



Fermi National Accelerator Laboratory

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Engineering Note

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Project: Stand Alone Sequencer Version 1

Doc. No: U020314C

Subject: Modifications to make Masters/Slaves

Introduction

In some test situations, such as in cosmic ray test stands, multiple SASeqs need to run synchronously, accepting triggers simultaneously at all cards. This note describes the modifications necessary to achieve this.

Master

- 1) Solder a 3" piece of RG174 with a LEMO connector on one end to U93, pin15. Pin 4 of U58 can serve as ground.
- 2) Route it out through the Logic opening in the front panel. This is the Master Clock output for all the Slave modules.
- 3) Program U89 (NRZGEN) with the .pof file in Server4\Electronics\SASeq\Lab3\Lab3Master
The TRIG_OUT front panel connector becomes NRZ out to the Slaves.

Slave

- 1) Remove the Oscillator in X1.
- 2) Solder a 3" piece of RG174 with a LEMO connector on one end to a 3/8" length of .020" dia. piece of bus wire inserted into the output socket (lower right) of the X1 socket. This becomes the master clock input to the Slave. The lower left socket can serve as ground.
- 3) Remove R9 (master clock termination) and R54 (Trig_In termination) unless this is the only Slave to be used. These resistors may also be left on the last Slave in the chain. In the last Slave, R9 may have to be replaced with a 50 ohm resistor when many Slaves are used; a 75 ohm resistor soldered in parallel with the existing 150 ohm resistor will also give a 50 ohm termination.
- 4) Reprogram U89 (NRZGEN) with the .pof file in Server4\Electronics\SASeq\Lab3\Lab3Slave
- 5) The TRIG_IN front panel connector becomes NRZ in from the Master.

Interconnections

Master Clock Cable

The first clock connection, from the Master to the first Slave, should be connected with a 4ns cable. Thereafter, with short (1ns) RG174 cables and T connectors, connect the master clock from Slave to Slave. The last signal in the chain should terminate the transmission line. This is usually done by leaving R9 intact on the last Slave.

NRZ Cable

With short (1ns) RG174 cables and T connectors, connect the Master's Trig_Out to all the Slaves' Trig_In spigots. The last signal in the chain should terminate the transmission line. This is usually done by leaving R54 intact on the last Slave.

The system is now ready for test stand use.