Apple® II

Apple IIe Extended 80-Column Text Card

APPLE COMPUTER, INC.

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WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. See instructions if interference to radio or television reception is suspected.

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Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with our instructions—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit-ear" television antenna is used. (A rabbit-ear antenna is the telescoping-rod type usually found on television receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem, disconnect the peripheral devices and their input/output (I/O) cables one at a time. If the interference stops, it was caused by either the peripheral device or the I/O cable. These devices usually require shielded I/O cables. For Apple peripheral devices, you can obtain the proper **shielded cable** from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

A **shielded cable** uses a metallic wrap around the wires to reduce the potential effects of radio-frequency interference.

Important This product was FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radio, television, and other electronic devices.

If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit than the television or radio. (That is, make certain the computer and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions.

THE APPLE PUBLISHING SYSTEM

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Introduction

The Apple® IIe Extended 80-Column Text Card helps make the Apple IIe computer one of the most versatile and useful computers around. The text card is actually two cards in one:

- It allows you to display 80 columns on your monitor.
- It provides an additional 64K of memory.

More memory allows for longer word processing documents, larger data bases, and larger and more complicated spreadsheets. And because you see 80 columns of information instead of 40, you're able to see more information on your monitor.

The text card also lets you display characters in both 80 and 40 columns while running BASIC programs, and it lets you write your own programs by using the card's auxiliary memory.

This booklet describes the card and tells how to install it and use several of its features. You should finish this section and read "Installing the Card." Read "Activating and Deactivating the Card" only if you plan to write your own BASIC programs and want to switch between 80- and 40-column displays. (Programs you write in Pascal automatically display 80 columns.)

As you read, watch for these visual cues throughout the booklet:

Important Text set off in this manner—with one or more words in the margin—presents important information.

Warning Text like this, preceded by the word *Warning,* indicates a potential danger to you or your equipment.

Computer terms are **boldfaced** when first introduced. Boldfacing is also used for key words in the text that are referred to in an accompanying illustration.

Key names are spelled out; for example, Return, Left Arrow, and Escape. When you see a hyphen joining two keys, it means you should press them simultaneously. For instance, Control-Q means to press the Control key and, while holding it down, press the Q key; then release both keys.

Text card and software considerations

Here are some considerations for using different kinds of software with the text card:

- Some Apple IIe software requires 128K of memory to run at all. To run this software, you'll need the text card.
- Some Apple IIe software hasn't been designed to display 80 columns or to use the additional memory. If you expect it to, you'll be disappointed. Keep this in mind when you're considering new software.
- Although Apple II and Apple II Plus software should run when the Extended 80-Column Text Card is installed, the software probably won't take advantage of the text card's features.

A television set or a video monitor?

Television sets are not able to display 80 columns of text clearly. So you should use a monochrome video monitor or a color monitor that can display 80 columns.

You may want to use a color television set with your Apple IIe—perhaps to display color graphics—while the Extended 80-Column Text Card is installed. In this case, you will want to deactivate the card so your set will display 40 columns. Doing so will make the display more readable. (See "Activating and Deactivating the Card" for instructions.)

If you want to get more technical

If you want to use the text card's auxiliary memory while executing programs you write yourself, you should learn how the auxiliary memory works and how to control its use. Read about that in the *Apple IIe Technical Reference* (Reading, Mass.: Addison-Wesley Publishing Company, Inc., 1985).

Housekeeping chores

Before going ahead to the section "Installing the Card," take a minute to get necessary chores out of the way:

- Check the packing slip to make sure you have what it lists. (If you don't, contact your authorized Apple dealer.)
- Fill out the warranty card and mail it in. Doing so registers you as an Apple owner so you can be notified about important changes to Apple products.

Installing the card

The steps in this section tell how to install the Apple IIe Extended 80-Column Text Card. In just a few minutes, you'll be ready to take advantage of the benefits the card provides.

