![hp] MEASUREMENT COMPUTATION news

product advances *from Hewlett-Packard*

JANUARY/FEBRUARY 1980

A very BASIC computer to give your personal productivity a lift

HP-IB

Basically, the new HP-85 is

- a fully integrated computer (keyboard, display, CPU, magnetic tape data storage, and thermal printer) in one package small enough to fit a corner of your desk or lab bench, or to take home.

- a computer that is easy to use because of HP's BASIC language, and that requires no computer expertise.

- a computer with 16K bytes of memory (expandable to 32K bytes, able to invert a 10 × 10 matrix). It will generate graphic designs on its CRT display interactively under your control, then transform the display to hard copy on its built-in printer.

- a computer that can interface with instruments and operate as a computing controller through HP-IB and other communication protocols available later this year.

- a computer whose versatility can be enhanced with optional peripherals through HP-IB interface: a high-speed, full-width line printer, a full-sized plotter, and flexible disc drives for data storage.

- a computer with a starting repertoire of 10 application pacs, including technical, graphics, statistics, and business.

- a computer that costs only $3,250*.

*To get full information on the HP-85, check **A** on the HP Reply Card.*

The HP-85 computer weighs a mere 20 pounds (9 kilograms). It's a very BASIC computer designed for individual use, with interactive graphics, expandable memory, optional peripherals, and interfacing potential disproportionate to its modest price.

IN THIS ISSUE

- First digital bar code wand • Fast, accurate temperature probe

New temperature probe quickly, accurately locates circuit hot spots
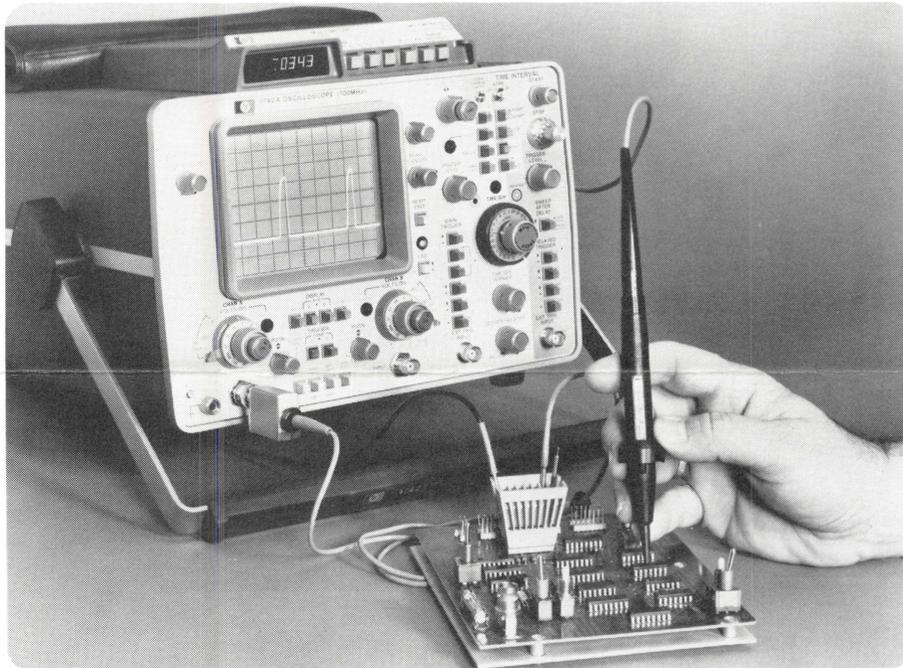
HP's new temperature probe coupled with a 1700 series Option 034/035 oscilloscope gives you accurate temperature measurements while observing circuit operation.

HP's 10023A Temperature Probe provides the fast, accurate temperature measurements needed in a wide variety of thermal design, diagnostic and testing applications. Surface temperatures are read directly in degrees Celsius on any general purpose digital multimeter (DMM) with an input impedance of $\geq$10 MΩ. Operation is simple with a convenient pencil-like probe tip and press-to-read switch. Just press the button, touch the surface to be measured, and read its temperature directly on the DMM.

The 10023A is a factory calibrated probe that does not require periodic recalibration. In fact, no internal adjustments are needed.

The calibrated linear output is 1 mV/°C, achieved by individually characterizing each diode in a precision thermal reference bath. An integrated circuit resistor network is then laser trimmed to match each diode to its electronic compensating network.

Measurement accuracy, which is traceable to the National Bureau of Standards, is ±2°C from 0°C to +100°C decreasing linearly to +2°C, −4°C at −55°C and to +4°C, −2°C at +150°C. For applications requiring relative rather than absolute measurements of similar temperatures, the probe has short-term repeata-

bility of ±0.3°C. Fast temperature measurements are enabled by a temperature sensor with very low thermal mass positioned close to the measurement surface. This design also allows measurements with very low thermal gradient errors.

