



PHYSICS RESEARCH

PIPSBOX- 2x1200-500PATM

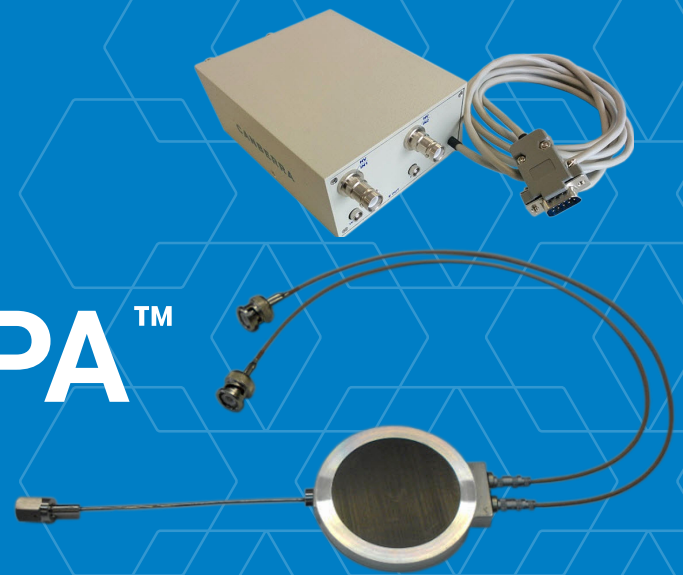
Detectors

The PIPSBOX is a detector designed for atmospheric radionuclide 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.



FEATURES

- ✓ Two 1200 mm² PIPS[®] detectors
 - Active area: 2 x 1200 mm²
 - Chip thickness: 500 μ m
- ✓ Low background housing
- ✓ Radiological standards for RIIDs and RIDs
- ✓ Carbon windows
- ✓ Preamplifier with two channels

PERFORMANCE

- ✓ Electronic resolution per detector:
<13 keV at 2 μ s 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 – $\pm 0.05\%$
- Temperature Instability – ± 100 ppm/°C (0 to 50 °C)

CONNECTORS

PIPSBOX – Two LEMO connectors, one for each detector

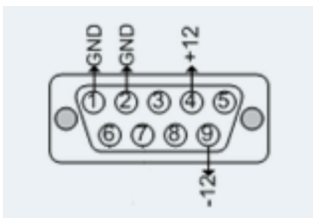
- Connectors in Assembly: LEMO EWV.00.250.NTLPV
- Fitting Connectors: LEMO FFA.00.250.CTAC22

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 mm³ (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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