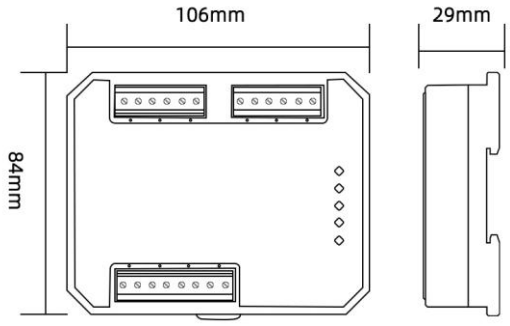
SPS9-HTL Series Single-Ended to Differential Module

User Manual

scan the QR code to learn more

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: **106mm (L) X 84mm (W) X 29mm (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

The SPS9 series differential signal converter is designed with the core function of accurately converting 4 channels of single-ended signals into 4 channels of differential signals. It serves as a critical signal conversion component in the field of industrial automation control. The primary application of this module's conversion capability is in scenarios involving single-ended pulse signals output from PLCs. The resulting differential signals after conversion can effectively and stably drive servo motors.

The SPS9-HTL series single-ended to differential module features meticulous internal design with optical coupler isolation between its front and rear stages. The differential signals converted by this module deliver significant advantages in transmission performance. In addition to substantially enhancing signal noise immunity, it robustly ensures signal integrity. In complex industrial environments with substantial interference, such as during the startup and operation of high-power equipment or in the presence of spatial radiated interference, the module fully utilizes its anti-interference capabilities. This effectively reduces the impact of external disturbances on signal transmission, thereby improving the operational accuracy of servo motors and ensuring the stability and reliability of the entire control system.

This product requires independent power supply and adopts DIN 35mm standard rail mounting, enabling simple field installation and flexible deployment for various application environments.

· Technical Parameters

Basic Parameters	
Power Supply	DC12～28V(DC24V recommended)
Power Consumption	＜1.5W
Isolation Voltage	3000VDC
Power Protection	Reverse connection voltage< -40V
Dielectric Strength	1500 VAC / 1 minute (Power, Input, Output)
Insulation Resistance	≥100MΩ (Power, Input, Output)
EMC Compatibility	Complies with GB/T18268.1 (IEC61326-1)
Input Terminal	
Input Signal	4-Channel Single-Ended Signals
Input Signal Frequency	0～1MHz
Signal Voltage	DC15-28V
Output Terminal	
Output Signal	Differential Signal DC 5V Output
Signal Current	⩽20mA
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

· Product Model Description

Model	Function Description
SPS9040HTL	4-Channel Single-Ended to Differential Converter
SPS9030HTL	3-Channel Single-Ended to Differential Converter
SPS9020HTL	2-Channel Single-Ended to Differential Converter

