

Cabinets clockwise from top: CPU, Dual-cassette drive, Keyboard, 9" Monitor.

Meet The Digital Group

If you are seriously considering the purchase of a microcomputer system for personal or business use... or just beginning to feel the first twinges of interest in a fascinating hobby... the Digital Group is a company you should get acquainted with.

For many months now, we've been feverishly (and rather quietly) at work on our unique, high-quality product—a microcomputer system designed from the inside out to be the most comprehensive, easy-to-use and adaptable system you'll find anywhere. And our reputation has been getting around *fast*. In fact, you may have already heard a little something about us from a friend. We've found our own best salesmen are our many satisfied customers.

There's a good reason. Simply, the Digital Group has a lot to offer: state-of-the-art designs, a totally complete systems philosophy, unexcelled quality, reasonable software, affordable prices and the promise that our products will not become rapidly obsolete, even in this fast-moving, high-technology field.

The Advantages

Here are a few specific advantages of our product line:

- We offer interchangeable CPUs from different manufacturers (including the new "super chip"—the Z-80 from Zilog) which are interchangeable at the CPU card level. That way, your system won't become instantly obsolete with each new design breakthrough. The major portion of your investment in memory and I/O is protected.
- Digital Group systems are complete and fully featured, so there's no need to purchase bits and pieces from different manufacturers. We have everything you need, but almost any other equipment can be easily supported, too, thanks to the universal nature of our systems.
- Our systems are specifically designed to be easy to use. With our combination of TV, keyboard, and cassette recorder, you have a system that is quick, quiet, and inexpensive. To get going merely power on, load cassette and go!
- Design shortcuts have been avoided—all CPUs run at full maximum rated speed.
- All system components are available with our beautiful new custom cabinets. And every new product will maintain the same unmistakable Digital Group image.

The Features

Digital Group Systems—CPUs currently being delivered: Z-80 by Zilog 8080A/9080A 6800 6500 by MOS Technology

All are completely interchangeable at the CPU card level. Standard features with all systems:

- Video-based operating system

- Video/Cassette Interface Card
512 character upper & lower case video interface
100 character/second audio cassette interface
- CPU Card
2K RAM, Direct Memory Access (DMA)
Vectored Interrupts (up to 128)
256 byte I702A bootstrap loader
All buffering, CPU dependencies, and housekeeping circuitry
- Input/Output Card
Four 8-bit parallel input ports
Four 8-bit parallel output ports
- Motherboard

Prices for standard systems including the above features start at \$475 for Z-80, \$425 for 8080 or 6800, \$375 for 6500.

More

Many options, peripherals, expansion capabilities and accessories are already available. They include rapid computer-controlled cassette drives for mass storage, memory, I/O, monitors, prom boards, multiple power supplies, prototyping cards and others. Software packages include BASICs, Assemblers, Disassemblers, Text Editors, games, ham radio applications, software training cassettes, system packages and more (even biorhythm).

Sounds neat—now what?

Now that you know a little about who we are and what we're doing, we need to know more about you. In order for us to get more information to you, please take a few seconds and fill in our mailing list coupon. We think you'll be pleased with what you get back.



the digital group

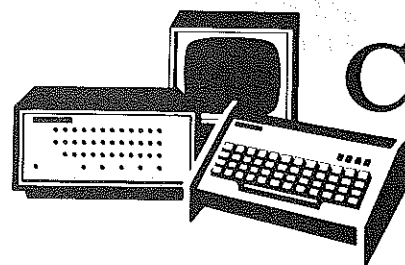
P.O. Box 6528
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OK, I'd like to get to know you guys better.
Send me the whole package!

Name _____

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Computer Bits

By Stephen B. Gray

COMPUTER STORES

THE FIRST hobby-computer store opened in Los Angeles in July 1975. Now, a year and a half later, there are well over 100 of them across the country. Why such a rapid rise? As one store owner observed, a computer store "provides the place, the people and the knowledge to help out the hobbyist." It provides the hobbyist with a place to look over different computers, to ask questions, and often the chance to try out a computer, hands-on. In this way, he can look before he leaps.

A Typical Store. At one time there were two basic types of stores. Both sold a variety of peripherals, but one sold only MITS Altair computers, while the other sold several other makes. The former type of store can concentrate on a single line of computers, and develop an expertise in the sales, operation and service of a minimum number of mainframe machines. Now, however, as different models pour into the marketplace, some stores that previously sold only the 8800b and 680b computers also carry others. A substantial number, though, still prefer to concentrate on the two Altair models, offering a host of peripherals to go with them.

If you walk into a typical computer store today, you'll find at least one operating computer connected to a Teletype or to a keyboard terminal and a TV monitor or receiver, or to a complete CRT terminal. Sometimes a peripheral or two are also on-line, such as a cassette-storage device, or a graphics terminal or printer. Other computers are on counters or in display cases, along with memory boards, Teletype paper and tape, extender boards, power supplies, TV monitors, interface boards, printers, terminals, breadboards, keyboards, etc. Not every store will have all these, but many do.

