

Holmes Engineering

3555 South 3200 West
Salt Lake City, Utah 84119
Phone: 801-967-2324

Dear TRS-80® owner:

Thank you for your interest in our expansion products for the TRS-80® Model I and Model III computers. I have enclosed information about our current product line. If you have any further questions about our products, please write or call; we will be happy to answer them for you.

The microcomputer industry has experienced tremendous growth over the past several years, and is expected to continue to grow for many years to come. Although we can't claim to be "one of the first" to develop products for microcomputers, over the past two years we have earned a reputation for being "one of the best" to design, manufacture and support TRS-80® expansion systems. There are many new companies and individuals who have entered the microcomputer market to get "their share of the action". These companies seem to come from nowhere with expensive advertising (which their customers ultimately pay for), extremely low prices, claims that they can do every thing just as well as anyone else for half the price (how? we all buy the same raw materials from the same suppliers!), and virtually no after-sale support of their products. If you are a technical wizard, you can probably buy from these folks and have a good time making the product work. But if you have any problems, well.....don't say we didn't warn you! In the microcomputer world, you get exactly what you pay for.

When you buy from Holmes Engineering, or one of our registered dealers, you are getting one of the best products on the market. We design, manufacture and test our products to the highest standards. Everything we sell is guaranteed for ONE FULL YEAR. And unlike some of the "bargain basement" companies, we will still be here next year to back up our guarantee.

Every one of our products comes with full instructions, describing installation and operation. If you have a question about something we did not include in the manual, we have qualified technical people available to assist you by mail or by phone. If you need installation or repair, we can do it for you. You don't need to worry about whether or not Radio Shack will ever repair your system if you install one of our products in it.

Each product is completely tested before it is shipped. A new dealer of ours was amazed to learn that we tested each disk controller we ship with every major operating system on the market! Our high level of testing prevents marginal products from being shipped out to our customers. If there is a problem with one of our products, it should be our problem, not yours. In addition, each Holmes employee is personally responsible for every product he builds, tests or sells. It is his responsibility to make sure any problems get solved, no matter what it takes to do it. When you call on us for help, you will not get "THE RUNAROUND". You will not be told our people are "not in" or "in a meeting" every time you call. What you WILL get is a qualified Holmes employee who will take the time to help you.

A copy of our latest ad and a list of Holmes dealers has been enclosed for your convenience. If you are not close to a dealer, you may order directly from Holmes Engineering. (Items not manufactured by Holmes Engineering but included in this package are generally not available at Holmes dealers. Order these items directly from Holmes Engineering.)

We have several new products in development which are not described in the enclosed information. For example, we have a complete single-drive system for the TRS-80® Model I or Model III. This is a single drive in a standard drive enclosure, with a double-density disk controller built right into the case. All you need to do to add a disk to your TRS-80® is plug the drive in (of course, if you wish to add other expansion features, you should still use the MF-1™). We are so busy developing new products, we may not be able to notify everyone when a new product comes out. If you are looking for a particular feature to add to your system, drop us a line. Chances are, we have just what you need, or we can put you in touch with one of our dealers who can help you. We want to be your best source for microcomputer systems!

James Clemans
Director of Public Relations
Holmes Engineering

VID-80

The Complete Expansion

80 X 24 VIDEO DISPLAY
112 K USER RAM
CP/M®

The TRS-80® is a good computer, but it has some limitations. The screen can display only 16 lines of 64 characters per line. The maximum memory in a fully expanded system is only 48K. Most programs written for the TRS-80® are OK for non-critical applications, but don't measure up to the high quality programs which run under the CP/M® operating system.

The VID-80™ from Holmes Engineering "fills the gaps" in the design of the TRS-80®. The VID-80™ provides a screen format of 24 lines with 80 characters per line. The extended memory option allows expansion of available memory to 112K. The CP/M® option allows you to run the CP/M® operating system from Digital Research on your TRS-80®, allowing you to use programs such as Wordstar®, Supercalc®, and dBase II®. With these added features, your TRS-80® becomes a "serious" business/professional computer. With the addition of the SPRINTER speed-up board from Holmes Engineering, you will have a system which will actually OUT-PERFORM many of the high-priced systems on the market!

THE BASIC VID-80™

Your TRS-80® has a screen which is 64 characters "wide" and 16 lines "high" (or 64 X 16). This screen size is useable, but its limitations become noticeable when using a word processor or spread-sheet program; the printer is 80 characters wide, but the screen is only 64 characters wide! Because the "narrow" screen can't faithfully represent what the document will look like when it is printed, you usually print the document two or three time just to get the page to look right.

In addition, most CP/M® programs assume you have an 80 X 24 screen. A few programs have been rewritten to use the 64 X 16 screen, but most of the new, powerful software requires an 80 X 24 display to operate.

The VID-80™ expands your TRS-80® display from 64 X 16 to 80 X 24. As soon as you turn on your TRS-80®, the VID-80™ "takes control" and places the system in the 80 X 24 mode (if you wish to use the standard 64 X 16 mode, simply hold down the "6" key while turning on your system). Because of the way the VID-80™ operates, most programs written in Level II or Level III BASIC will operate without modification. Any machine language program which uses the "ROM routines" to write information to the screen will also run without modification.

