

DOSIMETRIC GAMMA RADIATION DETECTION UNITS

for use as part of stationary and mobile monitoring stations and robot devices

DETECTION UNIT		BDKG-04	BDKG-24	BDKG-25	BDKG-30
Detector		Scintillation tissue-equivalent plastic, Ø30x15 mm	Scintillation tissue-equivalent plastic, Ø50x40 mm	Scintillation plastic, Ø10x5 mm	Scintillation tissue-equivalent plastic, Ø50x40 mm
Energy range		15 keV – 10 MeV	25 keV – 10 MeV	60 keV – 3 MeV	50 keV – 10 MeV
Measurement range of ambient radiation dose rate equivalent		50 nSv/h – 10 Sv/h	30 nSv/h – 1 Sv/h	–	–
Measurement range of air kerma rate		–	–	0.1 µGy/h – 1 Gy/h	30 nGy/h – 1 Gy/h
Limits of tolerable intrinsic relative error		±20%	±20%	±20%	±20%
Energy dependence relative to 662 keV (¹³⁷ Cs)		±25% (15 keV – 3 MeV) ±40% (3 – 10 MeV)	±25% (25 keV – 3 MeV) ±40% (3 – 10 MeV)	±35% (60 keV – 3 MeV)	±25% (50 keV – 3 MeV) ±50% (3 – 10 MeV)
Typical sensitivity to gamma radiation	²⁴¹ Am	cps/(µSv·h ⁻¹) 370	cps/(µSv·h ⁻¹) 3200	cps/(µGy·h ⁻¹) 75	cps/(µGy·h ⁻¹) 2800
	¹³⁷ Cs	70	530	3.5	600
	⁶⁰ Co	40	270	2	290
Response time for dose rate change from 0.1 to 1 µSv/h (µGy/h)		≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]		≤2 s [accuracy error ≤±10%]
Burn-up life		≥100 Sv	≥100 Sv	≥100 Gy	≥100 Gy
Protection class		IP64	IP64	IP57	IP64
Interface		RS232	RS232	RS485	RS232
Power supply		RS232 – 5-9 VDC power source / RS485 – 9-30 VDC power source			
Mean operating life		≥15 years	≥15 years	≥15 years	≥15 years
Operation temperature range		-50...+50°C	-50...+50°C	-40...+50°C	-50...+50°C
Relative humidity with air temperature ≤35°C without condensation		≤95%	≤95%	≤95%	≤95%
Overall dimensions, weight		Ø60x200 mm, 0.46 kg	Ø60x205 mm, 0.5 kg	Ø60x210 mm, 0.6 kg	Ø60x207 mm, 0.6 kg
Image					
Design and specifications are subject to change without notice					