1. Make sure the power to your Apple IIe is off.

Warning Before you install or disconnect any cards or peripheral devices (printer, disk drives, and so on), you must make sure the power to the computer is off. That is, make sure the power switch on the computer's back panel is in the OFF position. If the power is on while you are installing or disconnecting any cards or devices, it can damage the card, the device, or the computer's circuitry, and possibly hurt you. Don't take chances.

2. Remove the cover from your Apple IIe by pulling up on the cover's rear edges until the cover pops off. Slide the cover away from the keyboard and put it aside so it won't be in the way. Now take a look inside the computer, pictured in Figure 1. The callouts are further defined in the text that follows.

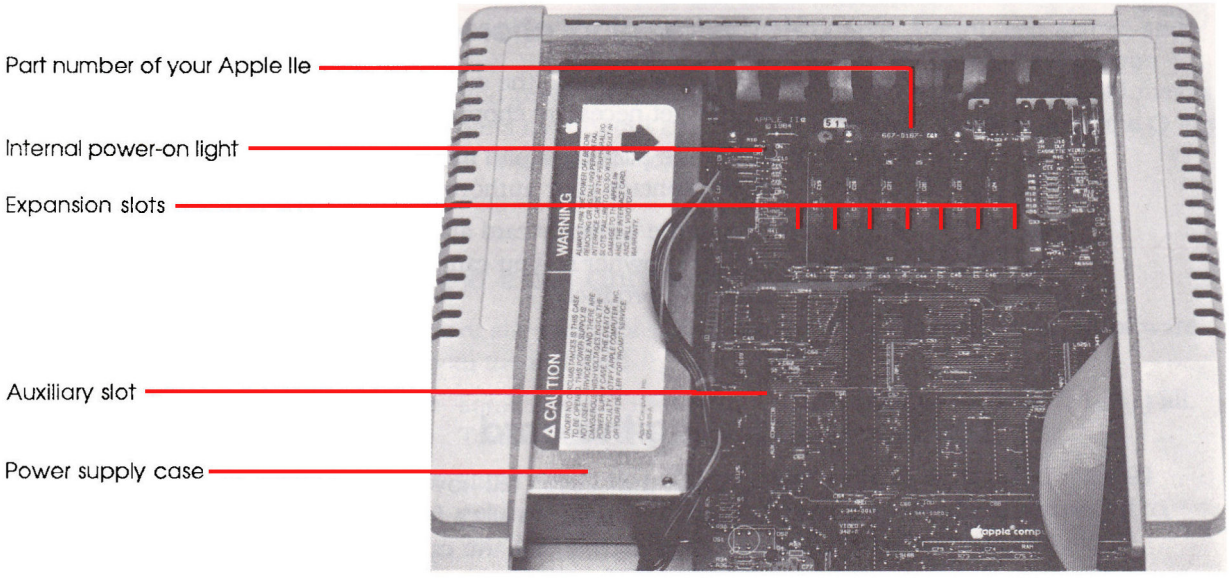

Figure 1
The inside of the Apple IIe

The **power supply case** houses the computer's power supply. All peripheral cards, including the Extended 80-Column Text Card, should face *away* from this case. That is, the side with the chips should *not* be toward the case.

The **internal power-on light** is on when the computer is on. (It should be off now.)

The **auxiliary slot,** labeled *AUX.CONNECTOR,* is where you insert the extended 80-column card.

The **expansion slots** are numbered 1 through 7. You can insert cards in these slots to connect peripheral equipment such as printers or disk drives.

The **part number** of your Apple IIe will be important in step 5 of this section.

Important The Extended 80-Column Text Card goes in the auxiliary slot. After the card has been installed, it overrides most cards in expansion slot 3. That is, most cards in slot 3 cannot be used if the extended 80-column card is in the auxiliary slot.

3. Again, check to see that the power to the Apple IIe is off by making sure that the internal power-on light is off.
4. Holding the card carefully by its edges, as Figure 2 shows, remove the card from its protective plastic antistatic bag.

Important Don't touch the gold comblike fingers along the bottom edge. These fingers insert into the auxiliary slot inside your Apple IIe and connect with the computer's circuitry. Moisture left by your hands on the fingers attracts dust that can cause a bad connection. And perspiration acids can corrode the connections.

