

AT2503, AT2503A Personal Dosimeters

Monitoring of individual exposure doses from X-ray and gamma radiation with energy range from 50 keV to 1.5 MeV



Pocket-size intelligent devices, ideally matching accuracy, functionality, user friendliness, reliability and price.

Dosimeter with reader, which is connected to PC, and software suite make an efficient automatic system for staff radiation exposure monitoring.

Operating principle

Primary dosimeter function is to measure $H_p(10)$ individual dose equivalent, and the secondary one is to measure $\dot{H}_p(10)$ individual dose equivalent rate of X-ray and gamma radiation. Geiger-Muller counter tube with energy compensating filter is used as a detector.

Intrinsic background metering and microprocessor processing provides high measurement accuracy.

Microprocessor control of operation mode management, processing, display on TFT screen and self-check function.

Integrated non-volatile memory allows recording and saving in deenergised state all accumulated dose data and dose accumulation history.

Applications

- Radiation protective measures in case of nuclear disasters
- Nuclear industry
- Nuclear medicine
- Radiology
- Emergency situations
- Civil aviation
- Research activities
- Dose monitoring of population

Features

- Simultaneous measuring of $H_p(10)$ individual dose equivalent and $\dot{H}_p(10)$ individual dose equivalent rate of gamma radiation
- Autocompensation of intrinsic detector background
- Resistance to impacts and vibration, dust- and moisture-proof, tolerance to electromagnetic interference
- Constant detector self-check and battery level monitoring
- Sound and LED alarm
- Alarm mode for pulsed X-radiation detection with pulse length 10 ns and more (option)
- Can be integrated into a system or used separately
- Low weight and small size
- Calibrated with water phantom ISO 30x30x15 cm
- Dosimeter-to-PC communication via IR-transmitter in reader



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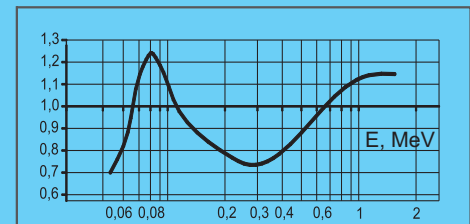
INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR MEASUREMENTS AND RADIATION MONITORING

AT2503, AT2503A Personal Dosimeters

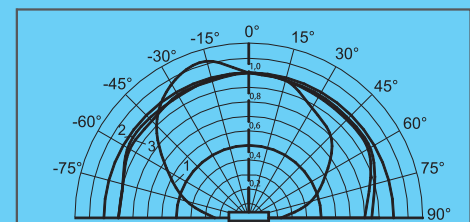
Specification

Detector	Geiger-Muller counter tube
Measurement range for:	
Individual dose equivalent AT2503, AT2503A	1 μ Sv...10 Sv
Individual dose equivalent rate AT2503 AT2503A	0.1 μ Sv/h...0.5 Sv/h 0.1 μ Sv/h...0.1 Sv/h
Intrinsic relative error for:	
Dose measurement	$\pm(15+\dot{H}_p(10)/50)\%$, where $\dot{H}_p(10)$ is dose rate in μ Sv/h
Dose rate measurement	$\pm(15+3.5 \cdot 10^{-3}/\dot{H}_p(10)+\dot{H}_p(10)/50)\%$, where $\dot{H}_p(10)$ is dose rate in μ Sv/h
Calibration error for ^{137}Cs	$\pm 5\%$
Energy range	50 keV...1.5 MeV
Energy dependence relative to 662 keV (^{137}Cs)	$\pm 30\%$
Alarm thresholds	1 of 8 independent dose thresholds, 1 of 8 independent dose rate thresholds
Anisotropy in angular spacing $\pm 75^\circ$	
For ^{137}Cs and ^{60}Co	$\pm 20\%$
For ^{241}Am	$\pm 50\%$
Response time for dose rate measurement (When dose rate is greater than 10 μ Sv/h)	5 s
Radiation overloading	
AT2503	≤ 5 Sv/h
AT2503A	≤ 1 Sv/h
Power	3 x SR44 type batteries with nominal voltage 1.5 V
Continuous run time	
In normal conditions	≥ 1000 h
In economy mode	≥ 5000 h
Working temperature range	-10°C...+40°C (-30°C...+60°C - special order)
Relative air humidity with temperature $\leq 35^\circ\text{C}$ without moisture condensation	$\leq 90\%$
Drop protection	From ≤ 1.5 m to hard surface
Protection class	IP54
Connection to PC	USB or RS232 (via Reader)
Overall dimensions	85x46x16 mm
Weight	70 g

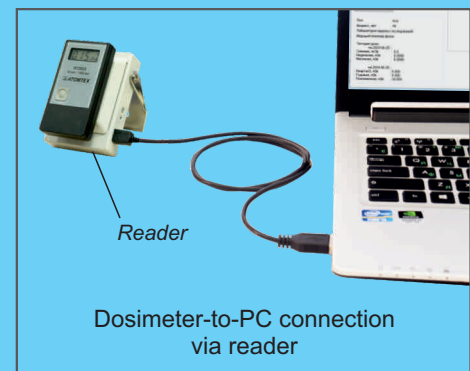
Design and specifications are subject to change without notice



Normal energy relationship between dosimeter sensitivity and ^{137}Cs gamma radiation energy of 662 keV



Normal dosimeter anisotropy for vertical position
1 – ^{241}Am ; 2 – ^{137}Cs ; 3 – ^{60}Co



Dosimeter-to-PC connection via reader

The personal dosimeters AT2503 and AT2503A meet International standard requirements: IEC 61526:2005 (confirmed by tests IAEA-EURADOS, IAEA-TECDOC-1564) Safety standard requirements: IEC 61010-1:1990 EMC requirements: EN 55022:1998+A1:2000+A2:2003 EN 55024:1998+A1:2001+A2:2003 IEC 61000-4-2:2001 IEC 61000-4-3:2008

The personal dosimeters AT2503 and AT2503A have the pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine, Kazakhstan, Lithuania and Slovakia.



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