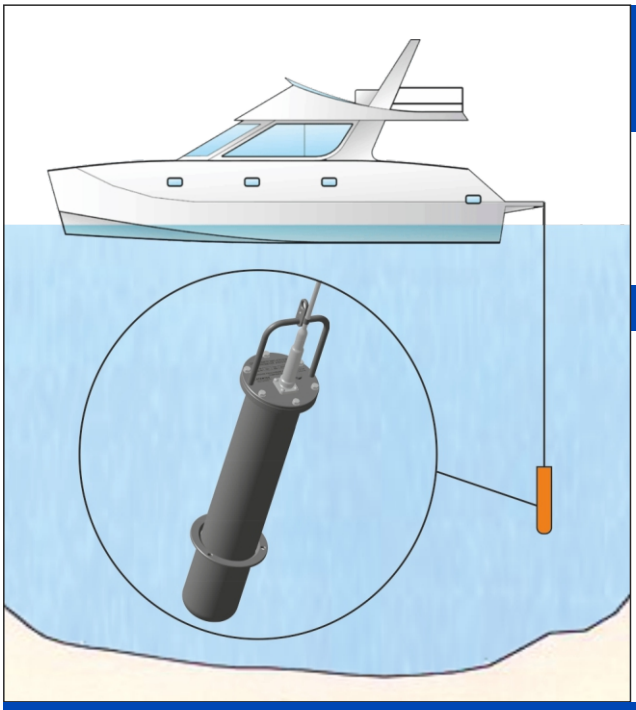

AT6104DM Spectrometer

AT6104DM Immersion Multifunction Spectrometer is designed to monitor fresh water and sea water radiation levels, as well as bottom sediments.

All parameters are measured at depths of up to 150 m without prior sampling and sample preparation.

Operating principle

Spectrometer unit in a temperature-and-shock-resistant watertight container from stainless steel detects gamma-radiation of monitored radionuclides.

Spectrometric data from detecting unit is sent via special cable to a PC and is displayed on its screen.

Instrumental spectra processing algorithms in PC Software are used for displaying of radioisotope composition data or certain radionuclide volume activity. Ambient gamma-radiation dose equivalent rate value in inspection point is determined by instrument spectrum analysis with “spectrum-dose” operational function.

The Spectrometer consists of: Detection unit, dedicated cable, software, etc.

Specification

Gamma radiation detector	Scintillator, NaI(Tl) Ø63x63 mm
Registered gamma radiation energy range	50 keV...3 MeV
Identified radionuclides	^{137}Cs, ^{134}Cs, ^{131}I, ^{40}K, ^{226}Ra, ^{232}Th
Measurement range of specific activity in water for 4π measurement geometry ^{134}Cs, ^{137}Cs (Measurement time: 30 min) ^{40}K	 3...1·10^{6} Bq/kg 250...2·10^{4} Bq/kg
Measurement range of bottom sediments specific activity for 2π measurement geometry ^{134}Cs, ^{137}Cs	 50...1·10^{5} Bq/kg
Intrinsic relative error of activity measurement	±30% max.
Measurement range of ambient radiation dose rate equivalent	0.01...100 μSv/h
Intrinsic relative error of ambient dose equivalent rate measurement	±20% max.
Energy dependence for ambient gamma radiation dose rate equivalent measurement (100 keV...3 MeV energy range)	±20% max.
Anisotropy in angular spacing ±120° relative to vertical axis (100 keV-3 MeV energy range)	±30%
Sensitivity to ^{137}Cs gamma radiation	1900 cps/μSv·h^{-1}
Relative energy resolution for ^{137}Cs	8% max.
Maximum input statistical load	≥5·10^{4} s^{-1}
Number of ADC channels	512 / 1024
Operation mode setup time	1 min
Integral nonlinearity	1% max.
Continuous run time in normal conditions	≥9 h
Measurement instability during continuous service	5% max.
Working temperature range	-20°C...+50°C
Detection unit protection class	IP67 (Withstands static hydraulic pressure up to 1.50MPa)
GPS	GPS-receiver, integrated into HPC. Positioning accuracy ≥ 3 m
Connection to PC	RS 422
Overall dimensions	Ø125x633 mm
Detection unit weight	6.5 kg

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