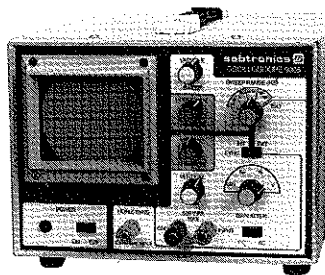


All merchandise advertised is ready assembled and factory tested.



Sabtronics SUPERSCOPE Model 9005 at super low price

- Features:**
- ★ Sharp clear 3" CRT
 - ★ Lower threshold triggering: less than 1/2 division at 5MHz
 - ★ Sharper focus especially at high frequencies
 - ★ Fiberglass pcb
 - ★ Colour coded input terminals
 - ★ and a usable response to beyond 5MHz

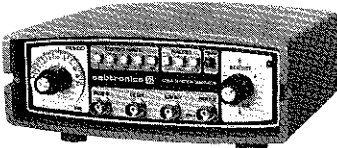
Specifications:

- Usable bandwidth DC to 5MHz plus
- Vertical deflection sensitivity: 10mV per division
- Horizontal deflection sensitivity: 500mV per division
- Time base sweep frequency: 10Hz to 100kHz in 4 ranges
- Synchronisation: internal and external
- Size: 202(W) x 160(H) x 306(D) mm
- Weight: approx. 3.8 kg

only
\$229.00

- Features:**
- ★ Wide 1Hz to 200kHz frequency range
 - ★ Sine, square, triangle and separate TTL square wave output
 - ★ Continuously variable output to 10V P-P
 - ★ Frequency sweepable over 100:1 range
 - ★ Short-circuit proof outputs
 - ★ Verier frequency dial with fine adjustment control

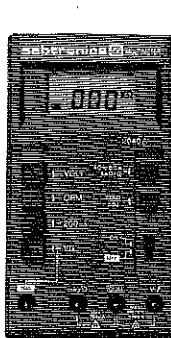
Low cost Function Generator Model 5020A



Specifications:

- Frequency range: 1Hz to 200kHz in five overlapping decade ranges.
- Waveforms: Sine wave: Distortion <1% from 1Hz to 100 kHz; <3% from 100kHz to 200kHz
- Square wave: Rise/fall time <250nsec. Symmetry <98%
- Triangle wave: Non-linearity <1% to 100kHz
- Output: Impedance: 600Ω short-circuit proof. Amplitude (continuously variable): 10V P-P open circuit; 5V P-P into 600Ω max. Low Level: -40dB of high output. TTL square wave: >10 std. TTL loads
- Sweep input: Impedance: 27kΩ. Range: >100:1. Input voltage: Up to ±10V.

\$129.00



AUTORANGING DMM Model 2040 with 10 amps current measuring capability

This is a very sensitive, general purpose instrument which provides the facilities and quality required by today's electric/electronic technicians and engineers.

Specifications:

- Display: Numerical display: 3.5 digit LCD, maximum reading 1999. Unit and sign: mV, V, mA, A, Ω, KΩ, AUTO, BATT, ADJ, LO, -, AC
- Range selection: Autoranging on VOLT and OHM
- Polarity: Autopolarity, (-) sign when minus, (+) sign is implied and is not shown
- Battery warning: LO BATT sign
- Sampling rate: Two times per second
- Power consumption: 5mW typically
- Power supply: Two 1.5V batteries, type UM-3 or AA
- Battery life: 300 hour continuous operation
- Overload protection: One 3A 600V, BBS type fuse and one 0.3A 250V, 5x20 mm fuse for OHM and mA ranges
- Operating temperature and humidity: 0 to +40°C, less than 80%
- Zero adjustment: Zero adjustment by ZERO ADJ. Keyswitch
- Low power OHM ranges: For in-circuit resistance measurements at voltage levels below 0.33 volts

\$129.00

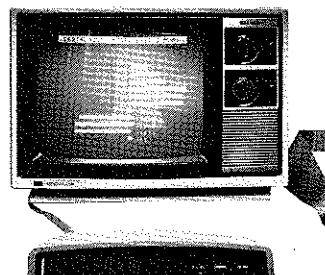
Features:

- ★ Easiest operation: AUTORANGING SYSTEM requires no range selections
- ★ Easiest reading: Automatic indications of units, signs, polarity, decimal point, overrange and battery warning
- ★ Low battery consumption of 5mW: 300 hour continuous use with two 1.5V batteries, type UM-3 or AA
- ★ Difference Measurements: This instrument can be used like a galvanometer
- ★ Ultimate Portability: Actualized light weight and compactness in excellently designed ABS cases

We also have many other products. Contact us for our full catalogue.

