VacuTec Meßtechnik GmbH
Dornblüthstr. 14a
01277 Dresden
Germany
Phone: +49 351 317 24 - 0
E-Mail: info@vacutec-gmbh.de
Web: www.vacutec-gmbh.de

Geiger-Mueller Tube

Type 70 013

REF 013 00 51

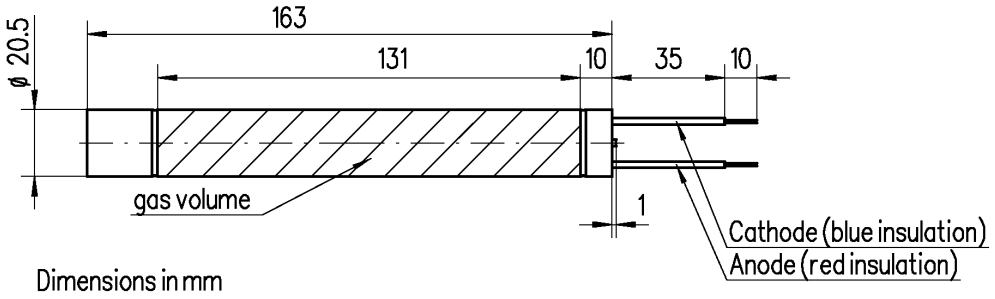
Application

The counter tube 70 013 is a halogen quenched Geiger-Mueller counter for measuring X-ray and γ-radiation with high counting efficiency. Due to the constancy of its parameters and high mechanical stability even at high temperatures, it is suitable for industrial installations and for dosimetry within the range of the natural environment.

Construction Type

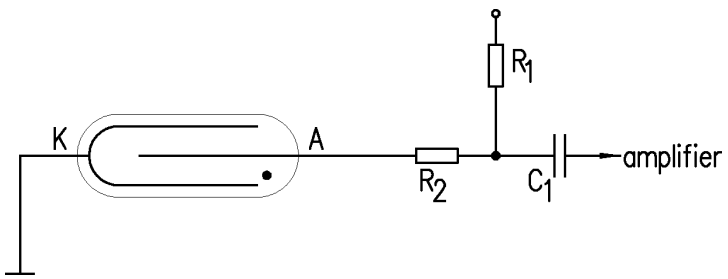
Chrome iron counter tube with solderable wires

Mechanical Data



Measurement Circuit

The given data were measured by counting the pulses derived from the anode signal via the circuit R1, R2, C1 (R1 = 65 kOhm, C1 = 50 pF). The pulse height trigger level for the pulse counting is 2% of the pulse amplitude after the recovery time.



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Technical Data

(All data refer to 25 °C ambient temperature as well as to the recommended operation conditions.)

Physical data

Quantum efficiency (662keV, ^{137}Cs)	0.1	count/s / Photon/cm²/s
Dose sensitivity (662keV, ^{137}Cs)	10	count/s / µGy/h
Dose rate range	(0.2 ... $8 \cdot 10^3$)	µGy/h
Photon energy range	> 30	keV
Background (shielded by 5 cm Pb with a 2 mm Al surface)	≤ 1	count/s
Length of active volume	131	mm
Cathode diameter	20.5	mm
Anode diameter	2	mm
Mass	45	g
Filling gas	Neon / Halogen	
Life expectancy	> 10^{10}	count

Electrical data

Starting voltage	< 350	V
Plateau voltage range	(400 ... 600)	V
Plateau length	> 200	V
Plateau slope	< 0.1	%/V
Recommended supply voltage	500	V
Recommended anode resistor R_2	≥ 4.7	MΩ
Dead time (R_2 = 4.7 MΩ)	≤ 100	µs
Anode to cathode capacitance	≤ 5	pF

Limiting values

Storage temperature range	(–55 ... +70)	°C
Operating temperature range	(–40 ... +70)	°C

Only values given with tolerance ranges, or limits are guaranteed. All other values are for information only. Subject to change.

