Development of trigger event generate module for the NeuNET System

S. Muto[1], S. Satoh[1], and M. Ishiwata[2]

[1]KENS, KEK, Tsukuba, 305-0801, JAPAN

[2]Bee Beans Technologies Co., Ltd., 109 Oho, Tsukuba, 305-0047, JAPAN

suguru.muto@kek.jp

Abstract

The DAQ group of KENS has developing a data acquisition (DAQ) system for neutron scattering experiments in the MLF/J-PARC. The DAQ system has adopting the eventmode data taking instead of a conventional histogram-mode data taking to expand flexibility of measurements. Therefore, the KENS-DAQ group has developed the new DAQ system called a NeuNET system. The NeuNET system consists of some modules such as the NeuNET: ^{3}He-PSD data processing module [1] and the GateNET: TOF timing control module [2]. In general, time-of-flight (TOF) neutron scattering experiments for material science, required data are not only neutron detection data but also the sample surrounding condition data, such as temperature, pressure, and et cetera. Therefore, we have developing event data generating modules, which produce event data from these samples surrounding conditions, so-called "TrigNET". Sample surrounding conditions are include many different items, so that the TrigNET can be suited it in various way, one is to modify interface hardware and another is modify programmable data processing circuit. The first TrigNET has been developing for the BL21 "NOVA" spectrometer in the MLF, which is customized for the BL21 equipment. The second TrigNET is "TrigNET type CP1" which has more general interface and is commercially available product. The TrigNET type CP1 has eight digital inputs, two slow analog and two fast analog inputs. An event data, which is synchronized to TOF timing is generated by on board field programmable gate array (FPGA) chip from various input and trigger conditions that are selected by operation commands via network.

We will report a detail of TrigNET type CP1 and the NeuNET system.

References

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