

Charge Sensitive Preamplifiers



Main
Features

- ▶ Small dimensions and weight
- Low noise
- Low consumption power
- Input circuit protection
- Bias filtering

Main
Applications

- ▶ Gamma ray spectrometers
- Portable instrumentation
- Room temperature semiconductor detectors



NUCLEAR RADIATION
SEMICONDUCTOR DETECTORS
AND ASSOCIATED ELECTRONICS

Charge Sensitive Preamplifiers PA 101C and PA101C/HV

Preamplifier Model PA101C and PA 101C/HV are a miniature, low noise, charge-sensitive preamplifiers for gamma-radiation spectroscopy with room-temperature-operated semiconductor detectors (CdTe, CdZnTe, HgI₂). These preamplifiers can be used with Large Volume CdZnTe Detectors CZT/500(S) or CZT/1500. The preamplifier's scheme includes bias filtering and input circuit protection.

Specifications

Basic

• noise, based on CdTe equivalent at 1 μ s shaping time and operation temperature +22 °C	
with input capacitance 0 pF	≤ 3 keV
with input capacitance 10 pF	≤ 4 keV
• charge sensitivity, based on CdTe equivalent	≥ 0.2 mV / keV
• integral nonlinearity (60 keV ... 1.33 MeV)	$\leq 0.1\%$
• gain stability (0 ... +50 °C)	$\pm 0.025\%$ / °C
• rise time	
with input capacitance 0 pF	≤ 100 ns
with input capacitance 10 pF	≤ 150 ns
• output swing range	± 1 V
• cable driving capability	up to 30 m
• output impedance	50 Ω
• detector bias isolation	
for PA 101C	± 1500 V
for PA 101C/HV	± 3000 V
• bias filtering	yes
• input circuit protection	yes
• power requirement	+12 V, 18 mA; -12 V, 12 mA

Connectors

• input	
for PA 101C	BNC
for PA 101C/HV	SHV
• output*	LEMO FGG.2B.704.CLAD

Dimensions

• diameter, length	see below
• typical connecting cable length**	0.30 m

* other connectors types are available

** other connecting cable lengths up to 30 m are available

