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First Prototype of the Muon Frontend Control Electronics for the LHCb Upgrade: Hardware Realization and Test

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The muon detector plays a key role in the trigger of the LHCb experiment at CERN. The upgrade of its electronics is required in order to be compliant with the new 40 MHz readout system, designed to cope with future LHC runs between five and ten times the initial design luminosity. The framework of the Service Board System upgrade is aimed to replace the system in charge of monitoring and tuning the 120’000 readout channels of the muon chambers. The aim is to provide a more reliable, flexible and fast means of control migrating from the actual distributed local control to a centralized architecture based on a custom high speed serial link and a remote software controller. In this paper we present in details the new Service Board System hardware prototypes from the initial architectural description to board connections, highlighting the main functionalities of the designed devices with preliminary test results.

Summary

See attached file: “Summary_lhcb_fe_control_upgrade_final.pdf”

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