

**Horizon  
RAM Disk  
EPROM**

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## INSTALLATION INSTRUCTIONS

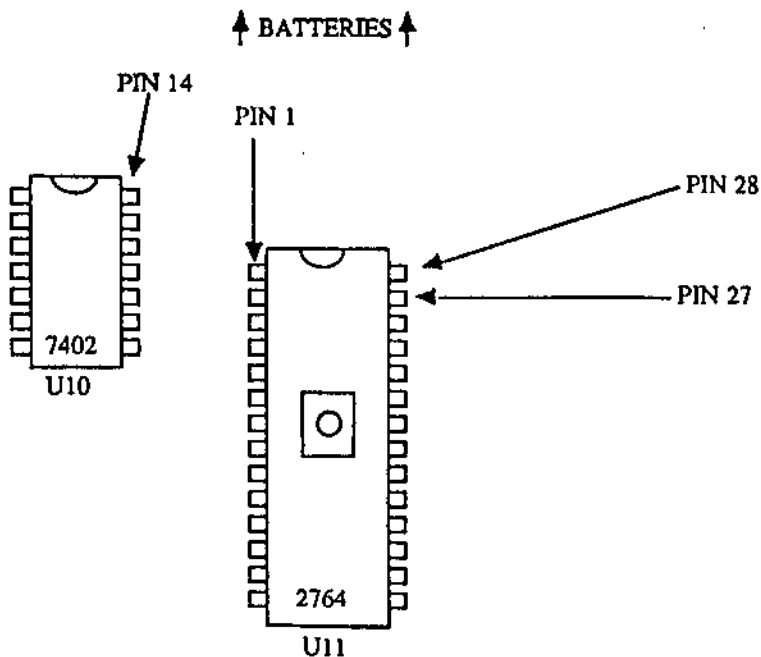
If you built your HORIZON RAM DISK or are handy with a soldering iron used for electronic applications, you should have no trouble installing the EPROM yourself. There is only one fairly simple solder joint to be made. If you are the least bit hesitant, please take the job to someone with experience in building or repairing electronic components.

If your HRD is already in service, please recall and heed the following caution from the HRD manual:

**CAUTION:** As with ALL Peripheral Expansion Box (PEB) cards, you MUST turn OFF PE-Box power and wait a FULL TWO MINUTES before installing or removing the RAMDISK card.

You may wish to back up the contents of an in-service HRD before proceeding with the modification as any contents will be lost upon installation of the EPROM. Remove the HRD from the Peripheral Expansion box.

De-power the card by removing one of the batteries from its holder. This modification has actually been done leaving all batteries in place, but is NOT recommended.



Locate and remove from its socket the integrated circuit in the socket marked U11. This is the chip that will be replaced with the new EPROM chip that contains the new operating system. Notice that there is a notch on the chip at the end closest to the batteries. The new chip has a similar notch. The orientation for the new chip must be the same as the one it replaces when it is installed per the instructions below.

Examination of the new chip shows that 3 of the pins have been connected with a short length of wire. This wire also extends for a short distance from pin 1 of the chip to a free end. Also notice that these same 3 pins have been bent outward or clipped off. These 3 pins are NOT to be inserted into the socket holder.

The free end of the new chip must be connected to pin 14 of chip U10. This chip is located directly to the left of U11. It is recommended that U10 be removed from its socket for this operation. Pin 14 of U10 is located closest to the notched end of the chip and on the side facing U11.

Solder the free end of the wire on the new chip to U10 pin 14 at the top, being careful not to over-heat the chip, solder bridge to adjacent pins or inhibit the re-insertion of the chip back into its socket. Please use a battery powered soldering iron or a grounded iron at the very least since damage to one or both chips can result. Use electronic solder and NEVER use a soldering gun.

Insert U10 and the new U11 back into their respective sockets taking care that the three pins on the new chip (the ones connected with the wire) do not get re-socketed.

Re-insert the battery into the holder. The RAM disk is now ready to be re-installed into the PEB per the instructions in the HRD reference manual.

## Testing the EPROM

Once you have the EPROM installed and the HRD back in your expansion box, turn on your computer. If the computer locks with the HRD light on you should try removing the card from the box (after powering down for 2 minutes) and removing RAM chip U17 on the bottom right hand corner of the board. Wait about 1 minute and then reinsert the chip. Next go to TI BASIC. Type

**CALL HDSZ(90)**

**CALL HDDIR**

You should get the top of a catalog listing with no files. It should indicate 358 sectors free and 2 sectors used. If this is not the case, you have not installed the EPROM correctly. Please check the installation instructions over.

If the above test checks OK, do a **CALL HDSZ** command for the amount of memory you have on your board as described below. After doing this set the drive number to 5 with a

**CALL HDDN(5)**

and then get out a copy of Disk Manager 1000 and copy the CHARA1 file from the disk provided or another CHARA1 file onto the RAM Disk. This is required if you wish to use any of the Program Image loaders explained below.

**Important Note:** A **CALL HDSZ** will erase all contents of your RAM Disk. Should you ever remove your EPROM, you will have to do a **CALL HDSZ** when you reinstall it. Without a **CALL HDSZ** having been executed, the RAM disk will not function.

