

CONCEPT AND ARCHITECTURE OF THE RHIC LLRF UPGRADE PLATFORM

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The goal of the RHIC LLRF upgrade has been the development of a stand alone, generic, high performance, modular LLRF control platform, which can be configured to replace existing systems and serve as a common platform for all new RF systems with the Collider-Accelerator Department at BNL. The platform is designed to integrate seamlessly into a distributed network based controls infrastructure, be easy to deploy, and to be useful in a variety of digital signal processing and data acquisition roles. Reuse of hardware, software and firmware has been emphasized to minimize development effort and maximize commonality of system components. System interconnection, synchronization and scaling are facilitated by a deterministic, high speed serial timing and data link, while standard intra and inter chassis communications utilize high speed, non-deterministic protocol based serial links. System hardware configuration is modular and flexible, based on a combination of a main carrier board which can host up to six custom or commercial daughter modules as required to implement desired functionality. This paper will provide an overview of the platform concept, its architecture, features and benefits.

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