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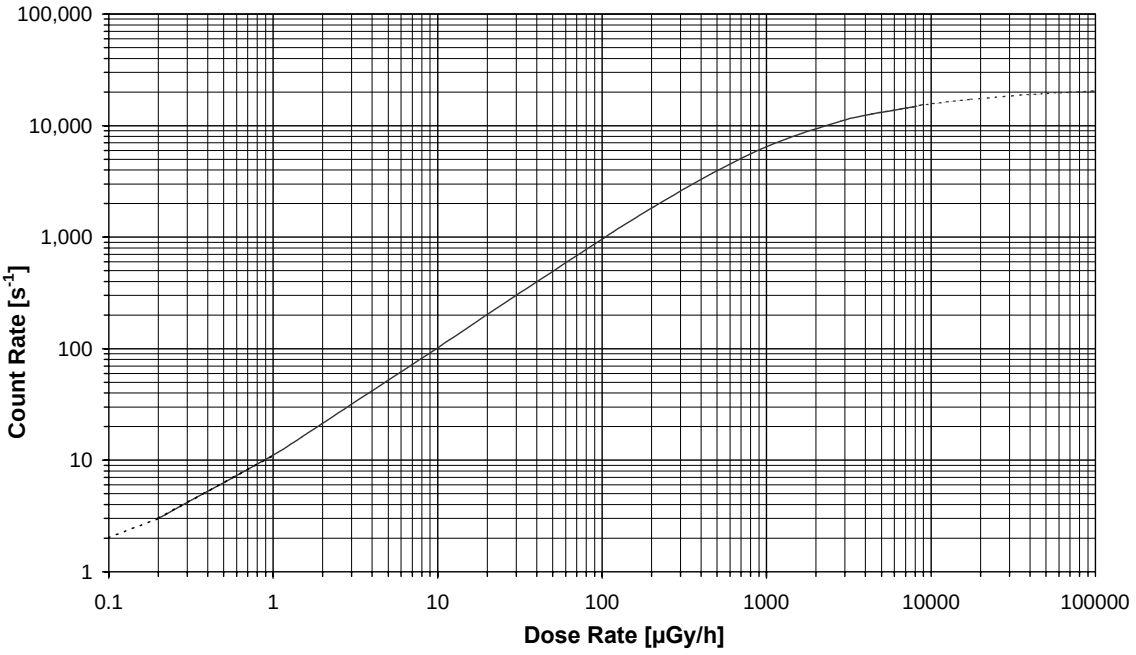
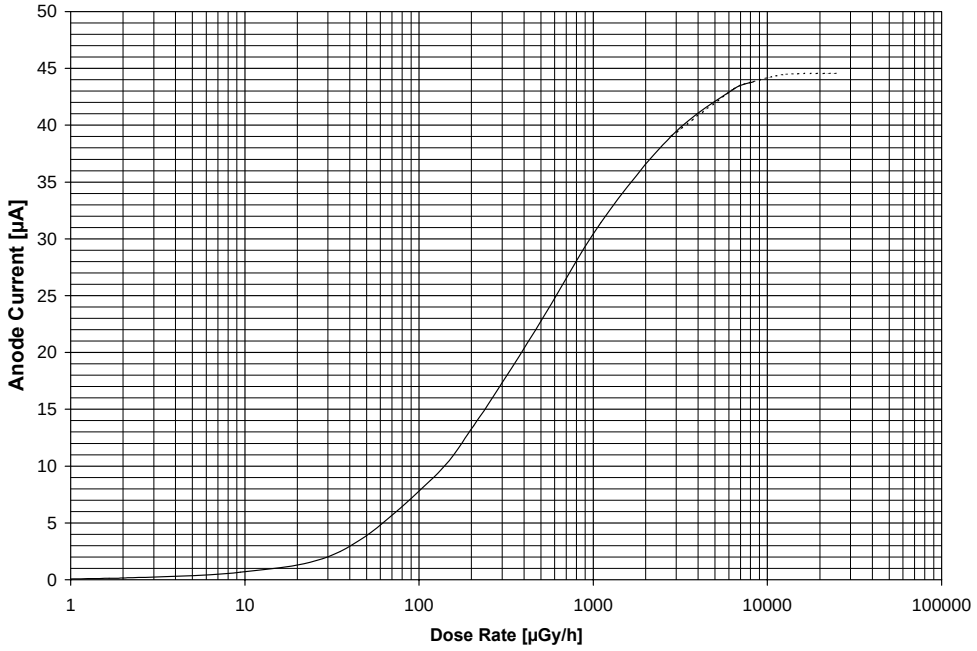
Pulse rate vs. dose rate (for ^{137}Cs)



