BaBar IFR
ICC System Description

Preliminary

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1 Introduction

The IFR Crate Controller (ICC) is the master of the front end Crates. It is connected to the standard BaBar ReadOut Module via the optical link at 1.2 GHz and to the IFR boards (IFB, ICB, ITB) via the backplane (PDB).

2 ICC Requirements

The ICC must have serial optical link to receive Commands and send Data to the ROM. The Commands must be de-multiplexing to the 16 lines and the data must be multiplexed in the serial Data link.
The ICC must extract the 59.5 MHz System Clock and distribute it to 16 board with a maximum jitter of $\pm 0.5 ns$ and 50% duty cycle.
The System Clock must be delayed to wait for signal propagation from IFB and used to send back data to ROM.

3 ICC Description

The crate controller acts as demultiplexer for the commands coming from the ROM and like multiplexer for the data sent to the ROM. To handle with 59.5 MHz special care must be used, the printed circuit will be realized in stripline technology, with controlled impedance lines. Special buffers will be used to drive the lines.

The commands data coming from the ROM are demultiplexed in the HP chip, then are converted from ECL to TTL and the send to the 16 lines. The data coming from the IFR board are multiplexed by the HP link and sent to the ROM using the input clock. The incoming clock is extracted from the link, conditioned (PLL NE568AN) and delayed to wait the data coming from the IFR boards. To distribute the clock to the 16 boards a splitter (IDT74CT807T) is used which guarantee minimum channel differences (250ps). The FINISAR chips have a built-in serial monitor which can be controller with a dedicated microcontroller (MC68HC11) connected to Environmental Control via a serial link (RS232). The same controller will be used also to control the voltage and the temperature of the crates and to set the delay on the DLL. The ICC block diagram is shown in Fig 1. The components used in the board are shown in tab 1:

Component	name
Optical Rx/Tx	FRM8510
line driver	IDT74CT2244CT
ECL/TLL conv	F100328
HP mult	HDMP1012/1014
Clock distrib.	IDT74FCT807T
PLL	NE568AN
Microcontroller	
Dll	DAL

Table 1: Value of STRIPLINE technology

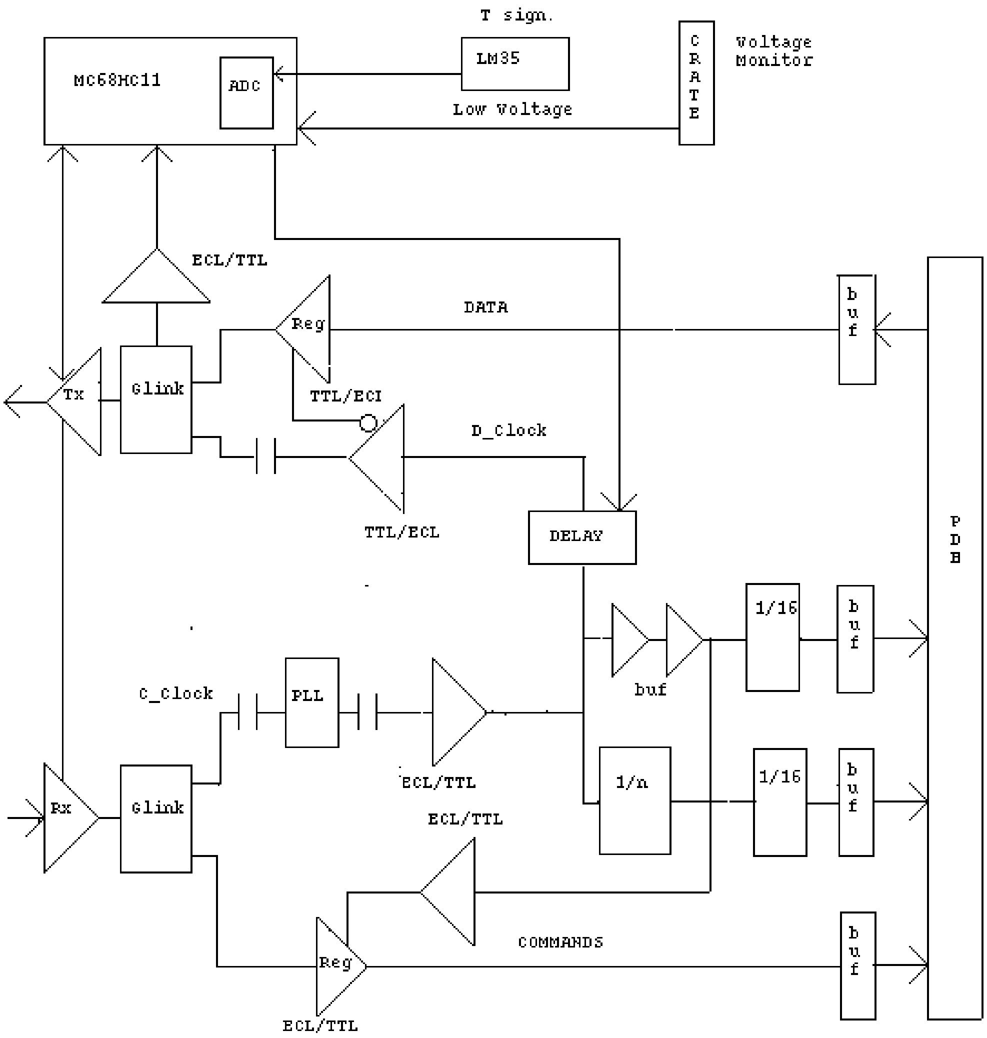

Figure 1: Block diagramar of the ICC Module