Specialty
Electronic
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TRIONYX ELECTRONICS, INC.

P.O. Box 5131, Santa Ana, CA 92704

16 September 1983

Dear X/2-H8 Customer:

Inclosed is an updated copy of our software for the X/2-H8 memory bank select card. The HDOS file MU.DVD has been revised and this revision should be used in place of the original version of MU.DVD. A floppy disk emulation program for CP/M has also been included. This is a very excellent program which is very easy to set up and use.

This letter is being written using Wordstar under CP/M and the X/2-H8 bank select card with 128K of additional memory. All of the Wordstar operating files were transfered to the additional RAM memory. We are also using the new H29 video terminal. Operation is at 4 MHz with one wait state, using our Z80 CPU board. The system was booted with H37 drives and the Heath controller. In this configuration, the H8 is a very powerful computer!

We are working on a cache program for CP/M similar to the one supplied for use with HDOS. This should be available in a few more weeks and will be sent to all X/2 card buyers at no additional cost. The disk emulator program supplied on the inclosed diskette is far more powerful than any cache program. However, the cache program may be more convenient to use for some applications.

Yours very truly,

Bill Perry
President

BP/ms

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P.O. Box 5131, Santa Ana, CA 92704

28 October 1983

X/2 Memory Bank Select Board - CP/M Cache Software

Inclosed is the final software package for the X/2 memory bank select board. This is Revision 3 of P/N ØØØ819. The CP/M cache program is a new addition to the diskette files.

The diskette previously supplied with the CP/M disk emulator program (Revision 2 of P/N ØØØ819) may have contained some corrupted HDOS files. We had a manufacturing problem which caused this.

All of the X/2 bank select software is provided on the inclosed diskette. All programs are at their final revision level. The programs on this disk should be used in place of the programs previously supplied.

No further updates to this package are planned. When operating at 4 MHz, one wait state may be required when using the X/2 bank select board.

Your patience while we have been completing this new product has been greatly appreciated.

Note:

A large number of X/2-H8 bank select cards have been shipped as of this date. Most of our customers prefer the CACHE program under HDOS to the MU program. The CACHE program is convenient to use, but the MU program is far more powerful.

Under CP/M, the MU program may be prefered to the CACHE. This is because directory disk accesses are retained using CACHE under CP/M. This is done due to the fact that CP/M disks may be interchanged without dismounting, as is required under HDOS. Disk file protection must be afforded under this circumstance.

X/2 - H8

MEMORY BANK SELECT BOARD

for the

H8 COMPUTER

[redacted] our new X/2 memory bank select cards for the H8 computer. The X/2 card was recently exhibited at the West Coast Computer Faire. This is another in our series of "half boards" for the H8 which will either plug into the standard H8 buss or in one of the auxillary "C" connector slots on our T-H9Ø motherboard for the H8. The half boards are short 5-1/2 in. boards, patterned after the Heath H8 "ORG ZERO" board, which use a special connector and plug backwards into the buss.

The X/2 bank select card enables the H8 computer to use standard memory boards as additional, separate, port addressable memory. As little as 16K, or as much as 256K, of memory may be controlled by a single X/2 card. Any amount of memory between these limits, in 16K increments, may be used. Any type of H8 memory boards may be used. These include Heath 8K and 16K static memory boards as well as Heath and Trionyx 64K dynamic memory boards.

Exclusive software utilities for both HDOS and CP/M are supplied with the X/2 bank select card. These utilities allow the X/2 card to use additional memory as either a quiet, high-speed RAM disk emulator or as a fully automatic high-speed cache memory to eliminate repeated disk accessing.

The X/2 card may be used with either an 8Ø8Ø or a Z8Ø CPU board. A twisted pair memory enable line connects each memory board to the bank select card. This is an excellent way to utilize spare memory boards. The cache memory will also greatly save wear on the floppy diskettes. The diskettes will then remain reliable for much longer periods of time.

