**Reuter Stokes Fission Counter**

**RS-P6-0805-134**

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**Neutron Counting in a High Gamma Flux**

This fission counter is operable in high gamma flux applications (<10^6/R/ hr). Due to the high neutron-to-gamma signal ratio in these applications, the large fission pulses permit discrimination against gamma pulses and pulse pile-up. B-10 lined counters and He-3 counters are usable in a gamma flux of 10^3 and (1-10) R/hr respectively.

In all applications, the inherent low sensitivity (0.14 cps/hv in 0 R/hr) must be weighed against the advantage of satisfactory performance in a high gamma environment. Performance is greatly dependent on associated electronics when operating in a high gamma flux. High count-rate electronics are required for optimum performance.

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**Smart Construction**

The fission counter is constructed of aluminum alloy for minimum neutron absorption and residual activity. All seals are ceramic-to-metal and insulators are high purity alumina.

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**Sample Specifications**

This proportional counter is a sample of one of over 10,000 neutron counter designs we have manufactured. Please contact us if your application requires modification of the specifications given here.
Specifications

Mechanical
• Maximum diameter: 2.62 cm
• Maximum overall length: 20.32 cm
• Connector type: HN

Material
• Outer shell and inner electrodes: Aluminum
• Connector: Aluminum
• Insulation:
  — Detector: Alumina ceramic
  — Connector: Alumina ceramic
• Neutron sensitive material: Uranium enriched 93% in U-235
• Total quantity of U-235: 12 mg
• Fill gas: 76 cm Hg – Argon/Nitrogen

Capacitance
• 40 pf

Resistance @ 25°C
• $10^{12}$ ohms (minimum)

Maximum Ratings
• Voltage: 800 V
• Temperature: 300°C
• Burn-up life for 10% decrease in sensitivity: $2 \times 10^{20}$ nvt (thermal)

Typical Operating Characteristics
• Thermal neutron sensitivity (see note): 0.14 cps/nv ±20%
• Thermal neutron flux range: to $10^6$ nv
• Voltage range: 300-800 volts
• Output pulse characteristics (average)
  — Charge output: $3 \times 10^{-15}$ coulombs
  — Collection time: ≤200 nanoseconds

Note: The sensitivity is measured with alpha background count rate from uranium plating at <1 cps. Sensitivity values are not adjusted for perturbation.