

## HIGH TEMPERATURE UNCOMPENSATED IONIZATION CHAMBER TYPE WL-7606

The WL-7606 is an aluminum cased ionization chamber designed to detect thermal neutrons in the flux range from  $2.5 \times 10^4$  to  $2.5 \times 10^{10}$  neutrons/cm<sup>2</sup>/second. Ionization currents are produced by thermal neutrons incident on the sensitive coating, which consists of Boron enriched to 96% in B-10 isotope. The neutron sensitivity of the WL-7606 is  $4.4 \times 10^{-14}$  amperes/neutron/cm<sup>2</sup>/second and the gamma sensitivity is  $5 \times 10^{-11}$  amperes/Roentgen/hour. The tube is provided with type "HN" connectors and is extremely rugged, being operable in any position and at temperatures up to 500 °F.

The WL-7606 employs a guard ring type of construction. This features minimizes reduction in signal current due to leakage through the insulators.

### MECHANICAL:

Maximum Diameter . . . . .	3	Inches
Maximum Overall Length . . . . .	13-3/4	Inches
Approx. Sensitive Length . . . . .	7-1/2	Inches
Connectors § . . . . .	Hermetically Sealed HN Type	
Net Weight . . . . .	2-1/2	Pounds
Shipping Weight . . . . .	10	Pounds

### ELECTRICAL:

Interelectrode Capacitances:	
Signal Electrode to Case ♣ . . . . .	250 μμf
High Voltage Electrode to Case ⊕ . . . . .	170 μμf
Interelectrode Resistance:	
At 500 °F	
Signal Electrode to Case . . . . .	10 <sup>9</sup> min. Ohms
High Voltage Electrode to Case . . . . .	10 <sup>9</sup> min. ohms

### MATERIALS:

Body . . . . .	Aluminum
Insulation . . . . .	Alumino
Gas Filling . . . . .	Argon-Nitrogen Mixture at 76 cm Hg
Neutron Sensitive Material . . . . .	Boron enriched to 96% in B-10

### MAXIMUM RATINGS:

Absolute Maximum Values		
Interelectrode Voltage . . . . .	1500 max.	Volts
Thermal Neutron Flux . . . . .	$1.0 \times 10^{11}$ max.	n/cm <sup>2</sup> /sec
Ambient Temperature . . . . .	500 max.	°F

### TYPICAL OPERATING CHARACTERISTICS:

Operating Voltage □ . . . . .	200 to 800	Volts
Thermal Neutron Flux . . . . .	$2.5 \times 10^4$ to $2.5 \times 10^{10}$	n/cm <sup>2</sup> /sec
Neutron Sensitivity . . . . .	$4.4 \times 10^{-14}$	amp/n/cm <sup>2</sup> /sec
Gamma Sensitivity . . . . .	$5 \times 10^{-11}$	amp/R/hr

### TYPICAL SATURATION CHARACTERISTICS:

For Neutron Flux of $3 \times 10^9$ n/cm <sup>2</sup> /sec		
Operating Voltage . . . . .	250 min.	Volts
Output Current . . . . .	$1.3 \times 10^{-4}$	Amperes
For Neutron Flux of $1.5 \times 10^{10}$ n/cm <sup>2</sup> /sec		
Operating Voltage . . . . .	600 min.	Volts
Output Current . . . . .	$6.6 \times 10^{-4}$	Amperes

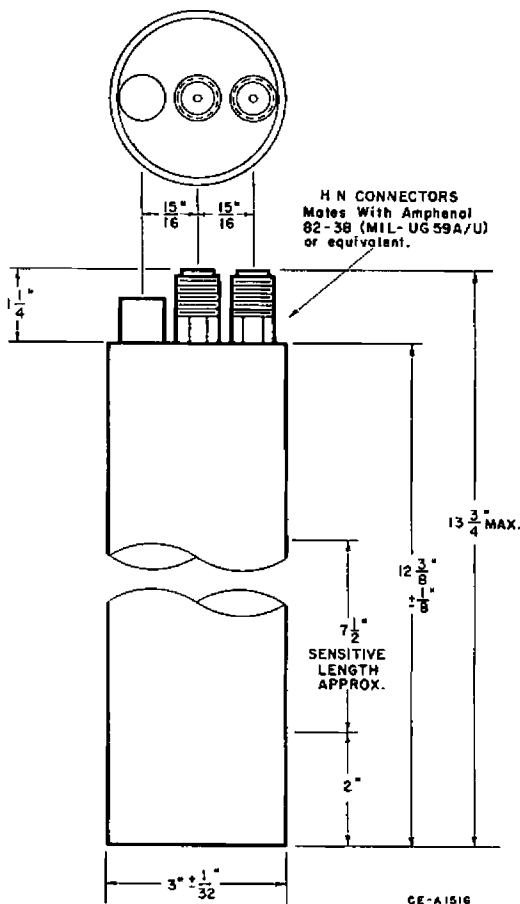
□ Saturation voltage varies with neutron flux. Either positive or negative voltage can be used.

