

**LASER INTERFEROMETER GRAVITATIONAL WAVE
OBSERVATORY**

-LIGO-

CALIFORNIA INSTITUTE OF TECHNOLOGY
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Reading out a Trillium 240 With an STS-2 Interface Chassis		
Ben Abbott, Daniel Clark		

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California Institute of Technology
LIGO Project – MS 18-33
Pasadena, CA 91125
Phone (626) 395-2129
Fax (626) 304-9834
E-mail: info@ligo.caltech.edu

Massachusetts Institute of Technology
LIGO Project – MS 20B-145
Cambridge, MA 01239
Phone (617) 253-4824
Fax (617) 253-7014
E-mail: info@ligo.mit.edu

www: <http://www.ligo.caltech.edu/>

Performed by: _____
Date: _____
Board Serial Number: _____

1. Overview

The Streckheisen STS-2 and Trillium 240 triaxial seismometers are similar enough that one can read out T240 signals through an STS-2 Interface after the addition of a single piece of hardware. These are the instructions on how to do that.

2. Necessary Equipment

- 2.1 Trillium 240 Seismometer
- 2.2 STS-2 Interface Chassis, that is hooked into an ADC through an AA chassis.
- 2.3 STS-2 to T240 Interface Chassis (D0901489)
- 2.4 T240 in-pod cable which has the round military connector on one end, and a 25-pin Dsub on the other (for the pinout of this cable, see Appendix A)
- 2.5 Patch cable between the STS2-to-T240 Interface Chassis (D0901489), and the STS-2 Interface Chassis (D080535-v2)
- 2.6 9-pin Dsub F-F cable to connect your computer's serial out port to the STS2-to-T240 Interface Chassis. DO NOT USE A NULL MODEM CABLE.

3. Preliminaries

- 3.1 Hook up the seismometer to the "STS-2 to T240" Chassis where it reads "to Trillium Flange". (Since the interface's cable, and the in-pod cable are through two flanges, the pin flip is cancelled, and you don't need to flip any cables to read out the Trillium in this configuration.)
- 3.2 Connect the STS-2 Interface to the T240 Interface with the 50-pin Dsub to 25-pin Dsub patch cable.
- 3.3 Turn on the STS-2 Interface.
- 3.4 At this point you should see some signs of life from the ADC channels.

4. RS232 Readout

- 4.1 Have Daniel Clark email you the Multi-Threaded TTY program, and launch it. The settings at the top of the GUI should be set to the following:

Port	COM1
BAUD	9600
PARITY	NONE
Data Bits	8
Stop Bits	1

The following check boxes should all be checked:

- √ Local Echo
- √ Display Errors

- √ CR=> CR/LF
- √ Autowrap

4.2 The XYZ/UVW switch on the STS2-toT240 Interface Chassis (D0901489) should be set to XYZ. If it is set to UVW, it sets the RS232 TX line high, and you cannot communicate.

4.3 Click in the command line space, and write the following (<cr> means carriage return (Enter)):

tx <cr>

it should respond: Serial Transmit enabled.

help <cr>

it should print a list of useful commands like this:

```

Nanonetrics Trillium User Menu (Version 3.33) Program A
*****
Help   - Repeat this menu (also turns on Serial TX)
Tx     - Enable the Serial Transmit Signal
TxOff  - Disable the Serial Transmit Signal
Upload - Upload software to the alternate program
Switch - Switch to the alternate program
Default - Set the current program as default
Reboot - Reboot the instrument
GetInfo - Get factory configuration information
ReadFC  - Read factory calibration parameters
WriteUC - Write user calibration parameters
ReadUC  - Read the user calibration parameters
Soh     - Report state-of-health
ShortPer - Set sensor to short period mode
LongPer - Set sensor to long period mode
SetXYZ  - Set sensor to XYZ mode
SetUVW  - Set sensor to UVW mode
Center  - Center all masses or (u/v/w)
Checksum - Print checksum value for both program A and B
*****
Please type a command and hit return:
setuvw
setxyz
txoff
Serial Transmit disabled.

```

txoff

it should respond: Serial Transmit disabled

always disable the serial transmit after communicating if the instrument is being used as a sensor, as we don't know if the transmitter would inject noise if it was left on.

5. Calibration Inputs

The calibration inputs on the T240 work differently than those on the STS-2. Instead of having a single enable, and three different signals, the T240 has one signal, and three input enable bits. In order to map these efficiently, I stole some of the channels from the STS-2 box, and made them available for the T240. In order to use the calibration coils, you must do the following:

- 5.1 Insert an appropriate signal into the UCAL BNC on the front of the STS-2 Interface (D080535-v2).
- 5.2 To select the direction, use the following switches on the STS-2 Interface Chassis (D080535-v2) (none of the switches on the STS2-to-T240 Interface chassis should be touched for this procedure):

To select the U direction, change the period select switch from “120 sec” to “1 sec”.

To select the V direction, change the Cal switch from “Norm” to “Cal”.

To select the W direction, change the XYX/UVW switch from “XYZ” to “UVW”.

For now, select only one direction at a time. Tests will have to be done to find out if it is alright to enable more than one direction at any given time.

Appendix A Trillium Cable Pinout

