0-5310-P4

LASER SYSTEM USER GUIDE

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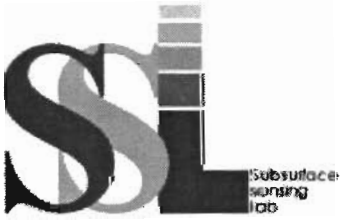

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Part 1: Introduction to the Scanning Laser System

The scanning laser system is composed by scanning laser device, cables, SCB-68 Shielded I/O Connector Block for DAQ, laptop.

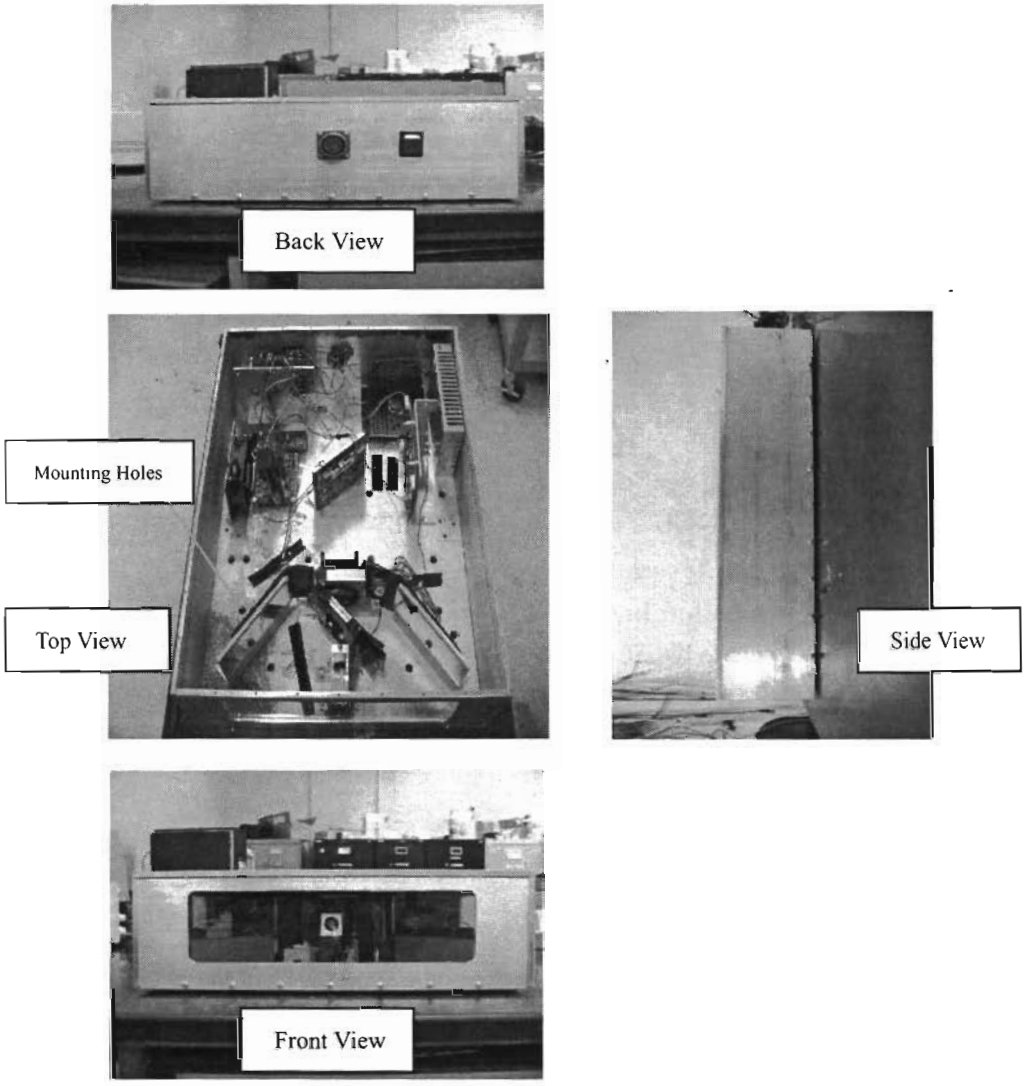

Figure 1, Scanning Laser Device. There are some mounting holes on the base plate.

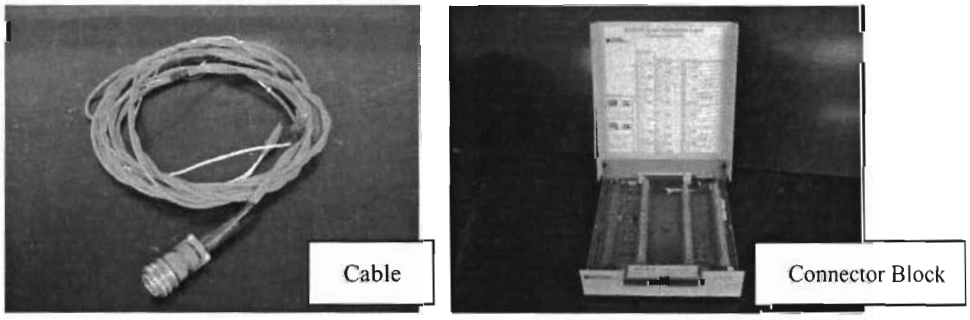

Figure 2, Cable and SCB-68 Shielded I/O Connector Block for DAQ

Part 2: System Setup for Testing

Step 1: Mounted the scanning laser device on the vehicle:

- First take of the top cover,
- Then mount the scanning laser device to the frame on the vehicle, using 3/8 hex bolts. The distance between the front of the device to the ground should be 36.875 inches.
- Then mount the top cover to the device.

