

Data transmission and selection for the L0 calorimeter trigger of LHCb.

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This report describes the Selection Crate, designed by INFN for the L0 calorimeter trigger of the LHCb experiment.

The Selection Crate is a modular system which consists in 8 Selection Boards (SB) used to select the most energetic clusters detected by the electromagnetic and hadron calorimeters, as well to evaluate other global trigger variables.

A SB is equipped with 28 x 1.6 Gbps optical inputs and 3 x 1.6 Gbps optical outputs. The slow control is achieved by using a onboard diskless ethernet-booting CreditCard PC with a related GlueCard bus converter, while a TTCrq board provides the fast control TFC signals of the LHC TTC system.

Each SB receives data from the front-end through 3 MPO ribbon connectors and sends data to the trigger decision unit through single channel optical links.

All the optical links are suited for multimode, 1.6 Gbps, 850 nm fiber with sync patterns and 8B/10B coding. The optical transmitters used throughout the calorimeter have been designed by INFN Bologna. The optical transmitter boards are capable of sending on a single fiber up to 8 x 32bit at the LHCb clock of 40.08 MHz.

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