

GE 320: Equipment Manual

1. GE 320 Lab Bench



Figure 1-GE320 Lab Bench in ECEB 3075

The lab bench in ECEB3075, shown in Figure 1 above, contains many different types of equipment; you will use some of it to complete experiments GE320. A short introduction to the most frequently used equipment is included in this document. There are also links to the equipment manuals that can be referenced for additional details.

2. Oscilloscope

The scope (oscilloscope), shown in Figure 2, is going to be used to measure voltage signals over time. It will show you how voltage varies over time between the two points where the probe was connected. The scope that will be used in the lab is a dual channel oscilloscope. That means that you can observe two separate signals.

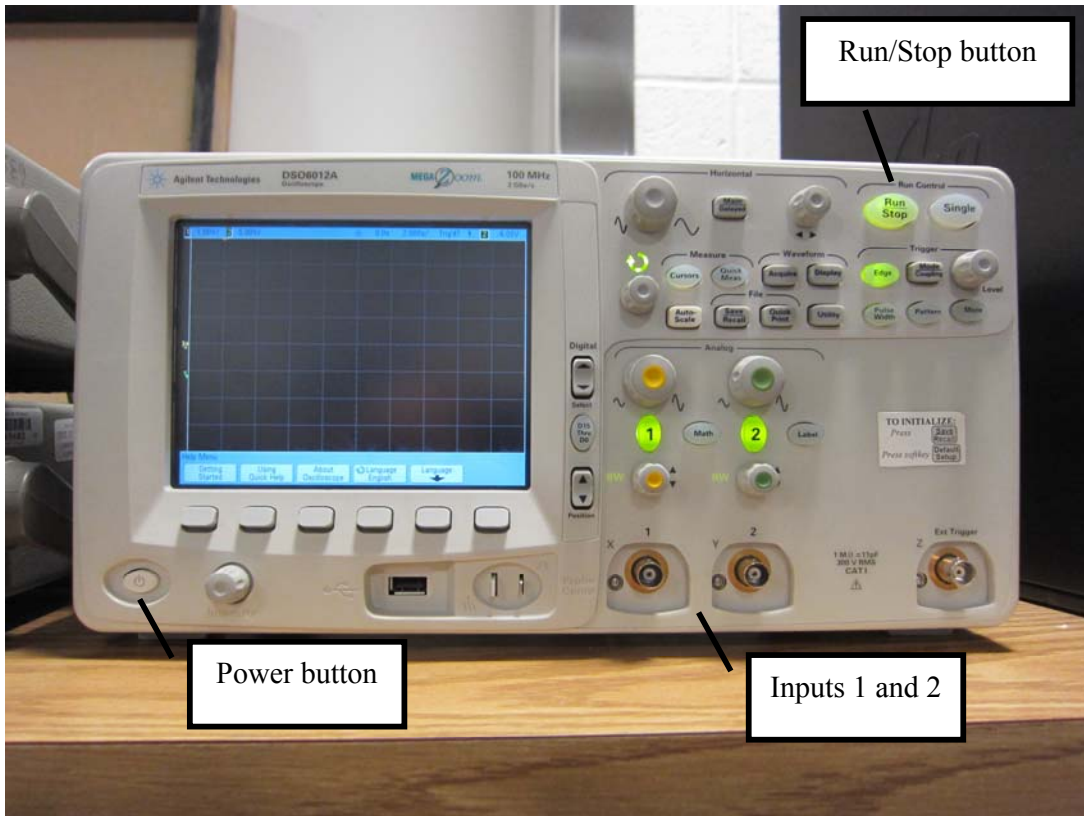


Figure 2 - Oscilloscope

The **oscilloscope** (scope), shown in Figure 1 is an instrument used in the field or the laboratory to measure, and view by lighted trace on the screen, the time dependent voltage of a point in a circuit (terminal) referenced to a second terminal (usually ground). Oscilloscopes may be dual channel, permitting two voltages to be viewed individually or simultaneously.

The power switch is in the lower left corner of the oscilloscope. Signals you wish to view on the oscilloscope are connected to the input terminals via BNC connectors. The inputs are labeled 1 and 2 and are along the bottom just to the right of the screen. Input 1 is yellow and input 2 is green. The "Run/Stop" button in the upper right corner is another important button, if it is red, your signals will not be displayed. The rest of the settings on the oscilloscope will be set using the HP VEE software on the laboratory computer.

[Agilent DSO6012A manual](#)

3. myRIO

The myRIO, shown in Figure 3 below, is a programmable input/output device. It records both analog and digital inputs. It can also generate analog and digital outputs. The primary method of programming this device is NI LabVIEW.

Figure 4 shows a close-up of the input/output connector on the myRIO. In GE320 we will be using two analog inputs (AI) and an analog output (AO).



