



LisaTerminal

Lisa

LisaTerminal



LisaTerminal

LisaTerminal •

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Preface

LisaTerminal is an office tool that lets you use your Lisa™ as a DEC VT52, a DEC VT100, or a TTY terminal. With LisaTerminal, your Lisa can simultaneously communicate with other computers and retain its function as a stand-alone computer.

This manual contains the following:

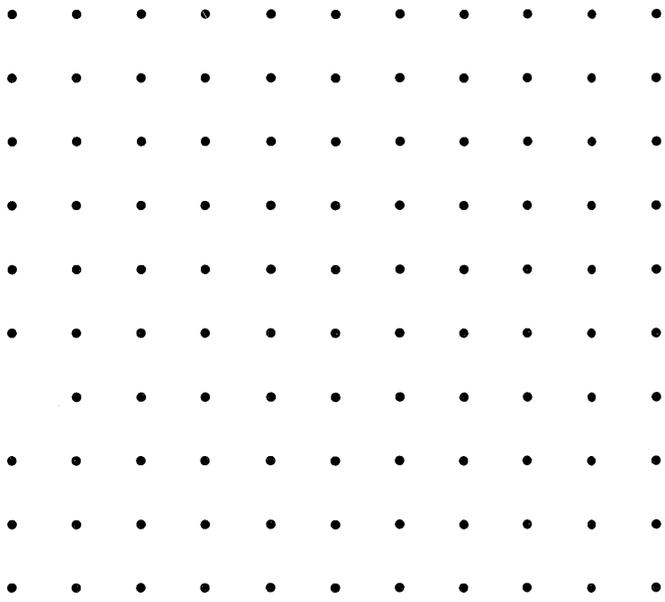
- Chapter 1 offers an overview of LisaTerminal and its compatibilities.
- Chapter 2 describes step by step how to use LisaTerminal.
- Chapter 3 describes in detail how to set up LisaTerminal to communicate with remote computers.
- Appendix 1 summarizes the LisaTerminal menu items.
- Appendix 2 explains the LisaTerminal error messages.
- Appendix 3 describes how to use LisaTerminal with some of the many available public networks and data bases.
- Appendix 4 is a programmer's reference.
- Appendix 5 explains the details of the LisaTerminal serial interface.
- Appendix 6 lists the differences between LisaTerminal and the DEC VT100.

The material in this manual is based on the assumption that you have gone through LisaGuide, which teaches you the fundamentals of using the Lisa. Instructions for using LisaGuide appear in Section A of the *Lisa Owner's Guide*.

Because the details of using LisaTerminal depend on the requirements of the remote computer system, this manual does not include a tutorial. LisaTerminal will be easier to learn if you are familiar with at least one Lisa Office System tool, such as LisaCalc or LisaWrite.

The step-by-step procedures are marked with an arrow symbol (▶). It means “Do something.” For example,

▶ Begin Chapter 1 to learn about LisaTerminal.



Chapter 1
Introduction

Introduction

LisaTerminal lets you communicate interactively with other computers. To do so, LisaTerminal acts like one of a number of standard terminals; a remote, or host, computer communicates with the Lisa in the same way it communicates with a terminal.

A terminal has a screen and a keyboard like your Lisa, but it is not itself a computer. A terminal works when it is connected to a remote computer.

When you use LisaTerminal, the Lisa takes on the characteristics of a standard terminal. Another computer can then communicate with LisaTerminal. You use the LisaTerminal document as you would use a terminal of the type that LisaTerminal is imitating. When a computer imitates another kind of terminal, the process is called “emulation.” LisaTerminal is a terminal emulator, and when you use it, your Lisa can emulate a TTY, a DEC VT52, or a DEC VT100 terminal. You specify, in a LisaTerminal document, which terminal you want LisaTerminal to emulate.

The part of every LisaTerminal document that emulates a TTY, DEC VT52, or a DEC VT100 terminal is called the “terminal screen area.” Figure 1 illustrates the terminal screen area in relation to the LisaTerminal document, the Lisa, and the remote computer.

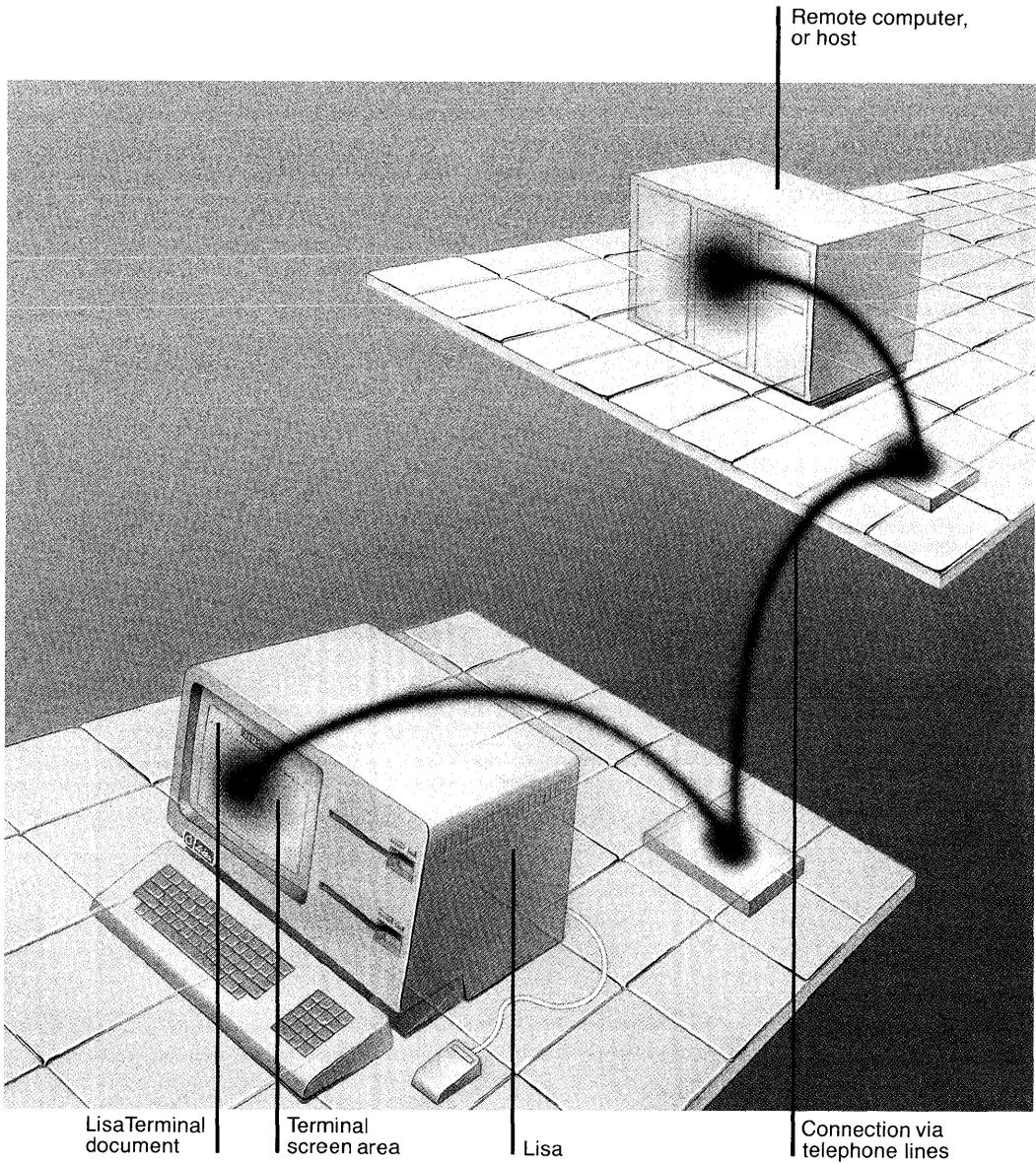


Figure 1. Terminal Screen Area and Its Relationships

You can use LisaTerminal to transfer information between your Lisa and another computer, including another Lisa or another Apple® computer. You can, for example, send information to an electronic mail program running on a remote computer if you have an account on the appropriate system. You can also access most public networks and data bases, so that you can send and receive electronic mail or get information on stock prices. Using the usual Lisa Office System procedures, you can copy material from other sources and paste it into Lisa documents for processing and printing.

LisaTerminal consists of the tool and a pad of stationery. The LisaTerminal master diskette is stored on the inside front cover of this manual. If your dealer did not transfer the contents of this diskette onto your ProFile™, follow the procedure under Add Contents of a Diskette onto Another Disk, under Copy, in Section D, Desktop Manager Reference Guide, in the *Lisa Owner's Guide*.

LisaTerminal Work Flow

To use LisaTerminal for the first time with a particular remote computer, you will:

- Create a document.
- Set the document up for communication with the host computer.
- Make a stationery pad out of the document. All documents created with this stationery pad will be set up for communication with the host.

These steps are fully explained later in this chapter.

Setting Up the Lisa to Communicate with Remote Computers

Before communicating with another computer through LisaTerminal, you must set up the Lisa so that it will function with the host.

- Make sure you have the proper hardware.
- Connect a modem or direct tie line to the Lisa.
- Set up the Device Connections portion of the system Preferences to tell the Lisa what kind of modem you have and where it is connected.

Hardware Requirements

You need the following hardware to use LisaTerminal:

- A Lisa.
- A modem or direct tie line. The Hayes Smartmodem 300 or Hayes Smartmodem 1200 is recommended. If you don't have one of the Hayes modems, you cannot use the LisaTerminal Phone menu. For more information, see Chapter 2, Using LisaTerminal, under Using the Phone Menu.
- A cable with a male DB-25 connector for the Lisa and the proper connector for your modem.

Connecting the Modem

You can connect the modem to either of the connectors labeled Serial A or Serial B on the back panel of the Lisa. Serial A is designed for use with modems, but Serial B will work with most modems. The Serial B connector allows you to use all the baud rates provided by LisaTerminal. The Serial A connector, however, excludes 3600 baud.

Both serial connectors accept 25-prong, D-shaped connectors. You cannot attach the connector incorrectly; it plugs in only one way. For more information on the serial connectors, refer to the *Lisa Owner's Guide*, Section C, Lisa Hardware, in System Parts, under Cabinet.

Setting Preferences

Before the Lisa can communicate with a remote computer, you must check Remote Computer in the Device Connections portion of the Lisa Preferences window. If you are not familiar with the Lisa Preferences, refer to Section B, Lisa Fundamentals, in the *Lisa Owner's Guide*.

To tell the Lisa you are going to communicate with a remote computer,

- ▶ Open the Preferences window by clicking twice on the Preferences icon.



- ▶ Check the box to the left of the words “Device Connections.” This portion of the Preferences window looks like Figure 2.
- ▶ Check Serial A or Serial B, as in Figure 2.
- ▶ Check Remote Computer, as in Figure 2.
- ▶ Choose Set Aside Preferences from the File/Print menu to close the Preferences window.

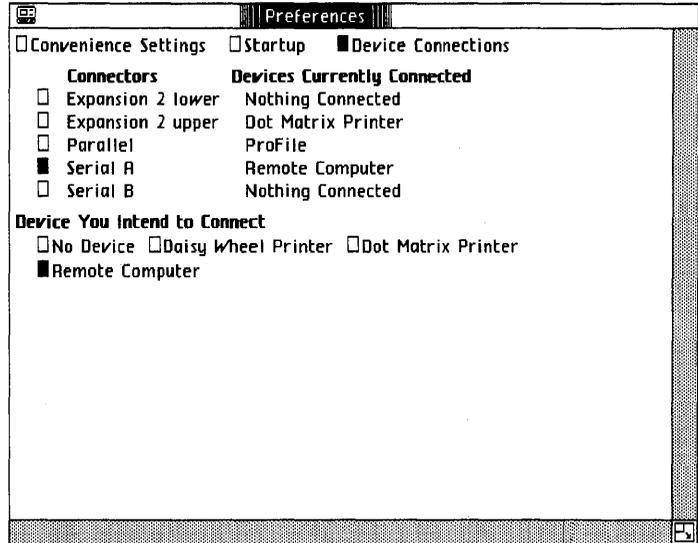
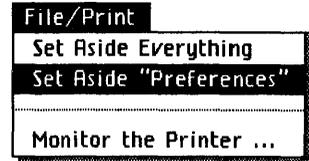


Figure 2. Preferences Window with Device Connections Checked

Setting Up the LisaTerminal Document for Communication

To use LisaTerminal, you open a LisaTerminal document. You can create a new document by tearing off a piece of stationery, or you can open an existing LisaTerminal document. You should create a stationery pad for each remote computer you access so that you won't have to set up the document each time before using it.

Creating a LisaTerminal Document

A LisaTerminal document displays a communications session with a remote computer; in it you see what you enter and how the host computer responds.

To create a new LisaTerminal document,

- ▶ Tear off a sheet of paper for the new document by clicking twice on the LisaTerminal stationery pad icon.



- ▶ Name the new document by entering, for example,

host-one



- ▶ Open the new document by clicking twice on the document icon.

You have created a LisaTerminal document from LisaTerminal stationery. Your LisaTerminal document should look like Figure 3.