## RAM Disk Related CALLs

**CALL HDDIR** - This prints out a directory listing of the contents of the HRD. It can be paused by pressing any key, and restarted by pressing another key. The listing is a standard directory format, except that a byte count is given for a PROGRAM image type file, since a record length is not applicable. The current HRD emulation drive number is displayed on the first line, on the right after then words HDDN.

**CALL HDDN(n)** - This sets the drive emulation number for the HDR. "n" can be any number from 1 to 6. To turn off drive emulation use a value of zero.

**CALL HDVOL("volume")** - This call sets the name of the disk. For example to use the HRD with Multiplan this must be TIMP.

**CALL HDSZ(K)** - Sets number of "k" of data that the HRD will hold. This will INITIALIZE the RAM disk. For a single sided disk use 94, for a double use 184, and for a 256K HRD use 260. Note that in each case you get 4K more space for data, or another 16 sectors beyond what was available with the original HRD operating system. This may cause problems with some disk manager programs, so simply set the number back to 90 or 180 to emulate a normal floppy drive exactly.

### Program Image Loaders

The following calls may be executed from immediate mode in TI BASIC, TI Extended BASIC, and MYARC Extended BASIC II. They can also be accessed from a running TI BASIC program. They all load Editor/Assembler Option 5 type files. If the file is not on the disk, you will be returned to title screen. The characters in these programs may not appear correctly unless you copy a CHARA1 file onto your RAM Disk.

**CALL DM** - loads in the file MG & MH from the HRD. These filenames were chosen to be compatible with Funnelweb V3.4. You should rename the files MGR1 and MGR2, as MG and MH for use with this operating system.

**CALL BOOT** - loads in an Editor/Assembler option 5 type file called BOOT. A version of John Johnson's MENU program has been included on your disk under the name of BOOT for this option.

**CALL MD** - this loads in the files MD & ME from the HRD. This is intended for use with a MoDem program, with the letters MD being chosen for compatibility with Funnelweb.

**CALL EA5("filename")** - this will load in the filename requested from the HRD and execute it. The file must be an Editor/Assembler option 5 type file (program image)

**CALL EA5** - this will load in the UTIL1 file from the HRD. Note that this is the same as the above command, just without the parenthesis.

## Editor/Assembler Option 3 Loader

They following 3 calls return no errors. If there is an error, they return as if nothing had happened.

**CALL ILD** - this is the same as a **CALL INIT**

**CALL LD("DSKn.xxxx")** - this loads in an Editor/Assembler Option 3 type file, a DIS/FIX 80 file, from any device. If it is an autostart program it will begin execution immediately.

**CALL LLD("xxxxx")** - this is the same as **CALL LINK**. It will start any loaded assembly program provided you enter a valid link name.

### Power Up Key Presses

At Power Up you may hold down the following keys to invoke various functions.

<b>1 to 6</b>	set drive emulation number
<b>0</b>	turn DSKx emulation off
<b>D</b>	loads MG (disk manager)
<b>U</b>	loads UTIL1
<b>M</b>	loads MD (MODEM program)
<b>B</b>	loads BOOT
<b>ENTER</b>	by pass auto powerup selection

The Power Up D/U/M/B key presses execute all other powerup routines before starting the program. This insures that all cards are properly initialized. If you have a CorComp disk controller without the Millers Graphics chip set, you should hit the space bar at title screen to allow your selection to start.

### Setting a Default Power Up Program

Because it can sometimes be difficult to hit your powerup choice fast enough, particularly if your card is at CRU base >1000, a feature has been added to let you select a default choice. To select your choice, go into BASIC and type **DELETE "PU.n"** where **n** is the letter D/U/M/B that you want to execute at power up. For example to select **BOOT** to run at powerup every time, type **DELETE "PU.B"**. To turn this feature off type **DELETE "PU"** with no character. You can always bypass your powerup choice by hitting **ENTER** at powerup which will take you to the regular title screen. You may still hold down a number key to change drive number, although your **PU** choice will be executed when you release the key. You may also use the D/U/M/B keys to over-ride the set choice.

You may execute the PU command any time you are at a prompt for a filename since PU is defined as a device. For example, from the main prompt in the TI-Writer editor you could choose DF (Delete File) and then enter P.U.D to select the disk manager program to execute at powerup.

### **BOOT Program**

On the disk provided with your EPROM there is a file called BOOT which is a special version of John Johnson's popular MENU program for the HRD. Also included on the disk are source code files for the program and a documentation file (BOOT/DOC). By making some simple, well documented, changes in the source code and recreating the BOOT file, you can create a custom menu for your computer.

### **Assorted Notes**

Please note that at all times the RAM Disk may be addressed as "HD" instead of "DSKn." This is true even when you have selected drive emulation as zero (off).

The reason for changing the names of all the CALLs is to allow for both the EPROM operating system and the original operating system to co-exist in the same expansion box (although in separate cards).

### **Thank You**

Thanks to Paul Charlton and Tom Ward for making the EPROM work where a RAM chip once lived. Thanks to Corson Wyman for loan of the EPROM burner so I could work on this project. Thanks to Donald Mahler and John Clulow for testing out the EPROM operating system and offering helpful suggestions along the way. Thanks to John Johnson for modifying his MENU program to work with the EPROM and for allowing us to distribute it with this EPROM. Thanks to MYARC for allowing me to use the operating system to their RAM Disk as a basis for the EPROM. And thanks to the Horizon RAM Disk manufacturers themselves for creating such an incredibly useful product.