Mullard halogen quenched Geiger-Müller tube guide / Mullard Ltd.

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Mullard halogen quenched Geiger-Müller tube Guide

Mullard

MULLARD GEIGER–MÜLLER TUBES

Mullard halogen quenched Geiger Müller tubes have been designed to give years of satisfactory service under even the most exacting conditions. The high degree of mechanical and electrical strength, the exceptional stability, and the unique standardisation of characteristics have been achieved after a long period of intensive research into the selection of the most suitable materials and their processing.

Wherever possible the chrome iron cathode has been used as the main body of the tube, and the amount of glass required for insulation purposes has been reduced to a minimum. Mica windows are sealed to the cathode with a thin layer of glass, thus avoiding synthetic cements and the hazards associated with their use.

With the exception of the argon and krypton filled tubes for the measurement of X-radiation, all Mullard Geiger-Müller tubes are filled with neon, argon and halogen. A special technique has been developed for this process ensuring an exact and consistent specification which does not vary from tube to tube. The standardisation of working voltage is such that tubes taken at random or even supplied at different times will all operate under identical conditions.

The minimum count life is 10^{9} and the shelf life in excess of two years. Operation and life expectancy are not impaired by a moderate overvoltage, or by applying an operating voltage of incorrect polarity.

Type of counter	GAMMA			BETA END WINDOW	ALPHA BETA END WINDOW		X-RAY END WINDOW		HIGH CURRENT	LIQUID SAMPLE		Type of counter
Type number	**MX112**	**MX115****	**MX120**	**MX108****	**MX113**	**MX123**	**MX118**	**MX122**	**MX119****	**MX124**	**MX124-01**	Type number
Threshold voltage (max.)	370V.	370V.	370V.	370V.	575V.	600V.	1,100V.	940V.	450V.	400V.	400V.	Threshold voltage (max.)
Plateau length (min.)	100V.	100V.	90V.	100V.	150V.	150V.	200V.	200V.	200V.	100V.	100V.	Plateau length (min.)
Plateau slope (average)	7%/100V.	8%/100V.	3%/100V.	7%/100V.	6%/100V.	7%/100V.	5%/100V.	5%/100V.	7%/100V.	6%/100V.	6%/100V.	Plateau slope (average)
Temp. range	—55° C. to 75° C.	—55° C. to 75° C.	—55° C. to 90° C.	—55° C. to 75° C.	—55° C. to 75° C.	—55° C. to 75° C.	—50° C. to 75° C.	10° C. to 75° C.	—40° C. to 75° C.	—55° C. to 75° C.	—55° C. to 75° C.	Temp. range
Dead time	140 μ sec.	100 μ sec.	110 μ sec.	150 μ sec.	88 μ sec.	85 μ sec.	150 μ sec.	380 μ sec.	35 μ sec.	100 μ sec.	100 μ sec.	Dead time
*Background (shielded)	90c./min.	20c./min.	55c./min.	21c./min.	6c./min.	10c./min.	50c./min.	50c./min.		20c./min.	20c./min.	*Background (shielded)
Background (unshielded)	160c./min.	45c./min.	90c./min.	45c./min.								Background (unshielded)
Window thickness				3.5—4.0 mg./cm.²	1.6 to 2.1 mg./cm.²	1.5 to 2.5 mg./cm.²	3.5 to 4.5 mg./cm.²	3.5 to 4.5 mg./cm.²				Window thickness
Window area				227 mm.²	31.7 mm.²	458 mm.²	314 mm.²	314 mm.²				Window area
Wall thickness	400 mg./cm.²	575 mg./cm.²	575 mg./cm.²						400 mg./cm.²	25 mg./cm.² approx.	25 mg./cm.² approx.	Wall thickness
Active length	290 mm.	38 mm.	140 mm.						40 mm.	60 mm. approx.	60 mm. approx.	Active length
Minimum count life	10^{9}	10^{9}	10^{9}	10^{9}	10^{9}	10^{9}	10^{9}	10^{9}	1,500 hours at 50 μA.	10^{9}	10^{9}	Minimum count life
Electrical connections	Anode turret lug	Special Base	Anode turret lug	Special Base	Anode cap.	Anode turret lug	Anode Cap.	Anode Cap.	Tinned leads	For use in mercury pools	For use in mercury pools	Electrical connections
Remarks	An all metal gamma tube for use in survey measurements where high sensitivity and electrical and mechanical robustness are required. Such applications include bore hole, geological survey, and cosmic radiation measurements. Having constant diameter, they may be nested together in multiple arrangements.	An all metal tube in a neoprene sheath, widely used in portable gamma monitors. The special two-pin base and socket provide a watertight union with the outer sheath. The tube may therefore be mounted externally on the equipment. The special socket is available separately if required—MX196.	A general purpose all metal gamma tube, which owing to its greater length, is three and a half times more sensitive than type MX115.	A low voltage mica end window tube which is interchangeable with tube MX115 when beta measurements are required. A mesh window guard is provided under the neoprene sheath this reduces the window area to 114 mm.² but it may be removed if the full window area has to be used. Socket type MX199 is also used with this tube.	A miniature mica end window tube for all applications in which a very thin window of small diameter is required. These include in vivo measurements in the medical field, and scanning techniques where full advantage of the directional properties may be taken.	This versatile tube is carefully manufactured to exceptionally close tolerances in order that it may fit the majority of lead castles and holders. The ultra thin mica window and low background make it suitable for the measurement of beta sources down to very low specific activities and energies.	A mica end window, argon-filled tube with a path length of approximately 10 centimetres for maximum efficiency in the measurement of X-radiation of wavelengths between 0.5 and 0.86 Angstroms. In fluorescence analysis it is suitable for elements of mass numbers 19 to 34.	A krypton-filled version of type MX118 for maximum efficiency in the measurement of X-radiation of wavelengths between 0.5 and 0.86 Angstroms. In fluorescence analysis it is suitable for elements of mass numbers 20 to 53.	This tube passes a sufficiently high current (50 μA. in a radiation field of 10 r/hour) for the direct indication of radiation intensity by a micro-ammeter connected in series. It is suitable for the measurement of moderately intense gamma radiation, or hard X-rays.	A liquid sample tube of outstanding stability throughout its life. Its liquid capacity is 9-10 ml., and a ground glass stopper (B24) is fitted to facilitate the agitation of solutions and the measurement of volatile fluids.	Type number MX124.01 is similar in all respects to MX124, but is not supplied with a stopper.	Remarks

