

ELECTRONIC TUBE REFERENCE

7741

Specialized - Radiation Counter electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
IONIZATIONCHAMBER

Westinghouse compensated ionization chamber for thermal-neutron measurement in very high gamma fields. Continuously adjustable electrical compensation suppresses gamma response while retaining neutron sensitivity, enabling reactor monitoring over a wide flux range.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / —	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 IonizationChamber
No fixed ratings recorded.
Source-derived physical/electrical section.

T4 Westinghouse Sheet lof 2 COMPENSATED IONIZATION CHAMBER TYPE 77.1 The 7741 compensated ilonization chamber ig designed to detect thermal neutrons in the range from 2.5 x 102 to 2.5 x 10 neutrons/cm</second, in the presence of very high gamma radiction fields. The detector is of rugged construction, incorporating a design which allows operation at temperatures up to 500°F. The 7741 incorporates two outstanding design features. The first is the use of a "guard ring" type of construction to minimize reduction in signal currents due to leakage through the insuwlaters. The second 1s the provision for continuously variable, electrical compensation. The neutron sensitivity of the chamber is approximately 4 x 1014 amperes/neutron/cm?/second. Gamma sensi- tivity is approximately 3 x 10 amperes/R/hr when operated uncompensated, but it is reduced to approximately 3 x 10-13 amperes/R/hr in compensated operation, thus extending the operating range two decades. The 7741 is constructed of high p

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1947 Westinghouse

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1947 WESTINGHOUSE

Section 1 · Ionization Chamber

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
neutrons in the range from	10	neutrons in the range from 2.5×10^2 to 2.5×10^3 neutrons/cm ² /second, in
up to	500	up to 500°F.
currents due to leakage through the insulators. The second	1	currents due to leakage through the insulators. The second 1s the provision for
chamber is approximately	14	chamber is approximately 4×10^{-14} amperes/neutron/cm ² /second. Gamma sensi-
tivity is approximately	10	tivity is approximately 3×10^{-14} amperes/R/hr when operated uncompensated, but
it is reduced to approximately	-13	it is reduced to approximately 3×10^{-13} amperes/R/hr in compensated operation,
Signal to Case (Minimum) ,	1	Signal to Case (Minimum) , . 10 ¹² Ohms
H.V. to Case (Minimum)	1010	H.V. to Case (Minimum) . 1010 Ohm
Signal to Case (Minimum)	10	Signal to Case (Minimum) . . 10 ¹⁴ Ohms
Compensating to Case (Minimum)	1012	Compensating to Case (Minimum) . 1012 Ohms
Operating Voltage	800	Operating Voltage . . . 300 to 800 Vde
Compensating Voltage	80	Compensating Voltage . . . -10 to +80 Vde
Thermal Neutron Flux Range	10	Thermal Neutron Flux Range . . . 2.5×10^0 to
2.5×10^{20} n/cm ² /sec	2020	2.5×10^{20} n/cm ² /sec
Thermal Neutron Sensitivity	14	Thermal Neutron Sensitivity . . 4×10^{-14} amperes/nv
Gamma Sensitivity Uncompensated	-11	Gamma Sensitivity Uncompensated 3×10^{-11} amperes/R/hr

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Resistance (	500	Resistance (500°F)s
Resistance (	68	Resistance (68°F):