



## SIGNAL PROCESSING

# 2007B™

*Scintillation Preamplifier*

This amplifier features high voltage transient protection for a longer life in your lab.



## FEATURES

- Low preamp power requirement  $\pm 12$  V dc at 15 mA
- Compatible with Accuspec NaI Plus
- HV transient protection

## DESCRIPTION

The Model 2007B low-noise charge-sensitive preamplifier integrates the charge pulse from a PMT (decoupled from the anode) and converts it into a convenient positive voltage pulse output. The peak amplitude of each output pulse is linearly proportional to the total charge output of the PMT during each amplified photo event. The pulse is set to decay at a nominal 50  $\mu$ s time constant, and interfaces directly with any of the Mirion spectroscopy amplifiers.

The 2007B unit generates a positive polarity output pulse in response to a typical input signal from a photomultiplier's decoupled anode. This amplifier features high voltage transient protection for a longer life in your lab, low noise contribution for better resolution and a rise time of less than 20 ns for use in timing applications.

## SPECIFICATIONS

### Inputs

- Detector: Accepts decoupled negative charge pulses from scintillation detector's PMT; input limit  $\pm 100$  V dc; ac coupled
- Test input: Accepts a negative polarity tail pulse from a test pulse generator; charge coupled 100 pC/V to preamplifier input; voltage gain to output is 0.45 V/V, nominal;  $Z_{in} = 93 \Omega$

### Outputs

- Output: Provides unipolar positive pulses linearly proportional in peak amplitude to charge delivered from PMT. Decay time constant = 50  $\mu$ s, nominal; rise time  $< 20$  ns; delivers up to 10 V, peak;  $Z_{out} = 93 \Omega$

### Performance

- Integral non-linearity:  $< \pm 0.04\%$  for up to 10 V output
- Gain drift:  $< \pm 0.01\%$  per  $^{\circ}\text{C}$  ( $\pm 100$  ppm/ $^{\circ}\text{C}$ )
- Noise:  $< 1.2 \times 10^{-15}$  Coulombs rms, referred to input
- Charge sensitivity: 4.5 mV/pC, nominal

### Connector Types and Cables

- Output, test input, detector input: BNC
- Power: Amphenol 17-20090 (male)
- Power cable: 3 m (10 ft) C-1402 cable provided

### Power Requirements

- +12 V dc -15 mA dc, nominal
- -12 V dc -15 mA dc, nominal

### Physical

- Height: 4.45 cm (1.75 in.)
- Width: 7.62 cm (3 in.)
- Depth: 9.86 cm (3.88 in.); 12.07 cm (4.75 in.) including connectors
- Net weight: 306 gm (0.68 lb)

### Environmental

- Operating temperature – 0 to 50  $^{\circ}\text{C}$
- Operating humidity – 0 to 80% relative, non-condensing
- Meets the environmental conditions specified by EN 61010, Installation Category I, Pollution Degree 2

