

## **SG-3016 Isolated Strain Gauge Input Module User's Manual**

### **Introduction**

The SG-3016 is a voltage input to voltage or current output signal conditioning module. It has 1000Vdc three-way isolation for input, output and power. And can change the input/output range via internal configuration switches.

The SG-3016 has an LED display to show whether the SG-3016 is functioning correctly and has three VRs (Zero, Span, Exci) to calibrate the input/output range accuracy.

The bandwidth of the SG-3016 is typically 600Hz. It's easy to mount the SG-3016 on a standard DIN rail and can operate in environments with wide temperature range.

### **Specifications**

#### **Voltage Specifications:**

- Electrical input:  $\pm 10\text{mV}$ ,  $\pm 20\text{mV}$ ,  $\pm 30\text{mV}$ ,  $\pm 50\text{mV}$ ,  $\pm 100\text{mV}$
- Excitation voltage: 1 ~10Vdc (20mA max.)

#### **Voltage output:**

- Bipolar:  $\pm 5\text{V}$ ,  $\pm 10\text{V}$
- Unipolar: 0~5V, 0~10V
- Output impedance:  $<50\Omega$

#### **Current output:**

- Current: 0~20mA
- Current load resistor: 0~500 $\Omega$  (Source)

#### **General**

- Three-way isolation: 1000 Vdc
- Accuracy:  $\pm 0.1\%$  of full range
- Bandwidth: 600Hz (typical)@-3dB
- Operation temperature range:  $-25^{\circ}\text{C} \sim 75^{\circ}\text{C}$
- Storage temperature range:  $-30^{\circ}\text{C} \sim 85^{\circ}\text{C}$

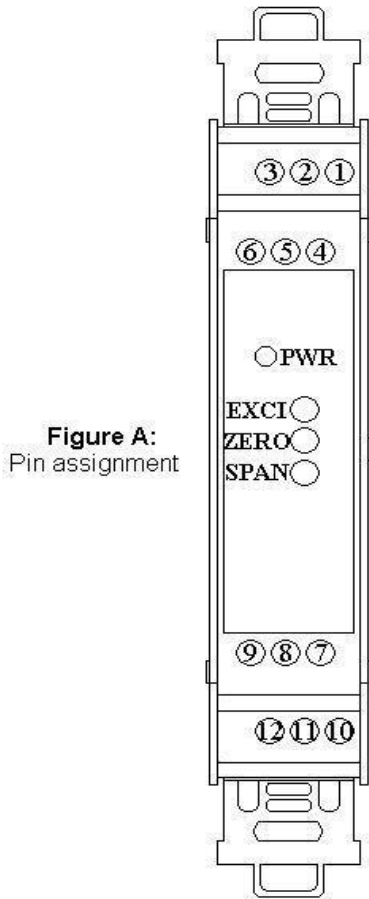
#### **Supply Voltage**

- Input Range: 10~30Vdc
- Consumption: 1.44W (voltage output)  
1.74W (current output)

### **configure**

The terminal wiring for the SG-3016 is shown in Figure A. Positive power terminals pin's 7 and 9 are internally connected, as are negative pins 10 and 12. Power can be connected through the adjacent modules, making wiring much easier. The SG-3016 uses a power input range of 10~30Vdc.

Table 1 and table 2 show the switch positions used to configure the input and output range. The I/O configuration switches are located inside the module. And can be accessed by removing the DIN-rail bracket covers by sliding them in the direction shown in Figure B.

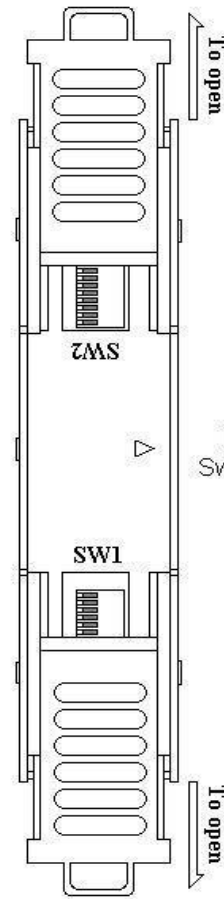


**Figure A:**  
Pin assignment

PWR  
PWRCOM

Pin	Name
1	INPUT+
2	INPUT-
3	FGND
4	EXCI+
5	EXCI+
6	EXCI-
7	PWR+
8	OUT+
9	PWR+
10	PWRCOM
11	OUT-
12	PWRCOM

PWRCOM



**Figure B:**  
Switch location

SG3016 Input Range	Range (SW2)				
	1	2	3	4	5
±10mV	◆				
±20mV		◆			
±30mV			◆		
±50mV				◆	
±100mV					◆

