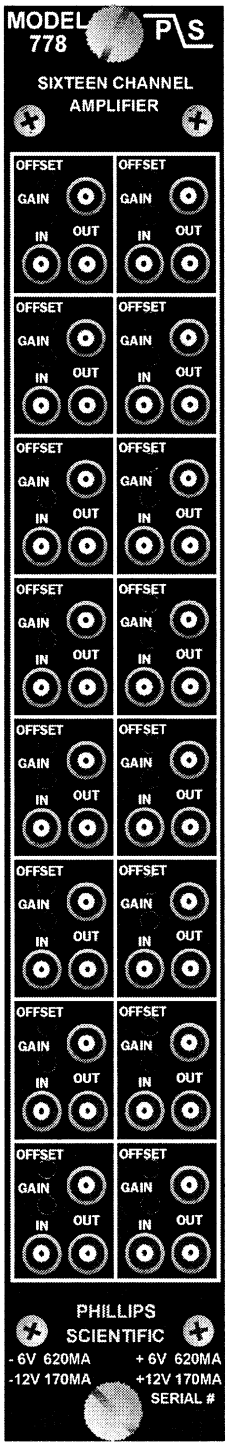
Phillips Scientific

16 Channel Variable Gain Amplifier

NIM MODEL 778

FEATURES

* *Wideband - DC to 200 MHz*
* *Variable Gains from 2 to 50*
* *Low Noise Performance*
* *Excellent DC and Gain Stability*
* *16 Channels in a Single Width NIM*
* *Inputs and Outputs Protected*



DESCRIPTION

The Model 778 is a high performance, variable gain preamplifier with 16 channels in a single width NIM module. It is designed to operate with photomultiplier detectors producing negative output pulses from DC to over 200 MHz. Each channel has a 50 ohm input, a front panel gain adjustment providing non-inverting voltage gains from two to fifty, an offset control, and two outputs.

Excellent stability for both DC and higher frequencies helps to maintain good pulse fidelity without significant pulse overshoot or baseline drift. The DC offset control can easily compensate for offsets due to variations in source impedance or differences in signal grounding.

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. Each output is capable of driving a 50 ohm load providing a fan-out of two for the amplified signal. However, unused outputs may be left unterminated with no adverse effects.

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INPUT CHARACTERISTICS

General:

One LEMO input connector; 50 ohms ±2% Direct Coupled; less than ±4% input reflection for a 2.0nSec input risetime. Input protection clamps at ±.7Volt and can withstand ±2Amps (±100V) for the duration of 1mSec or less with no damage to the input.

Wideband Noise:

Less than 25mVolts RMS, referred to the input. Noise spectral density of less than 1.5nV/ÖHz at maximum gain.

Input Offset Voltage:

Less than ±300mVolts with 50 ohm source impedance.

Overdrive Recovery Time:

Less than 25nSec for a 1 Volt input.

OUTPUT CHARACTERISTICS

General:

Two bridged LEMO connectors per channel, Voltage source output stage, each output is capable of driving a 50 ohm load. Unused outputs do not require terminating for proper operation.

Output Voltage Swing:

Greater than -3 Volts across 25 ohm load. Positive outputs linear to +.5 Volts across 50 ohm load or +.25 Volts across 25 ohm load.

Output Protection:

Completely protected against overloading. Outputs can be continuously shorted to ground without suffering damage.

Offset Voltage:

A front panel 15-turn potentiometer provides control of ±250 mV to compensate for offsets due to ground drops or source impedances other than 50 ohms.

GENERAL PERFORMANCE

Gain : Continuously variable from 2 to 50 via a front panel potentiometer; Non-Inverting.

Stability : Better than ±10 mV/°C, Referred to the input, and ±0.02%/°C above 1 MHz.

Integral Linearity : ±0.15% to -3 Volts, DC to 100 MHz into 50 ohms.

Bandwidth : DC to 200 MHz minimum, 3 db point; 1 Volt output excursion.

Risetime and Falltime : Less than 1.8 nSec for a 1 Volt excursion into 50 ohms.

Crosstalk : Greater than 60 db isolation between channels, DC to 100MHz.

Input to Output Delay : Typically 4.5 nSec, 5.0 nSec maximum.

Power Supply Requirements : – 6 Volts @ 620 mA* –12 Volts @ 170 mA
+ 6 Volts @ 620 mA* +12 Volts @ 170 mA
* **Note:** This module requires more current than specified in the NIM standard. Phillips Scientific Model 702 NIM Power Supply is recommended for a full bin of 12 modules.

Operating Temperature : 0 °C to 70 °C ambient.

Packaging : Standard single width NIM module in accordance with TID-20893 and Section ND-524.

Quality Control : Standard 36-hour, cycled burn-in with switched power cycles.

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