Extended Memory Option

The VID-80™ expands the useable RAM in your TRS-80® to 64K in its standard configuration; 16K of RAM is used by the VID-80™ in the "TRS-80® mode", leaving 48K of RAM in the "TRS-80® mode". When used with CP/M®, the VID-80™ gives your TRS-80® a full 64K of RAM.

By adding the extended memory option to the VID-80™, useable RAM is extended to 112K. The added RAM is accessed in "banks" using software commands. Holmes Engineering is developing software to use the

extended memory option of the VID-80™, which would allow the added RAM to emulate a disk drive. This would speed up some types of disk I/O intensive programs (data bases, accounting packages, etc.) by a factor of 10! The extended memory option unlocks the full potential of the TRS-80®.

CP/M OPTION

The CP/M® operating system from Digital Research has become the standard operating system for microcomputers. A "stock" TRS-80® cannot run CP/M®. Holmes Engineering is licensing CP/M® version 2.2 from Digital Research. Because the VID-80™ already contains the hardware needed to run CP/M®, all you need to do to run CP/M® on your TRS-80® is place our CP/M® diskette in drive 0 and reset the system! No further hardware modifications are necessary.

Simple Installation

VID-80™ systems are available for the TRS-80® Model I and Model III. The VX-3™ for the Model III is installed by opening your Model III case, removing the Z-80 microprocessor chip from its socket, plugging the Z-80 into a socket on the VID-80™, and plugging a cable from the VID-80™ into the empty Z-80 socket. A second cable is plugged onto the power supply board, and four wires are connected to points on the Model III circuit board. A special installation kit is available if you do not wish to solder to your Model III circuit board. No trace cuts are necessary; your Model III may be returned to original condition by simply removing the VID-80™ system.

The VX-1™ for the TRS-80® Model I must be used with a HOLMES MF-1 or MF-2 expansion system. The main VX-1™ board plugs into two slots inside the HOLMES expansion mainframe, which is connected to either your Model I keyboard (if you are using the MF-1) or your expansion interface (if you are using the MF-2). A small plug-in board must then be installed inside your Model I keyboard. If you wish to obtain a full 64K system, or if you wish to use CP/M® with the Model I VID-80™, you must make two trace cuts on the circuit board inside your keyboard, and you must solder two pairs of wires to points on the circuit board. This is a simple job IF YOU HAVE EXPERIENCE WITH SOLDERING. If you do not have much soldering experience, you should allow one of our dealers to do the installation for you.

In addition to the modification inside the keyboard, you will need a new video display if you wish to obtain the full 80 X 24 display with your Model I. If you do not wish to replace your video display, you may order your VID-80™ set up for 80 X 16 operation, which will allow it to operate with the standard TRS-80® video display.

EPSON PRINTER DRIVER FOR SUPER SCRIPSIT

The EPSON® driver, for use with SuperSCRIPSIT®, allows your EPSON® printer access to all of the SuperSCRIPSIT® functions except "top the form". In combination with SuperSCRIPSIT®, your EPSON® becomes a powerful word processing printer capable of TRUE super and sub scripting, auto underlining, and auto double underlining.

It will automatically adjust to and set the printer for the following pitches:

- 1.) 10 (normal print)
- 2.) 16.5 (compressed print)
- 3.) 5 (expanded print)
- 4.) 8.25 (expanded and compressed print)

It comes with predefined printer codes for emphasis on/off, double strike on/off, and others.

Required equipment is an EPSON® printer (with GRAPHTRAX®) and SuperSCRIPSIT®. Please note GRAPHTRAX® plus is NOT required, nor do the super and subscripting functions use a special character set. If your EPSON® is capable of printing a backspace, it has the necessary PROM set.

Please specify MOD I or MOD III. Currently only the parallel version of the EPSON® driver is available. Write for more information on availability of the serial version and drivers for other printers.

PRICE \$24.95

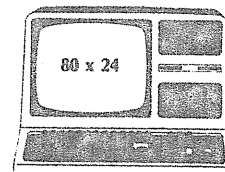
TRS-80®
MOD. III

FINALLY

TRS-80®
MOD. I

80x24 VIDEO DISPLAY PLUS! 112 K AND CP/M®

Others offer you CP/M or 80x24.
We give you what you've been waiting for.



SPRINTER™ "Double Your Speed"

Speed-up cuts computer operation time for accounting, word processing, etc., in half. Saves Time and Money.

- Automatic Slow-down for disk I/O (defeatable).
- SPRINTER III (MOD. III) \$99.50
- SPRINTER I (MOD. I) \$99.50

- "DOUBLE DENSITY ADAPTER" \$129.50*
- Run 5 1/4" or 8" drives
- Adapter utilizes new technology for high performance at a lower price.

"MODEL III Disk Controller/Clock"

- Double density, 8" capability, battery powered, clock calendar. Assembled board only (DX-3D) \$229.50
- Complete Drive O package — DX-3D, drive, power supply, brackets \$599.00

SPECIAL!!!

- HOLMES EXPANSION INTERFACE SYSTEM (Mod. I) \$399.00
- Includes: Double Density Disc Controller (DX-2D), RS232 w/32K RAM (RX-232M), Metal enclosure (MF-1).

