

Model 4, 4D, and 4P Speed-up Installation Instructions

Check the model number plate on the bottom of your Model 4 or the inside back cover of your 4P to see what type of computer you own. Then refer to the following chart to determine the speed-up kit type that you need for your computer, and make sure it is the kit type that you have received.

<u>Computer type</u>	<u>Model #</u>	<u>New CPU speed</u>	<u>Kit type</u>
Old Model 4 (non-gate array)	26-1069	5 Mhz	O4
Old Model 4P (non-gate array)	26-1080	5 Mhz	O4P
New Model 4/4D (gate-array)	26-1069A	6 Mhz	N4
New Model 4P (gate-array)	26-1080A	6 Mhz	N4P

The O4 and O4P kits consist of a Z80B, a PAL chip, and a 74HCT245 (or 74SC245) chip. The N4 kit consists of a Z80B, a 24-pin header socket containing a PAL chip, and a 9-pin resistor pack. The N4P kit consists of a Z80B, a 24-pin header socket containing a PAL chip, and a 74HCT245 (or 74SC245) chip. If you have any problems with your speed-up modification, the most likely cause will be that your RAM chips are not 150 nanoseconds or faster. We recommend that you use 120 nanosecond RAM chips if you have also installed the SuperMem upgrade in your computer.

DISASSEMBLY

WARNING: Disassembly of your computer may void your warranty from Radio Shack. Verify first that all functions (memory, disk, printer, RS-232, etc.) of your computer are working properly.

CAUTION: Use extreme caution at all times your computer 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 itself. Both can have 15,000 volts on them. This voltage can be present for several minutes after the power has been removed.

Model 4 and 4D: Turn off the computer and disconnect the power cord. Remove all cables attached to the computer. Place a soft cloth 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. 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 so remember which ones go where. Also remember where any ground straps are connected, if any are present.

Model 4P: Turn off the computer and disconnect the power cord. Remove all cables attached to the computer. Place a soft cloth on your work area. Place the 4P face down on a soft surface to prevent damage to the CRT. The case is held in place with six screws. Remove two screws from either side of the case at the front of the unit. The final two case mounting screws are accessible under the handle assembly. These two screws attach the handle as well as the case to the internal rear mounting plate. After removing all six screws, lift the cover off the computer and set it aside for reassembly later. Be careful not to scratch the CRT or cover. The main logic PC board is a large board nested inside a metal pan at the bottom of the main chassis. Remove 4 or 5 screws on each side of the metal PC board mounting pan which attach the pan to the metal chassis and the logic board and pan can be removed as a subassembly from the chassis. Remove the 34-pin disk drive connector but try not to remove the other 4 connectors at the front of the CPU board. Lay the board down as far as it will go.

KIT INSTALLATION

Old Model 4: Using an IC removal tool or small flat head screwdriver, remove U3 from its socket (the first IC chip in the upper left corner of the CPU board) and put the PAL16R8ACN chip from the kit into that socket with the dimple pointing up. Remove the Z80A CPU from the U57 socket (left center of the board, lower of the two 40 pin chips) and put the Z80B CPU into that socket with the dimple pointing left. Remove U71 (lower middle of CPU board) and put the 74HCT245 (or 74SC245) chip in that socket with the dimple pointing up. Now you may reassemble your computer in reverse order that you took it apart.

New Model 4 and Model 4D: Using an IC removal tool or small flat head screwdriver, remove U9 from its socket (top center of the CPU board) and plug the 24-pin header socket from the kit into that socket with the dimple pointing up. Bend pin 23 of the U9 chip out about 30 degrees so it will not contact with the socket (pin 23 is second pin down from top right) and plug it into the 24-pin header socket with the dimple pointing up. Remove the Z80A CPU from the U1 socket (upper left corner of CPU board) and insert the Z80B CPU from the kit in that socket with the dimple pointing up. While testing, if you have key bounce problems, solder the 9-pin resistor pack to the solder side of the CPU board opposite RP1 (left center of the board) pin-to-pin with the dot on the resistor pack pointing the same direction as the dot on RP1. Now you may reassemble your computer in reverse order that you took it apart.

