

# AT1320C Gamma Activity Monitor



*Water, foods and other materials radioactive contamination monitoring*

## Applications

- Radiation protective measures in case of nuclear disasters
- Radiation monitoring during decontamination operations
- Potable water monitoring
- Foodstuffs monitoring
- Agricultural products monitoring
- Mineral raw materials, soils, construction materials, wood products monitoring
- Product, raw material and waste monitoring in mining and oil industry
- Radioactive waste and effluent monitoring in nuclear industry

## Features

- Spectrometric smart probe
- Internal continuous automatic LED stabilisation of gamma counter energy scale, calibration integrity monitoring and automatic calibration with integrated KCl sample
- Automatic radionuclide identification
- Automatic background subtraction
- Sample activity measurement for materials with wide density range
- Can be used both in stationary and mobile radiation monitoring laboratories
- Methodological and metrological support of measurements
- Measurement result log

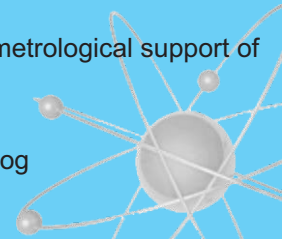
Highly sensitive selective wide-range spectrometric scintillation gamma activity monitor is intended for measuring volumetric (specific) radionuclide activity in  $^{131}\text{I}$ ,  $^{134}\text{Cs}$ ,  $^{137}\text{Cs}$ ,  $^{40}\text{K}$ ,  $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  samples with 1 litre Marinelli beaker and 0.5 litre and 1 litre flat containers.

## Operating principle

Gamma activity monitor operating principle is based on the detection unit pulse-height distribution analysis. Controlling PC reads the detection unit data on-line, processes it and displays on computer screen.

The installed PC application software is intended for controlling the activity monitor operation modes, viewing the recorded information, calculating gamma-radionuclide activity and measurement error for chosen measurement geometry, and managing electronic history log of measurement results.

Measurement procedure includes preliminary analysis of sample radionuclide composition. Activity calculation is carried out based on the results of monitored sample radionuclide identification procedure.



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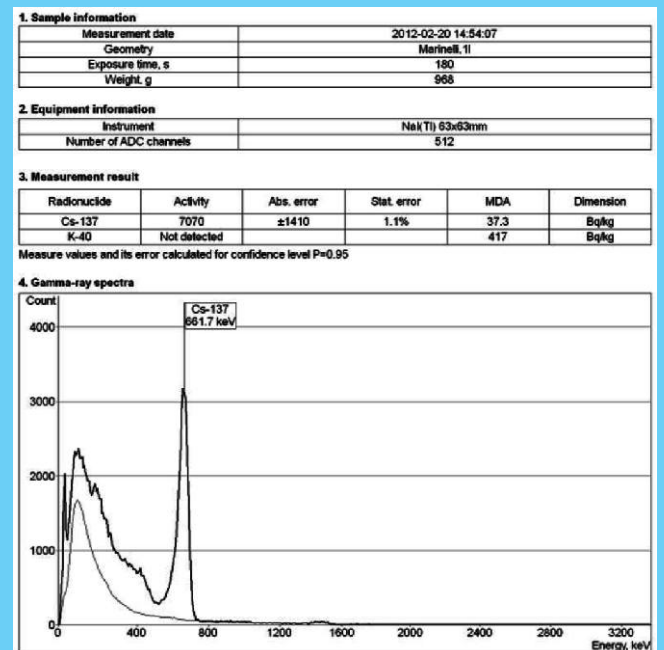
## Specification

