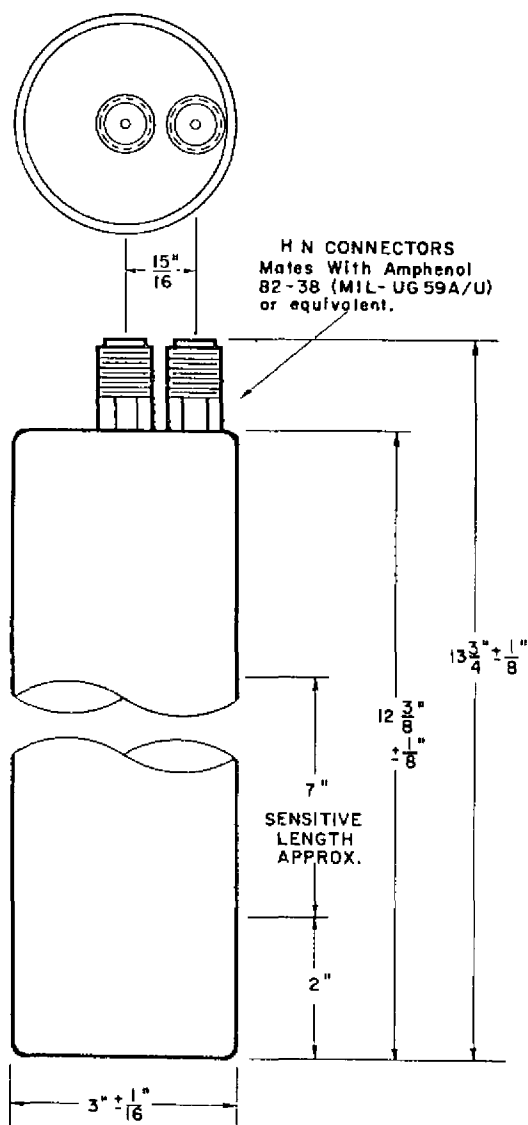


May 15, 1961

UNCOMPENSATED IONIZATION CHAMBER TYPE 8075

The 8075 is a guard-ring ionization chamber designed to detect thermal neutrons in the range from 2.5×10^3 to 2.5×10^{10} neutrons/cm²/second. The guard-ring construction combined with the use of high-purity alumina ceramics provides a design which minimizes leakage currents usually detrimental to low current operation. The detector is extremely rugged and the high alumina insulation used throughout permits operation to 300°F and minimized deterioration due to radiation damage.

The rugged construction makes the detector especially useful for Intermediate and Power range reactor instrumentation where mechanical shock and vibration present problems. The internal design provides a relatively high thermal neutron sensitivity of about 4.4×10^{-14} amperes/neutron/cm²/second in a compact device. The gamma sensitivity is approximately 5×10^{-11} amperes/R/hour.



MECHANICAL:

Maximum Diameter	3-1/16	Inches
Maximum Overall Length	13-7/8	Inches
Approximate Sensitive Length	7	Inches
Net Weight	2-1/2	Pounds
Shipping Weight	10	Pounds

MATERIALS:

Outer Case	Aluminum
Electrodes	Aluminum
Insulation	Alumina Ceramic
Neutron Sensitive Material	Boron Enriched to 96% in B-10
Gas Filling	Argon-Nitrogen Mixture

IMPEDANCE:

Resistance:		
Signal Electrode to Case (minimum)	10^{11}	Ohms
H.V. Electrode to Case (minimum)	10^{11}	Ohms
Capacity:		
Signal Electrode to Case (Note 3)	250	μf
H.V. Electrode to Case (Note 4)	170	μf

MAXIMUM RATINGS:

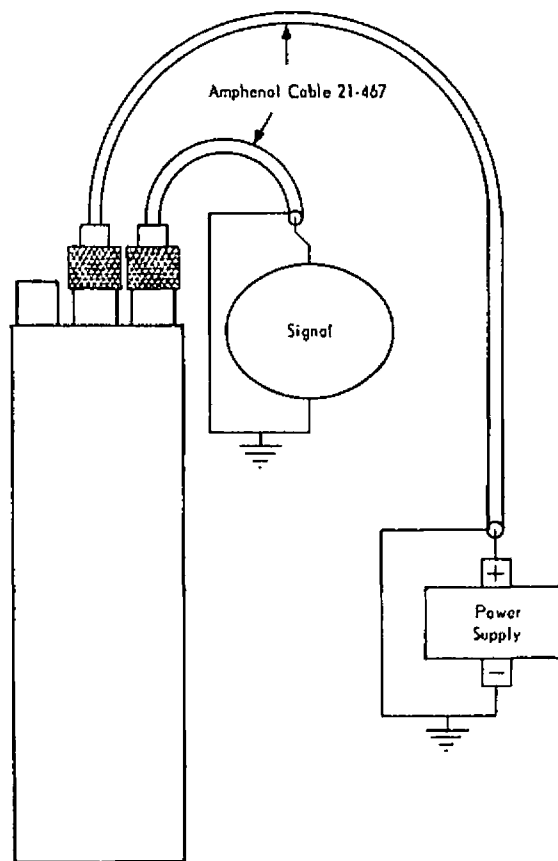
Voltage Between Electrodes	1500	Volts
Temperature	300	°F
External Pressure (Note 2)	180	Pounds/Inch ²
Thermal Neutron Flux	10^{11}	nv

