

REFERENCE MANUAL

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The materials contained herein are summary in nature, subject to change and intended for general information only.

INTRODUCTION THE AVATAR UTILITIES

The AVATAR utilities function as application programs under AVATAR's enhanced CP/M operating system. In systems with two disk drives these utilities normally reside on the operating system disk in drive A.

All the AVATAR utilities consist of menus which display the available choices. The menus may be nested. In other words, the utility may display a sub-menu in response to your selection on the previous menu.

CALLING AN AVATAR UTILITY:

The name of each utility is also the enhanced CP/M operating system command you use to call that utility.

You can call any of the AVATAR utilities by typing the name of that utility (followed by a carriage return) in response to the CP/M A> prompt.

LEAVING AN AVATAR UTILITY

Each menu includes instructions for leaving that menu. The highest level menu includes instructions for leaving that utility.

Typing CONTROL-C (^C) while using one of the AVATAR utilities is not recommended. It will usually, but not always, bring you to the next higher level menu.

USING THE AVATAR UTILITIES IN A SINGLE DRIVE SYSTEM

Most of the AVATAR utilities can be used on AVATAR TC1 systems with a single disk drive.

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SECTION 1 SYSTEM START-UP

NORMAL START-UP

Normal start-up occurs when your AVATAR TC1 is powered on, the LINE/LOCAL switch is in the LOCAL position and the system is properly configured to match your terminal. Upon normal start-up, the system executes a series of self-diagnostic tests, the results of which are displayed on your terminal.

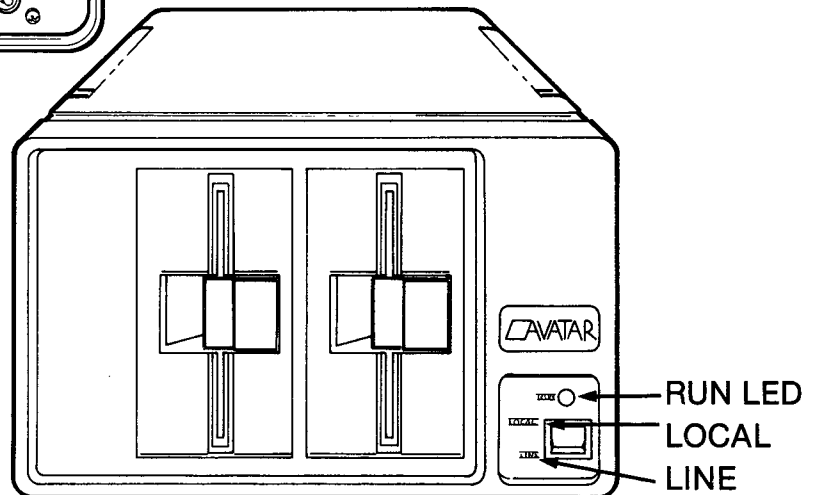
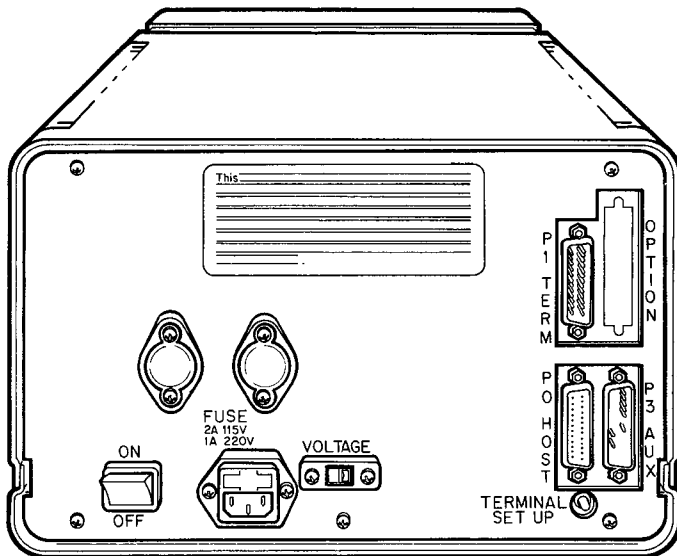
Welcome to the AVATAR TC1

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ram OK
rom [rev XXXX] OK
programmable timer OK

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:



If the RUN indicator is lit, but nothing appears on your terminal screen:

- * Check that the LINE/LOCAL switch is set to LOCAL
- * Initiate the Terminal Set-up procedure.

If the RUN indicator is lit, and the message on your terminal screen is badly garbled, initiate the set-up procedure.

If the RUN indicator blinks, but you did not press the TERMINAL SET-UP button, your AVATAR TC1 has lost the contents of the nonvolatile random access memory:

- * Initiate the terminal set-up procedure.
- * Boot the enhanced CP/M operating system.
- * Immediately reconfigure your system using the CONFIGURATION utility.
- * Don't forget to make your configuration options permanent.
- * Turn the system off for more than three seconds, then turn it back on.
- * If the RUN indicator starts blinking again, call the AVATAR toll-free Customer Service Line.

TERMINAL SET-UP

Your AVATAR TC1 can automatically set itself to match the communication characteristics of your terminal.

Press the TERMINAL SETUP button on the back of your AVATAR TC1.

THE TERMINAL SETUP BUTTON IS DEACTIVATED AFTER YOU BOOT THE SYSTEM.

The RUN indicator on the front of your AVATAR TC1 will start blinking.

Type "123" on your terminal keyboard.

NOTE: You MUST press the "1" key, then the "2" key, then the "3" key in that exact order without any spaces or carriage returns. Your AVATAR TC1 will ignore any other numbers or letters you type until it sees "123"

Your AVATAR TC1 will automatically set itself for the correct baud rate, parity, number of bits per character and number of stop bits to match your terminal. Then it will execute the self-diagnostic tests. When those are successful, the RUN indicator will light again.

If the RUN indicator continues to blink, the automatic terminal setup was not successful.

- * Type "123" again. Type the number "1", then the number "2", then the number "3".
- * Do not type any spaces when you type "123".
- * Be sure to use the numbers along the top row of your main keyboard.
- * Check that your terminal is not set for a split baud rate. The send and receive baud rates must be the same.
- * Double check the cable between your terminal and your AVATAR TC1.

SELF-DIAGNOSTICS

When you first turn your AVATAR TC1 on, (or the first time you place your AVATAR TC1 in LOCAL mode after turning it on) it executes a series of self-diagnostic tests. These tests insure that the ram (random access memory), rom (read only memory) and programmable timer are all functioning properly before you boot the system.

ANY failure of a self-diagnostic test will freeze the system at that point. The keyboard will be locked and you will not be able to proceed.

If your system ever fails a self-diagnostic test, turn the system off for three seconds, then turn it back on. If the self-diagnostic tests are successful, you can disregard the previous failure. If your system fails the self-diagnostic tests for a second time, leave the system on or write down exactly what you see on your terminal screen, then call the AVATAR toll-free Customer Service Line.

RAM TEST

The first self-diagnostic test checks the ram - random access memory. This test consists of six passes. After each pass is completed, the system prints a dot after the word "ram" on your terminal screen.

After all six passes have been completed, the system tells you that the ram test was "OK" and automatically goes on to the rom test.

```
ram ..... OK
```

Ram Test Failure

Any failure in the ram test automatically freezes your AVATAR TC1. Your keyboard will be locked.

```
Welcome to the AVATAR TC1
```

```
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```