Ordering Information:

Domestic: Shipping and Handling, add 10% of purchase up to \$100.00, add 5% on orders over \$100.00.
For orders call: (813) 623 2631 9 A.M. to 5 P.M. E.S.T.
We accept Master Charge or VISA Credit Cards. Florida residents add 4% Sales tax.
Overseas orders: Add \$25.00 for all instruments except Model 9005 Scope. Add \$65.00 or ask us for a list of our overseas distributors.



Interfaceable DMM Model 2020 MP

Features:

- ★ 0.1% basic DCV accuracy
- ★ 10 amps current measurement
- ★ 31 ranges and 6 functions
- ★ Hi power and Lo power Ohms
- ★ Unique touch and hold capability**
- ★ Battery or AC operated***
- ★ Interface for most popular computers included

Specifications:

- 3 1/2 digit large 0.4" LED readouts
- Automatic decimal and minus (-) sign
- ACV frequency response: 40Hz to 40kHz on 200mV, 2V and 20V ranges
- Overload protection: 1200V (DC+AC peak) on all voltage ranges

**CRT not included

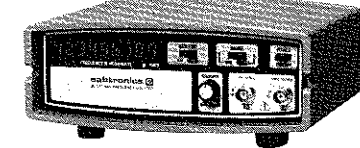
***Batteries or AC adaptor optional

\$299.00

Give your computer test and measurement capabilities by using our interfaceable Model 2020 MP DMM.

- Features:**
- ★ 9-digit resolution for more precise readings
 - ★ Excellent 30mV sensitivity up to 1GHz
 - ★ 3 switch selectable gate times
 - ★ 10MHz crystal controlled time base for greater accuracy
 - ★ 2 separate inputs for added versatility
 - ★ Front panel sensitivity control

1GHz 9-digit Frequency Counter Model 8000B

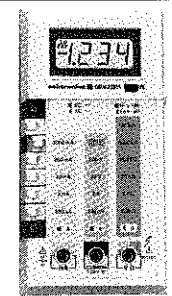


Specifications:

- Frequency range: Model 8000B: 10Hz-1GHz in 3 ranges. Model 8610B: 10Hz-600MHz in 3 ranges
- Display: 9-digit 0.4" (10 mm) LED with automatic decimal point; separate LED gate activity indicator
- Resolution: 10MHz range: 0.1Hz with 10s gate time. 100MHz range: 1Hz with 10s gate time. 600MHz/1GHz range: 10Hz with 10s gate time
- Sensitivity: <20mV rms, 10Hz-100MHz; <30mV rms, 100-600MHz; <35mV rms, 600MHz-1GHz
- Input impedance: Input A-1MΩ/100pF. Input B-50Ω nominal
- Time base: Frequency: 10MHz. Stability: ±2ppm. Temperature stability: ±1ppm from 0 to 40°C.
- Gate time: 0.1 second, 1 second, 10 seconds switch selectable.

\$239.00

*Model 8610B 600MHz for only \$169.00



Solderless Breadboard Model 356S

Features:

- ★ 3 terminal strips 5 distribution strips
- ★ Aluminium plate
- ★ Size: 200x175x8 mm actual area of breadboard
- ★ Silver-plated contacts
- ★ Accept all DIP size including RTL, DTL and CMOS devices
- ★ Interconnect with any solid 20 to 29AWG (0.3-0.8 mm) wire
- ★ Breadboard elements are mounted on ground plane, ideal for high frequency, high speed and low noise circuit.

\$39.95

Other models also available.

