BALTIC SCIENTIFIC INSTRUMENTS

Deep-water HPGe Gamma Spectrometer

Application

Deep-water gamma spectrometer is applicable to the registration of gamma-radiation from radionuclides in monitoring of the sea bed for objects from marine accidents, submarine storage of radioactive wastes, search of lost nuclear charges, inspection of radionuclide migration, etc.

Features

- Long-lasting independent functioning at great depths
- Programmable control with inbuilt microprocessor device
- Independent detection and accumulation of gamma spectra for a predetermined time
- Recording and storage of gamma spectra for an unlimited time period
- Possibility of reading and processing data using computers after retrieving the spectrometer

Complete set

- HPGe coaxial detector
- Cryostat combined with cryoaccumulator for detector cooling
- Spectrometric device with microprocessor and data transfer devices
- Durable waterproof housing with power suplly for the spectrometer, allowing spectrometer to dive to depths of up to 100, 500, 1000 or 3000 meters depending on requirements
- External equipment for cryoaccumulator cooling and refilling with liquid nitrogen
- Work station equipped with software for spectra visualization and radionuclide identification

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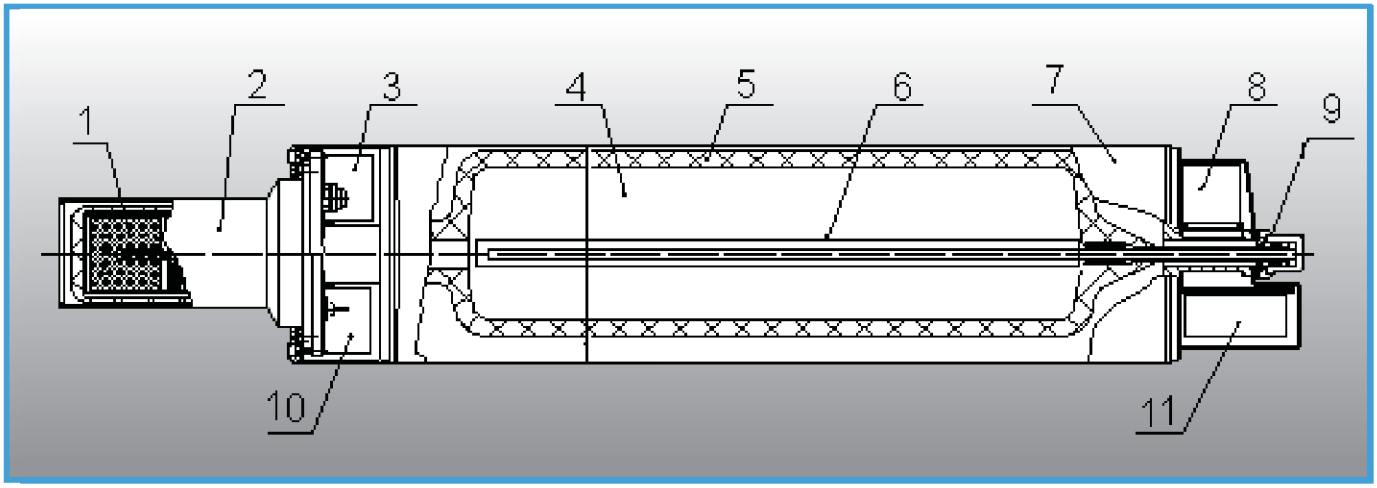
Gamma-rays

Specification

Parameter	Value
Energy range, keV	40 - 3000
HPGe detector efficiency, %	30*
Energy resolution for 30% efficiency detector, keV	
at energy	
122 keV	0.9
1.33 MeV	1.9
Detection limit for specific activity of ration nuclides during	
1 hour measurement time, Bq/l	
^{137}Cs	0.259
^{60}Co	0.222
^{54}Mn	0.222
^{235}U	0.333
^{241}Am	7.4×10^{-3}
Number of spectra recorded during autonomous operation	100
Maximum diving depth, m	3000
Cryoaccumulator cooling time, h	8
Continuous operation time after cryoaccumulator cooling, h	50
Weight of spectrometer without protective housing, kg	30
Weight of equipment for cryoaccumulator cooling by liqud nitrogen, kg	56



1. HPGe semiconductor detector;
2. cover of titan alloy;
3. compartment for preamplifier;
4. cryoaccumulator;
5. vacuum insulation;
6. cold finger;
7. stainless steel coating;
8. HV power supply;
9. filling nozzle;
10. HV filter;
11. shaping amplifier.