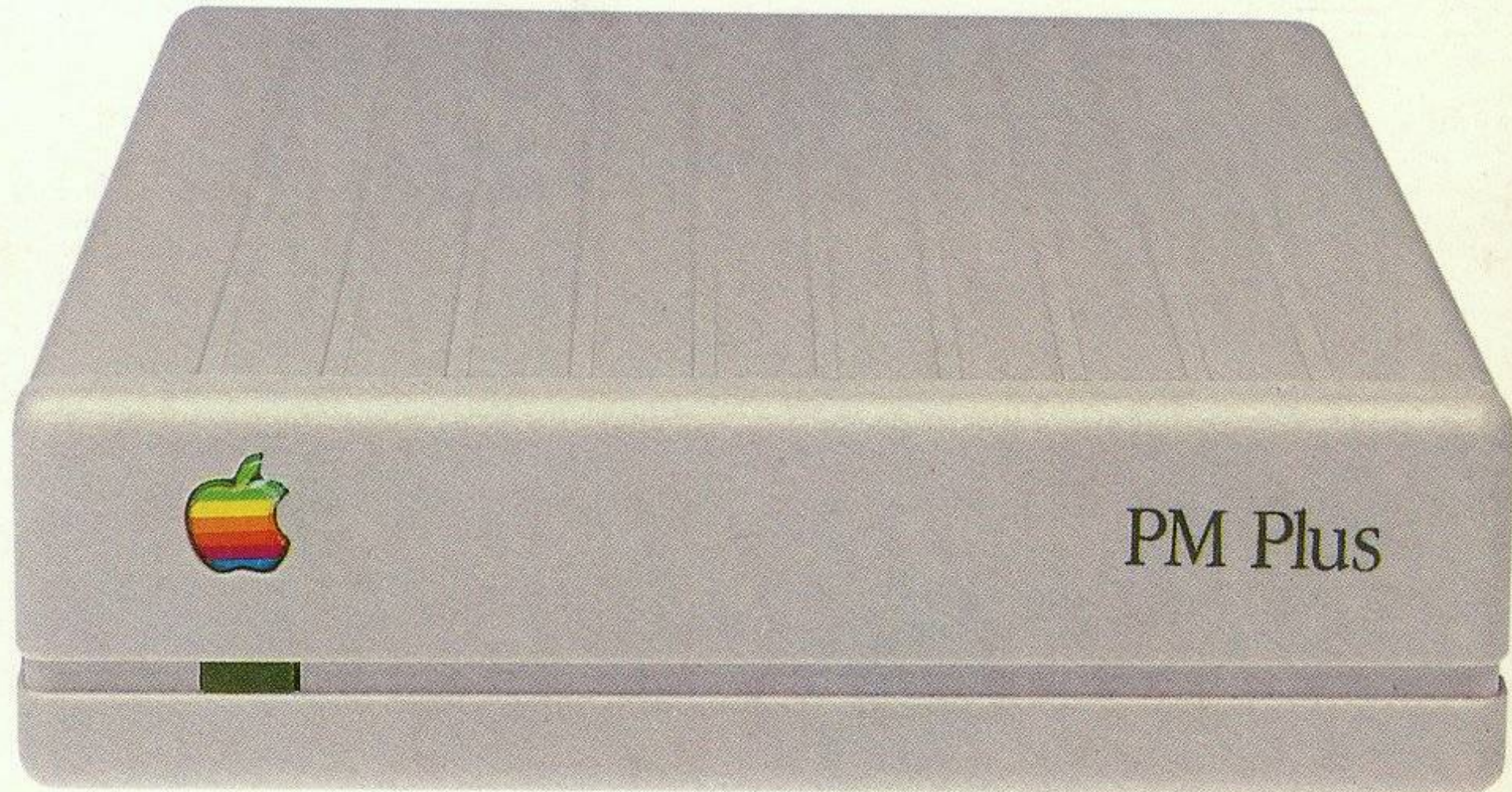




Apple®

Personal Modem Plus

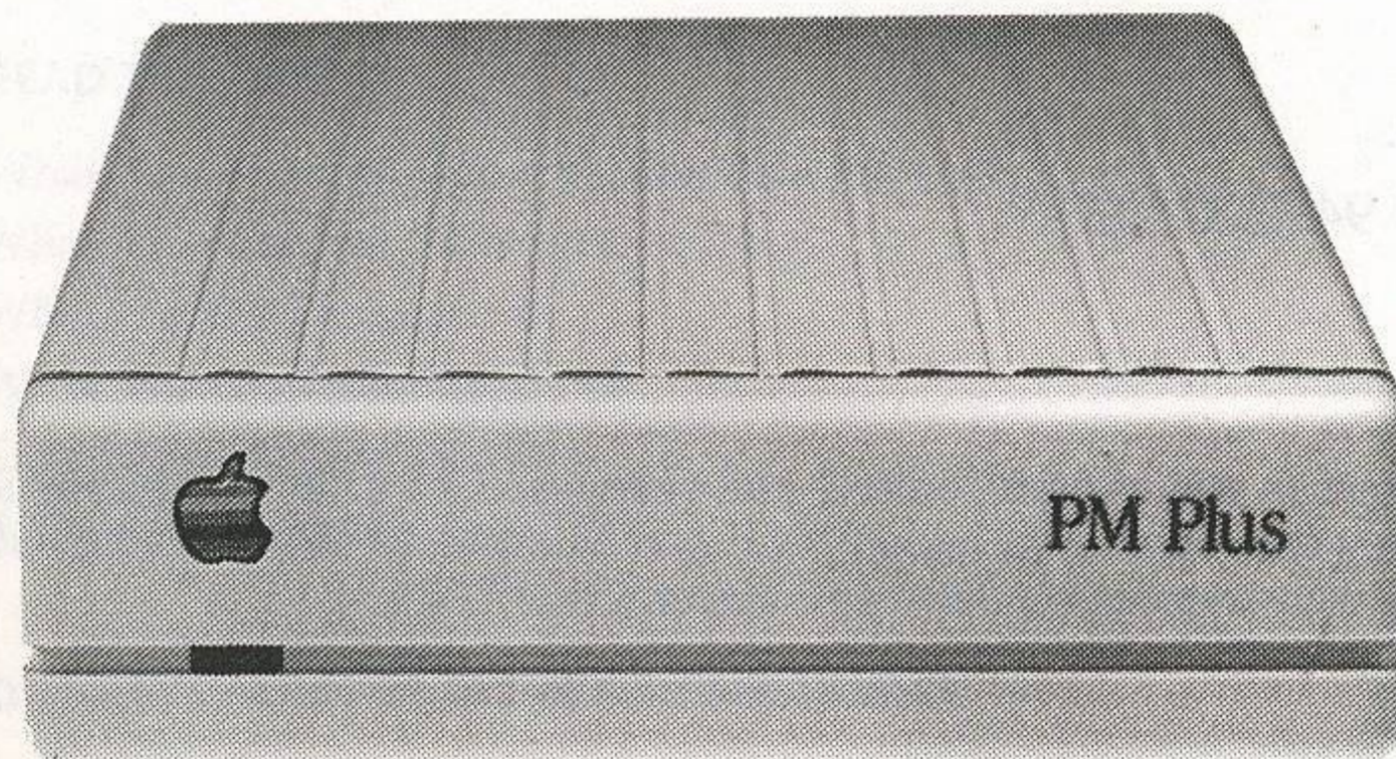
Owner's Manual



Standalone RS232 Multi-Standard Modem.
Auto Dial, Auto Answer, Auto Disconnect.