```
ram . FAIL
```

```
address(hex): 8000
```

expected	actual
10101010	11101010
11111111	11111111
10101010	11101010
01010101	11010101
00000001	01000001
00000010	01000010
00000100	01000100
00001000	01001000
00010000	01010000
00100000	01100000
01000000	01000000
10000000	11000000

Each dot printed after the word "ram" indicates a pass which was successfully completed before the failure.

The system tells you the ram address where the failure was detected. The ram address is a hexadecimal number.

During the ram test, the system stores a value in each location in the random access memory. It then reads each memory location to make sure that it gets back the same value it stored. If it gets back a different value than it stored at any memory location, it writes and reads a diagnostic sequence of values at that memory location.

The values the system expected (what it actually stored in that memory location) and the values it found (what it actually read from that location) help your AVATAR service representative pinpoint the problem.

ROM TEST

Before the system tests the rom, read only memory, it tells you which revision of the rom code it is running. Then it begins the rom self-diagnostic test.

After the successful completion of the rom test the system tells you that your rom is "OK".

rom [rev XXXX] OK

Rom Test Failure

Depending upon how and where the rom test fails, your system may print the word "fail" or it may just freeze. Either way, a rom test failure locks your keyboard.

Welcome to the AVATAR TCl

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ram OK
rom [rev XXXX] FAIL

PROGRAMMABLE TIMER TEST

The last self-diagnostic test checks the programmable timer.

After the successful completion of the programmable timer test, the system tells you that your programmable timer is "OK".

programmable timer OK

Programmable Timer Test Failure

If the programmable timer fails, the system will report the failure, then freeze. The keyboard is locked.

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ram OK
rom [rev XXXX] OK
programmable timer FAIL

BOOTING THE ENHANCED CP/M OPERATING SYSTEM

After the self-diagnostic tests you are given the option of booting the CP/M operating system or conducting diagnostic disk tests.

Welcome to the AVATAR TC1

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ram OK
rom [rev XXXX] OK
programmable timer OK

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:

If you press the RETURN (CR) key, your AVATAR TC1 will boot the enhanced CP/M operating system.

Welcome to the AVATAR TCI

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CP/M REG. TM rev 2.2, sys XXXX XXX-XXXXX

The system will welcome you, tell you which revision of the operating system you are using and prompt you with the CP/M A> prompt. In response to the A> prompt, you can enter either a CP/M command or the name of an AVATAR utility.

SYSTEM BOOT ERROR MESSAGES

MESSAGE: DISK NOT READY

Cause:

- * There is no diskette in drive A.
- * The diskette in drive A is not properly inserted.
- * The door to drive A is not closed properly.

Correction:

- * Check that you have a formatted system diskette properly inserted in drive A.
- * Remove the diskette and reinsert it to double check that it is inserted correctly. The label should be on the edge closest to you and the read/write notch (or write-protect tab) should be on the top edge.
- * Be sure you close the drive door.
- * Press the RETURN (CR) key to boot the system.
- * If you still get a DRIVE NOT READY message, insert the CP/M -- AVATAR UTILITIES MASTER diskette in drive A and try again. If the system boots normally, you know that you have a bad system diskette. (See the DISKOPS utility for information on copying a working system disk.)

further assistance.

MESSAGE: DISK ERROR, STATUS = 24,10

Cause: * You have placed an unformatted diskette in drive A.
* The diskette in drive A is damaged or worn.

Correction: * Place a formatted disk with a copy of the enhanced CP/M operating system in drive A.
* If you still get the DISK ERROR, STATUS = 24,10 message, place your CP/M -- AVATAR UTILITIES MASTER diskette in drive A. Occasionally a diskette may be damaged in such a way that the system cannot tell that it has been formatted.
* Press the RETURN (CR) key to boot the system.
* If the error persists, call the AVATAR toll-free Customer Service Line for assistance.

MESSAGE: NO INSTALLED CP/M

Cause: The disk in drive A is properly formatted, but it does not have a copy of the enhanced CP/M operating system.

Correction: Insert a disk which does have a copy of the enhanced CP/M operating system in drive A, then press the RETURN (CR) key.

OPTIONAL DIAGNOSTIC DISK TESTS

After the successful completion of the self-diagnostic tests, you are given the option of booting the CP/M operating system or conducting diagnostic disk tests.

Welcome to the AVATAR TCI

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ram OK
rom [rev XXXX] OK
programmable timer OK

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:

Your AVATAR TC1 can perform two types of diagnostic disk tests: a read-only test, and read-after-write test. They test both the diskette drive and the diskette itself. For this reason, both disk tests require a formatted diskette in the drive being tested.

- * **The read-only test** is a nondestructive test, so you can use any formatted diskette. The drive will attempt to read every sector on the diskette.
- * **The read-after-write test** is a more rigorous test of the drive and the diskette, but it requires a formatted **scratch** diskette. It first overwrites the entire diskette being tested with a special data pattern. It then verifies that it can read exactly what it wrote in every sector.

Disk Test Failures

The disk tests report soft and hard errors as they occur. The system reports the side, track and sector where the error occurred, the status of the error, and the number of retries. The number of retries for a hard error is always 10. (The system reports this as the hexadecimal "A").

At the end of the disk test, the system reports the number of sectors that were read or written and summarizes the error data.

sectors read/written: 0190/0190
seek/hard r-w/soft r-w/data verify errors: 0000/0000/0000/0000

SOFT ERRORS:

A Soft error is an error that your system can recover from. Soft errors provide a warning that your diskette is wearing out, or, on rare occasions, that a problem is developing in your disk drive.

When the system encounters a write or read error, it will retry reading or writing to that sector of the diskette up to ten times. If it manages to complete that write or read operation in ten tries, it reports a soft error.

Soft errors, are most often caused by worn diskettes. Before you do anything else, try rerunning the test using a new formatted diskette in the same drive. If this eliminates the soft errors, then you know that the problem is with your diskette.

A diskette with soft errors is deteriorating and will only get worse! Use the copy option of the DISKOPS utility to back-up the diskette with the soft errors, then throw it away.

HARD ERRORS:

A hard error is an error that your system cannot recover from. If the system cannot complete a write or read operation in ten tries, it classifies the problem as a hard error.

Any information which was stored in the sector of the diskette where the hard error occurred will be lost. As with soft errors, most hard errors are caused by damaged or worn diskettes.

If you should encounter a hard error, place a new formatted diskette in the drive and repeat the test. If this eliminates the hard error, then you know that the problem was due to a bad diskette.

A diskette with a hard error is damaged or severely worn. Use the copy option of the DISKOPS utility to copy as much of the bad diskette as is possible. You may lose some of the information stored on that diskette. Throw the bad diskette away.

If hard errors persist, especially if you see them in the same sectors on a number of different diskettes, you probably have a serious problem with that disk drive. You should have the disk drive serviced right away.

Do not use a disk drive that produces repeated hard errors. You could lose data or damage your diskettes.

TESTING PROCEDURE

1. The self-diagnostic tests are automatic. They run when you first power on your AVATAR TC1 with the LINE/LOCAL switch set to LOCAL.

Welcome to the AVATAR TCl

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ram OK
rom [rev XXXX] OK
programmable timer OK

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:

2. The system gives you the choice of just pressing the RETURN (CR) key to boot the CP/M operating system, or typing "D" to indicate that you want to run a disk test.

You cannot run a disk test after you boot the system.

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

3. If you decide to run a disk test, the system asks you which drive you want to test.

If you have a single drive system, you must always select drive A.

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

insert a FORMATTED diskette in drive A

(R)ead only test, or (W)rite with read after write verify test? W

4. Insert a formatted diskette in the drive, then type either "R" for the read-only test or "W" for the write-after-read test.

If you select the read-only test:

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

insert a FORMATTED diskette in drive A

(R)ead only test, or (W)rite with read after write verify test? R

disk test in progress, press CONTROL-C for status

sectors read/written: 0190/0000

seek/hard r-w/soft r-w/data verify errors: 0000/0000/0000/0000

DISK TEST COMPLETE

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:

- A. The test will run until it is completed or until you type CONTROL-C.
- B. If you type CONTROL-C, the system will give you a summary of the sectors tested and the errors which were found.

You then have the option of aborting the test or continuing.

- C. If you abort the test, you will be given the option of booting the CP/M operating system or running another disk test.

If you continue the test, the system will report any soft or hard errors it detects and give you a summary of the test results. Then you will be given the option of booting the CP/M operating system or running another disk test.

If you select the read-after-write test:

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

insert a FORMATTED diskette in drive A

(R)ead only test, or (W)rite with read after write verify test? W

WARNING: ALL CONTENTS OF THIS DISKETTE WILL BE LOST

(A)abort or (C)ontinue? C

A. The system reminds you that this is a destructive test and that any information which is stored on the diskette being tested will be lost.

B. You must type either "C" to continue with the read-after-write test or "A" to abort the test.

If you abort the test, you will be given the option of running another disk test or booting the enhanced CP/M operating system.

If you continue with the test, the system asks again if you are sure that you want to go on.

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

insert a FORMATTED diskette in drive A

(R)ead only test, or (W)rite with read after write verify test? W

WARNING: ALL CONTENTS OF THIS DISKETTE WILL BE LOST

(A)abort or (C)ontinue? C

ARE YOU SURE? - (Y)es or (N)o? Y

C. You must type either "Y" to continue the read-after-write test or "N" to abort it.

The system makes you respond twice for your own protection.

If you abort the test at this point, you will be given the option of running another disk test or booting the enhanced CP/M operating system.

FLOPPY DISK DIAGNOSTIC

diskette drive to test (A or B)? A

insert a FORMATTED diskette in drive A

(R)ead only test, or (W)rite with read after write verify test? W

WARNING: ALL CONTENTS OF THIS DISKETTE WILL BE LOST

(A)abort or (C)ontinue? C

ARE YOU SURE? - (Y)es or (N)o? Y

disk test in progress, press CONTROL-C for status

sectors read/written: 0190/0190

seek/hard r-w/soft r-w/data verify errors: 0000/0000/0000/0000

DISK TEST COMPLETE

insert diskette to boot in drive A

press RETURN to boot CP/M, or (D) for disk test:

- D. The test will run until it is completed or until you type CONTROL-C.
- E. If you type CONTROL-C, the system will give you a summary of the sectors tested and the errors which were found.
- You then have the option of aborting the test or continuing.
- F. If you abort the test, you will be given the option of booting the CP/M operating system or running another disk test.

If you continue the test, the system will report any soft or hard errors it detects and give you a summary of the test results. Then you will be given the option of booting the CP/M operating system or running another disk test.

You must reformat the diskette you used in the read-after-write test before you can use it again in your AVATAR TC1. To reformat the diskette, use the format option of the DISKOPS Utility.

SECTION 2 THE DISKOPS UTILITY

DISKOPS is AVATAR's disk operations utility. You will use the DISKOPS Utility to perform three essential functions:

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit?

- A. Format (initialize) a diskette for use on the system
- B. Copy (backup) an entire diskette
- C. Copy the enhanced CP/M operating system only from one diskette to another

2.A FORMATTING A DISKETTE FOR USE ON THE SYSTEM

BEFORE YOU CAN USE A DISKETTE IN YOUR AVATAR TC1 IT MUST BE FORMATTED (OR INITIALIZED) WITH THE AVATAR TC1 FORMAT.

Single-Sided Formats:

- * A single-sided format resides entirely on one side of the diskette.
- * Diskettes which have a single-sided format may be used in either single- or double-sided drives.

Double-Sided Formats:

- * Double-sided formats reside on both sides of the diskette.
- * Double-sided formats have twice as many sectors and can store twice as much information as single-sided formats.
- * Double-sided formats can be used in double-sided drives only.

DRIVE TO FORMAT

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? F
Diskette to format (A or B)?

If you have a system with only one disk drive, you must always choose drive A.

If you have a system with two disk drives, you may choose either drive A or drive B. It is a good idea to always format your disks in drive B. This protects you from accidentally formatting your system diskette.

FORMAT ACCORDING TO DRIVE TYPE?

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? F

Diskette to format (A or B)? B

format according to the drive type - (Y)es or (N)o?

The system asks if you want the diskette format to be the same as the drive type.

When you format according to the drive type, the system will prepare a single-sided format in single-sided drives and a double-sided format in double-sided drives.

All disk drives can work with a single-sided format, but only double-sided drives can work with double-sided disks. If you have a double-sided drive, there may be times when you want to format a disk so it can also be used in a single-sided drive.

When to say YES:

- * If you have a single-sided drive.
- * If you have a double-sided drive, and you will be using that diskette on your system only.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? F

Diskette to format (A or B)? B

format according to the drive type - (Y)es or (N)o? Y

strike RETURN when ready ...

disk format in progress ...

disk format complete ...

When to say NO:

- * If you have a double-sided drive, but you may wish to use that diskette on an AVATAR TC1 with single-sided drives.

If you say NO, the system will ask if you want a single- or double-sided format.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? F
Diskette to format (A or B)? B
format according to the drive type - (Y)es or (N)o? N
(S)ingle or (D)ouble sided? S
strike RETURN when ready ...
disk format in progress ...
disk format complete ...

CAUTIONS:

- * Use a blank or scratch diskette only. The format option of the DISKOPS Utility erases any information which is currently stored on the diskette being formatted.
- * If you format a diskette with a double-sided format, you may reformat that diskette in a single-sided drive to a single-sided format. But, if you then try to use that diskette in a double-sided drive, you will have a problem.

A single-sided drive has only one head, so it can read and write only one side of the diskette. When it reformats a disk, it cannot erase what is left of the old double-sided format. If you then try to use that diskette in a double-sided drive you will have problems.

If this happens, you MAY decide not to use that diskette in a double-sided drive or you reformat the diskette to a double-sided format in a double-sided drive.

If you want to save any of the information you have stored on that disk you must place it in a single-sided drive. Then you can use the DISKOPS Utility to make a duplicate copy of that diskette.

ERROR MESSAGES

MESSAGE: WARNING: drive A is not ready
 (A)abort or (C)ontinue after drive is ready

or

WARNING: drive B is not ready
(A)abort or (C)ontinue after drive is ready

Cause: * No diskette in the drive selected for the
 format option.
 * Diskette is not inserted properly.
 * Drive door is not closed properly.

Correction: * Insert a diskette properly in the drive, then
 type "C" to continue.
 * Type "A" to abort the format option and return
 to the DISKOPS Utility Main menu.

MESSAGE: WARNING: disk A is write-protected
 (A)abort or (C)ontinue after write-enable?

or

WARNING: disk B is write-protected
(A)abort or (C)ontinue after write-enable?

Cause: * The diskette you are trying to format has a
 write-protect tab on it.
 * The diskette you are trying to format was
 inserted upside down. (The label is on the
 left side of the diskette. It should be on
 the right side.)

Correction: * Check the diskette for proper insertion. If
 it is upside down, reinsert it with the
 read-write notch on the top and the label on
 the right side, then type "C" to continue.
 * Insert a diskette which is not write-protected
 in the drive, then type "C" to continue.
 * Remove the write-protect tab from the current
 diskette, reinsert it in the drive, then type
 "C" to continue.
 * Type "A" to abort the format option and return
 to the DISKOPS Utility Main menu.

MESSAGE: WARNING: unable to format media as
double-sided
disk format complete ...

Cause: You told the system not to format according to
drive type. Then you asked for a two-sided
format in a single-sided drive.

Correction: No correction is needed. The system gave your
diskette a single-sided format.

2.B COPYING AN ENTIRE DISKETTE

The Copy option of the DISKOPS Utility lets you copy the contents of one entire diskette to another diskette.

Don't forget to back-up your diskettes on a timely and regular basis. You should maintain at least two copies of all important files. It is a good idea to back-up your working diskettes every time you finish using your AVATAR TC1.

THE SOURCE AND DESTINATION DISKETTES

The source diskette is the diskette that you are copying from. The system asks about the source diskette first.

The destination diskette is the diskette that you are copying to.

The destination diskette must be formatted.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? C
Source diskette (A or B)?
Destination diskette (A or B)?

If you have a single disk drive system, the source and the destination diskette must both be in drive A.

If you have a two disk drive system, you can select either drive for either the source or the destination diskette. You can select the same drive to be both the source and the destination.

If you have a two disk drive system, it is a good idea to always put the source diskette in drive A and the destination diskette in drive B.

CAUTION: Use a blank or scratch destination diskette only. The Copy Option will overwrite your destination diskette. Any information stored on your destination diskette will be lost.

COPY VERIFICATION (Two Disk Drive Systems Only)

After the entire diskette has been copied, the system compares the destination with the original source diskette to verify that all the information has been copied correctly.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? C
Source diskette (A or B)? A
Destination diskette (A or B)? B
strike RETURN when ready ...
copy in progress ...
copy pass complete ...
verify in progress ...
copy/verify complete ...

HOW THE COPY OPTION WORKS ON SINGLE DRIVE SYSTEMS

- * On single drive systems you must alternately place the source diskette and destination diskette in drive A.
- * The system first reads information from the source diskette to system memory.
- * When the system memory is full, the system asks you to insert the destination diskette into the drive.
- * The system writes the information from the system memory to the destination diskette.
- * The system asks you to put the source diskette back in the drive.
- * The system remembers where it was so it can start reading into memory where it left off.
- * Again, when system memory is full, the system asks you to put the destination diskette into the drive so it can write down the information.
- * The system continues to transfer information from the source diskette to system memory and then to the destination diskette until the entire source diskette has been copied.

* There is no verify pass on single drive systems.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? C
Source diskette (A or B)? A
Destination diskette (A or B)? A

warning: single drive disk copy requested

insert SOURCE diskette, strike RETURN when ready ...
copy in progress ...
insert DESTINATION diskette, strike RETURN when ready ...
insert SOURCE diskette, strike RETURN when ready ...
insert DESTINATION diskette, strike RETURN when ready ...
insert SOURCE diskette, strike RETURN when ready ...
insert DESTINATION diskette, strike RETURN when ready ...
insert SOURCE diskette, strike RETURN when ready ...
insert DESTINATION diskette, strike RETURN when ready ...
disk copy complete ...

ERROR MESSAGES

MESSAGE: WARNING: drive A is not ready
(A)abort or (C)ontinue after drive is ready

or

WARNING: drive B is not ready
(A)abort or (C)ontinue after drive is ready

Cause: * There is no diskette in the drive selected for
the source or destination diskette.

* Either the source or the destination diskette
is not inserted properly.

* Either the source or the destination drive
door is not closed properly.

Correction: * Insert a diskette properly in the drive, then
type "C" to continue.

* Type "A" to abort the copy option and return
to the DISKOPS Utility Main menu.

MESSAGE: destination diskette is unformatted

or

source diskette is unformatted

Cause: * Either the source or the destination diskette has not been formatted.

Correction: * Place a properly formatted diskette in the drive, then try again.

MESSAGE: WARNING: disk A is write-protected
(A)abort or (C)ontinue after write-enable?

or

WARNING: disk B is write-protected
(A)abort or (C)ontinue after write-enable?

Cause: * The destination diskette has a write-protect tab on it.

* The destination diskette was inserted upside down. (The label is on the left side of the diskette. It should be on the right side.)

Correction: * Check the destination diskette for proper insertion. If it is upside down, reinsert it with the read-write notch on the top and the label on the right side, then type "C" to continue.

* Insert a diskette which is not write-protected in the drive, then type "C" to continue.

* Remove the write-protect tab from the destination diskette, reinsert it in the drive, then type "C" to continue.

* Type "A" to abort the copy option and return to the DISKOPS Utility Main Menu.

MESSAGE: soft error on drive A, retry in progress

OR

soft error on drive B, retry in progress

Note: This message may be repeated many times.

Cause: * The system detected a soft error on either the source or destination diskette.

* Most soft errors are caused by worn diskettes.

Correction: No immediate correction is necessary.

MESSAGE: WARNING: disk error on drive A
(A)abort (C)ontinue or (R)etry?

or

WARNING: disk error on drive B
(A)abort (C)ontinue or (R)etry?

Note: This message is always preceded by at least ten soft error warnings.

Cause: * There is a hard error on the diskette. The system is unable to access a sector on the disk, even after ten retries.

* Most hard errors are caused by badly worn or damaged diskettes.

Correction: If the hard error is on the destination diskette:

* Type "A" to abort the copy option and return to the DISKOPS Utility Main menu.

* Try again using a new formatted destination diskette.

If the hard error is on the source diskette:

* Type "R" to try reading the bad sector again. Perhaps you can recover the data stored in that sector.

- * If the hard error persists, type "C" to tell the system to continue. The system will copy whatever it can read from the bad sector. You will recover as much data as possible from the source diskette, but some of it may be incomplete or garbled.
- * If you type "A" you will abort the copy option and return to the DISKOPS Utility Main menu.

MESSAGE: **WARNING: data on source and destination
diskette does not agree
(A)abort or (C)ontinue?**

Note: This message will only appear on systems with
two disk drives.

Cause: The system has detected an error while
verifying that the destination diskette is an
exact copy of the source diskette.

- Correction:**
- * If you had hard errors on your source diskette, type "C" to continue the copy option.
 - * If you did not have problems with your source diskette, type "A" to abort the copy option and return to the DISKOPS Utility Main menu. Try the copy again using a new formatted destination diskette.
 - * If this problem persists with different source and destination diskettes, use the diagnostic disk test to see if you have a problem with your disk drive.

2.C COPYING THE ENHANCED CP/M OPERATING SYSTEM ONLY

The **System Copy** option of the DISKOPS Utility lets you copy the enhanced CP/M operating system from one diskette to another.

Copying the enhanced CP/M operating system does not reduce the number of usable sectors on a diskette. The CP/M operating system tracks are reserved and may not be accessed by application programs.

You may use any formatted diskette as your destination diskette. You do not need a scratch diskette. The System Copy option does not interfere with any information stored on the destination diskette.

It is always convenient to have a copy of the enhanced CP/M operating system on a diskette. There are times when your AVATAR TC1 may need to "warm boot" the operating system.

As with the Copy option you must tell the system which drive holds the source diskette and which drive holds the destination diskette.

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? S
Source diskette (A or B)? A
Destination diskette (A or B)? B
strike RETURN when ready ...
copy in progress ...
copy pass complete ...
verify in progress ...
copy/verify complete ...

Single drive systems perform the System Copy option the same way they perform the copy option: you **alternately** place the source and destination diskettes in the drive.

2.D Quitting the DISKOPS Utility

Any time you are in the DISKOPS Utility Main menu, you may return to the enhanced CP/M operating system by typing "Q".

DISKOPS- disk format/copy/copy system utility- revision XXXX

(F)ormat? (C)opy? (S)ystem copy? (Q)uit? Q

You can type CONTROL-C to get back to the DISKOPS Utility Main Menu. CONTROL-C will not get you out of the DISKOPS Utility.

ERROR MESSAGES

MESSAGE: WARNING: drive A is not ready
 (A)abort or (C)ontinue after drive is ready

 or

 WARNING: drive B is not ready
 (A)abort or (C)ontinue after drive is ready

Cause: * There is no diskette in the drive selected for
 the source or destination diskette.

 * Either the source or the destination diskette
 is not inserted properly.

 * Either the source or the destination drive
 door is not closed properly.

Correction: * Insert a diskette properly in the drive, then
 type "C" to continue.

 * Type "A" to abort the system copy option and
 return to the DISKOPS Utility Main menu.

MESSAGE: destination diskette is unformatted

 or

 source diskette is unformatted

Cause: * Either the source or the destination diskette
 has not been formatted.

Correction: * Place a properly formatted diskette in the
 drive, then try again.

MESSAGE: WARNING: disk A is write-protected
 (A)abort or (C)ontinue after write-enable?

 or

 WARNING: disk B is write-protected
 (A)abort or (C)ontinue after write-enable?

Cause: * The destination diskette has a write-protect
 tab on it.

 * The destination diskette was inserted upside
 down. (The label is on the left side of the
 diskette. It should be on the right side.)

- Correction:**
- * Check the destination diskette for proper insertion. If it is upside down, reinsert it with the read-write notch on the top and the label on the right side, then type "C" to continue.
 - * Insert a diskette which is not write-protected in the drive, then type "C" to continue.
 - * Remove the write-protect tab from the destination diskette, reinsert it in the drive, then type "C" to continue.
 - * Type "A" to abort the system copy option and return to the DISKOPS Utility Main menu.

MESSAGE: soft error on drive A, retry in progress

or

soft error on drive B, retry in progress

Note: This message may be repeated many times.

- Cause:**
- * The system detected a soft error on either the source or destination diskette.
 - * Most soft errors are caused by worn diskettes.

Correction: No immediate correction is necessary.

MESSAGE: WARNING: disk error on drive A
(A)abort (C)ontinue or (R)etry?

or

WARNING: disk error on drive B
(A)abort (C)ontinue or (R)etry?

Note: This message is always preceded by at least ten soft error warnings.

- Cause:**
- * The system is unable to access a sector on the disk, even after ten retries. There is a hard error on the diskette.
 - * Most hard errors are caused by badly worn or damaged diskettes.

Correction: If the hard error is on the destination diskette:

- * Type "A" to abort the system copy option and return to the DISKOPS Utility Main menu.

- * Try again using a new formatted destination diskette.

If the hard error is on the source diskette:

- * Type "R" to try reading the bad sector again. Perhaps you can recover the data stored in that sector.
- * If the hard error persists, type "A" to abort the system copy option and return to the DISKOPS Utility Main menu. Then repeat the system copy using the CP/M -- AVATAR UTILITIES MASTER diskette as your source diskette.
- * THE CONTINUE OPTION IS NOT RECOMMENDED FOR A SYSTEM COPY. If you type "C", the system will copy whatever it can read from the bad sector. At best you will wind up with an untrustworthy copy of the enhanced CP/M operating system on your destination disk.

MESSAGE: **WARNING: data on source and destination
diskette does not agree
(A)abort or (C)ontinue?**

Note: This message will only appear on systems with
two disk drives.

Cause: The system has detected an error while
verifying that the destination diskette is an
exact copy of the source diskette.

Correction: * Type "A" to abort the system copy option and
return to the DISKOPS Utility Main menu. Try
the system copy option again using a new
formatted destination diskette and the CP/M --
AVATAR UTILITIES MASTER diskette as the source
diskette.

* THE CONTINUE OPTION IS NOT RECOMMENDED FOR A
SYSTEM COPY. At best you will wind up with
an untrustworthy copy of the enhanced CP/M
operating system on your destination diskette.

SECTION 3

THE CONFIGURATION UTILITY

The CONFIGuration Utility lets you match your AVATAR TC1 to the specific communication characteristics of your terminal, host computer system and local printer.

You must configure your system when you initially install your AVATAR TC1. You will normally not need to use the CONFIGuration Utility again unless you change your terminal, host system or local printer.

The CONFIGuration Utility is logically divided into the three functions which are presented on the CONFIGuration Utility Main menu.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                           **
**      copyright (c) 1982 3R Computers, Inc.      **
**                                           **
**                               Westboro, Mass.    **
**                                           **
*****
```

