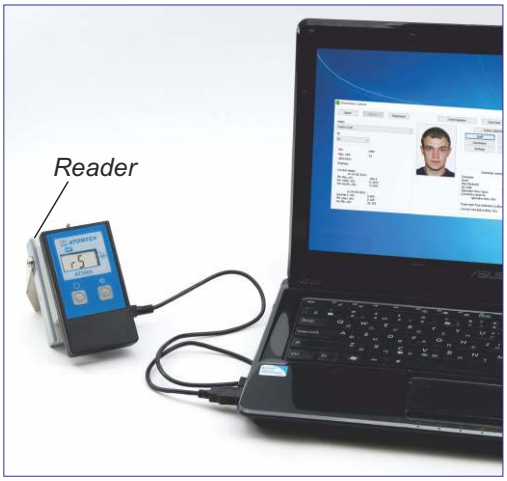
AT3509, A, B, C Personal Dosimeters

Monitoring of individual exposure doses from X-ray and gamma radiation with energy range from 15 keV to 10 MeV

Pocket-size wide-range intelligent device is an ideal combination of accuracy, functionality, usability, reliability and price.

Dosimeters are designed for measurement of personal dose equivalent and personal dose equivalent rate of continuous X-ray and gamma radiation.

Dosimeter, PC-connectible reader and application software suite make an efficient automatic system for staff radiation exposure monitoring.



Operating principle

Dosimeters provide dose range measurement in 7.5-order range and have individual sound and LED alarm function.

Measuring	*AT3509 AT3509A*	*AT3509B AT3509C*
Hp(10) continuous x & γ	+	+
$\dot{H}$p(10) continuous x & γ	+	+
Hp(0.07) continuous x & γ	-	+
$\dot{H}$p(0.07) continuous x & γ	-	+

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

Accumulated dose data and dose accumulation history is saved in non-volatile memory when the device is powered off.

Applications

- Radiation protective measures in case of nuclear disasters
- Roentgenology
- Therapeutic radiology
- Nuclear medicine
- Electronics (Ion implanters)
- Accelerating installations
- Nuclear research activities
- X-ray Crystallography and X-ray fluorescence spectroscopy, electronic microscopy

Features

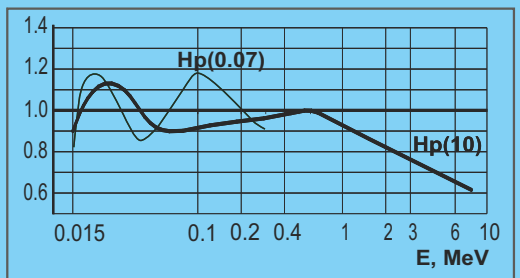
- Silicone planar detector
- Zero intrinsic background
- Simultaneous measurement of visceral radiation exposure Hp(10) and skin radiation exposure Hp(0.07) (AT3509B and AT3509C)
- Measurement in wide range of energies and dose rates
- Compensating filter and electrical energy dependence correction
- Resistance to impacts and vibration, dust-and-moisture-proof, tolerance to electromagnetic interference
- Repeating impact protection (so called "Microphone effect")
- Parameter self-check
- 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

AT3509, A, B, C Personal Dosimeters

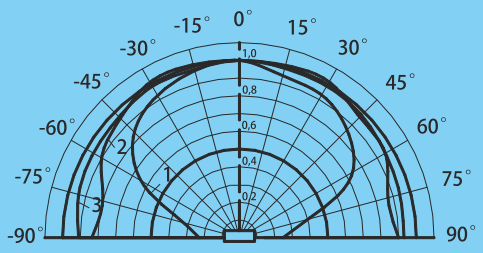
Specification

Measurement range for:	
Individual dose equivalent	
AT3509, AT3509A Hp(10)	1 μSv...10 Sv
AT3509B Hp(10), Hp(0.07)	1 μSv...10 Sv
AT3509C Hp(10), Hp(0.07)	1 μSv...10 Sv
Individual dose equivalent rate	
AT3509, AT3509A Ḣp(10)	0.1 μSv/h...1 Sv/h
AT3509B Ḣp(10), Ḣp(0.07)	0.1 μSv/h...1 Sv/h
AT3509C Ḣp(10), Ḣp(0.07)	0.1 μSv/h...5 Sv/h
Intrinsic relative error of dose measurement without associated beta radiation	±15% max.
Intrinsic relative error of dose rate measurement	
0.1 μSv/h...1 μSv/h	±30% max.
1 μSv/h...1 Sv/h	±15% max.
1 Sv/h...5 Sv/h (AT3509C)	±(15 + 0.001Ḣp)% max., where Ḣp is dose rate in μSv/h
Calibration error for ^{137}Cs	±5%
Energy range	
AT3509, AT3509B,C	15 keV...10 MeV
AT3509A	30 keV...10 MeV
Energy dependence relative to 662 keV (^{137}Cs)	
Hp(10) in the following energy range	
15 keV...1.5 MeV	±25%
1.5 MeV...10 MeV	±60%
relative to 59.5 keV (^{241}Am)	
Hp(0.07) in the following energy range	
15 keV...300 keV (AT3509B,C)	±30%
Alarm thresholds	1 of 8 independent dose thresholds, 1 of 8 independent dose rate thresholds
Anisotropy in angular spacing ±60°	
For ^{137}Cs and ^{60}Co	±20%
For ^{241}Am	±50%
Response time for dose rate change	≤5 s
Radiation overloading	≤10 Sv/h
Burn-up life	≥100 Sv
Power	2 x AAA type batteries; rechargeable cells can be used
Continuous run time	≥500 h
Working temperature range	-10°C...+40°C
Relative air humidity with temperature ≤35°C without moisture condensation	≤90%
Drop protection	From ≤1.5 m to hard surface
Protection class	IP54
Connection to PC	USB (via Reader)
Overall dimensions, weight	105x58x23 mm, 100 g

Design and specifications are subject to change without notice



Normal energy relationship between AT3509B Dosimeter sensitivity and ^{137}Cs gamma radiation energy of 662 keV



Normal AT3509 Dosimeter anisotropy for vertical position
1 – ^{241}Am; 2 – ^{137}Cs; 3 – ^{60}Co

The personal dosimeters meet International standard requirements:
IEC 61526:2010 (confirmed by tests IAEA-EURADOS, IAEA-TECDOC-1564)
Safety standard requirements:
IEC 61010-1:2001
EMC requirements:
IEC 61000-4-2:2008
IEC 61000-4-3:2008

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

ATOMTEX®
http://www.atomtex.com
5, Gikalo st.,220005 Minsk, Republic of Belarus
Tel./fax: +375 17 2928142
E-mail: info@atomtex.com

ISO 9001

CE

Corporate Member of European Nuclear Society