AT5350
AT5350/1

DOSIMETERS

Measurement error 3 %

Multipurpose high-accuracy wide-range x-ray and gamma radiation dosimeter to measure kerma and kerma rate in air

Features

- *Calibration in kerma in air, absorbed dose in air, absorbed dose in water, exposure dose and equivalent dose unit*
- *Ionization chamber library in the non volatile memory*
- *Possibility to extend the library with additional ionization chambers*
- *Built-in high-voltage power supply for ionization chambers output voltage ± (1-500) V , increment 1 V*
- *Automatic measurement result correction considering air density for nonhermetic ionization chambers by input temperature and pressure values*
- *Input of resultant correction factor specified by energy response, polarization and recombination effects etc.*
- *Automatic compensation of input displacement current*
- *Selection of measurement units (Gy, Sv, R, A, C) specified for measuring physical values*
- *Mathematical and logical processing of measurement results by 8 programs*
- *Keeping up to 500 measurement results, possibility to review, process and print them*
- *Matrix backlit LCD to readout measurement results and additional information*
- *RS 232 and IEEE-4888 interface and additional digital inputs/outputs*
- *Analog output*

	IEEE 488.2	RS232C	Analog output
AT5350	+	+	+
AT5350/1	-	+	-

Application

- *Beam therapy*
- *Clinical dosimetry*
- *Radiation protection*
- *Physical research*
- *Ionizing radiation metrology*
- *Short current and charge measuring*

ATOMTEX

INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR MEASUREMENTS AND RADIATION MONITORING

Specification

ELECTROMETRIC

Measuring range of continuous current (charge) of positive and negative polarity..... $1 \cdot 10^{-14}$ - $1 \cdot 10^{-6}$ A ($1 \cdot 10^{-14}$ - $6 \cdot 10^{-2}$ C)

The limits of tolerated relative intrinsic error of current (charge) measurement..... ±(0.5% + 1 less significant digit)

Increment of less significant digit within current (charge) measurement ..... $1 \cdot 10^{-15}$ A ($1 \cdot 10^{-14}$ C)

Zero level instability at the least range within continuous operation for 24h ..... $\leq \pm 5 \cdot 10^{-15}$ A

Spurious leakage current when the ionization chamber is not connected ..... $\leq \pm 1 \cdot 10^{-15}$ A

Zero level drift within charge measuring when the ionizing chamber is not connected ..... $\leq \pm 6 \cdot 10^{-14}$ C / min

Permanent instability ..... ≤± 0.5 % / year

Time interval of numerical current integration at charge measuring ..... 1 - 99999 s

DOSIMETRIC

Kerma in air (kerma rate in air) measuring range

chamber TM32002 (spherical chamber V=1000cm^3) ..... 50 nGy - 3 Gy (0.4 μGy/min - 3 mGy/min)

chamber TM23361 (cylindrical chamber V=30cm^3) ..... 2 μGy - 2 kGy (12 μGy/min - 2 Gy/min)

chamber TM30001-10, (TM30010, TM30006, TM30013) (thimble chamber V =0.6 cm^3) ..... 100 μGy - 300 kGy (0.6 mGy/min - 300 Gy/min)

chamber TM31010 (waterproof thimble chamber V =0.125 cm^3) ..... 500 μGy - 1.5 MGy (3.0 mGy/min - 500 Gy/min)

chamber TM23342 (plane parallel low-energy X-ray chamber V=0.02 cm^3) ..... 3 mGy - 10 MGy (20 mGy/min - 10 kGy/min)

Relative intrinsic kerma (kerma rate) measurement error at confidence probability of 0.95 ..... ±3 %

Measuring photon radiation energy range

chambers, type TM32002, TM23361, TM30001-10, TM31010 ..... 0.03 - 1.33 MeV

chamber, type TM 23342 ..... 0.008 - 0.035 MeV

Dosimeter sensitivity response upon photon radiation energy

0.03 - 1.33 MeV (TM32002) ..... ≤ ±5 %

0.1 - 1.33 MeV (TM30001-10, TM23361, TM31010) ..... ≤ ±4 %

0.03 - 0.1 MeV (TM30001-10, TM23361, TM31010) ..... ≤ ±6 %

0.008 - 0.035 MeV (TM23342) ..... ≤±5%

OPERATIONAL

Operating temperature range ..... 0 - 40 °C

Relative humidity at t=25 °C ..... up to 80 %

Power requirements ..... (220 ± 22) V, 50 Hz

Required power ..... ≤ 12 VA

Measuring electrometric unit dimensions ..... 260x98.5x250 mm

Measuring electrometric unit weight ..... 4.5 kg

Electrometric cable length ..... up to 20 m

Complete set: electrometer with any set of ionization chambers: TM32002, TM23361, TM30001-10, TM30010, TM31010 and other PTW Freiburg (Germany) ionization chambers, PTW Freiburg electrometric cables 6, 10 and 20 m and packing case. It is possible to order only the electrometer.
Support for ionization chamber fixation is an option and it is supplied **on additional order**.

The dosimeter AT5350 has pattern approval certificates of Republic of Belarus, Russia. Ukraine, Kazakhstan and Lithuania.
It complies with IEC 60731 International standard requirements. They also conform with the 89/336/EEC directive complying with EN 61326-1+A1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-11 standard requirements and 73/23/EEC directive complying with EN 61010-1+A2.

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