

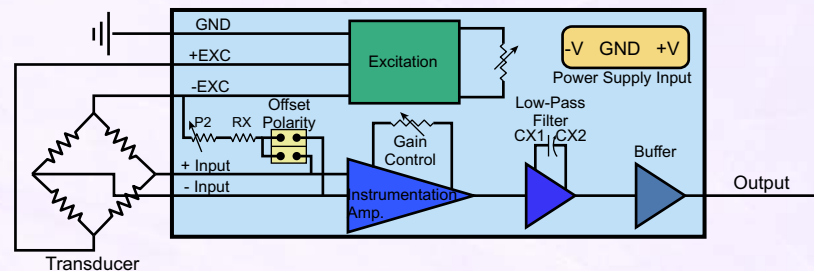
GAGE-3000

General Purpose Transducer Interface Board

Actual Size



Block Diagram



The GAGE-3000 is a high quality interface board, used for interfacing any bridge-type type transducer such as strain gages, pressure sensors and other bridge-type transducers, as well as voltage producing devices such as piezo sensors, temperature sensors, photo diodes and EEG/ECG inputs. The GAGE-3000 board provides a variable excitation, capable of driving up to 80 mA, at voltage range of 1V to 20V. The excitation voltage is symmetrical about ground level, so that the common mode voltage is approx. 0V. For example: an excitation voltage of 12V will be $\pm 6V$ relative to ground. The GAGE-3000 board can be configured as a single board for one transducer or up to six transducers on a single board.

The GAGE-3000 contains an instrumentation amplifier, with a variable gain of 200-1500, and a variable offset control. The output of the instrumentation amplifier is fed to a double pole low-pass-filter, then passed via a driver buffer to the output port. The cut-off frequency of the low-pass-filter may be changed by replacing two capacitors, CX1 and CX2, with capacitors of other values.

The GAGE-3000 also has a bridge loading resistor RX, connected in series with a variable trimpot (variable resistor) designated P2. The resistor is used for correcting the offset of a bridge, which has a high offset level that cannot be corrected by using the on-board offset control. The resistor has to be defined and connected by the user. Please note that this resistor may affect the linearity of the sensor, therefore it is recommended to correct the high offset by fixing the transducer.

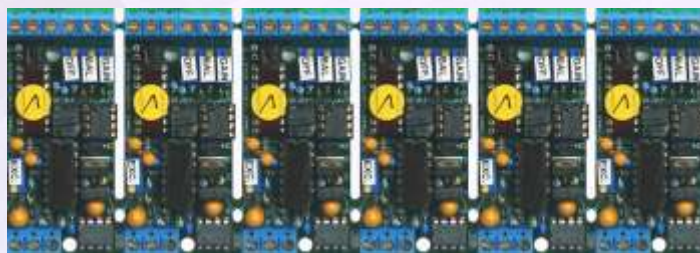
The excitation of the GAGE-3000 may be changed by using a trimpot designated P6, while the excitation level may be measured between the -EXC and +EXC test points. The gain is adjusted using P1. The GAGE-3000 requires an external stabilized power supply of $\pm 8V$ to $\pm 15V$. We offer an optional battery power supply that works from a 12V battery.

Technical Specifications

Gain	100-500 (adjustable by user) up to 10,000 -by request
Gain, Non-Linearity	$\pm 0.002\%$
Gain Temperature Coefficient	5ppm/°C
Input Offset Drift	1uV/°C
Output Offset Drift	25uV/°C
Input Offset vs. Supply	85dB
Input Impedance	1G Ω
Diff. Capacitance	5pF
CMRR (DC-100Hz)	100dB
Bandwidth (Gain 100-1000)	20KHz min (-3dB)
Setting time to 0.01%	80uSec
Input Noise Voltage	5 nV/ $\sqrt{\text{Hz}}$
Output Noise	100 nV/ $\sqrt{\text{Hz}}$
Supply Voltage Range	$\pm 8\text{V}$ to $\pm 15\text{V}$
Excitation Level	$\pm 1\text{V}$ to $\pm 10\text{V}$
Excitation Current (max)	80 mA
Excitation Drift	15 ppm/°C $\pm$ 10uV/°C
Excitation Noise (DC-100KHz)	0.6mV @ 300 Ω load
Excitation Noise (DC-1KHz)	0.2mV @ 300 Ω load
Operating Temperature	0-70°C
Bridge Resistance Range	50 Ω - 20,000 Ω

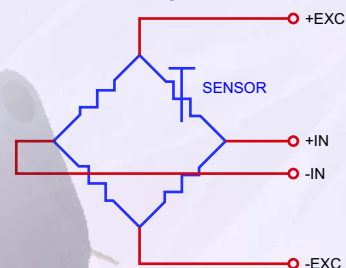
The following table provides capacitors values for some often used cut-off frequencies:

Cut-Off Frequency	50Hz	100Hz	200Hz	500Hz	1 kHz	2 kHz	5 kHz	10 kHz	20 kHz
Capacitor Value CX1/CX2	330 nF	150 nF	80 nF	33 nF	15 nF	8 nF	3.3 nF	1.5 nF	1 nF

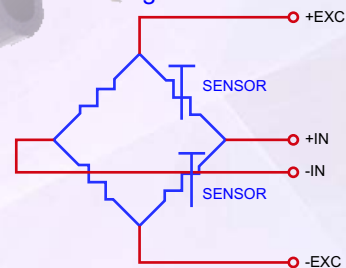


Applications

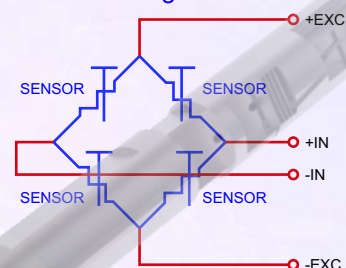
1/4 Bridge Sensor



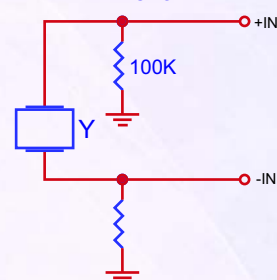
1/2 Bridge Sensor



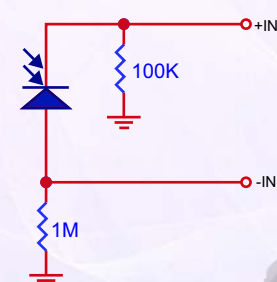
Full Bridge Sensor



Piezo



Photodiode



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ORDERING INFORMATION GAGE 3000 - 3 - 6000

Number of boards (up to 6) ←

Filter cut off frequency ←