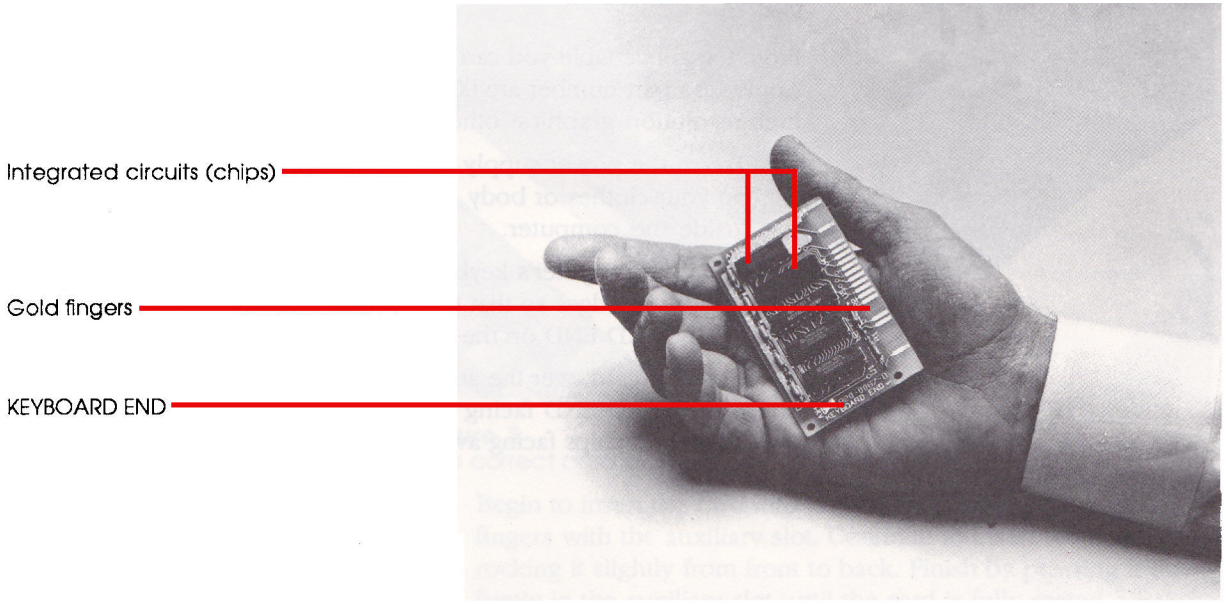

Figure 2
The Extended 80-Column Text Card

Notice that the left side of the card is marked KEYBOARD END.This is the side that will be pointed toward the keyboard when you install the card.

The **jumper block** connects two pins on the text card and allows most Apple IIe's to display **double high-resolution graphics** with the text card. Double high-resolution graphics uses 560 horizontal dots instead of 280. The *Apple IIe Technical Reference Manual* tells more about double high-resolution graphics.

5. Check the part number of your Apple IIe, which was pointed out in Figure 1. The part number determines what to do with the jumper block.

If the part number ends in	Then
0064-A	Remove the jumper block
0064-B	Leave the jumper block on the card
0087-A	Leave the jumper block on the card

From the above table you can see that if the last five digits of your Apple IIe's part number are 0064-A, you won't be able to use double high-resolution graphics; otherwise, you will.

6. Touch the power supply case to discharge any static electricity on your clothes or body. Do that before you touch anything inside the computer.
7. With the computer's keyboard facing toward you, pick up the card by its edges so that the chips are to your right. The label KEYBOARD END on the card should be toward you.
8. Hold the card over the auxiliary slot, as Figure 3 shows, with KEYBOARD END facing toward you, gold fingers pointing down and chips facing away from the power supply case.

