

Design overview

The Neutron Detector Module (NDM v1.0) allows the read-out and processing of a maximum of 16 channels of detection for any type of Detector Head based on ZnS(Ag)-⁶Li scintillator technology.

- Optimized for the use with photomultipliers (PMTs).
- Compatible with SiPMs
- 16x input channels / 16x 5V outputs
- 4 configurable monitoring ports.
- External clock input for time stamp processing.
- 1x I2C port.

Includes a GUI software in java that works as master controller and data managing interface.



Functional highlights

- Fully digital system based on FPGA technology
- All internal parameters can be modified by the user.
- Stand alone operation (before initial configuration)
- Online statistical analysis.
- Event record mode at both pixel and PMT level.
- Custom processing implementations are possible upon demand.
- User friendly interface with full access to internal parameter.

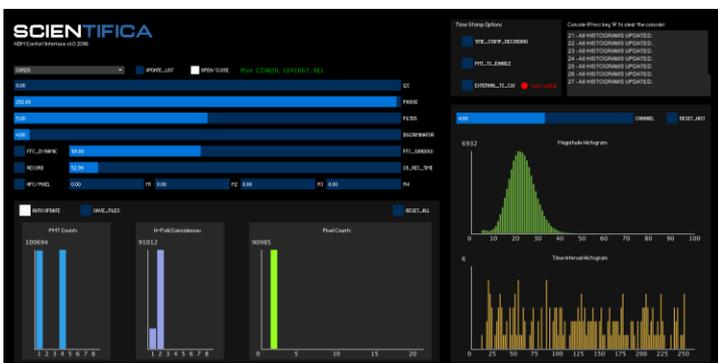
Applications

- Electronics read-out of any neutron detector based on ZnS(Ag)-⁶Li scintillator.
- Testing platform for novel concepts of neutron detectors.

References

NDM v1.0 is being used in:

- ESS Bilbao NDH CF/W



Specification

- 16x processing channels
- 5x configurable monitor outputs
- 1x I2C bus interface
- 16x 5VDC outputs (25W)
- 185 x 250 mm 1U enrackable case
- Artix 7 (XC7A100T) FPGA.
- USB communication interface.
- 7 GPIO ports at rear
- Time Stamp Recording modes
 - PMT events / Pixel events
 - Internal/External clock
- Processing Block included:
 - Dark pulses Filter
 - Discriminator Window
 - Discriminator Level
 - Coincidence Decoder
 - Pixel Calculation
- Statistical Analysis:
 - Counts per PMT
 - Coincidence statistics
 - Counts per Pixel
 - *Number of 'single photon' per event
 - *Time between events histogram
 - Recording Time Modes: Countdown / Continuous

*This analysis is made for just 1 channel eligible by the user for each run

Contact Information

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