SCT TIM-BOC Interface Specification

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Abstract

This document is a preliminary and incomplete draft of the SCT interface specification between TIM and BOC. Feedback is welcome.

Introduction

The TTC Interface Module (TIM) distributes the clock to the back-of-crate (BOC) optocards within a crate via a custom backplane.

This document should satisfy the interface requirements set out in the BOC requirements document [ref. BOC_requirements] and the TIM requirements document [ref. TIM_requirements].

Signals

The TIM delivers the following signals to each BOC slot:

Name	Level	Description
CLK+,CLK-	PECL	single balanced differential pair forming CLK (40 MHz BC clock)

Timing

* The clock should arrive at each slot at the same time.

* The CLK+/CLK- pair delivered by the TIM to each BOC slot should meet the clock input specification for BOC. The BOC specifications for clock jitter, long-term stability, duty cycle, edge rate, etc, are driven by the input requirements of the front-end DORIC chip. The BOC could have a PLL to meet these requirements.

* The clock specification for the BOC is sufficient for the ROD. The BOC passes the clock on to the ROD.

Electrical Notes

* The clock is distributed point-to-point by paths of equal length: the CLK+/CLK- pair at each ROD slot is routed from a separate pair of pins on the TIM slot.

* Each CLK+/CLK- pair is terminated on the BOC by a resistor between CLK+ and CLK- (unoccupied BOC slots lack termination for CLK+/CLK-).

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* The TIM uses PECL drivers with moderate edge rates for CLK+/CLK-
  to minimize reflections from connectors.

* Load resistors for the CLK+/CLK- driver are located at the driver.


References
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BOC_requirements http://www.hep.phy.cam.ac.uk/goodrick/AtBOC/boc_tim.html
                 http://www.hep.phy.cam.ac.uk/goodrick/AtBOC/boc_timing1.pdf
TIM_requirements http://www.hep.ucl.ac.uk/~jbl/SCT/TIM_requirements.txt

http://www.hep.ucl.ac.uk/~jbl/SCT/Crate-backplane.ps

http://positron.ps.uci.edu/~rodatlas/link_interface.pdf
http://positron.ps.uci.edu/~pier/ROD/pdf/ROD_BOC_Interface0.PDF
http://positron.ps.uci.edu/~pier/ROD/pdf/RodPinoutVME64x0.PDF

History:

0.3 11Nov98 UCI http://positron.ps.uci.edu/~pier/ROD/pdf/RODtofromTTC1.PDF
0.4 29Jul99 JBL New version

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http://www.hep.ucl.ac.uk/~jbl/SCT/TIM_interface_BOC.txt
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