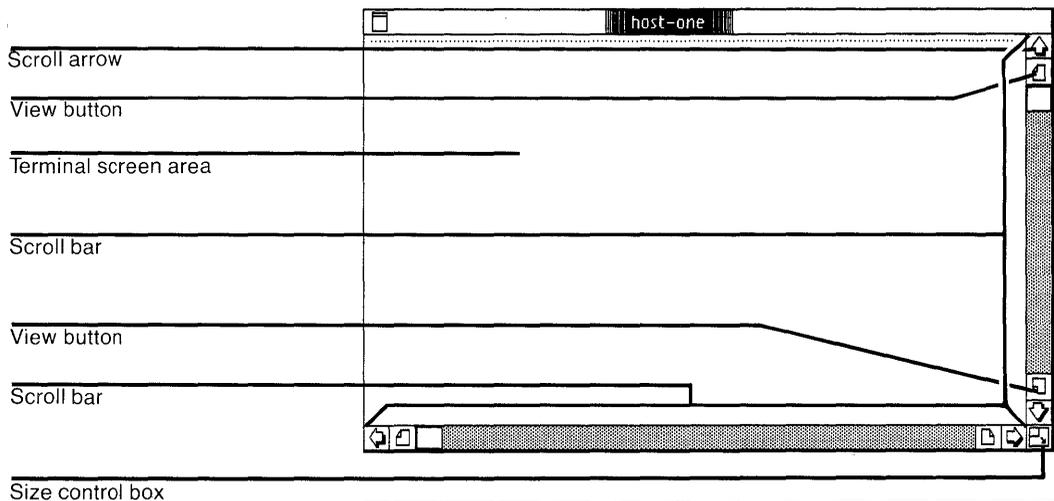


Figure 3. LisaTerminal Document

Checking the Computer Compatibility Characteristics

Computers interpret, send, and receive data in numerous ways. Whenever you access a remote computer, the data LisaTerminal sends to the host must be in a format the host understands.

All the information LisaTerminal needs to know about sending data to and from the host is in the Computer Compatibility dialog box. Since you will probably use many remote computers, you will connect to these computers in different ways. You may, for instance, use a network. Also, the requirements of the remote computers will differ. Default characteristics are therefore included in the LisaTerminal stationery. You may be able to communicate with a remote computer using these default characteristics. If not, you will have to set up the Computer Compatibility characteristics within a document to meet the requirements of the remote computer.

You can connect to a remote computer directly or through a telephone. In either case, you may log into the remote computer immediately, or you may need to identify yourself to a network or concentrator before you are allowed to log into the remote computer. When you use a network, you may call a phone number for the network and then use the network to connect to the remote computer, generally by giving the network some commands. If you call the remote computer directly, the characteristics you set for Computer Compatibility will remain the same throughout the communications session. If you use a network, you may have to change the settings for some of the Computer Compatibility characteristics once you access the remote computer. Refer to Appendix 3, Using LisaTerminal with Public Networks and Data Bases, for some examples of how the requirements of a network and a remote computer can differ slightly.

Figure 4 shows the default LisaTerminal Computer Compatibility characteristics. If you need to change some characteristics, follow the instructions in Chapter 3, LisaTerminal Setup Characteristics, under Computer Compatibility Characteristics.

Connector:	<input checked="" type="checkbox"/> Serial A	<input type="checkbox"/> Serial B		<input type="button" value="Cancel"/>
Parity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Even	<input type="checkbox"/> Odd	
Handshake:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> XOn/XOff		
Baud Rate:	<input type="checkbox"/> 50	<input type="checkbox"/> 75	<input type="checkbox"/> 110	
	<input type="checkbox"/> 134.5	<input type="checkbox"/> 150	<input type="checkbox"/> 200	
	<input type="checkbox"/> 300	<input type="checkbox"/> 600	<input checked="" type="checkbox"/> 1200	
	<input type="checkbox"/> 1800	<input type="checkbox"/> 2000	<input type="checkbox"/> 2400	
	<input type="checkbox"/> 3600	<input type="checkbox"/> 4800	<input type="checkbox"/> 9600	
Modem:	<input type="checkbox"/> Hayes 1200	<input type="checkbox"/> Hayes 300	<input checked="" type="checkbox"/> Other	
Dial:	<input type="checkbox"/> As the Document is Opened		<input checked="" type="checkbox"/> Using the Phone Menu	
Terminal:	<input checked="" type="checkbox"/> VT100	<input type="checkbox"/> VT52	<input type="checkbox"/> TTY	
Duplex:	<input checked="" type="checkbox"/> Full	<input type="checkbox"/> Half		
Auto New-Line:	<input type="checkbox"/> On	<input checked="" type="checkbox"/> Off		<input type="button" value="OK"/>
Communication:	<input checked="" type="checkbox"/> On (On-Line)	<input type="checkbox"/> Off (Local)		

Figure 4. Default Computer Compatibility Characteristics

Creating Stationery Pads

Now that you have created a LisaTerminal document and have changed the Computer Compatibility requirements for a particular computer, you should create a stationery pad for that document. Then, whenever you want to use this particular computer, you tear off a piece of stationery.

Before you create a stationery pad from the document, you might want to ask yourself some questions to make sure the document is set up to do what you want.

1. Do you want to record the entire communications session?

If so, check Remember for the Lines Off Top characteristic in the Comfort dialog box.

If you do not want to record the entire communications session, check Forget for the Lines Off Top characteristic in the Comfort dialog box.

2. If you have a Hayes modem, do you want to use the LisaTerminal Phone menu?

If so, you should, check Hayes 300 or Hayes 1200 for the Modem characteristic in the Computer Compatibility dialog box. Refer to Chapter 3, LisaTerminal Setup Characteristics, Computer Compatibility Characteristics, under Modem, for an explanation.

Enter the remote computer's phone number in the Phone menu. Refer to Chapter 2, Using LisaTerminal, under Entering the Phone Number, for an explanation.

3. Do you want the Lisa to dial the remote computer as the document is opened or to dial, when you specify, from the Phone menu?

If you want the Lisa to dial the remote computer as the document is opened, check As the Document Is Opened for the Dial characteristic in the Computer Compatibility dialog box.

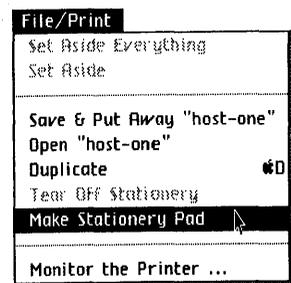
If you want to use the Phone menu to dial the remote computer, check Using the Phone Menu for the Dial characteristic in the Computer Compatibility dialog box. Refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for an explanation.

4. Have you set the Comfort characteristics as you want them?

Refer to Chapter 3, LisaTerminal Setup Characteristics, under Comfort Characteristics, for an explanation.

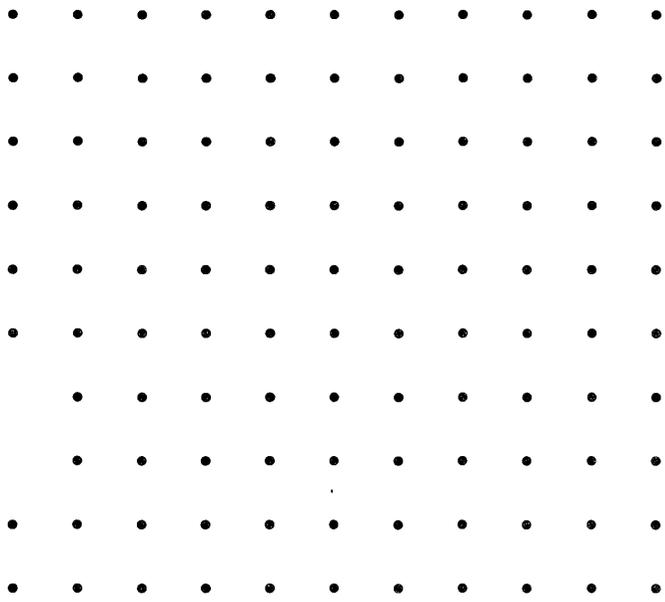
To create stationery for a particular host computer,

- ▶ Select the document icon from which you want to make stationery.
- ▶ With the document icon still selected, choose Make Stationery Pad from the File/Print menu.



The new stationery pad automatically takes on the name of the document. Change it if you like, or leave the name the way it is now. You may use the new stationery pad to create new LisaTerminal documents. All LisaTerminal documents created from this customized pad will have the characteristics you set for the document from which the pad was made. You can make as many different stationery pads as you need, and you can discard old ones as your needs change.

If the characteristics in Figure 4 match the requirements of the host, go to Chapter 2 to begin using LisaTerminal. If you need to change some characteristics, turn to Chapter 3, LisaTerminal Setup Characteristics, and follow the instructions under Computer Compatibility Characteristics to change the characteristics. After you have finished with the Computer Compatibility characteristics, turn to Chapter 2 to begin using LisaTerminal.



Chapter 2
Using LisaTerminal

Using LisaTerminal

The information in this chapter is based on the assumption that you have read Chapter 1, have set up the Lisa appropriately, and have created a stationery pad for a particular host computer. Chapter 2 first explains step-by-step procedures for using LisaTerminal. It then provides suggestions for setting up your LisaTerminal documents and for using LisaTerminal in conjunction with other Lisa Office System tools.

This chapter includes procedures for:

- Dialing a remote computer.
- Editing data within the LisaTerminal document.
- Copying and pasting data between LisaTerminal and LisaWrite.
- Copying and pasting data between LisaGraph and LisaCalc to LisaTerminal.
- Filing and retrieving LisaTerminal documents.

Terminal Screen Area

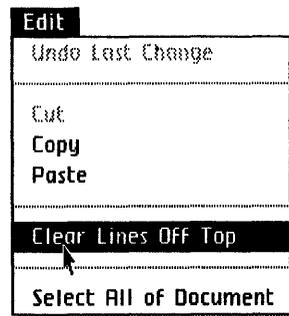
The part of every LisaTerminal document that assumes the characteristics of the terminal is the terminal screen area, a 24-line area in the LisaTerminal document where you see what you enter and how the remote computer responds.

The terminal screen area is distinguished from the rest of the LisaTerminal document by a dashed line across the top. Lines of data automatically scroll above this dashed line as the terminal screen area fills up. You can either record all the interactions of a communications session, or you can let the lines disappear as they scroll above the dashed line, depending on what you check for the Lines Off Top Comfort characteristic. If you check Remember, the lines are remembered, the complete communications session is recorded, and you can use the scroll bars to scroll up and down within the LisaTerminal document. If you check Forget, the lines disappear as they scroll above the dashed line in the terminal screen area. The default is Remember. Refer to Chapter 3, LisaTerminal Setup Characteristics, Comfort Characteristics, under Lines Off Top, to change this characteristic. The terminal screen area and the other parts of a LisaTerminal document are shown in Figure 3 in Chapter 1.

Clearing Lines Off the Top

You can clear the lines that have scrolled off the top of the terminal screen area.

- ▶ Choose Clear Lines Off Top from the Edit menu.



When you choose Clear Lines Off Top from the Edit menu, the lines that have scrolled off the top of the terminal screen area are erased and you have no way to retrieve or redisplay them. If you check Forget Lines Off Top in the Comfort characteristics dialog box, there will be no lines off the top to erase.

About the Cursor

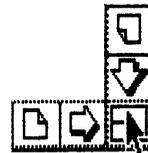
The terminal screen area contains a cursor. The cursor indicates the position at which data that you enter or receive from the host will appear. The host computer can, by itself or using commands you enter from the keyboard, change the position of the cursor.

Full-Screen Applications

Some host computers have applications that use a full screen of data at a time. Most typical of these full-screen applications are screen editors such as EMACS. If you use a full-screen application, lines of data will not be scrolled above the terminal screen area. Rather, the host will redisplay the screen when more information is required. Only the last screen of data will be saved during a work session when you use a full-screen application. You can copy and paste important intermediate screens to LisaWrite. Refer to Copying and Pasting with LisaTerminal, under LisaTerminal and LisaWrite, later in this chapter, for more information.

If you use full-screen applications, you should use the size control box to expand the LisaTerminal document window to the boundaries of the Lisa screen. This ensures that the entire terminal screen area is available for your use. The size control box is labeled in Figure 3 in Chapter 1. To widen a LisaTerminal document window,

- ▶ Move the pointer into the size control box, and then press and hold down the mouse button while moving the size control box and the flickering boundary to the right, to the left, up, or down.



- ▶ Release the mouse button when the window is the desired size.

After you enlarge the LisaTerminal document window, you may notice that part of the document, in the bottom of the window, is gray. The gray part of the document is unavailable for use; it is outside the 24-line terminal screen area.

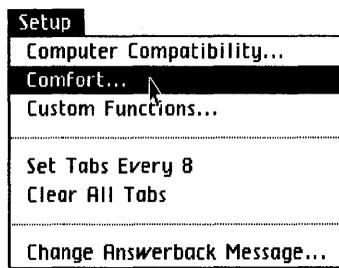
Changing the Columns per Line

The terminal screen area can be 80 or 132 columns wide, depending on what you check for the Columns per Line Comfort characteristic. The default is 80 Columns per Line.

When you change from 80 to 132 columns, or vice versa, whatever is currently displayed in the terminal screen area is lost. Never change the number of columns per line if you want to save the information currently on the screen. If you know you need 132 columns per line, you should probably change the width before dialing the remote computer; that way, you can record the entire session.

To make the terminal screen area 132 columns wide,

- ▶ Choose Comfort from the Setup menu.



- ▶ Find Columns per Line and move the pointer to the box to the left of "132."

