

Vibration Signal Conditioner

MODEL 5003

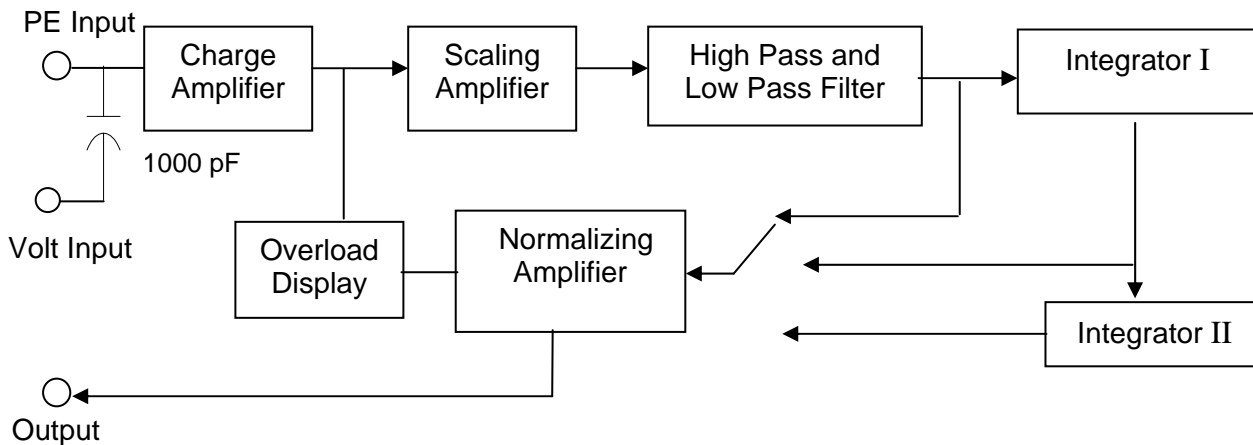
- Acceleration, Velocity, and Displacement Outputs
- Low Noise, High Accuracy
- Charge or Voltage Input
- Selectable Gain
- Selectable High and Low Pass Filters
- Overload Display



Description

The VIP Model 5003 is a multi-functional vibration signal conditioner. It accepts signals from Piezoelectric or Voltage transducer types, and provides an output voltage proportional to Acceleration, Velocity or Displacement.

Model 5003 allows selection of the transducer sensitivity from 1 to 109.9 pC/Unit or mV/Unit and the output voltage sensitivity from 1 to 1000 mV/Unit. It features six selectable low pass filters and two low pass filter cut-off frequencies.



VIP Sensors Model 5003 Functional Diagram

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SPECIFICATIONS

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

	UNITS	
INPUT		
Input Type		Single-ended
Charge Input	pC	± 10 ⁵ maximum
Voltage Input	Vp	± 10 maximum, input capacitance 1000 pF ±0.5%
OUTPUT		
Output Type		Single-ended
Output Voltage	Vp	± 5 maximum
Output Current	mA	5 maximum
Load Impedance	Ω	≥ 1000
TRANSFER CHARACTERISTICS		
Transducer Sensitivity (switch selectable)	pC/g or mV/g	1 to 10.99 (front panel switch position "1-11 pC/g or mV/g") 11 to 109.9 (front panel switch position "11-110 pC/g or mV/g")
Gain (switch selectable)	mV/Unit	1, 10, 100 or 1000 (front panel switch position "1-11 pC/g or mV/g") 10, 100, 1000 or 10000 (front panel switch position "11-110 pC/g or mV/g")
Accuracy	%	Acceleration: ±1% maximum, 0.3 Hz to 100 kHz Velocity: ±3% maximum, 1 Hz to 10 kHz Displacement: ±3% maximum, 1 Hz to 1 kHz
FREQUENCY RESPONSE		
Low Pass Filter	kHz	0.3, 1, 3, 10, 30 or 100 Switch Selectable Upper Cutoff Frequency (F-3dB ±1dB): Attenuation Rate: -12dB/Oct
High Pass Filter	Hz	0.3, 1, 3, 10, 30 or 100 Switch Selectable Lower Cutoff Frequency (F-3dB ±1dB): Attenuation Rate: -6dB/Oct
Noise	μV	≤ 5 rti (Gain switch position at 1000 mV/unit)
Harmonic Distortion	%	< 1 at 10 kHz with 10 nF capacitive load and full-amplitude output
Overload Display		LED on when output exceeds ±5 V
ENVIRONMENTAL		
Temperature	°F (°C)	Operating: +32 to +104 (0 to +40), Storage: -67 to +185 (-55 to 85)
Humidity	%	95 maximum relative humidity
POWER SUPPLY		
Power Source		Internal: Battery 1.2 V (>1300 mA) External: +5 to +28 Vdc (<300 mA) Supplied with six 1.2 V rechargeable AA batteries. Front panel LED turns on when supply power is below 6V. Batteries must be recharged.
PHYSICAL CHARACTERISTICS		
Dimensions	in (mm)	5.21H × 2.75W × 7.87D (132 × 70 × 200)
Weight	lb (kg)	3.3 (1.5) typical
Connectors		Input: 10-32 Output: BNC
ACCESSORIES		
Output Cable		BNC/BNC cable, 50Ω
Power Source Cables		(AC) AC/DC Power Convertor (DC) Power Cable