

MODEL 2122 / 2122i BIOAMPLIFIER



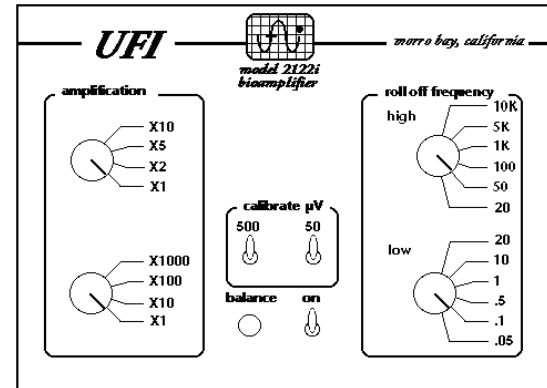
BioAmplifier
Input Box included

UFI
545 Main Street, Suite C-2
Morro Bay, CA 93442

Introduction

The Model 2122 is a differential amplifier for use with low-level signals -- 2 microvolts and above -- ranging from DC to 10 KHz. Primarily designed as biological instrumentation, the Model 2122 is well suited to many other demanding applications. It features high common-mode rejection, high input impedance, low noise, small size, and excellent frequency response. The Model 2122i includes subject isolation, but is otherwise identical to the standard Model 2122. A BioAmplifier Input Box with convenient binding post terminals is an included accessory.

Controls and connectors



Power switch

- Connects power supply to BioAmplifier; should be left in OFF position when instrument is not in use.

Amplification switch

- Provides 16 fixed-gain settings; Model 2122 frequency response does not change with gain.

High- and low-frequency rolloff switches

- Use these controls to filter out undesirable or interfering signals. Here are recommended settings for various bioelectric signals:

Desired signal	Low freq (Hz)	High freq (Hz)
EKG	0.1	50
EEG	1.0	50
EMG	10	1000
EOG	0.05	50

- 0.05 Hz and 0.1 Hz settings have long time constants; Model 2122 may require 30 seconds to stabilize when first turned on with these settings.

Calibrate μV switches

- Active circuit generates symmetrical square waves at about 0.5 Hz, and may be used to test amplifier at any time.

- Press 500 μV switch to disconnect signal and feed 500 μV calibration to Model 2122 input.
- Press 50 μV switch to disconnect signal and feed 50 μV calibration signal to input.
- Calibrator voltage is usually accurate to 5%.
- Bioamplifier may require rebalancing when calibrating.

Balance adjust control and meter

- Since the Model 2122 responds to frequencies as low as DC (0 Hz), you'll need to adjust this control when a signal has a DC (offset) component.
- Connect transducer, set amplification to 100.
- Adjust 10-turn balance control in direction you meter needle to move: clockwise for higher reading, counter-clockwise for lower.
- Balance control can compensate for some offset due to electrode polarization potentials: 100-150 mV offset for gains of 200-1000; 10-15 mV offset for gains of 2000 to 10,000.
- If meter cannot be centered with balance control, input offset is excessive.
- To check for this, press 500 μV calibrator switch and adjust balance control. Meter needle should return to zero and fluctuate with calibrator pulses.
- If this is not possible, a) reduce amplification to x1000 or less; b) switch to AC position on Model 2122 Input Box; c) use better Ag/AgCl electrodes such as UFI Model 1081.

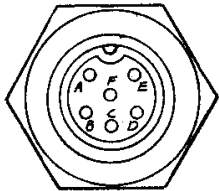
- *To input a single-ended signal into Model 2122, ground unused differential Model 2122 input, then adjust balance control.*

Power connector

- Model 2122 operates from 12VDC wall-mount power supply plugged into 110VAC mains.
- Use only UFI-supplied wall-mount supply – others may have reversed-polarity connectors.

Input connector

- Model 2122 features a 6-pin input connector (viewed from rear, below); pin functions are:



Pin	Function
A	+ Signal (non-inverting)
B	+9V excitation through 10K
C	Signal ground
D	Excitation ground
E	- Signal (inverting)
F	Driven shield

- Energize high-resistance strain gauges (like UFI Models 1030 and 1040) or similar full-bridge transducers with the +9V pin. A 0K resistor limits Pin B current to less than 0.7 mA.
- Driven Shield (Pin F) supplies buffered sum of inputs from Pins A and E; connect F to transducer shield for signal with large common-mode component.

BioAmplifier Input Box

- Plugs into Model 2122 input connector
- Connects wire-terminated transducers.
- AC switch position blocks DC component.

Rear-panel outputs

- 1000-ohm output impedance allows Model 2122 to drive oscilloscope or virtually any recorder.
- Use DC output for signals that require DC response like those from Models 1030/1040.
- Use AC output for bioelectrical signals such as ECG, EEG and EMG.
- Both outputs operate at all times: you can simultaneously record large-signal DC response and small superimposed "AC" variations.
- Both DC and AC outputs respond to amplification and high-frequency rolloff switches.
- Only AC output responds to low-frequency rolloff switch; it does not affect DC output.

Model 2122 specifications

- | | |
|-------------------------|--------------------------------------|
| • Input impedance | 10 megohms |
| • Input connector | Switchcraft EN3P6F; fits EN3C6M plug |
| • Freq response | DC to 10kHz +/- 3 dB |
| • Frequency rolloff | -12 dB/octave |
| • Common mode rejection | 90 dB minimum |