Columns per Line: 80 132

- ▶ Click the mouse button. Notice that the box next to 132 is darkened.

Columns per Line: 80 132

- ▶ Click OK.

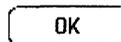


Figure 5 shows a 132 columns-per-line LisaTerminal document.

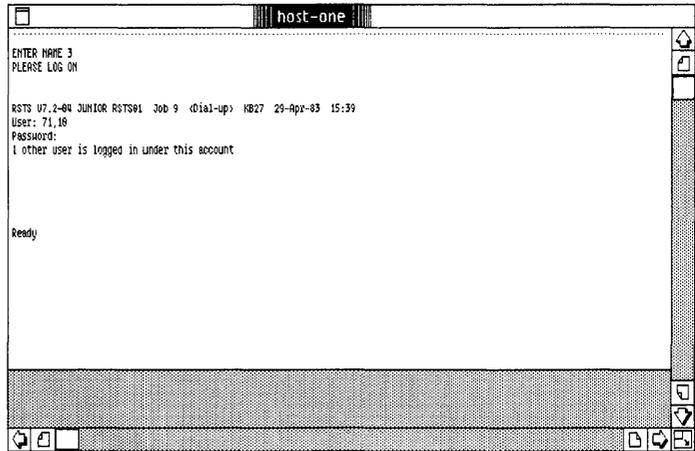


Figure 5. 132 Columns-per-Line LisaTerminal Document

Refer to Chapter 3, *LisaTerminal Setup Characteristics*, *Comfort Characteristics*, under *Columns per Line*, for more information.

Dialing the Remote Computer

If you have a Hayes 1200 or a Hayes 300, you can have LisaTerminal dial the remote computer's phone number for you. You can use the LisaTerminal Phone menu when you want to access the remote computer, or you can have LisaTerminal dial the remote computer as the LisaTerminal document is opened.

If you don't have a Hayes modem, you cannot have LisaTerminal dial the remote computer's phone number for you. This means you cannot have LisaTerminal dial the remote computer as the LisaTerminal document is opened, and you cannot use the LisaTerminal Phone menu. Refer to *If You Don't Have a Hayes Modem*, later in this chapter, for more information.

Using the Phone Menu

You can use the LisaTerminal Phone menu only if you have a Hayes Smartmodem 1200 or a Hayes Smartmodem 300. Before continuing, you should connect your Hayes modem to the Lisa and set Preferences. Refer to Chapter 1, *Introduction*, under both *Connecting the Modem* and *Setting Preferences*, if you haven't connected your modem and set Preferences.

To use the Phone menu, you must:

- ▶ Check either Hayes 1200 or Hayes 300 for the Modem characteristic in the Computer Compatibility dialog box.

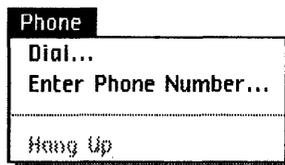
Modem: Hayes 1200 Hayes 300 Other

- ▶ Check Using the Phone Menu for the Dial characteristic in the Computer Compatibility dialog box.

Dial: As the Document is Opened Using the Phone Menu

Refer to Chapter 3, LisaTerminal Setup Characteristics, under Computer Compatibility Characteristics, for more information about the Dial and Modem characteristics.

You use the Phone menu to enter the remote computer's phone number, to tell LisaTerminal to dial the remote computer's phone number, and to tell LisaTerminal when to hang up (end communication with the remote computer). The Phone menu has three entries:



1. Choose Dial to enter the phone number you want the Lisa to dial, and to dial the number. Once you enter the phone number in the dialog box, it is displayed next to "Dial" in the Phone menu and you do not have to enter it again.
2. Choose Enter Phone Number to enter the phone number you wish the Lisa to dial.
3. Choose Hang Up to end a communications session with the host.

Entering a Phone Number

Phone numbers you enter into the Dial and Enter Phone Number dialog boxes must be in the following format.

1. Precede the phone number with **t** if you have a push-button phone — for example, **t(415)899-0023**.
2. Precede the phone number with **p** if you have a pulse (rotary dial) phone — for example, **p776-5211**.

3. Use a comma when you want the Hayes modem to wait for another dial tone before dialing a number. If you have to dial a number to get an outside line, insert a comma between the number for the outside line and the remote computer's phone number. For example, **t9,(415)444-5665** informs the modem that you have a push-button phone, that a "9" must be dialed, and that "(415)444-5665" is dialed after a second dial tone occurs. The area code is necessary only if the number you are entering is outside your own area. The phone number must not exceed 40 characters.

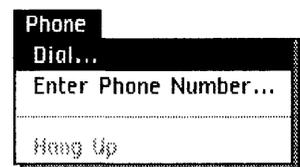
If you do not precede all phone numbers you enter in the Dial dialog box with either a "t" or a "p," the Hayes modem will use pulse dialing.

You can put all the normal formatting, for example, **t9,(415)444-5665**, when you enter the phone number. Characters such as the parentheses and dash are ignored by LisaTerminal.

You will hear the dialing, dial tone, and connection noises from the Hayes modem when LisaTerminal connects to the host. You can turn down the volume on the Hayes modem if you don't want to listen. To lower the volume, turn the volume-control knob on the back of the Hayes modem counterclockwise. The owner's manual for your Hayes modem has a diagram of the back of the modem; refer to it if you can't find the volume-control knob.

To enter and dial a phone number next to the Phone menu item,

- ▶ Choose Dial from the Phone menu.



- ▶ Enter the phone number, for example, **t9,444-5665** in the dialog box.

Phone Number? t9,444-5665

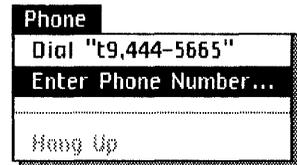
After you enter the phone number, press **(Return)** to dial the number. The phone number is displayed beside the Dial menu item in the Phone menu, and the number is dialed. You never have to enter the phone number again.

The number ‘t9,444-5665’ tells the Hayes modem that a push-button phone line is being used, and that a second dial tone must occur before ‘444-5665’ can be dialed.

Entering a Phone Number without Dialing It

To enter a phone number without dialing it, or to change the telephone number displayed next to the Dial menu item,

- ▶ Choose Enter Phone Number from the Phone menu.

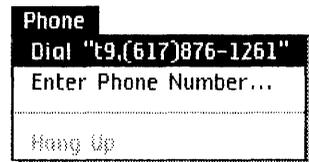


- ▶ Enter the phone number in the dialog box and press **(Return)**.

Phone Number? t9,(617)876-1261

The new phone number is displayed after the Dial menu item in the Phone menu. To dial the number,

- ▶ Choose Dial from the Phone menu.

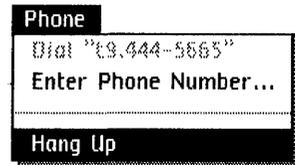


The phone number is dialed, and connection is established between LisaTerminal and the host.

Hanging Up

To stop communicating with the host,

- ▶ Choose Hang Up from the Phone menu.



The connection between LisaTerminal and the host is ended.

Dialing the Remote Computer As the LisaTerminal Document Is Opened

LisaTerminal can automatically dial the remote computer as you open a document. To do so, the LisaTerminal document must meet the following requirements:

- Hayes Smartmodem 1200 or Hayes Smartmodem 300 must be checked for the Modem characteristic in the Computer Compatibility dialog box.
- As the Document Is Opened must be checked for the Dial characteristic in the Computer Compatibility dialog box.
- The phone number for the remote computer must be in the document.

If you plan to use a remote computer frequently, you should make a stationery pad for that computer. Once you create a stationery pad customized for dialing as the document is opened, your Lisa will dial the remote computer as you open documents created from that stationery pad. Refer to Chapter 1, Introduction, under Creating Stationery Pads, for more information.

If You Don't Have a Hayes Modem

If you don't have a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, you can't use the LisaTerminal Phone menu. LisaTerminal will work with most modems; the only difference is that if you don't have a Hayes modem, you must call the remote computer yourself.

Before proceeding, you should already have connected your modem to the Lisa and set Preferences. Go to Chapter 1, Introduction, under both Connecting the Modem and Setting Preferences, if you haven't connected the modem and set Preferences.

Before you can dial the remote computer,

- ▶ Check Other for the Modem characteristic in the Computer Compatibility dialog box.

Modem: Hayes 1200 Hayes 300 Other

Refer to Chapter 3, LisaTerminal Setup Characteristics, under Computer Compatibility Characteristics, for more information about the Dial and Modem characteristics.

You should read the owner's manual for your modem to find out how to connect the modem to the telephone, and what commands, if any, your modem requires. Some modems connect directly to the telephone. Generally, when a modem is connected to the telephone, you will need to dial the remote computer's number and hang up when you hear the connection noise from the host. Alternatively, the modem may require you to enter the telephone number on the Lisa keyboard.

You must open a LisaTerminal document before you dial the remote computer. You must disconnect from the remote computer before saving or setting aside your LisaTerminal document.

Editing in LisaTerminal

Editing LisaTerminal documents is somewhat different from editing other Lisa tool documents. If you are not familiar with the concepts involved in editing a Lisa document, you should use LisaGuide for an introduction. Instructions for using LisaGuide appear in Section A of the *Lisa Owner's Guide*.

Pointers

As you move the mouse, the pointer moves around the screen and assumes the following shapes as it moves from one area to another.



The text pointer appears whenever you move the mouse in the LisaTerminal document window. You use this pointer when you select data for copying.



The arrow pointer appears outside the LisaTerminal document window, and when you choose menu items.



The check pointer is used to check options in the dialog boxes.



The hourglass appears whenever you need to wait while the Lisa finishes doing something.

Using the Edit Menu

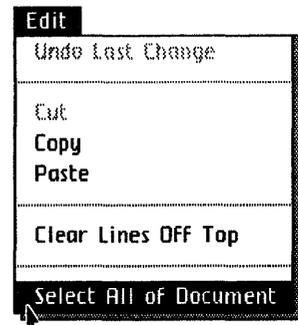
Since host computers are the source of what is in the terminal screen area, you cannot remove any information from the screen. Therefore, the concept of “cutting” in a LisaTerminal document does not exist.

The copy and paste functions work as with all other Lisa tools. However, when you paste information into LisaTerminal from another application, the text appears after the last entry in the LisaTerminal document, where the cursor is, unless the host uses an application that handles data transferral differently.

LisaTerminal does not use Apple keys as the other tools do. The other tools allow you to press an Apple-key combination instead of choosing a menu item. LisaTerminal uses the Apple keys to generate control and escape sequences for the remote computer. Refer to Appendix 4, Programmer's Reference, for an explanation of the LisaTerminal keyboard.

The Select All of Document menu item is especially useful in LisaTerminal. You may frequently wish to access information on a remote computer, copy it, and paste the information to a LisaWrite document. The Select All of Document function allows you to select all the contents in the LisaTerminal document in one step. To select an entire LisaTerminal document,

- ▶ Choose Select All of Document from the Edit menu.



The contents of your LisaTerminal document will be highlighted, and the entire LisaTerminal document will be selected.

Copying and Pasting with LisaTerminal

You can copy information from LisaTerminal and paste it to LisaWrite and vice versa. You can copy text from a LisaGraph or LisaCalc table and paste it into a LisaTerminal document.

When you paste into a LisaTerminal document, the information that you paste is sent to the host computer just as if you had entered it in from the Lisa keyboard.

Note: You must set the tabs within a LisaTerminal document before pasting from LisaWrite, LisaCalc, or LisaGraph.

LisaTerminal and LisaWrite

You can copy and paste from LisaTerminal to LisaWrite and from LisaWrite to LisaTerminal. Since LisaTerminal does not allow printing, you should paste information you want printed to LisaWrite. You can then print the information from LisaWrite.

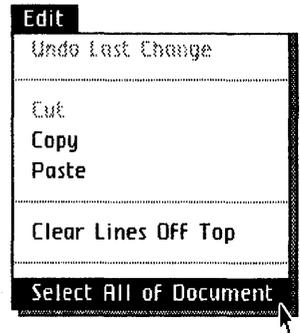
LisaTerminal will not wraparound or format text as does LisaWrite. In other words, punctuation and spaces between sentences may appear at the beginning of a new line, and words may be split between lines. If you want the same format in the LisaTerminal document as in the LisaWrite document, prior to pasting place a **Return** at the end of each line in each paragraph in the LisaWrite document. You should also set the tabs in the LisaTerminal document to match those in the LisaWrite document.

Copying information in LisaTerminal is like copying information in any of the other Lisa tools, except that you cannot use the Apple key as shorthand for the Edit menu items.

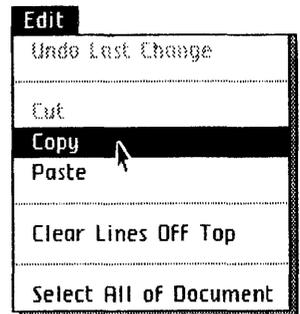
If you wish to copy an entire LisaTerminal document to a LisaWrite document,

- ▶ Open the LisaTerminal document that you want to copy into the LisaWrite document.

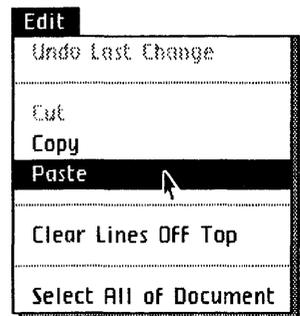
- ▶ Choose Select All of Document from the Edit menu.