Figure 3 - NI myRIO

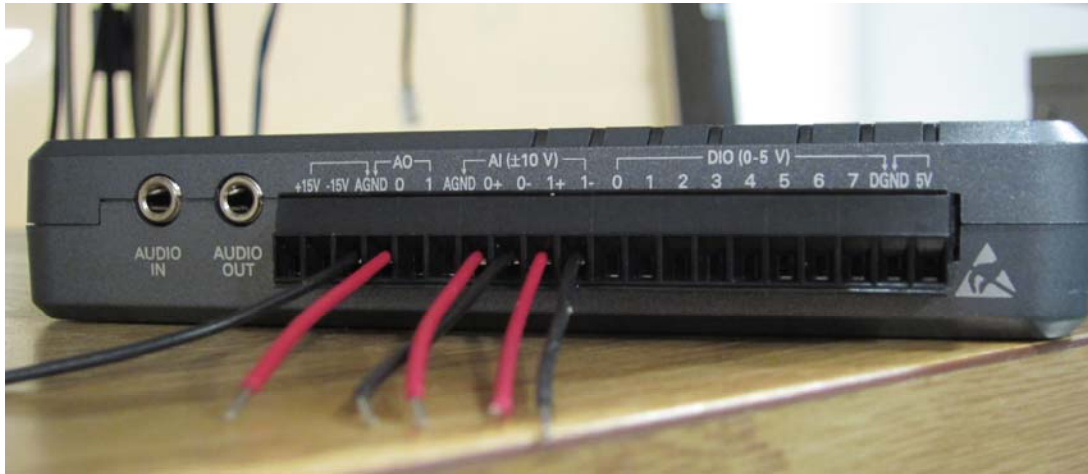


Figure 4 - Input/Output Connector on the myRIO

[NI MyRio 1900 User Guide and Specifications](#)

4. Multimeter

The **multimeter** is a field and/or laboratory instrument used to measure AC and DC voltages, resistance, and frequency. It may also be used to test for continuity and for other measurements. When measuring voltage use the HI and LO ports on the right side of the multimeter.



Figure 5 – Multimeter

[HP 34401A User's Guide](#)

5. Patch Panel

The primary purpose of the patch panel is to make the laboratory bench neater and frequent connecting ports easy to find. The patch panel in ECEB 3075 is shown in Figure 6, below.

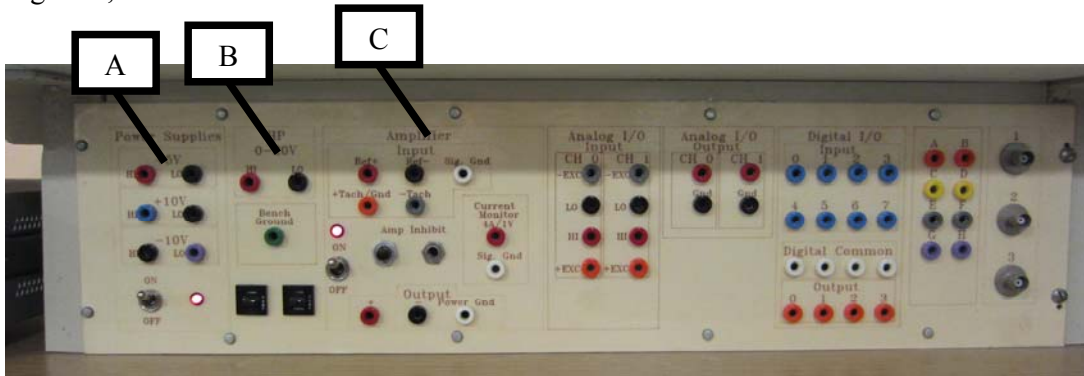


Figure 6 - Patch panel

The patch panel has a variety of connections but the ones that will be used the most are:

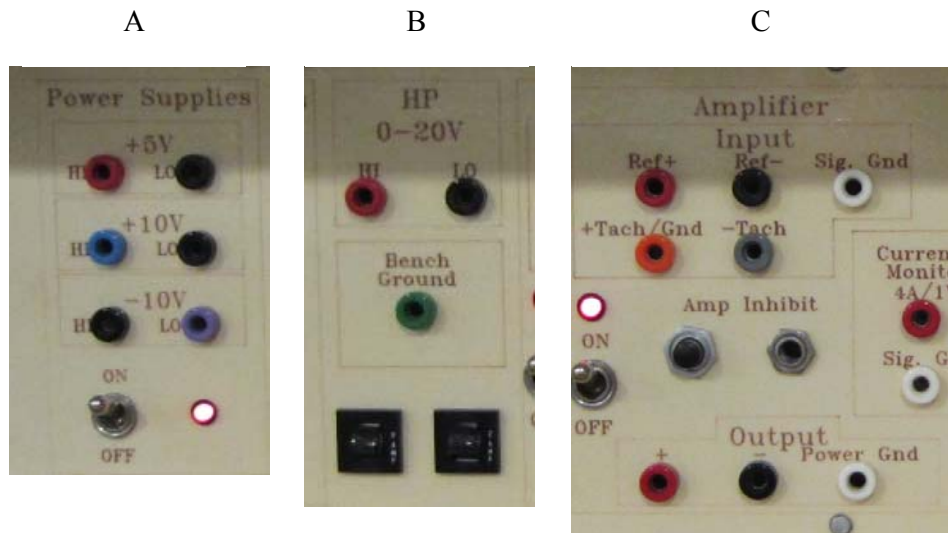


Figure 7 - Zoomed in pictures of patch panel components

Figure 7 (A) shows the constant power supply outputs. (+5, +10, and -10 V)

Figure 7 (B) shows the variable power supply outputs. (0-20 V)

Figure 7 (C) shows the amplifier: The top 3 ports are the input to the amplifier and the bottom 3 ports are the output from the amplifier.

6. Power Supply

The **variable power supply** is shown in Figure 8 below. Output voltage or output current may be set. Operations to be performed by the power supply may be computer controlled. The output ports for the power supply are located on the patch panel in the box labeled "HP 0-20V." The output voltage and current from the power supply are shown on the LCD screen on the left side of the power supply.



Figure 8 – Variable DC Power Supply

[HP 6632A DC Power Supply User's Guide](#)