

AT110 Gamma Beam Irradiator with Calibration Bench



Applications

Metrological assurance of gamma radiation dosimetry:

- Laboratories for research, adjustment and serial production of dosimetric instruments
- Metrology laboratories focused on calibration and verification of dosimetric instruments
- Secondary standard dosimetric laboratories (SSDL)

Features

- Up to 5 gamma sources in irradiator protection container
- Source motion control software in the irradiator
- Automatic and manual positioning
- Source relocation in the irradiator and platform travel by digital servomotors
- Reference and calibrated equipment centering using laser systems
- Remote monitoring of calibrated instruments indicated value using video surveillance system
- Safe braking feature and travel limitation of movable platform
- Locking system and visual alarms of source position
- Continuous monitoring of radiation environment
- Emergency power sources
- Sources are loaded into the installation using transferring container and accessory set
- Layout plan design service for user premises

AT110 Gamma beam irradiator with calibration bench is designed for verification, calibration and examination of ionization radiation measurement instruments in collimated field of gamma radiation.

Operating principle

The irradiator is based on the use of radionuclide sources of ^{137}Cs .

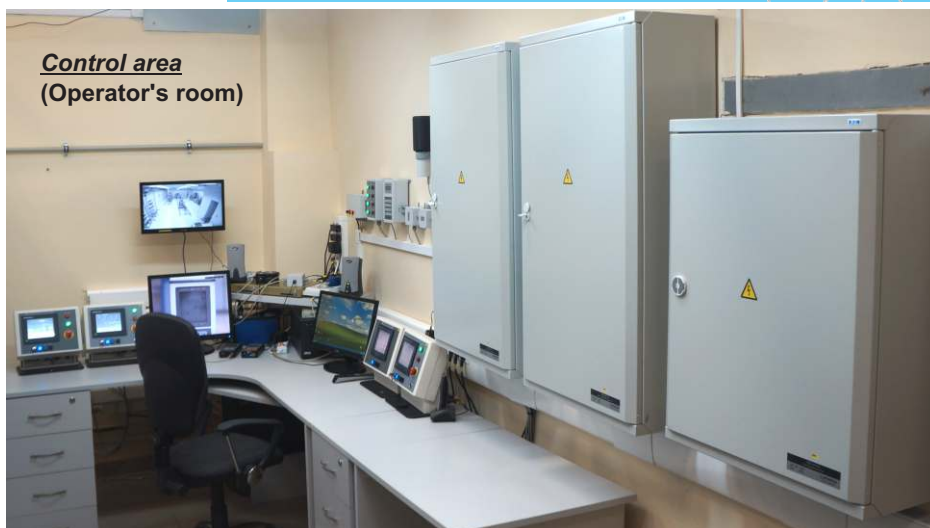
The installation scheme is realized with a fixed irradiator and calibration bench platform with linear positioning.

The range of gamma radiation dose rate values is achieved by using ^{137}Cs sources of different activity and by changing the "source-detector" distance.

Radiation field size varies by changed the "source-detector" distance or the collimator channel diameter.

Fully automated source transfer inside irradiator and mobile platform positioning.

Remote operation station in standard delivery.



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INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR MEASUREMENTS AND RADIATION MONITORING

AT110 Gamma Beam Irradiator with Calibration Bench

Specification

Used gamma radiation sources, maximum activity	$^{137}\text{Cs} - 1.3 \cdot 10^{12}$ Bq (35 Ci)
Range of formed kerma rates	0.25 $\mu\text{Gy/h}$...350 mGy/h
Collimation unit	$\varnothing 60$ mm or $\varnothing 90$ mm, length 150 mm
Elevation of radiation beam axis	(1500 \pm 30) mm
Accuracy of source height setting	± 1 mm
Time to transfer source to the operating position	≤ 15 s
Own radiation background in the "Storage" mode at a distance 1 m, maximum	0.50 $\mu\text{Sv/h}$
Basic error	$\pm(4 - 7)\%$
Operating distance range (R)	0.5 m...8 m
Reproducibility of moving platform position by coordinate X	< 0.5 mm
Display step of working distance	0.1 mm
Absolute error of positioning	≤ 0.002 R
Platform travel speed	0.9 mm/s...26 cm/s
The range of operational movements of the moving table:	
Vertically from the floor	1200 mm...1500 mm
Horizontal:	
Along the radiation beam axis horizontal (axis Y)	± 50 mm
Across the radiation beam axis (axis Z)	± 140 mm
Around a vertical axis in increments of 15°	360°
Weight of equipment installed:	
On moving table	≤ 35 kg
On moving platform	≤ 75 kg
Operation mode setup time	≤ 1 min
Continuous operation time	≤ 24 h
Power supply	230 (± 23) V, (50 ± 1) Hz
Required power	≤ 600 VA
Operating temperature range	+15°C...+25°C
Relative air humidity	$\leq 80\%$

Design and specifications are subject to change without notice

Dimensions, no more:

Irradiator	640x640x1700 mm
Bas	9000x860x200 mm
Movable platform	910x855x1820 mm
Movable table	270x330 mm
Operator's workplace (sq.)	3500x1500 mm

Weight, no more:

Irradiator	735 kg
Base	135 kg
Movable platform	70 kg
Transferring container	100 kg
Operator's workplace	150 kg

Complete set

- Remotely controlled irradiator:
 - Irradiator
 - Irradiator control unit
 - Irradiator control panel
 - Cables and accessory set
- Calibration bench:
 - Base
 - Movable platform
 - Video surveillance system
 - Laser survey system
 - Swivel table
 - Tool set for installation (including phantom 300x300x150 mm)
 - Workability control
 - Cables set
- Alarm and lock system
- Radiation monitoring system
- PC-based control system supporting automation and calibration functions
- Accessory tool set
- Set of spare parts
- User's manual
- Calibration procedure
- AT5350/1 Standard dosimeter can be included into the delivery set as an option (Measurement error 3%)



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