Apple II and Macintosh Systems.

Apple® Personal Modem Plus
User's Manual



Intelligent Auto
Dial, Answer & Disconnect
RS232 Direct Connect Modem

for Apple II, /// and
Macintosh™
families

Issue 1, January 1988.

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Introduction



Read this First

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What This Manual Is For

This manual is intended for users of the Apple Computer, Inc. product. It provides information on how to use the product and how to troubleshoot problems. It is intended for users who are new to the product and for users who need a refresher course.

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What This Manual Is Not For

This manual is not intended for users who are not familiar with the product. It is not intended for users who are not familiar with the product. It is not intended for users who are not familiar with the product. It is not intended for users who are not familiar with the product.

Read this first

Introduction

1.1

1.2

1.3

1.4

Introduction

READ THIS FIRST

Congratulations on your purchase of an Apple Personal Modem Plus. You will find this modem opens the door to a whole new world of communications for you.

The Apple Personal Modem Plus is designed for use with the Apple II, III and Macintosh families of computers.

In this manual you will learn how to install and use your Apple Personal Modem Plus. Together with a communications software package, such as The NetComm Program, the Apple Personal Modem Plus lets you communicate with many other micro, mini and mainframe computers.

What You Need to Know to Use This Manual

To use this manual, you should know how to use the keyboard and screen of the computer or terminal to which you will connect your Apple Personal Modem Plus. If you do not know how to use your computer or terminal please read the appropriate user manual first.

You will also need to know how to use your communications program.

What This Manual Tells You

This manual is a complete guide to the Apple Personal Modem Plus. It is organised into two parts. The first part (Chapters 1 to 4) is a basic guide to using the modem for non-technical users. The second part (the Appendices) is a complete description of the modem for users who require more detailed information.

The manual contains all the information you'll need to start using your modem. Let's have a quick look at what each chapter covers.

- ❑ Chapter 1, 'Data Communications for Beginners', introduces you to the basic ideas and terms you will need to know to understand data communications.
- ❑ Chapter 2, 'Introducing the Apple Personal Modem Plus', describes the main features of your modem.
- ❑ Chapter 3, 'Installing and Testing the Apple Personal Modem Plus', tells you, step-by-step, how to unpack, install, and set up the Apple Personal Modem Plus.
- ❑ Chapter 4, 'Using the Apple Personal Modem Plus', describes how to use the Apple Personal Modem Plus, and the ideas and concepts behind the design of the Apple Personal Modem Plus.

The Appendices provide further information and include technical specifications and hints on resolving communications problems.

What's in the Package

In your Apple Personal Modem Plus package you should receive the items pictured in Figure I-1.



Fig. I.1

Chapter 1

These are:

- An Apple Personal Modem Plus and its associated Plug Pack power supply.
- A telephone cable to connect your Apple Personal Modem Plus to a standard Telecom wall socket.
- This User and Reference Guide.
- Telecom Forms TS72 and TS86
- A Warranty Card

Contact your dealer if any items are missing.

Apple supplies the NetComm Program along with the cable in the appropriate Accessory Kit for your particular Apple II, Apple III or Macintosh model.

What The Symbols Mean

Helpful hints and interesting sidelights appear in boxes, like this:

NOTE: You may want to read this note, but then again you may not.

Warnings about potential problems and advice about how to avoid them appear in boxes like this:

WARNING: Pay attention to what's in these boxes -- or else!

Please also note that zeros are shown as 'Ø' in this manual. The capital of the letter 'o' is shown as 'O'.

Comments and Suggestions

If you have any suggestions for changes or improvements in the current product or this manual, or suggestions for a new product, please contact us - your comments are always welcome.

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Acknowledgments

Various companies products are referred to in this manual. In particular:

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Pty. Limited.

Chapter 1

Data Communications For Beginners

In this chapter, a brief introduction is given to some data communications concepts you will need to understand to get your modem and get the most from this manual. You don't track every detail and what these concepts mean in great detail, but you should be able to recognise them and be able to compare the capabilities of your Apple Personal Macintosh Plus with those of a remote computer, thus ensuring you can successfully communicate with it.

Definition of Data Communications

Data Communications is the exchange of information between two or more computers, or between a host computer and terminals attached to the computer. In either case, the computers involved may be in the same or different locations. The word terminal applies to both "dumb" terminals (those containing a keyboard and some capacity of going some process) and "smart" terminals (those containing an intelligent keyboard and instructions, memory as well as keyboard and screen).

The research in this study is based on a review of the literature on the topic of organizational communication. The study is a qualitative study and is based on the analysis of the data collected from the interviews. The study is a qualitative study and is based on the analysis of the data collected from the interviews.

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Journal of Business Communication

Chapter 1

Chapter 1

DATA COMMUNICATIONS FOR BEGINNERS

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Definition of Data Communications

Data Communications is the exchange of information between two or more computers, or between a host computer and terminals attached to that computer. In either case, the computers involved may be micros, minis or mainframes. The word 'terminal' applies to both intelligent terminals - those containing a microprocessor and thus capable of doing some processing themselves, and to non-intelligent terminals - containing no microprocessor and functioning merely as keyboards and screens.

