1 Data Acquisition System(Outline)

1.1 Design

Data that we need:

- Temperature
  - Ambient
  - Plumbing
  - Chamber
  - Nozzle
- Pressure
  - Plumbing (Run Tank)
  - Chamber
- Load
  - Thrust Data from Low Profile Universal (LPU) Compression Load Cell

Hardware Discussion

- Load Cell
- Pressure Transducers
  - PT1
  - PT2
- Thermocouples
  - K-Type
- NI 6009 Board
  - Pressure Transducers and Load Cell
- NI 6002 Board
  - Thermocouples

  Signal Conditioner for Load Cell Data

Grand Schematic
Software

- Labview
  - GUI
- NIMAX

Load Cell	Pressure Transducers
Rated Output: $3mV/V$	Rated Output:
Safe Temp. Range: -65° to 250°F	Safe Temp. Range:
Excitation Voltage: 10 VDC	Excitation Voltage:

Thermocouples	
Rated Output:	
Safe Temp. Range:	
Excitation Voltage:	

DAQ NI Boards	
NI USB 6009	NI USB 6002
Rated Output:	Rated Output:
Safe Temp. Range:	Safe Temp. Range:
Excitation Voltage:	Excitation Voltage:

Table 1: Hardware Specifications

1.2 Manufacturing

Circuit Diagram

Figure 1: This is a placeholder

1.3 Testing

Testing Operations

- Descriptions of verification testing should include the objective of the test as well as testing results and any anomalies seen

- Description of acceptance testing should include the criteria needed to be met to determine the system flight ready along with the results

Tests Performed

- Cold Flows

- Mock Fire

- Hot Fires

Noise from Hardware

- Thermocouples

- Load Cell

- Pressure Transducers

- Solutions

Hardware Calibration

- Thermocouples

- Load Cell

- Pressure Transducer

References

[1] Fernandez, M.M., "Propellent Tank Pressurization Modeling for a Hybrid Rocket," Thesis, Mechanical Engineering Dept., Rochester Institute of Technology, Rochester, NY, 2009.