Lab-Top Computers

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Thank you for your interest in Lab-Top Computer products. Enclosed please find the information you requested. You will find that you can quickly integrate our products into your science labs and provide many new hands-on experiences for your students.

A little history...

As a teacher of high school physics, I was frustrated by the lack of equipment and facilities the students had to work with and literally appalled at the prices schools had to pay for test equipment and lab apparatus. I also found that most microcomputer lab applications appeared to be designed around fancy graphics or playing games rather than measurement and analysis. Because computer measurement, analysis, and automation is required in todays industries, schools have an obligation to teach computer literacy and the techniques of laboratory analysis using microcomputer based lab equipment.

Having 18 years of experience in the electronics and computer field prior to teaching, I set out to design a system with the following goals in mind:

- Designed for the educational science lab.
- Eliminate the high prices schools have to pay for some equipment.
- A single unit that would replace several high-priced laboratory measurement devices
- To provide microcomputer accuracy.
- Interface with existing probes and devices schools may already have in the lab.
- To be able to use the power of more expensive microcomputers (if available) for analysis.
- Provide accurate data to the students but let the students analyze and develop their own conclusions.
- Make it expandable towards new applications.

The **Lab-Top 1000** has met these goals and much more. The **Lab-Top 1000** is a quality microcomputer based test instrument at a price that is sure to be affordable by most science departments. In addition we back the **Lab-Top 1000** with a 1-year parts and labor warranty and a 30 day money-back satisfaction guarantee.

If you require additional information concerning Lab-Top Computer products and services, please feel free to call or write us.

Sincerely,

Russell Francis

Lab-Top 1000

The **Lab-Top 1000** is a self contained* microprocessor based laboratory measurement device. Using low cost transducers (devices that convert from other forms of energy to voltages), the device is capable of very accurate measurements at intervals of thousandths (1 / 1000th) of a second. The data can be subsequently displayed, analyzed, stored or sent to a larger computer to be stored, processed, graphed, analyzed, etc.

The **Lab-Top 1000** has been pre-programmed with menu driven routines. Although we provide you with a lab manual that contains dozens of labs and exercises for your students to follow, the modular programs allow you to develop your own lab experiments. The versatility of this unit is difficult to describe on paper. Listed below are just a few of the uses we have found. If you you can think of another use for the **Lab-Top 1000** we would be very interested in hearing about it. We may include it in future programs. For those of you with a computer background, a development system is available which allows you to write your own programs.

The transducer ports are compatible with most existing probes and sensors. For example, the ports will accept any device that will work on APPLE II game ports. You can use existing probes, build your own probes, or we'll supply them. We are gearing up to produce several of our own low-cost sensors and probes. Behind all this you have our full support and fast service. We believe the **Lab-Top 1000** is capable of almost any application, so feel free to write us and tell us what you need.

USES:

TIMER	-	**Attach to photogates to determine speed, acceleration, RPM's, reactions. Can be used with air-tracks, pendulums or as a stopwatch.**
COUNTER	-	**Count number of passes, pendulums, events, etc.**
pH METER	-	**Attach to pH probe for chemistry, biology.**
LIGHT INTENSITY	-	**Connect photodiodes, photocells or solar cells to determine luminescence, inverse-square law.**
TEMPERATURE	-	**With temperature probes, has many uses in thermodynamics, biology, chemistry.**
HUMIDITY	-	**With sensor, can be used in biology, meteorology.**
FORCE	-	**Strain gauges and force beams, allow measurement of weight, torque, dynamic forces, friction, equilibrium.**
FREQUENCIES	-	**Can be measured for experiments in sound, music, resonance, waves.**
MILLIVOLTS/VOLTS	-	**Make measurements for electricity, magnetism labs.**
CONTROL OUTPUTS	-	**Control relays, solenoids, lights, bells for physics, robotics.**

The **Lab-Top 1000** will accept any device that will provide a variable voltage from -10 volts to +10 volts or a digital voltage that switches from 0 to 5 volts. It can also accept several devices at once depending on the menu selections.

Other potential uses include: light pens, bar-code readers, spectrophotometers, Geiger counters, joysticks, pressure, alarms, chromatography, fluid dynamics, aerodynamics, electrical current, momentum, thermocouples, stepper motors, sound levels, etc.

*Requires a dumb terminal or dumb terminal program to utilize the menu functions.

SPECIFICATIONS

CPU 8085
Speed .....5 Mhz
Inputs .....16 analog, 8 digital
Outputs .....8 buffered digital
Memory .....8k RAM, 16k ROM
Communications ..RS-232 port
Watchdog timer
Programmable timer
Interrupt capability

FEATURES

- **No disk drives or disketts to fool with**
- **expandable**
- **programmable (with optional FORTH)**
- **networkable**
- **readily servicable**
- **pre-designed lessons**
- **uses devices compatible with APPLE game ports**
- **100% portable version**
- **Data is down-loadable to PC's, printers, etc.**
- **Data can be analyzed and graphed with spreadsheets**
- **Replaces several, more expensive, instruments**
- **Regular software updates provided**
- **Menu driven software**

LabTop Computers LT1000 Technical Specification

General description: The LT1000 is a computer-based laboratory measurement device which is compatible with most existing probes and sensors. Using an ASCII terminal (or a PC running a dumb terminal program) the LT1000's menu driven software can control and monitor up to 512 measurement devices and provides recorded or real-time analysis of the incoming data. For more sophisticated analysis, the LT1000 has a built in communications protocol that allows complete programming flexibility.

Analog Channels

Number: 16 multiplexed
Resolution (in bits): 8
Maximum samples/sec.: in excess of 1,000

Digital Channels

Number: 16 configurable as input or output

Communications

Serial interface options: RS-232C, RS-422
Serial port speed: Configurable up to 19.2 KB
Maximum distance between unit and terminal at 9600 baud: 300 feet
Maximum number of units in a network: 32
Maximum distance between units at 9600 baud: 18,000 feet
Terminals supported: dumb ASCII or PC with LabTop or third-party software package

Hardware

CPU type: 8085
CPU speed: 5Mhz
RAM available for data buffering: 48K
On board timer-counter: 1Mhz
Output available to scope, recorder or logging printer
Power supply: external 24V AC or ±12V DC

Dimensions

	inches	cm.
Height	2¾	4.5
Width	9¼	18.5
Depth	6⅝	13.25

Virtually any sensor can be conditioned to operate with the LT1000. Adapters are available for most devices on the market.

Applications

Timer - Attach to photogates to determine speed, acceleration, RPM's, reactions. Can be used with air-tracks, pendulums or as a stopwatch.

Counter - Count number of passes, pendulums, events, etc.

pH Meter - Attach to pH probe for chemistry, biology.

Light Intensity - Connect photodiodes, photocells or solar cells to determine luminescence, inverse-square law.

Temperature - With temperature probes, has many uses in thermodynamics, biology, chemistry.

Humidity - With sensor, can be used in biology, meteorology.

Force - Strain gages and force beams allow measurement of weight, torque, dynamic forces, friction, equilibrium.

Frequencies - Can be measured for experiments in sound, music, resonance, waves.

Millivolts/Volts - Make measurements for electricity, magnetism labs.

Control Outputs - Control relays, solenoids, lights, bells for physics, robotics.

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Other potential uses include: light pens, bar-code readers, spectrophotometers, Geiger counters, joysticks, pressure, alarms, chromatography, fluid dynamics, aerodynamics, electrical current, momentum, thermocouples, stepper motors, sound levels, etc.

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