Model 410

Four-Channel Amplifier and Signal Conditioner

Description

The Brownlee Precision Model 410 is a four-channel general purpose laboratory amplifier. It can be used to amplify small signals from signal sources which may have a large common-mode level and high frequency noise. Each channel consists of a high gain/low noise amplifier, an input coupling selector, a 2-pole lowpass filter, and an output offset control. A control knob sets the amplifier parameter and the values are displayed on a bright LED alphanumeric readout.

Key Features

- Clear front panel controls for all settings
- Calibrated gains from 1 to 10,000
- Single-ended or differential inputs
- 2-pole elliptic lowpass filter with range 1 kHz to 25kHz
- AC or DC input coupling
- Output offset control to shift output up to +/- 10 Volts
- Low noise circuitry
- Self-trimming feature to remove internal offsets
- Memory on each channel
- Powerful output which can directly drive transducers
- Wide bandwidth: greater than 200 kHz on all gains

OPERATION:

The Brownlee Precision Model 410 is a rugged, precise, and easy to use laboratory amplifier. It is well suited to a wide variety of research and test applications, particularly in the electrophysiology field.

Each of the four amplifiers has a non-inverting (A) and an inverting (B) input with front panel BNC connectors. The inputs can be switched to be DC-coupled, AC-coupled, or grounded. The differential or single-ended signal is amplified by the selected gain, and high frequency noise is rejected by the adjustable lowpass filter. The output level may be shifted by as much as +/- 10 Volts with the output offset control.

The Model 410's input voltage noise is only 1.5μV_{rms} or 10 $\mu V_{peak\ to\ peak}$ (measurement bandwidth of 10 kHz).

Each channel functions independently and the circuitry is designed to prevent crosstalk. The output is capable of driving large currents and capacitive loads.

The front panel interface of this amplifier preserves the simplicity and "feel" of older analog instruments while taking advantage of the benefits of digital control.

Changing an amplifier setting is as easy as pushing a parameter button ("Gain" for exampled) and turning the control knob up or down until the desired setting is reached. Unlike a potentiometer however, the settings increment or decrement through discrete, calibrated steps. The bright LED alphanumeric readout displays the exact value ("Gain= 250" for example).

A complete setup may be stored for each channel in memory.

This product is manufactured in U.S.A. by Brownlee Precision Co.

If additional features are desired (such as 8-pole Bessel lowpass filter, Auto-Zero, line notch filter, highpass filter, multiple memories per channel, and DVM), the please consider the Brownlee Precision Model 440.

Brownlee Precision Co. is a division of NeuroPhase LLC.

SPECIFICATIONS:

Gain:
Range: 1 to 10,000
Steps: 1, 1.5, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, and factors of 10 thereafter
Gain Accuracy: < 2% error

Lowpass Filter:
Range: 1 kHz to 25 kHz, plus wideband.
Steps: 1, 1.5, 2, 3, 5, 7, 10, 15, 20, 25 (all kHz), and wideband
Characteristics: 2-pole elliptic
Wideband Frequency Response: 200 kHz min., all gains

Input:
Selection: A, -B, A-B, or Grounded
Coupling: AC (1 Hz cutoff) or DC
Impedance: 1 MΩ, 20 pF
Bias Current: 20 pA
Offset Voltage: 15µV, max.
Voltage Range: +/- 10V
CMRR: > 70dB, all gains
Noise: 1.5 μV_{rms} (10 $\mu V_{peak\ to\ peak}$) @ 10 kHz

Output:
Voltage Range: +/- 10 V
Current Drive Capability: +/- 100 mA
Slew Rate: 10 V/µS
Output Offset Control Range: +/- 10 V in .5V steps
Noise: 500 μV_{rms} (3mV $_{peak\ to\ peak}$) @ 10 kHz

Warranty:
12 months, parts and labor

Warning:
This product is not for use on human subjects

International Orders:
The Model 410 can be specially configured for international operation. Please specify linecord, voltage, and frequency when ordering.

All specifications are typical unless indicated as min. or max. This data is preliminary and subject to change without notice. 10/2012.

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