- Double Density Disk Controller w/8" drive capacity (DX-2D) \$189.95
- RS232 (RX-232) \$119.50
- RS232 w/32K (RX-232M) \$199.50
- Case/power supply — for 4 plug-in boards (MF-1) \$99.50
- Case — for 2 plug-in boards (MF-2) 79.50

VID 80™ "80 Character Video"

- Adds all the extra ram and logic necessary to convert to an 80 character, 64K or 112K CP/M system.
- Functions in 80x24 or 64x16 character mode.
- Software patches available for many programs.
- Reverse video (full screen).
- Improved graphic resolution.
- Easy plug-in installation inside case.
- Two models available:
Model III (VX-3) and Model I (VX-1)
- CP/M system requires purchase of Holmes CP/M package.
- VX-1 requires upgraded monitor for 80x24.
- VX-3 requires purchase of MF-1 or MF-2.
- VID 80 (VX-3, VX-1) \$279.95
- VID 80 plus 64K CP/M (Holmes package) \$399.00
- VID 80, Holmes CP/M package and 64K added memory (112K total) \$499.00

"48K MEMORY WITHOUT AN INTERFACE"

- Adds memory INSIDE keyboard up to 48K
- IM-2 w/16K (32K total) \$119.50
- IM-3 w/32K (48K total) \$139.50
- *Call or write for price

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(801) 967-2324



DISTRIBUTORS:

Bi-Tech, N.Y. (800) 645-1165
Level IV Products, MI (800) 521-3305
M & M Micro Mart
Quebec, Canada (514) 731-9486
Soft Sector Marketing
MI (800) 521-6504
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CIE, CA (714) 757-4849
OR Electronics, CA (714) 749-0299
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KY (502) 754-5313

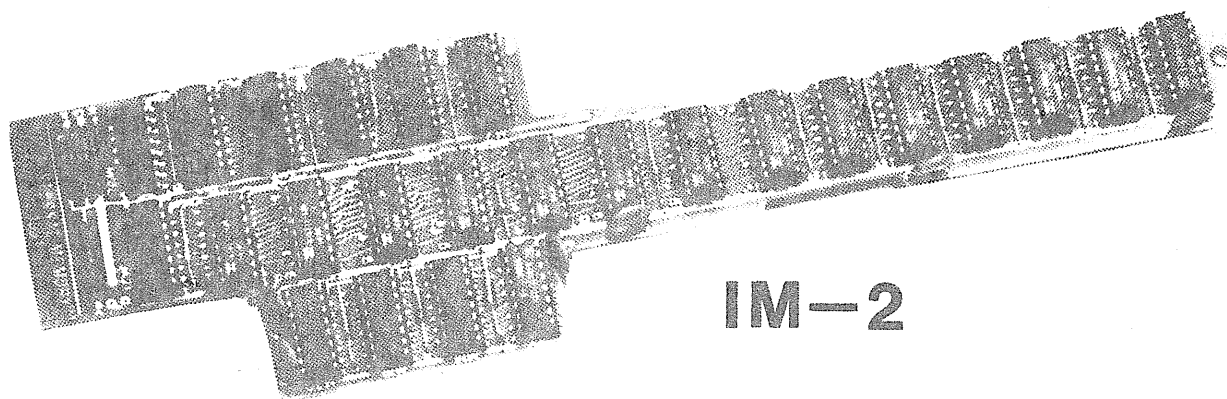
Software Support, MA (617) 872-9090
Computants, MA (617) 533-6431
Vespa Computer Outlet
MI (313) 535-1112
Alternate Source, MI (517) 482-8270
Compute Unlimited
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Computer Stuff, NM (505) 256-9708
Hewitt's Computer
NM (505) 883-0984
Info Inc., NY (516) 924-9229
Jerry's Computer, OH (216) 579-0648
Micro Data Supplies
OH (216) 951-6502
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OH (614) 653-1329
Heart to Heart Computer Services
OH (513) 663-4558

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Seyens Radio Shack
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CTI Associates, TX (713) 444-5405
Micro Mart, TX (512) 349-9741
East Coast Data, VA (804) 484-6636
Tidewater Data, VA (804) 397-9636
Freedom Micro-Systems
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WGS, VA (206) 747-3495
ABC Computer, WA (206) 775-6944
FOREIGN DEALERS:
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Scotland (041) 883-1189

TRS-80 is a registered trademark of Tandy Corporation. CP/M is a registered trademark of Digital Research.
One year warranty on all products. Add Shipping/Handling — MF-1, MF-2 \$9.00 U.S., \$15.00 Canada, Overseas \$30.00.
Other products add \$5.00 U.S. & Canada. All others add 75%. Prices subject to change without notice. DEALER INQUIRIES INVITED. FOR INFORMATION SEND SELF ADDRESSED STAMPED ENVELOPE. Reader service takes 8 weeks.

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up to **48K INSIDE your keyboard**
with the **INTERNAL MEMORY™**



IM-2

The INTERNAL MEMORY™ installs inside your Model I keyboard to provide up to 48K RAM. Because the IM eliminates connectors and cables between the CPU and the sensitive memory circuits, it is more reliable than an expansion interface.

The IM permits your system to operate reliably at up to 5.3 MHz (when used with the Holmes SPRINTER I™). We guarantee high speed operation IF the IM is purchased from Holmes with RAM installed.

