Fall 2010

16.311 & 16.312 Experiment I

Introduction to the Laboratory Bench Equipment

Objective: To familiarize yourself with all the Test Equipment in the Electronics Lab. Write answers in your lab notebook as you are completing each task.

THE TOOLS FOR THE TASK

The Power Supplies:

a) By using both power supplies what is the largest isolated DC voltage, you can apply to a device under test (DUT)?
b) Now the largest voltage with reference to ground?
c) The device under test required following voltages:
+ 5V, -5V, +12V, -12V and +20V for an external relay. Draw a diagram on how you will make connections to the supplies and your DUT, show signal reference ground point
d) List the current limits of each voltage

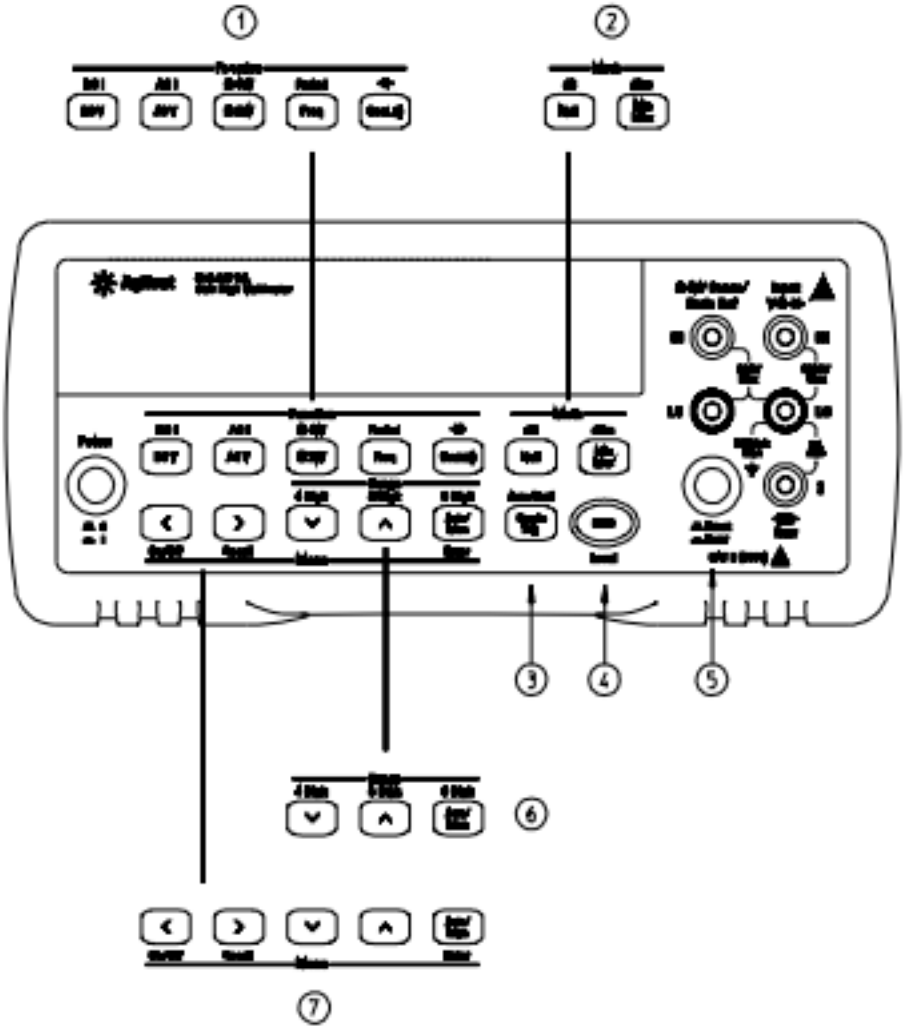
CA18303D: http://www.madelltech.com/m4-1.html

Digital Multimeters:

(place in table form)

a) List the max voltage range that can be displayed on each meter and what is the resolution of min. voltage that can be shown on that range?
b) Now do the same for the min. voltage range.
c) How many digits can each meter display?
d) Do the same for currents on both meters.
e) Do the same for resistance on both meters.
f) What meter will you prefer to use and why?

The Front Panel at a Glance



1 Measurement Function keys
2 Math Operation keys
3 Single Trigger / Autotrigger / Reading Hold key
4 Shift / Local key
5 Front / Rear Input Terminal Switch
6 Range / Number of Digits Displayed keys
7 Menu Operation keys

The Oscilloscope:

