Stefano Livi 24 Feb 2000
Max Planck Inst. fuer Aeronomie
37191 Katlenburg-Lindau
Germany

Dr. Livi,

Enclosed is the first draft of the interface “specification” between the TOF board and SIT that Glenn promised you at your visit.

As you can see I have repeated a lot of things from my straw-man proposal at the meeting and have included some guesses at the power, size and mass as well as listing my understanding of the input and output signals involved. I have changed my mind about output format and now prefer a parallel design as being more flexible. This is reflected in the signal list. There is also a paragraph which outlines my understanding of the overall operation of the system.

Please make any and all corrections necessary.

Best regards,

Peter

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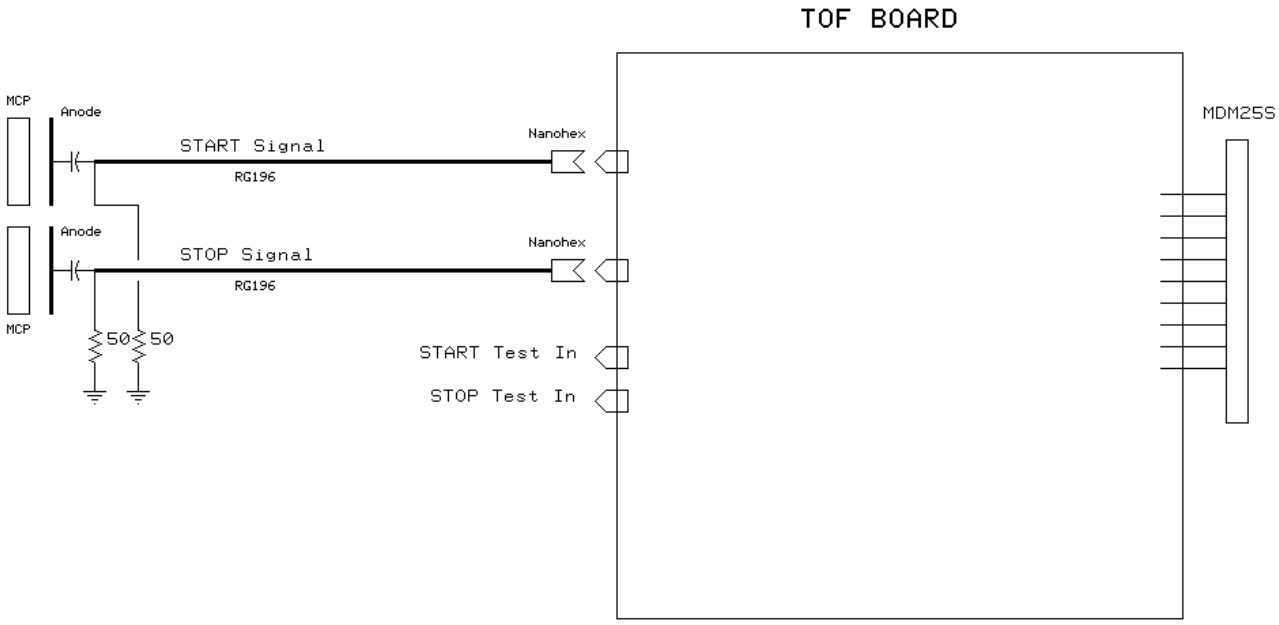

Pin	Signal
1	TOF Bit 9 (MSB)
2	TOF Bit 8
3	TOF Bit 7
4	TOF Bit 6
5	TOF Bit 5
6	TOF Bit 4
7	TOF Bit 3
8	TOF Bit 2
9	TOF Bit 1
10	TOF Bit 0 (LSB)
11	TREADY
12	VSR
13	STARTR
14	STOPR
15	+12V
16	+5V
17	+3.3V
18	AGND
19	DGND
20	-5V
21	CALGATE
22	CALCLK
23	CALDATA
24	spare
25	spare

TOF0-9	Parallel TOF output data
TREADY	A 5v logic signal going high when TOF0-9 are valid May not be necessary if can get timing from VSR.
VSR	A 5v logic pulse indicating a STOP signal has occurred within 60nS after a START signal. Might also indicate TOF data valid Width 0.5-1uS
STARTR	A 5v logic pulse indicating that the START discriminator has fired. Width 0.5-1uS.
STOPR	A 5v logic pulse indicating that the STOP discriminator has fired. Width 0.5-1uS.
CALGATE CALCLK CALDATA	A 5V 3-wire serial interface for calibrating the TOF Details TBD

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INPUT SIGNALS

START,STOP — Capacitively coupled to MCP collection anode at HV
Signals negative going 10mV-1V with peaking time of 1.5-2nS and <10% ringing
START rate 0-100kHz
STOP rate 0-50kHz
TOF - 1-2 to 60 nS

TEST CONNECTOR — Signals from pulse generator. Negative going, 0.1v Rate 1kHz

POWER

Voltage	Current	Regulation	Power
+12	3.5Ma	5%	40Mw
+5	40mA	5%	200mW
+3.3	30mA	5%	100mW
-5	2mA	5%	10mW
			350Mw TOTAL

SIZE

Single board, < 13cm x < 13cm Mounting TBD (5 mounting holes?)

MASS

100g — total including conformal coat and connectors
excluding mounting hardware

OPERATION

System is free-running. A START signal begins measurement of time-of-flight.
If it is followed within 60 nS by a STOP, a valid stop pulse is generated and the digitized TOF is output in parallel. When the output data is stable a TREADY signal is generated. (Or perhaps VS could be used for this)
If there is no valid stop, the system clears itself in TBD nS ready for the next START.
I assume that the data is buffered internally and remains valid until the next valid stop.

Calibration cycle: ?

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