Model 161 Signal Conditioner

4-Ch IEPE & Charge Amplifier/Conditioner
Acceleration, Velocity, Displacement Output
Built-in Low-Pass & High-Pass Filters
100kHz Bandwidth
AC or Battery Power Operation

The Model 161 series is a 4-channel signal conditioning amplifier designed to be used with piezoelectric accelerometers (IEPE or Charge) and most other piezoelectric based transducers. The Model 161 series incorporates front-panel controlled gain adjustments, multiple high-pass and low-pass filter settings, and it is capable of displaying IEEE 1451.4 TEDS information. The signal conditioner features broad bandwidth to 100kHz and 10Vpeak linear output. For various vibration applications where velocity and displacement information are desired, analog integration functions are included as output options with a push of a button.

The Model 161A is 110/220VAC powered, and it can be ordered with a built-in rechargeable battery option (Model 161B), perfect for field test applications.

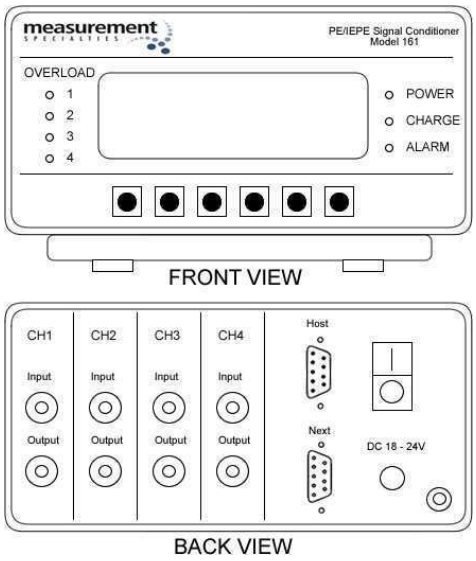
FEATURES

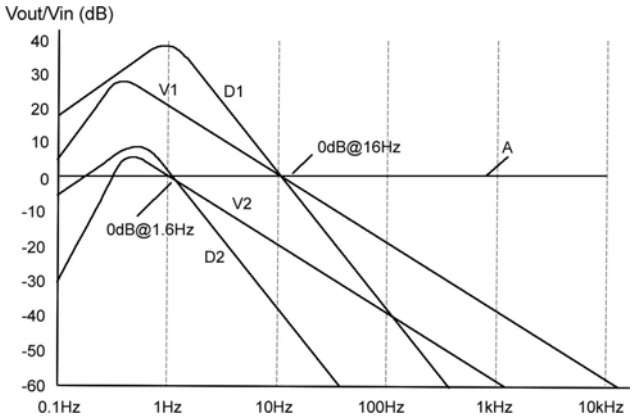
- Interface with Charge and IEPE Transducers
- 4 channels, Accel, Vel, and Disp Output
- Battery Power Option
- Wide Bandwidth, Low Noise
- Low and High Pass Filter Settings
- Support IEEE 1451.4 TEDS

APPLICATIONS

- Instrumentation Labs
- Field Testing
- Process Monitoring
- Vibration & Shock Testing

Layout





The velocity and displacement signals are obtained from single and double integrations of the acceleration signal. Piecewise integral method is used to calculate velocity and displacement output.

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Model 161 Signal Conditioner

performance specifications

Parameters	
INPUT SPECIFICATIONS	
Charge Input	<100,000pC, Single ended, BNC input connector
Charge Input Sensitivity Range	0.001pC/unit to 999.0pC/unit (unit may be g, m/s^2, etc.)
Charge, Source Capacitance	<30,000pF
Charge, Source Resistance	>10 MΩ
IEPE Input	<22 Volts (AC+DC components), Single ended, BNC input connector
IEPE Input Sensitivity Range	0.01mV/unit to 999.0mV/unit (unit may be g, m/s^2, etc.)
IEPE Current Excitation	4mA
IEPE Compliance Voltage	24 Volts
IEPE Input Impedance	>100 MΩ, 30,000pF
OUTPUT SPECIFICATIONS	
AC Voltage	Single ended (referenced to signal ground), short circuit protected, BNC output connector
Output Impedance	<100 Ohms
Output Current	35mA max
Linear Output	±10Vpeak
DC Offset	20mV max (10Hz – 100KHz, 10V/unit)
TRANSFER CHARACTERISTICS	
Output Sensitivity Range Settings	Charge: 100µ, 316µ, 1m, 3.16m, 10m, 31.6m, 100m, 316m, 1, 3.16, 10 (V/unit) IEPE: 100µ, 316µ, 1m, 3.16m, 10m, 31.6m, 100m, 316m, 1 (V/unit)
Accuracy	±0.5% of full scale (max), at 1kHz, filters disabled, gain >1
Linearity	±0.1% of full scale, best fit straight line at 1kHz reference Measurement Condition: Internal 10KHz lowpass filter is enabled.
Noise	Charge: 0.062 pC rms (RTI) plus 0.004 pC rms per 1000pF of source capacitance referred to input. IEPE: 110uV rms referred to input. Input shunted with a 249Ω resistor.
Frequency Response	0.1 Hz to 100 kHz (full power bandwidth), -3db referenced to 1kHz
Low-pass Filter (-3dB corner)	100Hz, 1kHz, 3kHz, 10kHz, 30kHz, 100kHz
High-pass Filter (-1dB corner)	0.1Hz, 1Hz, 3Hz, 10Hz
Crosstalk Between Channels	100 db RTI
POWER REQUIREMENTS	
Voltage	18-24VDC from supplied 110/220VAC power adaptor
Power dissipation	12W typical
PHYSICAL CHARACTERISTICS	
Weight & Size	2.85kg (6.28lbs); H x W x D: 115 (4.5) x 180 (7.1) x 310 (12.2) mm (inches)
Case Material	Anodized aluminum
Operating Environment	0°C to +75°C, <90% Relative Humidity

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ordering info

PART NUMBER	DESCRIPTION
161A	IEPE & PE Signal Conditioner, 110/220VAC
161B	IEPE & PE Signal Conditioner, 110/220VAC and Rechargeable Battery Option

OPTIONAL ACCESSORIES	DESCRIPTION
AC-G03294	10-32 Microdot to BNC input adaptor for charge type transducer

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