Old Model 4P: Using an IC removal tool or small flat head screwdriver, remove U126 from its socket (second row of IC's next to the small connectors) and plug the PAL16R8ACN chip from the kit into that socket with the dimple pointing away from the small connectors. Remove the Z80A CPU from the U47 socket and insert the Z80B CPU from the kit in that same socket with the dimple pointing away from the small connectors. Remove U71 from its socket (center of the board) and plug the 74HCT245 (or 74SC245) chip into that socket. Now you may reassemble your computer in reverse order that you took it apart.

New Model 4P: Using an IC removal tool or small flat head screwdriver, remove U148 from its socket (lower center of the CPU board) and plug the 24-pin header socket from the kit into that socket with the dimple pointing away from the small connectors. Bend pin 23 of the U148 chip out about 30 degrees so it will not contact with the socket (pin 23 is second pin down from top right) and plug it into the 24-pin header socket with the dimple pointing away from the small connectors. Remove the Z80A CPU from the U45 socket and insert the Z80B CPU in that socket with the dimple pointing away from the small connectors. Remove U86 (about 2 inches left of center of board) and plug the 74HCT245 (or 74SC245) chip into that socket with the dimple pointing away from the small connectors. Now you may reassemble your computer in reverse order that you took it apart.

USING THE SPEED-UP

If you use TRSDOS 6, LS-DOS 6.3, LDOS 5.1.4, or LDOS 5.3, your computer should automatically boot up in high speed mode. To switch to slow speed type: SYSTEM (SLOW) <enter>, to switch back to fast speed type SYSTEM (FAST) <enter>.

If you are running any other Model III DOS, your computer should automatically boot up in slow speed. To switch to high speed, go into BASIC and RUN the following program:

```
10 A=PEEK(16912):B=A OR 64:POKE16912,B:OUT236,B
```

To switch back to slow speed, go into BASIC and RUN the following program:

```
10 A=PEEK(16912):B=A AND 191:POKE16912,B:OUT236,B
```

Most Model III and most Model 4 software should run at the faster speed. If a Model III program will not run at the faster speed then switch back to the slower speed and try it again.

If You are using TRSDOS 1.3, you will need to make the following patch to the DOS before it will be able to work reliably at the faster speed. To install the patch, just type in the following at TRSDOS ready prompt.

PATCH *0 (ADD=4400,FIND=F5F1F5F1F5F1F5F1,CHG=E3E3E3E3E3E3E3E3) <enter>

PROBLEMS

If your computer works at slow speed but not at fast speed, you may have slow RAM chips. Check to make sure that they are 150 nanosecond speed or faster. If your computer still works at slow speed but not at fast speed, check to see that the speed-up PAL chip is properly seated in its socket.

If your computer does not work in either mode, check to see that the Z80B chip is properly seated in its socket. If you still cannot get your computer to work, remove the speed-up PAL chip and reinsert the old PAL chip in its socket on the CPU board. Power up the computer and run another test. If it works now, the speed-up PAL is bad. Return it for a replacement. If the computer still does not work, replace the Z80B with your original Z80A. 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 the following 1 line program will not run more than a few seconds in the Model III mode, it is a good indication that the Z80B is bad. Return it for a replacement.

```
10 POKE16912,40:PRINT PEEK(16912);:POKE16912,104:PRINT PEEK(16912);:GOTO 10
```

WARRANTEE

Anitek Software Products warrants this product to be free from defects in material and workmanship for a period of 90 days from the date of purchase. During the warrantee period Anitek will repair (or at our option, replace) at no charge for components that prove to be defective, provided the failure or defect was not the fault of the customer and the product is returned with proof purchase date. No other warranties are expressed or implied, including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose. Anitek, nor any of its dealers, shall not be held responsible for any consequential damages or losses arising from the use of this product.

