

Proposal of Readout System for charge amplifier and switched capacitor array asic

Charge amplifier and switched capacitor array (CASCA) asic is designed to provide 32 electronic channels for different micro-pattern gas detectors. A large number of electronic channels means massive amounts of data. Thus, we designed a readout system with high-speed transmission. The system mainly consists of three kinds of modules: the CASCA card, the Analog-Digital conversion card (AD card), and the Main-Control card. The CASCA card, mounted with a particular CASCA asic chips, are designed for receiving detector signals. The Analog-Digital conversion card is used for digitizing the output signals from the CASCA card and providing necessary control signals for the CASCA card with a FPGA chip and a ADC chip. The Main-Control card, connected with the Analog-Digital conversion card by HDMI interface, has a FPGA-based reconfigurable logic, providing source clock and trigger signal. The digital data transfer between the AD card with the Main-Control card is realized by GTX interface with filed programmable gate arrays(FPGA). The Main-Control card transfers data through Gigabit Ethernet protocol realized by a TCP core.

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