- ▶ Choose Copy from the Edit menu.



- ▶ Open the LisaWrite document that you want to paste the LisaTerminal document into, or create a new one.
- ▶ Place the insertion point within the LisaWrite document where you want to paste the LisaTerminal document.
- ▶ Choose Paste from the Edit menu.



The contents of the LisaTerminal document are copied to the LisaWrite document. You can copy parts of LisaTerminal documents the same way, except instead of selecting the entire document, you select the part of the document you wish to copy.

LisaTerminal, LisaGraph, and LisaCalc

You can copy text from a LisaGraph table or a LisaCalc spreadsheet and paste it to a LisaTerminal document.

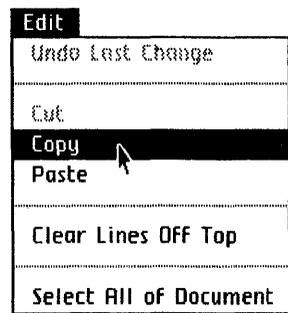
Before pasting from a LisaCalc or LisaGraph table into a LisaTerminal document, you must set the tab positions in the LisaTerminal document to accommodate the width of the cells in the LisaCalc or LisaGraph table. The first tab marks the insertion point of the paste. Note that if the contents of the cell is equal to the width of the cell, the tab positions should be set to one position greater than the cell width. The extra character position is used for the tab. For example, if you wish to copy from a LisaCalc table with eight cells, one of 12 characters and the rest of eight characters, you would set the tabs in the LisaTerminal document

- Where you want the insertion point of the paste,
- Thirteen character positions after the insertion point tab,
- Every nine character positions thereafter.

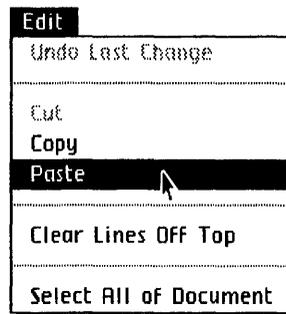
Refer to Chapter 3, under Tab Ruler, for more information.

To paste text from a LisaGraph or LisaCalc document into a LisaTerminal document,

- ▶ Open the LisaGraph or LisaCalc document containing the information you want.
- ▶ Select the entries to be copied from the document.
- ▶ Choose Copy from the Edit menu.



- ▶ Open or activate the LisaTerminal document.
- ▶ Choose Paste from the Edit menu.



Filing in LisaTerminal

Filing LisaTerminal documents is just like filing any Lisa tool document. All the filing operations are on the File/Print menu. For a detailed discussion of Lisa filing, refer to the *Lisa Owner's Guide*, Section D, Desktop Manager Reference Guide.

Retrieving an Existing LisaTerminal Document

You can open or retrieve an existing LisaTerminal document. To do so,

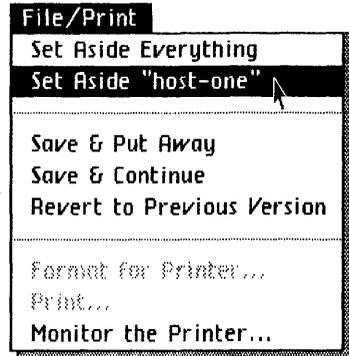
- ▶ Open the ProFile, if the document is stored on your ProFile. If the document is on a diskette, insert the diskette and open it by clicking the mouse button twice on the diskette icon.
- ▶ Open the folder, if the document is in a folder.
- ▶ Open the document by clicking the mouse button twice on the document icon.

If you have everything set up for automatic dialing, the Lisa will dial the remote computer when the document is opened. Refer to Dialing the Remote Computer, earlier in this chapter, for more information.

Setting Aside a Document

You can set aside a LisaTerminal document. When you do so, the document continues to receive information from the host, and no other document can use this serial port. You must save and put away the document before the serial port becomes available. To set aside the document,

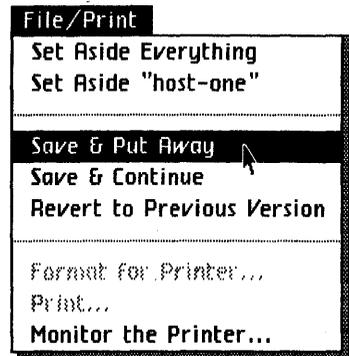
- ▶ Choose Set Aside from the File/Print menu.



Putting Your Document Away

When you've finished with a LisaTerminal document, you can either save it or discard it. To save a LisaTerminal document,

- ▶ Choose Save & Put Away from the File/Print menu.



The document window closes automatically, and its icon goes back to the position it occupied in the ProFile window before you opened it. If this is a document you just created, the document icon goes back beside the stationery pad in the ProFile window. To move the document icon to an empty place in the ProFile window,

- ▶ Move the pointer into the LisaTerminal document icon.



LisaTerminal Paper

- ▶ Press and hold the mouse button while moving the icon to an empty place in the ProFile window.
- ▶ Release the mouse button.

You will want to discard LisaTerminal documents that you don't want, because they take up space. To do this,

- ▶ Move the pointer into the icon of the unwanted LisaTerminal document.



- ▶ Press and hold the mouse button while moving the icon to the Wastebasket icon.



- ▶ Release the mouse button.

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Chapter 3
LisaTerminal Setup
Characteristics

LisaTerminal Setup Characteristics

This chapter defines and explains the LisaTerminal setup characteristics and explains how to change the answerback message. A troubleshooting section at the end of the chapter lists possible problems you may encounter when changing the LisaTerminal setup characteristics, their probable causes, and likely solutions.

The setup characteristics fall into three categories:

- **Computer Compatibility characteristics.** You use these characteristics to set up compatibility with the host computer and, if applicable, a network. Consult a manual for the host computer, or a data processing person associated with the host with which you wish to communicate, and find out what characteristics you need.
- **Comfort characteristics.** You use these characteristics to set up LisaTerminal the way you prefer. They include margin bell, screen background, and tab ruler.
- **Custom Functions.** You won't use these characteristics unless a host application requires them. Consult a data processing specialist associated with the remote computer, or a manual for the application, to see if you should use the Custom Functions.

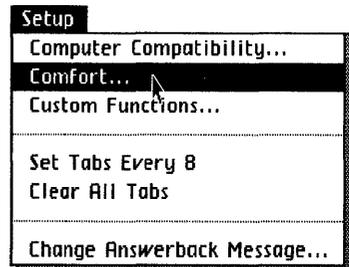
All LisaTerminal setup characteristics are explained in this chapter. The default for each characteristic is pictured with the discussion.

Changing a Setup Characteristic

The stationery pad that comes with LisaTerminal includes default setup characteristics. To adjust the settings, choose Computer Compatibility, Comfort, or Custom Functions from the Setup menu. Each will display a dialog box. These dialog boxes, with the default settings, are shown in Figures 6, 8, and 10 later in this chapter.

To check a particular characteristic, simply put the pointer over the desired option, and click the mouse button. For example, to hide the tab ruler:

- ▶ Choose Comfort from the Setup menu.



- ▶ Move the pointer to the box to the left of Hide.

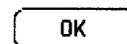
Tab Ruler: Show Hide

- ▶ Click the mouse button. Notice that the box next to Hide is darkened. The tab ruler will be hidden.

Tab Ruler: Show Hide

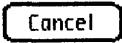
Make all changes this way. When you have checked everything you wish,

- ▶ Click OK. The characteristics you checked will be set for the document that is currently open. If you make the document into a stationery pad, these settings will apply to documents torn from that pad.



Or, if you wish to continue working without changing any existing characteristics,

- ▶ Click Cancel.
LisaTerminal will continue to use the characteristics that existed before the dialog box appeared.



Computer Compatibility Characteristics

The Computer Compatibility characteristics allow you to tailor the LisaTerminal document for communication compatibility with different host computers. The Computer Compatibility dialog box, with the default settings, is shown in Figure 6.

Connector:	<input checked="" type="checkbox"/> Serial A	<input type="checkbox"/> Serial B		<input type="checkbox"/> Odd	<input type="button" value="Cancel"/>
Parity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Even			
Handshake:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> XOn/XOff			
Baud Rate:	<input type="checkbox"/> 50	<input type="checkbox"/> 75	<input type="checkbox"/> 110		
	<input type="checkbox"/> 134.5	<input type="checkbox"/> 150	<input type="checkbox"/> 200		
	<input type="checkbox"/> 300	<input type="checkbox"/> 600	<input checked="" type="checkbox"/> 1200		
	<input type="checkbox"/> 1800	<input type="checkbox"/> 2000	<input type="checkbox"/> 2400		
	<input type="checkbox"/> 3600	<input type="checkbox"/> 4800	<input type="checkbox"/> 9600		
Modem:	<input type="checkbox"/> Hayes 1200	<input type="checkbox"/> Hayes 300	<input checked="" type="checkbox"/> Other		
Dial:	<input type="checkbox"/> As the Document is Opened	<input checked="" type="checkbox"/> Using the Phone Menu			
Terminal:	<input checked="" type="checkbox"/> VT100	<input type="checkbox"/> VT52	<input type="checkbox"/> TTY		
Duplex:	<input checked="" type="checkbox"/> Full	<input type="checkbox"/> Half			
Auto New-Line:	<input type="checkbox"/> On	<input checked="" type="checkbox"/> Off			<input type="button" value="OK"/>
Communication:	<input checked="" type="checkbox"/> On (On-Line)	<input type="checkbox"/> Off (Local)			

Figure 6. Computer Compatibility Dialog Box

Connector

You use the Connector characteristic to tell Lisa to which connector, Serial A or Serial B, your modem or direct tie line is attached. Serial A is the connector designed for modems. Serial B will work for most modems, however.

Note: You should connect serial printers to Serial B.

In a document torn from the stationery pad that comes with LisaTerminal, the Connector characteristic is automatically set to match the information in the Preferences window. See Figure 6. That is, if the Preferences window shows that Serial A is attached to a remote computer, the default connector will be Serial A. Likewise, Serial B is the default if the Preferences window shows Serial B attached to a remote computer. If the Preferences window has both Serial A and Serial B connected to a remote computer, Serial A is the default in all new LisaTerminal documents.

Serial A does not support 3600 baud. If you wish to communicate at 3600 baud, you must connect your modem to Serial B.

Parity

Parity refers to the process of checking that data were not damaged in transmission. The way you set the Parity setting for LisaTerminal is determined by what the host computer requires; check a manual for the host, or consult a data processing specialist associated with the host computer. Parity can be Even, Odd, or None (turned off). The default characteristic is None.

Parity: None Even Odd

Parity errors are printed as rectangular boxes. If you see these boxes on your screen, then the parity setting is wrong. Try the other settings until you receive normal transmission.



Handshake

Handshaking is the ability to regulate transmission of data from the host to LisaTerminal. Transmission of data is halted when the LisaTerminal buffers are too full to handle more information. When LisaTerminal is ready for more information, it sends a signal to the host to resume data transmission. Likewise, data transmission is halted when the host cannot handle more information, and starts when it is ready for more information. The Handshake protocol choice depends on what the host requires.

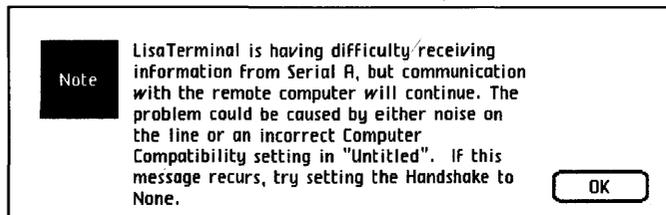
The XOn/XOff setting allows the remote computer and LisaTerminal to tell each other whether they are ready to receive more information. When XOn/XOff is checked, the Lisa can stop transmission from the host by sending XOff and start it again with XOn. Likewise, transmission from LisaTerminal to the host stops when XOff is sent to LisaTerminal and resumes when XOn is sent.

Note: When Handshake is set to Off, and a large amount of data is being received, it is recommended that you do not use the mouse until the transfer is complete.

When a host does not support XOn/XOff, you should check None. If the data you receive from the host seem to be missing random characters, this indicates an overflow. If an overflow occurs, check a slower baud rate so the host doesn't overflow LisaTerminal and vice versa (300 baud or lower should be slow enough). Check XOn/XOff if the host allows a handshake protocol. The default is None.

Handshake: None XOn/XOff

If the line is carrying excessive noise, or if you have not set the Handshake setting properly, LisaTerminal may have difficulties receiving information. If such a problem occurs, a message will appear on your screen about 45 seconds after the onset of the problem.



Baud Rate

The baud rate is the speed at which data pass to and from the remote computer. Baud means the number of bits sent per second. Every character requires ten bits. Therefore, the number of characters sent per second is equal to the baud rate divided by ten. The baud rate you check depends on the host computer or network.

LisaTerminal supports the following baud rates: 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, and 9600 baud. You must use Serial B to use 3600 baud. The default is 1200 baud.

Baud Rate:	<input type="checkbox"/> 50	<input type="checkbox"/> 75	<input type="checkbox"/> 110
	<input type="checkbox"/> 134.5	<input type="checkbox"/> 150	<input type="checkbox"/> 200
	<input type="checkbox"/> 300	<input type="checkbox"/> 600	<input checked="" type="checkbox"/> 1200
	<input type="checkbox"/> 1800	<input type="checkbox"/> 2000	<input type="checkbox"/> 2400
	<input type="checkbox"/> 3600	<input type="checkbox"/> 4800	<input type="checkbox"/> 9600

If the data you receive from the host are garbled, or if you aren't receiving anything, this could mean that the baud rates don't match. You can refer to the host's manual to find the correct baud rate.