High thermal isolation reduces any tendency of the probe tip to act as a heat sink or cooling fin which may change the measured surface temperature. Minimum disturbance of the operating environment by the probe is particularly important when accurate measurements of small electronic components are needed. In addition, being electrically isolated, the probe tip can make measurements on non-grounded components such as power transistors with the collector common to the case.

The entire electronics assembly, including the battery, is packaged in the probe barrel. A standard dual banana plug output connector provides universal readout by most digital voltmeters including the built-in DMMs on HP's Option 034/035, 1700 series delta time oscilloscopes. Price for the 10023A is $150.00.

Check **B** *on the HP Reply Card for further information.*

HP's microprocessor lab teaches digital troubleshooting

Hewlett-Packard's 5036A Microprocessor Lab provides an aspect of microprocessor training not available in other products—microprocessor troubleshooting. What's more, it provides skill in this important area using HP's high-quality instruments and thorough documentation. The 5036A consists of a 20-lesson textbook/lab manual and a briefcase-contained operating microcomputer.

Included in the 450-page textbook are a troubleshooting tree for the lab, block diagrams, schematic, signature tables, and solutions for the lab's 12 moveable, practice fault jumpers. In short, all documentation needed to completely troubleshoot the lab.

### Troubleshooting Lessons Build Skill on Microprocessors

The lab's textbook, "Practical Microprocessors" culminates in four highly practical troubleshooting lessons:

● **Handheld Troubleshooting Tools:** Hands-on troubleshooting using HP's 5024A IC Troubleshooters Kit: the 545A Logic Probe, 546A Pulser, and 547A Current Tracer.

● **Signature and Logic Analyzers:** Introduction to HP's 5004A Signature Analyzer and HP's Logic Analyzers.

● **Troubleshooting μP Systems:** Troubleshooting theories and useful tips.

● **Troubleshooting the Microprocessor Lab:** Detailed troubleshooting experiments on the lab using signature analysis.

Prices: Model 5036A Lab, $800. Optional: 5004A Signature Analyzer, $990; 5024A IC Troubleshooters Kit, $625.

For details on HP's integrated system for learning microprocessors, check **C** *on the HP Reply Card.*
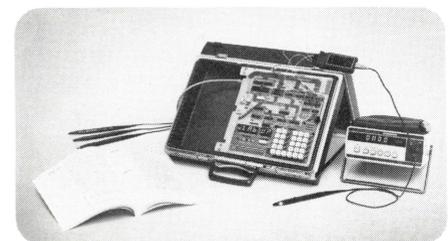
The 5036A Microprocessor Lab with optional 5004 Signature Analyzer and 5024A IC Troubleshooters Kit provide actual hands-on microprocessor troubleshooting experience.

New Digital Bar Code Wand's 0.3 mm resolution enhances bar code readability

Hewlett-Packard's new HEDS-3000 Digital Bar Code Wand greatly enhances the readability of dot matrix printed bar codes thanks to its 0.3 mm (0.012 in.) resolution.

The world's first digital bar code wand, this handheld scanner is an effective alternative to the keyboard when used to collect information in self-contained blocks. In addition to the convenience advantages, bar code scanning is also faster than key entry and more accurate since most codes have check sums built-in to prevent incorrect readings from being entered.

Equipped with an integral push-to-read switch, the HEDS-3000 consumes power only when the switch is depressed. It is well suited to portable systems as well as those with line power. Housed in a rugged, stylized, molded plastic case with attached cord and connector, the wand can be manufactured in custom colors with desired logos.

Applications include remote data collection, ticket identification systems, security checkpoint verification, file folder

This new HEDS-3000 Digital Bart Code Wand is designed to scan black-and-white bar code and output TTL and CMOS-compatible signals. The heart of the wand is an advanced, high-resolution, high-speed, emitter/detector sensor in a sealed module near the removable tip.

tracking, inventory control, identifying assemblies in service, repair and manufacturing environments as well as programming of appliances, intelligent instruments and personal computers.

In quantities of 1-99, the standard wand is priced at $99.50 each. *Check D on the HP Reply Card for details.*

New AC/DC threshold sensing optocoupler

A new voltage/current threshold detection optocoupler with guaranteed input-threshold specifications and logic-compatible output is now available from HP. It is designed for industrial control computer input boards and other applications where a predetermined input threshold level is desirable.

The HCPL-3700 combines a threshold-sensing input buffer IC, an internal LED, and a high-gain photon detector to provide an optocoupler which features adjustable external threshold levels and logic-compatible output.

The input buffer IC contains a reference voltage circuit and a comparator that compares the input signal with the reference voltage. When the "threshold" is reached the comparator switches and turns on current to the LED. The nominal turn-on threshold is 2.5 mA and 3.8 V, but the addition of one or more external attenuation resistors permits the user to set

the threshold switching point of the HCPL-3700 over a wide range of input voltages and currents. Additionally, a hysteresis circuit in the comparator minimizes false LED turn-on for electrically noisy input signals.

