

## **Detailed specifications (Dual Amplifier)**

- One NIM single width unit should contain two energy spectroscopy amplifiers.
- Should have selectable shaping time constants (0.5, 1.5, and 3  $\mu$ s).
- Should have gated active baseline restorer for high-count-rate applications.
- Should have automatic baseline restorer threshold control.

### **PERFORMANCE:**

GAIN RANGE: Continuously adjustable from 5 to 1250.

PULSE SHAPE: Semi-Gaussian on all ranges with peaking time equal to 2.2t, 50% pulse width equal to 3.3t, and pulse width at 0.1% level equal to 4.0 times the peaking time. Bipolar crossover = 1.5t.

INTEGRAL NONLINEARITY: For 1.5- $\mu$ s shaping time,  $<\pm 0.05\%$ .

NOISE:  $<5 \mu$ V rms referred to the input using 3- $\mu$ s unipolar shaping;  $<7 \mu$ V using 1.5- $\mu$ s shaping; both for gain  $>100$ .

TEMPERATURE INSTABILITY:

Gain  $<\pm 0.0075\%/^{\circ}\text{C}$ , 0 to 50 $^{\circ}\text{C}$ .

DC Level  $<\pm 30 \mu$ V/ $^{\circ}\text{C}$ , 0 to 50 $^{\circ}\text{C}$ .

BIPOLAR CROSSOVER WALK:  $<\pm 5$  ns at 0.5- $\mu$ s shaping for 50:1 dynamic range

RESTORER: Gated active baseline restorer with automatic threshold circuit to provide the threshold level as a function of signal noise to the baseline restorer discriminator.

### **CONTROLS:**

FINE GAIN: Ten-turn precision potentiometer with graduated dial for continuously variable direct-reading gain factor of X2.5 to X12.5.

COARSE GAIN: Six-position switch selects feedback resistors for gain factors of 2, 4, 10, 20, 40, and 100.

SHAPING TIME: Three-position printed wiring board(PWB) jumpers, easily accessible through side panel, to select time constants for active pulse-shaping filter network of 0.5, 1.5, or 3  $\mu$ s.

POS/NEG: PWB jumper to select either Pos or Neg input pulse polarity.

PZ ADJ: Screwdriver-adjustable potentiometer to set the pole-zero cancellation

### **INPUTS:**

INPUT: BNC Front- and rear-panel connectors for accepting either positive or negative pulses with rise times of 10 to 650 ns and decay times of 30  $\mu$ s to infinity,  $Z_{in} = 1000$  Ohm dc- coupled; linear maximum 2 V; absolute maximum 20 V.

### **OUTPUTS:**

UNI: Front-panel BNC connector with  $Z_o < 1$  Ohm and rear-panel connector with  $Z_o = 93$  Ohm. Short-circuit proof; full-scale linear range from 0 to +10 V; active filter shaped; dc-restored with dc level adjustable to  $\pm 15$  mV.

BI: Front-panel BNC connector with  $Z_o < 1$  Ohm and rear-panel connector with  $Z_o = 93$  Ohm. Short-circuit proof; positive lobe leading and full-scale linear range of 0 to +10 V; active filter shaped.

PREAMP POWER: Rear-panel standard power connector for preamplifiers.