◆ : ON

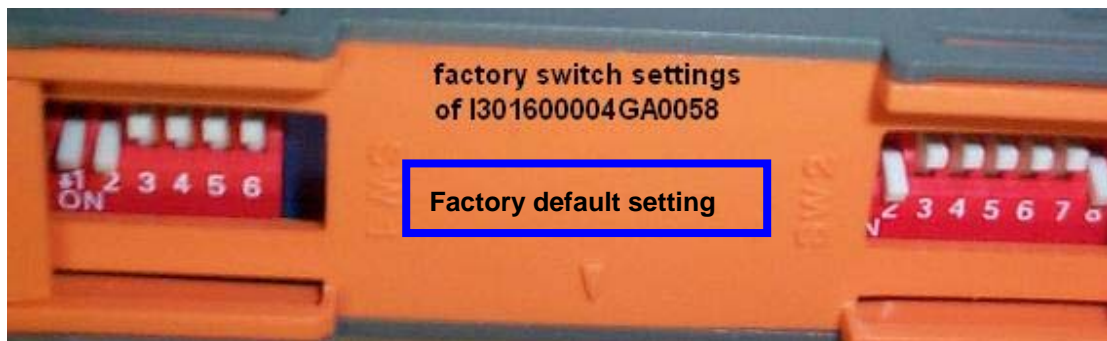
**Table 1:** Input range setting (SW2)

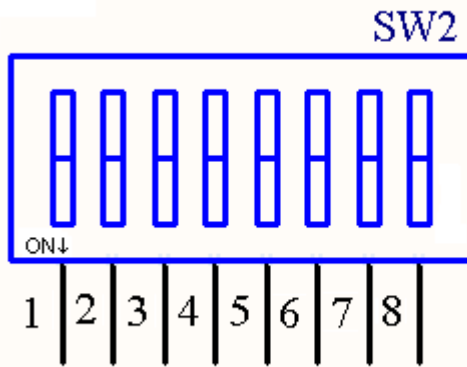
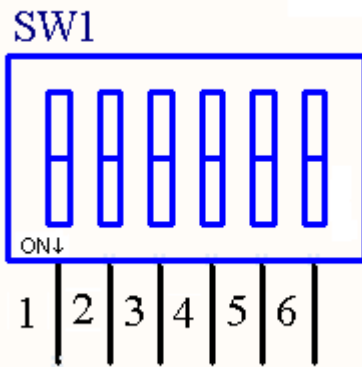
SG3016 Output Range	Range (SW1)						Range (SW2)		
	1	2	3	4	5	6	6	7	8
±10V	◆	◆							◆
±5V	◆	◆						◆	
0~10V	◆	◆			◆	◆	◆		
0~5V	◆	◆			◆		◆		
0~20mA			◆	◆	◆		◆		