Figure 3, mount the scanning laser device on the vehicle.

Step 2: Make the connection between the scanning laser device and the laptop.

- First connect the device to the SCB-68 connector block using the cable by the following way:
  "Signal", the green wire connect to "Pin-68" of SCB-68
  "Trig", the yellow wire connect to "Pin-43" of SCB-68;
  "Power" connect to +12V of the power supply;
  "GND" connect to GND of the power supply.

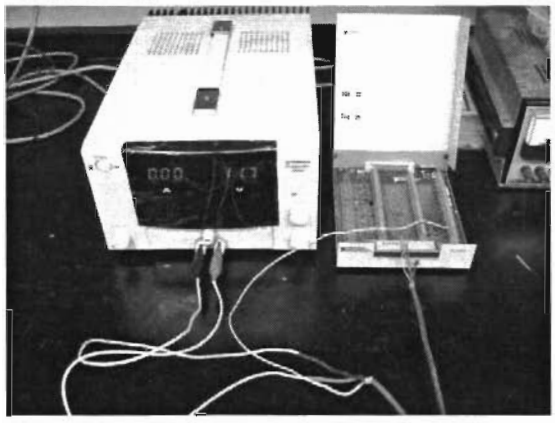

Figure 4, connect the cable to the power supply and SCB-68 connector block

- Then connect the DAQ to the laptop.
- Connect the cable to the scanning laser device.

Step 3: Turn on the device and the laptop to start the test.

- Turn on the power and switch on the device.
- When normal working, the current should be around 3.4 A. If the current is much higher or lower than this value, turn off the power immediately.
- After the current of the power supply become stable around 3.4A, check if the laptop receive the signal.

Use the National Instruments software NIMax.exe to check if the laptop receives the signals by using the "Test Panel". Open the NIMax.exe, go to the "Test Panel" section, choose the channel "0", the corresponding signal waveform will display in the windows. It acts like a software oscilloscope.

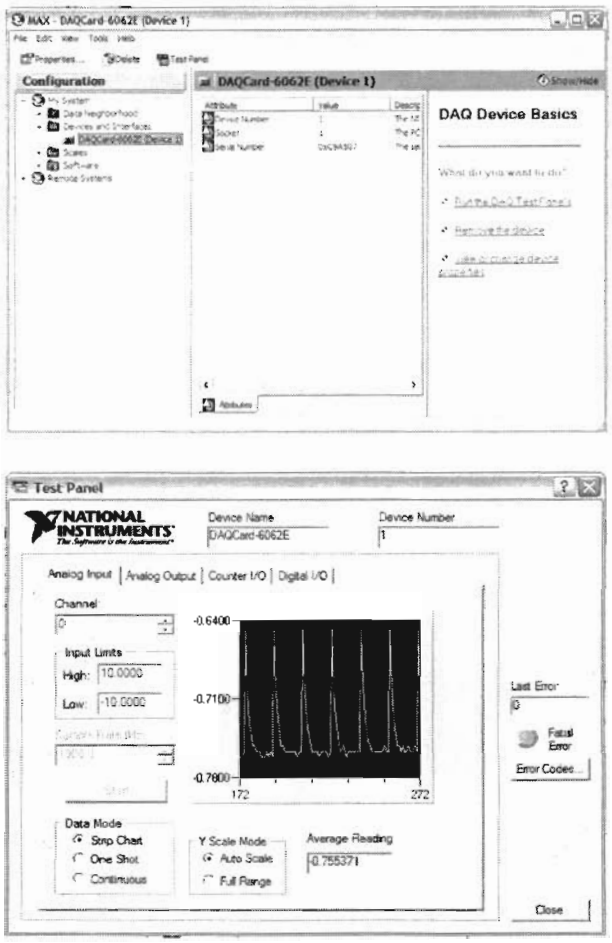

Figure 5, check the signal by using "Test Panel" in NIMax.exe

- After check the signal, we can record the raw data and save them to a .dat file by the software designed by our lab. Then we can use Excel or other software, such as Matlab, to process the raw data.

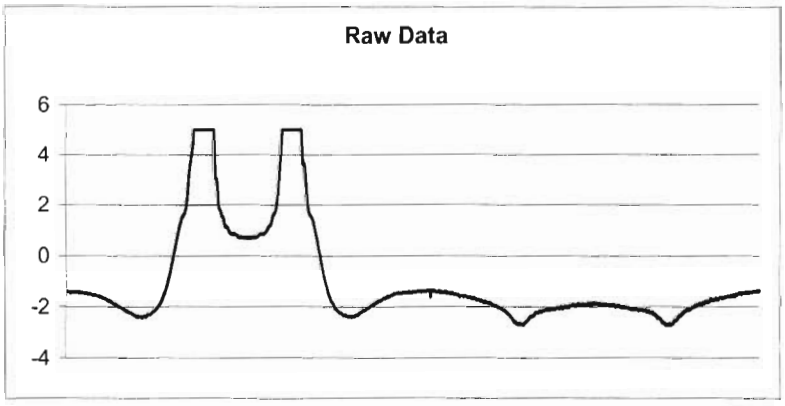

Figure 6, raw data

Note:

1, do NOT mount the scanning laser device until you are ready to do the test.

2, when it is turned on, the scanning laser device need about 1 minute to work stable. In this period the current may change a little bit.

3, the distance between the front window to the ground should be 36.875 inches.

4, make sure the mirror in the front window is clean when test.

5, if the current is not correct, please turn off the device and restart it again.