

BOC De-Multiplexing of 80 Mb/s Streams

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Abstract

This note describes the implementation of the de-multiplexing hardware and how it works.

1 Introduction

Fibre-optic cables from Pixel B-Layer- and Layer1- and Disk-modules will carry data at 80 Mb/s. The ROD accepts data at 40 Mb/s only. For such signals it is foreseen that the BOC will demultiplex each 80 Mb/s stream into 2x40 Mb/s streams. Additionally the B-Layer Modules are sending data on two fibre-optic cable so that a routing of the data streams for the same module on the BOC is necessary.

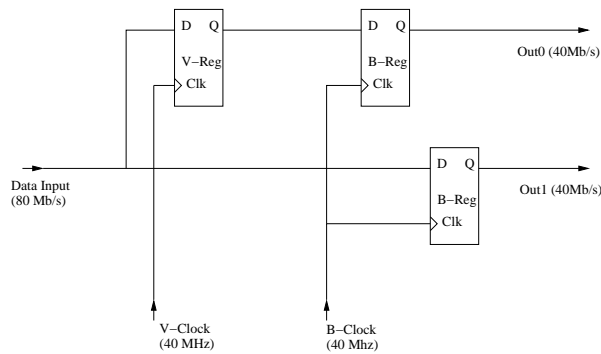


Figure 1: Demultiplexing scheme for the 80 Mb/s data streams

2 Hardware and functionality

The BOC can be operated in different RX-data modes. While mode 0 (40 Mb/s operation) will not change the data streams, mode 1 to 3 (80 Mb/s operation is different configurations) will do the demultiplexing of the data streams which arrive at RX-plugins in sites 0 and 7. When in this mode, the configuration

within the CPLD is as shown in 1. The relative phase of the V- and B-Clocks is adjustable within the BOC clock generation circuits: for this task they are in antiphase. The incoming data is sampled by the B-clock and by the antiphased V-clock. So the V-clock is sampling the 1. bit of the data stream and the B-clock takes the 2. bit. Both resulting 40Mb/s streams are then clocked to the ROD with the B-clock. For B-Layer operation the data are arriving at the BOC in two 80 Mb/s streams, which have to be sorted in four 40 Mb/s streams going next to each other to the ROD. This is done over a small piggyback platine sitting near the CLPDs. Using this platine it is possible to have all the four 40 Mb/s data streams coming from the same module going to the same formatter on the ROD. In Disk- or Layer1-configuration there will be one 80 Mb/s stream per module which will result in two 40 Mb/s streams going next to each other to the ROD.