

WL-6998

BF₃ PROPORTIONAL COUNTER

The WL-6998 is a proportional counter for the detection of thermal neutrons. It is intended for use in neutron fluxes in the range of 0.07 neutron/cm²/sec to 7×10^3 neutron/cm²/sec. The counter has an all-aluminum body one inch in diameter and 30-3/8 inches long; it is provided with a connector for "HN" cable fittings. The WL-6998 is extremely rugged and will operate in any position and at temperatures up to 80°C. It is filled to a pressure of 55 cm Hg with BF₃ enriched to 96% with Boron-10 isotope. The sensitivity of the counter is approximately 15 counts per second for unit thermal neutron flux and it operates in the vicinity of 2100 volts. Although the counter is sensitive to gamma radiation, the pulses arising from incident photons are sufficiently small that they normally can be biased out by the amplifier discriminating circuits.

MECHANICAL:

Overall Length	30-3/8" $\pm$ 1/8"
Diameter, Max.	1-1/32"
Net Weight	10 oz.
Shipping Weight, Approx.	5 lb.
Sensitive Length, Approx.	26"
Center Conductor	0.001" Diameter Tungsten Wire
Body	Aluminum
Insulating Material	Polystyrene and Alumina
Filling	BF ₃ enriched to 96% is B-10 at pressure of 55 cm Hg

MAXIMUM RATINGS:

Thermal Neutron Flux	7×10^3 nv
Total Life	10 ⁹ counts
Operating Temperature	80°C

OPERATIONAL:

Operating Voltage, Approx.	2100 Volts
Sensitivity	15 counts/neutron/cm ²
Neutron Flux Range	7×10^{-2} to 7×10^3 neutron/cm ² /sec
Multiplication Factor, at 2100 Volts	500
Plateau	Operating plateau 200 volts or greater in length and width an average slope of 0.02% per volt or less obtainable with 5 millicurie radiumberyllium neutron source.
Output	Under typical operating conditions, output pulse is a few millivolts with inherent rise time of about 1 μ s.

