

DRG-SC-AC

AC Input, Field Configurable Isolator

Instruction Sheet M2389/0796

DESCRIPTION

The field configurable DRG-SC-AC is a DIN rail mount, AC input signal conditioner with 1800VDC isolation between input, output and power. The field configurable input and output offers flexible, wide ranging capability for scaling, converting or buffering AC inputs ranging from 5mA to 100mAAC or 50mV to 200VAC. The DC output of the DRG-SC-AC is proportional to the average of the of the fully-rectified AC input signal, and is calibrated for sine waves between 40-400Hz.

For current inputs above 100mAAC, it is recommended that an input shunt resistor be used and the DRG-SC-AC be configured for the proper input range. For example, a 5AAC current transformer output can use a 0.1 Ω , 5W shunt resistor and set the input of the DRG-SC-AC for 0-500mVAC.

APPLICATION

The DRG-SC-AC is useful in applications requiring an isolated, conditioned DC output from an AC signal. Typical applications include energy management, load shedding, motor current/load monitoring, locked rotor detection, isolation and data acquisition. The output of the DRG-SC-AC can drive a digital meter for direct display or can interface with alarming or control devices including PLCs and computers.

DIAGNOSTIC LED

The DRG-SC-AC is equipped with a dual function LED signal monitor. The green, front mounted LED indicates both DC power and input signal status. Active DC power is indicated by an illuminated LED. If the input signal is more than 110% of the full-scale range, the LED will quickly flash at 8Hz. If this continues to occur, you may wish to change your full-scale input range setting.

CONFIGURATION

A major advantage of the DRG-SC-AC is its wide ranging capabilities and ease of configuration. The DRG-SC-AC has 15 input range switch settings.

Trim potentiometers allow 50% input zero and span adjustability within each of the 15 full-scale input ranges.

For example, the 200V switch setting in Table 1 configures the input for a 0 to 200VAC range. Since the span can be contracted by 50%, this enables an input span as narrow as 100VAC of the range. This span can be positioned anywhere within the 0-200VAC range with a zero offset as large as 50% of the full scale range (e.g. 100 to 200VAC range).

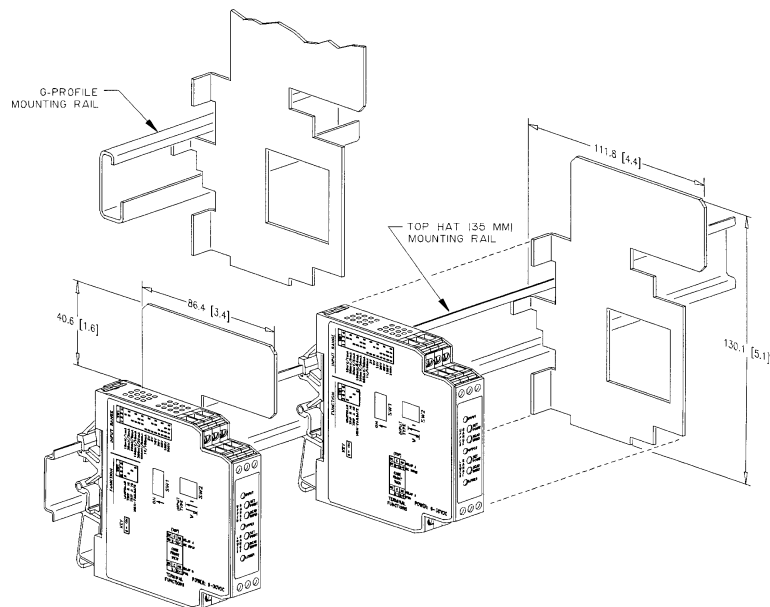
Unless otherwise specified, the factory presets the Model DRG-SC-AC as follows:

Input Range: 0-500mVAC
Output: 4-20mA

WARNING: Do not attempt to change any switch settings with power applied. Severe damage will result!

The DC power input accepts any DC source between 9 and 30V, typically a 12V or 24VDC source is used

Refer to Tables 1 through 3 for the proper switch settings. With power disconnected, use the switches on SW1 to select the input type (voltage or current), on SW2 to select the HI or LO input ranges, and on SW4 to select the desired input range. Using the switches on SW3, select the desired type of output.



Note 1: All DRG-Series modules are designed and tested to operate in ambient temperatures from 0 to 55°C, when mounted on a horizontal DIN rail. When five or more modules are mounted on a vertical rail, circulating air or model DRG-HS01 Heat Sink is recommended.