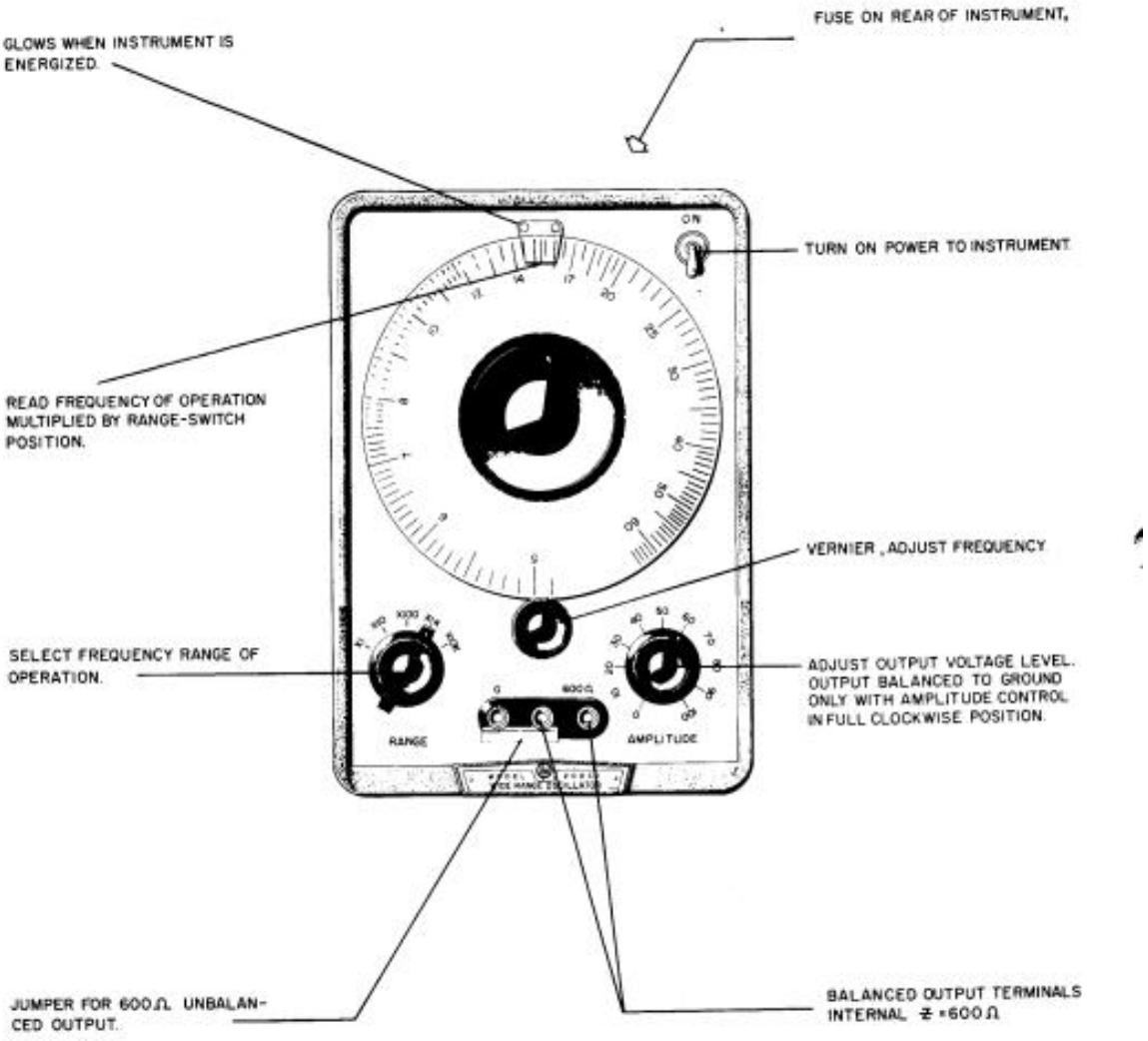
(use only scope probes or BNC to Ball clip leads when connecting the scope vertical inputs to a circuit for measurement, the use of banana plug leads will not be allowed, banana plug leads are to be used only for power connections.)

a) Test each vertical input with the scope calibration voltage
b) Find a scope test probe and adjust the probe pulse response (4-8)
c) Complete the scope manual section 3 *Getting Started* and section 4 *How to use the Instrument.*

http://pdf1.alldatasheet.com/datasheet-pdf/view/100055/ETC/TDS2014.html

The HP 200 CD Generator:

a) What type of output signal do you get?
b) What is the frequency range?
c) What is the max output peak-to-peak voltage?
d) Show how you made this voltage measurement?
e) What is the output impedance of this instrument?
f) Tell when and when not to use the chassis ground jumper clip?



The WAVETEK 183 Function Generator:

a) What type of output signal do you get?
b) What is the frequency range?
c) What is the max output peak-to-peak voltage on each signal?
d) What is the smallest usable pk-pk voltage and show how this measurement was taken
e) What is the output impedance of this instrument
f) Is the output signal low reference at chassis ground or not? How can you test for this? Make the test and note the results.

http://www.controlelectronics.com.au/used/w143/w143-images.html

The Curve Tracer Tek 370:

a) Go to the curve tracer, the TA will have a transistor in the test area.
b) Turn a few knobs and see what happens
   (Note the instrument setting before you start, when done return the knobs to the original settings-Thanks)

http://www.qmsi.com/pics/Sonyt_tech1.jpg