



**Model PCP5**  
**Proportional Counter Preamplifier**  
**for Mössbauer Applications**  
**Operating Manual**

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# Model PCP-5

# PROPORTIONAL COUNTER PREAMPLIFIER

**///FAST**

## FEATURES

- **Very low noise design:** less than 260 ion pairs RMS at 20 pF
- **High count rate capability:**  $1 \times 10^{-5}$  Coulomb/s
- **Fast risetime:** less than 15 nsec at 0 pF, 60 nsec at 300 pF

## APPLICATIONS

- **Mössbauer Spectroscopy**
- **Low energy X-Ray analysis**
- **other general purpose use**

## DESCRIPTION

The PCP-5 is a charge sensitive preamplifier for use with Proportional Counter Detectors. The PCP-5 converts the ionisation charge from the Proportional Counter to pulse whose amplitude is proportional to the charge collected by each event. The output of the PCP-5 is compatible to any Spectroscopy Amplifier available in the NIM line of modules.

## SPECIFICATIONS

### INPUTS

Detector input: positive or negative charge pulse up to  $5 \times 10^{-9}$  Coulomb ( $3 \times 10^{10}$  Ionpairs) and provides HV bias to the detector

Test input: positive or negative pulse

High Voltage Input: For detector bias of up to  $\pm 3$  kV

### OUTPUTS

Energy Output: Inverted pulse with fast risetime and slow fall time, maximum amplitude  $\pm 7.5$  V, impedance 50 Ohms.

( risetime 15 nsec at 0 pF, 60 nsec at 300 pF; falltime approx. 100 usec)

## PERFORMANCE

Integral Nonlinearity: less than 0.1% for up to  $\pm 4$  V output.

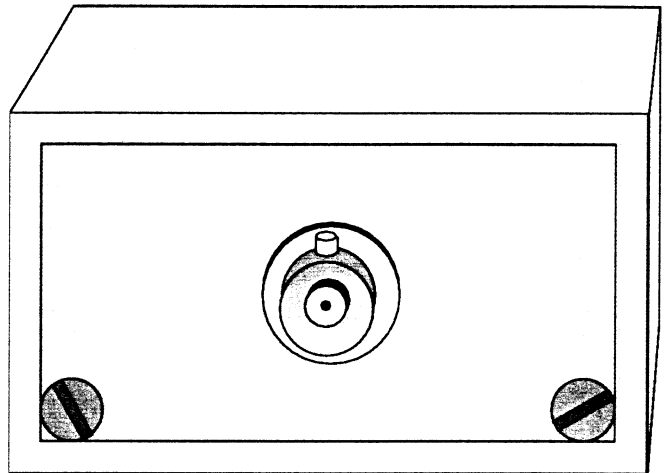
Stability: less than 0.01%/°C

Noise at 20 pF:  $< 4 \times 10^{-17}$  Coulomb RMS (260 Ionpairs RMS)

Open loop Gain  $> 50.000$

Sensitivity: approx.  $1 \text{ V} / 10^{-12}$  Coulomb/sec (0.16 uV/Ionpair)

Count rate capability:  $1 \times 10^{-5}$  Coulomb/sec ( $6 \times 10^{13}$  Ionpairs/sec)



## CONNECTORS

Detector Input: MHV ( SHV on request )

Test Input, Energy Output: BNC

HV-Input: SHV

Power: 9-pin D-sub connector

A 3m power cable is supplied with the PCP-5

## POWER REQUIREMENTS

+12V 30 mA, -12V 20 mA

## PHYSICAL

Size: 11 x 6 x 3.4 cm

Net weight: 0.3 kg

Shipping weight: approx. 0.6 kg