Low Cost Handheld DMM Model 2038A

- Features:**
- ★ 3 1/2-digit LCD display
 - ★ 0.6% basic DCV accuracy
 - ★ DC voltage: 1000V
 - ★ AC voltage: 750V
 - ★ Input impedance: 10MΩ
 - ★ Low battery indicator
 - ★ High impact ABS case
 - ★ AC/DC current: 2 amps
 - ★ Overload protection
 - ★ 2000 hours battery life
 - ★ Auto zero

\$89.00

Logic Probe Model LP-1

Features:

- ★ Input impedance: 100KΩ
- ★ Operating frequency: 10MHz
- ★ Min. detectable pulse width: 50nsec.
- ★ Input overload protection: ±50V Cont.
- ★ Power requirements: 5 to 15V less than 30mA.
- ★ LED indicator for HI and LO
- ★ Memory and DTL/TTL CMOS switch

\$24.95

COMPUTER BITS

By Carl Warren

Beef Up Your H-89

IF YOU'VE been thinking about additional capacity for your H-89 microcomputer, you might want to consider the double-density floppy disk controller from Magnolia Microsystems (2812 Thorndyke Ave. W., Seattle, WA 98199, Tel. 800-426-2841).

The \$595 unit comes with the PROMs, cables, CP/M, and documentation necessary to bring your system into the double-density world. The board supports up to 1210K bytes on a double-sided drive, and as much as 162K bytes on single-sided drives (such as those supplied in the Model H-77 disk system from Heath).

Other attributes of the controller include: the ability to work in concert with either the Heath single- or double-density controller, ease of configuration for a wide variety of systems, the ability to support as many as four 8" single- or double-sided drives, as well as four 5" single- or double-sided drives at the same time the Heath controller is supporting three 5" single-sided drives.

You should be aware, however, that the Magnolia board does not support either HDOS or Heath/Zenith CP/M. The CP/M Ver 2.2 that comes with the controller is optimized to take advantage of the various board characteristics and drives that can be attached to it.

Installation. Installing the controller takes about an hour. Most of the time is spent removing the CPU and terminal boards in order to make the necessary PROM and power-supply changes.

Because many of the H-89s in current use have the original power supply whose regulator is incapable of meeting the necessary current loads, your first step is to adapt the regulator by adding the part supplied for that purpose.

Your next task is to change the monitor PROMs designed to support the controller, and provide a well-thought-out command structure. Specifically, besides boot, you have P for program counter, S (substitute), G (go execute), M (dynamic memory test), and T (test drive rotational speed). Unlike the split-octal used by Heath, numbers are displayed on the monitor in hexadecimal.

Once you've made the necessary hardware additions and checked out the monitor commands, you're ready to configure the drives. On the 5" drives with your system, you only need to change the jumpers for head-load with motor. Incidentally, all the drives should be configured in this manner.

The 8" drive I chose was the single-sided FDD-100, 48 tpi (tracks-per-inch) from Siemens. Magnolia sells and recommends Qume's Data Trak 8, which currently is the only drive referenced in the set-up manual. (As of this writing, a new manual is being prepared to address a wider variety; getting the proper jumpers can be troublesome.)

As configured, my H-89 uses the Heath controller for the terminal-mounted drive, while the H-77 outboard drives are on the Magnolia controller, as is the 8" drive. The total system storage capacity is 1M byte: 80K bytes for the Heath drive, 160K bytes each for the 5" drives on the Magnolia controller, and 600K bytes for the 8" drive. All the drives are 48 tpi; but I could add 96-tpi drives in the daisy chain—either the 5" or 8" variety.

The Magnolia board is integrated into the system configuration via a specific program. This program is menu-driven and offers a number of selections, including density (single- or double-track), and one or two operational sides.

FOR ONLY \$129.95 Learn Computing From The Ground Up

Build a Computer kit that grows with you, and can expand to 64K RAM, Microsoft BASIC, Text Editor/Assembler, Word Processor, Floppy Disks and more.



