



### 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



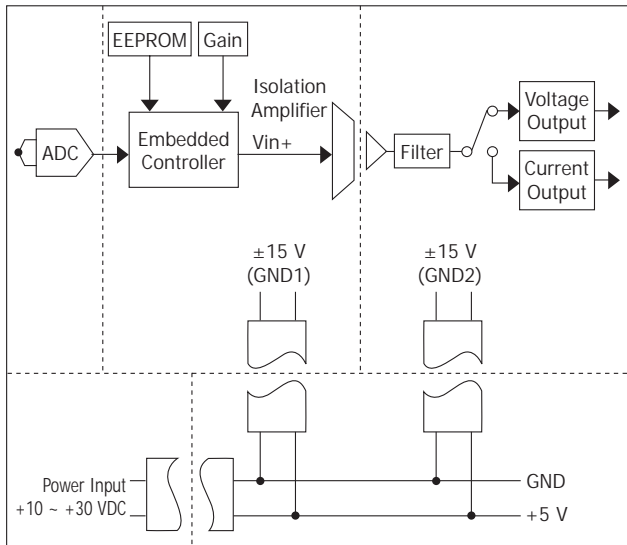
### Thermocouple Type

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	

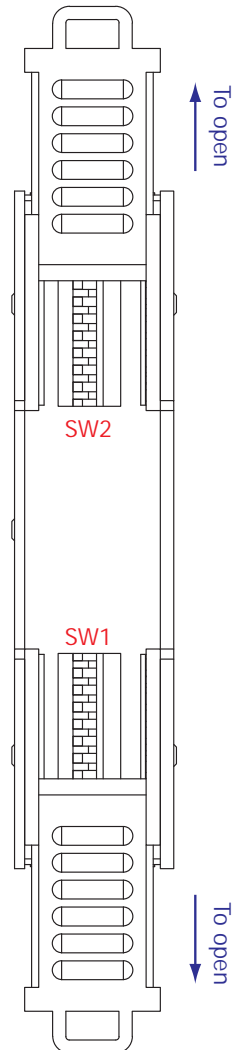
## Internal I/O Structure



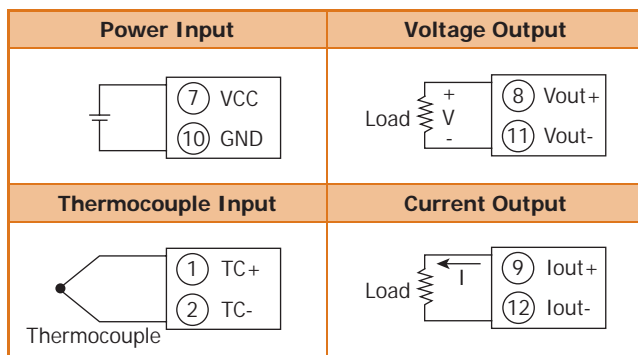
## PIN Assignments



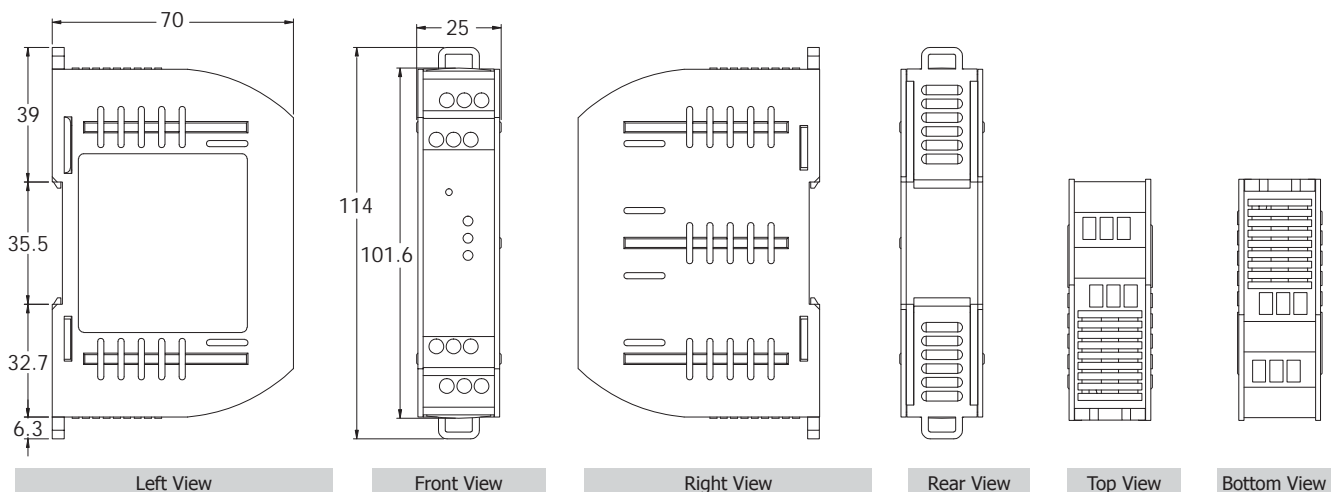
Pin	Name
1	TC+
2	TC-
3	Reserve
4	FGND
5	FGND
6	FGND
7	VCC
8	Vout+
9	Iout+
10	GND
11	Vout-
12	Iout-



## 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)