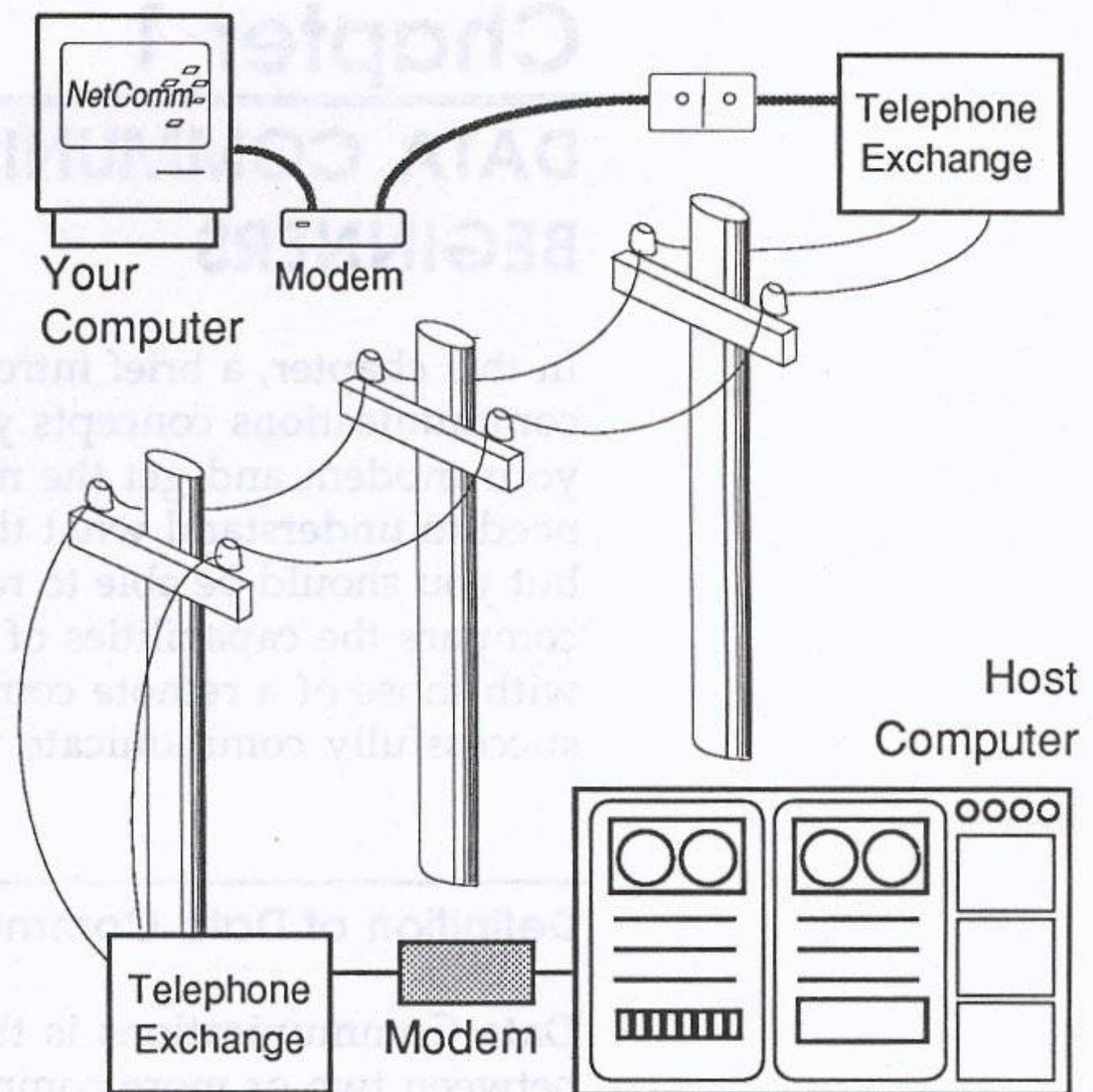


Fig. 1.1. Connection to a Host.

Connecting Computers

There are two ways to connect computers for communication:

1. 'Hard Wire' (sometimes called Direct Connect) - where the computer and the terminal are in relatively close proximity (within 15 metres). With a hard wire connection, the computers are connected by a cable.
2. 'Remote' - where the computers are connected via a telephone line. Modems are needed for this type of connection so that the digital data can be transmitted over the telephone lines.

What Does a Modem Do?

A modem, like your Apple Personal Modem Plus, allows your computer to send and receive data over the telephone lines. The term modem stands for 'modulator/de-modulator', which is an exact description of what the modem does. Computers work with data in the form of binary pulses, but telephones were designed to transmit voices in the form of analog sound waveforms. The modem modulates (converts) binary computer data into the analog form that phone lines can carry. When you're receiving signals, the modem demodulates the analog signals coming through the phone lines, converting them back into the binary form which the computer understands. In effect, computers and telephones speak two different languages and the modem acts as a translator.

Data Formats, Protocols and Standards

To enable computers to communicate with each other, we need to have sets of rules defining how information will be sent across the phone lines. There are a number of different sets of these rules covering different ways of communicating. As long as the computers and/or terminals linked together use the same set of rules, they will be able to exchange information.

Data Format

Modems need to use the same communications standard on both ends of a telephone line. You also need to make sure the computers at both ends use the same data format. The data format defines how the data will be 'packaged' when it is sent, so the receiving computer can identify where each piece of information begins and ends and can verify that it has received the information correctly.

A data format is often expressed in terms like '8 data bits, 1 stop bit, no parity' or '7 data bits, 1 stop bit, even parity'. For example, if you're using your modem to connect to a public bulletin board, you'll find most Australian bulletin boards use the same data format - 8 data bits, 1 stop bit and no parity.

Protocols

There are several sets of rules for communicating between computers. Each set of rules is called a protocol. The protocol determines how data is sent across the communications line between two locations.

Your Apple Personal Modem Plus supports asynchronous protocols. Asynchronous protocols generally transmit data as it is entered from the keyboard. 'Bits' are placed at the beginning and end of each character transmitted to tell the receiving modem when to prepare for the character to come and when to stop and wait for the next to be sent.

Some protocols communicate interactively. That is, each character is transmitted as you type it or when you press <RETURN>.

Other protocols transfer information in files. When you use file transfer protocols from a terminal to a host computer, you must prepare the data in advance and save it in files on disk, then transmit the files in a group (called a 'batch file transfer').

You can also use file transfer protocols to send one or a series of files from one personal computer to another. The data in each file must be prepared in advance by your word processor, spreadsheet or database program.

Modem Standards

There are two sets of standards used throughout the world governing modem communications. In the USA, the Bell standards are used to define the exchange of data. In many other countries, the standards are set by the CCITT (Consultative Committee for International Telegraphy and Telephony).

Your Apple Personal Modem Plus supports different standards, both Bell and CCITT, and so is able to communicate with other modems that also adopt one or more of those standards. The standards which your Apple Personal Modem Plus supports are:

CCITT V21	the Australian standard for 300 bps modems
CCITT V23	the Australian standard for 1200/75 bps modems
CCITT V22	the Australian standard for 1200 bps modems
Bell 103	the US standard for 300 bps modems
Bell 212A	the US standard for 1200 bps modems

Summary

Speed

The rate at which a modem can transfer information over the telephone system is called the 'modem speed'. The speed of a modem is usually expressed in 'bits per second' or 'bps'. This is also sometimes referred to as the 'baud rate' of the modem. While not strictly accurate from a technical point of view, many people use the terms 'bps' and 'baud' to mean the same thing. Baud specifically means the number of shortest pulses that can be used to create a data character that can be transmitted in a second.

Your Apple Personal Modem Plus can communicate at 300 bps, 1200/75 bps (that is, 1200 bps outbound, from the host to you, and 75 bps inbound, from you to the host) and 1200 bps.