♣ High voltage electrode connected to case.

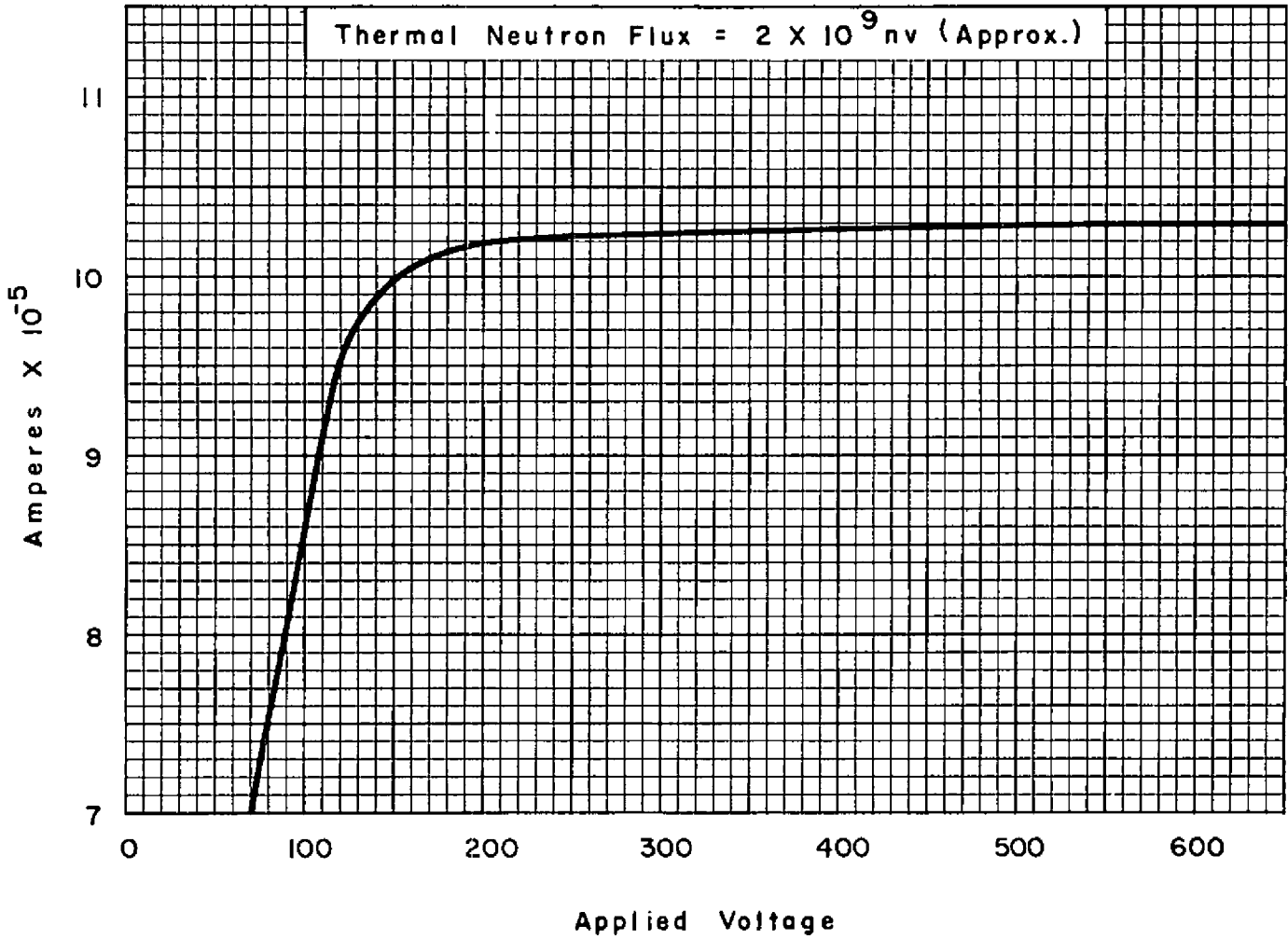
⊕ Signal electrode connected to case.

Note: The WL-7606 may not be immersed in water. If the WL-7606 is to be used in a high humidity environment, the connectors joining the cable to the tube must be vapor proof.

§ The connectors may be tightened with the fingers with no precautions. If a tool is used, the connector body must be wrench held to prevent fracturing the vacuum seal between connector body and detector case.



### TYPICAL SATURATION CHARACTERISTIC



CE-A1515