***** CONFIGuration options *****

- A) Specify PRINTER characteristics
- B) Specify TERMINAL characteristics
- C) Specify HOST characteristics

<ESC> to escape, '?' to redraw

ENTER SELECTION :

3.A SPECIFYING PRINTER CHARACTERISTICS

The first option on the CONFIGuration Utility Main menu lets you specify and test the communication characteristics of your local printer. When you select this option, the system displays the Printer Configuration Options menu.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility rev. XXXX  **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.         **
**                        Westboro, Mass.              **
*****
```

***** Printer configuration options *****

- A) Specify printer characteristics
 - B) List printer characteristics
 - C) Printer test
 - D) Make printer selections permanent
- <ESC> to escape, '?' to redraw

ENTER SELECTION :

3.A.A - Specifying Printer Characteristics.

This is the printer configuration option you will use to select or change the settings for your printer.

When you select this option, your AVATAR TC1 displays a series of menus that let you specify the communication characteristics your printer expects.

The current setting on each of these menus is indicated in brackets. You may enter a selection or just press the RETURN (CR) key to leave the current setting unchanged.

When you have completed specifying the characteristics of your printer, or when you press the ESCAPE (ESC) key, you will return to the Printer Configuration Options menu.

Communication Mode

In serial mode, the cable between the system and the printer can only carry one bit at a time. The printer assembles groups of bits back into characters.

In parallel mode, there is a separate wire for each bit in a character. As a result, the cable can carry an entire character at a time.

You must buy optional hardware to be able to connect a parallel printer to your TC1. Unless you have bought and installed the optional parallel printer hardware, you must have a serial printer.

IF YOU HAVE A PARALLEL PRINTER, the CONFIGuration utility will immediately return you to the Printer Configurations Options menu.

IF YOU HAVE A SERIAL PRINTER, you must select additional printer communication characteristics.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.        **
**                        Westboro, Mass.            **
*****
```

***** Printer Characteristics Menu *****

Communications mode (select one) :

- A - Serial
- B - Parallel

ENTER SELECTION [A]:

Baud Rate (Serial printers only)

Baud rate (select one) :

- A - 300
- B - 600
- C - 1200
- D - 2400
- E - 4800
- F - 9600

ENTER SELECTION [A]:

The baud rate is the communications line speed, not the printing speed. Printing speed is measured in characters per second (cps). The baud rate is many times greater than the number of characters per second.

You must select the baud rate that your printer expects.

In this example, notice the [A] in the ENTER SELECTION line. This tells you that the current communications line speed is 300 baud.

You may enter a selection or just press the RETURN (CR) key to leave the baud rate at 300.

Parity (Serial printers only)

Parity (select one) :
A - space
B - mark
C - odd
D - even
E - none
ENTER SELECTION [E]:

Parity is a test that some devices use to detect errors in transmission. Sometimes the character the device receives is different from the character your system sent.

Those printers that check for parity usually print a special character when a parity error is detected.

If your printer does not check for parity, select "E".

If your printer does perform a parity check, determine if it uses odd, even, space or mark parity.

Bits Per Character (Serial printers only)

Bits per character (select one) :
A - 5 bits
B - 6 bits
C - 7 bits
D - 8 bits
ENTER SELECTION [D]:

Almost all printers in use today use either seven or eight bits to represent a single character of data. Those printers which use five or six bits per character usually print only upper case letters.

If your printer prints both upper and lower case letters and does not check for parity, you should select seven bits per character.

If your printer prints both upper and lower case letters and does perform a parity check, you should select eight bits per character.

Stop Bits (Serial printers only)

Stop bits (select one) :
A - 1 stop bit
B - 1.5 stop bits
C - 2 stop bits
ENTER SELECTION [A]:

Stop bits tell the printer that one character has ended and it should get ready to receive the next character.

If you select too few stop bits, your printer will have problems determining where one character ends and the next one begins.

If you put in an extra stop bit, it will slow the printer down a little, but not enough to make any noticeable difference.

If you are not sure how many stop bits your printer expects, you should specify one stop bit.

