Description
The FE136 Animal Bio Amp is a galvanically isolated, high performance software controlled differential amplifier, suitable for the measurement of a wide variety of biological signals in animals and isolated tissue. The function of the amplifier is to amplify and filter small bioelectrical signals that are associated with nerve and muscle activity. Three shrouded 1.5 mm input sockets allow the direct connection of electrodes to the amplifier. Three Animal Bio Amp Lead Wires (MLA1212 Micro-Hook Electrodes for FE136 (3pk) are included.

Compatibility
The Animal Bio Amp is compatible with all PowerLab and MacLab models and requires the following ADInstruments software versions or later: LabChart v6, Chart v4 or Scope v3.3.

Visit www.adinstruments.com/downloads/ for Windows and Mac operating system compatibility. For more information please contact your ADInstruments representative.

Features and Benefits
- A low-noise, high-gain differential amplifier specifically designed for biological signal measurements
- Software-controlled low-pass, high-pass and notch filters to remove unwanted signal frequencies for particular uses
- Audio output for use with EMG or EEG signals and similar

Applications
Animal ECG, EMG and EEG, sensory nerve action potentials, visual evoked response, cortical evoked potentials and recording the long term electrical activity involved in involuntary muscle contractions.
Specifications

Amplification

Configuration: High impedance, differential (floating), electrically isolated

Amplification range: ±5 µV to ±100 mV full scale in 14 steps

<table>
<thead>
<tr>
<th>Full Scale</th>
<th>Resolution</th>
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<tbody>
<tr>
<td>±100 mV</td>
<td>50 µV</td>
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<tr>
<td>±50 mV</td>
<td>25 µV</td>
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<td>±20 mV</td>
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<td>±10 mV</td>
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<td>±5 mV</td>
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<td>±2 mV</td>
<td>1 µV</td>
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<tr>
<td>±1 mV</td>
<td>500 nV</td>
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<td>±10 µV</td>
<td>5 nV</td>
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<tr>
<td>±5 µV</td>
<td>2.5 nV</td>
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</table>

Mid-band gain accuracy: ±1.5% (all ranges, within Bio Amp)

Non-linearity: 0.2% within range

Noise at various bandwidths:
- 1 Hz to 5 kHz: <1.3 µV$_{\text{rms}}$ (< 8 µV peak to peak)
- 0.3 Hz to 1 kHz: <0.6 µV$_{\text{rms}}$
- 0.1 Hz to 100 Hz: <0.35 µV$_{\text{rms}}$ (@ 200 samples/second)

CMRR: 85 dB typical (1-60 Hz)

IMRR: >130 dB (to true earth, 50 to 60 Hz)

Input

Connection type: Three shrouded 1.5 mm male pin sockets

Input impedance: 200 MΩ differential

Input leakage current: <3 µA$_{\text{rms}}$ @ 240 V, 50 Hz
<2 µA$_{\text{rms}}$ @ 120 V, 60 Hz

DC blocking: ±1 V

Baseline restore: Automatic
**Filtering**

Low-pass filter: Fourth-order Bessel filter, ±3% accuracy
Low-pass options: Software selectable. Standard: 50, 100, 200, and 500 Hz and 1 and 5 kHz (all at –3 dB); EEG mode: 3, 10, 30, 60, and 120 Hz
High-pass filter: First-order filter, ±0.25% accuracy
High-pass options: Software selectable. Standard: 0.1, 0.3, 1, 3, and 10 Hz (all at –3 dB); EEG mode: 0.03, 0.1, 0.3 and 1 seconds
Notch filter: Second-order filter, –32 dB attenuation; 50 or 60 Hz frequency (automatic sensing)

**Output**

Analog signal: ±2.0 V standard; ≤ ±4.0 V over range
Audio: 3.5 mm (0.14") stereo jack; ±200 mV. Suitable for headphones or powered speakers

**Control Port**

I²C port: Provides control and power. Interface communications rate of ~50 Kbits/s.

**Physical Configuration**

Dimensions (h × w × d): 55 mm × 120 mm × 260 mm
Weight: 1.2 kg
Power requirements: <2 W
Operating temperature range: 0 to 35 °C, 0 to 90% humidity (non-condensing)

ADInstruments reserves the right to alter these specifications at any time.
Caution
Read “Statement of Intended Use” on our website or in “Getting Started with PowerLab” before use.

Front and Back Panels

Ordering Information
FE136 Animal Bio Amp

Includes:
I2C Cable (9-pin plug to 9-pin receptacle)
BNC to BNC cable
MLA1212 Micro-Hook Electrodes for FE136 (3pk)
Animal Bio Amp Owner's Guide

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