EXPLORER/85

Here's the low cost way to learn the fundamentals of computing, the all-important basics you'll need more and more as you advance in computer skills. For just \$129.95 you get the advanced-design Explorer/85 motherboard with all the features you need to learn how to write and use programs. And it can grow into a system that is a match for any personal computer on the market. Look at these features: 8085 Central Processing Unit, the microprocessor "heart" of the Explorer/85. (Join the millions who will buy and use the 8080/8085 this year soon!) Four 8-bit plus one 6-bit input/output ports from which you can input and output your programs, as well as control exterior switches, relays, lights, etc. a cassette interface that lets you store and reload programs you've learned to write - delays 2,000 byte operating system/monitor makes it easy to learn computing in several important ways: • It allows simpler, faster writing and entering of programs • It permits access by you to all parts of the system so you can check on the status of the contents of the CPU (registers, flags, etc.) • ... and it does much more!

You get all this in the starting level (Level A) of the Explorer/85 for only \$129.95. Incredible! To use, just plug in your EVIDC power supply and terminal or keyboard/display - If you don't have them, see our special offers below.

- Level A computer kit (Terminal Version) ... \$129.95 plus \$3 P&H.
- Level A kit (Hex Keypad/Display Version) ... \$129.95 plus \$3 P&H.
- LEVEL B - This "building block" converts the motherboard into a two-slot S100 bus (industry standard) computer. Now you can plug in any of the hundreds of S100 cards available.
- Level B kit ... \$49.95 plus \$2 P&H.
- S100 bus connectors (two required) ... \$4.85 each, postpaid.
- LEVEL C - Add still more computing power! This "building block" mounts directly on the motherboard and expands the S100 bus to six slots.
- Level C kit ... \$39.95 plus \$2 P&H.
- S100 bus connectors (five, "level D" required) ... \$4.85 each, postpaid.
- LEVEL D - When you reach the point in learning that requires more memory, we offer two choices: either add 4k of a memory directly on the motherboard, or add 16k to 64k of memory by means of a single S100 card, our famous "JAWS".
- Level D kit (CHECK ONE) ... □ 4k on-board ... \$49.95 plus \$2 P&H; □ 16k S100 "JAWS" ... \$149.95 plus \$2 P&H; □ 32k S100 "JAWS" ... \$199.95 plus \$2 P&H; □ 48k S100 "JAWS" ... \$249.95 plus \$2 P&H; □ 64k S100 "JAWS" ... \$299.95 plus \$2 P&H.
- Level D kit (CHECK ONE) ... □ 4k on-board ... \$49.95 plus \$2 P&H; □ 16k S100 "JAWS" ... \$149.95 plus \$2 P&H; □ 32k S100 "JAWS" ... \$199.95 plus \$2 P&H; □ 48k S100 "JAWS" ... \$249.95 plus \$2 P&H; □ 64k S100 "JAWS" ... \$299.95 plus \$2 P&H.

LEVEL E - An important "building block" it activates the 8K ROM/EPROM space on the motherboard. Now just plug in our 8K Microsoft BASIC or your own custom programs.

LEVEL F - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL G - Add a Rom-Version Text Editor/Assembler (requires levels B and D or S100 Memory) ... \$99.95 plus \$2 P&H. □ Special Complete Business Software Pak (Save \$625.00) - Includes CP/M 2.2, Microsoft BASIC, General Ledger, Accounts Receivable, Accounts Payable, Payroll Packages ... (Reg. \$1825) SPECIAL \$699.95 postpaid.

LEVEL H - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL I - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

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LEVEL K - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL L - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL M - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL N - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL O - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

LEVEL P - A disk system - includes Level A, B floppy disk controller, one CDC "B" disk-drive, two-drive cable, two S100 connectors; just add your own power supplies, cabinets and hardware ... □ (Reg. \$1065.00) SPECIAL \$599.95 plus \$13 P&H. □ 48k Starter System, \$1149.95 plus \$13 P&H. □ 64k Starter System, \$1449.95 plus \$13 P&H.

This way, the controller knows the bits per inch (bpi) are doubled; and for the 96-tpi drives, that you have more than 40 tracks to address. In addition, the configuration program permits logical and physical drive assignments in a lookup table. This technique maps the drives as they appear in your system. Moreover, you can set up a boot drive. I currently boot off a double-density 5" drive and use the 8" for maximum storage capacity.

During configuration, you can establish the density of a specific drive so that you can read a variety of disks. This is important since most software is delivered on single-density, IBM-compatible formats. Ideally, what you'd want is one 8" drive in double-density, the other in single. Should you have only a single 8" drive, prepare to make two systems disks, one configured for single-, the other for double-density.

