



## Reuter-Stokes $^3\text{He}$ Neutron Detectors for Homeland Security radiation portal monitors

Reuter-Stokes now offers  $^3\text{He}$ -based neutron proportional counters specifically designed for use in homeland security radiation portal monitors. These accurate and reliable detectors are backed by the extensive application support that you expect from Reuter Stokes instrumentation, and at a price point that makes them practical for use in a wide variety of portal types.

Since 1956, Reuter-Stokes has been an industry leader in providing instrumentation and sensors for harsh environments. With more than 100,000 solutions installed around the world, the Reuter-Stokes products are among the most proven and most widely accepted for radiation monitoring.

### Rugged and reliable for radiation monitoring portals

Radiation portal monitors operate in harsh environments. It is essential that these monitors maintain a very tight level of detection performance across broad temperature ranges, shock and vibration levels. Reuter-Stokes has designed this series of detectors specifically for use in such challenging environments.

The  $^3\text{He}$ -based detectors for radiation portal monitors are 2-inch diameter detectors and are available in standard lengths from 2 feet to 6 feet (active length) with an HN connector (MHV and SHV optional). Additional diameters, lengths and connector configurations are available on request.

### Reduced false alarms

The performance of a neutron detector is measured in sensitivity, both in detecting the presence of radioactive materials, as well as in not generating false alarms. Reuter-Stokes design and manufacturing processes have been developed to minimize microphonics and false alarms during normal operation. With extensive experience in high vibration environments, Reuter-Stokes can design a detector to satisfy your operational requirements.

### Cost effective, high quality solution

Reuter-Stokes Reuter Stokes detectors are recognized across the industry as possessing the quality and dependability required to help you meet the performance standards of the homeland security market. By streamlining the design, manufacturing and supply chain processes, Reuter-Stokes is able to offer a high quality radiation detector – complete with our expert technical application support and an industry-leading warranty – at a price that will help ensure your portals are cost competitive.

And, this series of Reuter-Stokes radiation detectors are “plug and play” for quick and straightforward installation. This preengineering also allows for quicker turnaround times and on-demand fulfillment so you can get instruments when you need them, on your schedule.

## Exceptional reliability

The Reuter-Stokes radiation detector is a rugged solution, proven to perform accurately in the installed application. With one of the longest operational lives in the industry, you can be confident in the performance of our radiation detectors.

Minimize maintenance and spare parts expense, while maximizing portal uptime and availability.

Contact Reuter-Stokes today for more information on the Reuter-Stokes <sup>3</sup>He-Filled Proportional Counter for homeland security radiation portals.

## Product configurations

Standard Portal Detector

2" diameter detectors

### Mechanical

- Nominal diameter 2 inches\*
- Active lengths up to 72 inches (longer upon request)
- Connector HN (MHV and SHV optional)
- All welded and brazed construction

### Material

- Outer shell stainless steel (specially selected to provide the lowest inherent background possible); Aluminum optional
- Silver plated brass connector
- Insulators
  - Teflon connector
  - Alumina ceramic detector
- Neutron sensitive material: <sup>3</sup>He
- Fill pressures up to 20 atmospheres

### Maximum ratings

- Operating temperature 100°C
- Voltage 2500 volts

## Typical operating characteristics

- Thermal neutron efficiency >60%
- Plateau lengths >200 volts
- Resolution (FWHM) – see Figure 1
- Operating voltage characteristics are displayed on gas gain curve
  - Actual operating voltage will be determined by gains and shaping time characteristics of electronics used
- Gamma discrimination of dose rates >100 mR/hr
- Gain matching between detectors: + / - 7% typical (+ / - 3% optional)

## Specifications

Active length*	He-3 pressure (atm)*	Sensitivity (cps/nv)
24"	2	157
	2.5	174
	3	185
	4	202
36"	2	236
	2.5	260
	3	278
	4	303
48"	2	315
	2.5	347
	3	371
	4	405
60"	2	393
	2.5	434
	3	464
	4	506
72"	2	472
	2.5	521
	3	557
	4	607

\*Please contact us for additional diameters, dimensions and pressures.

