



SG-3011/SG-3011H
Isolated Thermocouple Input Module

Introduction

The SG-3011/SG-3011H module is a thermocouple input signal conditioner that uses a microprocessor-controlled high-resolution 24-bit integrated A/D converter to acquire the thermocouple signal and the cold junction compensation input. Temperature measurement is performed using the thermocouple linearization and cold junction compensation function. The range of thermocouple types supported by the SG-3011/SG-3011H module include J, K, T, E, R, S, B, N, C, L, M, L2 (DIN43710). The response time for the SG-3011 module is 100 ms. the response time for the SG-3011H is switch selectable and can be set to either 0.5 ms or 100 ms. The power supply that drives the input and output circuitry in the module is internally isolated, enabling the SG-3011/SG-3011H to offer true channel-to-channel isolation. The SG-3011/SG-3011H module is easily mounted on a standard DIN rail, and the module can operate in harsh environments with a wide temperature range.

Applications

- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment

System Specifications

| Model Name | SG-3011 | SG-3011H |
|------------------------------|---|----------|
| LED Indicator/Display | | |
| System LED Indicator | Yes, 1 as Power/Communication Indicator | |
| Isolation | | |
| Three-way Isolation | 1000 VDC | |
| EMS Protection | | |
| ESD (IEC 61000-4-2) | ±4 kV Contact for each Terminal | |
| EFT (IEC 61000-4-4) | ±4 kV for Power Line | |
| Surge (IEC 61000-4-5) | - | |
| Power | | |
| Reverse Polarity Protection | Yes | |
| Input Range | +10 to +30 VDC | |
| Consumption | 1.44 W | |
| Mechanical | | |
| Dimensions (L x W x H) | 74.5 mm x 24.5 mm x 113.0 mm | |
| Environment | | |
| Operating Temperature | -25 to +75°C | |
| Storage Temperature | -40 to +85°C | |
| Humidity | 10 to 95% RH, Non-condensing | |

Features

- Configurable for a Wide Range of Thermocouple Types
- Adjustable CJC Offset
- Open Thermocouple Detection
- Three-way Isolation: 1000 VDC
- High-speed Response Time: 0.5 ms (SG-3011H)
- Operating Temperature Range: -25 to +75°C



Thermocouple Type

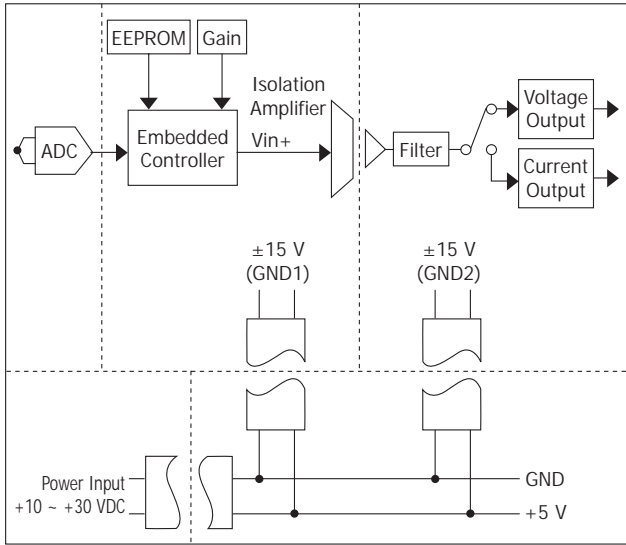
| Type | Temperature Range (°C) | |
|----------------|------------------------|-------------------------------|
| | SG-3011 | SG-3011H |
| J | -40 to +760 | -40 to +760, -210 to +760 |
| K | 0 to +1000 | 0 to +1000, -270 to +1372 |
| T | -100 to +400 | -100 to +400, -270 to +400 |
| E | 0 to +1000 | 0 to +1000, -270 to +1000 |
| R | +500 to +1750 | |
| S | +500 to +1750 | |
| B | +500 to +1800 | |
| N | -100 to +1300 | |
| C | 0 to +2000 | |
| L | -200 to +800 | |
| M | -200 to +100 | |
| L2 (DIN 43710) | -200 to +900 | |

I/O Specifications

| Model Name | SG-3011 | SG-3011H |
|-----------------------------|-------------------------------------|---|
| Thermocouple Input | | |
| Channels | 1 | |
| Type | J, K, T, E, R, S, B, N, C, L, M, L2 | |
| Resolution | 24-bit | |
| Accuracy | ±0.2% of FSR | ±0.1% of FSR |
| Response Time | 100 ms | 0.5 ms or 100 ms (Switch Selectable) |
| Input Impedance | 1.8 MΩ | 1.6 MΩ |
| Offset Mode | Adjustable CJC Offset | |
| Open Thermocouple Detection | Yes | |
| Analog Output | | |
| Channels | 1 | |
| Type | 0 to 10 V, 0 to 20 mA | |
| Resolution | 12-bit | |
| Accuracy | ±0.1% of FSR | |
| Voltage Output Capability | 10 mA | 20 mA |
| Current Load Resistance | <50 Ω | |