TECHNICAL GUIDANCE

Anitek Software Products is glad to be able to provide whatever technical guidance you may need while installing this speed-up kit, without additional cost, for the first 30 days of ownership. We can be contacted at:

Anitek Software Products
PO Box 361136
Melbourne, FL 32935
1-407-259-9397

SPEED-UP KIT ADDENDUM

Please read before installing your speed-up kit

There are a few changes to the attached instructions that need to be noted before you begin installing your speed-up kit. **First:** On chip U9 of the gate-array Model 4 and on chip U148 of the gate-array Model 4P you will need to bend pins 10 and 23 out at a 30 degree angle before plugging it into the 24-pin header socket. **Second:** The instructions will mention that some of the kits come with a 10-pin resistor pack and some of the kits come with a 74HCT245 chip. Neither of these items are needed in the current version of the speed-up kit. **Third:** Your speed-up kit comes with a small length of wire that may be installed to improve the reading of the keyboard at the faster CPU clock speed. It may not be necessary to install this wire on your computer if keyboard reads are reliable without it. If keyboard reads are not reliable without the wire then we recommend that you install the wire. This wire is to be soldered between the following pair of points on the back side of your main circuit board. Note that it will not be necessary to ever remove this wire even in the event you decide to remove the speed-up kit and put the old chips back in their sockets. Cutting and trimming the wire to size is recommended.

non-gate-array Model 4:	from U3 pin 8 to U45 pin 12
gate-array Model 4:	from U9 pin 10 to U56 pin 12
non-gate-array Model 4P:	from U126 pin 8 to U58 pin 1
gate-array Model 4P:	from U148 pin 10 to U78 pin 1

Note for those installing a 6.7 MHz TURBO speed-up kit: if you choose not to install this wire on your main circuit board then it will be necessary to jumper a wire between pin 8 and pin 20 on the Turbo GAL chip before you plug it into the socket, otherwise the CPU clock will only run at 4 MHz instead of the desired 6.7 MHz.

Patches to LS-DOS: before you even begin installing your kit we recommend that you make the following patches to your LS-DOS disk. These patches will make the disk drive accesses more reliable at the faster CPU clock speed. With your LS-DOS disk in drive 0 and at the DOS ready prompt type:

On both LS-DOS 6.3.0 and LS-DOS 6.3.1 type:

```
PATCH BOOT/SYS.LSIDOS (D01,DC=30:F01,DC=18:D0C,E2=FF:F0C,E2=7F)<enter>
PATCH BOOT/SYS.LSIDOS (D0D,26=24:F0D,26=12)<enter>
PATCH SYS2/SYS.LSIDOS (D00,E4=12:F00,E4=09:D00,EE=40:F00,EE=20)<enter>
PATCH SYS2/SYS.LSIDOS (D01,04=40:F01,04=20)<enter>
PATCH SYS12/SYS.LSIDOS (D03,7C=12:F03,7C=09:D03,86=40:F03,86=20)<enter>
PATCH SYS12/SYS.LSIDOS (D03,9C=40:F03,9C=20)<enter>
```

Also on LS-DOS 6.3.0 type:

```
PATCH BACKUP/CMD.UTILITY (D17,22=12:F17,22=09:D17,28=40:F17,28=20)<enter>
PATCH BACKUP/CMD.UTILITY (D17,3C=40:F17,3C=20)<enter>
```

Also on LS-DOS 6.3.1 type:

```
PATCH BACKUP/CMD.UTILITY (D17,0A=12:F17,0A=09:D17,10=40:F17,10=20)<enter>
PATCH BACKUP/CMD.UTILITY (D17,24=40:F17,24=20)<enter>
```

NOTE: On any of the above patches, if you get a "file access denied" error message then change the "LSIDOS" in the command to "VZA" and try the patch again.

Fee Schedule
and related policies
5/1/88

We wish we were able to provide all our services without charge to our customers. However, if we did, we would be unable to remain in business for very long. We believe the following service fees and policies regarding our services are as fair as they can be to our customers while at the same time adequate to cover our costs in providing these services. We ask for your understanding and cooperation as we seek to serve you in a way that makes it economically possible to continue doing so long into the future.

