NBRICK

32 ch Neutron Position Sensing System

Features

- Tailored for the readout of **3He/BaF3 tubes**
- **Thanos** DAQ software for neutron detection applications
- Up to 16 position sensitive detectors
- Provides High Voltage, preamplification stage and digital pulse processing
- Rackmountable setup for SANS instruments and Nuclear Security detectors

Description

The CAEN **Mod.NBrick** is a rackmount system composed of three boards:

- **R1443C**: Charge Sensitive Preamplifier specifically designed for 3He/BF_3 tubes (32-ch independent HV).
- R5560C: 32 channels 14-bit 125 MS/s Pulse Processor.
- **R8033**: High Voltage board (Mod. **R8033DP**: 16-ch +4kV/3mA).

The three units combined together build a complete readout system for neutron detection applications, allowing for the readout of up to 16 position-sensing 3He/BF3 tubes.

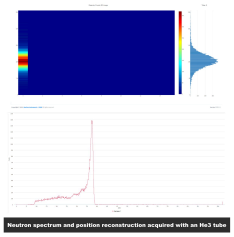
It provides High Voltage up to 4 kV for 3He/BF3 tubes bias and a proper preamplification stage with a total gain of 0.85 to 19 V/pC and sensitivity 2 mV/fC. Thanks to the architecture based on Flash ADC, the Pulse Processor can sustain event rates up to 100 kcps per channel. The firmware onboard performs Resistive Charge Division for position reconstruction and outputs energy/timing data.

CAEN provides the **Thanos** DAQ software, that allows the user to remotely manage the High Voltage and Digitizers, to acquire waveforms, energy spectra, ToF spectra, and to perform position reconstruction. The figures below show some examples of measurements performed using 4 3He tubes and a 252 Cf source. The emitted neutrons were moderated by using a polyethylene shielding, therefore thermal neutrons were detected.

Ordering Options

Code	Description	
WKNBRICKXAAA	NBRICK - 32-ch Neutron Position Sensing System	RoHS

Gallery



Neutron spectrum and position reconstruction acquired with an He3 tube

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