ORTEC®

AMETEK®

113
Scintillation Preamplifier

- **Designed for photomultiplier tubes**
- **Input capacitance switch for selectable sensitivity**
- **Input protected**
- **Economical**





The ORTEC Model 113 Scintillation Preamplifier is designed for use with dynode or anode signals from photomultiplier tubes. The charge in the photomultiplier output pulse is integrated on the input capacitance of the preamplifier to produce a voltage pulse. A non-inverting voltage amplifier (gain ≈ 1) drives this pulse into the output load. Switch selection of the input capacity permits control of the sensitivity of the preamplifier. The input capacity of the Model 113 is ~45 pF plus the capacity selected by a front-panel switch (0, 100, 200, 500, or 1000 pF).

The Model 113 should be used with a shaping main amplifier, such as ORTEC Model 460, 570 Series, 671, 672, and 590A.

A diode network prevents destruction of the input transistor if a sudden positive or negative high voltage is applied to the input.

Specifications

PERFORMANCE

RISE TIME <60 ns.

PREAMPLIFIER FALL TIME Fall time constant is designed for 50 µs, assuming a signal source impedance of 1 MΩ.

INTEGRAL NONLINEARITY ≤±0.02%.

TEMPERATURE COEFFICIENT ±0.01%/°C, 0 to 50°C.

COUNTING RATE The gain shift of a 250-mV reference pulse is <0.25% with the application of an additional count rate of 65,000 counts/s of 200-mV random pulses.

NOISE <0.1 mV rms at output.

CONTROL

INPUT CAP Switch selects desired input capacity: 0, 100, 200, 500, or 1000 pF.

INPUTS

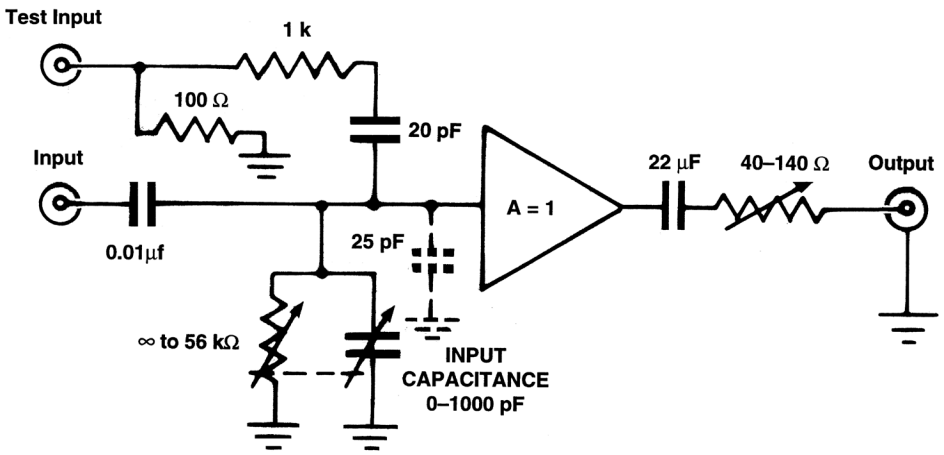
INPUT BNC connector; isolated for 1000 V; positive or negative polarity; input impedance is 45 pF plus the capacity selected by the front-panel switch (0, 100, 200, 500, or 1000 pF), shunted by the resistance needed to preserve a 50-µs decay time constant (see Fig. 1).

TEST BNC connector accepts a pulse generator output with fast rise and slow decay to check operation of the electronics; input impedance 100 Ω.

Power Input power through captive power cable from ORTEC main amplifier or ORTEC Model 4002P Portable Power Supply.

OUTPUT

BNC connector; output impedance adjustable from 40 to 140 Ω. Output saturation level ±10 V into open circuit; ±5.1 V into 100-Ω load. Linear output ±7 V into open circuit; ±3.5 V into 100-Ω load.



ELECTRICAL AND MECHANICAL

POWER REQUIRED +24 V DC, 17 mA; –24 V DC, 17 mA.

WEIGHT
Net 0.65 kg (1.5 lb).
Shipping 1.05 kg (2.3 lb).

DIMENSIONS 4.5 X 10.2 X 15.3 cm (1.75 X 4 X 6 in.).

Related Equipment

The Model 113 can be operated with any ORTEC shaping main amplifier. Test input pulses can be furnished from any ORTEC Pulse Generator.

Ordering Information

To order, specify:

Model	Description
113	Scintillation Preamplifier

Suggested cable accessories:

C-24-1/2	RG-62A/U 93-Ω Cable with two BNC male plugs; 6-in. length
C-24-12	RG-62A/U 93-Ω Cable with two BNC male plugs; 12-ft length

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Specifications subject to change
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