◆ : ON

**Table 2:** Output range setting (SW1 · 2)

\* Factory default setting



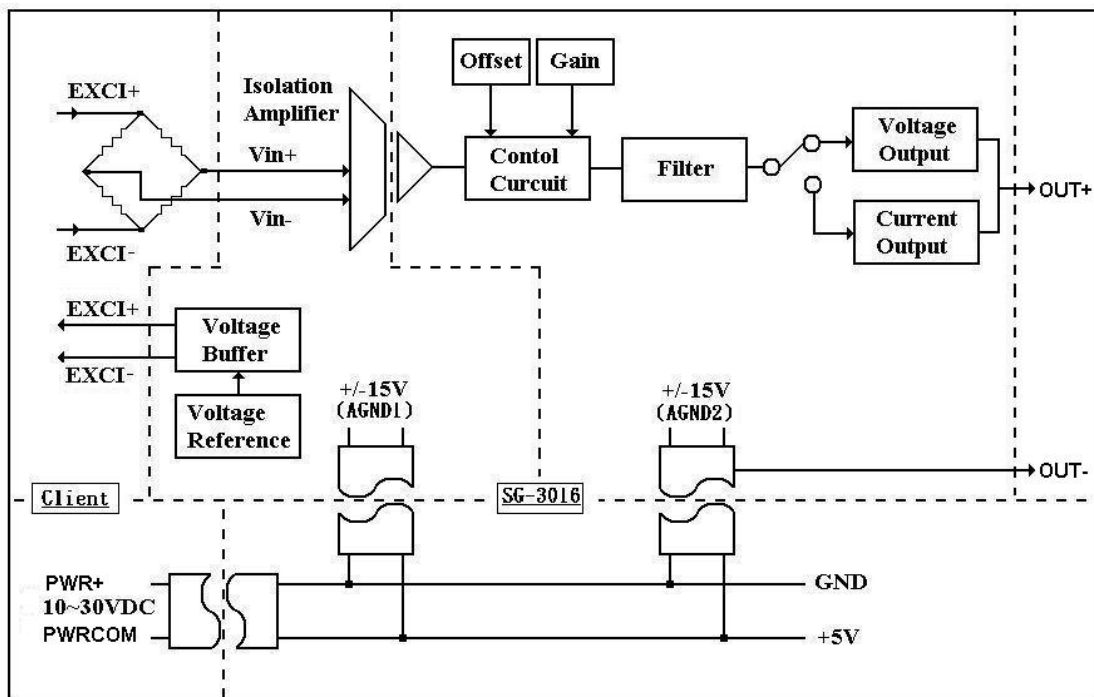


1	Voltage Output	
2		
3	Current Output	
4		
5	ON	Unipolar Output
	OFF	Bipolar Output
6	ON	Internal Gain2 : 2
	OFF	Internal Gain2 : 1

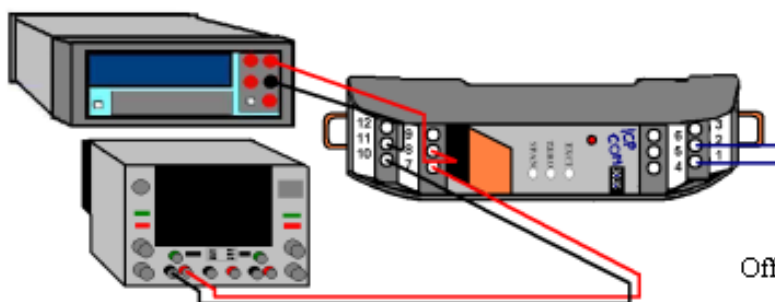
1	Input : $\pm 10\text{mV}$
2	Input : $\pm 20\text{mV}$
3	Input : $\pm 30\text{mV}$
4	Input : $\pm 50\text{mV}$
5	Input : $\pm 100\text{mV}$
6	Internal Gain1 : 0.5
7	Internal Gain1 : 1
8	Internal Gain1 : 2