CALIBRATION

1. After configuring the DIP switches, connect the input to a calibrated AC source. Connect the output of the actual device load (or a load approximately equivalent to the actual device load value) and apply power. Refer to the Terminal Wiring Diagram. (Figure 3)

NOTE: to maximize thermal stability, final calibration should be performed in the operating installation, allowing approximately 1 to 2 hours for warm up and thermal equilibrium of the system.

2. Set the calibrator to the desired minimum and adjust the zero potentiometer for the desired minimum output.

3. Set the calibrator to the desired maximum and adjust the span potentiometer for the desired maximum output.

4. Repeat steps 2 and 3, if necessary for best accuracy.

Figure 1: DRG-SC-AC Input Range Selector-Switch Settings

Voltage	Current	SW1							
		1	2	3	4	5	6	7	8
100mV	10mA				■				■
200mV	20mA				■		■		■
500mV	50mA			■		■	■		■
1V	100mA			■	■				■
2V				■	■		■		■
5V		■		■		■	■		
10V		■		■	■				
20V		■		■	■		■		
50V			■	■		■	■		
100V			■	■	■				
200V			■	■	■		■		
250V				■	■		■	■	■

Figure 2: DRG-SC-AC Output Range Selector-Switch Settings

RANGE	SW2							
	1	2	3	4	5	6	7	8
0 to +5V	■	■	■	■				
0 to +10V	■		■	■				
0 to 1mA			■	■	■			
4 to 20mA						■	■	■
0 to 20mA	■	■				■	■	■

Figure 3: DRG-SC-AC Input Jumper Settings

TYPE	SW1	
	9	10
CURRENT		■
VOLTAGE	■	

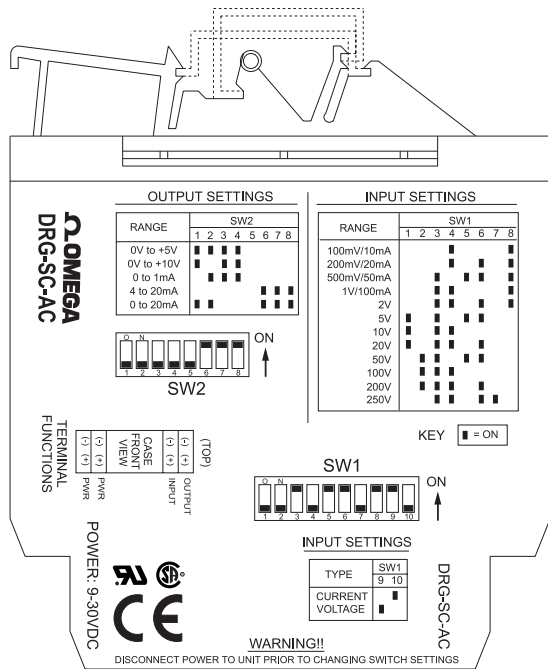


Figure 1: DRG-SC-AC Factory Calibration: 0-500mVAC, 4-20mA

Warning: Do not attempt to change any switch settings with power applied. Severe damage may occur!