Originate and Answer Modes

For modems of the same data communications standard to be able to communicate with each other, one modem must be in 'originate' mode while the other must be in 'answer' mode. When you dial into a remote computer system you will almost always have your Apple Personal Modem Plus in 'originate' mode. If you are using your Apple Personal Modem Plus to automatically answer the phone for other modems it will be in 'answer' mode.

Important Telecom Information

Apart from all the rules which make data communications possible, there are some requirements issued by Telecom governing the use of modems. Telecom Australia requires you to be aware of the following:

Telecom Advice Regarding Location and Connection of Modems In Dangerous Situations:

The apparatus described in this Authorisation can only be located and connected to Telecom plant in normal commercial and domestic situations. Where location and connection is required in a dangerous situation (e.g., High voltage power station) and the electrical safety protection limits of line isolation may be exceeded, separate approval must be sought from Telecom in each instance.

Telecom Compliance Regarding Repetitive Calling Facilities:

Telecom requires customers who have equipment which has repertory dialling facilities to be aware of their requirements when using this equipment. The following section is a reprint from Telecom Specification 1056, Issue 3.

Definition

Repertory Dialler - A storage device which allows a telephone customer to store one or more telephone addresses (telephone numbers), and at any subsequent time to manually select a stored address (or addresses) which will then be automatically transmitted to the exchange line to originate calls on the Switched Telephone Network.

Repetitive calling facilities shall comply with the following:

- (i) The facilities shall be manually initiated, and provision shall be made for the facility, once actuated, to be cancelled before the sequence of calls has been completed.
- (ii) The maximum number of calls in any automatic re-dialling sequence or sequential calling sequence where no manual action is required between calls shall be as follows.
 - (a) Repertory diallers which do not incorporate service tone detectors - Three calls (the original plus two automatically initiated retries).
 - (b) Repertory diallers which incorporate service tone detectors which will ensure that the line will be released after the receipt or otherwise of a service tone indicating the call will not be successful - Five calls (the original plus four automatically initiated retries).

- Chapter 2
- (iii) At the end of any unsuccessful call, there shall be an 'Off Line' period of $6\emptyset + 1\emptyset$ seconds before the line is automatically looped to initiate another call to the same number.
 - (iv) There shall be an 'Off Line' period of at least 2 seconds between two calls addressed to different numbers.
 - (v) An automatic re-dialling sequence in progress shall be automatically cancelled by:
 - (a) A successful call (indicated by an answer from a called party) made from a repertory dialler which incorporates service tone detectors, or
 - (b) Any manual action of the caller which could cause a sequence in progress to be interrupted, e.g. using the associated telephone for normal caller to take control of a call established from the repertory dialler.
 - (vi) It shall be possible for the caller to use the repertory dialler to make single calls to any number stored in it without automatically actuating any repetitive calling facilities with which the number called is associated.

The first part of the paper discusses the importance of the medical profession in the United States. It points out that the medical profession is one of the most important and most respected professions in our society. It is a profession that has a long and distinguished history, and it is one that has made a significant contribution to the health and well-being of the American people.

In the second part of the paper, the author discusses the challenges that the medical profession faces in the future. He points out that there are a number of factors that are likely to have a significant impact on the medical profession in the years ahead. These factors include the aging of the population, the increasing prevalence of chronic diseases, and the growing emphasis on cost containment in the health care system.

The author also discusses the role of the medical profession in the future. He believes that the medical profession has a responsibility to continue to provide the highest quality of care to its patients, and to work to address the challenges that it faces. He also believes that the medical profession should continue to play a leadership role in the health care system, and to work to improve the health and well-being of the American people.

In conclusion, the author believes that the medical profession is a profession that is essential to the health and well-being of the American people. It is a profession that has a long and distinguished history, and it is one that has made a significant contribution to the health and well-being of the American people. He believes that the medical profession has a responsibility to continue to provide the highest quality of care to its patients, and to work to address the challenges that it faces.

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Chapter 2



Introducing and Testing the Apple Personal Modem Plus



Abbie Ferguson Model Plus
Introduction and Testing the
Model
Chapter 5



Chapter 2

INTRODUCING THE APPLE PERSONAL MODEM PLUS

In this chapter you will learn what you can do with your Apple Personal Modem Plus and the special features of your modem.

What The Apple Personal Modem Plus Does

Your Apple Personal Modem Plus lets you communicate with other personal computers, with host computers, and with a variety of on line database, electronic mail and bulletin board services.

This means you get the use of several computers for the price of one.

Modem and Telephone

Your Apple Personal Modem Plus is the link between your computer and other remote computers via the telephone socket. You can still have a telephone, of course, by using a suitable double adaptor plug in the Telecom wall socket.

Software and Your Apple Personal Modem Plus

Most modern communications software, like The NetComm Program, is capable of controlling the modem for you, so you will normally not need to know a great deal about the detail of how the modem operates. If you are interested in the technical details of the modem, or you wish to use a communications program which is not capable of sophisticated control of the modem, you may want to read Appendix A which describes the operation of the modem in quite some detail.

Most communications software will allow you to control your communications by dialogs, menu selections or multiple choice lists. Once you have selected what you want, the software will then control your Apple Personal Modem Plus for you.

Features

Intelligence

Your Apple Personal Modem Plus is an intelligent modem, which means it can both dial and answer your telephone. What makes your modem intelligent is its built-in micro-processor which controls operation of the modem and facilitates communications between your computer and the computer you are calling, with a minimum amount of effort from you.

Your Apple Personal Modem Plus takes care of the dialling, answering and disconnection of the phone line for you in conjunction with your communications software.

'AT' Commands

Your Apple Personal Modem Plus is particularly designed to be used with the enormous range of communications packages which use the 'AT' industry standard command set (pioneered by Hayes in the USA) to control the modem. The 'AT' commands are so called because each command begins with the letters 'AT' (to get the ATtention of the modem).

Naturally, you can easily use communications packages which are not designed for the 'AT' commands; you can send the required commands directly to the modem. You will need to become familiar with your communications program to see if it uses the 'AT' command set, or whether you'll need to use other commands with your Apple Personal Modem Plus.

Asynchronous

Your Apple Personal Modem Plus operates asynchronously. This means that each character transmitted by the modem is preceded by 'start bit' and followed by 'stop bit' markers which allow the receiving end to identify when each character begins and ends. So, the timing of transmission of each individual character is not critical, as the start and stop bits identify the data.

In practice, this means that you can only communicate with other systems which operate asynchronously. These include most bulletin board systems, a host of services including electronic mail, telex and videotex, and other computers which use asynchronous communications, at speeds of 300 and 1200 bits per second (bps).

Connection Information

Your Apple Personal Modem Plus will respond with a 'CONNECT' message, telling you the speed of the connection after it has connected to a remote modem. For example, the message 'CONNECT 1200' lets you know you've successfully connected to the remote modem at 1200 bps. The modem also uses an internal speaker to let you monitor what is happening on the phone line.

