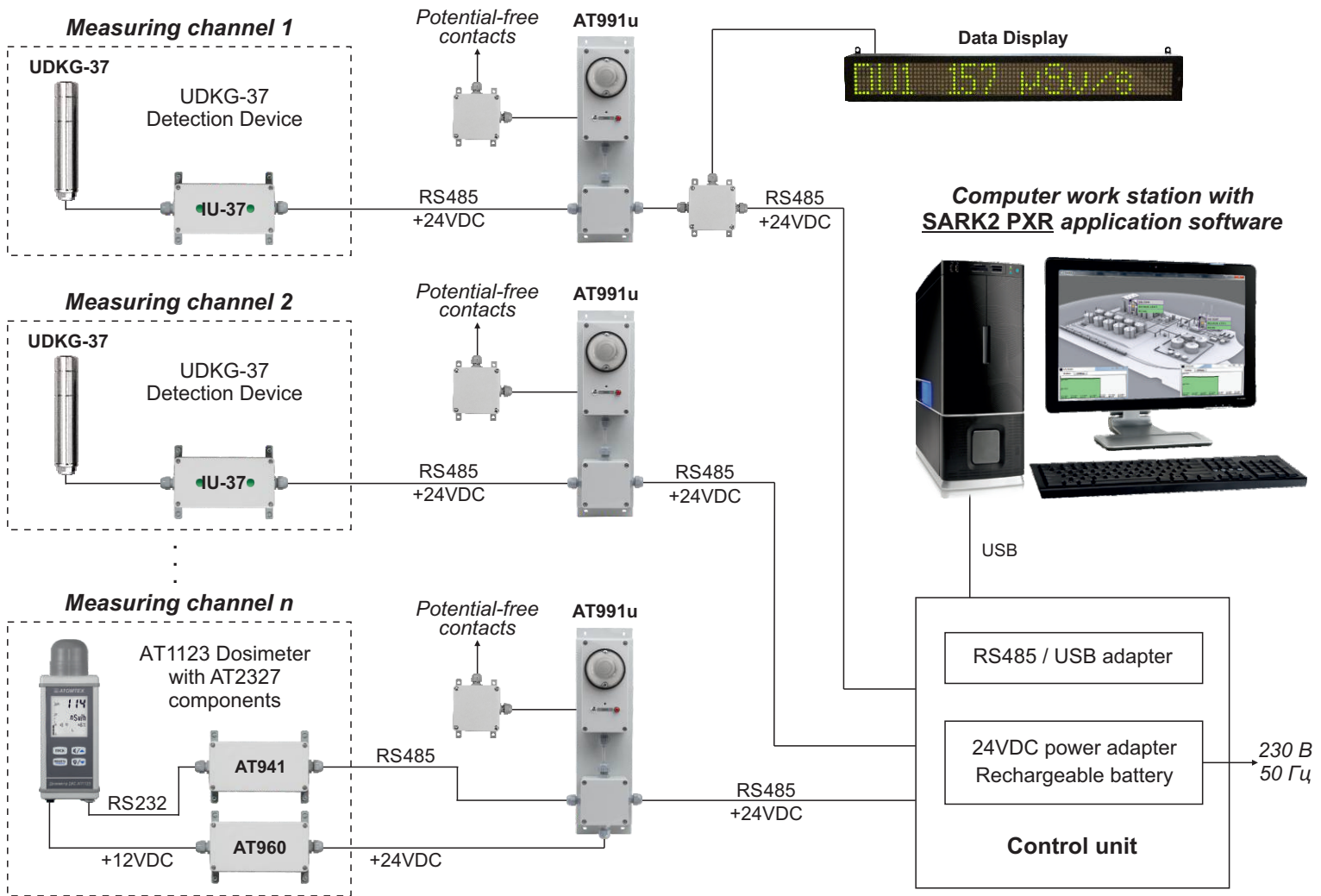


Area monitor for pulse radiation



Flexible and reliable system for restricted area beamline radiation control at linear accelerators (LINACs) and other pulse radiation facilities. Measurement point may be either in the operator's room or directly at the LINAC or facility location.