Anode current vs. dose rate



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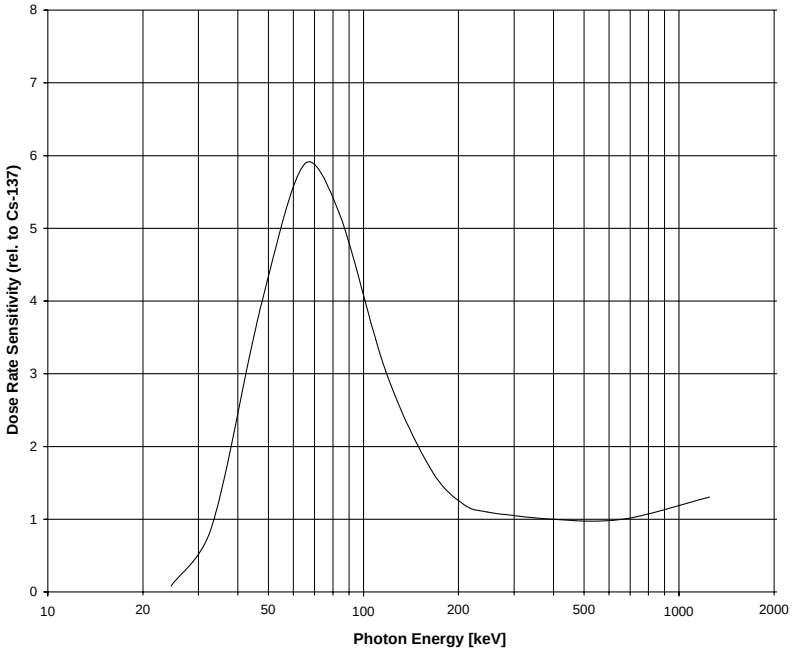
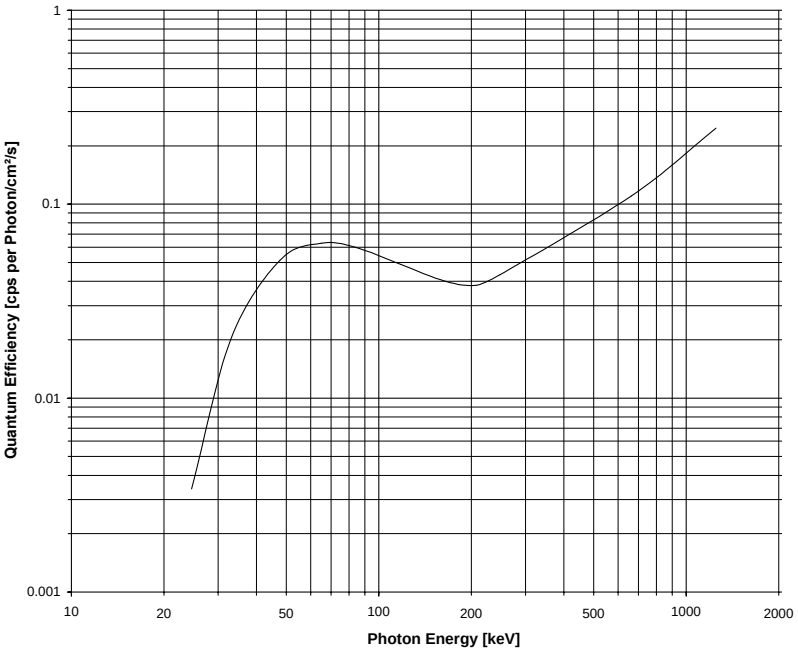
Dose sensitivity vs. photon energy



Quantum efficiency vs. photon energy



The measurements were performed with filtered X-rays of the ISO narrow series in 25 keV to 248 keV and with the Cs-137 and Co-60 γ-lines at 662 keV and 1250 keV.