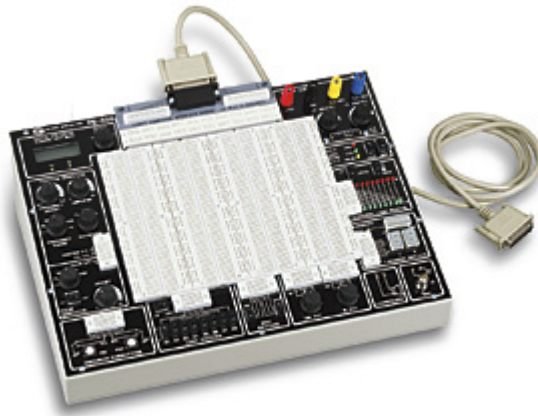


# Master Lab with Computer Interface

## ML-5000

**EDU-LABS**



The Masterlab is a unique state of the art Design Breadboard Trainer that is just the right product for those higher level design projects, especially when it is necessary to interface with the computer for various circuit designs, accuracy verification & storing of data.

The model ML-5000 offers a many features, including 1MHz Function Generator, Quad Voltage Power Supply, Logic probe with Pulse Capture, DC Digital Voltmeter with four ranges, Square Wave Pulse Generator, Removable Breadboard area, Detachable 25-way centronic, 9-way RS-232 & USB computer interface and many other features noted in the Specification Table.

- Removable breadboard area with lifetime warranty
- 1 MHz multi-waveform function generator
- 50 MHz frequency counter
- Quad voltage power supply
- Logic probe with pulse capture
- Square wave pulse generator
- BCD to 7 segment decoder/display
- 8 channel logic indicators
- DC digital voltmeter with four ranges
- Two open collector output pulsers
- 8 selectable logic switches
- Built-In computer interface

### Specifications

#### Power Source :

3-wire AC line input with fuse holder (110/240V, 50-60Hz typical) with power indicator ON/OFF Switch.

#### Power Supplies:

Fixed DC output : +5V @ 1.0 A, -5V @ 0.5 A, +12V @ 0.5 A, -12V @ 0.5 A,

Variable DC output : +1.2V to +22V @ 0.5A , -1.2V to -22V @ 0.5A

Fixed AC output : 19V – 15V – 9V – 0V – 9V – 15V - 19V

#### Function Generator:

Frequency Range: 1Hz to 1MHz in six ranges

Output Voltage: 0 to +/-10V (20Vp-p), short circuit protected

Output Waveforms: Sine, Square, triangle (adjustable) & TTL  
Sine, Triangle and Square waveform output

With fine adjust, Amplitude and DC offset control

Seven frequency ranges:

1Hz to 10Hz

10Hz to 100Hz

100Hz to 1KHz

1KHz to 10KHz

10KHz to 100KHz

100KHz to 1MHz

**50MHz Autoranging Frequency Counter:**

Up to 50MHz auto range measurements

**Logic Indicators:**

16 LED'S 8 red to indicate logic high, 8 green to indicate a logic low

**Logic Probe:**

Built-in TTL/CMOS compatible logic probe. Captures fast single shot events and pulse trains.

Input impedance 300 Ohms, overload protection +50VDC, min detectable pulse width 100nsec.

TTL Threshold low +0.8V high +2.25V, CMOS Threshold low =30% Vcc High +70% Vcc.

Memory Mode, latches on first transition and LED remains on until probe is reset.

**Debounced Pushbutton (Pulser):**

Two push-button operated, open-collector output pulsers, each with one normally-open and one normally-closed output. Each output can sink up to 250mA

**Potentiometers:**

One 1KOhm, One 10KOhm, all leads available and uncommitted

**Pulse Generator:**

A normal square wave source with 6 ranges covering from 1Hz to 1MHz. Two switch selectable output ranges, one (TTL) of 5Vp-p and one (CMOS) linked to the variable supply voltage and capable of giving any voltage from 0V to 15Vp-p.

**Digital Voltmeter:**

A switch selectable DC Digital voltmeter with four ranges:

+/-000.0-1999.9V, +/-0.200-1.999V, +/-2.00-19.99V & +/-20.0-199.9V.

**BNC Connector:**

One BNC Connector, shell connected to ground

Miniature Connector

2mm Mini Connector

4mm Binding Post Connector

**SPDT Switches:**

2 SPDT slide switches, all leads available and uncommitted

Tie points; 10 per wiper, 5 per remaining contact

**Logic Switches:**

8 Logic switches select logic low or logic high, low level is grounded

High level is switchable between the fixed +5V supply and the +1.3 through +15 supply

Toe Points: 5 per switch

**Speaker:**

0.25W, 8 Ohm, uncommitted

Tie Points: 1 times 0.6mm socket for + input

1 times 0.6mm socket for - input

#### BCD To Seven Segment Display:

2 BCD to 7 segment display circuits are provided including decoder/driver circuitry

#### Breadboarding Area:

A total of 2200 uncommitted tie-points are available on a removable Velcro Breadboard plate, also on the unit are two QT-59b Bus strips. Fifty tie-points for each +5V, variable +/-15V, and ground if desired

#### Computer Interface:

USB Port

RS-232C Port

centronic Port

#### Enclosure:

Epoxy Coated Steel case

#### Dimensions:

465 x 330 x 150 mm (W x D x H)

#### Weight:

10 lbs

The **ML-5000** shipped with a comprehensive user's manual and a power cord.