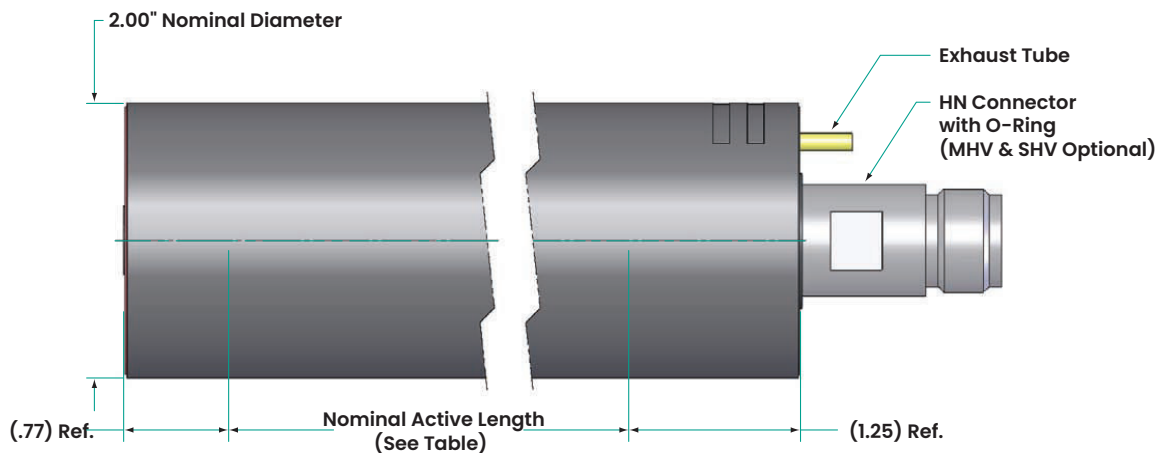


Figure 1: typical differential pulse height spectrum

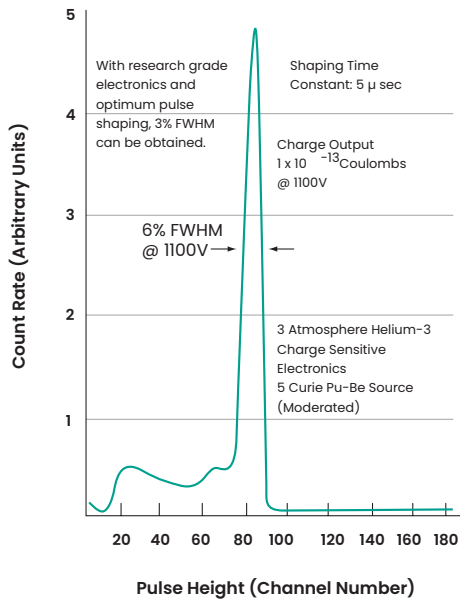


Figure 3: Thermal neutron sensitivity per 12 inches of active length

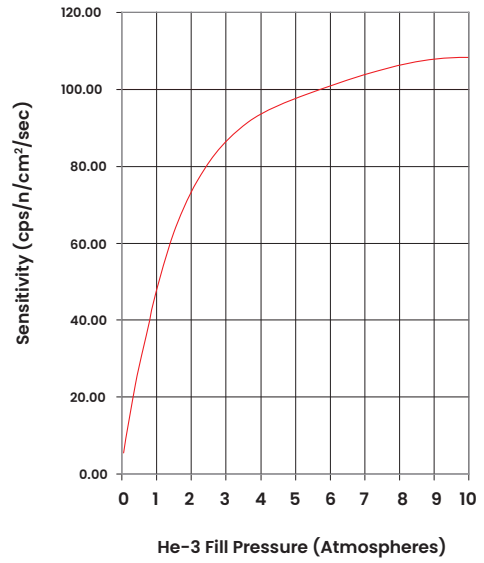
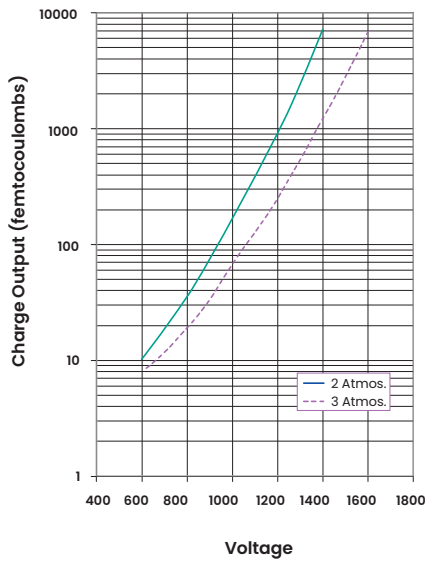


Figure 2: Typical gas gain data



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BHCS34710 (03/2020)

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