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DETECTION UNIT		BDKG-32	BDKG-35	BDKG-36	BDKG-38
Detector		Scintillation tissue-equivalent plastic, Ø70x80 mm	Scintillation plastic, Ø70x150 mm	Scintillation tissue-equivalent plastic, Ø89x89 mm	Scintillation tissue-equivalent plastic, Ø89x89 mm
Energy range		40 keV – 10 MeV	20 keV – 10 MeV	40 keV – 10 MeV	40 keV – 10 MeV
Measurement range of ambient radiation dose rate equivalent		30 nSv/h – 500 mSv/h	Count rate indication range: 0 – 1.5·10 ⁵ s ⁻¹	30 nSv/h – 200 mSv/h	–
Measurement range of air kerma rate		–	–	–	30 nGy/h – 200 mGy/h
Limits of tolerable intrinsic relative error		±20%	–	±10%	±10%
Energy dependence relative to 662 keV (¹³⁷ Cs)		±25% (40 keV – 3 MeV) ±40% (3 – 10 MeV)	–	±30% (40 – 60 keV) ±15% (60 keV – 3 MeV) ±20% (3 – 10 MeV)	±30% (40 – 60 keV) ±15% (60 keV – 3 MeV) ±20% (3 – 10 MeV)
Typical sensitivity to gamma radiation	²⁴¹ Am ¹³⁷ Cs ⁶⁰ Co	cps/(μSv·h ⁻¹) 8300 1660 850	cps/(μSv·h ⁻¹) 11500 3300 1700	cps/(μSv·h ⁻¹) 10500 2600 1450	cps/(μGy·h ⁻¹) 12800 3000 1600
Response time for dose rate change from 0.1 to 1 μSv/h (μGy/h)		≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]
Burn-up life		≥100 Sv	≥100 Sv	≥100 Sv	≥100 Gy
Protection class		IP64	IP64	IP64	IP64
Interface		RS232	RS232	RS232	RS232
Power supply		RS232 – 5-9 VDC power source			
Mean operating life		≥15 years	≥15 years	≥15 years	≥15 years
Operation temperature range		-50...+50°C	-40...+50°C	-50...+50°C	-50...+50°C
Relative humidity with air temperature ≤35°C without condensation		≤95%	≤95%	≤95%	≤95%
Overall dimensions, weight		Ø80x245 mm, 0.78 kg	Ø80x320 mm, 1.2 kg	Ø93x250 mm, 1.2 kg	Ø93x250 mm, 1.2 kg
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DETECTION UNIT		BDKG-22	BDKG-23/1	BDKG-23
Detector		Geiger-Muller counter tube with energy compensating filter	Two Geiger-Muller counter tubes with energy compensating filters	Two Geiger-Muller counter tubes with energy compensating filters
Energy range		60 keV – 3 MeV	60 keV – 3 MeV	60 keV – 3 MeV
Measurement range of ambient radiation dose rate equivalent		0.1 μ Sv/h – 10 Sv/h	0.1 μ Sv/h – 100 Sv/h	–
Measurement range of air kerma rate		–	–	0.1 μ Gy/h – 100 Gy/h
Limits of tolerable intrinsic relative error		$\pm 20\%$	$\pm 20\%$	$\pm 20\%$
Energy dependence relative to 662 keV (^{137}Cs)		-25% ... +35%	-25% ... +35%	-25% ... +35%
Typical sensitivity to gamma radiation	^{241}Am	cps/ $(\mu\text{Sv}\cdot\text{h}^{-1})$ 4	cps/ $(\mu\text{Sv}\cdot\text{h}^{-1})$ 4	cps/ $(\mu\text{Gy}\cdot\text{h}^{-1})$ 4.6
	^{137}Cs	4	4	4.6
	^{60}Co	4	4	4.6
Response time for dose rate change from 1 to 10 μ Sv/h (μ Gy/h)		<7 s [accuracy error $\leq \pm 10\%$]	<7 s [accuracy error $\leq \pm 10\%$]	<7 s [accuracy error $\leq \pm 10\%$]
Burn-up life		≥ 100 Sv	≥ 100 Sv	≥ 100 Gy
Protection class		IP67	IP67	IP67
Interface		RS485 / RS422	RS485 / RS422	RS485 / RS422
Power supply		RS485 / RS422 – 9-30 VDC power source		
Mean operating life		≥ 15 years	≥ 15 years	≥ 15 years
Operation temperature range		-40...+70°C	-40...+70°C	-40...+70°C
Relative humidity with air temperature $\leq 35^\circ\text{C}$ without condensation		$\leq 98\%$	$\leq 98\%$	$\leq 98\%$
Overall dimensions, weight		$\varnothing 60 \times 255$ mm, 0.5 kg	$\varnothing 60 \times 255$ mm, 0.55 kg	$\varnothing 60 \times 255$ mm, 0.55 kg
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DETECTION UNIT		BDKG-204	BDKG-224	BDKG-230
Detector		Scintillation tissue-equivalent plastic, Ø30x15 mm	Scintillation tissue-equivalent plastic, Ø50x40 mm	Scintillation tissue-equivalent plastic, Ø50x40 mm
Energy range		20 keV – 10 MeV	30 keV – 10 MeV	50 keV – 10 MeV
Measurement range of ambient radiation dose rate equivalent		50 nSv/h – 10 Sv/h	30 nSv/h – 1 Sv/h	–
Measurement range of air kerma rate		–	–	30 nGy/h – 1 Gy/h
Limits of tolerable intrinsic relative error		±20%	±15%	±15%
Energy dependence relative to 662 keV (¹³⁷ Cs)		-45%...+35% (20 – 60 keV) ±25% (60 keV – 3 MəB) ±50% (3 – 10 MəB)	±25% (30 keV – 3 MəB) ±50% (3 – 10 MəB)	±25% (50 keV – 3 MəB) ±50% (3 – 10 MəB)
Typical sensitivity to gamma radiation	²⁴¹ Am ¹³⁷ Cs ⁶⁰ Co	cps/(μSv·h ⁻¹) 370 70 40	cps/(μSv·h ⁻¹) 3200 530 270	cps/(μGy·h ⁻¹) 2800 600 290
Response time for dose rate change from 0.1 to 1 μSv/h (μGy/h)		≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]	≤2 s [accuracy error ≤±10%]
Burn-up life		≥100 Sv	≥100 Sv	≥100 Gy
Protection class		IP67	IP66 / IP67	IP66 / IP67
Interface		RS485	RS485 / RS422	RS485 / RS422
Power supply		RS485 – 6.5-30 VDC power source	RS485 / RS422 – 6-40 VDC power source	
Mean operating life		≥15 years	≥15 years	≥15 years
Operation temperature range		-40...+60°C	-40...+55°C	-40...+55°C
Relative humidity with air temperature ≤35°C without condensation		≤95%	≤98%	≤98%
Overall dimensions, weight		Ø60x230 mm, 0.55 kg	Ø65x260 mm, 0.7 kg	Ø65x260 mm, 0.7 kg
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