

AT2503 AT2503A

Easy to operate, pocket-sized microprocessor instruments with high accuracy and reliability. Together with the reader connected to PC it can be a part of automated monitoring system of staff dose burden

PERSONAL DOSIMETERS

1 μ Sv - 10 Sv 50 keV - 1.5 MeV
0.1 μ Sv/h - 0.5 Sv/h

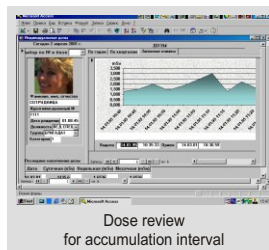
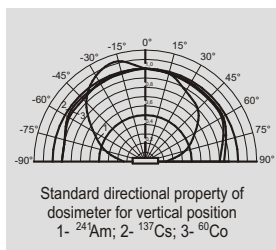
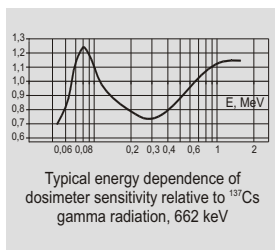
Features

- Simultaneous wide-range gamma radiation dose and dose rate measuring
- Proof against impacts and vibrations, dust and water, electromagnetic-resistant
- Continuous self-testing of detector and cells discharge
- Audible and visual alarm
- Stand-alone or system application
- Pocket-sized and light weight
- Pulsed x-ray radiation alarming mode, pulse duration more than 10 ns



Application

- Nuclear industry
- Nuclear medicine
- Radiology
- NDT
- Emergency
- Civil aviation
- Scientific research
- Population dose burden monitoring



The dosimeters are intended to measure personal x-ray and gamma radiation dose equivalent and dose rate equivalent in the energy range from 50 keV to 1.5 MeV. The detector is a GM-tube with the energy compensating filter. Microprocessor processing and proper background detection ensure high accuracy of dose measurement within the wide dose rate measuring range. The microprocessor controls operation modes over, calculates, outputs data on a backlit LCD and performs self-testing. The nonvolatile memory keeps the accumulated dose and its accumulation history when the dosimeter is off. The dosimeter is calibrated on a water phantom of 30 x 30 x 15 cm. The dosimeter is designed to be carried in a breast pocket. It complies with ISO4037-3 International standard requirements

The dosimeter can operate stand-alone or in a dosimetry monitoring system: dosimeter - reader - PC. The dosimeter connects to the reader via IR channel, and the reader connects to PC via RS232. The dosimeter software is intended to:

- read/setup personal and serial dosimeter numbers;
- change dose and dose rate thresholds;
- disable/enable to change dosimeter thresholds by the dosimeter button;
- change the dose accumulation interval in the range from 1 to 255 min and evaluate accumulated dose for each time interval within a work shift;
- save automatically up to 800 dose values in the nonvolatile memory accumulated for the selected accumulation interval;
- reset accumulated dose;
- disable/enable to reset accumulated dose by the dosimeter button;
- save automatically data in the data base and print them.

The operation modes are "Dose ", "Dose rate ", "Economical", "Menu", "Reset dose", "Dose threshold", "Dose rate threshold", "data exchange with PC".

Specification

Measuring range

dose equivalent (in increment of 0.1 μ Sv)
 AT2503, AT2503A 1 μ Sv - 10 Sv
 dose rate equivalent
 AT2503 0.1 μ Sv/h - 0.5 Sv/h
 AT2503A 0.1 μ Sv/h - 0.1 Sv/h

Intrinsic dose measurement error $\pm 15\%$

Calibration error on ^{137}Cs $\pm 5\%$

Intrinsic dose rate measurement error in the range
 from 0.1 to 1 μ Sv/h $\pm 25\%$
 more than 1 μ Sv/h $\pm 15\%$

Energy sensitivity response in the range
 of 50 keV - 1.5 MeV $\pm 30\%$

Audible and visual alarm at
 dose and dose rate measuring range or
 dose and dose rate threshold exceeding;
 detector failure; cells discharge

Alarm thresholds (independent)
 dose 30 μ Sv; 200 μ Sv; 1 mSv; 4.2 mSv; 12.5 mSv;
 50 mSv; 100 mSv; 1 Sv
 dose rate 0.6 μ Sv/h; 3 μ Sv/h; 30 μ Sv/h; 300 μ Sv/h;
 3 mSv/h; 30 mSv/h; 300 mSv/h; 500 mSv/h
 customized thresholds

Anisotropy within $\pm 75^\circ$ angle
 for ^{137}Cs $\pm 20\%$
 for ^{241}Am $\pm 50\%$

Response time to dose rate change
 when $\dot{H}_p(10) > 10 \mu\text{Sv/h}$ 5 s

Radiation overload
 AT2503 up to 5 Sv/h
 AT2503A up to 1 Sv/h

Operating conditions:
 operating temperature range $-10^\circ \div +40^\circ\text{C}$
 relative humidity at
 temperature of $+40^\circ\text{C}$ up to 98 %
 shock-proof (to fall from 1.5 m)

Protection class IP54

Power requirements
 3 cells type SR44, V357, LR44, A76

Continuous operation time from one cells set
 when $\dot{H}_p(10) < 1 \mu\text{Sv/h}$ in economical mode
 (the backlighting is off) 5000 h

Electromagnetic compatibility
 CEI/IEC 61000-4-2:1995
 IEC 61000-4-3:1995

Dimensions
 dosimeter 85×46×16 mm
 reader 90×66×28 mm

Weight
 dosimeter 70 g
 reader 300 g

Complete set: personal dosimeter, cells, chain with a clamp, plastic boxes for easy decontamination, Manual and package. The reader and applied software and AT2503 and AT2503A modifications with the temperature from -30 to $+60^\circ\text{C}$ or the optional pulsed x-ray radiation alarming mode are supplied on **additional order**.

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

They comply with IEC 61283 International standard requirements. They also conform with the 89/33/EEC directive complying with EN 55022 B:1998 and EN 55024 B:1998 standard requirements.