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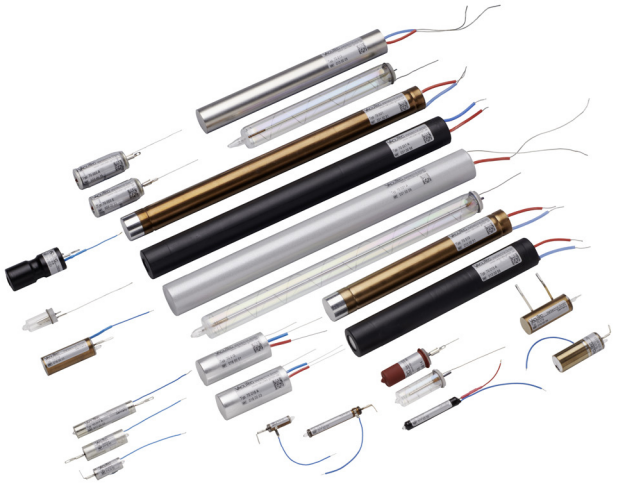
GEIGER-MUELLER TUBES



Typical Applications

VacuTec manufactures counter tubes to detect ionizing radiation. For decades, we have been experienced in the production of a wide variety of counter tubes using both special glass technology and tubes with chrome-iron-cathodes primarily for quantum radiation i.e. gamma and X-rays. Furthermore, we provide special types of counters for the registration of alpha, beta, and neutron particles as well as low-energy X-rays. Different tube sizes are available for applications in a wide dose rate range from natural background radiation up to high flux situations. Our detectors are used in radiation protection and environmental monitoring. Other applications are in the field of non-destructive material testing and non-contact level measurement. For dosimetry and environmental measurements, the counter tubes are available with energy-compensation according to Air Kerma/Exposure (type E) or to Ambient Dose Equivalent (type A).

Type	Sensitivity band α	Sensitivity band β	Sensitivity band γ	Max. length without connectors (mm)	Dose rate range (µSv/h)[2] (µGy/h)[2]	Counting rate [^{137}Cs] at 1 µSv/h[2] 1 µGy/h[2] (counts/s)	Dead time (µs)	Background shielded[3] (counts/min)	Plateau Range (V)	Plateau Slope (%/100 V)	Finish
70 003		·	·	44	1 ... 3 x 10^4	1.9	≤ 90	≤ 8	400 ... 600	8	glass
70 003 A/E[1]			·	45	1 ... 3.5 x 10^4	1.6	≤ 120	≤ 8	400 ... 600	8	glass
70 013			·	170	0.3 ... 10^4	10	≤ 100	≤ 60	400 ... 600	10	glass / CrFe
70 013 A/E[1]			·	167	0.3 ... 10^4	7.5	≤ 100	≤ 60	400 ... 600	10	glass / CrFe
70 014		·	·	34	4 ... 10^6	0.28	≤ 25	≤ 3	400 ... 600	15	CrFe
70 014 A/E[1]			·	34	4 ... 10^6	0.24	≤ 25	≤ 3	400 ... 600	15	CrFe
70 017		·	·	59	3 ... 3 x 10^5	0.73	≤ 25	≤ 5	400 ... 550	10	CrFe
70 017 A/E[1]			·	59	3 ... 3 x 10^5	0.6	≤ 25	≤ 5	400 ... 550	10	CrFe
70 018			·	43	10^2 ... 2 x 10^7	0.02	≤ 20	≤ 2	520 ... 620	30	glass
70 018 A/E[1]			·	55	10^2 ... 2 x 10^7	0.02	≤ 20	≤ 2	520 ... 620	30	glass
70 019		·	·	51	1 ... 4 x 10^4	2.1	≤ 60	≤ 7	400 ... 600	4	CrFe
70 019 A/E[1]			·	51	1 ... 4 x 10^4	1.6	≤ 60	≤ 7	400 ... 600	4	CrFe
70 031			·	270	0.2 ... 3 x 10^3	16	≤ 150	≤ 120	400 ... 600	10	glass / CrFe
70 031 A/E[1]			·	270	0.2 ... 3 x 10^3	14	≤ 150	≤ 100	400 ... 600	10	glass / CrFe
70 035		·	·	106	0.4 ... 8 x 10^3	6	≤ 80	≤ 60	400 ... 600	8	CrFe