Protocol (Serial printers only)

Protocol (select one) :
A - none
B - XON/XOFF
C - ETX/ACK
D - Hardware busy
ENTER SELECTION [B]:

The protocol is the way in which a printer tells the system when to temporarily stop sending characters and when to resume sending characters again.

If the baud rate is high enough, a system can send out characters faster than your printer can print them. Most printers have small memories or buffers where they store the characters which are waiting to print. As the buffer fills up with characters, the printer needs a way to tell the system to stop sending for a while. After the printer has emptied the buffer, it needs a way to tell the system to start sending again. Most printers are designed to time their signals to the system so that the buffer is never completely full or completely empty.

For example, some printers send an XOFF character when they want the system to stop sending data. These printers send an XON character when they are ready to receive more data to print.

In the same way, some printers use ETX and ACK characters or a hardware busy signal.

Select the protocol that your printer uses.

After you specify the protocol, the CONFIGuration Utility returns you to the Printer Configuration Options menu.

3.A.B - Listing Printer Characteristics

This option tells the system to show you a list of the current printer characteristic settings.

```
*****
**  AVATAR-TCl System CONFIGuration Utility  rev. XXXX  **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.          **
**                        Westboro, Mass.              **
*****
```

***** Current Printer Characteristics *****

Baud rate:	Parity:
9600	NONE
Bits per char:	Stop bits:
8	1

XON/XOFF has been selected

Printer is set up for SERIAL communications

STRIKE RETURN TO CONTINUE :

This option only lets you look at the current settings. If you want to change any of these settings, you must use the Specify Printer Characteristics option which was presented in the previous section.

After ten seconds, you will be returned to the Printer Configuration Option menu.

You may press the RETURN (CR) key if you want to return to the Printer Configuration Options menu before the ten seconds are up.

3.A.C - Printer Test

This option lets you check that you have set your printer characteristics correctly. It sends a test pattern of all the printable characters to your printer. You can easily see if your printer is printing them correctly.

```
*****
** AVATAR-Tcl System CONFIGuration Utility rev. XXXX **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.      **
**                               Westboro, Mass.    **
*****
***** Printer test *****
```

STRIKE ANY KEY TO RETURN TO MAIN MENU

```
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
!"#$%&'()*+,-./0123456789:;<=>?ABCDEFGHIJKLMNOPQRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~
```

If the printer test looks good, you should let it run for at least two full pages so you can be sure that you have set the protocol correctly.

Press any key to halt the test and return to the Printer Configuration Options menu.

Your printer may continue to print for a while after you stop the test. Many printers have a small local memory or buffer. Even after you stop the test, the printer may continue to print until the buffer is empty. On a few printers, the buffer may hold an entire page or more of text.

Printer Test Failure (Serial Printers Only)

There is no way of predicting how your printer will react if you have set the printer characteristics incorrectly. The printer may just sit there, or it may print nonsense characters or it may even start spewing out paper.

- * If the printer does nothing at all, the problem is most likely the wrong baud rate. Try specifying a different baud rate and rerunning the printer test.
- * If the printer prints solid blocks or diamond-shaped characters, the problem is most likely due to an incorrect parity setting. Solid blocks and diamonds are common parity error characters.
- * If the printer prints characters and line feeds at random, the problem could be the number of bits per character or the number of stop bits. Specify two stop bits per character, then run the test again.

If the printer prints upper and lower case letters and checks for parity, specify 8 bits per character.

If the printer prints upper and lowercase letters and does not check for parity, specify 7 bits per character.

If the printer prints uppercase letters only, specify either 5 or 6 bits per character.

- * If the printer loses characters, the problem is probably due to the protocol.

3.A.D - Make Printer Selections Permanent

This option tells your AVATAR TC1 system to permanently store your printer characteristic settings.

Do not chose this option until you have run a satisfactory printer test for at least two full pages.

3.B SPECIFYING THE TERMINAL CHARACTERISTICS

The second option on the CONFIGuration Utility Main menu lets you specify your terminal's communication characteristics. When you select this option, the system displays the Terminal Configuration Options menu.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                          **
**      copyright (c) 1982 3R Computers, Inc.      **
**                                  Westboro, Mass.  **
*****
```

***** Terminal Configuration options *****

- A) Specify Terminal Type
- B) List current terminal characteristics
- C) Terminal attributes test
- D) Make terminal type permanent

<ESC> to escape, '?' to redraw

ENTER SELECTION :

3.B.A - Specifying The Terminal Type

Your AVATAR TC1 automatically sets the communication line characteristics (baud rate, number of bits per character, parity and number of stop bits) to match your terminal when you used the **TERMINAL SETUP** button.

Now it needs to know how to tell your terminal how to position the cursor. Your AVATAR TC1 also needs to know how to tell your terminal when to use bright and dim fields, (If your terminal supports bright and dim fields.) In most cases, you will simply have to tell your AVATAR TC1 which terminal you are using. Your AVATAR TC1 knows how to control many popular terminals.

** AVATAR-TCl System CONFIGuration Utility rev. XXXX **
**
** copyright (c) 1982 3R Computers, Inc. **
** Westboro, Mass. **

***** Terminal Type Menu *****

- | | |
|---------------------------|-------------------------------|
| A) Data General 605X | L) Televideo 910 |
| B) Data General D200 | M) Televideo 912C/920C |
| C) Digital VT52 | N) Televideo 925 |
| D) Digital VT100 | O) Televideo 950 |
| E) Hazeltine ESPRIT | P) Adds VIEWPOINT |
| F) Hazeltine 1410 | Q) Adds 520 |
| G) Hazeltine 1421 | R) Adds REGENT 25 |
| H) Hazeltine 1500 series | S) Adds CONSUL 580 |
| I) Lear Siegler ADM-3A | T) Kimtron ABM-85 |
| J) Lear Siegler ADM-5/2.1 | U) Visual Technology 200 |
| K) Lear Siegler ADM-31 | V) User-defined terminal type |

What terminal are you currently using- ENTER SELECTION [P]:

Type the appropriate letter to indicate the terminal you are using.

If your terminal is a DEC VT100, you will be asked if your terminal is set for smooth or jump scrolling and whether your terminal has the advanced video option.

***** VT100 Options *****

Please enter which scrolling option you are using

- A) Jump scrolling
- B) Smooth scrolling

ENTER SELECTION [A]:

An advanced video option is available for the VT100
Does your terminal have it?

- A) My terminal is NOT equipped with the advanced video option
- B) My terminal is equipped with the advanced video option

ENTER SELECTION [A]:

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                          **
**      copyright (c) 1982 3R Computers, Inc.      **
**                                  Westboro, Mass.  **
*****
```

***** Current Terminal Characteristics *****

Output terminal type is:
Adds VIEWPOINT

Baud rate:	Parity:
9600	EVEN
Bits per char:	Stop bits:
7	1

STRIKE RETURN TO CONTINUE :

The terminal line characteristics (baud rate, parity, bits per character and number of stop bits) were set automatically when you used the SETUP button. The only way to change them is to shut your AVATAR TC1 off and then go through setup all over again.

If the terminal line characteristics were not correct, you never would have gotten this far.

After ten seconds, you will be returned to the Terminal Configuration Options menu.

You may press the RETURN (CR) key if you want to return to the Terminal Configuration Options menu before the ten seconds are up.

3.B.C - Terminal Attributes Test

When you select this option, the system will test its ability to control the attributes of your terminal.

The terminal attributes test consists of three screens. Each screen should last for ten seconds, unless you press the RETURN (CR) key.

* The first screen explains the test. It also demonstrates that the system can display readable text on your terminal.

How To Tell If Your VT100 is Set For Smooth or Jump Scroll:

- * Press the SET-UP key on your VT100 keyboard. You are now in set-up A.
- * Press the number 5 key on the main keyboard. You are now in set-up B.
- * If the first number in the first set-up block is "0", your VT100 terminal is set for jump scroll.
- * If the first number in the first set-up block is "1", your VT100 terminal is set for smooth scroll.
- * Press the SET-UP key on your VT100 keyboard to return to terminal mode.
- * Type a QUESTION MARK (?) to tell the system to redraw the current screen.

IF your terminal is not listed on this menu, but is designed to emulate a terminal which is listed, then type the appropriate letter to indicate the terminal you are emulating.

If your terminal is not listed on this menu and your terminal is not designed to emulate a terminal which is, then you have a user-defined terminal type. This is option "V" on the Terminal Type menu.

Creating a user-defined terminal type is not difficult, but it does require a detailed knowledge of the control sequences for your terminal.

Instructions for creating a user-defined terminal type are presented in the Appendix.

IF YOU DON'T HAVE A DETAILED KNOWLEDGE OF YOUR TERMINAL'S CONTROL SEQUENCES, PLEASE GET THE USER'S MANUAL FOR YOUR TERMINAL AND THEN CALL THE AVATAR TOLL-FREE CUSTOMER SERVICE LINE. AVATAR's service people will help you create your user-defined terminal type.

3.B.B - Listing the Current Terminal Characteristics

This option tells the system to display a list of the current terminal characteristic settings.

The option only lets you look at the settings. If you want to change the terminal type, you will have to use the Specify Terminal Characteristics option which was presented in the previous section.

```
*****
**  AVATAR-TCl System CONFIGuration Utility  rev. XXXX  **
**                                                                 **
**          copyright (c) 1982 3R Computers, Inc.          **
**                               Westboro, Mass.            **
*****
****Terminal test ****
```

The terminal will be configured as per your specifications. Then some screens will be output, along with an explanation of what should be happening. If things don't work right, do not worry- your old terminal characteristics will be restored. Whatever happens, don't make your terminal stuff permanent until this works properly!!!

Each screen will be output for ten seconds, or until you strike the RETURN key, whichever comes first.

When all of the appropriate screens have been output, you will be returned to the Terminal Configuration menu.

* The second screen demonstrates bright and dim fields. Ignore this test if your terminal does not have the ability to display bright and dim fields.

This message should be bright

...and this message will be dim if your terminal supports it

* The third screen demonstrates the system's ability to position the cursor and control the location of displayed text. You should see an asterisk [*] in each corner of the screen with the appropriate row and column locations in square brackets [].

```
*  <-- this is [1,1]                this is [1,79] --> *
```

There should be asterisks at the four corners of this screen.

```
*  <-- this is [24,1]                this is [24,79] --> *
```

3.B.D - Make Terminal Characteristics Permanent

This option tells your AVATAR TC1 to store your terminal characteristic settings.

3.C SPECIFYING THE HOST COMPUTER SYSTEM CHARACTERISTICS

The third, and last option on the CONFIGuration Utility Main menu lets you specify your host computer system's characteristics.

When you select this option, the system displays the Host Configuration Options menu.

```
*****
** AVATAR-TC1 System CONFIGuration Utility rev. .XXXX **
**                                                              **
**      copyright (c) 1982 3R Computers, Inc.                **
**                               Westboro, Mass.              **
**                                                              **
*****
```

***** Host Configuration options *****

- A) Specify Host type
- B) Specify Host Line characteristics
- C) Define character translation tables
- D) List Host characteristics
- E) Make Host configuration permanent

<ESC> to escape, '?' to redraw

ENTER SELECTION :

3.C.A - Specifying The Host Type

In most cases, you will tell your AVATAR TC1 which operating system is running on your host computer system. The file transfer command formats for many popular operating systems have been predefined.

```
*****
** AVATAR-TC1 System CONFIGuration Utility rev. XXXX **
**                                                                 **
**      copyright (c) 1982 3R Computers, Inc.                **
**                                                                 **
**              Westboro, Mass.                             **
*****
```

*in Ver 1.4001
gone to system
Ctrl G!
-) use def.
system*

***** Host System Specification *****

- | | |
|-------------------|------------------------|
| A) no host system | H) TOPS-10 |
| B) AOS/VS | I) TOPS-20 |
| C) AOS | J) RSTS |
| D) RDOS | K) RSX-11/M |
| E) Primos | L) UNIX version 7 |
| F) UNIX version 6 | M) User defined system |
| G) VAX/VMS | |

<ESC> to escape, '?' to redraw

ENTER SELECTION [A]:

If you are using a host system which is listed on this menu, type the appropriate letter. Your AVATAR TC1 already knows how to transfer ASCII files to and from this system.

If you are using your AVATAR TC1 as a stand-alone system, then type "A" to tell your AVATAR TC1 that you have no host system.

If you are using a host system which is not listed on this menu, type "M" to tell your AVATAR TC1 that you, the user, will define your host system.

CREATING A USER-DEFINED HOST SYSTEM

The CONFIGuration Utility lets you create a user-defined host system. If you are not familiar with the system commands for your host computer's operating system, you may need the assistance of your host system manager.

When you create a user-defined host, you are actually creating a command file which tells the PASSTHRU Utility how to command your host system to co-operate in ASCII file transfers. Since you will be telling your AVATAR TC1 how to send host system commands, you must follow certain conventions:

You must type the entire command line. Blank spaces in the right places and carriage returns (or new lines) are often essential elements in the command.