The X/2 software features a port address set option and the X/2 card has a matching port address selection switch. More than one bank select card may be used in the computer at one time. This will allow both the RAM disk and cache programs to be used at the same time. The RAM disk program allows the user to establish a large capacity, high-speed floppy disk emulator using solid state RAM memory boards. The new Trionyx M-H8/A 64K memory board is ideal for use with the X/2 bank select card. Four M-H8/A memory boards may be controlled by a single X/2 bank select card.

The new X/2 memory bank select card for the H8 is in stock and is now shipping. Prices are $225.ØØ for an assembled board and $175.ØØ for the kit version. Complete instructions and all software utilities are included. This is one of the finest products we have ever produced.

Trionyx Electronics, Inc. - June 1983

M-H8 Extended Performance Modification No. Ø7

Bank Select Operation

The original M-H8 memory board is readily modified for bank select operation. Modification Ø4 (Zero Address Extension) must be installed first. If the M-H8 is being used as a fully populated 64K memory, install the simplified modification Ø4-II. If less than 64K is being used, install the comprehensive modification Ø4-III. Modification Ø7 is implemented according to which version of modification Ø4 has been installed.

I. Full 64K memory - Modification Ø4-II installed.

M-H8 Memory Board Modification Ø7:

1) Remove the memory-size jumper wire next to R38.

2) Cut the trace between U37-4 and U37-5 on the solder side of the board.

3) Connect a wire on the solder side of the board from U64-pin 11 to U37-pin 4.

4) Connected a twisted wire pair to U37:

Connect the white wire to U37-4.
Connect the black wire to U37-8.

II. Memory size less than 64K - Modification Ø4-III installed.

M-H8 Memory Board Modification Ø7:

1) Cut the trace between U37-4 and U37-5 on the solder side of the board.

2) Connect a twisted wire pair to U37:

Connect the white wire to U37-4.
Connect the black wire to U37-8.

The memory board enable twisted wire pair is connected to an appropriate output on the bank select card. A negative signal level is required to enable the M-H8 memory board.

If the M-H8 contains less than 64K of memory, the memory address jumper should be set accordingly. Additional memory can be added above the M-H8. The bank select lines in this case should be connected in together parallel to a single output on the bank select card until 64K of memory is obtained.

HEATH MEMORY BOARD MODIFICATIONS

for

BANK SELECT OPERATION

The Heath Company provides three (3) different types of memory boards for use with the H8 computer. These are the 8K static memory board, the 16K static memory board and the 64K dynamic memory board. Each of these memory boards is easily modified for bank select operation.

Heath 8K static memory board:

1) Lift IC-1Ø4-pin 11.

2) Connect a twisted wire pair to IC-1Ø3:

Connect the white wire to IC-1Ø3-12.
Connect the black wire to IC-1Ø3-Ø8.

Heath 16K static memory board:

1) Lift U144-pin 2.

2) Connect a twisted wire pair to SW1:

Connect the white wire to SW1-6.
Connect the black wire to SW1-4.

Heath 64K Dynamic Memory:

