

## Model SGC-200 Current Sense Amplifier

### FEATURES

- signal conditioning unit, small form factor, screw-down wire terminals, DIN mountable
- built-in, non-inductive, current sense resistor
- designed for current measurement applications for PWM solenoids, PWM solenoid valves, actuators, DC motors, stepper motors → any DC pulsed electro-mechanical load up to 4A
- two outputs: unfiltered and low-pass filtered
  - low-pass filtered output provides a DC output proportional to the average current
  - unfiltered output provides a voltage output waveform proportional to real-time current
- differential analog input buffer with +/- 100V common mode rejection
- powered by nominal 12V DC, isolated from output and measurement input
- fixed output model SGC-200A with fixed gain and low-pass filter for 0 to 2.5A applications
- standard model SGC-200 with dipswitch selectable gain and low-pass filter cutoff settings
- OEM versions available on request
  - gain, current sense resistor value
  - filter cutoff
  - variable settings
  - with or without enclosure

### DESCRIPTION

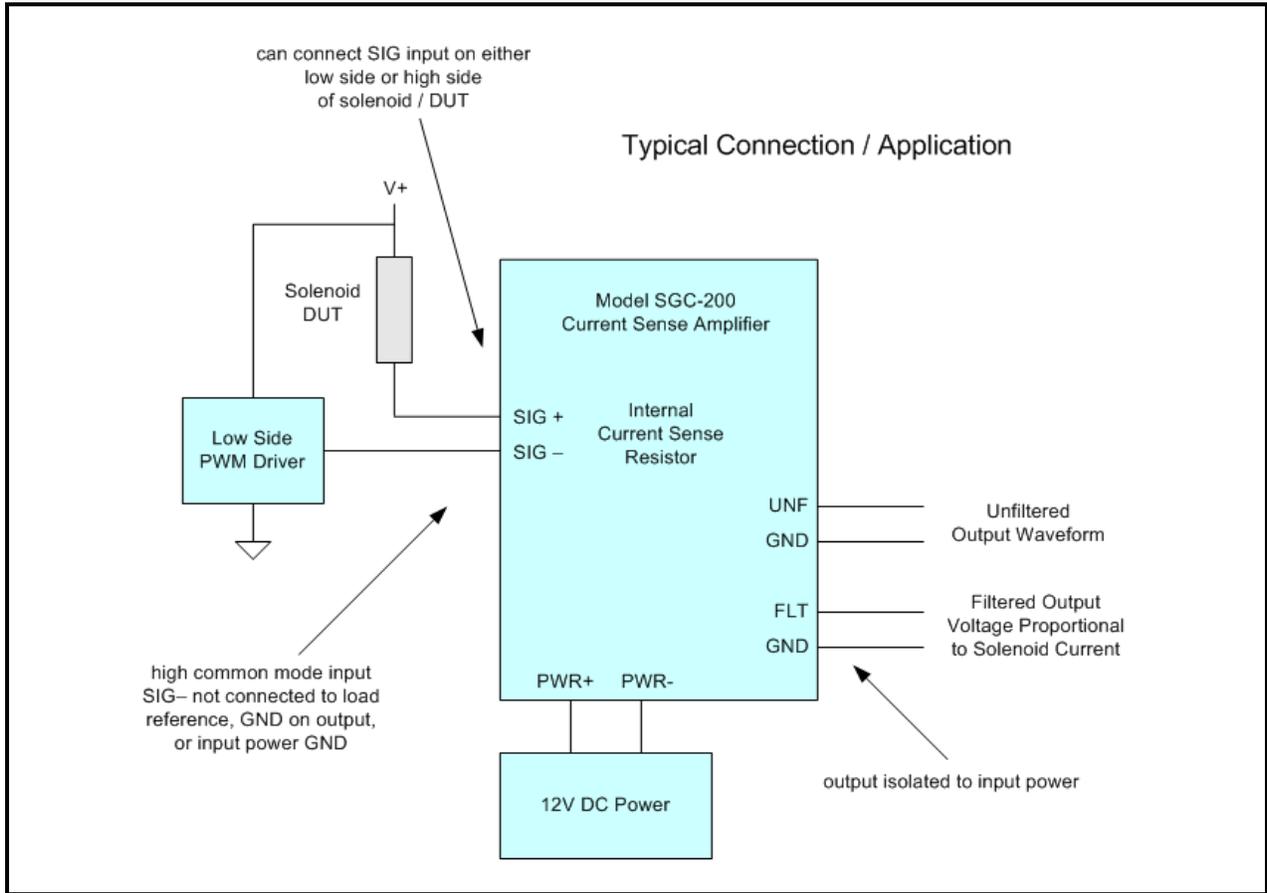
The Model SGC-200 Current Sense Amplifier from Applied Processor and Measurement, Inc. provides two amplified voltage outputs proportional to the current sensed across an internal, non-inductive sense resistor. One output is an amplified voltage output allowing for current waveform pick-up, the other a low-pass filtered voltage output which provides an average current of a pulsed load. The SGC-200 is intended for PWM solenoid applications where an average current measurement is desired. The filtered output can also be used for any pulsed signal application such as actuators and small DC stepper motors such as those used in automotive and commercial applications.



### APPLICATIONS

- current measurement of (PWM) pulsed solenoids and DC motors, stepper motors
- automotive, industrial, commercial component test and development
- general purpose signal conditioner for monitoring applications and data acquisition and control applications including PLC interface

A typical connection using the SGC-200 and a PWM solenoid is shown in the diagram below. The filtered output on the SGC-200 provides a DC output voltage proportional to the current through the solenoid that is under Pulse Width Modulation control.



## **SPECIFICATIONS**

- Operating Voltage: nominal 12V DC (9 to 14V DC)
- Power Consumption: 100 mA typical (no output load)
- Signal Input: DC coupled, not isolated
  - fully differential and bi-directional
  - Common Mode Voltage: +/- 100V typical
  - Current Sense Resistor: 0.1Ω , non-inductive
  - Max Current Input: +/- 4A
  - Recommended (PWM) freq range: 16 to 1000 Hz
- Operating Temperature: -40 °C to 60 °C
- Connectors: screw-clamp terminal blocks, 14AWG max
- Size: 3.625 in. x 2.25 in. x 1 in.  
(1.375 in. height by I/O connectors)

## **OUTPUT**

- analog outputs, single ended, DC coupled, +/-10V max
- output offset: 20mV typical (into 5kΩ load)
- accuracy: +/- 2.5%
- SGC-200A
  - sense R: 0.1Ω , non-inductive
  - fixed gain: 1V output = 0.5A input
  - fixed filter: low-pass filter, 4Hz cutoff
- SGC-200
  - sense R: 0.1Ω , non-inductive
  - $V_{out} = gain * (current\_in * 0.1\Omega)$
  - selectable gains: 10, 12.5, 20, 25, 40, 50, 70, 100
  - variable low-pass filter
  - selectable cut-off (Hz): 80, 16, 4

## **ORDERING INFORMATION - Model SGC-200 Current Sense Amp**

Order Number: SGC-200A or SGC-200A-DIN - fixed gain, 0 to 5V out, 0 to 2.5A in, 4Hz filtered output  
 Order Number: SGC-200 or SGC-200-DIN - switch selectable gains and low-pass filter cutoffs

OEM versions – different amplifier gain or filter cutoff, board only, or custom versions: contact factory