Neutron Detection Solutions

**NeuTruck™** and **NeuPort™** are a family of novel neutron detection solutions developed to detect neutron without He-3. These are fully integrated neutron detection solution designed to be a plug and play replacement of He-3 tubes.

**Plug & Play**
- **Replaces He-3 systems** without modification of existing electronics or significant changes in voltage.

**Fully Integrated**
- Incorporates the electronics that allows calibration to meet specifications.

**Reliable**
- Is based upon **well established** technologies that guarantee product reliability over time.

**Safe**
- Contains **no hazardous materials** and does not require secondary containment.

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

**Product Technology –**

**NeuTruck™** and **NeuPort™** systems are a “LiF/ZnS(Ag) based neutron detector incorporating a design concept reported in LANL 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-00-3004 (2000)
LA-UR-01-3848 (2001)
Neutron Detection Solution

Typical Design and Performance –
The technology is scalable.
A designs can be adjusted to meet specification requirements and size available in the enclosure.

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

<table>
<thead>
<tr>
<th>Application</th>
<th>Overall Dimensions</th>
<th>Neutron Efficiency * (cps/ng)</th>
<th>Gamma Rejection</th>
<th>Part Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NeuPort</td>
<td>85” x 12.5” x 4.2”</td>
<td>≥ 2.5</td>
<td>≤ 1 x $10^{-6}$</td>
<td>200-8065</td>
<td>Nu85X12.5X4.2-2.5</td>
</tr>
<tr>
<td></td>
<td>85” x 12.5” x 4.2”</td>
<td>≥ 2.8</td>
<td>≤ 1 x $10^{-6}$</td>
<td>200-8048</td>
<td>Nu85X12.5X4.2-2.8</td>
</tr>
<tr>
<td>NeuTruck</td>
<td>34” x 14” x 4.2”</td>
<td>≥ 1.6</td>
<td>≤ 1 x $10^{-6}$</td>
<td>200-8108</td>
<td>Nu34X14X4.2-1.6</td>
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<tr>
<td></td>
<td>34” x 14” x 4.2”</td>
<td>≥ 2.3</td>
<td>≤ 1 x $10^{-6}$</td>
<td>200-8009</td>
<td>Nu34X14X4.2-2.3</td>
</tr>
</tbody>
</table>

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

Other operating conditions can be considered upon request

Electrical Specifications (22°C):
• VDC 5V
• Current 0.8A
• Power 4W
• Signal output: TTL (Transistor Transistor 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

- Operating temperature: -30°C to +55°C

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)

Figure 1. Pulse Shape Discrimination

Manufacturer reserves the right to alter specifications.
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