

# Lab 00: The Test Box

## Adapted from “The Pot Box” writeup in Caltech CNS 182

### Analog Integrated Circuit Design

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The Test Box is a general-purpose chip test fixture to allow easy control and monitoring of a chip. A grounded lid is included that shields sensitive experiments while still allowing easy access to the chip. The main features of the box are shown in Figure 1, and described below.

- **Chip Socket**

The chip plugs into the ZIF (Zero-Insertion-Force) socket on the Protoboard.

- **Rear Panel**

Signals to and from external instruments interface to the pot box via connectors on the rear panel.

- **Connection and Spare Protoboards**

Signals from the BNC connectors and from the potentiometers are available to plug in the proto board.

**WARNING: The protoboards can easily be damaged by inserting wires and components that are too thick. Wire should not exceed 22 gauge. Please be careful!**

- **Power Supply Banana Plugs (R,G,B)**

Connect the box to the Power supply via the banana sockets on the side of the box. The Green socket is for ground (GND) the red is for positive supply (Vdd) and the black is for negative supply (-Vdd). More often than not, you will need only a positive supply to your test circuits.

- **Potentiometers**

These are six multi turn potentiometers 25, 50, or 100  $k\Omega$  on the front panel. These are arranged into two banks. There is a common wire to all of them and this is connected to GND (Green Banana socket). The second terminal for each bank can be connected to the positive voltage rail (Vdd) or a negative voltage rail (-Vdd). More often than not the second bank of the potentiometers will be connected to the positive voltage rail.

- **BNC (1,2,3)**

There are three uncommitted BNC connectors on the rear panel. These can be used to connect the chip to Voltage sources, signal generators, oscilloscopes, etc. The center conductor of each BNC is attached to blue wire. The outer shield of each BNC is connected to chassis ground.

- **Isolated BNC (1,2,3)**

There are three isolated BNC connectors on the rear panel (the outer shield is not connected to chassis ground). There are two wires coming out of each of these connectors. The center conductor is blue, the outer conductor is white. Often used with the floating voltage sources to allow a relative voltage to be applied and with current sources to allow the current to be measured in a branch.

Note: due to continuous movement and use the probe wires attached to the box tend to break. Please try to be gentle. However if they do break that is no big problem, just contact someone in the Andreou Lab and we will repair it.