Modem

You use the Modem characteristic to specify the type of modem you are using: Hayes 1200, Hayes 300, or Other if you are using another kind of modem or a direct tie line. You may use the LisaTerminal Phone menu only if you have a Hayes modem and if you choose Hayes 1200 or Hayes 300. The default is Other.

Modem: Hayes 1200 Hayes 300 Other

Dial

You must have checked Hayes 1200 or Hayes 300 for the Modem characteristic to check a Dial characteristic.

You can check As the Document Is Opened, which gives you automatic dialing, or Using the Phone Menu, which puts manual dialing into effect. Check As the Document Is Opened if the remote computer's phone number is to be dialed when you open a document. Check Using the Phone Menu if you intend to use the Phone menu to tell the LisaTerminal when to dial the remote computer.

Refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for more information.

If you check *As the Document Is Opened*, you must check Hayes 1200 or Hayes 300 in the Modem characteristic. The default is *Using the Phone Menu*.

Dial: *As the Document is Opened* *Using the Phone Menu*

Terminal

LisaTerminal can assume the characteristics of the DEC VT100, DEC VT52, or TTY terminals. The default is VT100.

Terminal: VT100 VT52 TTY

The TTY ignores all escape and most control sequences.

Duplex

Full duplex sends all characters entered from the Lisa keyboard to the host without, at the same time, printing the characters on the terminal screen area as you enter them. In full duplex, all characters sent from the host are printed in the terminal screen area; if the host sends back the characters you entered when it receives them, these are displayed in the terminal screen area. If the host does not send back the characters you entered, you will not see what you entered. Most hosts, however, return the characters they receive.

Half duplex sends characters you enter from the Lisa keyboard and prints these characters in the terminal screen area as you enter them. In other words, half duplex does not require the host to send back the characters it received.

Most host computers use full duplex. If you don't know what your host uses, check Full Duplex. If, as you enter information, you never see what you enter but do receive messages from the host, you should check Half Duplex since this condition indicates that the host uses half duplex.

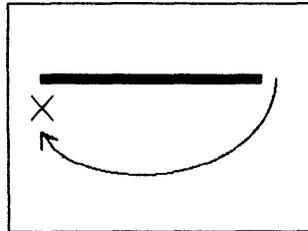
If you check Half Duplex and see lots of double characters, this means that the host uses full duplex. The host is sending back the characters it receives. The default is Full Duplex.

Duplex: Full Half

Auto New-Line

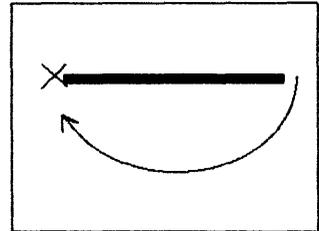
Normally, when the **(Return)** key is pressed, it sends the cursor to the beginning of the line that it is on. When Auto New-Line On is checked, the **(Return)** key, when pressed, sends both a carriage return and a line feed. This means that when you press **(Return)**, the cursor is placed on the next line down in the leftmost position, scrolling if necessary. See Figure 7 for clarification.

On



Document with Auto New-Line places the cursor at the beginning of the next line when **(Return)** is pressed.

Off



Document without Auto New-Line places the cursor back at the beginning of the line already typed.

Figure 7. Auto New-Line and Return Key

Some host computers send back both a carriage return and a line feed when a **(Return)** is pressed. Check the setting that matches what the host does. If Auto New-Line On is checked when the host is also performing this function, lines will be double-spaced. The default is Off.

Auto New-Line: On OFF

Communication

The Communication characteristic tells LisaTerminal whether or not you intend to use the LisaTerminal document to communicate with a remote computer. On (On-line) must be checked before LisaTerminal can communicate with a host computer. When Off (Local) is checked, LisaTerminal cannot communicate with a remote computer. The Off option is provided so new users can try out LisaTerminal without being connected to a host computer. If Preferences has Serial A or Serial B, or both, connected to a remote computer, the default is On (On-line); otherwise the default is Off (Local).

Communication: On (On-Line) OFF (Local)

If you select Off during a Communication session, LisaTerminal ends the connection with the host.

Comfort Characteristics

The Comfort characteristics allow you to set up LisaTerminal the way you like it best. Experiment with these characteristics to discover which you prefer, and you'll end up with a working environment suited to your tastes.

The Comfort characteristics dialog box, with the default settings, is shown in Figure 8.

Lines Off Top:	<input checked="" type="checkbox"/> Remember	<input type="checkbox"/> Forget	<input type="button" value="Cancel"/>
Tab Ruler:	<input type="checkbox"/> Show	<input checked="" type="checkbox"/> Hide	
Status Lights:	<input type="checkbox"/> Show	<input checked="" type="checkbox"/> Hide	<input type="button" value="OK"/>
Columns per Line:	<input checked="" type="checkbox"/> 80	<input type="checkbox"/> 132	
Wraparound:	<input checked="" type="checkbox"/> On	<input type="checkbox"/> OFF	
Auto Repeat:	<input checked="" type="checkbox"/> On	<input type="checkbox"/> OFF	
Margin Bell:	<input type="checkbox"/> On	<input checked="" type="checkbox"/> OFF	
Cursor:	<input type="checkbox"/> Block	<input checked="" type="checkbox"/> Bar	
Background:	<input checked="" type="checkbox"/> White	<input type="checkbox"/> Black	

Figure 8. Comfort Characteristics Dialog Box

Lines Off Top

Twenty-four lines in the LisaTerminal document are used to display the information sent to and received from the various computers with which you communicate. Depending on what you check for Remember Lines Off Top in the LisaTerminal Comfort characteristics dialog box, either you can record, on disk, all the interactions with the remote computer, or you can use the document as a terminal, with information disappearing as it scrolls off the screen. These 24 lines are called the “terminal screen area.” When Remember is checked, all the information displayed in the terminal screen area during a particular work session is saved. It is recommended with large LisaTerminal documents that you use the XOn/XOff Handshake characteristic when you select Remember Lines Off Top. When Forget is checked, all information that scrolls off the terminal screen area is lost. The default is Remember.

Lines Off Top: Remember Forget

Refer to Chapter 2, Using LisaTerminal, Terminal Screen Area, under Clear Lines Off Top for more information.

Tab Ruler

LisaTerminal provides a tab ruler that allows you to set and clear tab stops. Arrows indicate the position of the tab stops on the tab ruler. The tick marks on the ruler indicate character positions. The tab ruler can be displayed or hidden; by default the tab ruler is hidden.

Tab Ruler: Show Hide

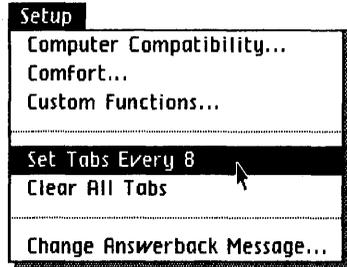
The tabs you set on the tab ruler don't affect data you've already entered or received from the host; rather, the tab stops affect the data transferred and entered after the tab stops are set. You should set the tabs as you want them before pasting or receiving data. Generally, hosts assume that the tabs are set to a default of every eight characters.

Before continuing further, look to see if your tab ruler is visible or hidden. If it is hidden, follow the instructions in Changing a Setup Characteristic earlier in this chapter to make it visible.

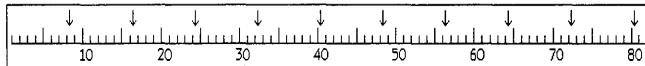
Setting Tab Stops Every Eight Characters

To set tabs every eight characters,

- ▶ Choose Set Tabs Every 8 from the Setup menu.



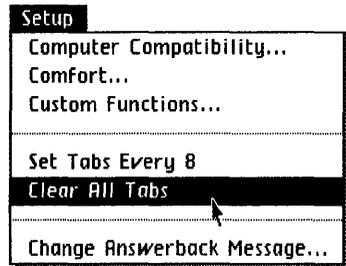
Your tab ruler should show an arrow every eight characters.



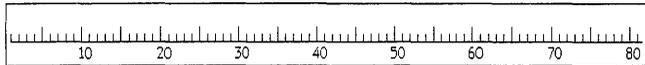
Clearing All Tab Stops

To clear all tabs,

- ▶ Choose Clear All Tabs from the Setup menu.



Your tab ruler should show no arrows.

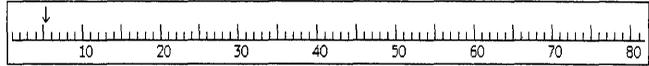


Setting Individual Tab Stops

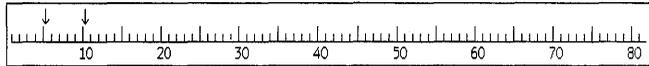
You can also set tabs using the mouse, placing the tabs at any position on the tab ruler.

Assume you wish to set tabs at the following positions on the tab ruler: 5, 10, and 25. To do so,

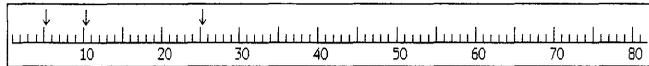
- ▶ Move the pointer above 5 on the ruler and click the mouse button. An arrow appears where the pointer was.



- ▶ Move the pointer above 10 on the ruler and click the mouse button. A second arrow appears.



- ▶ Move the pointer above 25 on the ruler and click the mouse button. A third arrow appears.



Moving Tab Stops

You can set, move, and clear tabs at any point in a work session. If you place a tab in a position you do not want or need,

- ▶ Position the pointer over the tab, press the mouse button and, while holding the button down, move the arrow to the position where you want the tab set.

Removing Tab Stops

You can use the mouse to remove a single tab. To clear a single tab,

- ▶ Position the pointer over the tab and click the mouse button twice. The tab is cleared.

Status Lights

The status lights can be displayed or hidden. The status lights are located above the keys on a DEC VT100 terminal. The LisaTerminal status lights are displayed in the upper part of the LisaTerminal document. Refer to Figure 9 to see the position of the LisaTerminal status lights. Status lights 2 and 3 are on, and status lights 1 and 4 are off.

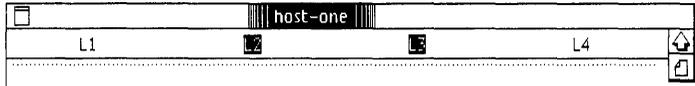


Figure 9. LisaTerminal Status Lights

The status lights are used by various host computers in different ways. For information on whether a particular host computer uses these lights, and what they are used for, consult a manual for the host computer. The status lights are, by default, hidden.

Status Lights: Show Hide

Columns per Line

LisaTerminal supports 80 or 132 columns per line. When 80 columns per line is checked, the screen is 80 columns wide by 24 lines high. When 132 columns per line is checked, the screen is 132 columns wide and 24 lines high. The default is 80.

Columns per Line: 80 132

Refer to Chapter 2, Using LisaTerminal, Terminal Screen Area, under Clearing Lines Off the Top, for more information.

Wraparound

Depending on the specified columns per line (80 or 132), the cursor moves to the first position on the next line when at the 81st or 133rd character. The next character goes on the leftmost position on the next line, preventing the information from disappearing off the side of the terminal screen.

When the Wraparound setting is Off, all characters after 80 or 132, depending on specified line length, write over the last character in the line.

Whether or not you should check the Wraparound setting depends on the host computer. If the host computer provides this function, you need not check Wraparound. If a particular host does not provide a wraparound function, you should check Wraparound. The default is On.

Wraparound: On Off

Auto Repeat

When you hold down a key, characters repeat automatically after you check the Auto Repeat characteristic. The rate at which characters are repeated is controlled by Preferences. Auto repeat does not affect the following keys: **(Tab)**, **(Return)**, and ESC keys. The default is On.

Auto Repeat: On Off

Margin Bell

When you check Margin Bell, a warning bell rings whenever the cursor is eight characters from the right margin. The default is Off.

Margin Bell: On Off

Cursor

The cursor shows the point on the screen where the next character will be placed. The cursor may be represented as a blinking bar or a blinking block. This cursor is visible only in the 24-line terminal screen area. The default cursor is the blinking bar.

Cursor: Block Bar

Background

You use Background to change the color of the background of the terminal screen area. You can check a white background with black characters, or a black background with white characters. The default is White.

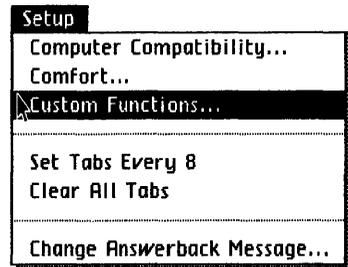
Background: White Black

Custom Functions

Custom Functions provide four bits the host computer can read. Whether and how the host computer uses these bits is up to the host application. If the host computer uses these bits as an integer, bit 3 is the most significant bit, and bit 0 is the least significant bit.

To use the Custom Functions,

- ▶ Choose Custom Functions from the Setup menu.



- ▶ Enter the values you desire in the dialog box.

The Custom Functions dialog box is shown in Figure 10.

Bit-3:	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0	<input type="button" value="Cancel"/>
Bit-2:	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0	
Bit-1:	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0	
Bit-0:	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0	
			<input type="button" value="OK"/>

Figure 10. Custom Functions Dialog Box

Troubleshooting

Most problems that you will encounter while using LisaTerminal will be caused by a setup characteristic that is set incorrectly for use with a particular host computer or network. Table 1 lists possible problems that you may see during the data transfer to and from the host computer or network, their probable causes, and what you should do to fix them.

