

Phillips Scientific

Quad DC-300 MHz Amplifier

NIM MODEL 770 771

FEATURES

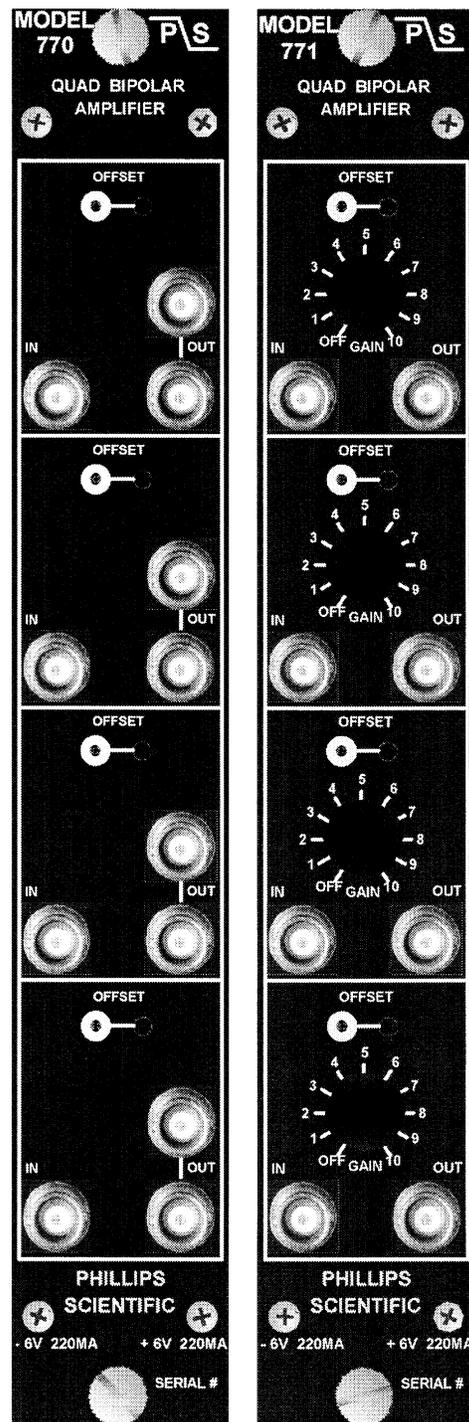
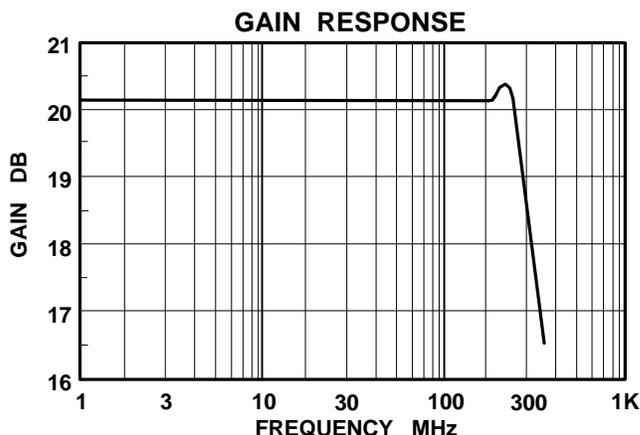
- * Model 770 with a Fixed Gain of Ten
- * Model 771 with Calibrated Gains from One to Ten
- * Four Channels Per NIM Module
- * DC to 300 MHz Bandwidth
- * Typically 1nSec Risetime and Falltime
- * Cascadable for Higher Gains
- * Noise Less than 25 μ V RMS
- * Offset Control with ± 250 mV Range
- * Inputs and Outputs Protected
- * Excellent Stability - Gain and Offset

DESCRIPTION

The Models 770 and 771 are four channel, direct-coupled amplifiers packaged in a single width NIM module. The Model 770 provides a non-inverting voltage gain of ten, and the Model 771 features calibrated gain steps from one to ten. Both models are fully bipolar and capable of amplifying positive or negative signals making them compatible with most detectors or preamplifiers.

Stability was given particular attention during the amplifier's design. Both the DC and fast pulse characteristics are exceptional. This allows for cascading of channels for gains in excess of 500 without suffering significant overshoot or baseline drift. Each channel has individual offset controls which can compensate for DC offsets due to the input source impedance or differences in ground levels.

The output stage is a low-impedance voltage source design with short-circuit protection. No damage can occur from overloading or continuous shorts to ground. The outputs have been designed to drive two 50 ohm loads for fanout of the amplified signal. However, unused outputs may be left unterminated with no adverse effects.



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INPUT CHARACTERISTICS

General :

One input connector per channel; bipolar input, accepts positive or negative voltages.

Impedance :

50 ohms $\pm 1\%$ direct coupled input.

Protection :

Protected with clamping diodes, no damage will occur from transients of ± 100 Volts (± 2 Amps) for 1μ Sec or less duration.

Reflections :

Less than $\pm 4\%$ for input risetime of $1n$ Sec.

Input Offset :

Less than $\pm 300\mu$ Volts, typically 12μ Amps.

Overdrive Response :

Recovery time of $20n$ Sec for a ± 1 Volt input.

OUTPUT CHARACTERISTICS

General :

Model 770: Two bridged output connectors per channel.

Model 771: One output connector per channel. Low impedance voltage source output stage.

Both the 770 and 771 are capable of driving two 50 ohm loads.

Protection :

Outputs can be continuously shorted to ground without damage.

Output Voltage Swing :

Bipolar outputs deliver over ± 2.5 Volts across single 50 ohm load, and ± 2 Volts across two 50 ohm loads.

DC Offset :

A front panel 15-turn potentiometer provides $\pm 250m$ Volt adjustment. A front panel test point allows easy monitoring of the DC offset.

GENERAL PERFORMANCE

- Gain** : Model 770 : Fixed gain of 10, $\pm 2\%$, non-inverting.
Model 771 : Calibrated gain steps from 1 to 10, $\pm 2\%$ non-inverting.
- Stability** : Better than $\pm 5.0\mu$ Volt/ $^{\circ}$ C from DC to 1 MHz, and $\pm .01\%$ / $^{\circ}$ C above 1MHz.
- Linearity** : $\pm 0.1\%$ for ± 2.0 Volts across one 50 ohm load or ± 1.5 Volts across two 50 ohm loads.
- Bandwidth** : DC to 300 MHz, 3 db point for 1 Volt peak to peak.
- Wideband Noise** : Less than 25 μ Volts RMS, referred to the input ($1.5nV/\sqrt{Hz}$).
- Risetime** : Typically $1.1n$ Sec, for a 1 Volt output excursion.
- Insertion Delay** : Typically $3.5n$ Sec.
- Crosstalk** : Greater than 60 db, DC to 300 MHz.
- Power Supply Requirements** : +6V @ 220 mA -6V @ 220 mA
Note: All currents are within NIM power supply limits for a single width NIM module.
- Operating Temperature** : 0° C to 70° C ambient.
- Packaging** : Standard single width NIM module in accordance with TID-20893 and Section 524.
- Connector Type** : BNC connectors, unless otherwise specified. (LEMO or SMA female are available as options).
- Quality Control** : Standard 36 hour cycled burn-in with switched power cycles.