ALPHA TECHNOLOGY, INC
DIGITAL PRODUCTS DIVISION
280 ROOSEVELT AVE
SATELLITE BEACH FL 32937-3029

(305) 773-1136

Thank you for ordering Alpha Systems speedup board for the TRS-80, Model IV. We at Alpha Systems think that the Model IV is one of the best computers available for the price. We also think that our 5 Mhz speedup will make it an even better computer. We have tested several Model IV's at our shop and have checked the clock frequency at less than 3.4 Mhz going into pin 6 of the Z80 CPU. Our board will pass a 5 Mhz signal to the CPU.

In the normal high speed mode, the Model IV is not fast enough to run double density, 8 inch drives. Our speedup board will give you that capability. We have tested the system using 8 inch drives and an 8 inch driver for DOSPLUS 3.5 from Micro Systems Software. The system works flawlessly.

TRS-80 and Radio Shack are trademarks of Tandy Corporation. DOSPLUS is a trademark of Micro Systems Software, Inc

Alpha Systems, Inc warrants this product to be free from defects in material and workmanship for a period of ninety (90) days from the date of purchase. During the warranty period, Alpha Systems will repair (or at its option, replace) at no charge components that prove to be defective provided the product is returned, shipping prepaid, to Alpha Systems, or an Alpha Systems authorized repair center. Information on obtaining service is available by contacting the Alpha Systems dealer from whom the product was purchased, or by contacting Alpha Systems directly at the address shown above. Your sales receipt is your warranty validation. The receipt must show the date of purchase and dealer's name. This must be provided when requesting warranty work to be performed.

No other warranties are expressed or implied, including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose. Alpha Systems shall not be held responsible for any consequential damages or losses arising from the use of this product.

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5 Mhz SPEEDUP
INSTALLATION MANUAL
Version 2

INTRODUCTION

Please read the following instructions very carefully before proceeding with the installation. TRS-80 and Radio Shack are trademarks of Tandy Corporation. DOSPLUS is a trademark of Micro Systems Software, Inc

DISASSEMBLY

WARNING. Disassembly of your computer may void your warranty from Radio Shack. Verify that all functions (memory, disk, printer, RS-232, etc.) of your computer are working properly. After you are satisfied that all functions are working properly begin the disassembly process. Turn off the computer and disconnect the power cord. Remove all cables attached to the computer. Place some soft cloth material on your work area. Raise the front of the computer and let it rest on its back. Remove the 10 screws from the bottom of the case. You will find three different types of screws, so please keep them separated. One of the screws is located beneath the warranty seal. After the 10 screws are removed, place the computer in the upright position. Remove the screw located at the top rear of the computer. You should now have 11 screws. USE EXTREME CAUTION AT ALL TIMES WHEN THE COVER IS REMOVED. DO NOT WEAR ANY JEWELRY WHILE WORKING INSIDE THE COMPUTER. DO NOT TOUCH THE HEAVY WIRE AROUND THE CRT OR THE CRT. BOTH CAN HAVE 15,000 VOLTS ON THEM. THIS VOLTAGE CAN BE PRESENT FOR SEVERAL MINUTES AFTER THE POWER HAS BEEN REMOVED. Remove the top cover by raising it up and slightly toward you. You will be able to see inside through the disk drive mounting holes. Be very careful that the neck of the CRT does not get hung up on any cables. Once the neck of the

tube has cleared the rear mounting bracket, move the cover to the left and lay it on its left side. Remove the connector and ground strap connected to the video board. You may now place the cover out of the way so it will not get damaged.

Turn the computer so that you are facing the rear. Remove the metal chassis covering the rear of the CPU board by removing all sheet metal screws along the top and sides of the cover. Some of the screws may be different size. If they are, remember which ones go where. Also remember where any ground straps are connected, if any are present. The cover is part of the RFI shield and must be replaced when installation is completed. Once the cover is removed, the CPU board is visible. Locate U3 (1st IC in the upper left hand area of the CPU board). NOTE: If your Model 4 is different from these instructions, please contact out technical department for help. Using an IC removal tool (or a small flat head screwdriver), remove IC U3. Orient the speedup board so that the 20 pin header is at the top left and the 20 pin socket is at the upper right. Insert U3 in the socket on the speedup board. Pin 1 of U3 should be at the upper left. Insert the speedup board into the empty socket on the CPU board. Be careful not to bend the pins of the header. Push the header pins into the socket with enough force that they will seat properly. On some boards you may have to move a vertical mounted capacitor slightly to the left to make room for the speedup board. Check that there are no shorts between the speedup board and the CPU board. Remove the Z80A CPU located at the left center of the board. (lower of the two 40 pin chips). Insert the Z80B in the 40 pin socket oriented the same way as the Z80A was. The board is now ready to be tested; however, for safety reasons, the complete re-assembly should be accomplished prior to turning on the power. Replace the shield cover and all sheet metal screws. The rear shield will be pressed against U3 on the speedup board so do not exert any more pressure than is needed to replace the shield. Reconnect the connector and ground strap to the video board. Place the cover on top of the computer and gently lower into place, being careful not to damage the neck of the CRT. Once the cover is in place, replace the screw in the rear of the computer first. After that, raise the computer on its back and replace the remaining screws. You are now ready for the speed test.

TESTING

Hold down the break key and turn on the power switch. You should power up in the non disk Model III mode at the slow speed as normal. Type in the following test to insure the computer is operating properly.

```
1 IF MEM < 100 THEN RUN ELSE PRINT MEM;:GOSUB 1
Type RUN
```

If everything is ok, we are ready to test the high speed. Press the break key and type POKE 16912,104:OUT236,104 and press ENTER. NOTE* The value will be different if you are using another operating system. The value for DOSPLUS is 120. The computer should now be in the high speed mode and running a little over 5 Mhz. Type RUN again and the above program will execute again but this time it will be about 2.4 times faster.