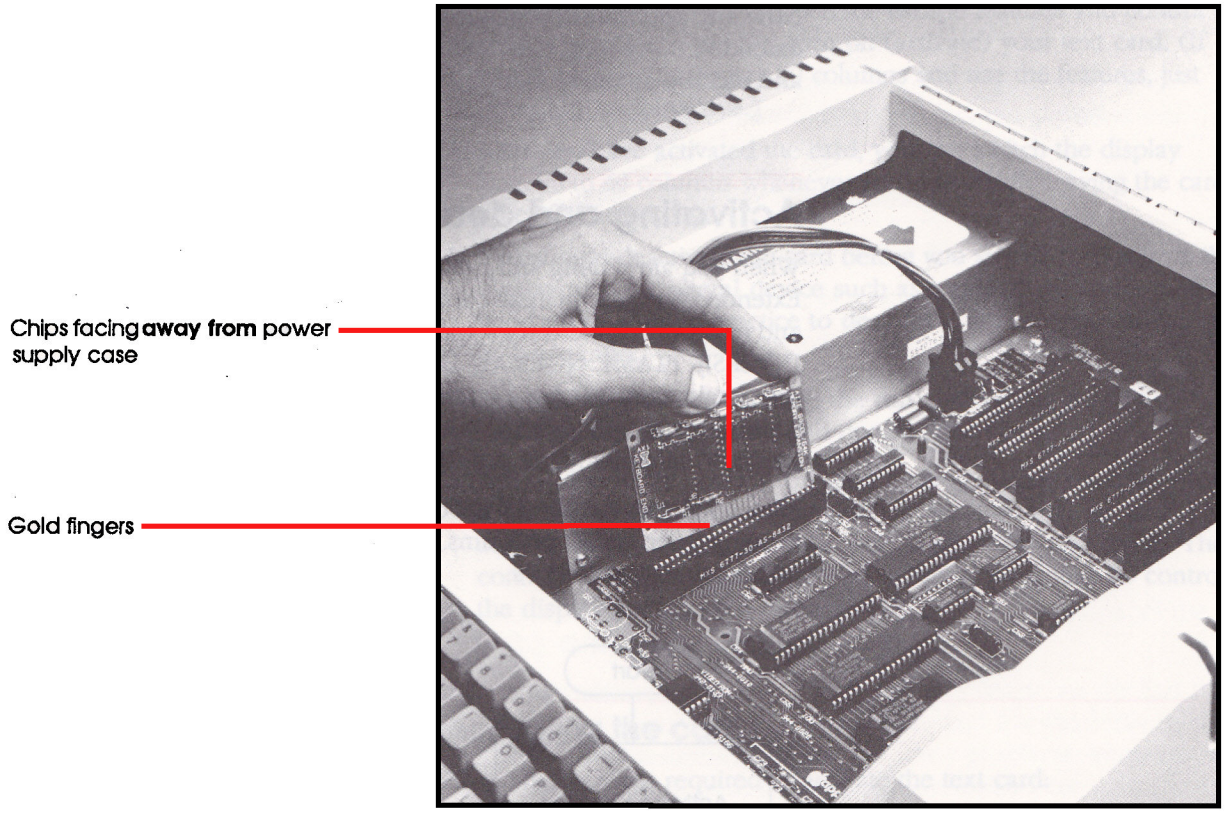

Figure 3
The correct card position

9. Begin to insert the card into the slot by lining up the gold fingers with the auxiliary slot. Continue to insert the card by rocking it slightly from front to back. Finish by pressing it down firmly in the auxiliary slot until the card is fully seated.
10. Put the cover back on the computer by inserting the front lip of the cover and pushing down firmly on its back corners until the lid snaps into place.
11. Start up the computer with any startup disk.

At this point you may want to adjust the contrast and the vertical and horizontal hold of your video monitor so that the information displayed is easy to read. The manual that comes with your monitor tells how to do that.

Now any application program requiring 128K of memory and an extended 80-column card should automatically display 80 columns and use the auxiliary memory.

Activating and deactivating the card

When you are writing and running your own BASIC programs, the Extended 80-Column Text Card allows you to display 80 columns and makes available certain special **display features,** including INVERSE, FLASH, NORMAL, HOME, and tabbing. It also lets you use certain **escape features** and **control character functions** while running your BASIC programs. These BASIC features and functions are listed in Appendixes A and B.