Table 1. Troubleshooting

What You See	Possible Problem	How to Fix It
Nothing gets sent or received.	You have connected to wrong serial connector or you need a modem eliminator.	Try connecting to the other serial connector or get a modem eliminator.
	Parity error — the Parity setting is incorrect.	Try setting the Parity characteristic to None, Odd, or Even until the transmission is normal.
Data from host are missing random characters.	An overflow has occurred.	Check XOn/XOff for the Handshake characteristic if the host supports it. If not, check a slower baud rate.
Either data from host are garbled, or you're not receiving data from the host.	Baud rate is incorrect.	Try other baud rates until you find one that works, or find out from a manual or data processing specialist associated with the host or network what baud rate is expected.

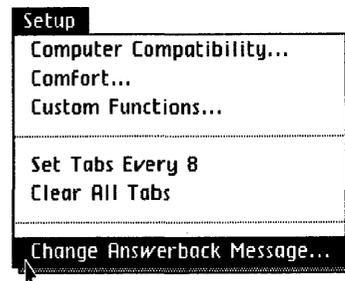
Table 1. Troubleshooting, continued

What You See	Possible Problem	How to Fix It
Double characters appear in the terminal screen area.	Host or network uses Full Duplex.	Change the Duplex characteristic to Full Duplex.
You don't see what you enter, but you get data from the host.	Host or network uses Half Duplex.	Change the Duplex characteristic to Half Duplex.
Lines of data from the host are double-spaced.	Host and LisaTerminal are both performing Auto New-Line.	Change the Auto New-Line characteristic to Off.
Data are written over one line only.	Host expects LisaTerminal to perform Auto New-Line.	Change the Auto New-Line characteristic to On.
Characters disappear off the side of the Lisa screen.	Host expects LisaTerminal to perform Wraparound.	Change the Wraparound characteristic to On.

Changing the Answerback Message

Some host computers ask for terminal identification. The answerback message allows LisaTerminal to identify itself to the host. All answerback messages must be delimited by the same character. In other words, you must end the message with the first character you entered. The delimiter can be any character; nonprinting characters print a bullet in the dialog box. To enter an answerback message such as "Hello",

- ▶ Choose Change Answerback Message from the Setup menu.



▶ Enter the answerback message in the dialog box:

xHellox.

The Change Answerback Message dialog box does not allow backspaces. This means if you make a mistake, press **(Return)**, repeat this process, and enter the message again.

Contents

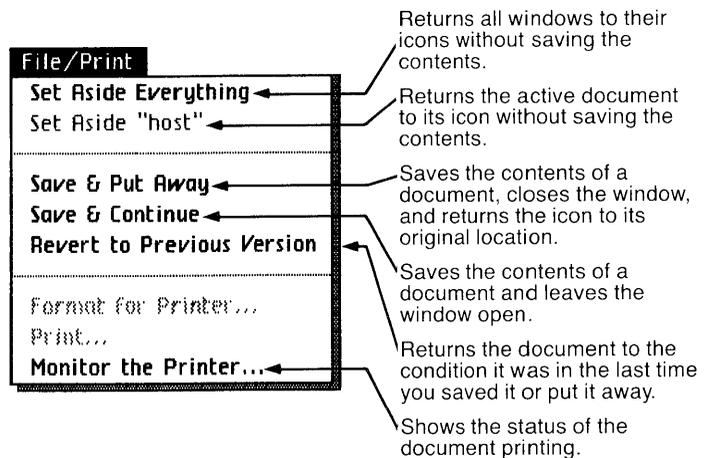
61	<i>Appendix 1. Menu Items</i>
63	<i>Appendix 2. Error Messages</i>
65	<i>Appendix 3. Using LisaTerminal with Public Networks and Data Bases</i>
77	<i>Appendix 4. Programmer's Reference</i>
85	<i>Appendix 5. LisaTerminal Serial Interface</i>
89	<i>Appendix 6. Differences between LisaTerminal and the DEC VT100</i>

Appendix 1

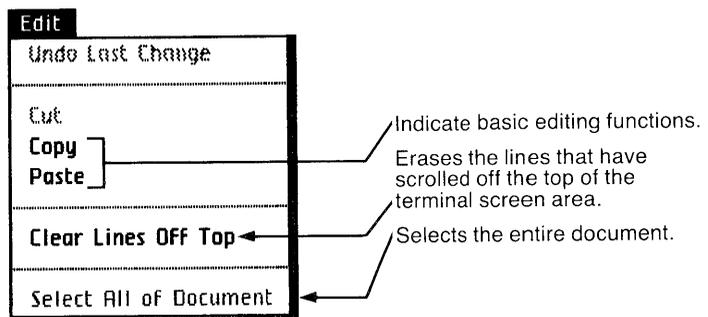
Menu Items

Appendix 1 summarizes the LisaTerminal menu items. Gray items are not available in LisaTerminal, except in the Phone menu.

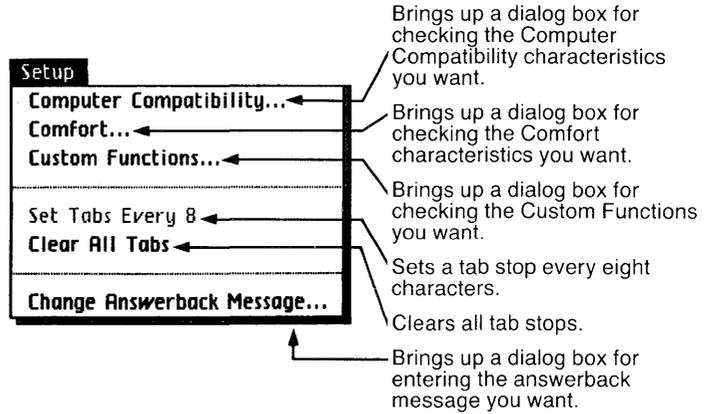
File/Print Menu



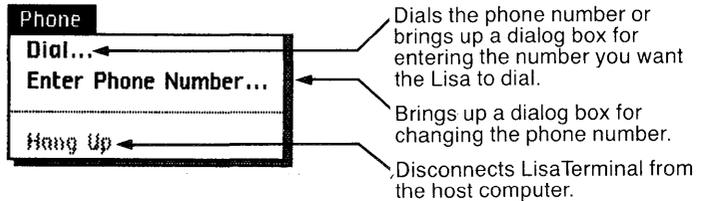
Edit Menu



Setup Menu



Phone Menu



Appendix 2

Error Messages

Appendix 2 explains some of the LisaTerminal error messages. For an explanation of the Lisa error messages, refer to the *Lisa Owner's Guide*, Appendix 6.

Error Message: Something went wrong trying to access Serial [A or B]. LisaTerminal is changing the Computer Compatibility characteristic for [documentname] to Off (Local).

Solution: This error message appears when LisaTerminal experiences difficulty trying to use Serial A or Serial B. The Communication Computer Compatibility characteristic is changed by LisaTerminal to Off (Local). You should check to make sure that the modem or tie line is correctly connected and checked in the Preferences window. Then change the Communication characteristic back to On (On-line), and try again. If it still doesn't work, use the other serial connector. Refer to Chapter 1, Introduction, under Setting Preferences, and Chapter 3, LisaTerminal Setup Characteristics, under Computer Compatibility Characteristics, for more information.

Error Message: LisaTerminal cannot communicate with the device configured to Serial [A or B]. LisaTerminal is changing the Communication characteristic for [documentname] to Off (Local).

Solution: This error message appears when the Preferences window has something other than Remote Computer selected for the serial port the LisaTerminal document thinks the modem or tie line is connected to. Check the Preferences window and change the serial port selection to Remote Computer. Refer to Chapter 1, Introduction, under Setting Preferences, for more information.

Error Message: The modem connected to [documentname] cannot communicate at the specified baud rate. LisaTerminal is changing the Communication characteristic for [documentname] to Off (Local). Please change the baud rate to an acceptable value.

Solution: This error message appears if you have a Hayes Smartmodem 300 and have checked a baud rate above 300, or if you have a Hayes Smartmodem 1200 and have checked 600 baud or a baud rate above 1200. Change the baud rate to 300 if you have a Hayes Smartmodem 300 or to 1200 if you have a Hayes Smartmodem 1200. Then change the Communication characteristic back to On (On-line), and try again. When an error occurs in an inactive LisaTerminal document, a tone sounds. Activate the document and respond to the error message.

Appendix 3

Using LisaTerminal with Public Networks and Data Bases

This appendix discusses a number of popular public networks and data bases, and shows how LisaTerminal can be used to connect with the networks and data bases. In order to use a network or data base, you must first acquire an account. Contact the company that owns the service to find out about acquiring accounts.

The networks and data bases mentioned in this appendix are a small sample of the many that are available. LisaTerminal is capable of connecting to most public networks and data bases, since it emulates three common types of terminals.

Public Networks and Data Bases

A data base is simply a collection of information, arranged so that it can be accessed. A network is a collection of data bases or other services arranged so that a user can connect to the network, and then use the services.

This appendix discusses Telenet and Tymnet, the two largest public networks, and Compuserve™ Information Service, Dow Jones News/Retrieval Service™, and THE SOURCESM services, three of the largest data base networks. Public networks are used to reach some particular service: the network itself is nothing but a way to get to a service. Data base networks, on the other hand, actually provide the services, usually giving you menus or some other guide for moving between those services.

The basic procedure for connecting to one of the services described in this appendix is always the same:

- ▶ Connect a modem to the Lisa, and use Preferences to inform the Lisa of the connection. Go to Chapter 1, Introduction, for more information.
- ▶ Open a LisaTerminal document.

- ▶ Set up LisaTerminal as required by the service.
- ▶ Dial the proper phone number (manually or automatically).
- ▶ Give the proper sequence of characters and commands to connect to the service.

Once you have successfully connected to the service, you can access the information available. When you are finished, you may or may not have to tell the service to disconnect you, but, in any case, you should always tell LisaTerminal to hang up.

Connecting to the Services

You can connect to any public data base or data base network in one of two basic ways:

- Call directly.
- Connect to a network like Telenet or Tymnet, and use that network to reach the data base or data base network.

Although these two ways of getting to a data base network are basic, they are not always advisable or possible. Dow Jones can be reached only through other networks, as Dow Jones does not have a direct number. CompuServe, on the other hand, can be reached directly or through other networks. Since CompuServe provides a national network, however, most users call CompuServe directly. THE SOURCE has only one national number, located in Washington, D.C., so telephone toll charges will get high if you call THE SOURCE directly from outside that area.

Telenet and Tymnet

The two primary networks used to connect to THE SOURCE and Dow Jones are: Telenet, operated by General Telephone and Electronics, and Tymnet, operated by Tymshare Corporation. Telenet and Tymnet have local numbers all over the country, so that you should save on telephone charges by using these networks.

You can also use Telenet and Tymnet to connect with CompuServe, but most users connect directly with CompuServe's own national network.

THE SOURCE, Dow Jones, and Compuserve

These three services are networks of public data bases and other services. They have differences, but all three give you access to news, sports, entertainment features, business information, shopping information, and computing services. You can reach any of these by calling directly, or by using one of the networks discussed above.

The services available on these networks fall into the following categories:

- **Information.** This category is the largest. You can, for example, get news from newswires; use a number of investment services, including stock reporting services; see airline schedules and weather reports; get general information about a variety of subjects; and get sports reports, information about jobs and education, and tax tips.
- **Communications.** This area revolves around electronic mail, which allows you to send messages to other users of the network. Other kinds of messages also can be sent. For example, on THE SOURCE, you can use a subscriber “bulletin board” to “post” classified advertisements that other network users can look at.
- **Shopping.** You can look at a variety of catalogs and classified advertisements and actually place orders over the network.
- **Computing services.** You can use computers provided by THE SOURCE and Compuserve to program, store information, or perform many other functions you could do on a computer located in your office.

The amount you are charged depends on the amount of time you are connected to a service. Some services are more expensive than others. In addition, if you use a network’s computers to store information, you may be charged a storage fee.

Setting Up for Telenet

Telenet is a network used to reach other services. A huge number of data bases, networks, and computer systems can be reached through Telenet. In particular, Telenet (as well as Tymnet) can be used to reach THE SOURCE and Dow Jones.

Telenet does not charge you directly for services, and you do not need an account to access Telenet. You must, however, have accounts on the services you reach through Telenet.

Figure 11 shows a Computer Compatibility dialog box with the characteristics set the way Telenet requires. The baud rate is 1200. If you have a 300 baud modem, then indicate 300 baud in your Computer Compatibility dialog box. THE SOURCE operates only at 1200 or 300 baud. You need a modem that uses one of these rates to use THE SOURCE.