Test equipment is also on the shelves, including logic probes, logic monitors, perhaps a pulse generator, and maybe even a frequency counter. Some tools

may also be on display, such as for wire-wrapping, soldering and desoldering. There are computer stores that also carry basic tools such as pliers, screwdrivers, soldering irons, etc.

A good supply of parts is essential, since half of the hobby computers built from kits don't work when first turned on. Not all of that is caused by solder bridges and miswiring. So, to repair the damage, the hobbyist may need IC's, LED's, and IC sockets, which most stores carry, along with breadboarding hardware, hookup wire, etc.

Books and Software. Many stores devote a large amount of space to books. As one store manager put it, "We carry books about everything on computers and data processing except the social issues." That store has books on hardware design, digital techniques, flowcharting, even on multiple regression and telecommunications. They have programming texts on assembler,

BASIC, APL, FORTRAN, ALGOL, and several other languages. They also carry software books, offering assembly-language programs (such as the Scelbi series on the 8080 and 8008) and BASIC programs (including "101 BASIC Computer Games"). In addition to programs being offered as listings in these books, the store also has many programs on PROM memory chips, on paper tape, and on cassette.

Magazine racks are used by many stores to display up to half a dozen different hobby magazines. And there's always a bulletin board, with notices of meetings, "For Sale" ads for computer hardware, listings of computer courses, etc.

You may also find T-shirts, lettered with slogans such as "Does Not Compute," "Real Time Operator," or "Baud Rated."

Chains. Most of the stores are independently owned. There are several chains, one with over a dozen stores, mainly in California, another with half a dozen in the Northeast. Late last year, an industrial electronics distributor announced plans to establish computer display counters in their twelve U.S. branches, with "working models of five microprocessor kits, three non-assembled kits, plus four additional microprocessor chips not in kit form. Two complete developmental systems will be available. In addition, books, power supplies, tape readers, and accessories in kit form will be carried."

COMING UP IN THE MARCH

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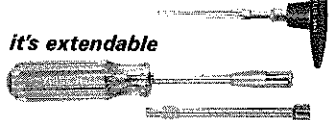


...for slotted, Phillips, Frearson, Bristol, clutch head, Scrolox® screws; in inch and metric size Allen hex and Allen hex ballpoint socket types; and Pozidriv® style.

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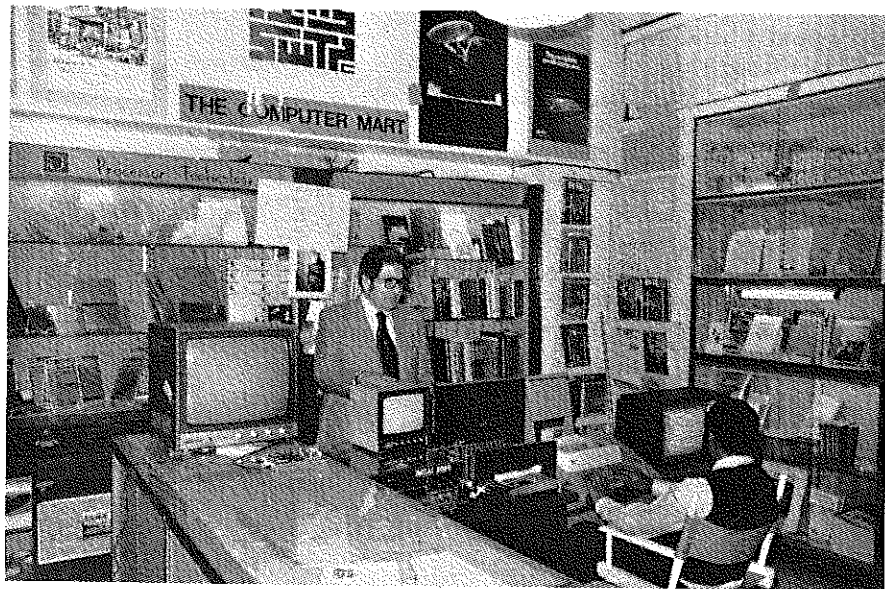
CIRCLE NO. 64 ON FREE INFORMATION CARD

The company's president says, "The industrial distributor has never really catered to the hobbyist, but always allowed cash sales because many engineers and buyers from industry bought small quantities for their personal use. With the advent of the microprocessor, a whole new market of "Computerists" has developed. These people are engineers, programmers, and technicians from industry who are learning, designing, and programming microprocessor systems at home. They want a place to browse, read, have hands-on practice, and see what they are buying."