Figure 4 shows the normal procedure for using the text card while running your BASIC programs. The numbers refer to the information that follows.

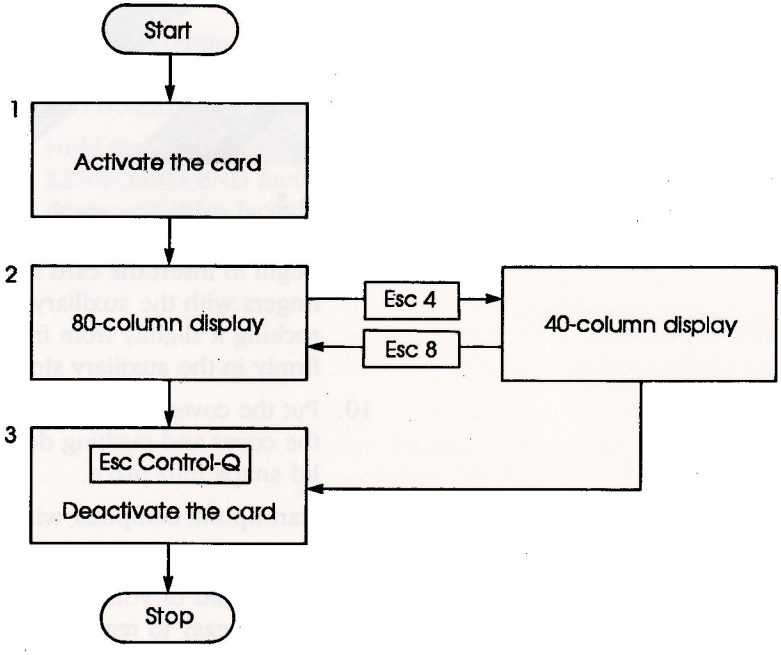

Figure 4
The Extended 80-Column Text Card and BASIC programs

1. To display 80 columns and use the escape features and control character codes, you must turn on (activate) your text card. (If you don't want to display 80 columns and use the features, just leave the card inactive.)
2. After you have activated the card, you can switch the display from 80 to 40 columns whenever you want while leaving the card's other features active.
3. You should deactivate the card before you switch output from the display to a peripheral device such as a printer. In addition, it's good programming practice to deactivate the text card at the end of a program.

This section tells how to activate the card, switch the display between 40 and 80 columns, and deactivate it again.

❖ *Note:* If you are writing programs using Pascal or if you are using the CP/M operating system, 80 columns of text are automatically displayed after you install the text card. The control codes you can use in your Pascal programs to control the display are listed in Appendix C.

Activating the card

Here are the steps required to activate the text card:

1. Turn on your video monitor and start up the Apple IIe with the *DOS 3.3 System Master* disk or the *ProDOS® User's Disk.* (Select the BASIC option if you've started up with ProDOS.) Or, if you don't have a disk drive, just turn the computer on and press Control-Reset.

   Now you see a square bracket prompt (]) and the blinking checkerboard cursor (▒). The blinking checkerboard cursor tells you the text card is inactive and the computer is in 40-column display mode.
2. Press Caps Lock on the left side of the keyboard to communicate with BASIC in uppercase letters.
3. Type `PR#3` and then press Return.

   Now you see a rectangular, solid white cursor, which tells you the card is active and the computer is in 80-column display mode.

Switching displays

To switch back and forth between 80- and 40-column displays while leaving the text card active, press the Escape key, release it, and then press either 4 or 8:

What you press	What happens
Escape 4	80-column display switches to 40-column display
Escape 8	40-column display switches to 80-column display

(Don't press both keys at the same time.)

After you switch to 40-column display by pressing Escape 4, the cursor changes to a solid white square. That means you still can use all the special escape features and control character functions the text card provides, but what you type will be displayed in 40 columns.

Deactivating the card

If you want to switch your output from the screen to a peripheral device such as a printer, you should deactivate the card. Also, you should deactivate the card at the end of your BASIC program (most application programs expect to find the card inactive, so they activate it themselves).

