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Find the *ADInstruments ML132* at our website: ***Click HERE***

ML132 Bio Amp

Signal Conditioner Series

Description

The ML132 Bio Amp is a fully isolated, high performance differential amplifier with filter settings optimized for the measurement of a wide variety of biological signals including EEG, ECG and EMG. The ML132 comes equipped with an output jack for headphones or powered speakers, a subject cable and lead wires. The ML132 Bio Amp is approved IEC601-1 (BF body protection) for human connection.



Compatibility

The 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.

Accessories suitable for use with the Bio Amp include:

MLA700	Reusable ECG Electrodes
MLA710	Chest ECG Electrodes
MLAWBT9	EEG Flat Electrodes
MLA2340	3-Lead Shielded Bio Amp Cable
MLA2503	Shielded Lead Wires (3 pack)
MLA0112/S	ECG Lead Switch Box

Features and Benefits

- Full electrical isolation from power-line (mains) circuitry to guarantee subject safety
- 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
- Audio output for use with EMG or EEG signals and similar

Applications

EEG, ECG and EMG, sensory nerve action potentials (SNAP), visual evoked response (VER), cortical evoked potentials and smooth muscle studies.

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Specifications

Input

Connection type:	Six-pin DIN/MS socket to fit 3-Lead Bio Amp Cable (Tronomed D-1340)
Input configuration:	1 isolated differential channel with isolated ground reference
Input impedance:	200 MΩ differential, 30 pF (no cable) or 200 pF (supplied Bio Amp cable and leads) to isolated ground
Safety:	Approved to IEC601-1 BF (body protection) standard



Isolation:	4000 V_{rms} (50 Hz for 1 minute)
Amplification ranges:	±5 µV to ±100 mV full scale in 14 steps
	(combined PowerLab and Bio Amp)
	±100 mV ±50 mV ±20 mV ±10 mV ±5 mV ±2 mV ±1 mV ±500 µV ±200 µV ±100 µV ±50 µV ±20 µV ±10 µV ±5 µV
Gain accuracy:	±1.5 % all ranges
Non-linearity:	<0.1% within range
Noise at various bandwidths:	
• 1 Hz to 5 kHz:	<1.3 μV_{rms} (<8 µV p-p)
• 0.3 Hz to 1 kHz:	<0.6 μV_{rms}
• 0.1 Hz to 100 Hz:	<0.35 μV_{rms} (@ 200 samples/second)

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IMRR (isolation mode):	>130 dB (to true earth, 50 to 100 Hz)
CMRR (common mode):	85 dB (typical) @ 60 Hz
Input leakage current:	<3 µArms @ 240V, 50 Hz
	<2 µArms @ 120V, 60 Hz
DC blocking:	±1 V
Baseline restoration:	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.

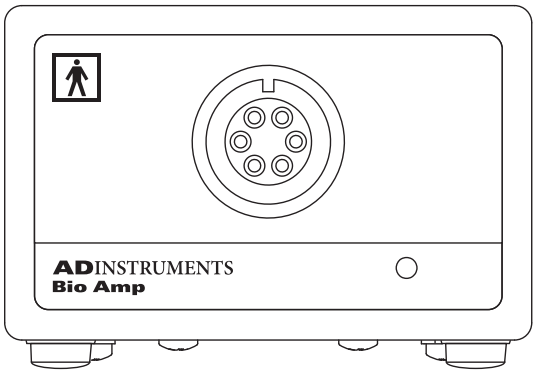
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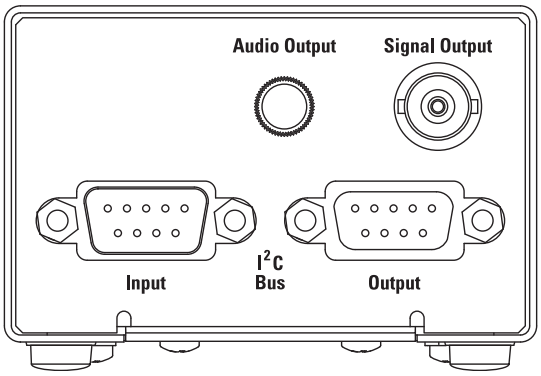
WARRANTY: ADInstruments PowerLab Systems, Front-end and Pod Signal Conditioners are warranted against defects in materials and workmanship for a period of 3 years from the date of purchase. Third party products are covered by the manufacturer's warranty. Warranties are void if the product has been damaged 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

ML132 Bio Amp

Includes:

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

BNC to BNC Cable

MLA2340 3-Lead Shielded Bio Amp Cable

MLA2503 Shielded Lead Wires (3)

Bio Amp Owner's Guide

For use with:

MLA700 Reusable ECG Electrodes

MLA710 Chest ECG Electrodes

MLAWBT9 EEG Flat Electrodes

MLA2340 3-Lead Shielded Bio Amp Cable

MLA2503 Shielded Lead Wires (3 pack)

MLA0112/S ECG Lead Switch Box

ML132-DC-09A

ADINSTRUMENTS.com ISO 9001:2008 Certified Quality Management System

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