

GPIB Guidelines

General

The lab has been split up into sections and subsections (please see attached map). A GPIB node serves each subsection. Some sections have only one subsection. A GPIB node is a box with many GPIB connectors. In general, several connectors may be piggybacked on each of the connections. Each subsection may have at most one computer attached. (Note: Some of the subsections have no permanently connected computer.)

As a default each section should be an island unto itself. To use the test equipment connected to a subsection that is not the subsection of the computer you are using, you can connect the subsections together via a GPIB cable. For most subsection-to-subsection connections, a cable is already in place but is disconnected. You need merely to plug in the provided cable to make the subsection-to-subsection connection. Subsection-to-subsection connections on each of the GPIB nodes are indicated by a blue mark on the sticker identifying the subsection.

Computers

The PC connections are indicated by a red mark on the sticker identifying the subsection. To protect the GPIB connectors on the PC cards (which are very fragile) these connections should never be removed. This also makes it easy to identify which GPIB node a PC is connected to. Because the GPIB connectors on the PC are so fragile, please do not piggyback connectors onto the PCs.

Instruments

The instruments are generally connected to the GPIB node closest to the instrument and are often connected to the node of the computer most commonly used to control the setup. Instruments that are not dedicated to setups may be moved. All instrument connections are indicated by a green mark on the sticker.

GPIB Nodes (*disconnecting & connecting GPIB cables*)

There is one procedure you should be aware of when connecting and disconnecting the GPIB cables from the nodes. The nuts on the GPIB nodes are not fixed into the node box. In other words, the nuts on the GPIB nodes will spin when you try to connect or disconnect a GPIB cable. Therefore, when connecting and disconnecting GPIB cables from the GPIB nodes, use a pair of needle-nose pliers to hold the nut as you connect or disconnect a GPIB cable.

Summary of Allowed and Disallowed Connections

Allowed

Node-to-Node (blue-to-blue)

Node-to-instrument (green)

Node-to-PC (red)

Disallowed

Instrument-to-instrument

Instrument-to-PC

Cable-to-Cable (except at Node)

Troubleshooting GPIB Problems (brief and incomplete, but nonetheless common)

- 1) Everything plugged in? (power & GPIB) (good connections, both connector screws tightened)
- 2) How many controllers on my subsections?
 - a. Is my subsection islanded?
 - b. If I must use more than one subsection, how many computers are connected to the combined subsections? **You can only have one controller on your GPIB network.**
 - c. Shutdown (turn off) any extra computers on your island to disable the GPIB card in that computer.
- 3) Am I using the HP-PC?
 - a. The HP PC has 2 GPIB cards. One for phase noise, the other for everything else. They are marked.
- 4) Check the GPIB addresses on your equipment and any other equipment on your islanded subsections. Each device must have a unique address and the software must be aware of the address of your devices.
- 5) As a last resort, make a direct PC to instrument connection to test the instrument, computer, and cables for defects. Be careful with the instruments and computer GPIB connections and make sure you disconnect these direct connections immediately after your test, so that nobody else has to remove the connection.

Definitions

HPIB=GPIB=IEEE 488

GPIB node: box containing many GPIB connectors. On the map the nodes are designated by GPIB x[:y] where x is the section number and y is the subsection number.