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The CMD-3 Data Acquisition System

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The CMD-3 (Cryogenic Magnetic Detector) is the general purpose detector, designed for experiments at VEPP-2000. The detector includes a magnetic spectrometer, made of the drift chamber and multiwire proportional chamber, placed inside the 1.3 T magnetic field generated by thin superconducting solenoid, and an electromagnetic calorimeter, made of stacked liquid Xenon-based and CsI-based barrel calorimeters and BGO-based endcap calorimeter. The detector also includes the time-of-flight counters, placed between two barrel calorimeters, and the muon range system.
A specialized data acquisition system is developed, designed, and fabricated for CMD-3 detector. The CMD-3 DAQ capacity is to process some about 10k channels with mean Trigger rate up to 5kHz thus producing about 3Gbps data rate. The special attention is devoted to synchronization of data transmission, and electronics efficiency on-line checks. The environment of signaling of synchronization and the data, named C-Link has been for this purpose specially developed.
The present paper describes a specialized electronic system of the data acquisition (DAQ) system for precision experiments with the CMD-3 detector in the VEPP-2000 collider. The CMD-3 DAQ architecture can be used for a big installation DAQ, such as Super C-Tau Factory.

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