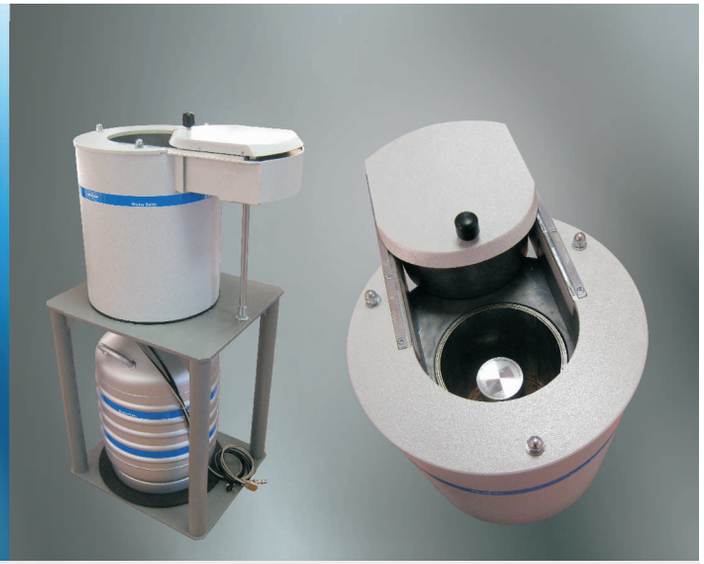
BALTIC SCIENTIFIC INSTRUMENTS



Laboratory HPGe Detector with Lead Shield

(Liquid Nitrogen cooled)

Application

Radionuclide monitoring of environmental objects (solid, powder, liquid), medicine and biological objects, materials and food.

Features

- Available in Vertical and U-type cryostat
- Adopting precision gamma-spectrometery methods
- Radionuclide identification and determination of their specific activity
- Low instrumental background
- Low threshold for radionuclide detection
- Separate and simultaneous measurement of activity of 100 radionuclides
- Several grades of instrument material (Al, Cu, etc.) radiopurity are available (ref. p. 59):
  - Standard
  - Low-background
  - Ultra low-background

Complete set (standard)

- HPGe coaxial detector
- Preamplifier with cooled input stage
- Dewar vessel
- Lead Shield for lower back signal with a support
- Liquid nitrogen sensor and level monitor LN_2 Monitor
- Cable set
- Documentation

Accessories (optional)

- Multichannel Analyzer (Digital or Analog-Digital)
- Analytical Software packages:
  - quantitative and qualitative analysis
  - γ-spectra modeling & efficiency registration calculation for complex geometry objects
  - extended radionuclide library
- Liquid nitrogen storage and filling system
- Electrically driven lead door
- Cable set extension

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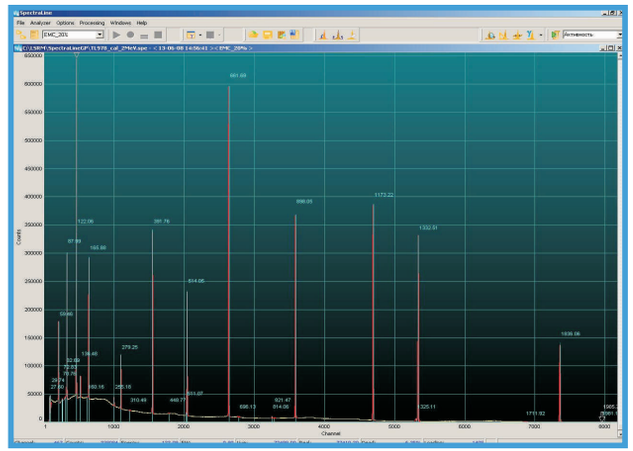
Specification

Parameter	Standard	Low background	Ultra low background
Detection limit for ^{137}Cs radionuclide specific activity, 30%* efficiency detector, measurement time 1 hour, Bq/kg	0.7	0.3	0.1
Absolute sensivity to gamma flux for 30%* efficiency detector, pulse/quantum	4.5×10^{-3}	4.5×10^{-3}	4.5×10^{-3}
Instrumental background intensity for energy range from 40 keV to 3 MeV, pulse x s	< 4.5	< 1.5	< 0.5
^{137}Cs radionuclide specific activity measurement error for 1 hour measurement time, %	< 20	< 20	< 20
Shield thickness			
Lead wall, mm	100	100	100 - 150
Copper wall, mm	6	9	6 - 10
AC power supply			
Voltage, V	230	230	230
Frequency, Hz	50	50	50
Lead Shield internal diameter (without liners)**, mm	200	200	200
Lead Shield internal height (without liners)**, mm	280	280	280
Detector with Lead Shield weight, kg	760	760	> 760

* Detectors with higher efficiency are available
** Possible to order other Lead Shield dimensions



Spectrum of source Lt978 in 1l Marinelli beaker, including: ^{241}Am, ^{109}Cd, ^{57}Co, ^{139}Ce, ^{203}Hg, ^{113}Sn, ^{85}Sr, ^{137}Cs, ^{88}Y, ^{60}Co