SPS7□□□-NC Series Temperature Transmitter

User Manual

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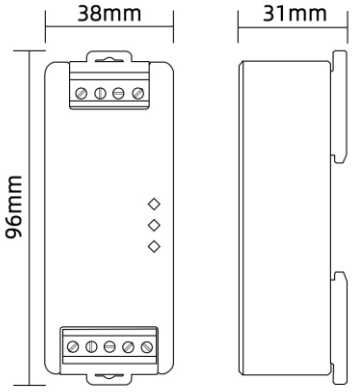
I. Precautions

- Do not operate this product beyond its design limits under any circumstances.
- The power supply for this product is 24V DC. Strictly prohibit the use of 220V AC power.
- This product should be installed in a safe location. The shell's maximum withstand temperature is +85°C.
- When used in environments with strong magnetic interference, Shielded cable is recommended for signal lines.
- Strictly prohibit unauthorized disassembly, modification, or repair of this product.
- Pay attention to the wiring method of this product to ensure correct Wiring and avoid damaging the product.
- Read this manual carefully before installation and use. If you have any questions, please contact our technical support personnel or refer to relevant technical guidance videos.
- Our company is not responsible for damage to components other than this product during use.
- Please download the latest electronic version of the documentation. The content of this manual is for reference only. We continuously improve the user experience, and technical parameters are subject to change without notice.



II. Product Dimensions

- Product dimensions: **96mm (L) X 38mm (W) X 31mm (H)**
- Industrial-grade flame-retardant plastic shell, standard DIN35 rail mounting.

III. Operating Environment

- Do not expose this product to excessively high or low temperatures.
- The surrounding environment must be free from strong vibration, impact, and electromagnetic interference such as large currents and sparks.
- The operating environment must not contain harmful substances that cause severe corrosion to metal or plastic components. Do not use or store the product in harsh environments, otherwise it will affect the electrical performance of the product.
- Operating Temperature: -40℃～+80℃ Relative Humidity: 10% ～ 90%RH (non-condensing)

IV. After-Sales Service

We are committed to providing you with comprehensive after-sales service and warranty policy. The product warranty period is three years. During the warranty period, if the product fails due to non-human factors, we will provide free repair or replacement service. Damage caused by violation of operating regulations and requirements will require payment of parts cost and repair fee. After the warranty period expires, we continue to provide technical support and assistance. During this period, replacement parts are provided at cost price.

V. Application Fields

Automation Equipment

Medical Electronics

Remote Monitoring

Process Control

· Product Introduction

SPS Series Temperature Signal Isolators are designed with industrial-grade 32-bit processors and high-speed optocoupler isolation. They convert input temperature signals into isolated linear voltage or current outputs. The transmitter module's output rapidly tracks input signal variations, making it widely applicable in power, railway, telecommunications, PLC-based measurement and control systems, and various automation control systems.

SPS7□□□-NC Series Temperature Transmitters feature precision-engineered internal design with full electrical isolation among power supply, input, and output circuits. Characterized by high accuracy, high isolation, high speed, and low drift, these transmitters effectively resolve issues such as common-mode interference, electrical isolation, and signal standardization during high-speed transmission of sensor, transmitter, or instrument signals. They are particularly suitable for high-speed transient waveform acquisition, harmonic analysis, and rapid monitoring and alarm applications.

This product requires an independent power supply and is mounted on a standard 35mm DIN rail, offering simple on-site installation and flexible use, adapting to a variety of field applications.

· Technical Parameters

Basic Parameters	
Power Supply	DC12～36V(DC24V recommended)
Power Consumption	<1.5W
Transmission Accuracy	±0.1%F.S (+25° C)
Temperature Drift	≤200ppm/° C
Response Time	≤1mS
Non-Linearity	Maximum 0.075% at 5V
Power Protection	Reverse Power Voltage <-40V
Isolation Voltage	3000VDC
Dielectric Strength	1500VAC/1 minute (power, input, output)
Insulation Resistance	≥100MΩ (power, input, output)
Electromagnetic Compatibility	Complies with GB/T 18268.1 (IEC61326-1)
Input	
Sensor Type	Thermocouple / RTD / NTC
Sensor Type Code	As shown in Sensor Range Table
Sampling Resolution	24-bit ADC with dedicated TI chip
Lead Resistance Compensation Range	< 50 Ω
Output Terminal	
Output Signal	0-5V
	0-10V
	4-20mA
	0-20mA
Load Capacity	Voltage Output RL ≥ 2kΩ
	Current Output RL ≤ 500Ω
Output Ripple	≤ 10mV (250Ω load)
Environmental Conditions	
Operating Temperature	-40°C～+80°C
Storage Temperature	-40°C～+85°C
Relative Humidity	10%～90%RH (non-condensing)
Atmospheric Pressure	80kPa～106kPa