Connector:	<input checked="" type="checkbox"/> Serial A	<input type="checkbox"/> Serial B		<input type="button" value="Cancel"/>
Parity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Even	<input type="checkbox"/> Odd	
Handshake:	<input type="checkbox"/> None	<input checked="" type="checkbox"/> XOn/XOff		
Baud Rate:	<input type="checkbox"/> 50	<input type="checkbox"/> 75	<input type="checkbox"/> 110	
	<input type="checkbox"/> 134.5	<input type="checkbox"/> 150	<input type="checkbox"/> 200	
	<input type="checkbox"/> 300	<input type="checkbox"/> 600	<input checked="" type="checkbox"/> 1200	
	<input type="checkbox"/> 1800	<input type="checkbox"/> 2000	<input type="checkbox"/> 2400	
	<input type="checkbox"/> 3600	<input type="checkbox"/> 4800	<input type="checkbox"/> 9600	
Modem:	<input checked="" type="checkbox"/> Hayes 1200	<input type="checkbox"/> Hayes 300	<input type="checkbox"/> Other	
Dial:	<input type="checkbox"/> As the Document is Opened	<input checked="" type="checkbox"/> Using the Phone Menu		
Terminal:	<input checked="" type="checkbox"/> VT100	<input type="checkbox"/> VT52	<input type="checkbox"/> TTY	
Duplex:	<input checked="" type="checkbox"/> Full	<input type="checkbox"/> Half		
Auto New-Line:	<input type="checkbox"/> On	<input checked="" type="checkbox"/> OFF		
Communication:	<input checked="" type="checkbox"/> On (On-Line)	<input type="checkbox"/> OFF (Local)		<input type="button" value="OK"/>

Figure 11. Computer Compatibility Settings

The Computer Compatibility screen indicates that a Hayes Smartmodem 1200 is used. If you have a Hayes Smartmodem 300, change the modem indication to Hayes 300. If you have some other type, indicate Other in the dialog box.

In addition to setting the baud rate at either 1200 or 300 and checking the modem type, you must set Full Duplex, and Parity to None. You can change the other information on the screen to suit yourself. See Chapter 3, LisaTerminal Setup Characteristics, for more information.

Once the Computer Compatibility dialog box is arranged correctly, use the mouse to move the pointer to the OK button, and press the mouse button. The dialog box disappears. This LisaTerminal document now uses the characteristics you have set.

Connecting to Telenet

If you have a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, you can use the LisaTerminal Phone menu. After you have set the Computer Compatibility characteristics correctly, choose Enter Phone Number from the Phone menu, and enter the phone number in the dialog box. The phone number you enter depends on the local number for the network you are using. You should get a number when you get a data base account.

Enter **t** before the phone number if you have a push-button phone or **p** if you have a rotary dial phone. Once you have entered the full number, press **(Return)**, and the dialog box disappears. The phone number is displayed next to the Dial menu item in the Phone menu.

Pull down the Phone menu again, and choose Dial. Your modem dials the number. Refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for more information.

If you have a modem other than the Hayes Smartmodem 1200 or the Hayes Smartmodem 300, you must call the remote computer yourself. The way you do so depends on the type of modem. See the documentation you received with your modem, and refer to Chapter 2, Using LisaTerminal, Dialing the Remote Computer, for more information if you don't have a Hayes modem.

If you are using a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, and you have not turned the modem's speaker volume down, you will hear the number being dialed, and then hear the Telenet phone ring. When the ringing stops, you should hear a high-pitched tone, and then the Hayes modem's speaker is turned off. You are now communicating with the network.

Press the **(Return)** key twice. This synchronizes LisaTerminal with the network.

Telenet now needs information from you. It prints:

```
TERMINAL =
```

in the LisaTerminal document. Enter:

```
D1
```

Press **(Return)**. That tells Telenet what type of terminal to expect — in this case, VT100.

You are now connected to Telenet. It prints its prompt, an @ , or “at” sign, which indicates that it is ready for a command.

Connecting to THE SOURCE from Telenet

To connect to THE SOURCE, enter after the @ prompt:

C 301xx

The “x’s” in the command lines are the numbers of the system you want to connect to. THE SOURCE has a number of separate and equal systems. You are assigned one along with your account number, and you must use that system with that account number.

Telenet now connects you to THE SOURCE. You should get a message like the following:

301 xx CONNECTED

Connecting to Dow Jones from Telenet

To connect to Dow Jones, enter after the @ prompt:

C xxxxx

You should now get the message:

xxx xx CONNECTED

Setting Up for Tymnet

Set up your LisaTerminal document as you would for Telenet. Refer to Figure 11. The baud rate can be either 300 or 1200, depending on the modem you are using.

In addition to setting the baud rate at either 300 or 1200, you must check Full Duplex, and check Parity at None. You can change the other information on the screen to suit yourself. See Chapter 3, LisaTerminal Setup Characteristics, for more information on the characteristic you want to change.

Once the dialog box is set up correctly, use the mouse to move the pointer to the OK box, and press the mouse button. The dialog box disappears. This LisaTerminal document now uses the characteristics you have set.

Connecting to Tymnet

If you have a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, you can use the LisaTerminal Phone menu. After you have set the Computer Compatibility screen correctly, choose Enter Phone Number from the Phone menu. The phone number you enter depends on the local number for Tymnet. You should get a number when you get a data base account.

Enter **t** before the number if you have a push-button phone or **p** if you have a rotary dial phone. Once you have entered the full number, press **(Return)**, and the phone number display disappears. Refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for more information.

Pull down the Phone menu again, and choose Dial. Your modem dials the number.

If you have a modem other than the Hayes Smartmodem 1200 or the Hayes Smartmodem 300, you must call the remote computer yourself. The way you do so depends on the type of modem. See the documentation you received with your modem and refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for more information.

If you are using a Hayes Smartmodem 1200 or Hayes Smartmodem 300 and you have not turned the modem's speaker volume down, you will hear the number being dialed, and then hear the Tymnet phone ring. When the ringing stops, you should hear a high-pitched tone, and then the Hayes modem's speaker is turned off. You are now communicating with the network. A string of characters appears.

PLEASE TYPE YOUR TERMINAL IDENTIFIER

Enter **a**. Do not press **(Return)**. The "a" synchronizes LisaTerminal with the network and tells Tymnet to expect a VT100 terminal.

A second request for information appears on the screen:

PLEASE LOG IN:

This request requires that you identify a service. If you want to use Dow Jones enter:

DOW1;;

or enter:

DOW2;;

Again, do not press **(Return)**. Only the first semicolon will print on LisaTerminal, but you have to enter both. If you want to use THE SOURCE, enter:

SOURCExx; PRIM;

replacing xx with the number of THE SOURCE computer to which you were assigned when you got your account. PRIM will not appear in the LisaTerminal document. Enter it anyway. Do not press **(Return)**. After a short pause, a + (plus sign) should appear on the screen. Now press **(Return)**.

Setting Up for THE SOURCE

You can call THE SOURCE directly, or you can reach it through Telenet or Tymnet.

If you wish to reach THE SOURCE through Telenet or Tymnet, see the sections in this manual on setting up for and connecting to the appropriate public network.

If you wish to connect to THE SOURCE directly, as you might if you live in the Washington, D.C., area, set up as you would for Telenet or Tymnet.

The beginning of this section applies only if you want to connect to THE SOURCE directly. If you are connecting with THE SOURCE through Telenet or Tymnet, skip down to Logging onto THE SOURCE.

If you have a Hayes Smartmodem 1200 or Hayes Smartmodem 300, you can use the LisaTerminal Phone menu. After you have set the Computer Compatibility dialog box correctly, choose Enter Phone Number from the Phone menu.

Enter the local phone number for THE SOURCE. Enter **t** before the number if you have a push-button phone or **p** if you have a rotary dial phone. Once you have entered the full number, press **(Return)**, and the phone number display disappears.

Pull down the Phone menu, and choose Dial. Your modem dials the number.

If you have another type of modem, you must call the remote computer yourself. The way you do so depends on the modem itself. See the documentation you received with your modem and refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer.

If you are using a Hayes Smartmodem 1200 or Hayes Smartmodem 300 and you have not turned the modem's speaker volume down, you will hear the number being dialed, and then hear the Tymnet phone ring. When the ringing stops, you should hear a high-pitched tone, and then the Hayes speaker is turned off. You are now communicating with THE SOURCE.

Press **(Return)** once. That synchronizes your LisaTerminal document with THE SOURCE.

Logging onto THE SOURCE

Whether you are using Telenet or Tymnet, or have called THE SOURCE directly, you should now see the following message:

```
WELCOME, YOU ARE CONNECTED TO SOURCE  
SYSTEM xx
```

```
PLEASE TYPE ID THEN YOUR NUMBER AND  
PASSWORD
```

```
>
```

The last character, the right angle bracket (>) is the prompt for THE SOURCE. It indicates that THE SOURCE is ready for a command. As requested, enter the characters I and D, followed by a space, then give your account number followed by a space, and then give your password. For example, if your account number is TCA000 and your password is SAM, the line should look like this:

```
>ID TCA000 SAM
```

Press **(Return)**. THE SOURCE prints a message like this one:

```
THANK YOU, YOU ARE NOW SIGNED ON TO SYSTEM  
xx
```

You will also be shown the first menu. A menu is a list of options, similar to the pull-down menus used on the Lisa. You indicate your option by entering a number or letter, rather than by using the mouse. In general, the mouse is not used in communicating through LisaTerminal. THE SOURCE is a menu-driven system. When you want to get to some particular piece of information, you choose menu items until you get to that information.

Logging onto Dow Jones

Note: Do not select XOn/XOff for the Handshake Computer Compatibility characteristic when using Dow Jones.

Whether you are using Telenet or Tymnet, the following message should appear:

WHAT SERVICE PLEASE????

Enter:

DJNS

Press **(Return)**. Dow Jones will respond with the following request:

ENTER PASSWORD @@@@@@@@@@@@

The @s are intended to hide your password from anyone looking at your display. Enter your password, and then press **(Return)**.

The following message will appear in the terminal screen area:

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You will also be shown the first menu. A menu is a list of options, similar to the pull-down menus used on the Lisa, but you indicate your option by entering a number or letter, rather than by using the mouse. In general, the mouse is not used in communicating through LisaTerminal. Dow Jones is primarily a menu-driven system. When you want to get to some particular piece of information, you choose menu items until you get to that information. You occasionally must, however, supply some more complex information, such as the code for a particular company. See the Dow Jones documentation for more information.

Connecting to Compuserve

Unlike THE SOURCE and Dow Jones, Compuserve provides its own national network. Most users connect to Compuserve by calling one of the Compuserve network numbers. You can connect through Telenet or Tymnet, but that procedure is not described in this manual.

Set up your LisaTerminal document as described under Setting Up for Telenet.

If you have a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, you can use the LisaTerminal Phone menu. After you have set the Computer Compatibility dialog box correctly, choose Enter Phone Number from the Phone menu. The phone number you enter depends on the local number for Compuserve. You should get a number when you get your account.

Enter **t** before the number if you have a push-button phone or **p** if you have a rotary dial phone. Refer to Chapter 2, Using LisaTerminal, under Dialing the Remote Computer, for more information. Once you have entered the full number, press **(Return)**, and the phone number display disappears.

Pull down the Phone menu again, and choose Dial. Your modem dials the number.

If you have a modem other than a Hayes Smartmodem 1200 or a Hayes Smartmodem 300, you must call the remote computer yourself. The way you do so depends on the type of modem. See the documentation you received with your modem.

If you are using a Hayes Smartmodem 1200 or Hayes Smartmodem 300 and you have not turned the modem's speaker volume down, you will hear the number being dialed, and then hear the Compuserve phone ring. When the ringing stops, you should hear a high-pitched tone, and then the Hayes modem's speaker is turned off. You are now communicating with the network.

Hold the Apple key down and press the letter **c**. This is the Lisa equivalent for control/c, sometimes written **^c**. Entering this key combination synchronizes LisaTerminal with Compuserve. Refer to Appendix 4, Programmer's Reference, for information about the Lisa keyboard.

The following request for information appears in your LisaTerminal document:

User ID:

Enter the sequence of numbers you were given, and press **Return**. The following request is now printed in your document:

Password:

Enter the password for your account. The characters do not print when you enter them.

Compuserve now introduces itself, and gives the time, day, and date. You will also be given a menu or a question. A menu is a list of options, similar to the pull-down menus used on the Lisa, but you indicate your option by giving a number or letter, rather than by using the mouse. In general, the mouse is not used in communicating through LisaTerminal. Compuserve is primarily a menu-driven system.

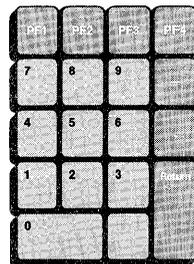
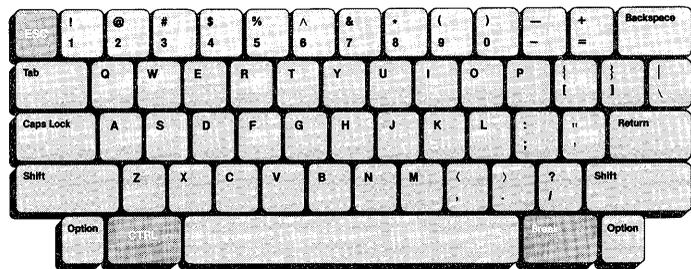
Appendix 4

Programmer's Reference

Appendix 4 is a reference for experienced programmers.

LisaTerminal Keyboard Layout

Figures 12 and 13 display the LisaTerminal keyboard layout.