Table 3: Configuration of SW1 and SW2

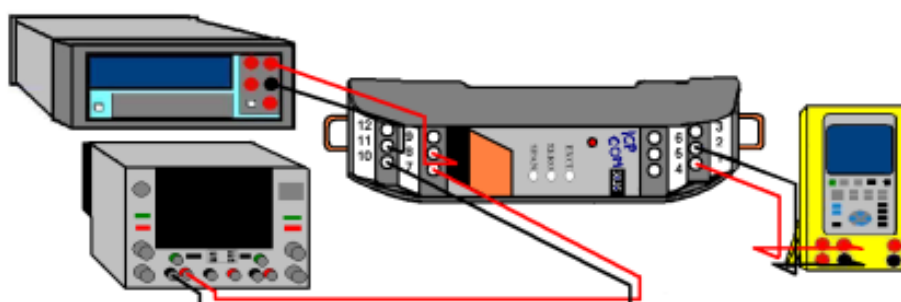
### Block Diagram



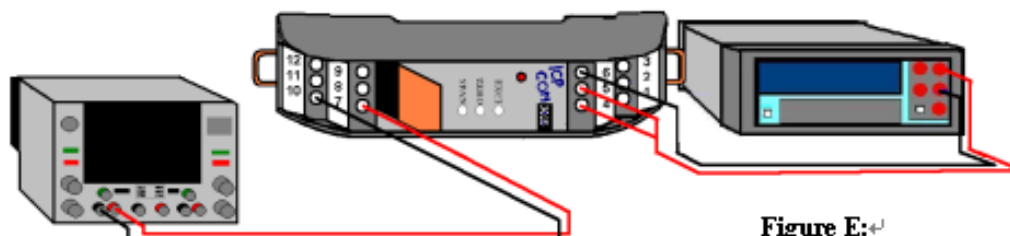
## Calibration Procedure



**Figure C:**  
Offset Regulate



**Figure D:**  
Gain Regulate



**Figure E:**  
Excitation Voltage Regulate

1. Refer to figure C to adjust the offset value.
  - (1) Connect pin7 to the PWR+ and connect pin 10 to PWRCOM.
  - (2) Connect pin8 and pin 11 to the meter.
  - (3) Use wire to connect pins 1 and 2.
  - (4) Changing the SW1 and SW2 depends on your input/output range. Watch the value of the meter and adjust the VR2 (ZERO) value to the minimum value of this range.
2. Refer to figure D to adjust the gain value.
  - (1) Connect pin7 to the PWR+ and connect pin 10 to PWRCOM.
  - (2) Connect pin8 and pin 11 to the meter.
  - (3) Connect pins 1 and 2 to input source.

(4) Changing the SW1 and SW2 depends on your input/output range. Watch the value of the meter and adjust the VR3 (SPAN) value to the maximum value of this range.

3. Refer to figure E to adjust the excitation voltage value.

(1) Connect pin7 to the PWR+ and connect pin 10 to PWRCOM.

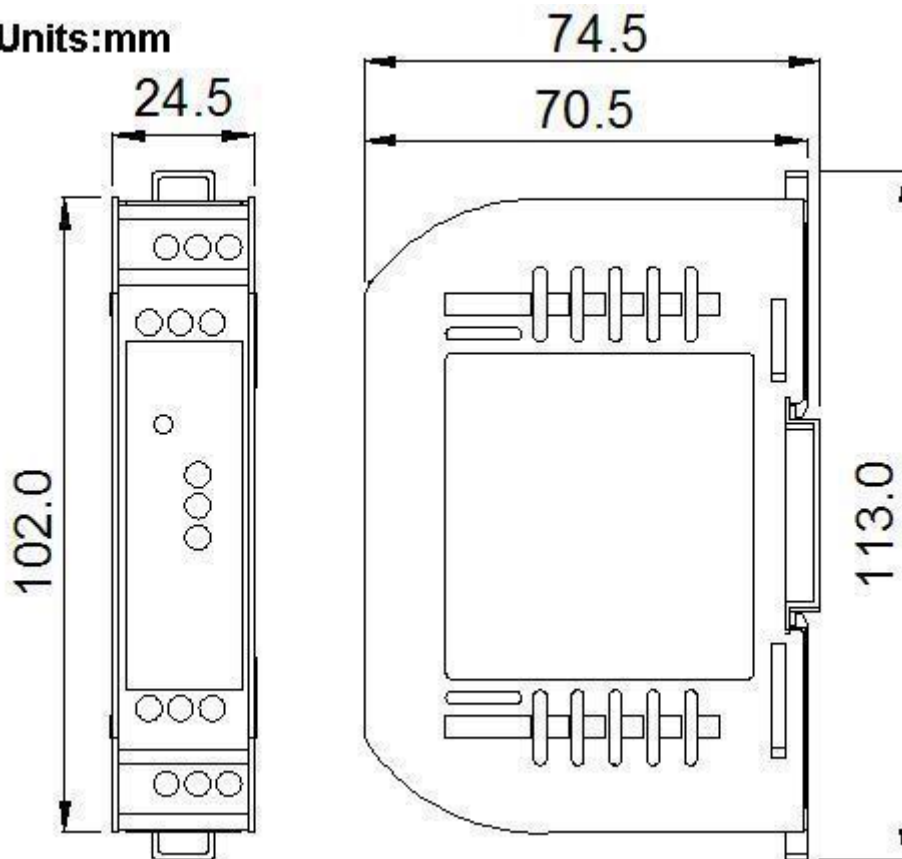
(2) Connect pins 4 and 6 or pins 5 and 6 to the meter.

(3) Watch the value of the meter and adjust the VR1 (EXCI) value to the 1~10Vdc of this range.

※ The default value is 10Vdc ※

### **Dimensions**

**Units:mm**



### **Technical Service:**

Please E-mail your problem description to [service@icpdas.com](mailto:service@icpdas.com) if you have any questions.

More detail information : [WWW.icpdas.com](http://WWW.icpdas.com)