4110

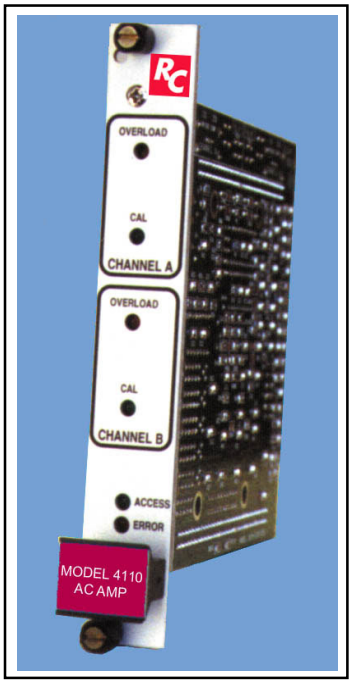
Programmable AC Amplifier

Description

The Dynamics 4110 dual channel programmable AC Amplifier is a dual-channel, high gain device. It was designed for use in neuro-physiology and physiology research using surface, intracellular, extracelluar, or micro-machined silicon electrodes. This amplifier comes complete with high and low pass filters for working with very sensitive low level signals. The 4110 is typically used as a second stage high gain amplifier following an X1 or X10 pre-amplifier from the electrode to remove DC and low frequency voltage signals.

The Dynamics 4110 has four discrete user programmable high pass filters set at 1, 5, 100, and 500 Hz. Four selectable low pass filters set at 1, 5, 10 and 20 kHz are provided to prevent high frequency noise from affecting the digitizing system. An innovative multi-stage gain amplifier is used to handle the high gain bandwidth requirement (20 kHz bandwidth X 50K gain = 1 GHz bandwidth) and to provide fine gain control with gains up to 50,000 in 65,000 discrete steps. An LED overload light on the front panel serves as a quick visual indicator of signal saturation.

The 4110 is designed to quickly troubleshoot large channel count applications. If a noisy signal is found, the input to the amplifier can be disconnected and shorted using an on-board relay to determine if the noise is generated before or after the amplifier. A low level selectable 200µV or 2mV 1 kHz sine wave oscillator can be switched into the input to verify that the amplifier is operational and at a proper gain setting.



4110 Dual Channel AC Amp

Features

- **Dual Channel AC Amp**
- **1Hz to 20 kHz Bandwidth**
- **High Gain from 1 to 50,000**
- **4 Position High Pass Filter: 1, 5, 100, 500 Hz**
- **4 Position Low Pass Filter: 1, 5, 10, 20 kHz**
- **65,000 Fine Gain Steps**
- **Amplifier Test**
  Input Short
  1 kHz Sine Wave
- **LED Overload Indicator**

Specifications

AC Amplifier	
Variable Gains	1 to 50,000
Frequency Response	1 Hz to 20 kHz
Common Mode Rejection	>100dB, Gain = 10,000
Gain Accuracy	±0.5%
Input Noise	1 µV rms
Output Noise	3 mV rms
Output	
Voltage Range	±10V @ 5 mA
Output Impedance	100Ω
Short Circuit Protection	Yes
Overload Indicator Settings	7V and 10V
High Pass Filter	
Type	2 Pole Butterworth
Corner Frequencies	1 Hz, 5 Hz, 100 Hz, 500 Hz
Low Pass Filter	
Type	2 Pole Butterworth
Corner Frequencies	1kHz, 5kHz, 10kHz, 20kHz
Environmental	
Power Requirements	±15V @ 50mA +5V @ 100mA
Operating Temperature	0°C to 50°C
Test Signal	2 mVpp or 0.2mVpp, 700 Hz

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