The system is based on UDKG-37 Gamma radiation detection devices, AT1123 X-ray and gamma radiation dosimeters and components of the AT2327 Alarm dosimeter. The UDKG-37 detection device consists of the BDKG-37 Gamma radiation detection unit and the IU-37 Interface unit. Each measuring channel supports connection of an optional electronic information display.

Features

- Independent measurement in wide range of dose rates and energies for each channel
- Extremely long burn-up lifetime – at least 50,000 Sv for UDKG-37
- Sound and light alarm to indicate exceeded threshold levels for each measuring channel
- Fault diagnostics
- Logging data on dose rate values and exceeded threshold levels
- Software for displaying current radiation environment at controlled site on the PC screen
- Backup power supply unit
- The monitor can be used for dosimetric control of continuous gamma radiation
- The AT1123 dosimeter can be used separately as a portable device.



ATOMTEX[®]
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Ionizing radiations detectors and instruments

Area monitor for pulse radiation

OPERATING PRINCIPLE

The monitor is structurally divided into measuring channels (1 – 32) connected to a switchboard unit. Each channel comprises a measuring part (AT1123 Dosimeter or UDKG-37 Detection device) and a connecting part (AT941 Interface adapter and AT960 Surge protector) fixed to a wall in close proximity to each other.

Any of the channels can be equipped with a light and sound alarm unit AT991u with potential-free contacts to allow connection to various actuators, such as locks, etc.

Information from each channel about the radiation level is transmitted via cable into the switchboard unit and then to the PC-based operator panel. An individual control channel can be mounted inside control room for safety reasons.

The "SARK2 PXR" software is available to provide the monitor management and to allow reading and analyzing the measurement data, as well as configuring and adjusting system settings. Operator panel displays graphic representation of monitored site with measurement values at control points in the form of charts and tables.

If a measuring channel or communication line fails, the rest will continue operation in stand-alone mode maintaining all alarm, measurement and data storage functions.

"SARK2 PXR" SOFTWARE

Purpose:

The "SARK2 PXR" program collects and processes dosimetric information received from UDKG-37 Gamma radiation detection devices and AT1123 X-ray and gamma radiation dosimeters, and triggers an alarm when the gamma radiation dose rate threshold or accumulated dose rate threshold has been exceeded.

Administration mode

Scheme path: E:/Ha тестирование/SARK2 новое PC

COM port: COM3

Measure type: Continuous

Thresholds: S/N of device: 53191

Operational DR: 2 µSv/h

Emergency DR: 3 µSv/h

Emergency D: 10 Sv

Use dose threshold:

Database: Used: 0%

Buttons: Backup, Load, Clear, Save, ОЧИСТИТЬ

Warnings

S/N of device	Time	Description
53191	15/02/2018 03:10:49	operational dr
53191	15/02/2018 03:10:53	operational dr
53191	15/02/2018 03:12:02	operational dr
53191	15/02/2018 03:12:58	operational dr, emergency dr
53191	15/02/2018 03:17:51	operational dr, emergency dr
53191	15/02/2018 03:18:52	emergency dr
53191	15/02/2018 03:18:54	operational dr, emergency dr

Buttons: Refresh, Delete, Clear

S/N/S/N of device: 53191

Alarm time: 15/02/2018 03:18:54

Alarm type: operational dr, emergency dr

Graph: Radiation dose rate history (µSv/h) over time (15.02.2018).