All control characters in the command line must be preceded by a backslash (\). This tells your AVATAR TC1 that the next special character is part of the command line and not an AVATAR TC1 function.

Control characters include any character you type while holding down the **CONTROL** (CTRL) key plus the **RETURN** (CR) key, the **NEW LINE** or **LINE FEED** key, the **ESCAPE** (ESC) key, and the **BACKSLASH** (\) key itself.

For example, when you want your AVATAR TC1 to send a **RETURN** (CR) to your host system, you must remember to type a \ before you press the **RETURN** (CR) key. If you forget the \ and just press the **RETURN** (CR) key, your AVATAR TC1 thinks that you have finished entering the command line and asks you for the next one.

If you want your AVATAR TC1 to send a **CONTROL-C** (^C) to your host system, you must type \^C in the command string. If you type just ^C, the **CONFIGURATION** Utility thinks you are commanding it to abort the current menu and you will find yourself back in the **Host Configuration Options** menu.

If you want your AVATAR TC1 to send a backslash as part of the command line, type **BACKSLASH BACKSLASH** (\)

When you want your AVATAR TC1 to insert the name of the file being transferred, press the **ESCAPE** (ESC) key, then type the letter "F".

When you want your AVATAR TC1 to pause before sending the rest of the command line, press the **ESCAPE** (ESC) key and then type a number. The number you type is the number of seconds that your AVATAR TC1 will pause.

It is generally a good idea, and sometimes essential, that your AVATAR TC1 pause for a few seconds while the host system processes a command. You will want to put a short pause between the command line and the terminating **CARRIAGE RETURN** (or **NEW LINE**). Sometimes the entire command line may contain more than one host system command. In that case, you may need a longer pause to allow the host system to execute one command before it processes the next command.

You can use the **DELETE** or **RUB OUT CHARACTER** key to delete a single character in the command line. Some terminals echo the character being deleted.

You can type **CONTROL-U** (^U) to delete the entire command line you are currently working on.

You cannot go back to correct a previously entered command line. If you discover a mistake in a command line after you have typed the **RETURN** (CR), you must type **CONTROL-C** (^C) to return to the **Host Configuration Options** menu. Then you can start specifying your host type over again.

Don't forget that blank spaces, carriage returns and new lines may be essential parts of the command line.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.        **
**                        Westboro, Mass.            **
*****
```

***** User-defined host command sequences *****

You have selected a User-defined host type, which means that your host system is not supported yet by PASSTHRU. This program will produce a disk file that PASSTHRU reads so it knows what host commands to use to transfer files. Note that the filenames can be defaulted here in CONFIG and in PASSTHRU- they are the same (HOSTDEF.TAB).

The entire host command must be entered- this must include carriage returns and line feeds where necessary. Single characters may be escaped by prefacing them with a backslash (\). Filenames can be entered with <esc>F; and delays can be entered via <esc><digit>

Enter the command for doing a directory list function; i.e., to find out if the file exists :

The system asks you to enter the command for performing a directory list on the host system. This is the command you would use to see if a particular file exists on your host system.

When you want to transfer a file from the host system, the PASSTHRU Utility will send this command line, then wait. This allows you to make sure that the file you want to transfer exists on your host system. If it isn't there or if it is not the file you want to transfer, you can type a CONTROL-C (^C) to abort the file transfer from the host.

If you were working on a TOPS 20 system with the EDT editor, you would type: DIR ESC-f ESC-2 \RETURN RETURN

Your AVATAR TC1 would display this command line as: DIR <filename> <2 sec pause> <CR>

You normally include the 2 second pause in the command line to protect you from any timing differences between your AVATAR TC1 and your host system.

Enter the command for inserting every character from the console directly into a file :

Your AVATAR TC1 needs to know the command line which orders your host system to create a new file and store information in that file. This is the command that the PASSTHRU Utility will use to initiate a file transfer to the host.

If you were working on a TOPS- 20 system, you would type: CREATE ESC-F ESC-2 \RETURN RETURN

Your AVATAR TC1 would display this line as: CREATE <filename> <2 sec pause> <CR>

Enter the character sequence for terminating the above data entry command :

This time your AVATAR TC1 needs to know how to tell your host system to close and store the file after the file transfer to the host has been completed.

If you were working on a TOPS 20 system you would type: \^C ESC 2 E \RETURN RETURN

The system would display: ^C <2 sec pause> E <CR>

Dont't forget to type the BACKSLASH (\) before the CONTROL-C or you will find yourself back in the HOST CONFIGURATION OPTIONS MENU. Then you would have to start defining your host system all over again.

Enter the command for typing out a file to the console :

Your AVATAR TC1 needs to know how to tell your host system to display the contents of a file on your terminal screen.

If you were working on a TOPS 20 system you would type: TYPE ESC-F ESC-2 \RETURN RETURN

The system would display: TYPE <filename> <2 sec pause> <CR>

Enter the host abort sequence :

The system asks you how to tell your host system to abort the current program or function. What do you type to tell the system to immediately stop what it is doing?

If you were working on a TOPS 20 system you would type: \^C

The system would display: ^C

Does your host support XON/XOFF (control-s and control-q) [y] :

Your AVATAR TC1 asks if your host system supports the XON and XOFF control characters. (Can you type CONTROL-S to tell your host system to stop sending information and CONTROL-Q to tell it to start again?)

If your host system supports XON/XOFF, press the RETURN (CR) key

If your host system does not support XON/XOFF, type "NO", then press the RETURN (CR) key.

Select the maximum transfer rate while sending files to the host :

- | | |
|-------------------------|--------------------------|
| A) 10 characters/second | D) 60 characters/second |
| B) 20 characters/second | E) 120 characters/second |
| C) 30 characters/second | F) 240 characters/second |

ENTER SELECTION [D]:

Your AVATAR TC1 asks you to select the maximum character transmission rate to your host. This information is needed because most hosts have limits on the character rate (typing speeds) they can support. (This question should not be confused with baud rate of your host, which refers to the speed your host port is configured.)

Enter the letter that corresponds to the maximum character rate your host can support. (If you are not sure, a good answer will be 30 characters per second.)

Enter command list output filename [HOSTDEF.TAB] :

Finally, your AVATAR TC1 asks you for the name of the file in which you want to store your host system command information.

If you want to use the standard command list filename [HOSTDEF.TAB], just press the RETURN (CR) key.

If you want a different command list filename, type the name you want to use, then press the RETURN (CR) key.

If you are working on a network, you might have more than one host system that you commonly use. You would then want to have a command list output file for each host system.

AFTER YOU HAVE CREATED YOUR USER-DEFINED HOST SYSTEM, YOU WILL RETURN TO THE HOST CONFIGURATION OPTIONS MENU.

3.C.B - Specifying the Host Line Characteristics

The "B" option on your Host Configuration menu lets you specify the characteristics of the communication line between your AVATAR TC1 and your host computer system.

If your host system is connected directly to your AVATAR TC1, you do not need to specify the host line characteristics. If you do not select this option, your host line characteristics will be the same as your terminal line characteristics.

If you are communicating with your host system through a modem, you must specify the host line characteristics before you can use the PASSTHRU Utility to transfer files to and from your host system.

Modems are generally low speed devices (300 or 1200 baud). You will find working with your AVATAR TC1 more enjoyable if you set your terminal to communicate with your AVATAR TC1 at high speeds (4800 or 9600 baud). The Specify Host Line Characteristics Option lets you communicate with you AVATAR TC1 at high speeds and communicate with your host system at modem speeds when you are using the PASSTHRU Utility.

IF YOU SET YOUR TERMINAL FOR A DIFFERENT SPEED THAN YOUR HOST LINE SPEED, YOU WILL BE ABLE TO COMMUNICATE DIRECTLY WITH YOUR HOST SYSTEM ONLY BY USING THE TERMINAL PASSTHRU MODE OPTION OF THE PASSTHRU UTILITY. The LINE/LOCAL switch and the automatic communications bypass are not effective unless your terminal line and host line characteristics are the same.

When you select this option, your AVATAR TC1 displays a series of menus which let you specify communication characteristics to match your host system line.

The Host Line Characteristics menu asks only for the very basic host line characteristics. Your host system manager should be able to help you determine these characteristics. The current setting on each of these menus is indicated in brackets. You may enter a selection or just press the RETURN (CR) key to leave the current setting unchanged.

When you have completed specifying the host line characteristics, you will be returned to the Host Configuration Option menu.

Baud Rate

```
*****
**  AVATAR-TC1 System CONFIGuration Utility rev. KXXX  **
**                                                    **
**      copyright (c) 1982 3R Computers, Inc.         **
**                        Westboro, Mass.              **
*****
```

***** Host Line Characteristics Menu *****

Baud rate (select one) :

- A - 300
- B - 600
- C - 1200
- D - 2400
- E - 4800
- F - 9600

ENTER SELECTION [F]:

You must select the baud rate that your host line supports.

The baud rate is the communications line speed.

Parity

Parity (select one) :

A - space

B - mark

C - odd

D - even

E - none

ENTER SELECTION [D]:

Parity is a test that some systems use to detect errors in transmission. Sometimes the character your host receives is not the same character your AVATAR TC1 sent.

Some host systems check for parity and others do not.

If your host system does not check for parity, type "E".

IF your host system does perform a parity check, you must specify if it uses odd, even, space or mark parity.

Stop Bits

Stop bits (select one) :

A - 1 stop bit

B - 1.5 stop bits

C - 2 stop bits

ENTER SELECTION [A]:

You must specify the minimum number of stop bits your host system needs between characters.

Stop bits tell your host system one character has ended and it should get ready to receive the next character.

Protocol

Protocol (select one) :

A - none

B - XON/XOFF

C - ETX/ACK

D - Hardware busy

ENTER SELECTION [A]:

The protocol is the way in which devices and other systems tell your host system to stop and then resume sending characters.

You must select the protocol that your host system recognizes or you may lose information when you transfer files using the PASSTHRU Utility.

AFTER YOU HAVE SPECIFIED YOUR HOST LINE CHARACTERISTICS YOU WILL RETURN AUTOMATICALLY TO THE HOST CONFIGURATION OPTIONS MENU.

3.C.C - DEFINING CHARACTER TRANSLATION TABLES

The CONFIGuration Utility lets you define character translation tables.

Why Translate

Probably the most common reason that you may want character translation is that some systems automatically supply a line feed when they see a carriage return and some do not.

Suppose that you wanted to send a text file that you created using the AVATAR WordStar* software to your host system. WordStar inserts a carriage return and a line feed after every line. If your host is one that automatically adds a line feed to a carriage return, the file would appear double-spaced on your host system. Here's why:

- * Your AVATAR TC1 sends a carriage return.
- * Your host system automatically adds a line feed and advances a line.
- * You AVATAR TC1 sends the line feed.
- * You host system sees the line feed and advances another line.

In this example, you would want to tell your AVATAR TC1 to send only the carriage return whenever it saw a carriage return followed by a line feed.

To further complicate matters, some host systems only put line feeds at the end of a line. These systems automatically supply a carriage return when they see a line feed. Your AVATAR TC1 does not. If you were receiving a file from such a host system, your cursor would move to the right of your screen and stay there, dropping down a line at a time. Here's why:

- * The cursor starts at the left of the line and moves to the right as it types the line being sent by your host system.

- * When it gets to the end of the line, your host system sends a line feed.
- * The cursor drops down a line, but does not return to the left side of your screen because there was no carriage return.

In this example, you would set up a character translation file which would send your AVATAR TC1 a carriage return and line feed every time your host system sent a line feed.

The PASSTHRU Utility filters out all control characters to protect both your AVATAR TC1 and your host system. If you want to communicate control characters, you must translate them into characters that the PASSTHRU Utility will communicate.

Suppose that you had a network of AVATAR TC1's in offices throughout the continent, and you wanted to send a memo, prepared using WordStar, to each of your offices. WordStar uses control characters in the file. For example, CONTROL B (^B) indicates a word that you want printed in bold type. You could create a character translation file that told your AVATAR TC1 to send a Z!Z every time it saw a ^B in a file. You would use this translation table only when you were transferring a WordStar file to the host system.

Admittedly, you would have a funny looking file on your host system. But you would also tell every AVATAR TC1 user on the network to create another character translation file to be used only when transferring a WordStar file from the host system.

You could transfer your WordStar memo file to the host system using character translation. As each office opened in the morning, they would log into the host system and transfer that Wordstar memo file back to their AVATAR TC1's using the complementary character translation. Then they could print that memo on their local printer and it will look the same as your original memo.

Creating a Character Translation File

When you create a character translation file, you first type the **input** characters. This is the character (or character string) you want translated.

Then you will be asked to type the output characters. This is the character (or character string) you want the input characters to be translated to.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                          **
**      copyright (c) 1982 3R Computers, Inc.      **
**                                          **
**                          Westboro, Mass.        **
**                                          **
*****
```

***** Character Translation Table definitions *****

It may be necessary or useful for you to translate characters which are being sent or received from the host using the PASSTHRU program. This option allows you to define tables for PASSTHRU to use to automatically translate characters.