Endwindow	Energy range α (MeV)	Energy range β (keV)	Energy range γ (keV)	Window Ø (mm)	Window Thickness (mg/cm²)	Window Material	Dead time (µs)	Background shielded[3] (counts/min)	Plateau Range (V)	Plateau Slope (%/100 V)	Finish
70 072	>3.5	>50	>3	11	2	Mica	≤ 90	7	400 ... 600	4	CrFe

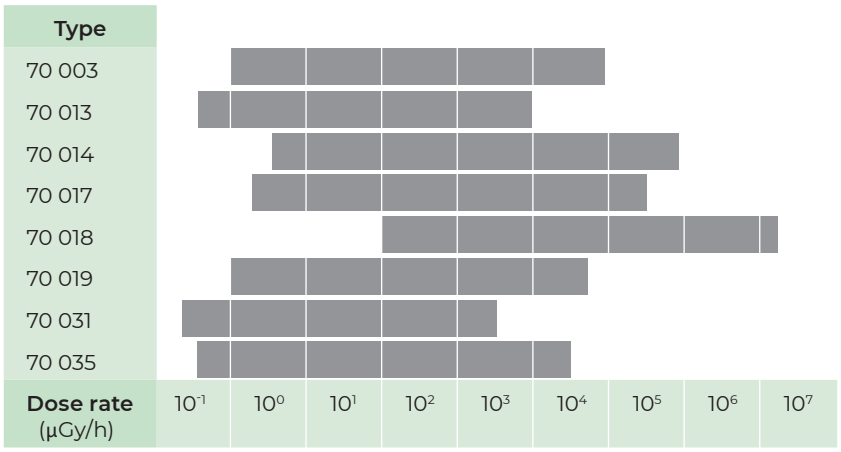
1) with compensation filter: A = Ambient Dose Equivalent H*(10), E = Air Kerma/Exposure
2) A in µSv/h, E in µGy/h; for the uncompensated types the range is given in dose rate unit at 662 keV (^{137}Cs)
3) shielded with 5 cm Pb + 0.2 cm Al

Cross Reference List

VacuTec	Centronic	LND
70 003 **70 003 E** **70 003 A**	ZP1200 ZP1201 ZP1202	7121 71210
70 013 **70 013 E** **70 013 A**	ZP1210	78016
70 014 **70 014 E** **70 014 A**	~ ZP1310 ~ ZP1313 ~ ZP1314	~ 714 ~ 7149
70 017 **70 017 E** **70 017 A**	~ ZP1320 ~ ZP1321 ~ ZP1324	~ 713 ~ 71322 ~ 7139
70 019 **70 019 E** **70 019 A**	ZP1200 ZP1201 ZP1202	7121 71210
70 031 **70 031 E** **70 031 A**	ZP1220 ZP1221 ZP1221/02	78017 7807
70 035		
70 072	ZP1401	7124

~ alike

Measuring Range



PROPORTIONAL COUNTERS FOR ACTIVITY MEASUREMENTS

Pancake Style Proportional Counters

with mica/aluminum window

	70 021	70 022	70 023
Recommended supply voltage for α radiation	1000 V		
Recommended supply voltage for β and γ radiation	1450 V		
Filling gas	Ar/CO_2		
Entrance window (mg/cm²)	Mica (2)	Al (3)	Mica (1.7)
Window diameter (mm)	44.5	57.2	28.6

Large Area Proportional Counters 70 048

with separate detection of α, β and γ radiation

Alpha energy range	> 3 MeV
Beta energy range	> 40 KeV
Recommended supply voltage for α radiation	800 V
Recommended supply voltage for α, β and γ radiation	1450 V
Filling gas	Ar/CO_2
Entrance window	Al (3 mg/cm²)
Active area	148 cm² / 230 cm²
Dimensions	212 mm x 119 mm 212 mm x 181 mm

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