To deactivate the text card:

Press Escape Control-Q.

The blinking checkerboard cursor appears on the screen, with a backslash (\) just above the cursor. To reactivate the text card, you have to type `PR#3` again.

Important You can activate and deactivate the text card and switch the display whenever you want without wiping out the BASIC program in memory, which is protected.

Letting your program do the switching

You can code your BASIC program so the program itself automatically controls the text card. Here is a sample program that activates and deactivates the card:

Sample program	Remarks
`10 PRINT CHR$ (4);"PR#3"`	Turn on 80-column card
`40 GET X$`	Wait for a keypress
`50 TEXT`	Make sure you're at the left edge of the screen with no windows active
`60 PRINT CHR$ (17)`	Print a CONTROL-Q (go to 40-column)
`70 GET X$`	Wait for a keypress
`80 PRINT CHR$ (18)`	Print a CONTROL-R (go back to 80-column)
`90 PRINT CHR$ (21)`	Print a CONTROL-U (turn off the card)

Now that you've learned how to activate and deactivate the text card and to control the display both manually and automatically, you're ready to put your card to work in your own programs. Remember, more technical information, including instructions for using the text card's auxiliary memory, is available in the *Apple IIe Technical Reference*.

Appendix A: Escape sequences in BASIC

The escape codes with the directional arrow keys are the standard cursor-motion keys on the Apple IIe. The escape codes with the I, J, K, and M keys are the standard cursor-motion keys on the Apple II Plus, and are present on the Apple IIe for compatibility with the Apple II Plus. On the Apple IIe, the escape codes with the I, J, K, and M keys function with either uppercase or lowercase letters.

Press the Escape key, release it, and then press the next key(s) as indicated in Table 1.

Table 1
Escape sequences in BASIC

Escape code	Function
Escape Tab	Clears window and homes cursor (places it in upper-left corner of screen); exits from escape mode
Escape A or a	Moves cursor right one line; exits from escape mode
Escape B or b	Moves cursor left one line; exits from escape mode
Escape C or c	Moves cursor down one line; exits from escape mode
Escape D or d	Moves cursor up one line; exits from escape mode
Escape E or e	Clears to end of line; exits from escape mode
Escape F or f	Clears to bottom of window; exits from escape mode
Escape I or i *or* Escape Up Arrow	Moves cursor up one line; remains in escape mode (see text)

Table 1 (continued)
Escape sequences in BASIC

Escape code	Function
Escape J or j *or* Escape Left Arrow	Moves cursor left one space; remains in escape mode (see text)
Escape K or k *or* Escape Right Arrow	Moves cursor right one space; remains in escape mode (see text)
Escape M or m *or* Escape Down Arrow	Moves cursor down one line; remains in escape mode (see text)
Escape 4	If 80-column firmware is active, switches to 40-column mode; sets links to BASICIN and BASICOUT; restores normal window size; exits from escape mode
Escape 8	If 80-column firmware is active, switches to 80-column mode; sets links to BASICIN and BASICOUT; restores normal window size; exits from escape mode
Escape Control-D	Disables control characters; only carriage return, line feed, BELL, and backspace have an effect when printed
Escape Control-E	Reactivates control characters
Escape Control-Q	If 80-column firmware is active, deactivates 80-column firmware; sets links to KEYIN and COUT1; restores normal window size; exits from escape mode

Appendix B: Control character codes in BASIC

Table 2 lists the control characters and their use with the extended 80-column card.