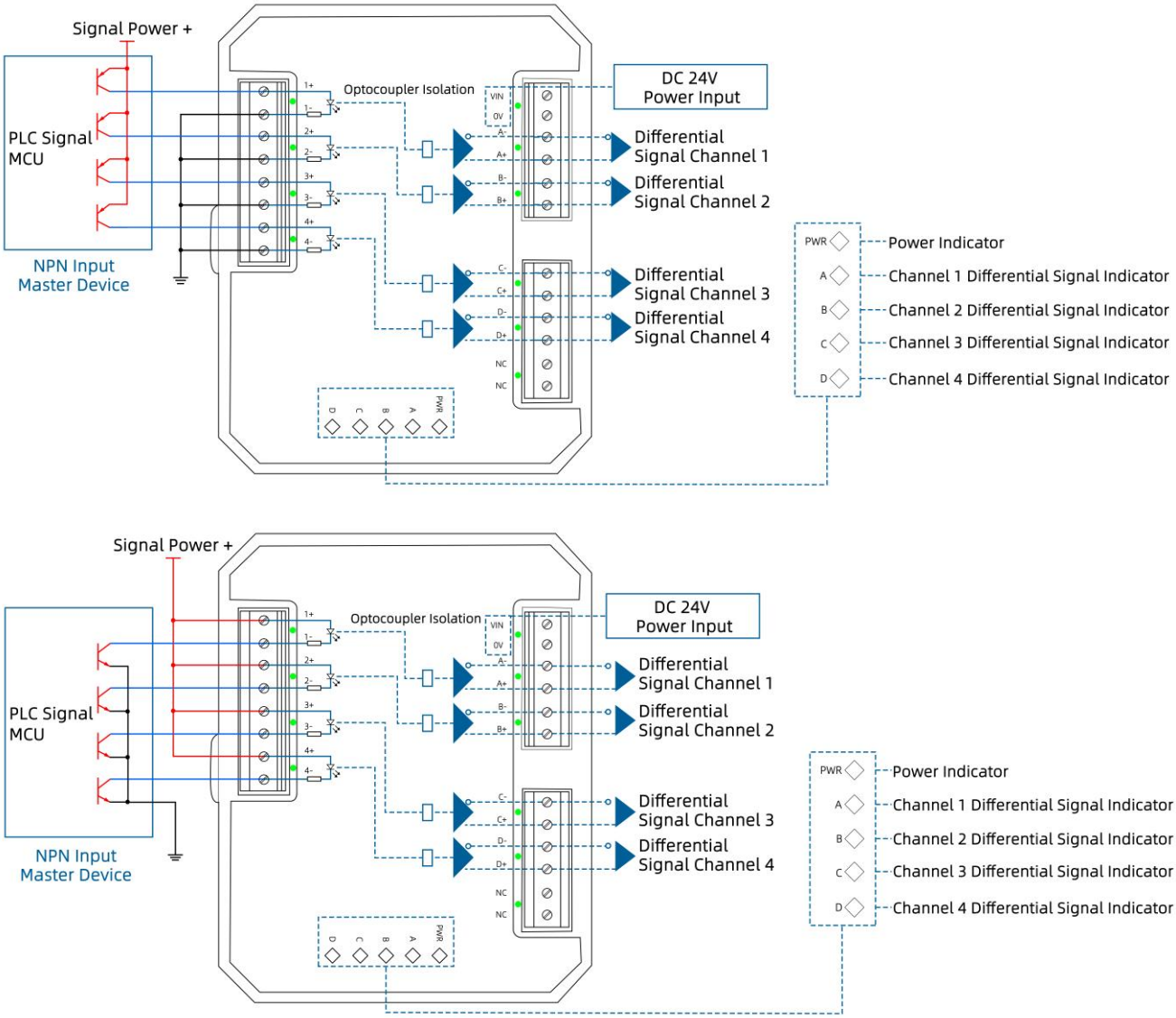
· Terminal Description

Terminal Mark	Function Description
1+	Channel 1 Single-Ended Input Positive
1-	Channel 1 Single-Ended Input Negative
2+	Channel 2 Single-Ended Input Positive
2-	Channel 2 Single-Ended Input Negative
3+	Channel 3 Single-Ended Input Positive
3-	Channel 3 Single-Ended Input Negative
4+	Channel 4 Single-Ended Input Positive
4-	Channel 4 Single-Ended Input Negative
NC	No Connection (Empty pin)
NC	No Connection (Empty pin)
D+	Channel 4 Differential Output Positive
D-	Channel 4 Differential Output Negative
C+	Channel 3 Differential Output Positive
C-	Channel 3 Differential Output Negative
B+	Channel 2 Differential Output Positive
B-	Channel 2 Differential Output Negative
A+	Channel 1 Differential Output Positive
A-	Channel 1 Differential Output Negative
GND	Power Output Negative
VIN	Positive Power Terminal: DC12-28V Input/Output

· Terminal Description

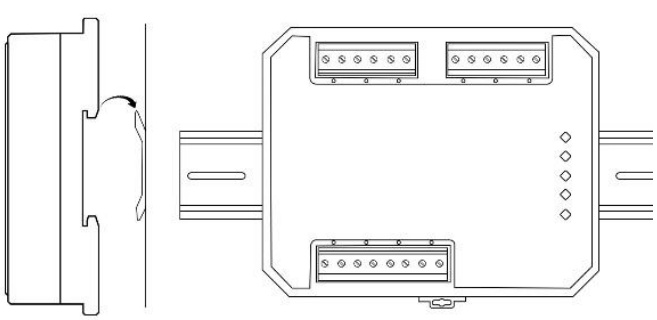
Indicator Mark	Function Description
PWR	Power indicator
A	Channel 1 Differential Signal - LED Indicates Output Active
B	Channel 2 Differential Signal - LED Indicates Output Active
C	Channel 3 Differential Signal - LED Indicates Output Active
D	Channel 4 Differential Signal - LED Indicates Output Active

· Wiring and Indication

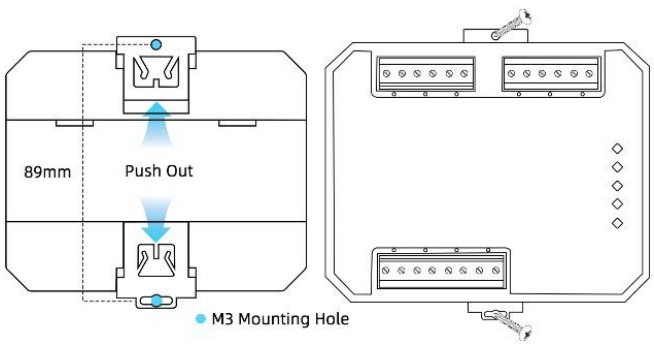


· Installation Instructions

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 −