

LIQUID NITROGEN COOLED DETECTOR FOR GAMMA AND X-RAYS SPECTROSCOPY

Portable HPGe Detectors

MAIN FEATURES

- Ultra-light cryostat fabrication for minimum gamma absorption
- Light weight aluminium construction
- Detection of radiation in any spatial orientation
- Compact low consuming electronics
- Available with HPGe coaxial or planar detector
- Transportation and storage without cooling
- Input window materials: Aluminium, Beryllium or Carbon-fiber
- Dewar vessels available with different volumes from 1l to 7l

DESCRIPTION

Germanium detectors are semiconductor diodes having a p-i-n structure in which the intrinsic (I) region is sensitive to ionizing radiation, particularly x rays and gamma rays.

When photons interact with the material within the depleted volume of a detector, charge carriers (holes and electrons) are produced and are swept by the electric field to the P and N electrodes.

This charge, which is in proportion to the energy deposited in the detector by the incoming photon, is converted into a voltage pulse by an integral charge sensitive preamplifier.



Because germanium has relatively low band gap, these detectors must be cooled with Liquid nitrogen (temperature of 77 °K).

Portable HPGe Detector is designed for detection, accumulation and processing of gamma spectra in field and industry conditions where small dimensions and weight of spectrometer are important.

The **Portable HPGe Detectors** complete set is composed by the following components:

- HPGe coaxial detector
- Preamplifier with cooled input stage
- Dewar vessel
- Cable set
- Documentation

ACCESSORIES

In addition to standard supply, the following accessories are available upon request:

- Hexagon Multichannel Analyzer
- Analytical Software packages:
 - quantitative and qualitative analysis
 - Gamma spectra modeling and efficiency registration calculation for complex geometry objects
 - extended radionuclide library
- Hand-cart for Multichannel Analyzer, battery, transformer, etc.
- Additional batteries
- Recharger
- Collimators
- Transport case

- Tripod
- Liquid nitrogen storage and filling system
- Liquid nitrogen sensor and monitor
- Cable set extension

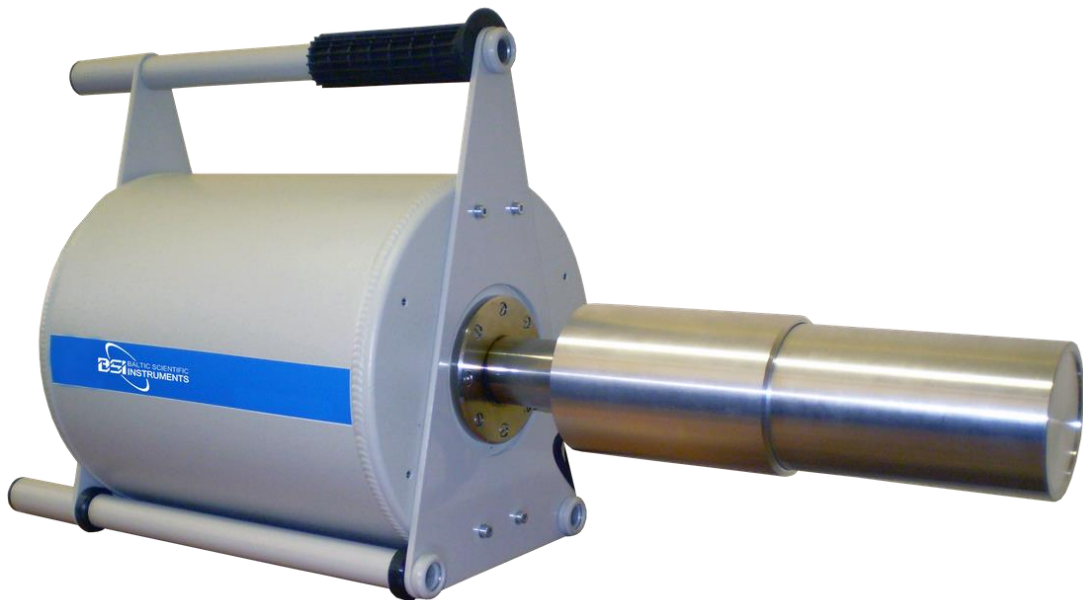
TECHNICAL SPECIFICATIONS

Detectors

- Energy range: 40 – 10000 keV
- Energy range extended: 3 – 10000 keV
- HPGe detector efficiency: 30 % *
- Energy resolution for 30% efficiency detector:
 - 0.875 keV at 122 keV
 - 1.85 keV at 1.33 MeV
- Time of cooling after refilling: 4 h **
- Time of continuous operation (depending on Dewar vessel volume): 1d, 2d, 5d
- Al end cup thickness: 0.7 mm
- Weight of detector with filled Dewar vessel:
 - 1,5 l - 7 kg
 - 3,0 l - 11 kg
 - 5,0 l - 15 kg

* HPGe Detectors are available with efficiency from 10% to 100%

** Depending on Dewar vessel volume and/or detector efficiency



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