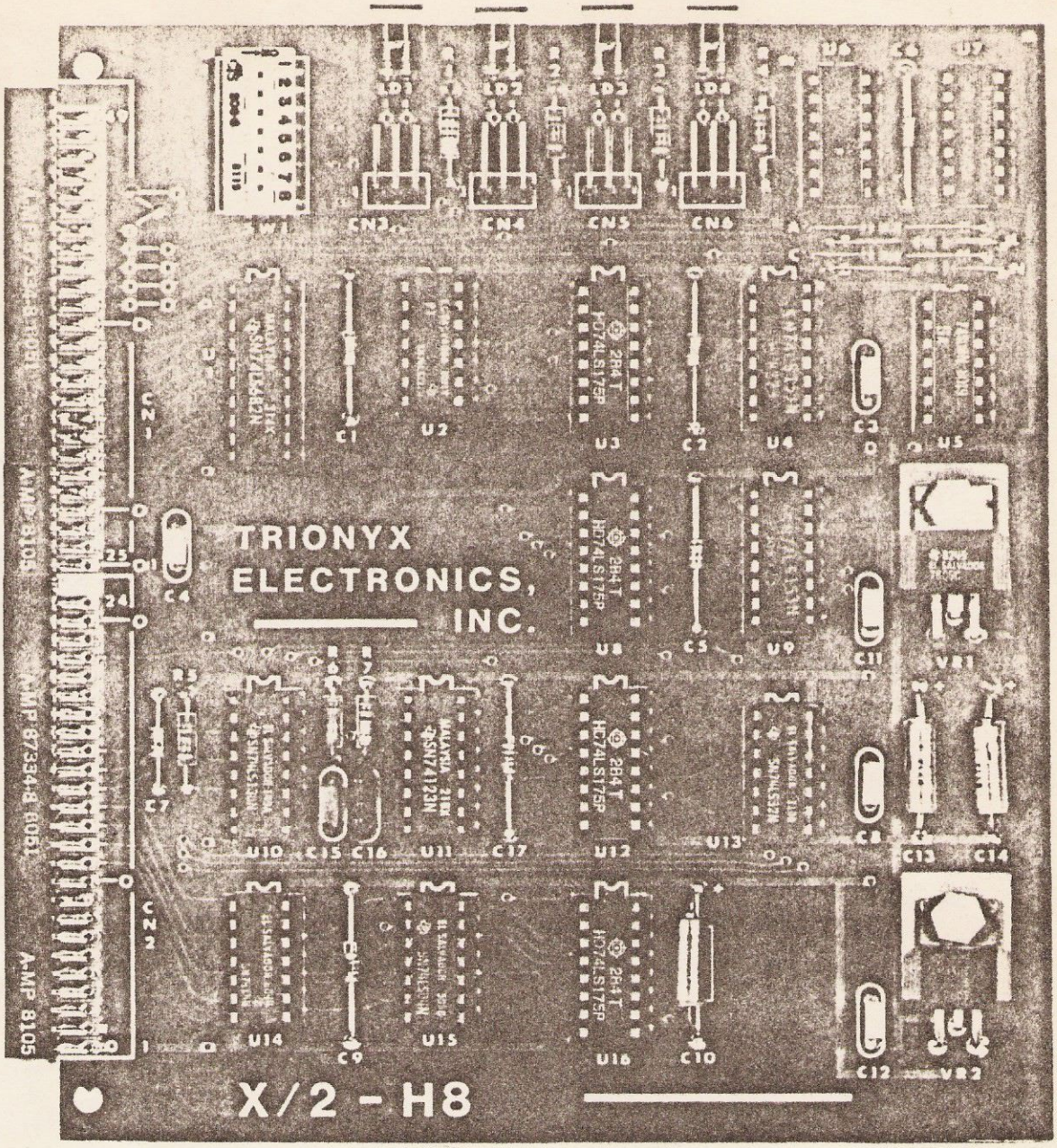
1) Lift U6Ø-pin 9.

2) Connect a twisted wire pair to U58:

Connect the white wire to U58-pin 13.
Connect the black wire to U58-pin Ø7.

Both the Heath 8K and Heath 16K static memory boards require a negative signal level to enable the boards. The Heath dynamic memory board is enabled with a positive signal level. The memory bank select card should be configured to provide the proper polarity signal to enable the memory boards.

The memory boards must be set properly to continuously address 64K of memory on the buss for each bank. The memory board enable twisted wire pairs are connected to the bank select card. The twisted wire pairs are connected together in parallel for all of the memory boards in each 64K bank. A different connector arrangement may be desired for this situation.

