,000 hours)

PRODUCT PROGRAM

TX103PI-	x	x	Description			
			Signal Type	Range	Minimum range	Accuracy
TR103PI-(RTD temperature signal input)	0		Pt100	-200~+850°C	20°C	0.4°C/0.2%
	1		Cu50	-50~+150°C	20°C	0.4°C/0.2%
	2		Cu100	-50~+150°C	20°C	0.4°C/0.2%
	3		Pt1000	-200~+250°C	20°C	0.4°C/0.2%
TC103PI-(Thermocouple temperature signal input)	0		R	-40~+1700°C	600°C	3°C/0.2%
	1		S	-40~+1700°C	600°C	3°C/0.2%
	2		K	-150~+1370°C	120°C	1°C/0.2%
	3		J	-80~+900°C	100°C	1°C/0.2%
	4		T	-160~+390°C	100°C	1°C/0.2%
	5		B	320~+1820°C	780°C	1°C/0.2%
	6		E	-80~+700°C	500°C	1°C/0.2%
	7		mV	-60~+60mV	10mV	40μV/0.2%
Output Signal		0	Current	4~20mA		
		1	Current	0~20mA		

Note: The initial setting is TR103PI-00, TC103PI-00, users can choose the signal type and range, and also can be self-programming.

ELECTRICAL CHARACTERISTICS

Power Source	Power supply		18~36VDC （Typ: 24VDC）			
	Power consumption		About 2.3W			
	Power protection		Reverse protection			
Input	RTD	Signal type and range	Refer to product program			
		Connection setting	Setting RTD connection by toggle switch 1, refer to the table below			
			Switch	Function	ON	OFF
			1	Connection	3-wire	4/2-wire
	Thermocouple	Signal type and range	Refer to product program			
		Cold junction compensation	-25°C ~ +75°C			
		Compensation accuracy	Every 20°C error of ±1°C			
Output	Output Signal		Refer to product program			
	Load		≤500Ω (Output current = max.)			
	Output current and instructions of super-range alarm		Lower limit alarm	I≤3mA, Light “L” ON (Current output: 4~20mA)		
				I=0mA, Light “L” ON (Current output: 0~20mA)		
			Upper limit alarm	I≥21mA, Light “H” ON		
	Output current and instructions of input disconnection alarm		I≥22mA, Light “O” ON			
	Alarm method setting: Can be independently set to normally open or normally closed and high temperature alarm or low temperature alarm (switch 2 is to set low temperature alarm, switch 3 is to set high temperature alarm, the free combination of 2,3-position toggle switch, to set normally open or normally closed)		Switch	Function	ON	OFF
			2	Low temp. alarm	Low temp. alarm normally open	Low temp. alarm normally closed
			3	High temp. alarm	High temp. alarm normally open	High temp. alarm normally closed
	Nominal switching capacity of relay		3A 277VAC, 3A 30VDC			
	Communication Interface		RS485 Physical Bus Interface			
	Communication protocol		MODBus			

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TRANSMISSION CHARACTERISTICS

Temperature Drift	0.0035%F.S./°C (-25 ~ +75°C)

ISOLATION CHARACTERISTICS

Galvanic Isolation	Between input and output: 2500VAC 1Min
	Between output and power supply: 1500VDC 1Min
EMC	EN61326

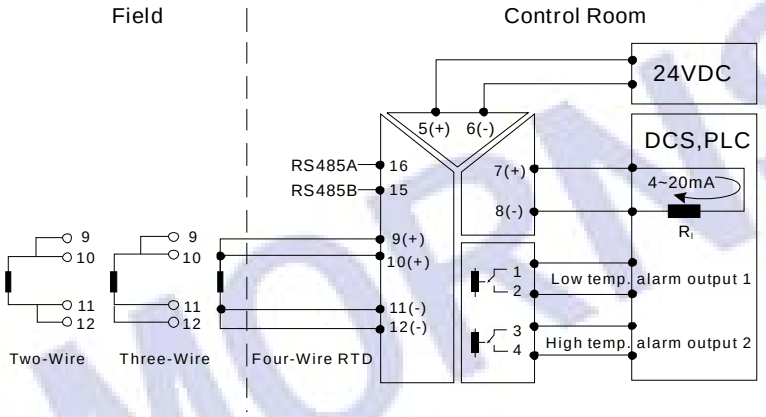
OTHER CHARACTERISTICS

Ambient temperature	Operation temperature: -25 ~ +75°C
	Transport and Storage temperature: - 50 ~ +105°C
Package	35mm DIN-rail package, pluggable connection pin, thickness 22.5mm, Plastic UL94-V0
Safety Class	IP20(IEC60529 / EN60529)
Weight	About 150g