In quantities of 1 to 99, the HCPL-3700 is priced at $5.90. *Obtain all details by checking E on the HP Reply Card.*
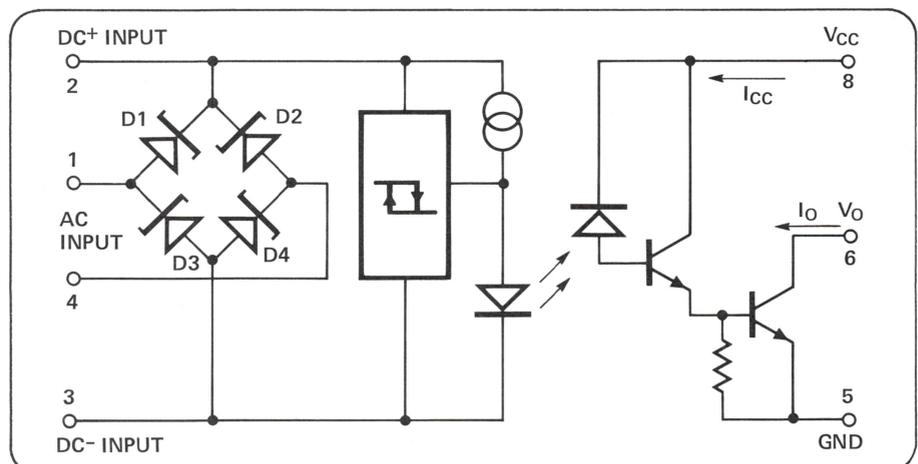
Printer/plotter delivers high-quality graphics and an impressive range of capabilities

HP-IB

If your application calls for high quality graphics, a combination of vector plotting with extensive annotation, unattended operation, or long axis plotting, HP has a plotter/printer for your needs and your interface requirement. The Models 7245B land 7240A are HP-IB and RS-232-C versions of the same plotter/printer. They combine a state-of-the-art, thermal printhead and a newly developed Hewlett-Packard soft writing surface to provide high quality vector graphics and printing.

With a printing speed of 38 characters-per-second (CPS) and plotting speeds equal to or greater than that of many dedicated vector plotters, these HP desktop plotter/printers are outstanding general purpose devices. The Model 7245B HP-IB plotter/printer is an excellent companion for your desktop computer or computer system while the 7240A RS-232-C plotter/printer can be used either via telephone modem for remote applications or hardwired to your computer.

Some areas of application are engineering design, production testing, data acquisition, process monitoring, analytical plotting, long-term business forecasting, business reports, long-axis survey plotting, and project management.
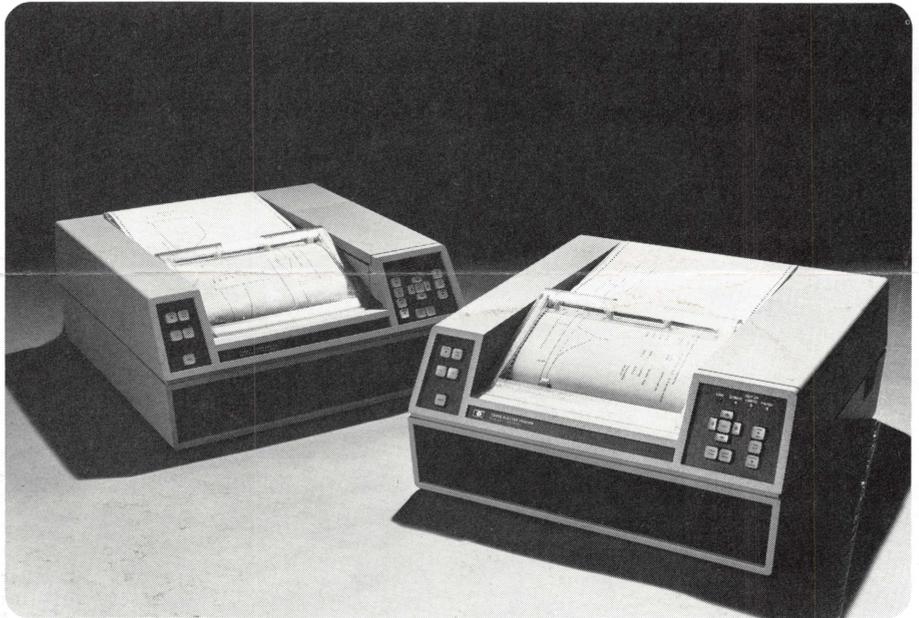
Both models are microprocessor-based and use a bidirectional paper drive to advance a 61-metre (200 foot) roll of thermosensitive paper for unattended plotting and bidirectional long-axis plotting up to 5 metres (16.4 feet). A patented microstep sprocket paper drive gives them excellent line quality, and repeat-ability of 0.25 millimetres (0.010 inches) maximum from any point on the chart.

Blue printing and black printing thermosensitive paper is available for both units.

For full details, check **F** *on the HP Reply Card.*

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