

Phillips Scientific

32 Channel Photomultiplier Preamplifier

NIM MODEL 779

FEATURES

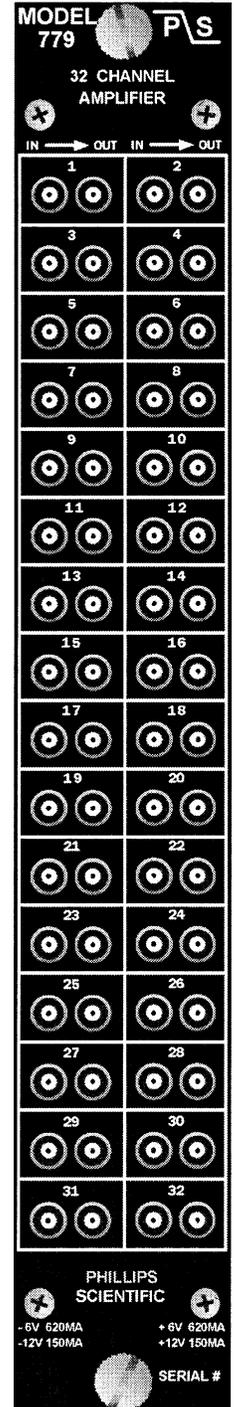
- * Ideal for Many Detectors Types
- * High Packaging Density - 32 Channels
- * Wideband - Direct Coupled to 275 MHz
- * Low Noise Performance
- * Excellent Stability
- * Low Cost

DESCRIPTION

The Model 779 is a 32 channel preamplifier packaged in a single width NIM module. Each channel has a non-inverting voltage gain of 10 and operates from DC to over 275 MHz, with one output capable of driving two 50 ohm loads per amplifier. It is designed for use with photomultiplier detectors having negatively going output pulses. Both the input and output stages are protected for reliable operation.

This amplifier exhibits excellent DC and high frequency stability. Two channels can be cascaded to obtain voltage gains of 100, while maintaining good pulse fidelity without significant overshoot or baseline drift. Each channel has an internal DC offset adjustment allowing for compensation of the DC output due to variations of input source impedance or grounding differences.

The output stage is a low-impedance voltage source design with short-circuit protection. No damage will occur from overloading or continuous shorts to ground. Front panel space limitations allow for only one output connector, however each output is capable of driving two 50 ohm loads.



Phillips Scientific

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INPUT CHARACTERISTICS

General:

One LEMO input connector; 50 ohms $\pm 2\%$, direct coupled; less than $\pm 4\%$ input reflection for a 2nSec input risetime. Input protection clamps at $\pm 0.7V$ and can withstand $\pm 2Amps$ ($\pm 100V$) for the duration of 1 μ Sec or less with no damage to the input.

Wideband Noise:

Less than 25 μ Volts RMS, referred to the input. Noise spectral density of less than 1.5nV/ \sqrt{Hz} .

Input Offset Voltage:

Less than $\pm 300\mu$ Volts with 50 ohm source impedance.

Overdrive Recovery Time:

Less than 20nSec 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 Control:

An internal 15-turn potentiometer provides control of $\pm 100mV$ to compensate for offsets due to ground drops or source impedances other than 50 ohms.

GENERAL PERFORMANCE

- Gain** : 10 $\pm 2\%$, Non-inverting.
- Stability** : Better than $\pm 5.0 \mu V / ^\circ C$, Referred to the input, and $\pm 0.01\% / ^\circ C$ above 1 MHz.
- Integral Linearity** : $\pm 0.1\%$ to -3 Volts, DC to 100 MHz into 50 ohms.
- Bandwidth** : DC to 275 MHz minimum, 3 db point, 1 Volt output excursion.
- Risetime** : Less than 1.3nSec, for a 1 Volt excursion into 50 ohms.
- Crosstalk** : Greater than 60 db, DC to 100 MHz.
- Input/Output Delay** : Typically 3.0nSec, 3.5nSec maximum.
- Power Supply Requirements** : +6 V @ 620 mA* +12 V @ 150 mA
-6 V @ 620 mA* -12 V @ 150 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 $^\circ C$ to 60 $^\circ C$ ambient.
- Packaging** : Standard single width NIM module in accordance with TID-20893 (Rev.) and Section ND-524.
- Quality Control** : Standard 36 hour, cycled burn-in with switched power cycles.