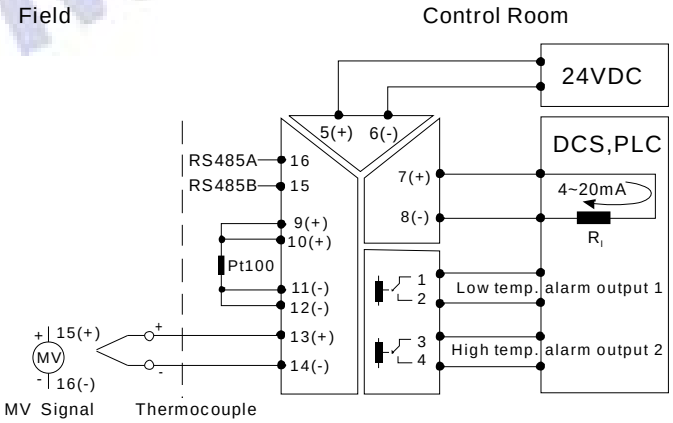
Note:
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. Only typical models listed, specifications of custom product may be different. Please contact our service people directly for certain conditions.
3. Communication protocol details refer to "MORNSUN Science and Technology Modbus Protocol Rule".

APPLICATION CIRCUIT DIAGRAM

TR103PI



TC103PI



1. 3-wire RTD temperature signal input, terminal 9 and 10 must be short connected, ensure the equal value of three wire resistance as possible as you can;
2. 2-wire RTD temperature signal input, terminal 9 and 10, 11 and 12 must be short connected.

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.

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. 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.

AFTER SERVICE

1. Products are carefully inspected and controlled before going out from our factory. If they operated abnormally or there were anything wrong in the inner parts, please contact with our agents near you or technical support in our company as soon as possible.
2. 3 years warranty since the delivery date. During the period of quality guarantee, our company will repair or change free of charge if product has any quality problem in the process of normally using.

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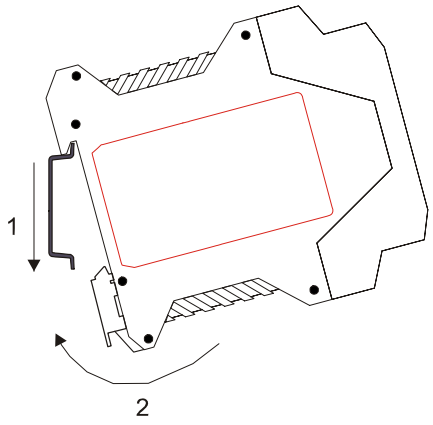
INSTALLATION

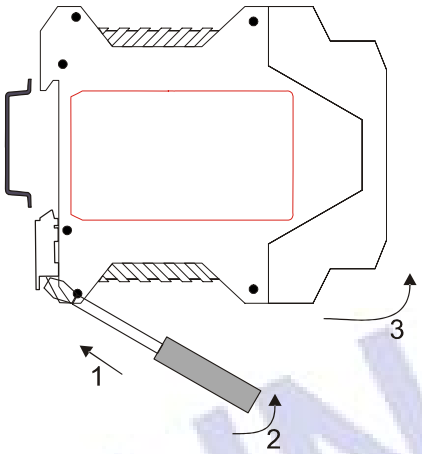
DIN35mm standard rail installation:

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

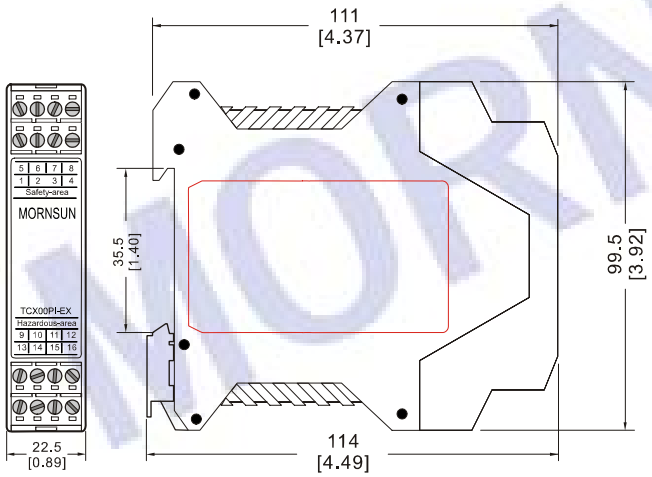


DISASSEMBLY

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.

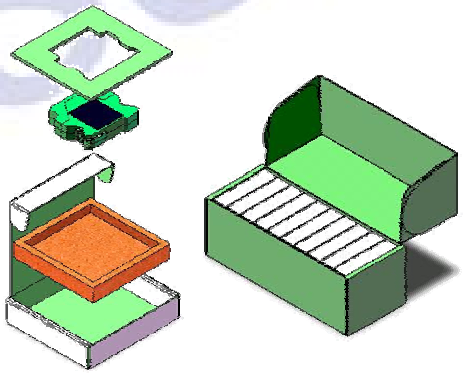


PACKAGING DIMENSION



Unit: mm[inch]
Tolerances: ±0.5mm

PACKAGING DIAGRAM



Inside box: L*W*H=165*155*40mm
Outside box: L*W*H=425*175*160mm
Packaging Quantity:
Inside box:1pcs
Outside box:10pcs

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