Capabilities. The Magnolia controller achieves its double-density capability by the method it uses to record the data. With a 5" single-sided drive, such as that offered by Heath, you have tracks laid out 48 to an inch. Typically, the effective number of available tracks is 40, since the head travels just a little under an inch for a full stroke. The next parameter of concern is the linear densi-

ty, that is, number of bits recorded per inch. For the Siemens Model FDD 200-N, for example, the bit density is 2938 bpi for frequency-modulated (FM) recording. The total areal density (bpi X effective tracks) is equal to 125K bytes.

To double the amount of data that can be put on the drive, only one parameter can be changed—the number of recorded bits per inch. The track density (tpi) is a physical limitation of the drive, although newer drives do offer 96 tpi, with an effective number of tracks ranging from 77 to 80.

Consequently, some method of increasing the bpi must be found, and the usual course is to employ modified frequency modulation (MFM) or M²FM. These two recording techniques reduce the size of the bit cell by applying a new definition of when a clock pulse starts or ends and data begins. The overall effect is to increase the number of bits per inch, thus increasing the overall real density of the drive. In the case of the Siemens drive, instead of 125K bytes you end up with 250K bytes. This is the technique employed by Magnolia.

You may have noted that I said the Magnolia controller gives you 160K bytes on the Heath drive, but that 250K bytes are specified with MFM recording techniques. The difference stems from

the fact that the 250K bytes is not formatted, while the 160K bytes is. Formatting implies overhead, in this case about 90K bytes.

The overhead is from the space required to define the sectors, provide sufficient spacing, and implant information on a track as to how the operating system should handle the disk. All of this must be accounted for by the controller so that errors aren't introduced. The Magnolia controller does this without any problems.

The Magnolia controller is well worth the money; it adds flexibility to your Heath system without sacrificing functionality.

I encountered only two problems as a result of the addition of the board. The first was system power difficulty due to low line voltage. This is easily cured by moving the line switch on the H-89 to low; but be aware that if the line comes up to nominal (typically 112 V), you will need to switch back to high or have a power supply running hot.

The second problem was making the Diablo Model 630 daisy-wheel printer work correctly. To do this, it is necessary to open the printer up, change a jumper between pins 5 and 6 on the HYPRO interface board, and then employ a pin-to-pin cable. The problem I had was in using a cable wired for an RS-232C that

carried a less-than-full signal, and, as a consequence, "clear-to-send" was not being monitored by the H-89, so buffer overflow resulted. Changing the cable fixed the problem.

Speaking of cables, I've found that no matter where you go to buy either a round or flat one, the prices range from \$30 to \$40 for a six-foot section with connectors. Interestingly, the actual cost to the manufacturer is only about \$3.

Okidata Microline 83A Printer.

With your storage needs solved, you might want to look at bettering your hardcopy output. One printer that deserves attention is the Microline 83A, made by Okidata Corp. (111 Gaither Dr., Mt. Laurel, NJ 08054).

The Microline 83A serial dot-matrix printer designed for applications requiring long-duty cycles, letter-quality printing, and full-size (15") paper.

Sporting both a 1200-bps RS232C serial interface and an 8-bit parallel interface, the Model 83A operates at 120 cps with a bidirectional print mechanism with shortline-seeking logic. In addition, standard characters are produced with a dense 9 x 9 dot pattern by a 9-wire, stored-energy print head. The Model 83A includes the full 96 ASCII character set (upper and lower case) plus 64 block graphics shapes. Furthermore, special character sets for British, German, French, Swedish, Danish, Norwegian, Dutch, Italian, and special-function TRS-80 codes are standard. A 136-character buffer is also standard.

The 64 graphics characters are similar to those of the TRS-80, and can be combined with the condensed and double-width functions to produce charts and graphs like those created on raster-type printers.

