

UNCOMPENSATED IONIZATION CHAMBER TYPE 8137

The 8157 uncompensated ionization chamber is designed to detect thermal neutrons for the control of reactors in the power range and to feed safety channel instrumentation. Rugged construction and guard-ring design reduce spurious signals due to mechanical vibration and electrical leakage.

The chamber electrodes, case, and major support members are constructed of high purity aluminum to minimize handling problems due to activation. The insulation is high stability, cross-linked polystyrene.

The thermal neutron sensitivity is approximately 2×10^{-14} amperes/cm²/second. The gamma sensitivity is approximately 5×10^{-12} amperes/R/hr. These values allow operation in thermal neutron fluxes from 5×10^9 to 5×10^{10} neutrons/cm²/second.

MECHANICAL:

Maximum Diameter	3-1/2	Inches
Maximum Overall Length	10-3/4	Inches
Approximate Sensitive Length	5-1/2	Inches
Net Weight	3-1/2	Pounds
Shipping Weight	12	Pounds

MATERIALS:

Outer Case	Aluminum
Electrodes	Aluminum
Insulation	Stabilized Polystyrene
Neutron Sensitive Material:	
Content	Boron Enriched in B-10
Thickness	1 mg/cm ²
Gas Filling	Nitrogen

IMPEDANCE:

Resistance:	
Signal-to-Case, Minimum	10^{13} Ohms
H.V.-to-Case, Minimum	10^{12} Ohms
Capacitance: (Note 1)	
Signal-to-Case, Approx.	110 $\mu\mu\text{f}$
H.V.-to-Case, Approx.	150 $\mu\mu\text{f}$

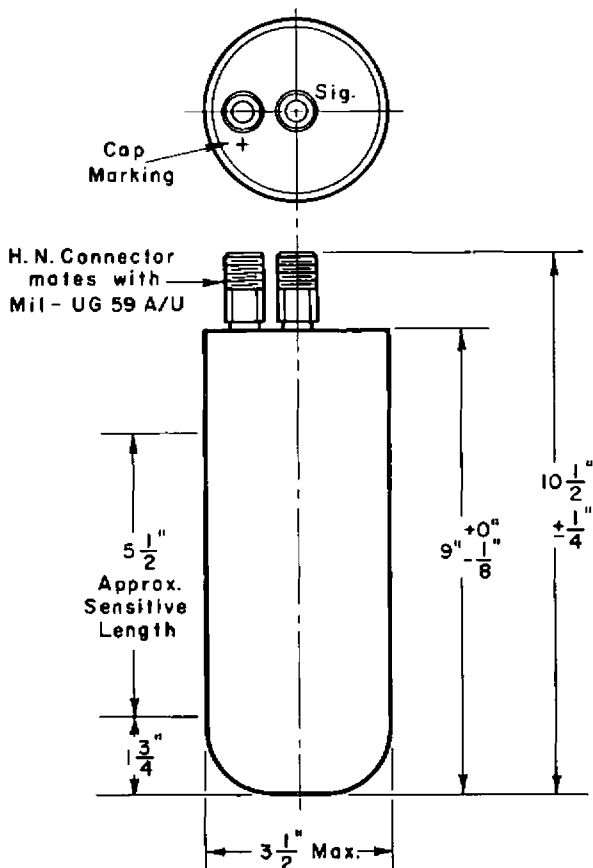
MAXIMUM RATINGS:

Voltage Between Electrodes (dc)	1000	Volts
Temperature	175	°F
External Pressure (Note 2)	180	PSI
Thermal Neutron Flux	5×10^{11}	nv

TYPICAL OPERATION:

Operating Voltage	300 to 800	Volts
Thermal Neutron Flux Range	5×10^9 to 5×10^{10}	nv
Thermal Neutron Sensitivity	2×10^{-14}	Amperes/nv
Gamma Sensitivity	5×10^{-12}	Amperes/R/hr

1. Capacitance is measured between an electrode and the case, with all other electrodes grounded to the case.
2. The pressurizing atmosphere must be dry and non-corrosive.





Westinghouse Electric Corporation

Electronic Tube Division

Box 284, Elmira, New York

April 2, 1965

05673
3522A
4-19-65

Mr. G. F. Hohn, Manager
EIA Engineering Laboratories
32 Green Street
Newark 2, New Jersey

Dear Mr. Hohn:

The following proposed re-registrations are hereby requested.

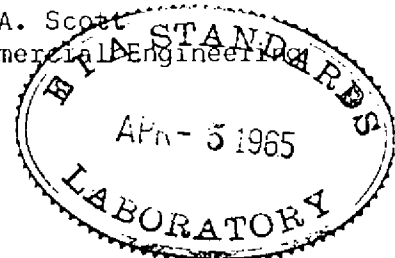
ITEM	AS REGISTERED	AS PROPOSED
Tube Type: 8073		
Rel. No. 3310		
Under Mat'ls:		
Neut. Sens. Mat'l.		
Total Quantity	1.72 Grams	1.68 Grams
Tube Types: 8105 8137 8214		
Ret. No. 3476 3522 3822		
Under TYP-OPER.		
Gamma Sens. (8137 only)	5×10^{-12} A/R/hr.	3.5×10^{-12} A/R/hr.
Un-Comp.	5×10^{-12} A/R/hr.	3.5×10^{-12} A/R/hr.

Thank you.

Very truly yours,

J. A. Scott

J. A. Scott
Commercial Engineer



JAS/cb