You will find more information on connection messages in the 'Response Codes' section of Appendix A, especially the section on the extended Response Code set (the 'ATX1' command).

Auto Dial, Auto Answer

The Apple Personal Modem Plus takes care of the dialling, answering and disconnection of the phone line for you, especially if your communications program already has the ability to do this built-in.

Portability and versatility are key features of the Apple Personal Modem Plus. It is designed for Australian Telecom connection but it can communicate using US Bell standards. If you travel a lot or dial overseas to communicate, you will be able to go most places with the Apple Personal Modem Plus.

Speed Rate Converter

If you select V23 1200 bps to dial to another modem, the Apple Personal Modem Plus adopts 1200/75 bps - that is, 1200 outbound (from the host to you) and 75 inbound (from you to the host). If your Apple computer is configured at 1200/1200, the Apple Personal Modem Plus automatically converts your inbound data (the data you are sending) from 1200 bps to 75 bps (about as fast as you can type) and buffers about 40 to 50 characters of your data.

The speed rate converter also operates if you select V23 1200 bps answer mode. In this situation, you would be sending data at 1200 bps and receiving data at 75 bps.

Saveable Options

The Apple Personal Modem Plus has been designed to remove the frustration of configuring it to your particular requirements each time you use it.

There are many options which have been set to sensible values in the factory. If you need to update these, then you need only issue a command from your computer.

Once the modem has been configured to your requirements, the 'AT&W' command will store your selections so when you next switch the modem on it will automatically be set the way you require. Your configuration is stored in the Apple Personal Modem Plus in an area known as the 'non-volatile RAM' (Random Access Memory). This non-volatile RAM will store details even when the modem's power is switched off.

Local Error Testing

The Apple Personal Modem Plus is capable of several self tests. If you are concerned that your modem is not operating correctly, these tests will assist you to isolate the problem area. See Chapter 3 for details of the tests.

Telecom Approved

The Apple Personal Modem Plus is fully approved by Telecom Australia.

Telecom Authorisation No. C87/37/23

Chapter 3

Installing and Testing the Apple Personal Modem Plus

The Apple Personal Modem Plus is designed for use with any Apple computer that is Apple II, III, the Lisa, or the Macintosh family.

The installation procedure for the Apple Personal Modem Plus is general, regular for all Apple computers. There are differences in detail, however, so please make sure that you read the section which details the installation for your particular type of Apple computer.

WARNING: Read all the steps in the installation instructions for your particular type of Apple computer before connecting to install your Apple Personal Modem Plus. Shut off the main power of first, but leave the cord attached. The power in earth should not stay on for a long time if you are not on your line.

The Front Panel

Figure 3-1 shows the front view of an Apple Personal Modem Plus. There is one indicator to show when the modem period is on. There is also a speaker inside which keeps you notified of the progress of a call.

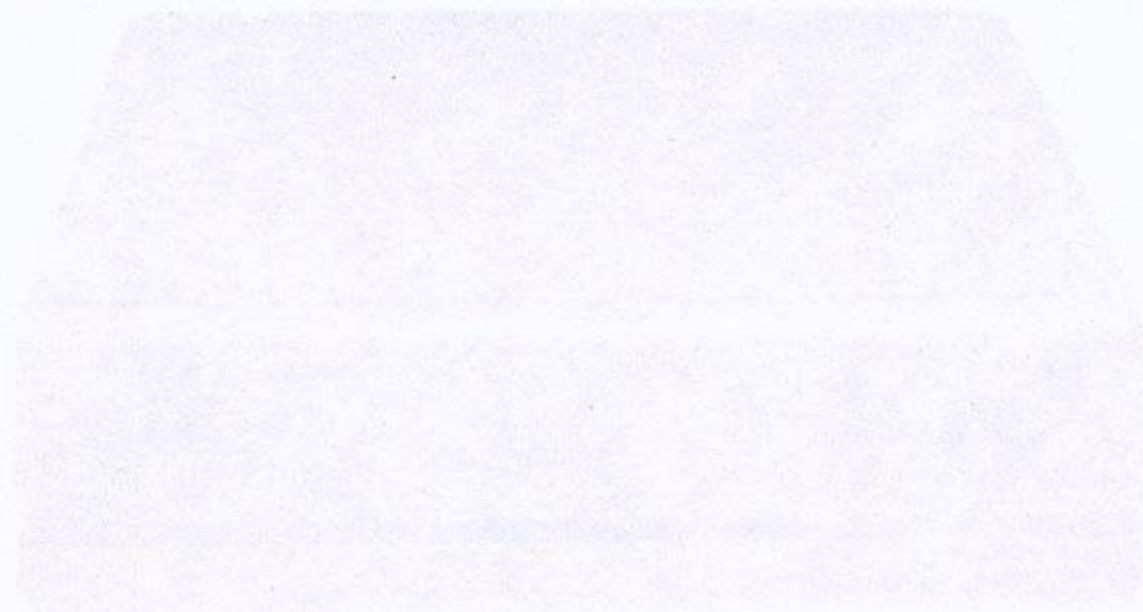


Fig. 3-1 The front panel.

Section 3.1: Introduction

3.1.1 Overview

The USB Modem Driver is a software component that enables the operating system to communicate with a USB modem device.

3.1.2 Prerequisites

Before installing the driver, ensure that the following prerequisites are met:

- The operating system is Windows XP or later.
- The USB modem device is properly connected to the computer.
- The user has administrative privileges.

3.1.3 Installation

The installation process is straightforward. Follow these steps:

- Run the USB Modem Driver Setup program.
- Accept the license agreement.
- Follow the on-screen prompts to complete the installation.

Once installed, the driver will be automatically loaded when the USB modem device is connected.

Chapter 3: Installing and Testing the USB Modem Driver

Section 3.1: Introduction

Chapter 3

Chapter 3

INSTALLING AND TESTING THE APPLE PERSONAL MODEM PLUS

The Apple Personal Modem Plus is designed for use with any Apple computer, that is Apple II, III, the LISA and the Macintosh family.

The installation procedure for the Apple Personal Modem Plus is generally similar for all Apple computers. There are differences in detail, however, so please make sure that you read the section which describes installation for your particular type of Apple computer.

WARNING: Read all the steps in the installation instructions for your particular type of Apple computer before commencing to install your Apple Personal Modem Plus. Switch the mains power off first, but leave the cord connected. This provides an earth should any stray static electricity be present on your body.

The Front Panel

Figure 3-1 shows the front view of an Apple Personal Modem Plus. There is one indicator to show when the modem power is on. There is also a speaker inside which keeps you informed of the progress of a call.