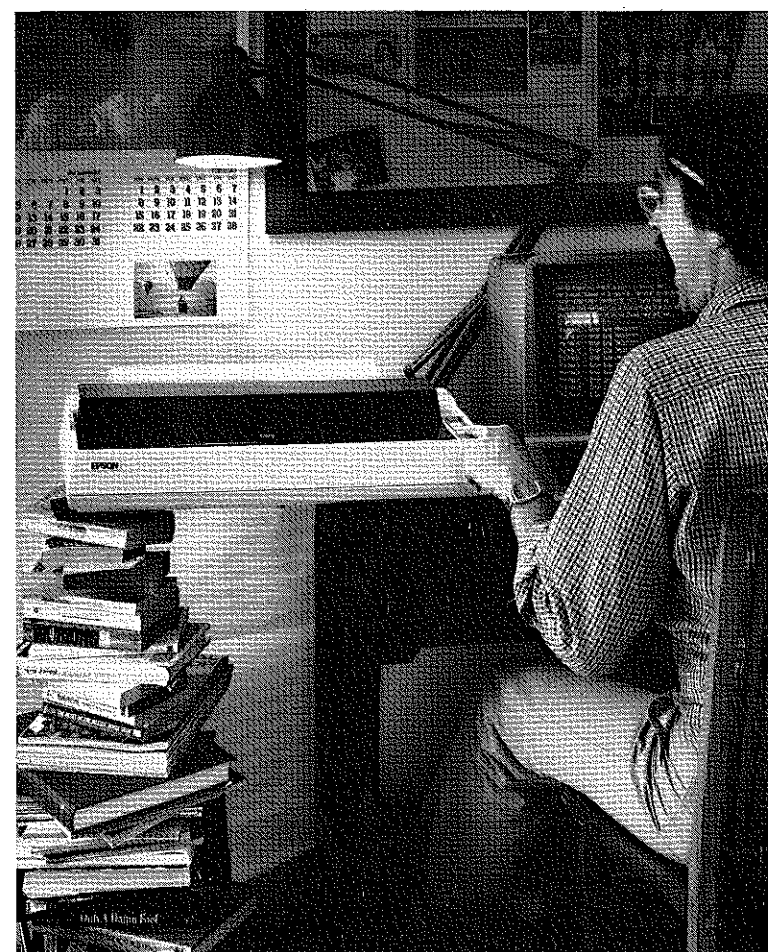
An optional 9600 bps is also available. The price for the high-speed interface Model HS-RS232, with a 256-byte buffer is \$180; with a 2K-byte buffer the price is \$270.

The printer with the optional \$50 tractor feed supports paper widths up to 15" or 14" with friction feed. Standard throughput ranges from 232 lpm for a 20-character line to 47 lpm for a full 136 characters per line.

In addition, line spacing is program-selectable (either 6 or 8 lpi), with a standard character size of 0.081" W x 0.105" H, with spacing of 10 cpi. In the condensed mode, spacing is 16.5 cpi, and double width is 5 cpi.

The flexible printer permits the use of single-sheet plain paper with friction feed, or continuous paper with the tractor feed. In addition, the adjustable snap-on tractor accommodates four-part stock up to 15" in width.

The Microline 83A power requirements range from 100V to 240V at 50 or 60 Hz, with a maximum power dissipation of 150 W. The 20.2" x 12.9" x 5.2" printer weighs 30.9 lb, and is priced at \$1195, with owners manual and interfacing guides. You can find it at most computer stores.



The MX-100. Not just better. Bigger. Epson.

The new Epson MX-100 is a printer that must be seen to be believed.

For starters, we built in absolutely unmatched correspondence quality printing and a high resolution bit-image graphics capability. Then we added the ability to print up to 233 columns of information on 15.5" wide paper to give you the most incredible spread sheets you're ever likely to see. Finally, we topped it all off with both a satin-smooth friction feed platen and fully adjustable, removable tractors. And the list of standard features goes on and on and on.

Needless to say, the specs on this machine — and especially at under \$1000 — are practically unbelievable. But there's something about the MX-100 that goes far beyond just the specs. Mere words fail us. But when you see an MX-100, you'll know what we mean. It's not only better... it's bigger.

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Now with added words!*

ELECTRIC MOUTH



for \$100, Elf II, Apple TRS-80, Level II* From \$99.95 kit

Now — teach your computer to talk, increasing interaction between you and your machine.