You will be prompted for an input string. This is what the string in your file looks like initially, and may be up to 10 characters long. Then you will be prompted for a replacement string. This string will be substituted for every occurrence of the input string in the file. After you have entered the output string, you will be prompted again for another input string and another output string. The way to terminate entering input strings is to just hit the return key without entering anything on the line. You will be asked to specify a file to write this table on disk. If you just hit a return here the filename will default to XLATDEF.DAT (which happens to be the same default name that PASSTHRU expects). The following characters are recognized as special characters here-

\	(backslash)	this forces the next character typed to be taken literally, and not interpreted as a special character.
<rubout>		this deletes the last character entered. It echoes it to show you it understood what you wanted.
^U	(control-U)	this deletes the entire line you've entered so far. At this point, you must re-enter the entire line.
^C	(control-C)	this aborts this screen, and returns you to the main host entry screen in CONFIG.

Input characters :

There are a few rules you must follow when entering the input and output characters:

- * Press the RETURN (CR) key to terminate the current input or output character.
- * All control characters in the command line must be preceded by a backslash (\). This tells your AVATAR TC1 that the next special character is either an input or output character, and not an AVATAR TC1 function.

Control characters include any character you type while holding down the CONTROL (CTRL) key plus the RETURN (CR) key, the NEW LINE or LINE FEED key, the ESCAPE (ESC) key, and the BACKSLASH (\) key itself.

For example, when you want your AVATAR TC1 to translate a RETURN (CR), you must remember to type a \ before you press the RETURN (CR) key. If you forget the \ and just press the RETURN (CR) key, your AVATAR TC1 thinks that you have finished entering that input or output character and asks you for the next one.

If you want your AVATAR TC1 to translate a CONTROL-C (^C), you must type \^C in the command string. If you type just ^C, the CONFIGURATION utility thinks you are commanding it to abort the current menu and you will find yourself back in the Host Configuration Options menu.

If you want your AVATAR TC1 to translate a backslash, you must type BACKSLASH BACKSLASH (\)

- * If you make a mistake, you can use the RUB OUT or DELETE key to delete the last character you typed.
- * You can use a CONTROL-U (^U) to delete the entire line you are working on.
- * To end your character translation table, type a RETURN (CR) when the system asks you for input characters.

Enter command list output filename [XLATDEF.TAB] :

After you press the RETURN (CR) key without entering any input characters, the system asks you to enter the name of the translation table file.

You can enter a file name, or just press the RETURN (CR) key to use the default name [XLATDEF.TAB]

Remember, you may want to have different translation files for different applications.

3.C.D - Listing the Host Characteristics

This option tells your AVATAR TC1 to show you a list of your current host system and host line characteristic settings.

```
*****
**  AVATAR-TC1 System CONFIGuration Utility  rev. XXXX  **
**                                           **
**      copyright (c) 1982 3R Computers, Inc.      **
**                                           **
**                        Westboro, Mass.          **
*****
```

***** Current Host Characteristics *****

current host type is: User-defined system

Baud rate:	Parity:
9600	EVEN

Bits per char:	Stop bits:
7	1

No protocol has been selected

STRIKE RETURN TO CONTINUE :

This option only lets you look at the current settings. If you want to change any of the characteristics you must use either the Specify Host Type option or the Specify Host Line Characteristics option.

After ten seconds, you will be returned to the Host Configuration Options menu.

You may press the RETURN (CR) key if you want to return to the Host Configuration Options menu before the ten seconds are up.

3.C.E - Making Host Configurations Permanent

This option tells your AVATAR TC1 to permanently store your host system type and host line characteristic settings.

3.D Leaving the CONFIGuration Utility

Press the ESCAPE (ESC) key to return to the CONFIGuration Utility Main Menu.

Press the ESCAPE (ESC) key again to leave the CONFIGuration Utility and return to the enhanced CP/M operating system.

SECTION 4

THE PASSTHRU UTILITY

PASSTHRU is AVATAR's file transfer utility. It gives your AVATAR TC1 three important file transfer functions:

- * Send ASCII files from your AVATAR TC1 to your host computer system.
- * Receive ASCII files from your host system.
- * Print host computer ASCII files on your local printer, without transferring those files to your AVATAR TC1.

```
*****
**      PASSTHRU- host communications program- rev XXXX  **
**                                           **
**      copyright (c) 1982 3R Computers, Inc.          **
**                                           **
**      Westboro, Mass.                               **
*****
```

***** PASSTHRU options *****

- A) Terminal pass-thru mode
- B) Send ascii file to host
- C) Receive ascii file from host
- D) Printer Passthru from host to local printer

<ESC> to escape, '?' to redraw

ENTER SELECTION :

4.A TERMINAL PASSTHRU MODE

The Terminal Passthru Mode lets you communicate directly with your host computer system. You can use it to log into your host system or check on the status of your host system.

```
*****
**      PASSTHRU- host communications program- rev XXXX  **
**                                           **
**      copyright (c) 1982 3R Computers, Inc.          **
**                                           **
**      Westboro, Mass.                               **
*****
```

***** Terminal Passthru Mode *****

Strike CONTROL-BACKSLASH to return to main menu

Source filename on CPM system :

The source filename on CPM system is the name of the AVATAR TC1 file you want to send to your host system.

Destination filename on host system [DEMO.TXT] :

The destination filename is the name of the file you want to create on your host computer system to receive the contents of the AVATAR TC1 source file. If you press the RETURN (CR) key, the destination filename will be the same as the source filename.

The destination filename must agree with the file naming conventions on your host system, or you will not be able to complete the file transfer.

Use character translation [n] :

If you do not want to use character translation, press the RETURN (CR) key.

If you want to use a character translation file, type "Y", then press the RETURN (CR) key.

Use character translation [n] : Y

Translation file [XLATDEF.TAB] :

You will then be asked the name of the file which has the character translation table you want to use. Type the name of the file and press the RETURN (CR) key, or just press the RETURN (CR) key to use the default filename [xlatdef.tab].

If you use character translation, you may have one character translation file that you always use when transferring files to your host system, or you may want to use different character translation files for transferring different files.

You can define character translation files using the Define Character Translation Tables option of the CONFIGURATION Utility.

ERROR MESSAGES

MESSAGE: **** File does not exist or cannot be opened

- Cause:
- * The source filename you entered is not the name of a valid AVATAR TC1 file.
 - * The AVATAR TC1 file you want to transfer does not reside on the diskette you are currently using.

Correction: Enter the name of a valid file which currently resides on the diskette you are using.

MESSAGE: Can't open translation file- aborting file xfer

- Cause:
- * You did not define a character translation file using the CONFIGuration Utility.
 - * You incorrectly entered the name of a valid character translation file.

Correction:

- * Enter the name of a valid character translation file.
- * Press the RETURN (CR) key to proceed without character translation.

MESSAGE: WARNING- no host system has been defined yet. You may continue and send the file verbatim to the host, but the synchronization is up to you!

do you wish to continue [N]:

- Cause:
- * You failed to specify a host file type using the CONFIGuration Utility.
 - * You failed to use the Make Host Configuration Permanent option of the CONFIGuration Utility.
 - * You selected no host system as your host system type.

Correction:

- * Abort the transfer and specify your host system type using the CONFIGuration Utility.

- * Try to continue with the transfer. You must use the line local switch to give the appropriate commands to your host system before you answer the character translation question.

MESSAGE: HOST TRANSMISSION FAULT

Cause: Your AVATAR TC1 is not getting an answer from your host system. This is probably due to a bad connection.

- Correction:
- * Use the Terminal Passthru Mode to see if you are still connected to your host system. (there may have been a temporary interruption)
 - * Reestablish the connection to your host system, if necessary.
 - * Try the file transfer again.

MESSAGE: HOST COMMUNICATION FAULT

Note: This message appears after the file transfer has been completed.

- Cause:
- * Your AVATAR TC1 has detected noise in the communication line which may have interfered with the file transfer.
 - * The transferred file may be incomplete or contain errors.

Correction: * You may want to check the transferred file for errors, or attempt the file transfer again.

4.C RECEIVING ASCII FILES FROM YOUR HOST COMPUTER SYSTEM

This option opens a file on your AVATAR TC1 and then transfers the contents of an existing host system file to that AVATAR TC1 file.

If you have a user-defined host system, you will be asked the name of the file which contains the host system commands.

```
*****
**      PASSTHRU- host communications program- rev XXXX      **
**      **
**      copyright (c) 1982 3R Computers, Inc.                **
**      Westboro, Mass.                                       **
*****
```

ASCII File Receive from host to AVATAR

A user-defined host system type has been CONFIGured.
Enter filename for host command list [HOSTDEF.TAB] :

In most cases you will press the RETURN (CR) key to indicate that you want to use the default file name [hostdef.tab].

Source filename on host system :

The source filename on the host system is the name of the file you want to receive from your host system.

The PASSTHRU Utility issues a file directory command to your host system. This gives you an opportunity to make sure that a file with that name exists on your host system.

If you don't see a host system directory listing for that file, either the PASSTHRU Utility is having difficulty communicating with your host system or the file you want to transfer does not exist on your host system. Either way you should type CONTROL-C (^C) to abort the transfer and return to the PASSTHRU Utility Options menu.

You may want to use the Terminal Passthru Mode to make sure that you are still connected to your host system.

Destination filename on CPM system [demo.txt] :

The destination filename on CPM system is the name of the AVATAR TC1 file you want to receive the contents of the host system source file.

If you want the destination file on your AVATAR TC1 to have the same name as the source file on the host system, press the RETURN (CR) key. Otherwise, type the name of the destination file on your AVATAR TC1, then press the RETURN (CR) key.

If the destination filename is not the name of an existing AVATAR TC1 file, the PASSTHRU Utility will create a new file on your AVATAR TC1.

If the destination filename is the name of an existing file, you will be asked if you want to overwrite that file.

**** File already exists ****
Do you want to overwrite it [N] :

If you do not want to overwrite the existing AVATAR TC1 file, press the RETURN (CR) key. The PASSTHRU Utility will ask you to enter another destination filename.

If you want to overwrite the destination file, type "Y", then press RETURN (CR) key.

Use character translation [n] :

If you do not want to use character translation, press the RETURN (CR) key.

If you want to use a character translation file, type "Y", then press the RETURN (CR) key.

Use character translation [n] : Y

Translation file [XLATDEF.TAB] :

You will then be asked the name of the file which has the character translation table you want to use. Type the name of the file and press the RETURN (CR) key, or just press the RETURN (CR) key to use the default filename [xlatdef.tab].

ERROR MESSAGES

MESSAGE: WARNING- no host system has been defined yet.
You may continue and capture all incoming data
from the host port into a CP/M file.

NOTE: if you do this, you must set the
LINE/LOCAL switch to LINE and tell your host
system to send the appropriate file. Then
you must quickly set the switch to LOCAL to
complete the transfer.

Is this what you wish to do[N]:

Cause: * You failed to specify a host file type using
the CONFIGURATION Utility.
* You failed to use the Make Host Configuration
Permanent option of the CONFIGURATION Utility.
* You selected no host system as your host
system type.

Correction: * Abort the transfer and specify your host
system type using the CONFIGURATION Utility.
* Try to continue with the transfer. You must
use the LINE/LOCAL switch to give the
appropriate commands to your host system
before you answer the character translation
question.

MESSAGE: WARNING - cannot open output file - probably
there is insufficient space on the disk
FILE NOT WRITTEN

Cause: There is not enough space left on your
diskette to store the file which was being
transferred from the host system.

Correction: * Delete some files from your diskette and try
again.
* Try again with a different diskette.

MESSAGE: HOST TRANSMISSION FAULT

Cause: Your AVATAR TC1 is not getting an answer from your host system. This is probably due to a bad connection.

Correction: * Use the Terminal Passthru Mode to see if you are still connected to your host system. (there may have been a temporary interruption)

* Reestablish the connection to your host system, if necessary.

* Try the file transfer again.

MESSAGE: HOST COMMUNICATION FAULT

Note: This message appears after the file transfer has been completed.

Cause: * Your AVATAR TC1 has detected noise in the communication line which may have interfered with the file transfer.

* The transferred file may be incomplete or contain errors.

Correction: * You may want to check the transferred file for errors, or attempt the file transfer again.

4.D PRINTING HOST SYSTEM FILES ON YOUR LOCAL PRINTER

This option lets you print a host system file on your local printer without transferring that file to your AVATAR TC1.

```
*****
** PASSTHRU- host communications program- rev XXXX **
**
** copyright (c) 1982 3R Computers, Inc. **
** Westboro, Mass. **
*****
```

ASCII File Receive from host to AVATAR

Source filename on host system :

The source filename on the host system is the name of the host system file you want to print on your local printer.

