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Development and Application of a general-purpose VME module using FMC

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We report development of a general-purpose VME module using FMC and applications of systems using the VME module for SACLA DAQ and SuperKEKB.

We have developed a general-purpose VME module using FPGA Mezzanine Card (FMC) to use in accelerator control and DAQ for experiments. A lot of signaling between detectors and systems are necessary for large-scale accelerators and experiments also exclusive built-in modules are often necessary. Development of such built-in module costs a lot of time and money and it is becoming very difficult to make the built-in module requested function in the limited budget, a fixed date and the human resources. We aimed to develop the general-purpose module to allow more functionality by changing mezzanine card and it results in a short term and in low budget for developing module. The general-purpose VME module is specialized for the function in our control and the experimental use more than an over-the-counter base board and it is optimized for SuperKEKB accelerator control and the SACLA DAQ. The general-purpose VME module designed to support HPC of the FMC as interface of mezzanine card, 1Gbps Ethernet, SFP+, input/output of a LVTTTL signal by LEMO connectors. Development of the VME module was advanced under cooperation of OpenIt.

Now this VME module was implemented in beam gate system for SuperKEKB. And it is expected to use in injection control for SuperKEKB and in new DAQ system for SACLA experiment.

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