Insert a Model 4 Disk Operating System in drive 0 and press the reset button. On some of the Model 4's, you may have to press the reset button twice to reset the system. You will now be able to see the difference in the operating speed.

You will now be able to run your Model III software as normal in the Model III mode at 2 Mhz and some of the software will run at the 5 Mhz mode. We believe that all of your Model 4 software will run at the 5 Mhz speed. We have tried DOSPLUS 3.5 and DOSPLUS IV and they both work fine in the high speed mode.

We have not tested all the software available to determine what will run in the Model III mode and what will not. If your Model III software will not run properly in the fast mode, POKE 16912,40 to return to the slow mode (POKE 16912,56 for DOSPLUS)

PROBLEMS

If your computer works in the slow mode but not the fast mode, check to see that U3 is properly seated in the socket on the speedup board and check to see that the header pins are properly seated.

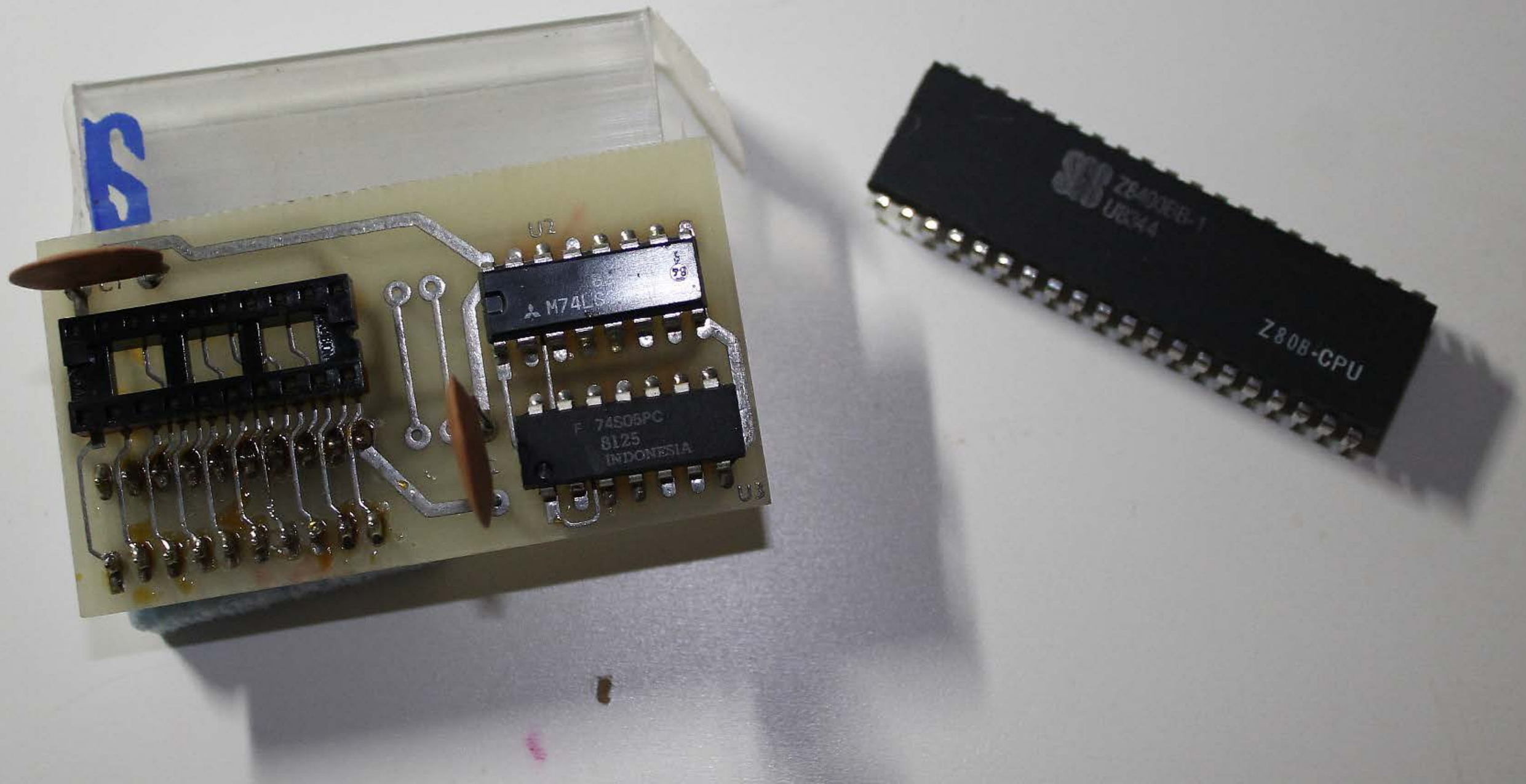
If your computer does not work in either mode, check to see that the speedup board and Z80B are properly seated in the sockets.

If you still cannot get your computer to work, remove the speed up board and reinsert U3 in its socket on the CPU board. Power up the computer and run another test. If it works now, the speedup board is bad. Return it for a replacement. If the computer still does not work, replace the Z80B with your original Z80. If it works then, the Z80B is bad. Return it for a replacement. If it still does not work, you have probably jarred something loose. Recheck all connections. If it still does not to work, please call us for technical assistance.

It the following 1 line program will not run more than a few seconds, it is a good indication that the Z80B is bad. Return it for a replacement.

```
1 POKE 16912,40:PRINT PEEK(16912);:POKE16912,104:PRINT
PEEK(16912);:GOTO1
```

You may call for technical assistance any evening between 6 an 8:30 eastern time.


U2
M74LS
74S05PC
8125
INDONESIA
U3
Z80B-CPU