4116 "industry standard" dynamic RAM chips are used (200 ns). We strongly recommend you use our tested RAM chips. The cheap RAM chips on the market are not good enough to perform reliably when used in the Model I with the IM.

The INTERNAL MEMORY™ does not overload the power supply in your keyboard unit. Fortunately, the TRS-80® has extra capacity designed into the memory section which allows memory expansion with no power supply problems!

The INTERNAL MEMORY is simply plugged into sockets inside your keyboard unit, and four wires are attached to points on the TRS-80® circuit board with solderless clips; no soldering is required. Detailed instructions lead you through the installation step by step. If you prefer, installation is available from Holmes Engineering or one of our dealers.

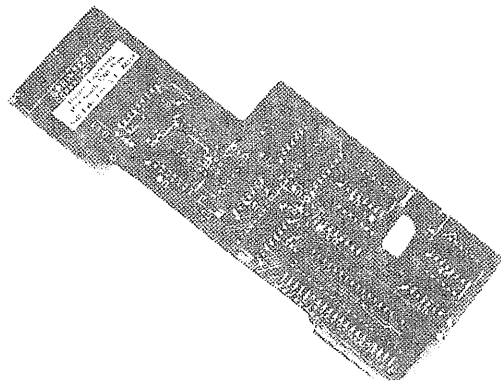
The INTERNAL MEMORY is compatible with virtually all software and hardware, including all Holmes products. If you have an unusual hardware or software system, check with a Holmes dealer to determine if it is compatible.

The INTERNAL MEMORY™ is available in either 32K or 48K capacities for the TRS-80® Model I, the PMC-80 or the PMC-81.

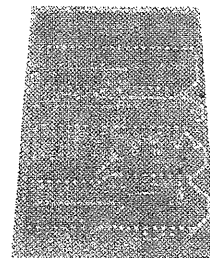
SPECIAL PRICE! IM-2P (for PMC-80/81) ...\$99.50
with RAM

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The BEST Speed-up "mod" you can buy



SPRINTER I™
for the TRS-80 Model I



SPRINTER III™
for the TRS-80 Model III

The SPRINTER™ is a plug-in circuit board which will reliably increase the operating speed of your Model I or Model III computer. You may select one of several speeds via software or hardware (optional at extra cost) to suit your application, allowing your TRS-80® to run twice its normal speed! (Model I version is capable of running at 2.75 times normal if your computer can handle it.) Unlike previous speed-up products, the SPRINTER™ does not require extensive modification of your computer, nor do you need to be an electronics expert to install and use it.

□ EASILY INSTALLED

The SPRINTER™ plugs into the Z-80 microprocessor socket inside your computer. Connecting wires are attached with solderless connectors.

Detailed instructions lead you through the installation step-by-step.

□ RELIABLE

Each SPRINTER™ comes with a special high-speed Z-80 microprocessor to ensure trouble-free high speed operation.

The SPRINTER™ compensates for the slow memory circuits in the TRS-80® by adding one "WAIT" state to every memory cycle at high speed (a technique used in the largest computers). The SPRINTER™ can also slow down to normal speed during disk and cassette operations.

The SPRINTER™ is compatible with most hardware and software, including all HOLMES products.

□ OPTIONS AVAILABLE

Model I expansion interface modification (new unbuffered cable version only)
Parallel printer port (Model I version only)
Hardware speed switching
Disk I/O slowdown defeat switch (for 8" double density operation)
Installation and high speed modifications available

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DISK CONTROLLERS

Holmes Engineering offers disk controller "boards" for the Model I and Model III TRS-80®. Each Holmes disk controller has all the features you need for reliable, complete operation of disk drives with your TRS-80®.

Model III

The DX-3D™ disk controller for the Model III is made with gold edge connectors to eliminate intermittent connections which can occur with tin connectors. The DX-3D™ also comes with these standard features:

- Precision LSI digital data separator yields superb performance under extreme conditions. If you ever need to use 5" 80 track drives, you will appreciate the high performance of this critical component.

- Battery backed-up clock calendar frees you from the "hassle" of re-entering time and date after disk access. The "real time clock" in your Model III is not a clock at all; it is merely a counter! The DX-3D™ provides you with an accurate digital clock which retains the time and date even when the system is turned off. The clock is accessed using simple port commands, either in BASIC or machine language. Sample software is included to show you how to use the clock.

- Fully buffered address and data lines to enhance reliability

- Each DX-3D™ is final tested with all known operating systems.

Switch selection of 5" or 8" drives at any drive address. This ensures that the DX-3D will be compatible with any operating system which can handle 8" drives. The DX-3D™ will allow you to use an 8" drive at drive 0, a useful feature if you intend to use CP/M®.

- The DX-3D™ is available as part of a "DRIVE 0" kit, which contains a Tandon 40 track double density drive, a switching power supply capable of running the controller and two drives, a DX-3D™, heavy metal mounting brackets, and all the cables and hardware needed to add the first drive to your Model III. A second drive may easily be added at any time.

