

Differential Amplifier Module Instructions

The Differential Amplifier Module (DA100A) is a general purpose, single channel, differential amplifier. The DA100A is designed for use in the following measurement applications:

- Blood Pressure
- Muscle Strain or Force
- Acceleration
- Sound
- Displacement

The DA100A has one differential input linear amplifier with adjustable offset and gain. The DA100A is used to amplify low level signals from a variety of sources. The DA100A has built-in excitation capability, so it can work directly with many different types of transducers. The DA100A is compatible with:

- Pressure Transducers
- Strain Gauges
- Accelerometers
- Microphones
- Piezo Sensors
- Photocells
- Thermistors
- Wheatstone Bridges

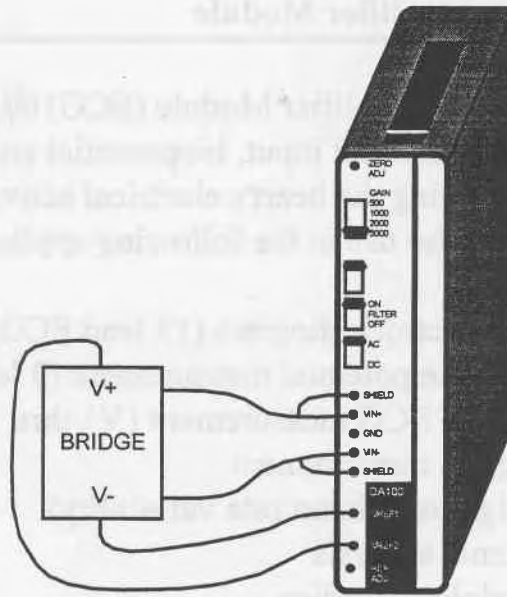
DA100A specifications

Input Impedance	2M Ω (differential)
Maximum Input Voltage	$\pm 10V$
Upper Frequency Response	
Filter Off	5000Hz
Filter On	10Hz
Lower Frequency Response	
AC	0.05Hz
DC	DC
CMRR	60dB minimum
Voltage Reference	-5V to +5V @ 10mA maximum
Noise Voltage (Shorted Input)	
Filter Off	3.0 μV (rms)
Filter On	1.0 μV (rms)
Input Signal Range (pk-pk)	Gain
2000mV	x10
400mV	x50
100mV	x200
20mV	x1000

If the input signal is applied differentially between the VIN+ and VIN- inputs, the pk-pk values can be centered around any voltage from -10 volts to +10 volts with respect to GND. If the signal is applied to a single input (with the other input grounded), then that signal can range over the selected maximum input level (pk-pk) with respect to GND.

The DA100A has two adjustable voltage sources (VREF1 and VREF2) for activating passive sensors like pressure transducers, strain gauges, thermistors and photocells. The references can be set anywhere from -5.0 to +5.0 volts. GND is considered to be at 0 volts. VREF1 and VREF2 track each other with opposite polarity. They can be adjusted using the REF ADJ potentiometer near the bottom of the module. The voltage references can handle up to 10 mA sourcing or sinking. GND can handle any current (sourcing or sinking) to a maximum of 20 mA. Pay close attention to your sensor drive requirements so as to minimize overall current consumption.

The DA100A can be used to directly connect up to existing transducers. The DA100A can be outfitted with connector assemblies (called TCIs) for easy interfacing to a variety of "off the shelf" pressure, force and strain gauges. The connector assemblies have PIN plugs on one side and the transducer mating connector on the other. For example, the TCI101 connector interface is used to connect Beckman compatible transducers to the DA100A. See page 162 in this manual for more information on the TCI connector interfaces. Please contact the BIOPAC Systems, Inc. Applications department for more information.



Typical DA100A to Transducer Bridge Interface