Fermilab

Particle Physics Division/CDF Upgrade Project

DRAFT

Specification for TX Mezzanine Module

Introduction

The TX Mezzanine Module allows the user to input two independent 16 bit data streams which are serialized by the TI TLK1501 SERDES at 62.5Mhz and sent out on fiber optic cables. The input data must be synchronized to the onboard oscillator, a copy of which is sent as an output to pin J1-11.

Onboard CPLDs and jumpers allow for zero, one or two copies of each independent data stream to be sent offboard as a 1.25Gbps optical output.

Jumper Definition

Jumper	Definition
J4	Controls output of copy1 - Data Stream A short pin 1-2 connect to TX_DIS input (weak pulldown) short pin 2-3 Disable O/E Transmitter
J2	Controls output of copy2 - Data Stream A short pin 1-2 connect to TX_DIS input (weak pulldown) short pin 2-3 Disable O/E Transmitter
J7	Controls output of copy1 - Data Stream B short pin 1-2 connect to TX_DIS input (weak pulldown) short pin 2-3 Disable O/E Transmitter
J6	Controls output of copy2 - Data Stream B short pin 1-2 connect to TX_DIS input (weak pulldown) short pin 2-3 Disable O/E Transmitter
J5	OFF – Enables oscillator clock ON - Turns off oscillator clock

The TX Mezzanine Module has been built on a Common Mezzanine Format. It is meant to be used on the CDF Pulsar Board or on the Pulsar Aux Card. All connections are through the J1 connector as described in the table below:

Pin	**Signal**	**Pin**	**Signal**
1	SPARE(4)	2	SPARE(3)
3	+3.3V	4	SPARE(2)
5	SPARE(1)	6	SPARE(0)
7	ENABLE	8	GND
9	GND	10	TX_DIS
11	CLK	12	GND
13	GND	14	PRBSEN
15	LOOP_EN	16	GND
17	B_TX_EN	18	B_TX_ER
19	B_TXD(15)	20	B_TXD(14)
21	B_TXD(13)	22	+3.3V
23	GND	24	B_TXD(12)
25	B_TXD(11)	26	B_TXD(10)
27	B_TXD(9)	28	GND
29	B_TXD(8)	30	B_TXD(7)
31	GND	32	B_TXD(6)
33	B_TXD(5)	34	B_TXD(4)
35	B_TXD(3)	36	GND
37	B_TXD(2)	38	B_TXD(1)
39	+3.3V	40	B_TXD(0)
41	A_TX_EN	42	A_TX_ER
43	A_TXD(15)	44	GND
45	A_TXD(14)	46	A_TXD(13)
47	GND	48	A_TXD(12)
49	A_TXD(11)	50	A_TXD(10)
51	A_TXD(9)	52	+3.3V
53	A_TXD(8)	54	A_TXD(7)
55	GND	56	A_TXD(6)
57	A_TXD(5)	58	A_TXD(4)
59	A_TXD(3)	60	GND
61	A_TXD(2)	62	A_TXD(1)
63	+3.3V	64	A_TXD(0)

Signal Definition:

Signal Name	Direction	Definition
SPARE(4:0)	undefined	undefined
ENABLE	input	enables SERDES part (TLK1501) 0- power down 1- Enable
CLK	output	copy of oscillator clock used by SERDES
TX_DIS	input	turns off optical transmitter(weak pulldown) 0- transmit enabled 1- transmit off
LOOPEN	input	loop enable (weak pulldown) 0- normal operation 1- loopback mode of SERDES
PRBSEN	input	PRBS test enable (weak pulldown) 0- normal operation 1- PRBS mode
B_TX_EN	input	Transmit Control Bit (see table below)
B_TX_ER	input	Transmit Control Bit (see table below)
B_TXD(15:0)	input	Data to be transmitted
A_TX_EN	input	Transmit Control Bit (see table below)
A_TX_ER	input	Transmit Control Bit (see table below)
A_TXD(15:0)	input	Data to be transmitted

Transmit Control

TX_EN	TX_ER	Encoded 20 bit output
0	0	IDLE Pattern
1	0	Normal Data