The PASSTHRU Utility checks to make sure that a file with that name exists on your host system. You should see a host system directory listing for that file.

Use character translation [n] :

If you do not want to use character translation, press the RETURN (CR) key.

If you want to use a character translation file, type "Y", then press the RETURN (CR) key.

Use character translation [n] : Y

Translation file [XLATDEF.TAB] :

You will then be asked the name of the file which has the character translation table you want to use. Type the name of the file and press the RETURN (CR) key, or just press the RETURN (CR) key to use the default filename [xlatdef.tab].

ERROR MESSAGES

MESSAGE: WARNING- no host system has been defined yet. You may continue and print all incoming data on your local printer.

NOTE: If you do this, you must set the LINE/LOCAL switch to LINE and tell your host system to send the appropriate file. Then you must quickly set the switch to LOCAL to complete the printer passthru from host to local printer.

Is this what you wish to do[N]:

Cause:

- * You failed to specify a host file type using the CONFIGuration Utility.
- * You failed to use the Make Host Configuration Permanent option of the CONFIGuration Utility.
- * You selected no host system as your host system type.

Correction:

- * Abort the printer passthru and specify your host system type using the **CONFIGURATION** Utility.

- * Try to continue with the printer passthru. You must use the **LINE/LOCAL** switch to give the appropriate commands to your host system before you answer the character translation question.

APPENDIX A

PORT AND CABLE PIN ASSIGNMENTS

AVATAR TC1 PORTS

TERMINAL PORT -- PORT #1

The AVATAR TC1 terminal port is a male 25-pin FIA type connector which supports both EIA and current loop communications.

CURRENT LOOP COMMUNICATIONS:

The AVATAR TC1 terminal port uses active current loop communications when the AVATAR TC1 is in LOCAL mode. (The AVATAR TC1 supplies the current.)

The terminal port passes signals from the host port when the AVATAR TC1 is in LINE mode. (The host supplies the current.)

TERMINAL PORT PIN ASSIGNMENTS

PIN	DESCRIPTION
====	=====
1	PROTECTIVE GROUND
2	TRANSMIT DATA TO TERMINAL
3	RECEIVE DATA FROM TERMINAL
7	SIGNAL GROUND
18	CURRENT LOOP TERMINAL'S NEGATIVE TRANSMIT DATA
21	CURRENT LOOP TERMINAL'S NEGATIVE RECEIVE DATA
23	CURRENT LOOP TERMINAL'S POSITIVE RECEIVE DATA
24	CURRENT LOOP TERMINAL'S POSITIVE TRANSMIT DATA

HOST PORT -- PORT #0

The AVATAR TC1 host port is a female 25-pin EIA type connector which supports both EIA and current loop communications.

CURRENT LOOP COMMUNICATIONS:

The AVATAR TC1 host port uses passive current loop communications. (Host supplies current.)

HOST PORT PIN ASSIGNMENTS

PIN	DESCRIPTION
====	=====
1	PROTECTIVE GROUND
2	TRANSMIT DATA TO HOST
3	RECEIVE DATA FROM HOST
7	SIGNAL GROUND
18	CURRENT LOOP HOST'S NEGATIVE RECEIVE DATA
21	CURRENT LOOP HOST'S NEGATIVE TRANSMIT DATA
23	CURRENT LOOP HOST'S POSITIVE TRANSMIT DATA
24	CURRENT LOOP HOST'S POSITIVE RECEIVED DATA

AUXILLIARY PORT -- PORT #3

The AVATAR TC1 auxilliary port is a male 25-pin EIA type connector which supports printer and modem control signals.

AUXILLIARY PORT PIN ASSIGNMENTS

PIN	DESCRIPTION
====	=====
1	PROTECTIVE GROUND
2	TRANSMIT DATA TO PRINTER
3	RECEIVE DATA FROM PRINTER
4	REQUEST TO SEND
5	CLEAR TO SEND
7	SIGNAL GROUND
8	CARRIER DETECT
20	(DATA TERMINAL READY) 330 OHM RESISTOR TO +5V
22	RING INDICATOR

AVATAR TC1 CABLES AND CONNECTORS

UNIVERSAL EIA TERMINAL CABLE

PART NUMBER 49-0003-006

LENGTH 6 feet

CONNECTORS

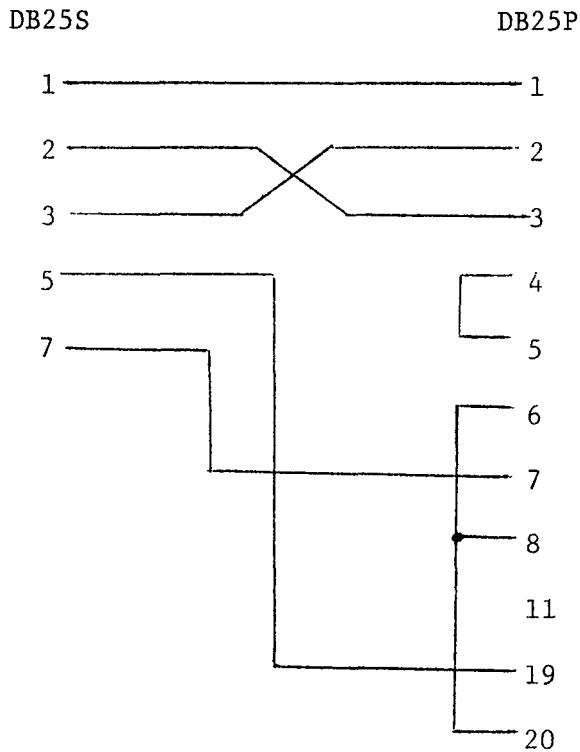
1. Male 25-pin EIA type connector labeled **TERMINAL**
2. Female 25-pin EIA type connector labeled **TC TERM/AUX**

APPLICATIONS

1. Connecting EIA terminal to the AVATAR TC1 terminal port
2. Connecting serial printer to the AVATAR TC1 auxilliary port

NOTES

This cable may be used to connect terminals or printers with male connectors. In such cases a Male Gender Change Adapter (part 06-0004-001) is also required.



DG 605X EIA/MOLEX TERMINAL CABLE

PART NUMBER 49-0004-006
LENGTH 6 feet
CONNECTORS 1. Female 6-pin Molex type connector labeled
TERMINAL
2. Female 25-pin EIA type connector labeled
TC TERM/AUX
APPLICATIONS Connecting Data General 6053 EIA
terminals to the AVATAR TC1 terminal port

DB25S	Molex
2	4
3	1
7	6
20	5

DG 605X 20mA/MOLEX TERMINAL CABLE

PART NUMBER 49-0005-006
LENGTH 6 feet
CONNECTORS 1. Female 6-pin Molex type connector labeled
TERMINAL
2. Female 25-pin EIA type connector labeled
TC TERM/AUX
APPLICATIONS Connecting Data General 6053 20mA
terminals to the AVATAR TC1 terminal port

DB25S	Molex
24	1
18	2
23	3
21	4

D200 CURRENT LOOP CABLE

PART NUMBER 49-0002-006

LENGTH 6 feet

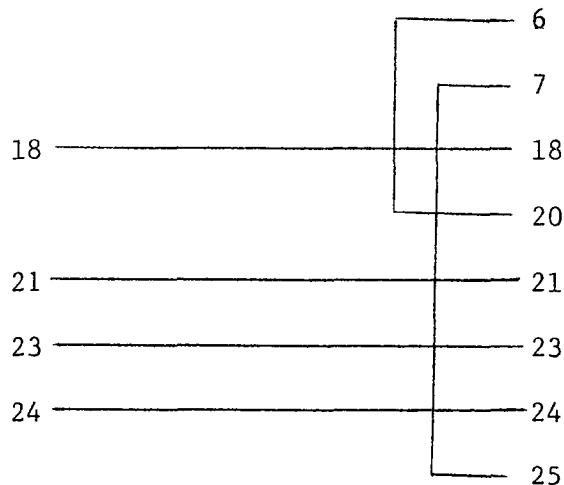
CONNECTORS

1. Male 25-pin EIA type connector labeled **TERMINAL--**
2. Female 25-pin EIA type connector labeled **TC TERM/AUX**

APPLICATIONS Connecting Data General D200 20mA terminals to the AVATAR TC1 terminal port

DB25S

DB25P



TERM/AUX MODEM CABLE

PART NUMBER 49-0001-006

LENGTH 6 feet

CONNECTORS

1. Male 25-pin EIA type connector labeled **MODEM**
2. Female 25-pin EIA type connector labeled **TC HOST/AUX**

APPLICATIONS

1. Connecting a modem to the AVATAR TC1 host port
2. Connecting a modem to the AVATAR TC1 auxilliary port

Pin Assignments - Wiring is straight through on pins 1 through 8 and 20.

MALE GENDER CHANGE ADAPTER

PART NUMBER 06-0004-001
LENGTH Printed Circuit Board
CONNECTORS 1. Female 25-pin EIA type connector
2. Female 25-pin EIA type connector
APPLICATIONS Connecting a male EIA connector to a male EIA connector
NOTES ALL 25 pins are wired straight through.

FEMALE GENDER CHANGE ADAPTER

PART NUMBER 06-0004-002
LENGTH 4 inches
CONNECTORS 1. Male 25-pin EIA type connector
2. Male 25-pin EIA type connector
APPLICATIONS Connecting a female EIA connector to a female EIA connector
NOTES ALL 25 pins are wired straight through.

DG 605X EIA/MOLEX HOST ADAPTER

PART NUMBER 06-0003-000
LENGTH Printed Circuit Board
CONNECTORS 1. Male 25-pin EIA type connector
2. Male 6-pin Molex type connector
APPLICATIONS Connecting a host line which had been connected to the EIA port of a DG 6053 terminal to the AVATAR TC1 host port.

DB25P

Molex

2-----1

3-----4

7-----6

20-----5

DG 605X 20mA/MOLEX HOST ADAPTER

PART NUMBER 06-0005-00

LENGTH Printed Circuit Board

CONNECTORS 1. Male 25-pin EIA type connector
2. Male 6-pin Molex type connector

APPLICATIONS Connecting a host line which had been connected to the 20mA port of a DG 6053 terminal to the AVATAR TC1 host port.

DB25P	Molex
18	2
21	4
23	3
24	1

CHARACTER CODES TRANSMITTED BY ASCII FILE TRANSFER

APPENDIX B

OCTAL CODES

Key	SHIFT	Normal	
A	101	141	
B	102	142	
C	103	143	
D	104	144	
E	105	145	
F	106	146	
G	107	147	
H	110	150	
I	111	151	
J	112	152	
K	113	153	
L	114	154	
M	115	155	
N	116	156	
O	117	157	
P	120	160	
Q	121	161	
R	122	162	
S	123	163	
T	124	164	
U	125	165	
V	126	166	
W	127	167	
X	130	170	
Y	131	171	
Z	132	172	
Space Bar		040	
1	041(!)	061(1)	
2	100(@)	062(2)	
3	043(#)	063(3)	
4	044(\$)	064(4)	
5	045(%)	065(5)	
6	136(↑)	066(7)	
7	046(&)	067(7)	
8	052(*)	070(8)	
9	050()	071(9)	
0	051())	060(0)	
.	137(-)	055(-)	
=	153(+)	075(=)	
,	176(˘)	140(')	
[173({)	133([)	
]	175()	135(])	
;	172(:)	073(;)	
\	174()	134(\)	
'	074(<)	054(')	
.	076(>)	056(.)	
/	077(?)	057(/)	
RETURN		015 or 015012	ASCII Mnemonic
LINE FEED		012	CR or CRLF
TAB		011	LF
FORM FEED		014	HT
			FF

APPENDIX C

CREATING A USER-DEFINED TERMINAL TYPE

The CONFIGuration Utility lets the user with a detailed knowledge of terminal control sequences create a user-defined terminal type.

GETTING THERE - A quick Review

- * Call the CONFIGuration Utility. The system will display the CONFIGuration Utility Main menu.
- * Select the Specify Terminal Characteristics option. The system will display the Terminal Configuration Options menu.
- * Select the Specify Terminal Type Option. The system will display the Terminal Type menu.
- * Select the User-defined Terminal Type option, the system will display the first item on the User-defined Terminal Configuration menu.

CREATING A USER-DEFINED TERMINAL TYPE

The following screens are an example of a User-defined Terminal Type for the Lear Siegler ADM 31 terminal. Responses to the questions are found in the terminal User Manual.

NOTE: Control characters may be echoed in brackets.
ESC is echoed as <1B>
CONTROL ^ is echoed as <1E>

```
*****
** AVATAR-Tcl System CONFIGuration Utility rev. XXXX **
**
** copyright (c) 1982 3R Computers, Inc. **
** Westboro, Mass. **
*****
```

***** User-defined terminal configuration *****

SET CURSOR POSITION specification

enter the set cursor position lead-in string: <lb>=

The row and column offsets may be specified as either ASCII
or binary (numeric) offsets. Which do you have?

