

AT2327 Alarm Dosimeter (AT920B, AT920P Pedestrian Radiation Monitors)



Stationary pedestrian radiation monitor is designed to detect gamma radiation sources continuously and automatically in a stream of people crossing borders of secure facilities.

Operating principle

Pedestrian radiation monitor is based on a gamma radiation detection unit.

Monitoring process has two stages. During the first stage the monitor powers on and measures natural gamma radiation background. Detection unit controller uses this measured value to calculate and set the threshold radiation level – alarm level. Second stage involves continuous gamma radiation monitoring, count rate level calculation and comparison to alarm threshold level. When the set alarm threshold level is exceeded the monitor actuates audio and visual (red light) alarm informing the staff about gamma radiation source detection.

This feature allows creating radiation monitoring network from multiple pedestrian radiation monitors (up to 32 monitors) controlled by personal computer with bundled dedicated software installed. Then the PC displays status of each connected pedestrian radiation monitor, its location on monitored site plan, keeps records and logs of alarms. Video recorder allows logging of monitored site video frames.

Applications

- Radiation screening of passing-by people:
 - Public places and institutions
 - Airport, bus terminal and railway stations, underground stations
 - Access control points on nuclear industry objects
 - Border and customs control points

Features

- 2-second triggering when threshold level is exceeded by $0.03 \mu\text{Sv/h}$ (AT920B), $0.04 \mu\text{Sv/h}$ (AT920P)
- Rapid accommodation to radiation background change
- Sound and light alerts are emitted when the threshold levels are exceeded
- Dedicated software allows arranging monitoring network with several pedestrian radiation monitors
- Mobility and passage formation capability
- Radiation monitor components perform self-tests during operation
- Continuous and occasional radiation monitoring
- Mains/integrated battery operation



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INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR
MEASUREMENTS AND RADIATION MONITORING

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Specifications

Pedestrian radiation monitor	AT920B	AT920P
Detector	NaI(Tl) scintillator, Ø63x160 mm	Scintillation plastic, Ø70x150 mm
Registered radiation	Gamma radiation	
Energy range	50 keV – 3 MeV	20 keV – 3 MeV
Detection threshold for unshielded source at 1 m height under natural radiation background conditions not more than 0.1 µSv/h (Distance to source 1 m, source travel speed 5 km/h, probability of source detection 80 % under confidence level P=0.95)	²⁴¹ Am 1 MBq ¹³⁷ Cs 320 kBq ⁶⁰ Co 130 kBq	2.3 MBq 370 kBq 190 kBq
Typical sensitivity to gamma radiation	²⁴¹ Am 30650 cps/(µSv·h ⁻¹) ¹³⁷ Cs 4900 cps/(µSv·h ⁻¹) ⁶⁰ Co 3140 cps/(µSv·h ⁻¹)	10000 cps/(µSv·h ⁻¹) 3200 cps/(µSv·h ⁻¹) 1600 cps/(µSv·h ⁻¹)
Minimal detectable gamma radiation dose rate level above background value (0.10±0.05) µSv/h in a period not longer than 2 s	0.03 µSv/h	0.04 µSv/h
Response time for dose rate change from 0.1 µSv/h to 1 µSv/h	<2 s (accuracy error ±10%)	
Alarm	Audio-visual alarm Optional: audio-visual alarm units can be mounted away from the monitor (monitors) location site	
Initialisation time	≤5 min	
Power supply	1) 110-230 VAC, 50-60 Hz 2) Rechargeable battery for emergency power	
Continuous operation time with fully charged battery	≥6 h	
False response quantity	≤1 for 8 h of continuous operation	
Measurement instability during continuous operation	±5% max.	
PC interface	RS485	
Number of monitors connected to a single PC	From 1 to 32	
Burn-up life	≥100 Sv	
Protection class	IP54	
Operation temperature range	-20°C to +50°C	-40°C to +50°C
Relative air humidity with temperature 35°C and below without moisture condensation	≤95%	
Overall dimensions	Ø350x1220 mm	
Weight	14.5 kg	13.5 kg

AT2327 Alarm Dosimeter meets Safety standard requirements: IEC 61010-1:2001
EMC requirements: EN 55011:2009, IEC 61326-1:2006, IEC 61000-4-2:2008,
IEC 61000-4-3:2008, IEC 61000-4-4:2004+A1:2010, IEC 61000-4-5:2005,
IEC 61000-4-6:2008, IEC 61000-4-8:2009, IEC 61000-4-11:2004

AT2327 Alarm Dosimeter has the pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine and Kazakhstan.



Design and specifications are subject to change without notice