



AT6101DR/1 Spectrometer

AT6101DR/1 Multifunction portable spectrometer is designed for radiation monitoring of water, agricultural produce, seafood, raw material and other material without prior sampling and sample preparation. Measurements are made in 4π geometry by spectrometer's detection device places in the controlled material.

Spectrometer capabilities:

- Identification of ^{134}Cs , ^{137}Cs , ^{40}K radionuclides
- Measurement of ^{134}Cs , ^{137}Cs , ^{40}K radionuclides specific activity
- Measurement of ambient gamma radiation dose equivalent rate

Operating principle

The unit has scintillation detector with NaI (TI) crystal $\varnothing 63 \times 160$ mm size inside lead protection. The unit automatically checks sample radionuclide content during sample radiometric radionuclide monitoring. The identification results are used for sample radionuclides activity calculation. Gamma ray instrument spectra are processed in software.

All measurements and processing results are displayed on PC monitor in real-time.

Specification

Gamma radiation detector	Scintillator, NaI(Tl) $\varnothing 63 \times 160$ mm
Registered gamma radiation energy range	50keV...3MeV
Specific activity measurement range for 4π measurement geometry:	
^{134}Cs	10...1·10 ⁵ Bq/kg
^{137}Cs	10...1·10 ⁵ Bq/kg
^{40}K	150...1·10 ⁴ Bq/kg
Intrinsic relative error of ^{134}Cs , ^{137}Cs and ^{40}K specific activity measurement	±20% max.
Ambient gamma radiation dose equivalent rate measuring range	0.01...50 $\mu\text{Sv/h}$
Intrinsic relative error of ambient dose equivalent rate measurement	±20% max.
Energy dependence for ambient gamma radiation dose rate equivalent measurement	±20% max.
Sensitivity to ^{137}Cs gamma radiation	4750 cps/ $\mu\text{Sv}\cdot\text{h}^{-1}$
Relative energy resolution for ^{137}Cs	9.5% max.
Maximum input statistical load	$\geq 5 \cdot 10^4 \text{ s}^{-1}$
Number of ADC channels	512
Operation mode setup time	1 min
Integral nonlinearity	1% max.
Continuous run time in normal conditions	≥ 9 h
Measurement instability during continuous service	1% max.
Working temperature range	-20°C...+50°C
Relative air humidity with temperature $\leq 35^\circ\text{C}$ without condensation	≤ 95 %
Protection class	IP67
GPS	GPS-receiver, integrated into HPC. Positioning accuracy ≥ 3 m
Connection to PC	USB
Overall dimensions, weight	
Hand-held PC	100x250x60 mm, 0.5 kg
Detection unit	125x140x625 mm, 7 kg