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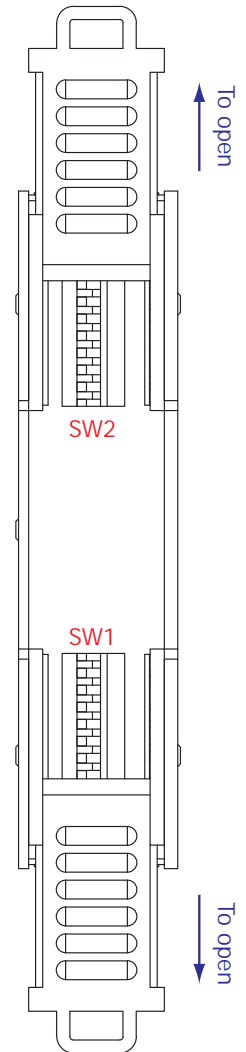
Internal I/O Structure



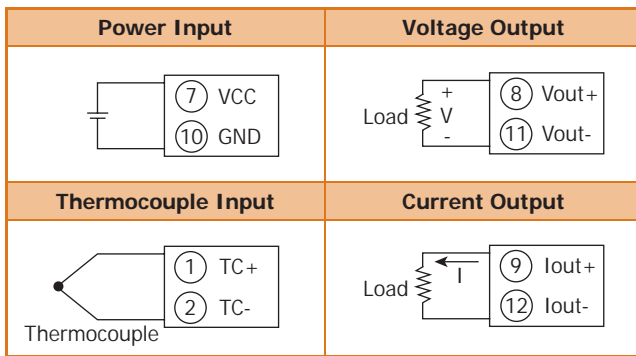
PIN Assignments



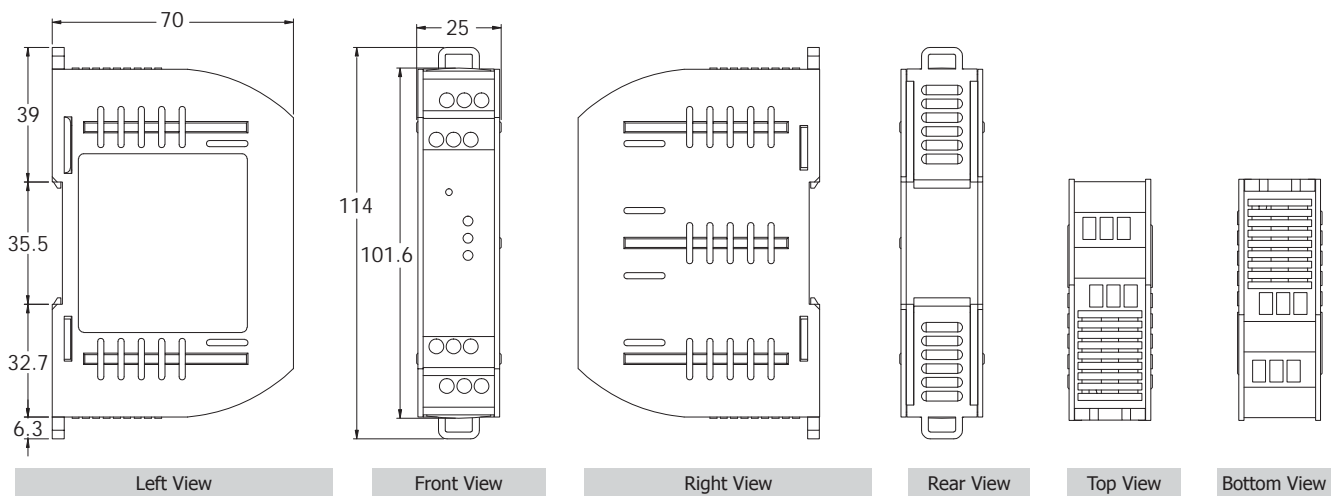
| Pin | Name |
|-----|---------|
| 1 | TC+ |
| 2 | TC- |
| 3 | Reserve |
| 4 | FGND |
| 5 | FGND |
| 6 | FGND |
| 7 | VCC |
| 8 | Vout+ |
| 9 | Iout+ |
| 10 | GND |
| 11 | Vout- |
| 12 | Iout- |



Wire Connections



Dimensions (Units: mm)



Ordering Information

| | |
|-------------|---|
| SG-3011 CR | Isolated Thermocouple Input Module (RoHS) |
| SG-3011H CR | Isolated Thermocouple Input Module with High-speed Response Time (RoHS) |