Experiment No.1

Using and Employment laboratory instrumen

Object

The students be familiar with Using and Employment laboratory instrument impact for their significant importance in their field of specialty

D.C power supply

A DC Power Supply Unit (commonly called a PSU) deriving power from the AC mains (line) supply performs a number of tasks:

1. It changes (in most cases reduces) the level of supply to a value suitable for driving the load circuit.
2. It produces a DC supply from a pure AC wave.
3. It prevents any AC from appearing at the supply output.
4. It will ensure that the output voltage is kept at a constant level, independent of changes in:

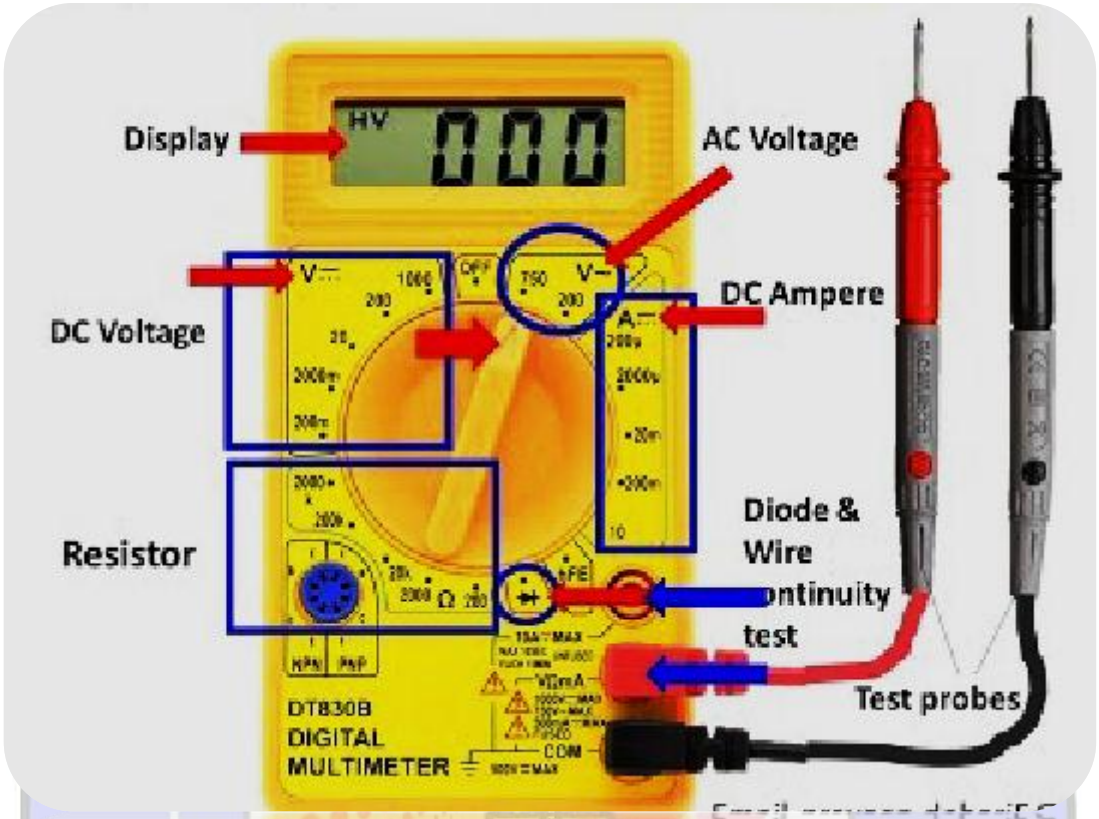
a. The AC supply voltage at the supply input.

b. The Load current drawn from the supply output.