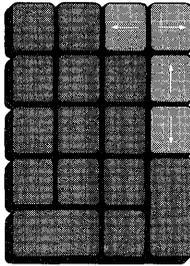


CTRL off (not pressed)

 Key that is different from the standard layout

 Standard key

Figure 12. LisaTerminal Standard Keyboard Layout



CTRL on (pressed)

-  Standard key name
Function mnemonic
-  Key that has no meaning
when CTRL is pressed

Figure 13. LisaTerminal CTRL Characters Keyboard Layout

Table 2 lists the control (CTRL) characters, the octal code transmitted, and the function mnemonic. The CTRL key is pressed, and the key pressed in conjunction with it may be shifted or unshifted.

Table 2. CTRL Characters, Octal Code, and the Function Mnemonic

CTRL Character	Octal Code	Function Mnemonic
Space Bar	000	NUL
A	001	SOH
B	002	STX
C	003	ETX
D	004	EOT
E	005	ENQ
F	006	ACK
G	007	BELL
H	010	BS
I	011	HT
J	012	LF
K	013	VT
L	014	FF
M	015	CR
N	016	SO
O	017	SI
P	020	DLE
Q	021	DC1 or XOn
R	022	DC2
S	023	DC3 or XOff
T	024	DC4
U	025	NAK
V	026	SYN
W	027	ETB
X	030	CAN
Y	031	EM
Z	032	SUB
[033	ESC
\	034	FS
]	035	GS
~	036	RS
?	037	US

Scroll/No Scroll

When you wish temporarily to stop information from the host, enter CTRL S to halt it. When you want it to continue scrolling, enter CTRL Q. This works only if XOn/XOff is supported by the host computer.

Modes

Mode Name	To Set		To Reset	
	Mode	Sequence	Mode	Sequence
Line feed/new line	new line	ESC[20h	line feed	ESC[20l*
Cursor key mode	application	ESC[?1h	cursor	ESC[?1l*
ANSI/VT52 mode	ANSI		VT52	ESC[?2l*
Column mode	132 col	ESC[?3h	80 col	ESC[?3l*
Screen mode	reverse	ESC[?5h	normal	ESC[?5l*
Origin mode	relative	ESC[?6h	absolute	ESC[?6l*
Wraparound	on	ESC[?7h	off	ESC[?7l*
Auto repeat	on	ESC[?8h	off	ESC[?8l*
Interlace	on	ESC[?9h	off	ESC[?9l*
Graphic process option	on	ESC 1	off	ESC 2
Keypad mode	application	ESC =	numeric	ESC >

*The last character of the sequence is a lowercase "l".

ANSI Compatible Mode

Command	Sequence
Cursor up	ESC [Pn A
Cursor down	ESC [Pn B
Cursor right	ESC [Pn C
Cursor left	ESC [Pn D
Direct cursor addressing	ESC [P1; Pc H
Direct cursor addressing	ESC [P1; Pc f
Index	ESC D
Next line	ESC E
Reverse index	ESC M
Save cursor attributes	ESC 7
Restore cursor attributes	ESC B

VT52 Compatible Mode

Command	Sequence
Cursor up	ESC A
Cursor down	ESC B
Cursor right	ESC C
Cursor left	ESC D
Special graphics character set	ESC F
ASCII character set	ESC G
Cursor to home	ESC H
Reverse line feed	ESC I
Erase to end of screen	ESC J
Erase to end of line	ESC K
Direct cursor address	ESC PI Pc*
Identify	ESC Z**
Enter alternate keypad mode	ESC =
Exit alternate keypad mode	ESC >
Enter ANSI mode	ESC <

*Line and column numbers for direct cursor address are single character codes whose values are the desired number plus 37 (base 8). Line and column numbers start at 1.

**Response to ESC Z is ESC /Z.

Auxiliary Keypad Codes

Key	VT52 Numeric Mode	VT52 Application Mode	ANSI Numeric Mode	ANSI Application Mode
0	0	ESC ? p	0	ESC O p
1	1	ESC ? q	1	ESC O q
2	2	ESC ? r	2	ESC O r
3	3	ESC ? s	3	ESC O s
4	4	ESC ? t	4	ESC O t
5	5	ESC ? u	5	ESC O u
6	6	ESC ? v	6	ESC O v
7	7	ESC ? w	7	ESC O w
8	8	ESC ? x	8	ESC O x
9	9	ESC ? y	9	ESC O y
— (minus)	— (minus)	ESC ? m	— (minus)	ESC O m
, (comma)	, (comma)	ESC ? l*	, (comma)	ESC O l*
. (period)	. (period)	ESC ? n	. (period)	ESC O n
ENTER	same as RETURN	ESC ? M	same as RETURN	ESC O M
PF1	ESC P	ESC P	ESC O P	ESC O P
PF2	ESC Q	ESC Q	ESC O Q	ESC O Q
PF3	ESC R	ESC R	ESC O R	ESC O R
PF4	ESC S	ESC S	ESC O S	ESC O S

*The last character in the sequence is a lowercase "l".

Erasing

Command	Sequence
From cursor to end of line	ESC [K
From cursor to end of line	ESC [0 K
From beginning of line to cursor	ESC [1 K
Entire line containing cursor	ESC [2 K
From cursor to end of screen	ESC [J
From cursor to end of screen	ESC [0 J
From beginning of screen to cursor	ESC [1 J
Entire screen	ESC [2 J

Cursor Position Report

Command	Sequence
Invoked by	ESC [6 n
Response is	ESC [PI; Pc R*

*PI = Line cursor is currently on. PI is a number between 1 and 24.
Pc = Column cursor is currently on. Pc is a number between 1 and 132.

Status Report/ Terminal Sequence

Command	Sequence
Invoked by	ESC [c*
Invoked by	ESC [0 c
Response is	ESC [?I; Ps c**

*Alternately invoked by ESC Z (not recommended). Response is the same.

**Ps = 0 base VT100, no options
Ps = 1 processor option (STP)
Ps = 2 advanced video option (AVO)
Ps = 3 AVO and STP
Ps = 4 graphics processor option (GPO)
Ps = 5 GPO and STP
Ps = 6 GPO and AVO
Ps = 7 GPO, STP, and AVO

Confidence Tests

Command	Sequence
Fill screen with "E's"	ESC # 8
Invoke test(s)	ESC [2; Ps y*
Reset	ESC c

*Ps = 1	Power up self-test (ROM checksum, RAM, NVR, keyboard, and AVO if installed)
Ps = 2 (loop back connector required)	Data loop back
Ps = 4 (loop back connector required)	EIA modern control test
Ps = 8	Repeat selected tests indefinitely until failure or power off

Tab Stops

Command	Sequence
Set tab at current column	ESC H
Clear tab at current column	ESC [g
Clear tab at current column	ESC [0 g
Clear all tabs	ESC [3 g
Scrolling region	ESC [Pt; Pb r*

*Pt = First line in scrolling region. Must be in range of 1 to 23.
Pb = Last line in scrolling region. Must be in range of 2 to 24.
Pb *must* be larger than Pt.

Status Lights

ESC [Ps;Ps; . . . Ps q*

*Ps = 0 or None	all LEDs off
Ps = 1	L1 on
Ps = 2	L2 on
Ps = 3	L3 on
Ps = 4	L4 on

Cursor Control Key Codes

Cursor Key (arrow)	VT52 Mode	ANSI/Cursor Key Mode Reset	ANSI/Cursor Key Mode Set
Up	ESC A	ESC [A	ESC O A
Down	ESC B	ESC [B	ESC O B
Right	ESC C	ESC [C	ESC O C
Left	ESC D	ESC [D	ESC O D

7-Bit ASCII Code

Octal	Char	Octal	Char	Octal	Char
000	NUL	053	+	126	V
001	SOH	054	, (comma)	127	W
002	STX	055	- (minus)	130	X
003	ETX	056	. (period)	131	Y
004	EOT	057	/	132	Z
005	ENQ	060	0	133	[
006	ACK	061	1	134	\
007	BEL	062	2	135]
010	BS	063	3	136	^
011	HT	064	4	137	_
012	LF	065	5	140	`
013	VT	066	6	141	a
014	FF	067	7	142	b
015	CR	070	8	143	c
016	SO	071	9	144	d
017	SI	072	:	145	e
020	DLE	073	;	146	f
021	DC1	074	<	147	g
022	DC2	075	=	150	h
023	DC3	076	>	151	i
024	DC4	077	?	152	j
025	NAK	100	@	153	k
026	SYN	101	A	154	l
027	ETB	102	B	155	m
030	CAN	103	C	156	n
031	EM	104	D	157	o
032	SUB	105	E	160	p
033	ESC	106	F	161	q
034	FS	107	G	162	r
035	GS	110	H	163	s
036	RS	111	I	164	t
037	US	112	J	165	u
040	SP	113	K	166	v
041	!	114	L	167	w
042	"	115	M	170	x
043	#	116	N	171	y
044	\$	117	O	172	z
045	%	120	P	173	{
046	&	121	Q	174	
047	' (apos.)	122	R	175	}
050	(123	S	176	~
051)	124	T	177	DEL
052	*	125	U		

Appendix 5

LisaTerminal

Serial Interface

LisaTerminal uses full-duplex, asynchronous communication lines. These lines are attached to Serial A or Serial B on the back of the Lisa. Serial A and Serial B are 25-pin connectors that meet the requirements of EIA specification RS-232-C. Table 3 summarizes the connector signals for Serial A and Serial B. Signal direction is given, where applicable, in relation to the Lisa. For example, the direction for Transmitted Data (Pin 2) is out. This means that the signal is sent out of the Lisa. When the direction of a signal is in, the signal is sent into the Lisa.

Serial A and B are wired differently. The Serial A connector is wired for full modem control signals. Serial B is wired with a special crystal oscillator that allows it to get all the common baud rates. Serial A uses the system clock and, as a result, cannot generate 3600 baud.

Table 3. Serial A and Serial B Connector Signals for LisaTerminal

Pin #	Direction	Serial A — Signal Name	Serial B — Signal Name
1	—	Protective ground	Protective ground
2	out	Transmitted data	Transmitted data
3	in	Received data	Received data
4	out	Request to send	Not connected
5	in	Clear to send	Not connected
6	in	Data set ready	Data set ready
7	—	Signal ground	Signal ground
8	in	Data carrier detect	Not connected
9	—	Not connected	Not connected
10	—	Not connected	Not connected
11	—	Not connected	Not connected
12	—	Not connected	Not connected
13	—	Not connected	Not connected
14	—	Not connected	Not connected
15	in	Transmit clock	Not connected
16	—	Not connected	Not connected
17	in	Receive clock	Not connected
18	—	Not connected	Not connected
19	in	Not connected	Receive data minus
20	out	Data terminal ready	Data terminal ready
21	—	Not connected	Not connected
22	—	Not connected	Not connected
23	—	Not connected	Not connected
24	out	Transmitter clock	Not connected
25	—	Not connected	Not connected

All the connected signals are explained in the list that follows. The explanations are for both Serial A and Serial B, except where noted.

Pin 1, Protective Ground

This conductor is connected to the Lisa chassis. You may not use this conductor for reference-potential purposes.

Pin 2, Transmitted Data

The Lisa transmits serially encoded characters and break signals on this circuit. The circuit is held in the mark state when nothing is being transmitted.

Pin 3, Received Data

The Lisa receives serially encoded characters from the host on this circuit.

Pin 4, Request to Send

For Serial A, the signal is always asserted when the Lisa Operating System is running. For Serial B, pin 4 is not connected.

Pin 5, Clear to Send

For Serial A, this signal is ignored by LisaTerminal. For Serial B, the pin is not connected.

Pin 6, Data Set Ready

This signal is ignored at all times.

Pin 7, Signal Ground

This conductor is connected to the Lisa chassis. It is the common ground reference potential for all voltages on the LisaTerminal interface.

Pin 8, Data Carrier Detect

For Serial A, this signal is ignored at all times by LisaTerminal. For Serial B, pin 8 is not connected.

Pin 15, Transmit Clock

For Serial A, Transmit Clock is ignored at all times by LisaTerminal. For Serial B, pin 8 is not connected.

Pin 17, Receive Clock

For Serial A, this signal is ignored at all times by LisaTerminal. For Serial B, pin 17 is not connected.

Pin 19, Receive Data Minus

For Serial A, pin 19 is not connected. For Serial B, this pin should be grounded or left unconnected on the cable.

Pin 20, Data Terminal Ready

Data Terminal Ready is asserted while the Lisa Operating System is running except for 3.5 seconds following SHIFT-BREAK.

Pin 24, Transmitter Clock

For Serial A, this signal is for external clocking. It is driven by the input signal on Pin 15, Transmit Clock (if any). For Serial B, this pin is not connected.

Appendix 6

Differences between LisaTerminal and the DEC VT100

Appendix 6 lists the differences between LisaTerminal and the DEC VT100.

Bits per Character

The number of bits per character is determined by the Parity setting in the Computer Compatibility dialog box. If Parity is Even or Odd, eight bits are transmitted for each character.

Interlace

LisaTerminal has no interlace option. It is always off.

Keyclick Tone

LisaTerminal has no keyclick option. It is always off.

Parity

Parity errors are denoted in LisaTerminal as rectangular boxes.



Power

LisaTerminal has no power option. The voltage is determined by the Lisa's power supply.

Transmit/Receive Speed

LisaTerminal does not have different settings for transmit and receive speeds. The two options are merged into the baud rate characteristic in the Computer Compatibility dialog box.

Screen Brightness

The contrast is controlled by the Lisa Preferences.

Scroll

LisaTerminal has no scroll option. It is always set to jump scrolling.

Smooth Scrolling Mode

LisaTerminal does not have a smooth scrolling mode.

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