Model I

Holmes Engineering offers both a single density and a double density controller for the Model I. The single density controller (the DX-1S™) is a "work-alike" of the single density controller in the Radio Shack expansion interface. The DX-1S™ is identical in FUNCTION to the expansion interface; however, the DX-1S™ uses a precision data separator to greatly surpass the performance of the Radio Shack system. The data separator is the key component in a disk system; a good data separator will allow trouble free operation; a poor data separator will fail often and cause unbelievable frustration! The DX-1S™ also provides a standard Centronics® compatible parallel printer port which is TRS-80® compatible.

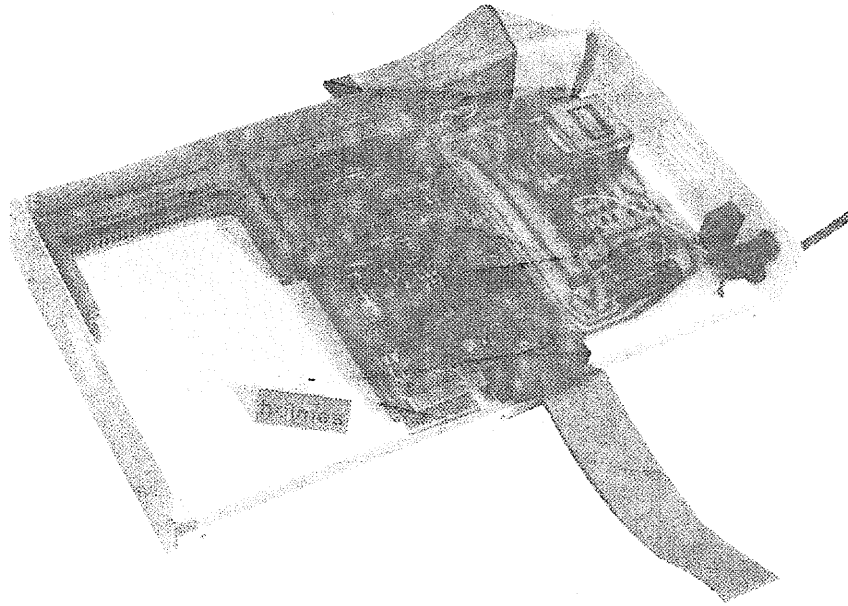
The DX-2D™ is a DX-1S™ single-density controller with a DX-1D™ double-density adapter plugged into it, to yield a double density controller. The DX-2D™ has all the features of the DX-1D™ (since it contains a DX-1D™!) and the DX-1S™, including the parallel printer port. Refer to the DX-1D™ data sheet for more information about the operation of the DX-2D™.

NOTE: The DX-1S™ and DX-2D™ MUST be used with a Holmes MF-1™ or MF-2™ expansion mainframe.

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EXPANSION MAINFRAME



The MF-1™ and MF-2™ Expansion Mainframe systems allow you to add Holmes plug-in expansion modules to your TRS-80® Model I computer. Simply plug a Holmes disk controller, 80 column video system, or serial interface/memory "board" into connectors inside the MF-1™ or MF-2™, plug the mainframe onto the expansion connector at the rear of your Model I keyboard, and you are ready to go!

FEATURES

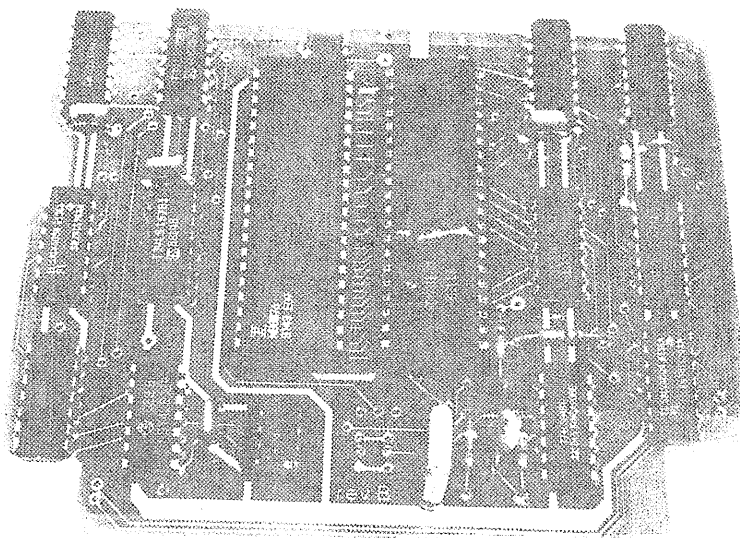
- Compact, attractive metal enclosure for durability as well as reduction of interference.
- Completely self-contained; does not "steal" power from the computer.
- FULLY buffered to allow high-speed operation.
- Gold-plated connectors used throughout for reliability.
- Completely compatible with Radio Shack® software (when used with HOLMES plug-in modules).
- Allows you to add "custom-made" expansion modules using Radio Shack "breadboards".

TWO MODELS AVAILABLE

The MF-1™ (shown) accepts up to four Holmes plug-in expansion "boards", in any combination (VX-1™ VID-80™ system uses two slots). The MF-2™ (available early 1983) accepts two plug-in "boards", and may be used to add the VID-80™ to your system if you already have an expansion interface. IN ADDITION, THE MF-2™ CAN BE CONFIGURED TO ACCEPT A HOLMES DISK CONTROLLER AND AN INTERNAL DISK DRIVE, ALLOWING ADDITION OF A SINGLE DRIVE TO A MODEL I IN A COMPACT ENCLOSURE WITH NO OTHER INTERFACES NEEDED. Holmes Engineering will offer a package "deal" on a complete drive 0 system for the Model I when the MF-2™ is available, consisting of the MF-2™, a disk controller and a 40-track disk drive. Send us a letter or post card if you are interested; we will notify you when it is available.

