

# AT1125, AT1125A Radiation Monitors

**Express analysis of radionuclides in food, raw materials, and environmental samples**

**Measurement of alpha and beta particle flux density from contaminated surfaces**

**Automatic background radiation monitoring and adjustment**

AT1125 portable high-sensitivity Scintillation Radiation Monitors are designed to search and detect gamma radiation sources, measure ambient gamma radiation dose equivalent rate, alpha and beta particle flux density from flat contaminated surfaces, as well as for quantitative radionuclide specific activity measurements in samples using 0.5-litre Marinelli beaker.

Activities of the following radionuclides can be measured:

- 1)  $^{137}\text{Cs}$  monitoring
- 2)  $^{137}\text{Cs}$ ,  $^{134}\text{Cs}$  +  $^{137}\text{Cs}$  monitoring
- 3)  $^{131}\text{I}$ ,  $^{137}\text{Cs}$ ,  $^{134}\text{Cs}$  +  $^{137}\text{Cs}$  monitoring



## Applications

- Search, detection and localization of ionizing radiation sources
- Radiation monitoring of environment, areas, facilities, raw materials, and products
- Rapid activity monitoring of  $^{137}\text{Cs}$  in liquids and foodstuff
- Dosimetric and Radiometric monitoring of manufacturing facilities
- Scrap metal radiation monitoring

## Features

- High sensitivity
- Light-weight – only 2.2 lbs
- Rugged IP54 design for field operation
- Internal LED temperature stabilization
- Dose rate level alarm
- Internal memory for up to 100 measurements
- Data transfer to a PC via RS232 or USB (through adapter)



## Operating principle

Radiation Monitor is equipped with a high sensitivity NaI(Tl) scintillation detector and can rapidly accommodate to minor changes in radiation background. "Spectrum-Dose" correction function allows high-accuracy dose rate measurement in the energy range from 0.05 to 3 MeV.

In addition to the scintillation detector AT1125A version of the Radiation Monitor is equipped with a Geiger-Muller tube, that significantly expands the range of ambient gamma radiation dose equivalent rate.

Radiation Monitors can be used for accurate quantitative radionuclide specific activity measurements down to 50 Bq/kg with lead protection unit and for express-testing down to 100 Bq/kg in the field without lead shielding.



← protection unit (lead - 1 cm)



Marinelli beaker →  
0,5 l

support →

External BDPS-02 detection unit connection



Radiation Monitor's functionality can be extended with an external BDPS-02 detection unit designed for measuring alpha and beta particle flux density from flat contaminated surfaces, gamma and X-radiation ambient dose equivalent and ambient dose equivalent rate in the energy range from 20 keV to 3 MeV.



**ATOMTEX**<sup>®</sup>  
Instruments and Technologies for Nuclear  
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**Zievert**