BK PRECISION


HAOXIN
DC POWER SUPPLY
CURRENT
VOLTAGE
CURRENT
VOLTAGE

Multimeter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HV
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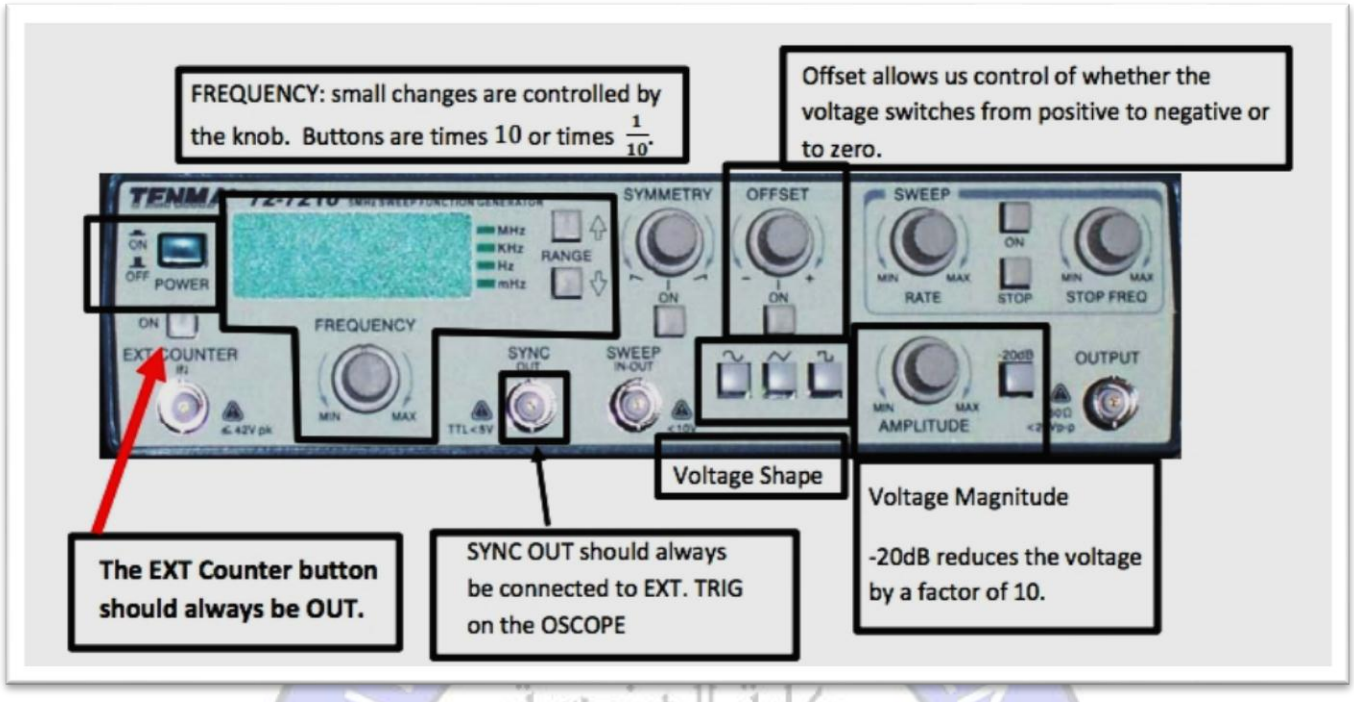
Oscilloscope

An oscilloscope is an electronic test instrument that displays electrical signals graphically, usually as a voltage (vertical or Y axis) versus time (horizontal or X axis) Oscilloscopes are commonly used for measurement applications such as:

- observing the wave shape of a signal
- measuring the amplitude of a signal
- measuring the frequency of a signal
- measuring the time between two events
- observing whether the signal is direct current (DC) or alternating current (AC)
- observing noise on a signal

function generator

A function generator shown in figure above is usually a piece of electronic test equipment or software used to generate different types of electrical waveforms over a wide range of frequencies. Some of the most common waveforms produced by the function generator are the sine wave, square wave, triangular wave and saw tooth shapes.


FREQUENCY: small changes are controlled by the knob. Buttons are times 10 or times $\frac{1}{10}$.
Offset allows us control of whether the voltage switches from positive to negative or to zero.
SYMMETRY
OFFSET
SWEEP
POWER
RANGE
FREQUENCY
SYNC OUT
SWEEP IN-OUT
RATE
STOP
STOP FREQ
AMPLITUDE
OUTPUT
Voltage Shape
Voltage Magnitude
-20dB reduces the voltage by a factor of 10.
The EXT Counter button should always be OUT.
SYNC OUT should always be connected to EXT. TRIG on the OSCOPE


PENTEK

COLOR CODING AND STANDARD RESISTOR VALUES

A wide variety of resistors, fixed or variable, are large enough to have their resistance in ohms printed on the casing. Some, however, are too small to have numbers printed on them, so a system of color coding is used. For the thin-film resistor, four, five, or six bands may be used. The four-band scheme is described. Later in this section the purpose of the fifth and sixth bands will be described. For the four-band scheme, the bands are always read from the end that has a band closest to it, as shown in Fig. 3.25. The bands are numbered as shown for reference in the discussion to follow. The first two bands represent the first and second digits, respectively. They are the actual first two numbers that define the numerical value of the resistor. The third band determines the power-of-ten multiplier for the first two digits (actually the number of zeros that follow the second digit for resistors greater than 10 Ω).

The fourth band is the manufacturer's tolerance, which is an indication of the precision by which the resistor was made. If the fourth band is omitted, the tolerance is assumed to be 20%. The number corresponding to each color is defined in Fig. 1 The fourth band will be either 5% or 10% as defined by gold and silver, respectively.

Color coding for fixed resistors.

Number	Color
0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White
±5% (0.1 multiplier if 3rd band)	Gold
±10% (0.01 multiplier if 3rd band)	Silver