TYPICAL OPERATION:

Operating Voltage (Note 1)	200 to 1000	Volts
Saturation Characteristics	Figure 2	
Thermal Neutron Flux		
Range	2.5×10^3 to 2.5×10^{10}	nv
Thermal Neutron Sensitivity (Approx.)	4.4×10^{-14}	Amperes/nv
Gamma Sensitivity (Approx.)	5×10^{-11}	Amperes/R/hr

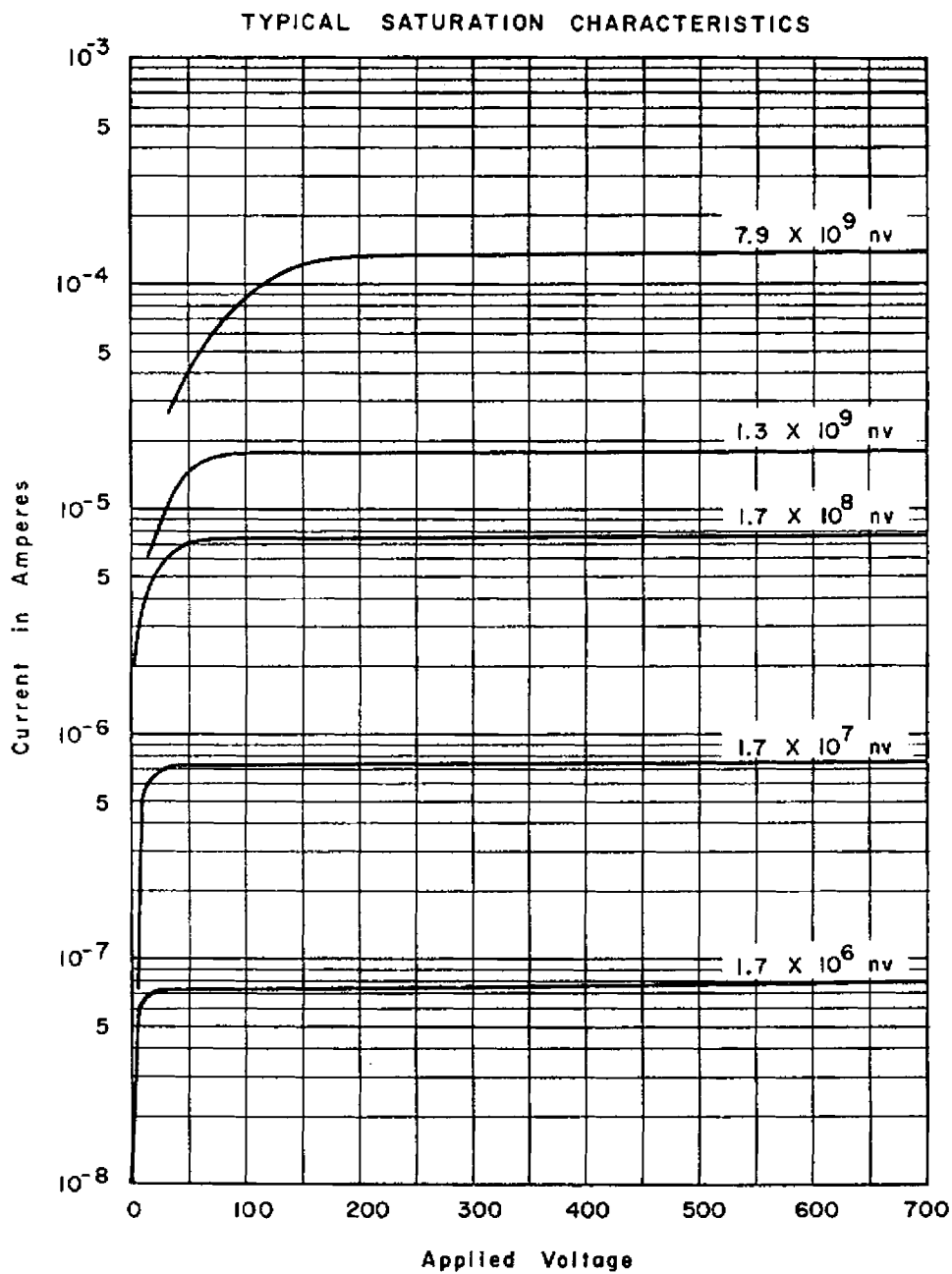
1. The voltage necessary to produce saturation varies with the neutron flux level. Either polarity may be used. See Figure 2.
2. The pressurizing atmosphere must be dry and non-corrosive.
3. With H.V. electrode grounded to case.
4. With signal electrode grounded to case.

TYPICAL CONNECTION DIAGRAM



CE-A1293

FIGURE 1



CE-A1292 R1

FIGURE 2