Functions:

- Adjust configuration
- Trigger alarm in case of exceeded preset for gamma radiation dose and dose rate threshold
- System diagnostics
- Log measurement results

Area monitor for pulse radiation

Measuring channel		UDKG-37	AT1123
Detector		Silicon semiconductor detector; Geiger-Muller counter tube	Scintillation tissue-equivalent plastic Ø30x15 mm
Measurement range of average ambient dose equivalent rate of pulse radiation		30 µSv/s – 0.3 Sv/s (100 mSv/h – 1000 Sv/h) (pulse repetition rate is not less than 20 cps, duration not less than 1 µs)	30 pSv/s – 3 mSv/s (0.1 µSv/h – 10 Sv/h) (pulse repetition rate is not less than 10 cps, duration not less than 10 ns)
Measurement range of ambient dose equivalent rate of continuous radiation		1 µSv/h – 5000 Sv/h	50 nSv/h – 10 Sv/h
Measurement range of ambient dose equivalent of continuous and pulse radiation		–	10 nSv – 10 Sv
Energy range	<i>pulse radiation</i>	50 keV – 10 MeV	15 keV – 10 MeV
	<i>continuous radiation</i>	50 keV – 10 MeV	15 keV – 10 MeV
Typical sensitivity to ¹³⁷ Cs gamma radiation		0.15 cps/(µSv·h ⁻¹), for dose rate ≤0.1 Sv/h 58 mV/(Sv·h ⁻¹), for dose rate >0.1 Sv/h	70 cps/(µSv·h ⁻¹)
Energy dependence relative to 662 keV (¹³⁷ Cs)		±30% (50 keV – 10 MeV)	±35% (15 keV – 60 keV) ±25% (60 keV – 10 MeV) -50% max. (10 MeV – 20 MeV*)
Limits of tolerable intrinsic relative error		±25%, for dose rate ≤10 µSv/h ±15%, for dose rate >10 µSv/h	±30% (<i>pulse radiation</i>) ±15% (<i>continuous radiation</i>)
Response time for 10-fold dose rate change		≤10 s, for dose rate >10 µSv/h	≤2 s, for dose rate ≥0.1 µSv/h
Burn-up life		≥50000 Sv	≥100 Sv

Alarm		3-stage light alarm and sound alarm
Maximum distance between UDKG-37 / AT1123 dosimeter and operator panel		1000 m
Initialisation time		≤5 min
Power supply		a) 110-230 VAC, 50-60 Hz b) Rechargeable battery for emergency power supply
Continuous run time		a) ≥24 h with AC mains power supply b) ≥6 h with self-contained supply from fully charged battery
Интерфейс	- UDKG-37 Detection Device - AT1123 Dosimeter - AT991u Alarm Unit - Data Display	RS485 RS232 RS485 RS485
Operation temperature range		-30°C to +50°C -40°C to +60°C (UDKG-37) -5°C to +40°C (Data Display)
Relative humidity		≤95% (with air temperature ≤35°C without condensation)
Protection class	- Detection Unit BDKG-37 - Interface Unit IU-37 - AT1123 Dosimeter - AT941 Interface Adapter - AT960 Surge Protector - AT991u Alarm Unit - Data Display - When AT1123, AT941, AT960 are located inside cabinet	IP68 IP65 IP54 IP65 IP65 IP65 IP21 IP66
Overall dimensions, weight	- Detection Unit BDKG-37 - Interface Unit IU-37 - AT1123 Dosimeter - AT941 Interface Adapter - AT960 Surge Protector - AT991u Alarm Unit - Data Display	Ø30x130 mm, 0.25 kg 170x80x55 mm, 0.3 kg 233x85x67 mm, 0.9 kg 206x82x56 mm, 0.4 kg 206x82x56 mm, 0.4 kg 185x85x95 mm, 0.4 kg 644x98x67 mm, 4.0 kg

* Energy dependence in 10 ... 20 MeV range is based on Monte Carlo method and is for reference only

Design and specifications are subject to change without notice



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Zievert
a CapeSym Company

Zievert, Inc.
6 Huron Dr. Suite 1B
Natick, MA 01760 | +1 (508) 653-7100
www.zievert.com | sales@zievert.com
Official distributor in USA and Canada