



NeuPort/NeuTruck

Operating Manual



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Revision History

Revision	Description	Date
-	Initial Release	24-January-2012
A	Removed all references of model number 2500 from document. Removed pictures showing logo and corresponding note.	03-April-2017

Safety Information

Before applying voltage, ensure the power supply and system are properly grounded.

Storage

The NeuPort/NeuTruck shall be stored within a temperature range of -40 °C to +55 °C. The rate of temperature change shall not exceed 10 °C per hour.

Handling Instructions

The weight of the NeuPort/NeuTruck will depend on the configuration. In all cases the assemblies shall be handled by at least two people.

The detector comes with two handles installed on either end. The handles can be removed by unscrewing the two screws holding them in place. The detectors are also supplied with 4 eyebolts which can be screwed into the ¼-20 threaded inserts once the handles are removed.



Unpacking Instructions

- Using the appropriate tools, typically a power drill/screw driver with a Philips bit, remove the lid from the crate.
- Remove the packing material inside the crate.

NOTE: Packing material and crate shall be retained in prevision of additional shipments.

- Grasp the handles installed on either end of the detector to remove it from the crate.

NOTE: If damage to the shipping crate is apparent, ask that the carrier's agent to be present when the detector is unpacked or otherwise document the damage. Inspect the detector for mechanical damage, scratches, dents, etc. The damage report will be required by Saint-Gobain Crystals to initiate a claim.

Repacking Instructions

- If not already installed, screw handles (provided) into threaded inserts on each end of the detector using $\frac{1}{4}$ "-20 screws (provided).
- To prevent damage to the cables, coil and tape power and signal cables to front cover of the detector.
- Obtain the same crate that the detector was delivered in or a new crate with inside dimensions that are at least 2" larger, on all sides, than the overall length (including handles), width, and height.
- Place a 2" thick piece of standard shipping foam or bead-board on the bottom surface of the crate.
- Grasp the detector by the handles and place it in the crate with the NeuPort and Saint-Gobain Crystals logos facing up.
- Using standard shipping foam or bead-board pack around all sides of the detector to secure it from moving or bouncing inside of the crate.
- Using the appropriate tools, typically a power drill/screw driver with a Philips bit, install lid onto crate.



General Description

The NeuPort/NeuTruck neutron detectors manufactured by Saint-Gobain Crystals consists of multiple layers of scintillating screen and wavelength shifting fibers configured in a moderator box together with pulse analyzing electronics.

The NeuPort/NeuTruck is factory calibrated to meet your specific neutron efficiency or gamma rejection requirements.

Neutron induced events result in an output TTL pulse; gamma events are rejected. The TTL driver is designed with a 50Ω output impedance and will support up to 50 feet of cable. The system is gain and temperature stabilized so that performance attributes are retained from at least $-30\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$. The power required is up to 1A at 5V (User supplied).

The general appearance, exterior dimensions, and cable locations of the NeuPort/NeuTruck detectors can vary depending on your specific configuration. In general, the side with the serial number is front and should face the neutron source. **NOTE: Do not remove front covers of moderator as this may void the warranty.**

Connectors

Power Supply: 28 AWG Pigtail

- Red wire = +5VoltsDC
- Green wire = Ground

TTL Signal Output: Male BNC Connector

Specifications

This manual is geared toward the general operation of the detectors. The performance specifications are defined on the sales drawings as provided by Saint-Gobain.

System Connection and Typical Operation

The system operates at +5VDC and requires up to 5W of power.

- Securely mount the NeuPort/NeuTruck into OEM system with the front covers facing towards the neutron source – Saint-Gobain Crystals can provide design assistance to define an acceptable mounting scheme for use within your system.
- Connect TTL output male BNC connector to your data acquisition system.
- With the power off, connect the Red wire to the +5VDC power supply.



- With the power off, connect the Green wire to the Ground of the +5VDC power supply.
- Turn on Power supply.
- The system takes approximately 50seconds to start-up. Once power is applied the system calibrates and performs a system verification. After 50seconds the system will report neutron counts.

Troubleshooting Guide

Problem	Verification Steps
No Output	Ensure that Power and Signal cables are properly and securely connected
	Ensure that the DC power supply is working correctly. Use a voltmeter to verify the +5VDC supply voltage.
	Inspect the cables for damage
	Reset the system by removing the power to the detector wait at least 15 seconds before applying power to the system
Noisy Signal	Ensure that the system is properly grounded
	Reset the system by removing the power to the detector wait at least 15 seconds before applying power to the system