The expansion mainframes may be used with PMC® computers IF you use the PMC® to TRS-80® adapter available from PMC®.

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DX-1D™

Double Density Adapter

The DX-1D™ is a high performance plug-in circuit board which adds double density and 8" drive capacity to TRS-80® Model I single density disk controllers.

□ Easily Installed

Simple plug-in installation requires no soldering. May be easily removed for servicing.

□ Reliable

The single density controller presently in your system uses a very low performance data recovery circuit. This can cause read errors (CRC errors) and "lost" disks. The DX-1D™ uses an LSI digital phase locked loop data recovery circuit which requires no adjustments and does not "drift" (as analog PLL circuits always do). This key feature allows the DX-1D™ to operate with fewer read errors and greater long-term stability than other adapters, in both single and double density.

□ Compatible

Designed primarily for use with the TRS-80® Model I and Holmes DX-1S™, the DX-1D™ may also be used with LNW®, MDX and other Model I compatible expansion systems.

Completely compatible with standard double-density operating systems including DOSPLUS®, MULTIDOS®, NEWDOS®, and LDOS®.

The DX-1D™ may be used with the Holmes DX-1S™ single density controller and the Holmes MF-1™ expansion mainframe for a complete double density system which also includes fully buffered signal lines (for reliable high-speed operation), a parallel printer port, and gold connector reliability in an attractive metal enclosure, ready for additional expansion.

Adapter cables are available to run 8" drive systems.
The DX-1D™ may be jumper-configured to use an 8" drive at drive 0.

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PRICE LIST

SPRINTER I Speed-up for TRS-80 Model I (includes parallel printer port).124.00
 SPRINTER II Speed-up for TRS-80 Model I (less printer port).....99.50
 Expansion Interface speed-up board (for unbuffered cable only).....10.00
 SPRINTER III Speed-up for TRS-80 Model III.....99.50
 IM-2 INTERNAL MEMORY for TRS-80 Model I (includes 32K high-speed RAM)...139.50
 IM-2P INTERNAL MEMORY for PMC-80/81 (includes 32K high-speed RAM).....99.50
 16K certified high-speed RAM chips.....20.00
 16K modified RAM chips (for use with SPRINTER systems for high speed)....26.00
 †MF-1 Expansion Mainframe (holds 4 plug-ins).....150.00
 †MF-2 Expansion Mainframe (holds 2 plug-ins).....99.50
 DX-1S Mod I Single-density disk controller (with printer port).....148.50
 DX-1D Mod I Double-density disk adapter (with printer port).....129.50
 DX-2D Mod I Double-density disk controller (with printer port).....219.00
 DX-3D Mod III disk controller w/clock/calendar.....229.50
 DX-3DL Mod III disk controller (less clock/calendar).....189.50
 †Tandon 40 TK SS DD drive.....235.00
 †Complete "drive 0" package (DX-3D, power supply, brackets, cables.....599.00
 RX-232 Serial interface for model I (RS-232).....99.50
 RX-232M RS-232 Interface for Model I with/32K RAM expansion.....179.50
 †Complete Holmes expansion system:MF-1, DX-2D, RX-232M.....399.50
 VX-1 VID-80 for TRS-80 Model I (requires MF-1 or MF-2).....279.50
 VX-3 VID-80 for TRS-80 Model III.....279.50
 CP/M® 2.2 by Digital Research (used with VX-1 or VX-3 only).....120.00
 Extended Memory option (with purchase of VX-1 or VX-3 only).....100.00
 "THE FONT" character generator by CECDAT.....69.50
 †PROWRITER printer (bit graphics, correspondence quality type).....595.00
 Adapter cable to allow 8" drive to plug into 5" cable connector.....29.50
 Printer cable (specify use with SPRINTER I or standard edge connector)...29.50
 Disk drive cables are \$10.00 per connector plus \$1.00 per foot of cable

Add \$9.00 shipping for items marked with †; all others add \$5.00 (US only)
 Overseas orders add 15%; excess refunded.

Order Blank

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3555 South 3200 West
 Salt Lake City, Utah 84119
 (801)967-2324

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Part No.	Qty.	Description	Price

