



NI Data Acquisition (DAQ) Wiring and Connections

Abstract:

The SignalExpress program runs all inputs and outputs through a National Instruments USB-6216. The specific unit is installed in a custom housing with labeled dual banana plug connections. These connections are compatible with BNC adapters for use with the additional hardware in our system.

Intake and Exhaust Valve Connections

- 1) Using a BNC extension cable, connect the BNC connector on the test rig labeled “Intake” to a dual banana adapter plugged into the red and black ports on the DAQ labeled “P00”
- 2) Using another BNC extension cable, connect the BNC connector on the test rig labeled “Exhaust” to a dual banana adapter plugged into the red and black ports on the DAQ labeled “ P24”

Accelerometer Connections

- 1) Using the provided BNC cables for each respective accelerometer, connect each accelerometer to the ICP (Input) ports on the PCB Piezotronics Model 482C signal conditioner. The small accelerometer with white cable to channel 1 and large accelerometer with black cable to channel 2
- 2) Using BNC extension cables, connect the output port of channel 1 to the DAQ analog input labeled “AI#2” and connect the output port of channel 2 to the DAQ analog input labeled “AI#3”
- 3) Plug in the wall outlet connection for the signal conditioner and press the power button on the front of the unit ensuring no warning lights are lit for channels 1 and 2.



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Pressure Transducer Connections

- 1) Using the “Signal Out” labeled portions of the respective supplied pressure transducer cables, connect the pressure transducer located on the back side of the aluminum “Pressure Vessel” to the DAQ BNC port “AI#0” and the pressure transducer located on the front of the black colored “Back Pressure Tank” to the DAQ BNC port “AI#1”
- 2) Using the “Power In” labeled portions of the respective supplied pressure transducer cables, connect both BNC connectors to either side of a BNC Male “T” adapter.
- 3) Using the Tektronix CPS250 or other equivalent power supply, setup an output voltage channel and adjust to 15 DC Volts then shut the power supply off.
- 4) Connect a dual banana to BNC adapter to the previously setup output channel.
- 5) Install a single banana cable from the negative terminal of the 15 VDC channel to the Earth Ground port of the power supply.
- 6) Install another combination of cables to connect the BNC housing of BOTH pressure transducer “Signal In” cables to the Earth Ground port
- 7) Turn on the power supply and ensure 15 VDC and around 10 mA.