<b>Detector</b>	Scintillation NaI(Tl) ø63x63 mm
<b>Measurement range for volume (specific) activity</b>	
<i>Measurement geometry - Marinelli beaker 1l</i>	
<sup>131</sup> I	3 – 4 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>134</sup> Cs	3 – 1 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>137</sup> Cs	3.7 – 1 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>40</sup> K	50 – 2 · 10 <sup>4</sup> Bq/l (Bq/kg)
<sup>226</sup> Ra	10 – 1 · 10 <sup>4</sup> Bq/l (Bq/kg)
<sup>232</sup> Th	10 – 1 · 10 <sup>4</sup> Bq/l (Bq/kg)
<i>Measurement geometry - Marinelli beaker 0.5l</i> (measurements are done in 1l Marinelli beaker with a sample of 0.5l volume)	
<sup>134</sup> Cs	5 – 1 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>137</sup> Cs	5 – 1 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>40</sup> K	70 – 2 · 10 <sup>4</sup> Bq/l (Bq/kg)
<i>Measurement geometry - Flat-type container 0.5l</i>	
<sup>131</sup> I	20 – 4 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>134</sup> Cs	20 – 4 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>137</sup> Cs	20 – 4 · 10 <sup>5</sup> Bq/l (Bq/kg)
<sup>40</sup> K	200 – 2 · 10 <sup>4</sup> Bq/l (Bq/kg)
<i>Measurement geometry - "Denta" container 0.1l</i>	
<sup>131</sup> I	50 – 1 · 10 <sup>6</sup> Bq/l (Bq/kg)
<sup>134</sup> Cs	50 – 1 · 10 <sup>6</sup> Bq/l (Bq/kg)
<sup>137</sup> Cs	50 – 1 · 10 <sup>6</sup> Bq/l (Bq/kg)
<sup>40</sup> K	500 – 2 · 10 <sup>4</sup> Bq/l (Bq/kg)
<b>Limits of tolerable intrinsic relative error</b>	±20%
<b>Typical resolution at 662 keV (<sup>137</sup>Cs)</b>	8.5%
<b>Measured sample density range</b>	0.1 – 3 g/sm <sup>3</sup>
<b>Minimum measured activity for 1-hour measurement with statistical error ±50% (P=0.95)</b>	
<i>Measurement geometry - Marinelli beaker, 1l</i>	
<sup>131</sup> I	4 Bq/l (Bq/kg)
<sup>134</sup> Cs	4 Bq/l (Bq/kg)
<sup>137</sup> Cs	5.7 Bq/l (Bq/kg)
<sup>40</sup> K	78 Bq/l (Bq/kg)
<sup>226</sup> Ra	12 Bq/l (Bq/kg)
<sup>232</sup> Th	10.4 Bq/l (Bq/kg)
<i>Measurement geometry - Marinelli beaker 0.5l</i>	
<sup>134</sup> Cs	8 Bq/l (Bq/kg)
<sup>137</sup> Cs	8 Bq/l (Bq/kg)
<sup>40</sup> K	110 Bq/l (Bq/kg)
<i>Measurement geometry - Flat-type container, 0.5l</i>	
<sup>131</sup> I	20 Bq/l (Bq/kg)
<sup>134</sup> Cs	20 Bq/l (Bq/kg)
<sup>137</sup> Cs	20 Bq/l (Bq/kg)
<sup>40</sup> K	260 Bq/l (Bq/kg)
<i>Measurement geometry - "Denta" container, 0.1l</i>	
<sup>131</sup> I	50 Bq/l (Bq/kg)
<sup>134</sup> Cs	50 Bq/l (Bq/kg)
<sup>137</sup> Cs	52 Bq/l (Bq/kg)
<sup>40</sup> K	690 Bq/l (Bq/kg)
<b>Energy range</b>	50 keV – 3 MeV

Design and specifications are subject to change without notice

<b>Number of ADC channels</b>	1024
<b>Integral nonlinearity</b>	±1% max.
<b>Intrinsic background for <sup>137</sup>Cs window</b>	<2 cps
<b>Operation mode setup time</b>	10 min
<b>Continuous operation time</b>	≥24 h
<b>Measurement instability during continuous service</b>	≤3%
<b>Operation temperature range</b>	0°C to +40°C
<b>Relative air humidity with air temperature ≤30°C without condensation</b>	≤75%
<b>Overall dimensions, weight (without PC)</b>	
Detection unit	ø97x350 mm, 2 kg
Protection unit	ø600x700 mm, 125 kg
USB-DU adapter	95x51x33 mm, 0.07 kg

## Measurement result display



The gamma activity monitor complies with:  
 GOST 27451-87, GOST 17209-89, GOST 23923-89,  
 Safety requirements of IEC 61010-1:2010,  
 EMC requirements of EN 55011:2009, IEC 61000-4-2:2008,  
 IEC 61000-4-3:2008



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