Repair Facilities. Some computer stores offer repair services. One store in New York fixes an item free if you bought it there and if it's still within the warranty period. After that, the charge is \$10 to \$12 an hour. The alternative is to send your computer or pc board or peripheral to the manufacturer, and if the warranty has expired, you pay \$15 to \$22 an hour, plus shipping. The most common problems with computers built

board, or a memory board, or the rest of the computer, you can narrow it down by taking the two or three boards into a computer store that has a machine like yours in operation. They'll plug in your boards, one at a time, after first checking for shorts that might cause trouble, and you'll soon have a better idea of where the problem is. There's no charge for this informal checkout, unless you want the store to go further in localizing the problem. However, since there are usually several hobbyists in a computer store at almost any time of the day, especially during the lunch hour and after work, you might get some very useful advice from someone who had the same problem.

Idea Exchange. Because computer stores are often meeting places for computer "freaks," they are good places to go to listen in, if you're a beginner, and to join in the conversation, once you've learned the ropes. You can learn what others think of this or that computer or pc board or program, you can often find



The Computer Mart (New York) typifies hobbyist stores around country.

from kits are solder bridges and miswiring. If the kit has otherwise been put together correctly, and if the store has a good digital electronics technician, you might save time and money by having your computer, or board, or whatever, repaired right there. One store manager expects his repair business to increase as more and more people with little or no electronics knowledge or ability try to build a computer, so he's expanding his service department.

If you can't get your computer to work, and don't know if it's the fault of the CPU

out from the store manager what new products are about to become available, and you can often watch one of the store assistants checking out a new piece of equipment. You can also often watch other hobbyists using the store's computer to check out some new program or peripheral, and thus help you decide if it's something you want to get into.

In short, there's no better place than a good computer store to see what's available, to find out what's going to be on the market, to chat with others afflicted with computeritis, and to get help. ◇

Unique full-function 8-digit wrist calculator... available only as a kit.

A wrist calculator is the ultimate in common-sense portable calculating power. Even a pocket calculator goes where your pocket goes—take your jacket off, and you're lost!

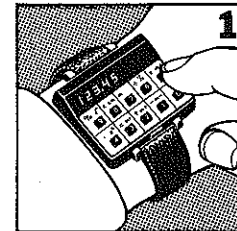
But a wrist-calculator is only worth having if it offers a genuinely comprehensive range of functions, with a full-size 8-digit display.

This one does. What's more, because it is a kit, supplied direct from the manufacturer, it costs only a very reasonable \$19.95. And for that, you get not only a high-calibre calculator, but the fascination of building it yourself.

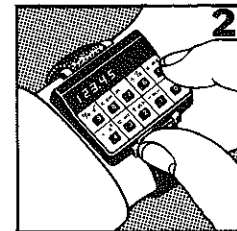
How to make 10 keys do the work of 27

The Sinclair Instrument wrist calculator offers the full range of arithmetic functions. It uses normal algebraic logic ('enter it as you write it'). But in addition, it offers a % key; plus the convenience functions \sqrt{x} , $1/x$, x^2 ; plus a full 5-function memory.

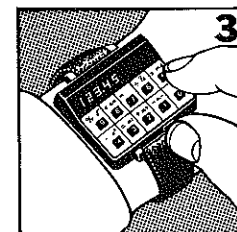
All this, from just 10 keys! The secret? An ingenious, simple three-position switch. It works like this.



1. The switch in its normal, central position. With the switch centered, numbers—which make up the vast majority of key-strokes—are tapped in the normal way.



2. Hold the switch to the left to use the functions to the left above the keys...



3. and hold it to the right to use the functions to the right above the keys. The display uses 8 full-size red LED digits, and the calculator runs on readily-available hearing-aid batteries to give weeks of normal use.

Assembling the Sinclair Instrument wrist calculator

The wrist calculator kit comes to you complete and ready for assembly. All you need is a reasonable degree of skill with a fine-point soldering iron. It takes about three hours to assemble. If anything goes wrong, Sinclair Instrument will replace any damaged components free: we want you to enjoy assembling the kit, and to end up with a valuable and useful calculator.

Contents
Case and display window.
Strap.
Printed circuit board.
Switches.
Special direct-drive chip (no interface chip needed).
Display.
Batteries.

Everything is packaged in a neat plastic box, and accompanied by full instructions.

The only thing you need is a fine-point soldering iron.

All components are fully guaranteed, and any which are damaged during assembly will be replaced free.

The wrist-calculator kit is available only direct from Sinclair Instrument. Take advantage of this 10 day money-back offer.

Send the coupon today.

To: Sinclair Instruments Inc.
6 Commercial Street
Hicksville, NY 11801

PE-2

Please send me

_____ Sinclair wrist calculator kit(s) at \$19.95\$

_____ Sales tax (NY residents)

_____ Shipping & handling (\$2.50 per unit)

Enclosed is check/MO (payable to
Sinclair Instruments Inc.)

TOTAL \$ _____

Name _____

Address _____

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Zip _____

I understand that you will refund the purchase price of the kit in full if I return it in saleable condition within 10 days of receipt.

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6 Commercial Street
Hicksville, N.Y. 11801

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\$19.95**