

AT1121, AT1123 X-ray and Gamma Radiation Survey Meters

**Photon radiation
energy range
15 keV – 10 MeV**

Radiation type	AT1121		AT1123	
	H*(10)	H*(10)	H*(10)	H*(10)
X-ray	+	+	+	+
Gamma	+	+	+	+
Bremsstrahlung	+	+	+	+
Continuous long-term	+	+	+	+
Continuous short-term	+	+	+	+
Pulsed	-	-	+	+
Beta (detection)	+	+	+	+

Portable multi-functional wide-range instrument for X-ray and gamma radiation dosimetry of:

- Continuous long-term radiation
- Continuous short-term radiation
- Pulse radiation [AT1123]

Operating principle

AT1121/1123 is designed for X-ray and gamma radiation dosimetry in wide ranges of ambient dose equivalent rate and energy. It also can be used for detection of sources of soft and hard gamma radiation, beta emitters, measurement of pulsed and short-term radiation with exposure time estimation, as well as measurement of moving sources of radiation.

It is possible to select one of the four averaging modes during dose rate or dose measurement of continuous X-ray and gamma radiation to operate the dosimeter as a:

- Portable measuring device
- Instrument for laboratory measurements
- Instrument for fixed use
- Instrument for measurement of vehicles.

The dosimeters feature manual and automatic recording of measurement results with date and time into non-volatile memory (the "Notebook") with subsequent data transfer and processing in a PC. The manual mode can store up to 999 measurement results, the automatic mode – more than 500,000

The dosimeters provide continuous and automatic health monitoring during operation.

Remote control and external alarm units can be attached to the dosimeters for remote monitoring applications.



Applications

- X-ray diagnostics
- Nuclear medicine
- Radiology
- X-ray and gamma-ray flaw detection
- X-ray and gamma-ray testing
- Pulsed X-ray and accelerators
- Radiation accidents
- Radiation monitoring
- Nuclear industry
- Accelerating installations
- Research activities

Features

- Tissue-equivalent scintillation plastic
- High sensitivity for rapid measurements with good statistical confidence
- Wide measurement range covering more than 8 orders of magnitude
- Wide energy range starting from 15 keV
- Measurement of short-term exposure dose rate and time (from 0.03 s) for continuous radiation
- Measurement of average dose rate of pulse radiation with duration from 10 ns [AT1123]
- Four averaging modes for high accuracy dose calculations
- Manual and automatic recording of measurement results with date and time into non-volatile memory
- Large LCD screen with back-lighting
- Integrated LED system for temperature stabilization
- Sound and visual alarm in case threshold level is exceeded
- Remote control for operator safety
- Fixed installation option with external audiovisual alarm and potential-free contacts for actuator/interlock controls
- PC interface to create a continuous monitoring system with log function
- Three types of power sources
- Designed for harsh operating conditions



ATOMTEX[®]
Instruments and Technologies for Nuclear
Measurements and Radiation Monitoring



Zievert

Ionizing radiations
detectors and
instruments

AT1121, AT1123

X-ray and Gamma Radiation Survey Meters

Specification

Detector	Scintillation plastic, Ø30x15 mm
Ambient dose equivalent rate measurement range	
<i>Continuous long-term radiation</i> AT1121, AT1123	50 nSv/h ... 10 Sv/h
<i>Continuous short-term radiation</i> AT1121, AT1123	5 µSv/h ... 10 Sv/h
<i>Pulse radiation</i> AT1123	0.1 µSv/h ... 10 Sv/h
Ambient dose equivalent measurement range	10 nSv ... 10 Sv
Energy range	
<i>Continuous long-term and short-term radiation</i>	15 keV ... 10 MeV
<i>Pulse radiation (AT1123)</i>	15 keV ... 10 MeV
Energy dependence relative to 662 keV (¹³⁷Cs)	
15 ... 60 keV (with protection cap "0.025 – 3 MeV")	±35%
60 keV ... 3 MeV (with protection cap "0.025 – 3 MeV")	±25%
60 keV ... 10 MeV (with protection cap "0.06 – 10 MeV")	±25%
10 ... 20 MeV * (with protection cap "0.06 – 10 MeV")	-50% max.
Minimum duration of pulse radiation for pulse dose rate up to 1.3 Sv/s (AT1123)	10 ns
Minimum duration of continuous short-term radiation	0.03 s
Limits of tolerable intrinsic relative error	
<i>Continuous long-term and short-term radiation</i>	±15%
<i>Pulse radiation (AT1123)</i>	±30%
Typical sensitivity to ¹³⁷Cs gamma radiation	70 cps/(µSv·h ⁻¹)
Response time for dose rate change from 0.1 to 1 µSv/h (accuracy error ±10%)	<2 s
Time of ¹³⁷Cs gamma radiation dose rate measurement with statistical error ±15% (P=0.95) for the following dose rate:	
50 nSv/h	≤60 s
0.3 µSv/h	≤10 s
over 2 µSv/h (Up to 10 Sv/h)	≤2 s
Typical sensitivity to associated beta radiation of ⁹⁰ Sr + ⁹⁰ Y with filter (with protection cap "0.06 – 10 MeV") at 5 cm distance	3·10 ⁻⁷ µSv·h ⁻¹ ·Bq ⁻¹
Burn-up life	≥100 Sv
Operation mode setup time	1 min
Power supply and continuous run time	
Alternate or direct current mains	≥24 h
Built-in rechargeable Ni-MN battery	
AT1121	≥24 h
AT1123	≥12 h
Protection class	IP54