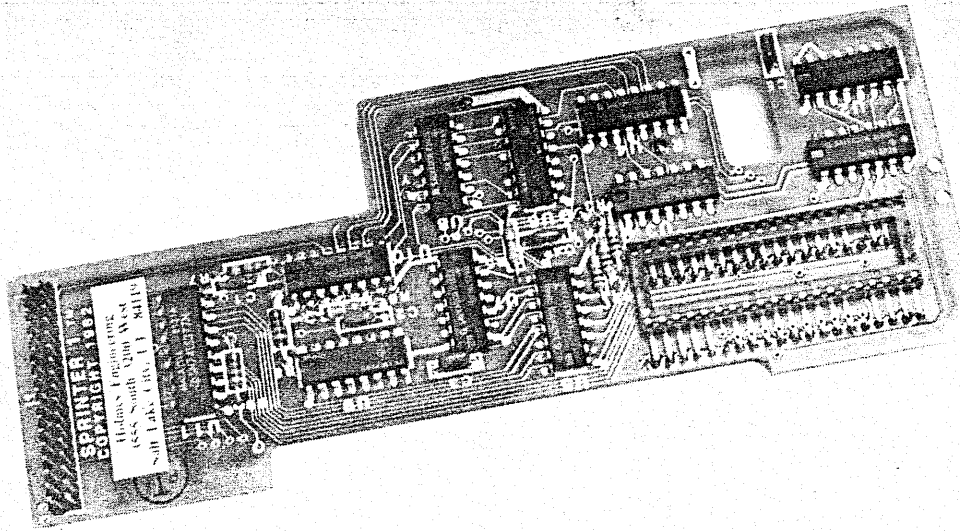
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TOTAL	

SPEED UP YOUR COMPUTER 2 TO 3 TIMES NORMAL



THE SPRINTER™ *by Holmes Engineering*

A keyboard installed speed-up module.

The SPRINTER is a reliable speed-up peripheral that increases your computers clock frequency - guaranteed to speed up your unmodified system by 50%. If you cut one trace in your system, the SPRINTER will run at double speed. A Z80B is added to the system and will run at triple speed with its special wait function activated.

SIMPLE INSTALLATION

- Simple plug-in installation, no soldering required. The SPRINTER plugs into the Z80 socket and the connecting wires are attached with special solderless clips.
- Detailed installation instructions with accompanying figures and photos lead you through the installation process step-by-step.

RELIABLE

- A trouble free-tested Z80B Microprocessor is included to ensure operation at high speeds. The Z80 that originally came with your system will not run reliably at high speeds.
- The SPRINTER will not overload the power supply in your system. In fact, your power supply will not be overloaded even when you use the SPRINTER with other Holmes peripherals.

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- The SPRINTER compensates for slower RAM, ROM and Video Memory by adding one wait state to every memory cycle, if the wait function is activated. This will "stretch" memory access times and allow slower memory time to catch up to the CPU. The SPRINTER also switches to normal speed during cassette and disk operations. A hardware I/O switch is available for by-passing the automatic slowdown feature.

COMPATIBLE

- The SPRINTER is compatible with virtually all software and hardware. If you have an unusual piece of hardware or software, please contact your local dealer or Holmes Engineering to determine if it is compatible.
- The SPRINTER is designed to run at high speed with all other products from Holmes Engineering - 80 character video display - disk controller - 48K memory board - RS 232. A complete, reliable high speed system.

VERSATILE

- A printer port is an available option. (Not necessary for the TRS 80® Model III). The SPRINTER can be used with any standard parallel printer. Printer cables are available from Holmes Engineering. (When ordering cable please specify printer make and model.)
- To speed up your Expansion Interface, you need an inexpensive modification which is available from *Holmes Engineering*.

NOTE: The SPRINTER is designed to triple computer speed; however, this speed varies with the type of interface. On any interface you should be able to achieve at least double speed.

The SPRINTER is available for the TRS-80® Model I, Model III Xerox®, and PMC®80/81 computers.

Some older models of the TRS 80 may need to be "tuned up" in order to run reliably at triple speed because they do not have proper noise decoupling on the power lines feeding the CPU buffer chips.

Contact your local dealer or *Holmes Engineering* if you have any questions.

CP/M COMPATIBLE ADAPTER EXPANDS THE DISPLAY OF YOUR TRS-80 TO 80 CHARACTERS BY 24 LINES WITH NO ADDED SOFTWARE!

Your TRS-80 normally displays information on a screen which is 64 characters "wide" and 16 lines "high" (or 64 X 16). This screen size is OK for some applications, but it can be cumbersome to use with word processors (because the printer is 80 characters wide), VISI-CALC and CP/M programs (which usually assume you have an 80 X 24 display). We can't really blame Radio Shack for using the 64 X 16 screen format; the 80 X 24 display is more complex and costly and would have made the TRS-80 too expensive to some purchasers. However, Holmes Engineering has developed an adapter which will add the 80 X 24 capability to your TRS-80 at a very reasonable cost.

The VID-80 by Holmes Engineering is a plug-in adapter which allows your TRS-80 to display 24 lines of 80 characters per line on the video display. The VID-80 causes the TRS-80 to power up in the 80 X 24 mode, or 64 X 16 by holding down a key on the keyboard while turning on the power (or pressing the reset switch on the model III).

The VID-80 is simple to install. The VX-3 (for the model III) plugs into sockets inside the model III case; there is no soldering required. The VX-1 (for the model I) has a small assembly which installs inside the model I keyboard, and a main p.c. board which must be plugged into a Holmes expansion mainframe, or a "single module case" (which will be available from Holmes Engineering).

The VID-80 is simple to operate. The VID-80 is completely "self-contained". It has its own memory, video controller, (same type as is used in the IBM) and does not interfere with the normal operation of your system. As a result,

BASIC PROGRAMS REQUIRE VIRTUALLY NO MODIFICATION TO
RUN WITH THE VID-80!

