

AT110, AT120 AT130

Standard dosimetric installations for gamma radiation are designed for verification, calibration and examination of ionization radiation measurement instruments in collimated field of gamma radiation.

Features

- Automatic movement of selected source to exposure position and back to storage position
- Up to 5 gamma sources in irradiator protection container with total ^{137}Cs activity up to: AT110 $1.3 \cdot 10^{12}\text{Bq}$; AT120 $9.6 \cdot 10^{12}\text{Bq}$; AT130 $5.55 \cdot 10^{13}\text{Bq}$
- Automatic positioning mode of bench movable platform according to distance set by operator
- Automatic positioning using manual control console and visual control of distance with calibration ruler reading scale
- Manual positioning mode
- Movement (and fixation) of reading scale visor during aligning if the instrument is displaced towards table center
- Centering detectors of instruments under verification in radiation beam using laser equipment
- Remote monitoring of instrument readings using a video surveillance system
- Lock system and visual alarms of source position
- Source emergency movement to storage position
- Radioactively safe handling of gamma sources using hoister and handling container
- Maximum travel speed of movable platform 26 cm/s
- Safe braking and travel limitation of movable platform
- Continuous control of radiation environment using alarm dosimeter AT2327
- Irradiator protection material - lead with tungsten elements
- Automatic cutoff from power mains upon leak current above permissible value
- Grooves and thread holes on working table to secure products under verification
- 220V power outlet on platform to supply for instruments under verification
- Emergency power sources
- Turnkey mounting

Standard dosimetric installations for gamma radiation

Metrology of ionizing radiation



Application

- Laboratories to research, adjust and serialize dosimetry equipment
- Metrology laboratories to calibrate and verify dosimetry equipment
- Second standard dosimetry laboratory (SSDL)



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INSTRUMENTS AND TECHNOLOGIES FOR
NUCLEAR MEASUREMENTS AND RADIATION MONITORING

Standard dosimetric installations for gamma radiation ensure remote and manual positioning of instruments under verification on movable platform in collimated beam of ionizing radiation. Remote positioning of movable platform and automatic feed of any of five gamma sources are performed from operator workplace, which can be remote up to 30 meters from exposure chamber. Movable platform positioning coordinates and information on source location are displayed in bench control panel and irradiator control panel. Also, position of movable platform can be taken from reading scale located along the bench base. Movable platform travel speeds using manual control are 26 cm/s; 3.5 cm/s; 6 mm/s; 0.8 mm/s. Movable platform with bearing supports travels on cylindrical guides secured at the base. The movable platform holds working table with hoisting units for vertical movement, and horizontal guides allow table travel across radiation beam axis. The calibration bench is equipped with video surveillance system for taking readings from instruments under verification. Standard dosimetric installations include laser-based devices that allow to snap detector center to radiation beam axis and source center using coordinate of movable platform travel.

Specification

Gamma sources used in:

AT110, maximum activity:

^{137}Cs - $1.2 \cdot 10^{12}$ Bq; ^{60}Co - $1.4 \cdot 10^9$ Bq; ^{241}Am - $1.4 \cdot 10^{10}$ Bq

total ^{137}Cs activity up to $1.3 \cdot 10^{12}$ Bq

AT120, maximum activity:

^{137}Cs - $9.1 \cdot 10^{12}$ Bq; ^{60}Co - $1.4 \cdot 10^9$ Bq; ^{241}Am - $1.4 \cdot 10^{10}$ Bq

total ^{137}Cs activity up to $9.3 \cdot 10^{12}$ Bq

AT130, maximum activity:

^{137}Cs - $5.36 \cdot 10^{13}$ Bq; ^{60}Co - $1.4 \cdot 10^9$ Bq; ^{241}Am - $1.4 \cdot 10^{10}$ Bq

total ^{137}Cs activity up to $5.55 \cdot 10^{13}$ Bq

Dose rate range

AT110 0.55 $\mu\text{Gy/h}$ - 300 mGy/h

AT120 0.65 $\mu\text{Gy/h}$ - 2 Gy/h

AT130 0.65 mGy/h - 10 Gy/h

Elevation of radiation beam axis 1500 mm

Collimator diameter $\varnothing 60$ mm, $\varnothing 90$ mm

Own radiation background

does not exceed 0.50 $\mu\text{Sv/h}$

Distance from source center

to detector center 0.5 - 10 m

Absolute error of positioning

R - working distance from source center to detector center, mm not more than 0.002 R

Platform travel speed ... from 0.8 mm/s up to 26 cm/s

Working distance indication increment 0.1 mm

Working table travel range

vertical 310 mm

horizontal along radiation beam axis ± 50 mm

horizontal across radiation beam axis ± 140 mm

around vertical axis, with 15° - 360° increments

Basic error $\pm 4 - 7 \%$

Dimensions

irradiator 600 \times 500 \times 1865 mm

platform 900 \times 800 mm

base 900 \times (6000 \div 10000) mm

working table 250 \times 330 mm

Weight of equipment placed on

working table up to 35 kg

additional instrumental table up to 40 kg

Cable length to connect platform

to operator workplace up to 30 m

Power supply from three-phase

AC mains (220 \pm 22) V (50 \pm 2) Hz

Power consumption

from AC mains not more than 800 VA

Continuous operation time 24 h

Operating temperatures range 25 ± 10 $^\circ\text{C}$

Weight

unit and irradiator control panel not more than 30 kg

unit and bench control panel not more than 30 kg

irradiator AT110 not more than 800 kg

irradiator AT120 not more than 1000 kg

irradiator AT130 not more than 1300 kg

platform not more than 65 kg

base not more than 100 kg

hoister not more than 110 kg

handling container not more than 100 kg

Average time between failures at least 4000 hours

Average life time at least 10000 hours

Average service life at least 10 years

Guarantee period 12 months

Complete set: Irradiator, base, movable platform, units and control panels for irradiator and bench, video surveillance system for instrument readings, hoister, handling container, cart, cable kit, laser aligning devices, spare parts and accessories kit, Manual, alarm dosimeter AT2327.

Additionally available: standard dosimeter AT5350 (error $\pm 3\%$).

Configuration of standard dosimetric installation is determined by customer's technical requirements.

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