

UDKG-37, UDKG-37/1 Gamma Radiation Detection Devices

Purpose

Measurement of ambient dose equivalent rate of continuous radiation and average dose rate of pulsed X-ray and gamma radiation in an extremely wide range and under harsh operating conditions.

Application

- autonomous operation at nuclear and radiation hazardous facilities, including emergency response
- as a part of area monitoring network
- restricted area beamline radiation control at linear accelerators (LINACs) and other pulsed-radiation facilities

Detection Device		UDKG-37	UDKG-37/1
Components		BDKG-37 Detection Unit	
		IU-37 Interface Unit	IU-37/1 Interface Unit
Detector		Silicon semiconductor detector; Geiger-Muller counter tube	
Energy range		50 keV – 10 MeV	
Measurement range of ambient dose equivalent rate $\dot{H}^*(10)$		1 μ Sv/h – 5000 Sv/h	
Limits of tolerable intrinsic relative error		$\pm 25\%$, for $\dot{H}^*(10) \leq 10 \mu$ Sv/h $\pm 15\%$, for $\dot{H}^*(10) > 10 \mu$ Sv/h	
Measurement range of average pulsed radiation dose rate		30 μ Sv/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 μ s)	
Limits of tolerable intrinsic relative error		$\pm 25\%$ (for measurement of average dose rate of pulse radiation)	
Energy dependence relative to 662 keV (^{137}Cs)		$\pm 30\%$	
Typical sensitivity to ^{137}Cs gamma radiation		0.15 cps/ $(\mu\text{Sv}\cdot\text{h}^{-1})$, for $\dot{H}^*(10) \leq 0.1 \text{ Sv/h}$ 58 mV/ $(\text{Sv}\cdot\text{h}^{-1})$, for $\dot{H}^*(10) > 0.1 \text{ Sv/h}$	
Response time for 10-fold dose rate change		$\leq 10 \text{ s}$, for $\dot{H}^*(10) > 10 \mu$ Sv/h	
Burn-up life		$\geq 50000 \text{ Sv}$	
Interface		RS485	RS232
Power supply		9 – 30 VDC power source	4 – 12 VDC power source
Average operating life		$\geq 15 \text{ years}$	
Operation temperature range		-40°C to $+60^\circ\text{C}$	
Relative humidity		$\leq 98\%$ (with air temperature $\leq 35^\circ\text{C}$ without condensation)	
Protection class	BDKG-37	IP68 (Resistance to static hydraulic pressure up to 400 kPa; water immersion depth up to 40 m)	
	IU-37	IP65	
Overall dimensions / weight	BDKG-37	$\varnothing 30 \times 130 \text{ mm}$ / 0.25 kg	
	IU-37	170x80x55 mm / 0.3 kg	
Image			
<p><i>Design and specifications are subject to change without notice</i></p>			

The gamma radiation detection devices 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



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