Of course, machine language programs which do not use the BASIC ROMs to write to the screen will probably need to be modified. (Holmes Engineering is working on modifications to some of the more widely used programs such as SCRIPSIT and VISI-CALC).

Until now, CP/M for the TRS-80 has cost at least \$300.00 without the 80 X 24 display. But, in addition to adding the 80 X 24 display to your TRS-80,

THE VID-80 ADDS ALL THE EXTRA RAM AND LOGIC NEEDED
TO CONVERT YOUR TRS-80 TO A 64K CP/M COMPUTER!

This is not "CP/M compatible", or "almost like CP/M", but the REAL THING! Holmes Engineering is currently negotiating with Digital Research and will have the latest version of CP/M available for the VID-80 as soon as possible.

As mentioned earlier, the VID-80 uses the same "video controller" as the IBM personal computer and the TRS-80 model II. Advanced programmers will enjoy the flexibility of this video system; the number of characters per line and lines per screen can be changed with software (requires machine language programming skill).

The VX-3 uses the character generator in the model III; this allows the VID-80 to maintain full compatibility with the model III character set. All text and graphic characters remain unchanged when the VID-80 is used in the 80 X 24 mode. However, the block graphics characters are altered slightly due to the limited number of scan lines available on the video display. The alteration is minor and is usually not noticable. As a "consolation" feature, the VX-3 increases the graphics resolution of the display by 25% in the horizontal direction and 50% in the vertical direction.

The VX-1 uses a character generator similar to most of the model I character generators. There were so many "versions" of the model I, we can't guaranty we will match yours, though the VX-1 comes close. If you wish to continue to use your model I video display, you should order the VX-1 set up for 80 characters by 16 lines rather than 24 lines; your model I display can't display 24 lines! If you have or are planning to buy a high-quality monitor, you can order the VX-1 set up for 80 X 24.

In addition, the VID-80 allows "reverse video" operation of the entire screen. This results in dark characters on a light screen, similar to a typewritten page. Reverse video is selected by a simple software command.

All of the operating functions of the VID-80 are accessible via software commands. Experienced programmers may be able to write routines which will "toggle" back and forth between the 64 X 16 and 80 X 24 display formats; use the extra 16K of RAM on the VID-80 for program storage; or to alter the operation of ROM BASIC as well as other advanced procedures.

In addition, the VID-80 can be used to enhance the performance of a system with slow ROMs when used with the Holmes SPRINTER speed-up board (the Level II BASIC ROMs are slow and can prevent the system from "booting up" at high speed, as well as restrict system speed and reliability when used with a speed-up system.)

The VID-80 is compatible with standard Radio Shack systems, as well as most non-Radio Shack hardware, including Holmes products.

ORDER FORM/PRICE LIST

QTY	DESCRIPTION	PRICE	TOTAL
	INTERNAL MEMORY for TRS-80® Model I		
	32 K without RAM	\$ 66.00	
	32 K with RAM	86.00	
	48 K without RAM	99.50	
	48 K with 16K RAM	119.50	
	48 K with 32K RAM	139.50	
	INTERNAL MEMORY for PMC Computer		
	48 K without RAM	99.50	
	48 K with 16K RAM	119.50	
	48 K with 32K RAM	139.50	
	SPRINTER Speed up module Model I & III		
	Includes Z-80B	99.50	
	Printer option (Model I only)	124.00	
	EXPANSION MAINFRAME Model I	150.00	
	DISK CONTROLLER Model I		
	Single Density	148.50	
	Double Density	219.00	
	DD Adapter for Exp. Interface	129.50	
	PRINTER CABLE (Please specify printer)	19.50	
	16 K UPGRADE KIT for 4K system	23.00	
	INSTALLATION (charge per hour)	20.00	
	*VID-80 Model III	199.00	
	*VID-80 Model I (requires Mainframe or Single enclosure)	179.00	
	Please add for shipping & handling:		
	U.S.	3.00	
	Canada	5.00	
	Overseas	11.00	
	Mainframe only	9.00	
	TOTAL DUE		279

*As of 01/01/83 both versions of the VID-80 will be \$279.00
 Amount enclosed \$ _____ Money order ☐ Cashier Check ☐
 Please charge _____ VISA ☐ MASTERCARD ☐
 Card # _____ Expires _____
 Signature _____

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SPECIAL!!!

**HOLMES EXPANSION "INTERFACE"
SYSTEM for TRS-80 MODEL 1**

INCLUDES :

- MF-1 EXPANSION MAINFRAME
- DX-2D DOUBLE DENSITY DISK CONTROLLERS
- RS-232M
 - RS-232 SERIAL INTERFACE
 - 32K RAM expansion

PRICE: \$399.00

COUPON

Include this with your order or mention
it when you call and you may take

\$1.00 OFF

of the total due

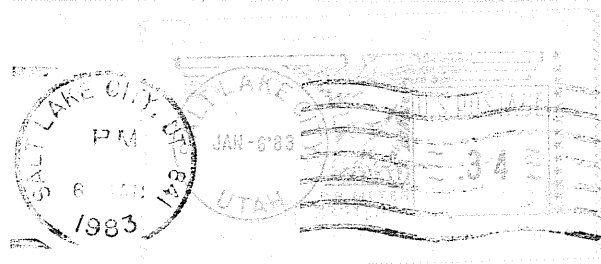
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