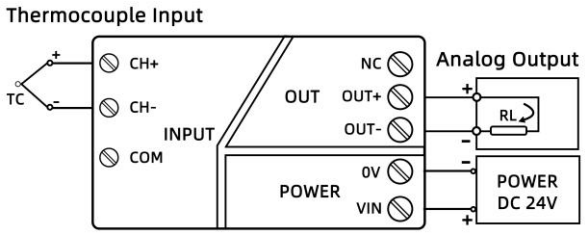
· Terminal Description

Terminal Mark	Function Description
VIN	Power supply positive terminal, DC12-36V input
OV	Power supply negative terminal
OUT-	Analog Output Negative
OUT+	Analog Output Positive
NC	No pin
CH+	Input Signal Positive
CH-	Input Signal Negative
COM	Input Common

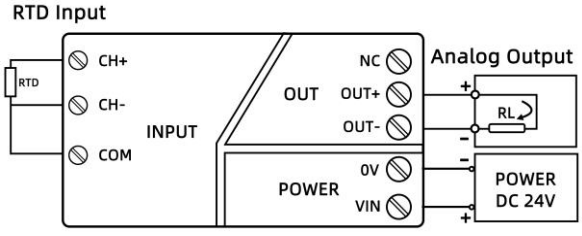
· Indicator Description

Indicator Mark	Function Description
PWR	Power indicator
SYS	Sensor Status LED - Flashes when sensor is open
COMM	RS485 Communication LED - Flashes during data transmission

· Wiring and indication



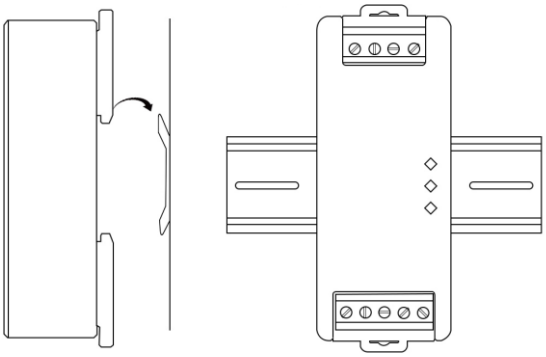
Thermocouple Wiring Configuration



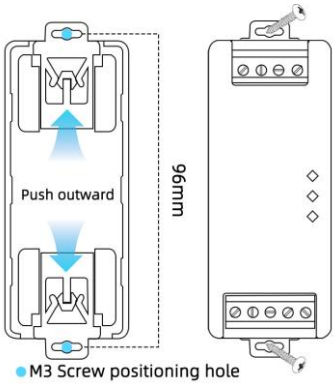
3-Wire RTD Wiring Configuration

· Installation Instructions

This module uses the DIN35mm rail mounting method. The rail should comply with the installation dimension specifications for the TH35-7.5 type rail according to the national standard GB/T19334-2003. Users can easily install or remove the module on the rail. Installation must be stable and secure. This module also supports screw mounting without a rail.



– Installation method of guide rail –



– Screw installation method –

· Product Naming Rules

SPS7011-NC21L: Single-channel signal isolation module, thermocouple sensor input, output 0-5V, transmission accuracy 0.1% F.S., N-shaped form factor, DC12-36V power supply.								
SPS	7	01	1	N	C	2	1	L
Product Type	Input signal	Channel configuration	Output signal	Product appearance	Transmission accuracy	Isolation level	Input range	Power Supply
Signal isolation transmission module	1 DC Voltage 2 DC Current 3 Shunt 4 AC Voltage 5 AC Current 6 Resistance 7 Temperature 9 Other Types	1 1-input 1-output 2 1-input 2-output 3 2-input 2-output	1 0-5V 2 0-10V 3 4-20mA 4 0-20mA 9 Other	N Form Factor K Form Factor M Form Factor W Form Factor F Form Factor R Form Factor	A 0.5%F.S B 0.2%F.S C 0.1%F.S D 0.05%F.S	0 None 1 1500V 2 3000V 9 Other	1 Thermocouple 2 RTD 3 NTC	L DC12-36V H AC220V C +12V D +24V Z Passive

· Sensor Range Table

Type Designation	Temperature Range	Type Designation	Temperature Range	Type Designation	Temperature Range	Type Designation	Temperature Range
Type B	300℃～1800℃	Type N	-200℃～1300℃	PT100	-200℃～850℃	Cu100	-50℃～150℃
Type E	-200℃～950℃	Type R	-20℃～1750℃	PT500	-200℃～250℃	Ni100	-60℃～180℃
Type J	-200℃～1200℃	Type S	-20℃～1750℃	PT1000	-200℃～250℃	Ni500	-60℃～180℃
Type K	-200℃～1370℃	Type T	-200℃～400℃	Cu50	-50℃～150℃	Ni1000	-60℃～150℃

· Product Model Selection Guide

SPS7011-NC21L-K: Type K Thermocouple Temperature Transmitter

SPS7011-NC22L-PT100: PT100 RTD Temperature Transmitter