Novel Neutron Detection Solutions for Portals

NeuPort™ is part of the ***NeuTrack***™ family of novel neutron detection solutions in development to detect neutron without He-3.

NeuPort™ is a fully integrated neutron detection solution designed to be a plug and play replacement of He-3 tubes in Radiation Portal Monitors (RPM).

NeuPort™ offers the best overall Portal solution:

Plug & Play

NeuPort **replaces He-3 systems** without modification of existing electronics or significant changes in voltage.

Fully Integrated

NeuPort incorporates the electronics that allows calibration to meet specifications.

Reliable

NeuPort is based upon **well established** technologies that guarantee product reliability over time.

Safe

NeuPort contains **no hazardous materials** and does not require secondary containment.

Value

NeuPort provides performance that meets or exceeds **ANSI standards** at a market-leading price point due to its underlying technology and optimized design.

NeuPort™

Product Technology –

NeuPort™ system is a ^{6}LiF/ZnS(Ag) based neutron detector incorporating a design concept reported in Los Alamos National Laboratory references* and successfully applied in multiplicity counters.
The entire assembly is contained within a high density polyethylene moderator box and complies to ANSI 42-35 standards requirements.

*Ref: LA-UR-99-4983C1 (1999), LA-UR-00-3004 (2000), LA-UR-01-3848 (2001)

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NeuPort™ Neutron Detection Solution

System includes –

- Flat packaged neutron sensitive detectors
- Full electronics with pulse shape discrimination (PSD) algorithms
- Proprietary Pulse Shape Discrimination (PSD) algorithm is employed to count neutrons and reject gamma ray events. (Figure 1)
- Gain stabilization
- High density polyethylene moderator enclosure
- Cables and connectors (customizable)

Electrical Specifications (22°C):

- VDC 5V
- Current 0.8A
- Power 4W
- Signal output: TTL (Transitor Transitor Logic) compatible
- Cable Length: 5 feet
- TTL Pulse every Neutron detected
- TTL Pulse output impedance: 50 ohms
- Connectors: Power Supply: Pigtail
  TTL Out: Male BNC

Custom output and connectors are available

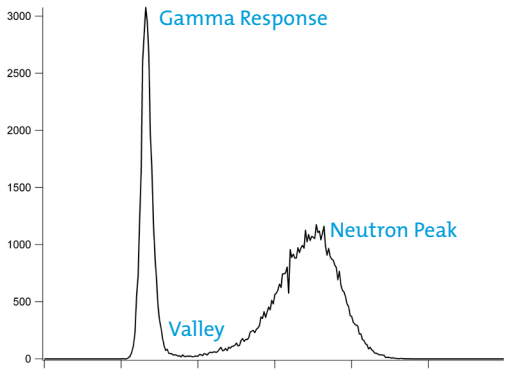

Figure 1. Pulse Shape Discrimination

Typical Design and Performance –

- ***NeuPort*** is a fully integrated system (5" [12.7 cm] x 12.5" [31.8 cm] x 85" [215.9 cm]) designed to replace He-3 tubes 2" diameter x 70" long used in RPM
- NeuPort technology is scalable. A variety of designs can be adjusted to meet specification requirements and size available in the RPM enclosure.
- Operating temperature: -30°C to +55°C

Typical product performing in a 10mR/hr ^{60}Co field –

Model	Neutron Efficiency *	Gamma Rejection
NeuPort 3000	≥ 3 cps/ng	≤ 1 x 10^{-7}
NeuPort 2500	≥ 2.5 cps/ng	≤ 1 x 10^{-7}
NeuPort 2000	≥ 1.8 cps/ng	≤ 1 x 10^{-7}

*Measured with ^{252}Cf moderated source @ 2 meters from the center

Other operating conditions can be considered upon request

Manufacturer reserves the right to alter specifications.

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