

A Fast Data Acquisition System for Spill Analysis and Beam Loss Measurement

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Abstract

The control of beam loss and slowly extracted currents at the heavy ion synchrotron at GSI is performed by particle counters such as scintillators, ion chambers and secondary electron monitors. To optimize transmission or beam loss several counters have to be observed simultaneously and their count rates during the spill have to be displayed as a function of time. Therefore a new data acquisition system has been developed with the main intention to combine the operating purposes beam loss measurement, spill analysis, spill structure measurement and matrix switching functionality in one single assembly. To provide a reasonable digital selection of counters at significant locations a modular VME setup based on the GSI data acquisition software MBS (Multi Branch System) was chosen. An overview of the design regarding the digital electronics and the infrastructure is given. Of main interest in addition to the high performance of the used hardware is the development of a user-friendly software interface for hardware controls, data evaluation and presentation.