- That's right: the ELECTRIC MOUTH actually lets your computer talk! Installed and on-line in just minutes, it's ready for spoken-language use in office, business, industrial and commercial applications, and in games, special projects, R&D, education, security devices... there's no end to the ELECTRIC MOUTH's usefulness. Look at these features:
- Supplied with 143 letters/words/phonemes/numbers, capable of producing hundreds of words and phrases.
- Expandable on-board up to thousands of words and phrases with additional speech ROMs (see new speech ROM described below).
- Four models, that plug directly into \$100, Apple, Elf II and TRS-80 Level II computers.
- Can ELECTRIC MOUTH talk with either Basic or machine language (very easy to use, complete instructions with examples included).
- Uses National Semiconductor's "Digitalizer."
- Includes on-board audio amplifier and speaker, with provisions for external speakers.
- Installs in just minutes.

Principle of Operation: The ELECTRIC MOUTH stores the digital equivalents of words in ROMs. When words, phrases and phonemes are desired, they simply are called for by your program and then synthesized into speech. The ELECTRIC MOUTH system requires none of your valuable memory space except for a few addresses (used in memory mapped mode. In most cases, output ports (user selectable) are used).

SPOKEN MATERIAL INCLUDED (VOX I)

one	eighteen	at	dollar	is	number	ss	c	u	y
two	nineteen	cancel	down	inches	number	ss	l	v	y
three	twenty	case	equal	it	of	sent	f	w	y
four	thirty	cent	error	kilo	on	space	r	x	y
five	forty	400hertz tone	feel	left	out	star	g	w	y
six	fifty	500hertz tone	flow	less	over	star	g	w	y
seven	sixty	20ms silence	fuel	lesser	parenthesis	start	l	v	y
eight	seventy	40ms silence	gallon	low	percent	stop	h	k	i
nine	eighty	60ms silence	great	limit	please	that	l	v	y
ten	ninety	80ms silence	gram	lower	plus	the	b	e	k
eleven	hundred	100ms silence	great	mark	point	time	m	e	n
twelve	thousand	200ms silence	quarter	more	turn	turn	o	p	o
thirteen	million	300ms silence	check	have	mile	pound	try	n	o
fourteen	zero	400ms silence	comma	high	milli	ratio	volt	p	o
fifteen	giga	500ms silence	control	hour	minute	ready	weight	q	r
sixteen	ampere	600ms silence	charger	in	near	right	weight	q	r
seventeen	and	700ms silence	degree	in	near	right	weight	q	r

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short	complete	fifth	light	put	station
add	continue	fire	lock	quarter	switch
adjust	copy	first	longer	range	system
alarm	correct	fourth	move	reached	temperature
alert	crash	"de"	forward	receive	test
all	deposit	from	next	reversal	"h"
ask	dial	gas	no	normal	thank
assistance	door	get	no	normal	third
attention	east	going	north	repair	this
blue	break	"ed"	not	replace	turn
button	emergency	side	not	replace	under
buy	enter	best	notice	room	use
call	"as"	hello	operator	safe	waiting
called	"ed"	help	or	secure	was
caution	evacuate	hold	pass	select	water
celestus	exit	hot	power	send	west
condigade	fail	in	press	side	wind
change	failure	incorrect	pressure	slow	wind
circuit	fahrenheit	intruder	process	slower	yellow
cigar	fast	key	pull	smoke	yes
close	factor	level	push	south	zero
cold					

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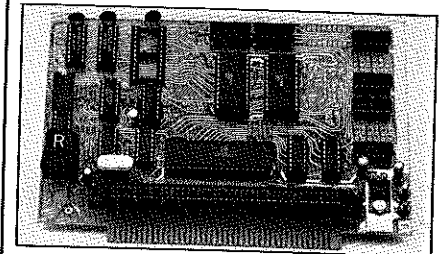
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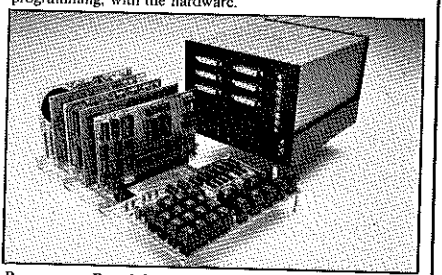
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