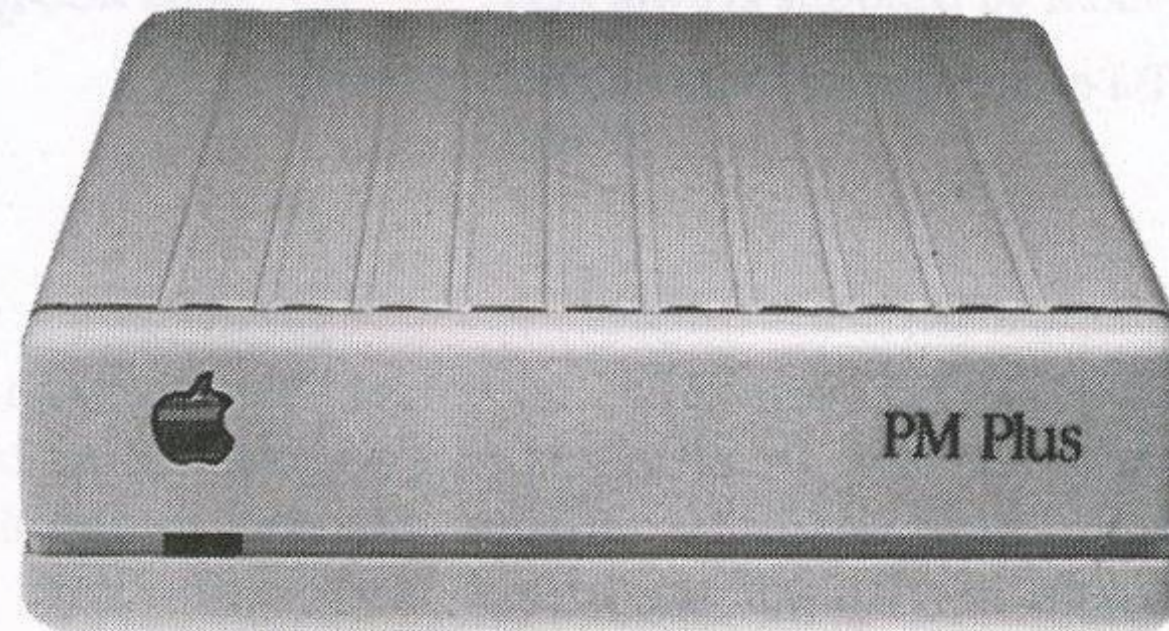


Fig. 3.1 The Front View.

The Rear Panel

Now turn your modem around and look at the back. This is where most of the external features of the modem are:

- Two modular telephone jacks (referred to as RJ11 jacks from now on)
- Data Cable Connector - This is the standard Apple Mini Din-8 format.
- Four DIP switches
- Power Cable Connector and the on/off switch

NOTE: The on/off switch is marked with international symbols. The \circ symbol indicates the OFF position; the I symbol represents the ON position.

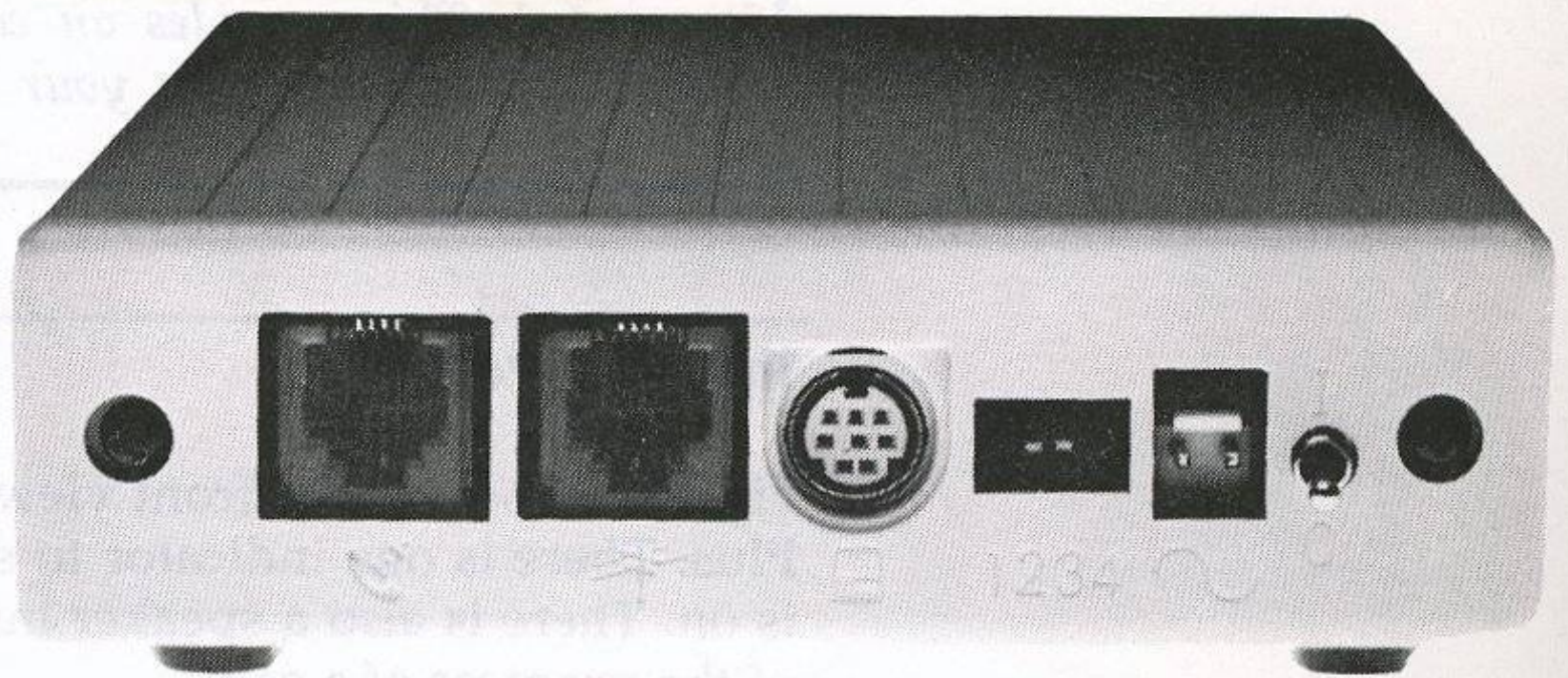
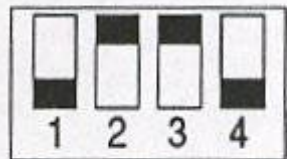


Fig. 3.2. The Rear View

The Dip Switches

DIP means Dual In-Line Package. They are also known as Piano Switches. The four DIP switches allows you to override certain aspects of the modem's ability. This means when you switch the modem off and on again, the DIP switches dictate certain settings that must remain.

NOTE: The DIP switches ALWAYS override the software status of the modem.



There are four switches and they are preset in the factory. The factory (standard or default) settings are indicated by a '*'. The four switches control and support attributes of the computer when it is attached to the modem. If you must change any of these settings, do so only when the modem is switched off.

