

# Charge Amplifier Module

# MODEL 5000

- Small Size, Rugged Construction
- High Gain
- Wide Bandwidth
- Fixed Low Pass Filter
- Adjustable Sensor Sensitivity
- Output Short Circuit Protection

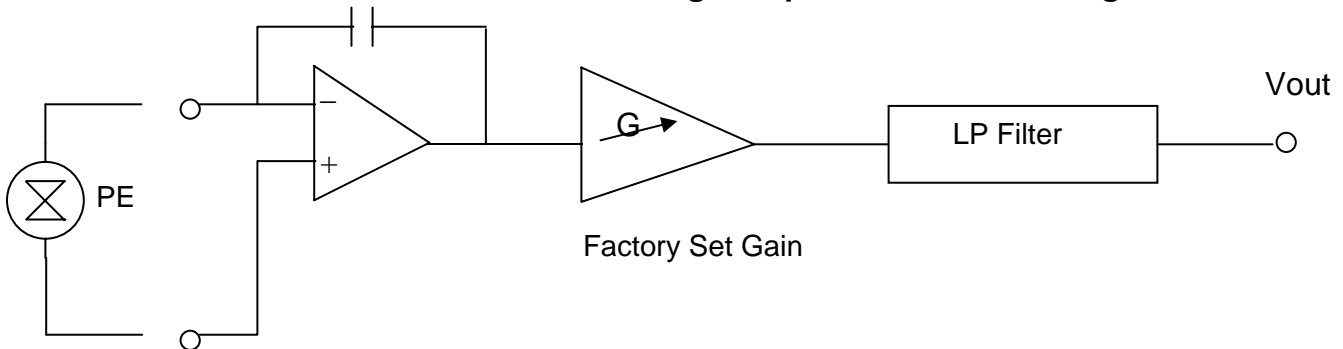


## Description

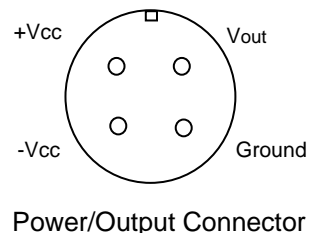
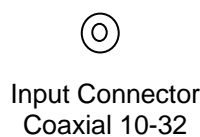
The VIP Sensors Charge Amplifier Model 5000 accepts signals from piezoelectric type of transducers and converts the high impedance charge input into a low impedance voltage output signal. The signal is processed through a gain stage and a 2-pole low pass filter stage. The value for gain and the corner frequency for the low pass filter are set at the factory.

The Model 5000A requires a  $\pm$  voltage source from 6 to 15 Vdc and its output voltage swing is about 70% of the source voltage. The Model 5000B operates from a single positive voltage source from 12 to 30 Vdc; an internal voltage divider halves the source voltage to bias its circuitry and its output voltage signal.

## Model 5000 Charge Amplifier Functional Diagram



## Model 5000 Connector Diagrams



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## SPECIFICATIONS

The following performance specifications are at +75°F (+24°C), unless otherwise noted.

	UNITS	
<b>INPUT</b>		
Type		Piezoelectric, single-ended
Capacitance	pC	1000 Maximum
Resistance	MΩ	20
<b>OUTPUT</b>		
Type		Single-ended
Voltage (peak)	%	70 of the maximum supply voltage for model 5000A
	%	70 of 1/2 the maximum supply voltage for model 5000B
Current	mA	10 maximum
<b>TRANSFER CHARACTERISTICS</b>		
Gain	mV/pC	10 to 100 Set at factory; default value 100
Accuracy	%	± 1 maximum for 1 Hz to 100 kHz at 24°C
	%	± 2 maximum for 1 Hz to 100 kHz over Operating Temp Range
Low Pass Filter	Hz	F (-3 ±1dB): 1 to 100,000 set at factory 2 poles, -12dB/octave roll off
Noise	μV rms	≤ 10 RTI
Harmonic Distortion	%	< 1 at 10 kHz with 10 nF capacitive load and full-amplitude output
Broadband Frequency Response		
Low Cutoff Frequency	Hz	F (-3 ±1dB): 1 Attenuation Rate: 6dB/Oct
Upper Cutoff Frequency	Hz	F (-3 ±1dB): ≤ 100,000 Attenuation Rate: 12dB/Oct
<b>ENVIRONMENTAL</b>		
Temperature	°F (°C)	Operating temperature: +32 to +104 (0 to +40) Storage temperature: -67 to +185 (-55 to 85)
Humidity	%	95 maximum relative humidity
<b>POWER SUPPLY</b>		
Power Sources	Vdc	± 6 to ± 15 for Model 5000A +12 to +30 for Model 5000B
<b>PHYSICAL CHARACTERISTICS</b>		
Dimensions	inches (mm)	2.0W × 1.3H × 3.9L (50 × 32 × 100)
Weight	oz (grams)	8.8 (250)
Connections		4-pin Power/Output connector 10-32 Transducer Input receptacle
<b>ACCESSORIES</b>		4-pin Power/Output Cable
<b>ORDERING INFORMATION</b>		
Model 5000X - yyy		X = <b>A</b> (± 6 to ± 15 Vdc supply) or <b>B</b> (+12 to +30 Vdc supply) yyy = Gain (010 to 100)