UPDATE A DISK TO LATER VERSION: cost varies depending on how many skips in versions the update is. Cost for next later version of LeScript has typically been about \$25 to \$30 (add \$3.00 if disk not returned) plus \$2.00 S/H. Updates are free to those with full support contracts and to those who are within 30 days of their original purchase, as long as disk is returned to us. Updates are not guaranteed to be bug free. If bugs are found and fixed, our policy regarding getting a copy of the later release is as follows:

REPROGRAM A DISK: \$5.00 per disk (\$8.00 if disk not returned) plus \$3.00 S/H. No Charge for those with full support contracts and those who are within 30 days of their original purchase or update purchase, as long as disk is returned to us. ~~This fee applies for any reason of reprogramming, even for reasons of receiving a later, more-bug-free release.~~ Reprogramming of a disk will only be done to disks that have already been updated to the most current version.

TECHNICAL SUPPORT QUESTIONS (telephone/letter): No charge to those who have full or limited support contracts (limited to 5 telephone and 5 written per year) and those who are within 30 days of their original purchase. All others wishing technical support will need to purchase at least the limited support contract for \$25.00 per year.

TROUBLE REPORT CHECK-OUTS: same as "Technical Support" above, except non-contract holders can pay a per-problem fee instead of purchasing a contract. This fee is \$5.00 per problem plus \$3.00 S/H. If any problem is found by Anitek staff to be something that needs to be changed in the program, the \$5.00 fee for that problem will be returned. Otherwise the \$5.00 fee will be retained and an explanation of the reason or cure for the problem will be given. If the person requesting the trouble report check-out wishes at the same time to have his disk(s) reprogrammed with a later release is believed to have fixed certain problems in the software, the fee is \$5.00 per disk as covered above under "Reprogram a Disk". If not stated otherwise, it will be assumed that the requester does wish his master (or working disk) to be reprogrammed with a later release of the software (if one exists), unless there was not enough money sent along with the request to cover it. Trouble report check-outs will only be done on current versions of our software.

SERVICE REQUESTS MADE WITHOUT REQUIRED FEES: the person requesting the service will be notified of the correct fees. The materials and correspondence received will be given an active status for 14 days. At the end of that time, if the fees are not received, the issue will be considered closed, the correspondence will be filled for reference, and the materials will be disposed of. To avoid the hassle and delay this situation can cause, we encourage all those requesting any kind of service, to include their VISA or MasterCard number with expiration date and permission for the service charges to be billed to that account.

CUSTOM PRINTER DRIVERS: \$40.00 for most dot matrix or daisy wheel printers. This includes proportional-space printing if the printer has the capability to proportional-space print and micro-space print. We reserve the right to turn down a request for a driver that would be too difficult to write. Customer must supply a copy of the complete printer manual that we can keep. Customer must agree and understand beforehand that this fee is for the work involved in writing the driver and is not a guarantee of a properly working driver. Many factors come into play in writing a printer driver, many of which are out of our control. We may offer to make some effort to correct an improperly working customer driver, but there is no guarantee, and no refund.

CUSTOM SOFTWARE PATCHES: \$50.00 per hour. When requesting an estimate please give a complete and exact description of the changes you wish to have done.

RETURN OF SOFTWARE: may be returned within 30 days of purchase, as long as it is in like-new saleable condition, for a full refund less a restocking fee equal to 20% of list price.

RETURN OF HARDWARE: may be returned within 30 days of purchase, as long as it is in like-new saleable condition for full refund. Repairs necessary to make items saleable will be subtracted from amount of refund.

WARRANTEE ON HARDWARE: Most of the hardware items we sell carry a 90-day fix or replace warrantee if the item fails under normal use. Items coming back that failed for reasons other than normal use will be charged according to whatever repairs are required. Items coming back within 90-days to be fixed or replaced that have not failed (are still in working order) will be charged a \$25.00 check-out fee plus \$3.00 S/H before they are returned.

30-DAY NET BILLING: only given to public schools and government agencies. \$10.00 billing fee, if sale amount is under \$100.00.

C.O.D.: \$5.00, in U.S. only.

CHECK RETURNED UNPAID: \$10.00

OVERPAYMENT REIMBURSEMENT: If you overpay any charge using a check or money order, we will issue you a check for the difference less a \$2.00 administrative charge. To avoid this situation we recommend use of VISA or MasterCard.

SHIPPING AND HANDLING: as stated in each category above. Overseas airmail, multiply shipping and handling charges by 3.