- A) ASCII
- N) numeric

ENTER SELECTION [A]:N

Some terminals want the row to be specified before the column
and others want it column/row. Which offset
does your terminal want to see first?

- R) Row first before column
- C) Column first before row

ENTER SELECTION [R]:R

enter the offset in decimal for the ROW number [0]: 32

enter the ascii string separating the ROW and COLUMN numbers:

enter the offset in decimal for the COLUMN number [0]: 32

enter the set cursor position trailing string:

CURSOR UP specification

the CURSOR UP string can be entered by pressing the UP ARROW key
enter the ascii string to move the CURSOR UP one (1) row: ^K

CURSOR DOWN specification

the CURSOR DOWN string can be entered by pressing the DOWN ARROW key
enter the ascii string to move the CURSOR DOWN one (1) row: <LF>

CURSOR RIGHT specification

the CURSOR RIGHT string can be entered by pressing the RIGHT ARROW key
enter the ascii string to move the CURSOR RIGHT one (1) column: ^L

CURSOR LEFT specification

the CURSOR LEFT string can be entered by pressing the LEFT ARROW key
enter the ascii string to move the CURSOR LEFT one (1) column: ^H

HOME the CURSOR specification

the cursor HOME position IS THE UPPER LEFT CORNER of the screen
although most keyboards have a HOME key which will move the
cursor to this position, some either do not have the key, or
the key does not move the cursor to the upper left corner. If
this feature is not available on your keyboard, enter the
SET CURSOR POSITION string to move the cursor to the upper
left corner of the screen

enter HOME CURSOR string: <1E>

ERASE to END OF LINE specification

enter the ascii string for ERASE to END OF LINE: <1B>T

ERASE SCREEN specification

enter the ascii string for ERASE SCREEN: <1E><1B>Y

does the HALF INTENSITY (DIM) screen attribute occupy a screen position? N

ALL SCREEN ATTRIBUTES OFF specification

enter the ascii string to turn OFF all SCREEN ATTRIBUTES: <1B>(

HALF INTENSITY (DIM) screen attribute specification

enter the ascii string for the HALF INTENSITY screen attribute: <1B>)

YOU HAVE COMPLETED CREATING A 'USER-DEFINED TERMINAL
TYPE and you will be returned to the Terminal
Configuration Options menu.

DON'T FORGET TO MAKE YOUR TERMINAL TYPE PERMANENT
BEFORE LEAVING THE TERMINAL CONFIGURATION OPTIONS
MENU!

GLOSSARY

Application: A specific program or task, such as sorting employee records, to which a computer solution can be applied.

Application program: A computer program designed to meet specific user needs, such as a program that controls inventory or monitors a manufacturing process.

ASCII: (The American Standard Code for Information Interchange.) Code that has assigned a binary number to each alphanumeric character and several non-printing characters used to control printers and communication devices. The binary number (code) assigned to each alphanumeric character is called ASCII code.

ASCII keyboard: A keyboard that sends ASCII character to a computer when a typist presses the corresponding key.

Asynchronous: A communications method in which data is sent as soon as it is ready, as opposed to methods in which data is sent at fixed intervals.

Backup: Copying of one or more files onto a storage medium for safekeeping, should the original get damaged or lost.

Baud: A unit of data transmitting/receiving speed, roughly equal to a single bit per second. Common Baud rates are 110, 300, 1,200, 2,400, 4,800 and 9,600.

Bidirectional: (1) Ability to transfer data in either direction, especially on a bus. (2) Ability of a print head to print from right to left and from left to right, which helps increase print speeds.

Binary: (1) Number system with only two digits - 0 and 1 - in which each symbol represents a decimal power of two. (2) Any system that has only two possible states or levels, such as a switch that is either on or off. This is represented in a computer circuit by the presence of current (equivalent to "1") or its absence (equivalent to "0"). All computer programs are executed in binary form.

Bit: Short for **binary digit**, which can have only two possible values - 0 or 1. It is the smallest unit of data recognized by the computer. All data (letters, numerals, symbols) handled by a computer are digitized, i.e., expressed entirely as a combination of bits - 0s and 1s.

Board: Also circuit board. A plastic resin board containing electronic components such as chips and the electronic circuits needed to connect them. See option module.

Buffer: A temporary storage area for data, frequently used to hold data being passed between computers or other devices, such as printers, which operate at different speeds or different times.

Byte: The number of bits used to represent a character. For personal computers, a byte is usually eight bits.

Cathode-ray tube (CRT): A vacuum tube that generates and guides electrons onto a fluorescent screen to produce such images as characters or graphic displays on video display screens.

Central processing unit (CPU): Electronic components in a computer that control the transfer of data and perform arithmetic and logic calculations.

Character: A single printable letter (A-Z), numeral (0-9), or symbol (,,\$\$.) used to represent data. Text symbols also include those that are not visible as characters, such as, a space, tab, or carriage return.

Character code: A code that assigns numerical values to characters, such as ASCII code.

Command: A user instruction to the computer, generally given through a keyboard, which can be a word, mnemonic, or character that causes a computer to perform a predefined operation.

Compatibility: (1) The ability of an instruction, program, or component to be used on more than one computer. (2) The ability of computers to work with other computers that are not necessarily similar in design or capabilities.

Configuration: The assortment of equipment (disks, diskettes, terminals, printers, etc.) in a particular system.

CP/M (Control Program for Microprocessors): An operating system used by many personal computers.

CPU: See central processing unit.

CRT: See cathode-ray tube.

Cursor: A movable, blinking marker - usually a box or line - on the terminal video screen that defines the next point of character entry or change.

Daisywheel: A print head that forms full characters rather than characters formed of dots. It is shaped like a wheel with many spokes, with a letter, numeral, or symbol at the end of each spoke. The print method used is similar to that of a regular typewriter.

Data: Facts, numbers, letters, and symbols stored in the computer. For personal computer users, data can be thought of as the basic elements of information used, created, or otherwise processed by an application program. Examples of data are employee names, weekly deductions from salary, projected sales, and fuel consumption.

Database: A large collection of organized data that is required to perform a task. Typical examples are personal files or stock quotations.

Data communication: The movement of coded data from a sender to a receiver by means of electrically transmitted signals.

Data diskette: A diskette that is used entirely or primarily to contain data files.

Data processing: The application in which a computer works primarily with numerical data, as opposed to text. Many computers can perform data processing and word processing.

Device: In computers, a piece of hardware that performs some specific function. Input devices (e.g., keyboard) are used to get data into the CPU. Output devices (e.g., printer or display monitor) are used to take data out of a computer in some usable form. Input/output devices (e.g., terminal or disk drive) are able to perform both input and output of data.

Diagnostic: A program that checks the operation of a device, board, or other component for malfunctions and errors and reports its findings.

Diskette: A flexible, flat, circular plate permanently housed in a black paper envelope with magnetic coating that stores data and software. Standard sizes are 5 1/4-inches and eight inches in diameter.

Display screen: A device that provides a visual representation of data; a TV-like screen. See cathode-ray tube.

Double density: Special recording method for diskettes that allows them to store twice as much data as in normal, or single-density, recordings.

Draft-quality printer: A printer, usually high-speed, that produces characters that are very readable, but of less than typewriter quality. Typically used for internal documents for which type quality is not a major factor. See letter-quality printer.

Drive: A peripheral device that holds a disk or diskette so that the computer can read data from and write data onto them.

Electronic Industries Association (EIA): A standards organization specializing in the electrical and functional characteristics of interface equipment.

Error message: Text displayed by the computer when an incorrect response is typed, which explains the problem and indicates what to do next.

File: A collection of logically related records or data treated as a single item. A file is the means by which data is stored on a disk or diskette so it can be used at a later date.

Filename: The sequence of alphanumeric characters assigned by a user to identify a file which can be read by both the computer and the user.

Flexible disk: See diskette.

Floppy disk: See diskette.

Formfeed: Automatically advances a roll of fanfold paper to the top of the next page or form when the printer has finished printing the previous form.

Hardcopy: Output in a permanent form (usually on paper or paper tape) rather than in temporary form, as on a CRT or visual display.

Head: A component that reads, writes, or erases data on a storage medium such as a diskette or disk.

Interface: An electronic assembly that connects an external device, such as a printer, to a computer.

K: The symbol for the quantity 2^{10} , or 1024. The K is upper-case to distinguish it from the lower-case k, which is a Standard International Unit for "kilo", or 1,000 (10^3).

Keyboard: The set of keys on a terminal that allows alphanumeric characters or symbols to be transmitted when keys are depressed. It inputs text and instructions to the computer.

Kbyte (KB): 1,024 bytes.

Letter-quality printer: The printer used to produce final copies of documents. It produces typing comparable in quality to that of a typewriter.

Mass storage: A device like a disk or magtape that can store large amounts of data readily accessible to the central processing unit.

Mbyte (MB): 1,048,576 (10^{20}) bytes.

Memory: (1) The main high-speed storage area in a computer where instructions for a program being run are temporarily kept. (2) A device in which data can be stored and from which it can later be retrieved.

Menu: A display list of options from which the user selects an action to be performed by typing a letter or by positioning the cursor.

Menu-driven: A computer system that primarily uses menus for its user interface rather than a command language.

Microcomputer: A computer which is physically very small - it can fit on or under a desk - and which is based on large-scale integration (LSI) circuitry. It is usually the least expensive of the computer types.

Microprocessor: A single-chip central processing unit incorporating LSI technology.

Modem (Modulator/Demodulator): A device that converts computer signals (data) into high-frequency communications signals, and vice versa. These high-frequency signals can then be sent over telephone lines.

Nonvolatile memory: Memory that does not lose its contents when a processor's power supply is shut off or disrupted.

Operating system: A collection of computer programs that controls the overall operation of a computer and performs such tasks as assigning places and controlling the overall input/output of the system.

Option module: An add-on printed-circuit module that allows expansion of a system. See board.

Parallel transmission: Sending more than one bit at a time. See serial transmission.

Parity: A one-extra-bit code used to detect recording or transmission errors by making the total number of "1" bits in a unit of data - including the parity bit itself - odd or even.

Peripheral: A device that is external to the CPU and main memory, e.g., printer, modem, or terminal, but connected to it by appropriate electrical connections.

Port: A physical area for the connection of a communications line. This line can be between the CPU and anything external to it, such as a printer, another computer, a modem, or another communications line.

Power supply: A transistor switch that converts AC power into DC power; energizes components such as integrated circuits, monitors, and keyboards; and steps down the power supplied to some components.

Printer: The device that produces a paper copy of a document (hard copy output). There are two types: draft-quality and letter-quality printers. Unlike a terminal, there is virtually no communication from printer to CPU.

Printhead: The element in a printer that forms a printed character.

Printwheel: See daisywheel.

Printout: An informal expression referring to almost anything printed by a computer peripheral device; any computer-generated hard copy.

Processor: The functional part of the computer system that reads, interprets, and executes instructions. See central processing unit.

Program: The complete sequence of instructions and routines needed to solve a problem or to execute directions in a computer.

RAM (Random Access Memory): Memory that can both be read and written into (i.e., altered) during normal operation. RAM is the type of memory used in most computers to store the instructions of programs currently being run.

Remote: Not hard-wired; communicating via switched lines such as telephone lines. Usually refers to peripheral devices (e.g., printers, video terminals) that are located at a site away from the CPU.

ROM: (Read Only Memory) Memory containing fixed data or instructions that is permanently loaded during the manufacturing process. A computer can use the data in the ROM, but cannot change it.

Screen: (1) The display surface of a video monitor. (2) The pattern or information displayed on the screen.

Self-test: A procedure whereby a program or peripheral checks its own operation.

Serial transmission: Sending one bit at a time. See parallel transmission.

Single-density: Describes the normal recording density for diskettes.

Software: The tasks or programs that makes the computer perform a particular function.

System: A combination of software and hardware that performs specific processing operations.

Terminal: An input/output device used to enter data into a computer and record the output. Terminals are divided into two categories: hard copy (e.g., printers) and soft copy (e.g., video terminals).

Terminal emulation: A communication method in which a terminal acts as a terminal of a different design so that it can be used on various systems.

Track: The portion of a moving storage medium, such as a disk or tape, that is accessible to a given read/write head position.

Upgrade: To expand your personal computer as new features are developed or as existing features are enhanced.

Video terminal: A terminal that displays data on a CRT.

Volatile memory: Memory that loses its contents when power is removed unless battery back up is available.

Word: The greatest number of bits a computer is capable of handling in any one operation. Usually subdivided into bytes.

Word processing system: A system that processes text, performing such functions as paragraphing, paging, left and right justification, rearrangement of lines, and printing the text.

Word-wrapping: The automatic shifting of words from a line that is too long to the next line.

65-1101-001

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