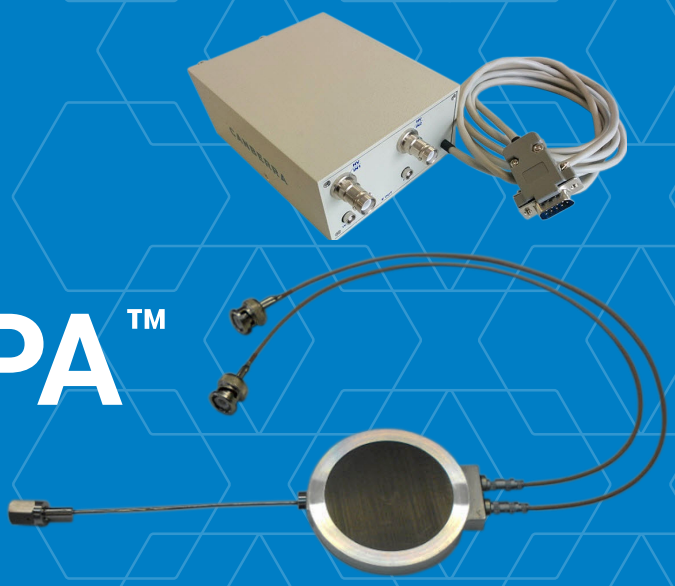
MIRION TECHNOLOGIES

PHYSICS RESEARCH

PIPSBOX-2x1200-500PA™



Detectors

FEATURES

- Two 1200 mm² PIPS® detectors
  - Active area: 2 x 1200 mm²
  - Chip thickness: 500 µm
- Stainless steel housing
- Radiological standards for RIIDs and RIDs
- Carbon windows
- Preamplifier with two channels

The PIPSBOX is a detector designed for atmospheric radioxenon monitoring.

The system is able to measure the four relevant xenon radioactive isotopes using a high resolution detection system operating in electron-photon coincidence mode. It is an innovative detection system comprised of a gas cell with two face-to-face silicon detectors typically associated with one or two germanium detectors.

The charge sensitive preamplifier has two input channels, one for each detector. It has a sensitivity of 400 mV/MeV, with positive and negative charge pulses accepted and an energy output in the range of ±3.5 V on a 50 Ω termination foreseen. It is especially designed to be used with the PIPSBOX where very low noise is required.

Product manufactured using CEA technology.

PERFORMANCE

- Electronic resolution per detector: <13 keV at 2 µs shaping time
- Leakage current per detector: <50 nA at room temperature

SPECIFICATIONS

DETECTOR

MODEL – 2x PD1200-26-500

- Depletion Depth: 475/515 µm
- Contact to Junction: wire bonding
- Junction Window Thickness: <50 nm
- Ohmic window thickness: <1500 nm

TEMPERATURE

- Operating: -20/+40 °C
- Storage: -20/+100 °C
- Capacitance – typ. 294 pF per detector
- Vacuum Tightness – leak rate 10e-10 mbar.l/s

PERFORMANCE

- Electronic Resolution – <13 keV at 2 µs shaping time per detector
- Leakage Current – <50nA per detector
- Charge Sensitivity – 400 mV/MeV
- Integral Nonlinearity – <±0.05%
- Temperature Instability – <±100 ppm/°C (0 to 50 °C)

CONNECTORS

PIPSBOX – Two LEMO connectors, one for each detector

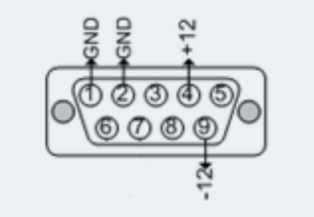
- Connectors in Assembly: SMB male
- Fitting Connectors: SMB female

PREAMPLIFIER

- HV Input – Two SHV connectors
- Detector Input – Two BNC connectors
- Energy Output – Two LEMO-00 connectors
- Test Input – Two LEMO-00 connectors
- Power – 9-pin SUB-D connector for power supply

POWER REQUIREMENTS

- HV Bias – Between 100 and 150 V for each detector, recommended value indicated on the supplied data sheet
- Preamplifier – Powered with ±12 V through the 9-pin SUB-D male connector, with the following pin-layout



PHYSICAL

- PIPSBOX: 84 x 70 x 12 mm3 (L x W x H)
- Active Volume: 10.6 cm3 between the two detectors
- Tubing: Inox 316 L (id 0.75 mm, od 1.59 mm)
- Preamplifier: 162 x 100 x 50 mm^3 (L x W x H)

SAFETY WARNINGS AND OPERATION REQUIREMENTS

- OPERATING HUMIDITY – 0-80% relative, non-condensing.
- The instrument should only be operated in the manner specified by Mirion Technologies.
- ⚠⚠ WARNING – During normal operation, a potentially hazardous high voltage bias is supplied to the detector via the preamplifier.
  - Only qualified personnel should carry out the installation, operation and maintenance of this unit.
  - The preamplifier bias circuit can remain at high voltage for a long time. The user should exercise adequate caution, to prevent personal injury due to electrical shock.
  - Completely discharge the detector bias circuit by switching off the bias supply before connecting a cable to the detector input connector.
  - Bring the high voltage value to zero and wait for at least 30-60 seconds.
- ⚠⚠ WARNING – Do not open the preamplifier cover, opening the cover can expose high voltages.
- CLEANING – Disconnect all power supplies before cleaning. Do not allow water to enter the unit. Cleaning can be performed with isopropanol or deionized water on only the external surfaces.

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ISO 9001 SYSTEM CERTIFIED MERIDEN CT ATLANTA GA OAK RIDGE TN CONCORD ON

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