TYPICAL APPLICATION

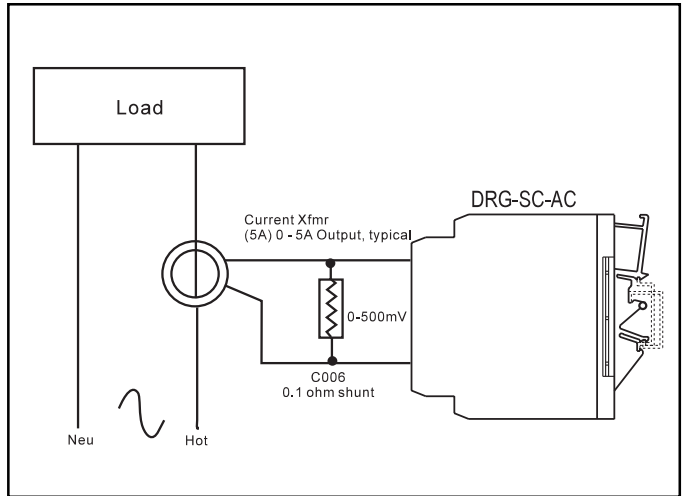


Figure 2: Load monitoring using a current transformer and the DRG-SC-AC

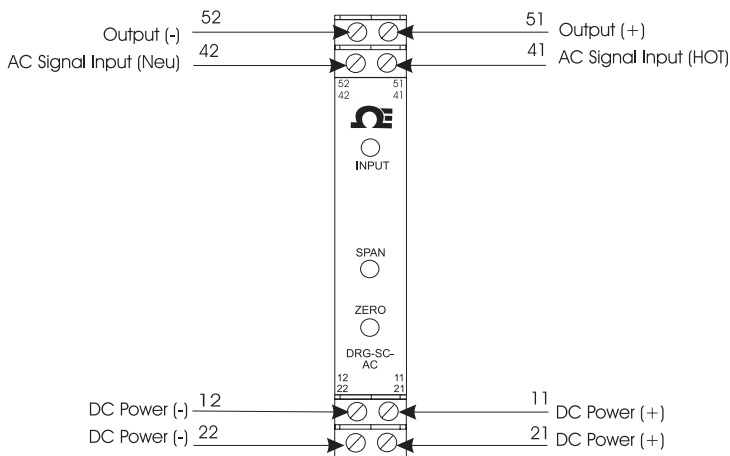


Figure 3: Wiring Diagram for DRG-SC-AC

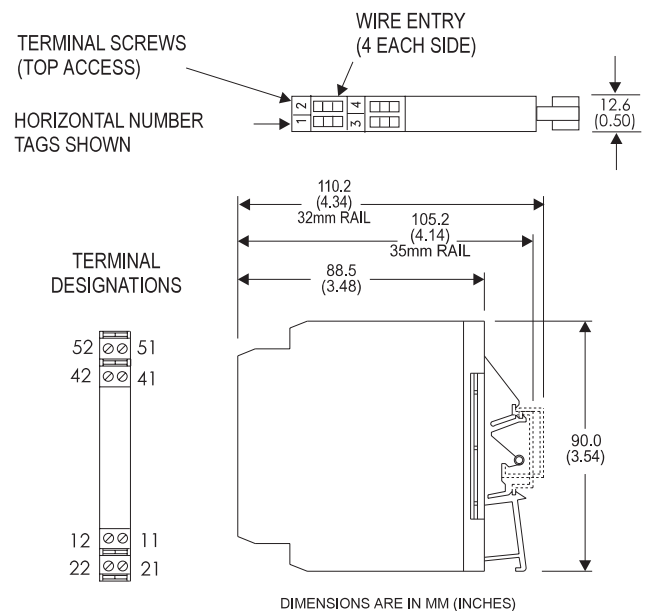


Figure 5: Mechanical Dimensions for DRG-SC-AC

SPECIFICATIONS

Inputs

Voltage Input

Ranges: 100mV to 200VAC

Impedance: >100KΩ

Overvoltage: 300VAC

Current Input

Ranges: 10mA to 100mAAC

Impedance: 20Ω, typical

Overcurrent: 200mAAC

Overvoltage: 60V peak

Frequency Range: 40 to 400Hz,

factory calibrated at 60Hz

Common Mode (Input to Ground):

1800VDC, max.

Zero and Span Range:

Zero Turn-Up: 50% of full

scale range

Span Turn-Down: 50% of full

scale range

Output

Voltage Output

Output: 0-5V, 0-10V

Source Impedance: <10Ω

Drive: 10mA, max.

(1KΩ, min. @ 10V)

Current Output

Output: 0-1mA, 0-20mA,

4-20mA

Source Impedance: >100KΩ

Compliance:

0-1mA; 7.5V, max. (7.5KΩ, max.)

0-20mA; 12V, max. (600Ω, max.)

4-20mA; 12V, max. (600Ω, max.)

LED Indicator (green)

8Hz flash when input is 10%

above full scale range (FSR)

Accuracy (Including Linearity, Hysteresis)

±0.1% of span, typical

±0.5% of span, maximum

Stability

±0.025%/°C of selected input

span, typical.

Response Time (10 to 90%)

250mSec., typical.

Common Mode Rejection

DC to 60Hz: 120dB

Isolation

1800VDC between input, output

and power.

EMC Compliance (CE Mark)

Emissions: EN50081-1

Immunity: EN50082-2

Safety: EN50178

Humidity (Non-Condensing)

Operating: 15 to 95% (@ 45°C)

Soak: 90% for 24 hours (@ 65°C)

Temperature Range

Operating: 0 to 55°C

(32 to 131°F)

Storage: -25 to 70°C

(-13 to 158°F)

Power

Consumption: 1.5W typical,

2.5W max.

Range: 9 to 30VDC

Wire Terminations

Screw terminals for 12-22 AWG

Agency Approvals

CSA certified per standard C22.2,

No. 0-M91 and 142-M1987 (File No.

LR42272). UL recognized per stan-

dard UL508 (File No.E99775).CE

Compliance per EMC directive 89/

336/EEC and Low Voltage 73/23/EE.

Mounting

32mm and 35mm DIN Rail

PIN CONNECTIONS

11 DC Power (+)

12 DC Power (-)

21 DC Power (+)

22 DC Power (-)

41 AC Signal Input (Hot)

42 AC Signal Input (Neu)

51 Output (+)

52 Output (-)



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3. Repair instructions and/or specific problems relative to the product

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