Switch Number	Name	Setting	Meaning
1	DCD Override	Up	Modem supplies DCD on connection.
		Down *	DCD permanently on.
2	RTS/CTS Loop	Up *	CTS always from modem.
		Down	CTS in response to RTS only.
3	DTR Override	Up *	Terminal must supply DTR.
		Down	DTR permanently on (supplied by modem).
4	DTR/DSR Loop	Up	DSR always supplied by modem.
		Down *	DSR is raised in response to DTR being raised.

The meaning of such terms as DCD and RTS/CTS are explained in the glossary (Appendix E). You should take time at some stage to become familiar with the meaning of these terms as they will appear again, particularly in regard to software control of the modem.

The Volume Control, Turning Up The Sound

You may need to change the volume of the speaker mounted inside your Apple Personal Modem Plus. This is accomplished by adjusting the volume control on the front underside of the modem. Carefully turn the modem upside down and using a small flat bladed screwdriver, gently adjust the volume control's setting as shown below.

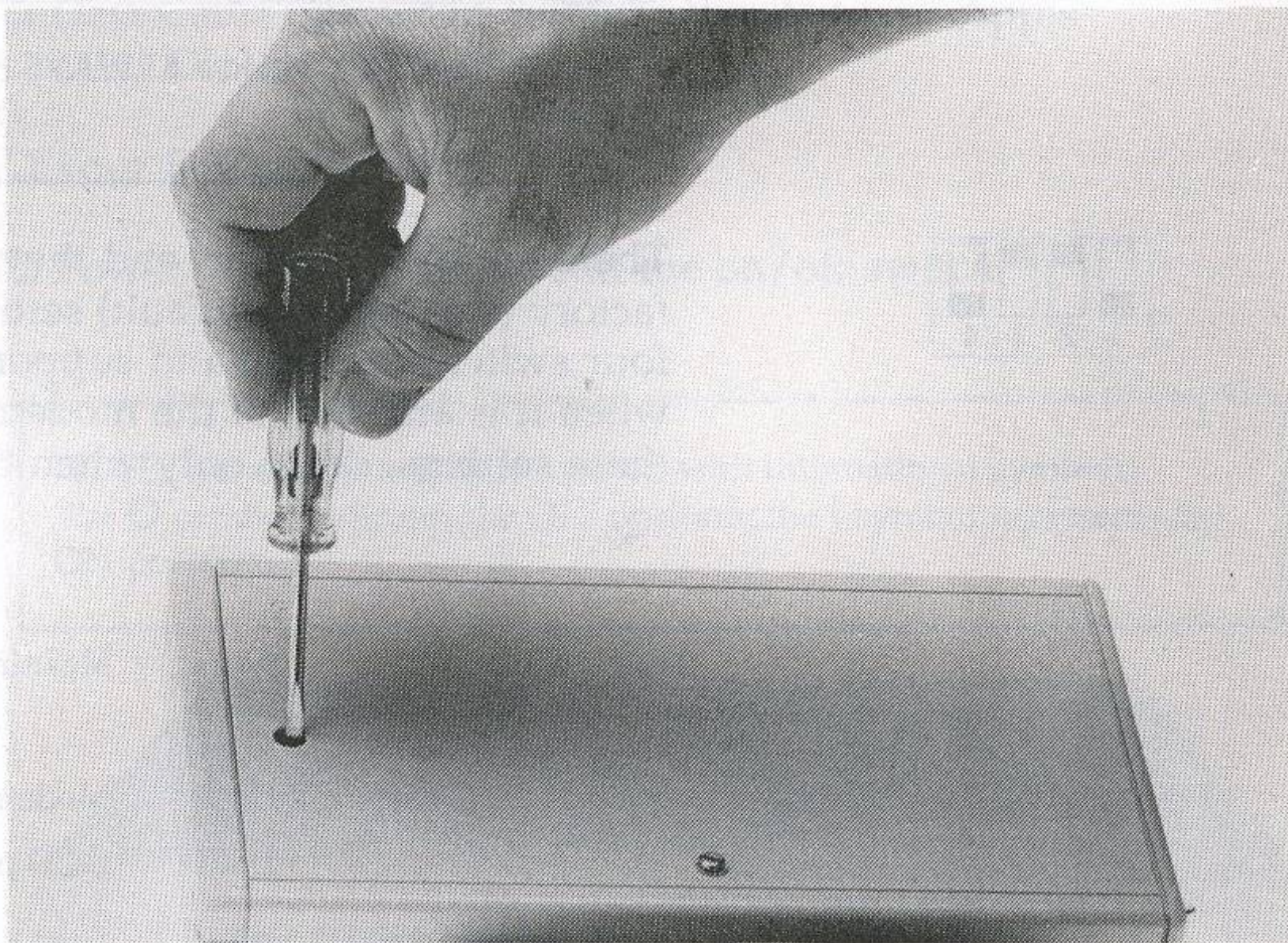


Fig. 3.3

Turn clockwise or counterclockwise to increase or decrease the volume, respectively.

Installing The Modem

Setting up your Apple Personal Modem Plus and connecting it to your Apple is easy. The following list summarises the installation process described in some detail later.

1. You should notify Telecom that you are connecting a modem to their lines. You may need to order a dedicated telephone line. Please read the later section titled 'Telephone Connection'.
2. Connect the modem to your Apple with the correct data cable.
3. Double check your completed installation.
4. Connect the power supply and switch the power on (switch up).
5. Set up your communications program.
6. Run a test to see that the modem is working properly. Read the section 'Testing your Modem'.
7. Go on line to your host or service.

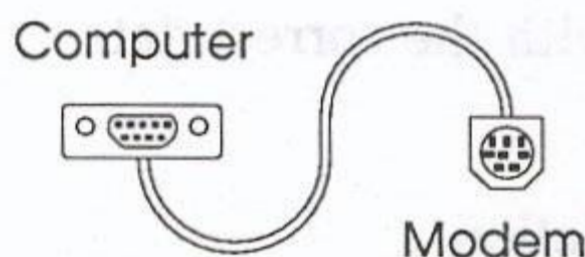
You need to make two electronic and one electrical connection to finish installing your modem:

1. Serial connection to your Apple.
2. Telephone connection to your modem.
3. Power connection.

Computer Connections

Attach the loose end of the data cable to the appropriate serial interface connector on your computer. You'll find the specific directions for your particular Apple computer on the next few pages. Also included in Appendix F are details as to the wiring for each of the cables mentioned here.

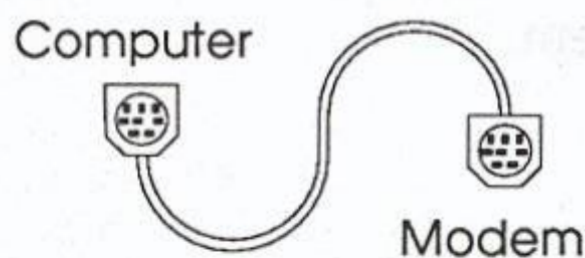
Macintosh 128K, 512K, 512K Enhanced



If you have one of these models, plug the rectangular 9 pin end of your modem data cable into the port marked with the icon of a telephone handset. Make sure the screws are aligned with the screw holes on the Macintosh interface connectors and tighten the screws to prevent radio and TV interference. The metal plate makes contact with the screws and grounds the modem. Tightening the screws also prevents accidental disconnection.