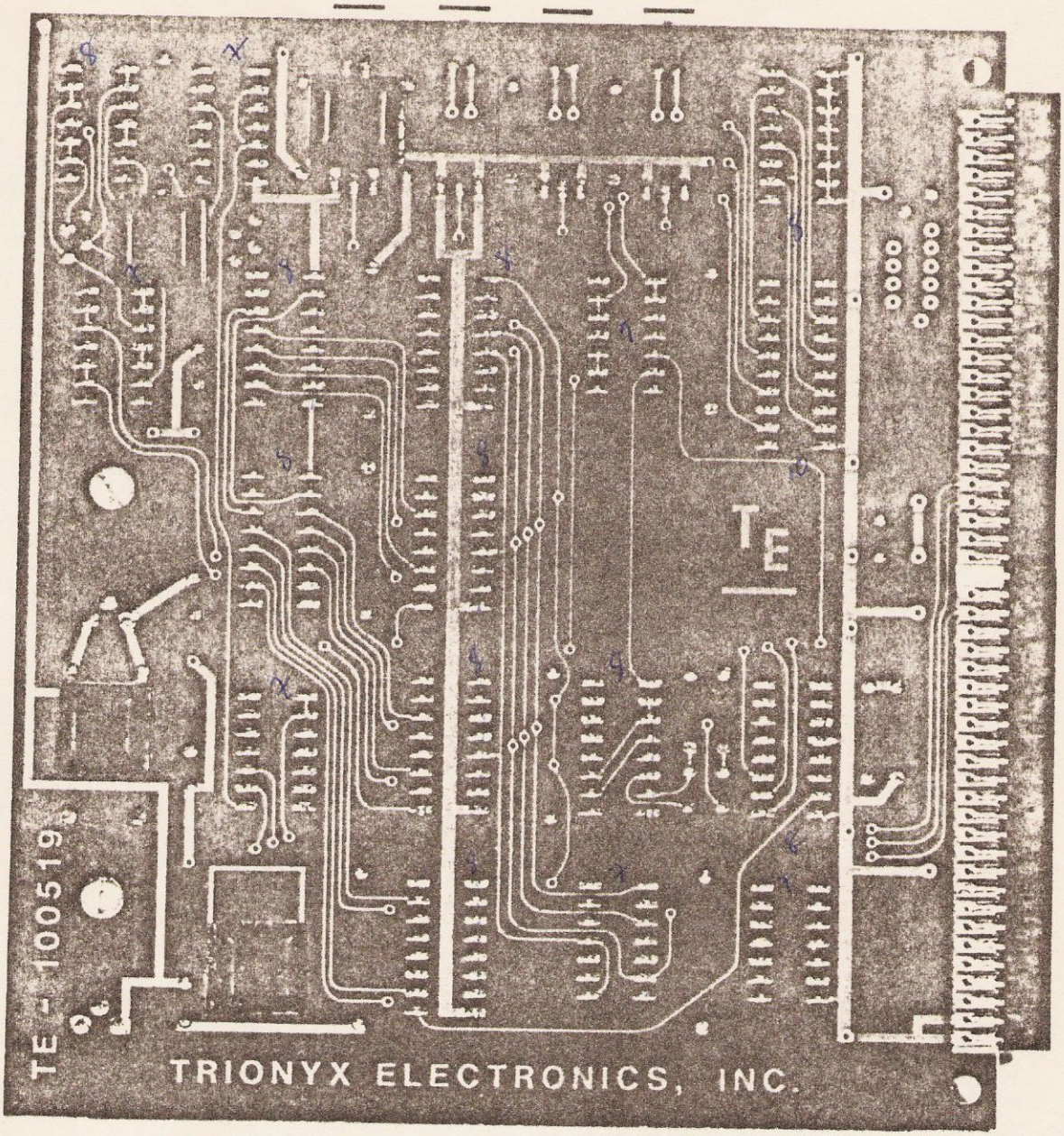


Component Side of Assembled X/2-H8 Board

This side of the board faces the REAR of the computer when the board is installed on the buss.

This board has been configured for the standard installation: It will be installed on a Heath motherboard in the H8 computer. All four bank select outputs will be asserted with a low signal level. The port address switch has been set for an Ø76 (octal) address.

Bending the connector pins (CN3 through CN6) close to the printed circuit board will help the LED cases hold the plug-in connectors in place.



Solder Side of Assembled X/2-H8 Board

This side of the board faces the front of the computer when the board is installed on the buss.

Note the four LEDs protruding from top of board. This provides a display which can be viewed by the operator when the cover is removed from the computer.

Notice the installation locations of the four rubber spacers at the top and bottom of the board, away from the connector. These spacers keep the X/2-H8 board from contacting the board in front of it on the buss. All of the component leads, including IC sockets, have been clipped after soldering, on the X/2-H8 board.