Table 2
Control character codes in BASIC

Control character	ASCII name	Apple IIe name	Action taken by BASICOUT
Control-G	BEL	bell	Produces a 1000 Hz tone for 0.1 second
Control-H	BS	backspace	Moves cursor position one space to the left; from left edge of window, moves to right end of line above
Control-J	LF	line feed	Moves cursor position down to next line in window; scrolls if needed
Control-K†	VT	clear EOS	Clears from cursor position to end of screen
Control-L†	FF	home and clear	Moves cursor position to upper-left corner of window and clears window
Control-M	CR	return	Moves cursor position to left end of next line in window; scrolls if needed
Control-N†	SO	normal	Sets display format normal
Control-O†	SI	inverse	Sets display format inverse
Control-Q†	DC1	40-column	Sets display to 40-column
Control-R†	DC2	80-column	Sets display to 80-column
Control-S*	DC3	stop-list	Stops listing characters on display until another key is pressed

Table 2 (continued)
Control character codes in BASIC

Control character	ASCII name	Apple IIe name	Action taken by BASICOUT
Control-U†	NAK	quit	Deactivates 80-column video firmware
Control-V†	SYN	scroll	Scrolls display down one line, leaving cursor in current position
Control-W†	ETB	scroll up	Scrolls display up one line, leaving cursor in current position
Control-X	CAN	disable MouseText	Disables MouseText character display; uses inverse uppercase
Control-Y†	EM	home	Moves cursor position to upper-left corner of window, but doesn't clear
Control-Z†	SUB	clear line	Clears line cursor position is on
Control-[	ESC	enable MouseText	Maps inverse uppercase characters to MouseText characters
Control-\†	FS	forward space	Moves cursor position one space right; from right edge of window, moves it to left end of line below
Control-]†	G	clear EOL	Clears from current cursor position to end of line (that is, to right edge of window)
Control-_	US	up	Moves cursor up one line; no scroll

* Works only from the keyboard.
† Doesn't work from the keyboard.

Appendix C: Pascal screen control codes

The following table summarizes the Pascal video control functions.

Table 3
Pascal screen control codes

Control	Hex	Function performed
E or e	$05	Turns cursor on (enables cursor display)
F or f	$06	Turns cursor off (disables cursor display)
G or g	$07	Sounds bell (beeps)
H or h	$08	Moves cursor left one column; if cursor was at beginning of line, moves it to end of previous line
J or j	$0A	Moves cursor down one row; scrolls if needed
K or k	$0B	Clears to end of screen
L or l	$0C	Clears screen; moves cursor to upper-left of screen
M or m	$0D	Moves cursor to column 0
N or n	$0E	Displays subsequent characters in normal video (characters already on display are unaffected)
O or o	$0F	Displays subsequent characters in inverse video (characters already on display are unaffected)
V or v	$16	Scrolls screen up one line; clears bottom line
W or w	$17	Scrolls screen down one line; clears top line
Y or y	$19	Moves cursor to upper-left (home) position on screen
Z or z	$1A	Clears entire line cursor is on
| or \	$1C	Moves cursor right one column; if at end of line, does Control-M
} or	$1D	Clears to end of the line the cursor is on, including current cursor position; does not move cursor
^ or 6	$1E	GOTOxy: initiates a GOTOxy sequence; interprets the next two characters as x+32 and y+32, respectively
_	$1F	If not at top of screen, moves cursor up one line

Appendix D: Service and support

To help you get the best performance from your system, Apple Computer, Inc. has established a worldwide network of full-support authorized Apple dealers. If you need answers to technical questions or information about product updates, your authorized Apple dealer can help you. Apple's Technical Support organization backs each dealer and international technical support group via AppleLink, a state-of-the-art on-line electronic information service, to ensure prompt, reliable assistance.

Your dealer has the latest information on new hardware and software products as well as product updates. If you wish to upgrade your system, your dealer can help you select compatible components.

If your product requires service, your local authorized Apple dealer is trained and ready to support you. Apple provides factory-quality parts and the latest available diagnostic equipment to the more than three thousand authorized Apple service centers throughout the world. Apple guarantees parts and warranty labor. (Regulations in each country determine the length of warranty. Some restrictions may apply, depending on the country of original purchase.)

If for some reason you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, in the United States, call (800) 538-9696; in Canada, call (800) 268-7796 or (800) 268-7637. For locations in other countries, either call the Apple headquarters in your country or write to

Apple Computer, Inc.
Attn: Customer Relations
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Cupertino, CA 95014
USA

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