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ML136 Animal Bio Amp

Signal Conditioners

Description

The ML136 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 2 mm input sockets allow the direct connection of electrodes to the amplifier. Three Animal Bio Amp Lead Wires (MLA1215) are included.



Compatibility

The Animal Bio Amp is compatible with all PowerLab and MacLab models and requires Chart v4 or later or Scope V3.3 or later.

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

Input amplifier: High impedance, differential (floating), electrically isolated

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

Full Scale	Resolution
±100 mV	50 µV
±50 mV	25 µV
±20 mV	10 µV
±10 mV	5 µV
±5 mV	5 µV
±2 mV	1 µV
±1 mV	500 nV
±500 µV	250 nV
±200 µV	100 nV
±100 µV	50 nV
±50 µV	25 nV
±20 µV	10 nV
± 10 µV	5 nV
± 5 µV	2.5 nV

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

Non-linearity: 0.1% within range

Noise at various bandwidths:

- 1 Hz to 5 kHz: <1.3 μV_{rms} (< 8 µV peak to peak)
- 0.3 Hz to 1 kHz: <0.6 μV_{rms}
- 0.1 Hz to 100 Hz: <0.35 μV_{rms} (@ 200 samples/second)

CMRR: >100 dB (to isolated earth, 10 Hz to 1 kHz)

IMRR: >130 dB (to true earth, 50 to 100 Hz)

Input

Connection type: Three 2 mm (0.08") sockets

Input impedance: 200 MΩ differential

Input leakage current: <3 μA_{rms} @ 240 V, 50 Hz

<2 μA_{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

I^2C port:	Provides control and power. Interface communications rate of ~50 Kbits/s.

Physical Configuration

Dimensions (h × w × d):	50 mm × 76 mm × 260 mm (1.96" × 3.0" × 10.2”)
Weight:	770 g (1 lb 11 oz)
Power requirements:	<2 W
Operating temperature range:	0 to 35 °C, 0 to 90% humidity (non-condensing)

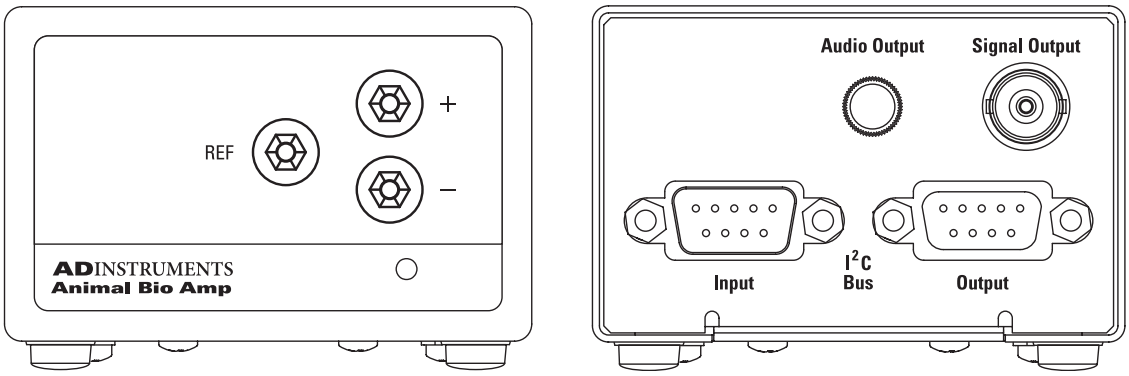
ADInstruments reserves the right to alter these specifications at any time.

WARRANTY: ADInstruments PowerLab Systems, Front-end and Pod Signal Conditioners are warranted against defects in materials and workmanship for a period of 3 years from the date of purchase. Third party products are covered by the manufacturer's warranty. Warranties are void if the product has been damaged due to negligence. Consumables and electrodes are not covered by a warranty. All questions regarding service and warranty should be directed to your nearest ADInstruments representative or one of the offices listed below.

Caution

Read "Statement of Intended Use" on our website or in "Getting Started with PowerLab" before use.

Front and Back Panels



Ordering Information

ML136 Animal Bio Amp

Includes:

I2C Cable (9-pin plug to 9-pin receptacle)

BNC to BNC cable

MLA1215 Animal Bio Amp Lead Wires (3 pack)

Animal Bio Amp Owner's Guide

ML136-DC-05A

ADINSTRUMENTS.com ISO 9001:2000 Certified Quality Management System

North America
Tel: +1 888 965 6040
Fax: +1 866 965 9293
info@adinstruments.com

United kingdom
Tel: +44 1865 891 623
Fax: +44 1865 890 800
info.uk@adinstruments.com

Germany
Tel: +49 6226 970105
Fax: +49 6226 970106
info.de@adinstruments.com

Asia
Tel: +86 21 5830 5639
Fax: +86 21 5830 5640
info.cn@adinstruments.com

South East Asia
Tel: +60 3 8023 6305
Fax: +60 3 8023 6307
info.sea@adinstruments.com

Japan
Tel: +81 52 932 6462
Fax: +81 52 932 6755
info.jp@adinstruments.com

Australia
Tel: +61 2 8818 3400
Fax: +61 2 8818 3499
info.au@adinstruments.com

Indian Subcontinent
Tel: +91 93 1225 2800
Fax: +91 11 2766 2591
info.in@adinstruments.com

South America
Tel: +56 2 356 6749
Fax: +56 2 356 6786
info.cl@adinstruments.com

International
Tel: +61 2 8818 3400
Fax: +61 2 8818 3499
info.au@adinstruments.com

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