Ionizing radiations  
detectors and  
instruments

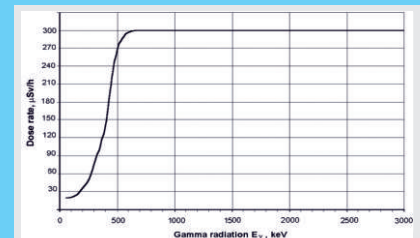
# AT1125, AT1125A Radiation Monitors

## Specification

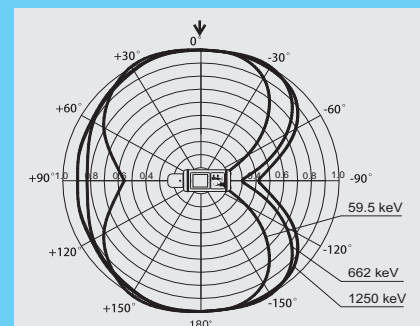
<b>Detector</b>	
AT1125	Scintillator NaI(Tl) Ø25x40mm
AT1125A	Scintillator NaI(Tl) Ø25x40mm, Integrated Geiger-Muller counter tube
BDPS-02	End-type Geiger-Muller counter tube
<b>Ambient gamma and X radiation dose rate equivalent measurement range</b>	
AT1125	30 nSv/h – 300 µSv/h
AT1125A	30 nSv/h – 100 mSv/h
BDPS-02	0.1 µSv/h – 30 mSv/h
<b>Ambient gamma and X radiation dose equivalent measurement range</b>	
AT1125	10 nSv – 10mSv
AT1125A	10 nSv – 10Sv
BDPS-02	0.1 µSv – 1 Sv
<b>Limits of tolerable intrinsic relative error of dose rate and dose measurement</b>	
AT1125, AT1125A	±15%
BDPS-02	±20%
<b>Energy range of registered X-ray and gamma radiation</b>	
AT1125, AT1125A	50 keV – 3 MeV
BDPS-02	20 keV – 3 MeV
<b>Typical sensitivity</b>	
AT1125, AT1125A	
For <sup>137</sup> Cs	350 cps/µSv·h <sup>-1</sup>
For <sup>241</sup> Am	3800 cps/µSv·h <sup>-1</sup>
BDPS-02 for <sup>137</sup> Cs	6.6 cps/µSv·h <sup>-1</sup>
<b>Energy dependence relative to 662 keV (<sup>137</sup>Cs)</b>	
AT1125, AT1125A	±15%
BDPS-02	±30%
<b>Response time for dose rate change from 0.1 to 1 µSv/h</b>	≤2 s (accuracy error ≤±10%)
<b>Natural radiation background (0.1µSv/h) measurement time with ±20% statistical error (P=0.95)</b>	≤15 s
<b>Detection time of <sup>137</sup>Cs source with 10 kBq activity at 5 cm distance</b>	<2 s
<b>Count rate measurement range</b>	1 – 10 <sup>5</sup> s <sup>-1</sup>
<b>Flux density measurement range</b>	
Alpha particles (BDPS-02)	2.4 – 1·10 <sup>6</sup> min <sup>-1</sup> ·cm <sup>-2</sup>
Beta particles (BDPS-02)	6 – 1·10 <sup>6</sup> min <sup>-1</sup> ·cm <sup>-2</sup>
<b>Spectrum maximum energy range of registered beta particles (BDPS-02)</b>	155 keV – 3.54 MeV
<b><sup>137</sup>Cs specific activity measurement range with 0.5 litre Marinelli beaker</b>	
<i>With Protection Unit</i>	50 – 10 <sup>5</sup> Bq/kg
<i>W/o Protection Unit</i>	100 – 10 <sup>5</sup> Bq/kg
<b>Limits of tolerable intrinsic relative error of <sup>137</sup>Cs specific activity measurement</b>	±20%
<b>Power supply</b>	Internal rechargeable Ni-MH battery or AC power adapter

Design and specifications are subject to change without notice

<b>Burn-up life</b>	≥100 Sv
<b>Continuous run time on integrated battery set</b>	≥24h
<b>Operation mode setup time</b>	1min
<b>Protection class</b>	
AT1125	IP54
BDPS-02	IP64
<b>Working temperature range</b>	-20°C to +50°C
<b>Relative humidity with air temperature ≤35°C without condensation</b>	≤90%
<b>Overall dimensions, weight</b>	
AT1125, AT1125A	258x85x67 mm, 1.0 kg
BDPS-02	138x86x60 mm, 0.3 kg
Protection unit	200x200x410 mm, 12 kg



Normal relationship between upper limit of dose rate measuring range and gamma radiation energy of scintillation detection channel



Normal radiation monitor anisotropy

The radiation monitors comply with:  
 GOST 27451-87,  
 Safety requirements of IEC 61010-1:2010,  
 EMC requirements of EN 55011:2009,  
 IEC 61000-4-2:2008, IEC 61000-4-3:2008,  
 IEC 61000-4-4:2004, IEC 61000-4-5:2005,  
 IEC 61000-4-6:2008, IEC 61000-4-8:2009,  
 IEC 61000-4-11:2004