

EXPERIMENT #0: INTRODUCTION TO LAB EQUIPMENT

OBJECTIVE:

- To get acquainted with the breadboard and the cathode ray oscilloscope.

Equipment:

- Dual –trace oscilloscope
- Digital Proto-Board

Mini-Lab ML-2001 Lab Station:

The Mini-Lab ML-2001 lab station Analog/Digital Proto-Board is a self-contained digital logic laboratory. The following figure shows the Mini-Lab ML-2001 lab station used in the lab:

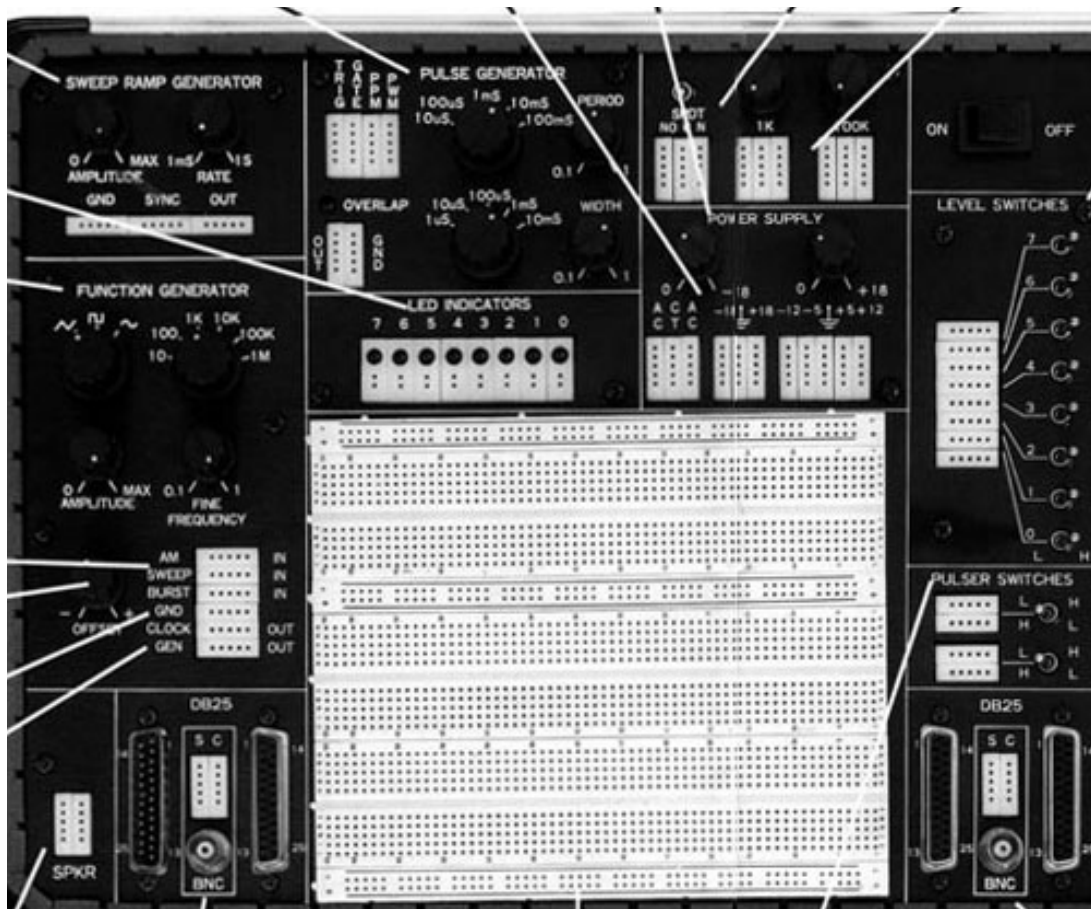


Figure 1: Lab Station

It includes a +5 volt power supply that provides operation power to the circuits under test, and also serves a "1" logic level for TTL (transistor-transistor logic) integrated

circuits. The ‘0’ logic level is represented by connection ground. Located on the front panel (see Fig. 1) is a Bread-boarding Socket that contains over 2500 tie points. These tie points are divided into 384 sets of five electrically interconnected solder-less tie points, 8 sets of 25 interconnected solder-less tie points along the right and left edges, and 4 sets of 50 interconnected solder-less tie points on the top of the board. Tie points are spaced 0.1 inch apart and will accommodate the pins of DIP (dual-in-line package) integrated circuits, as well as a wide variety of other circuit components.

Other useful features of the Mini-Lab ML-2001 lab station include:

- **Function Generator:** The multi-waveform function generator provides continuously variable frequency signals from 0.1Hz to 1MHz. The frequency is selected in three ranges, with each range covering two-decades. The generator produces, sine, triangle, and square waveforms.
- **Logic Indicators:** A bank of eight LEDs is provided for use as built-in logic indicators. The LEDs are active high (they light) to indicate a “logic one” condition.
- **Pulser Switches:** two manual, bounce-less (digitally conditioned) pulser-switches PS1 and PS2.
- **Level Switches:** Eight level switch provides a convenient source of digital inputs.
- **Potentiometers:** Two potentiometers are provided on the Mini-Lab ML-2001 lab station. The resistance values chosen (1 K and 100 K ohms) may be used in common circuit applications.
- **BNC Connectors:** The ML-2001 may be connected to other pieces of equipment via two BNC connectors BNC J1 and BNC J2. These allow the use of shielded cable to minimize noise and interference.

IC PIN CONNECTIONS:

Pin 1 is located by an identifying symbol, or the location of pins 1 and 14 are identified by an index notch at the end of the case where pins 1 and 14 are located.

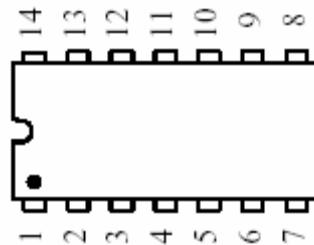


Fig.2 IC pin location, 14 pin dual-in-line (TO-116) case