* Shielded by 50 mm. of lead plus 0·5 mm. aluminium.

** Developed in collaboration with A.E.R.E. Harwell.

HALOGEN QUENCHED · ROBUST · LONG LIFE · RELIABLE · STANDARDISED CHARACTERISTICS

Reliability . . .

. . . largely depends on the careful selection and use of components. This folder is a guide to the most reliable Geiger-Müller tubes available.

Mullard halogen quenched tubes are in a class apart for strength, dependability and consistent quality. There is never any need to order matched sets, as tubes of any one type operate at the same working voltage.

They withstand reasonable over-voltage, incorrect polarity, and, in the case of all metal types, surprisingly severe vibration and drop tests.

They are very long lived, and may be stored for years without deterioration.

They can be delivered safely anywhere in the world, the end window types being sealed in aluminium containers, as illustrated on this page. They can be tested on reception (with gamma radiation) without breaking the seals.

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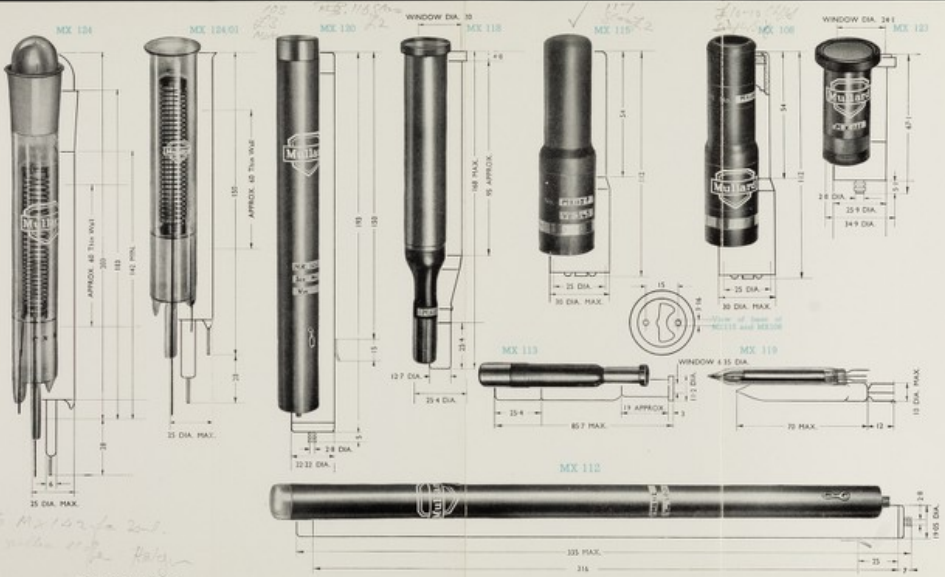

All dimensions in millimetres

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