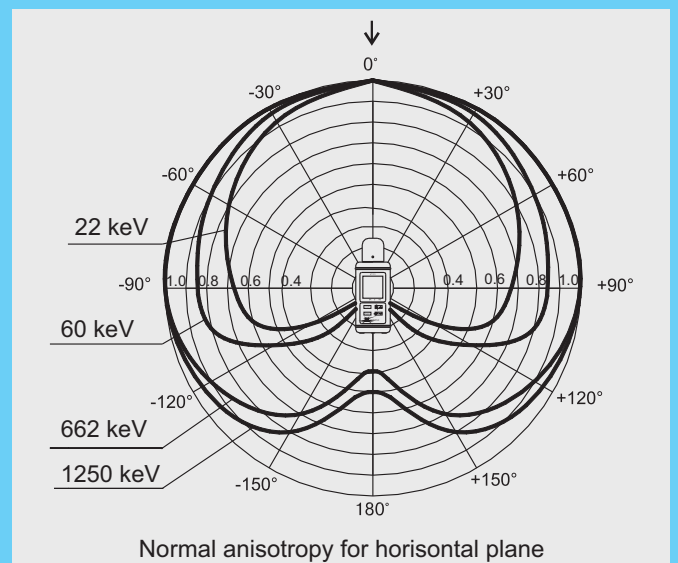
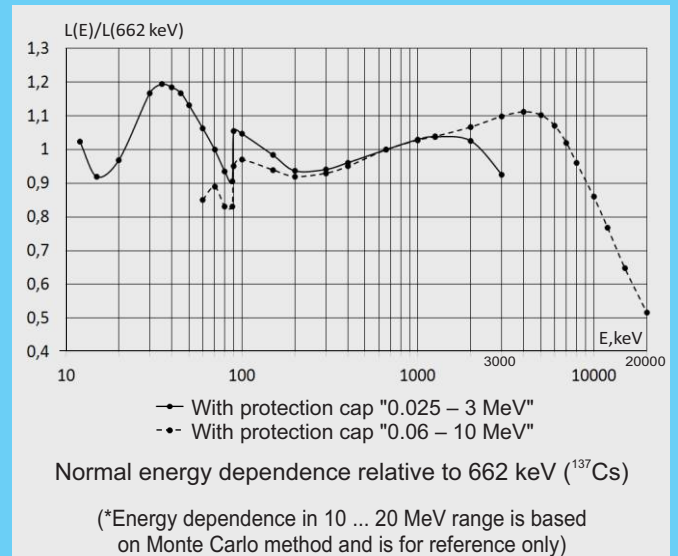
Design and specifications are subject to change without notice

Working temperature range -30°C ... +50°C

Relative humidity with air temperature ≤95%
≤35°C without condensation

Overall dimensions 233x85x67 mm

Weight 0.9 kg



The X-ray and Gamma Radiation Survey Meters comply with:
GOST 27451-87

Safety requirements of IEC 61010-1:2010,
EMC requirements of EN 55011:2009,
IEC 61000-4-2:2008, IEC 61000-4-3:2008,
IEC 61000-4-4:2004, IEC 61000-4-5:2005,
IEC 61000-4-6:2008, IEC 61000-4-11:2004