

Data Acquisition System of the NA64 Experiment

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NA64 is a fixed-target experiment located at the H4 beam line of the Super Proton Synchrotron (SPS) at CERN. It is dedicated for searches for dark matter production in both visible and invisible decays of sub-GeV vector mediators.

The experiment facility includes different types of detectors: Calorimeters, Straws drift tubes, Gas Electron Multipliers (GEM), Micromegas, Beam Momentum Stations (BMS), and scintillator-based hodoscopes. The Data Acquisition System (DAQ) is responsible for collecting the event data, for forming and propagating the trigger decision, and for time synchronization across different sub-systems.

The DAQ hardware architecture is based on custom front-end electronics, data concentrator, buffering readout cards, server PCs and network equipment. All DAQ equipment is configured, managed and monitored by the RCCARS software package, which is also responsible for reading the experimental data and writing them to a data storage.

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