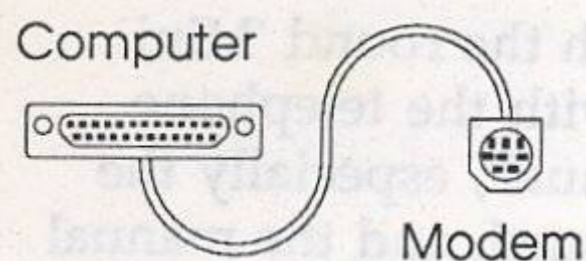
You can also use the port marked with a printer icon, but with MacTerminal software it's not as convenient. Most software defaults to the telephone port each time the program is restarted. Check this within the menus of the software you are using. The NetComm Program and MacVideotex allow you to connect to either port and you should configure the program accordingly. Check this as it is difficult to make a connection for data communications with a printer!

Macintosh Plus, SE and Macintosh II



The cable ends are both the same for these three models. Use only a Mini Din-8 to Mini Din-8 cable. Place one end of the cable into the Macintosh socket marked with an icon of a handset and the other end into the Apple Personal Modem Plus (n.b., you may place either end of the cable into the modem).

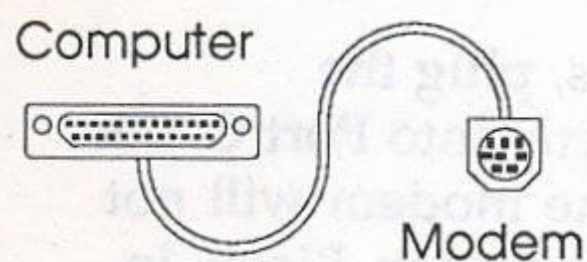
Macintosh XL/Lisa



The data cable used on the Macintosh XL has a 25 pin connector. This end must be plugged into the port Serial A as the pin configurations are different between the two serial ports. Most communications software will default to Serial A.

NOTE: If you are using the LisaTerminal program, you will need to open your Preferences window and check the Connect Devices box. Depending on where you connected your modem, click Serial A Connector. Finally, click the Serial Cable box (do not click on 'Modem A,' which represents European connections).

Apple IIe, II Plus, and II Installation

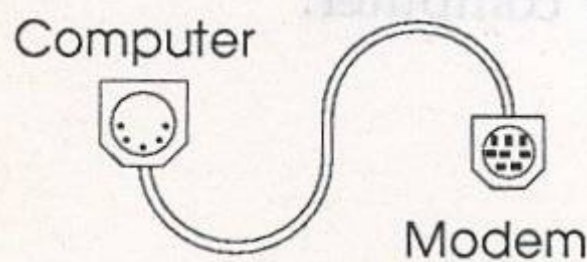


To connect the modem to an Apple IIe, II Plus, or II computer, you must first install a serial card in one of the computer's slots, preferably slot #2. If you have not yet done so, turn now to Appendix D for instructions on installing and adjusting the Apple Super Serial Card for use with your modem.

If you already have a Super Serial Card in slot #1 to use with a printer, you may want a separate card to use with your modem. You will have to change the card's switch settings and turn the jumper block around each time you change from modem to printer, if you use one card for both functions.

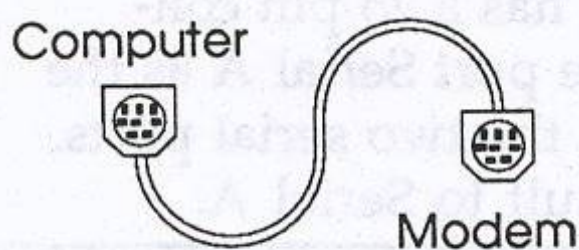
Once your serial card is configured for communications and securely in place, locate the end of the modem data cable that has a 25 pin connector attached. Plug the cable into the serial card connector on the back of your computer.

Apple IIc Installation



Plug the end of the Apple data cable with the round, 5 pin connector into port 2 (the handset icon), on the back of your Apple. Read the 'Apple IIc System Utilities Manual' on how you should configure the in-built serial ports. The NetComm Program does this automatically for you.

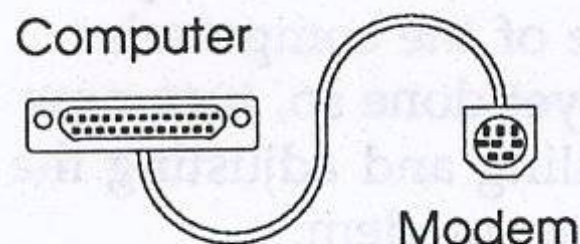
Apple IIGS Installation



Plug the end of the Apple data cable with the round 'Mini Din-8' connector into the port marked with the telephone icon. Read the 'Apple IIGS Owner's Manual', especially the section that describes the IIGS Control Panel, and the manual that describes the communications program you wish to use. The program must be capable of using the in-built serial ports of the IIGS.

Remember, if you have a serial card installed in one of your IIGS expansion slots, then the IIGS is exactly like a normal Apple II or IIe and you should read the previous section.

Apple III and III Plus Installation



If you have an Apple III or Apple III Plus, plug the unconnected end of your data cable directly into Port C. (Do not use a modem eliminator cable, or the modem will not function.) Refer to 'Changing the Configuration Block' in Chapter 6 of your Apple III Standard Device Drivers Manual for information on adjusting the RS232 driver's baud rate, data format and communication protocol. If you intend to run a modem and a serial printer simultaneously, you'll first need to install a serial card in one of the expansion slots.

Other Computers

Your Apple Personal Modem Plus will work successfully with most brands of microcomputers that support an RS232 serial interface. Please consult the instructions for modem attachment in your particular computer's owner's manual and make reference to Appendix F, 'Cable Diagrams'. Should you still not have sufficient information, check with the dealer from whom you purchased your computer.

Power Connection

The Apple Personal Modem Plus is supplied with a special plug pack the operates from any 240V 50Hz AC power source. The name plate on the modem indicates its electrical ratings. To connect the Apple Personal Modem Plus to its power supply:

1. Find the plug pack (with attached power cable) that is supplied with your modem.
2. Ensure the modem power switch is in the off position (down position).
3. Plug the connect end into your modem.
4. Plug the power plug into a normal 240V receptacle.

Testing Your Installation

Your Apple Personal Modem Plus responds to software commands typed by you or sent by your data communications program. The easiest and best way to test your installation is to run a simple self-test procedure for the Apple Personal Modem Plus.

NOTE: Read the manual which was supplied with your communications program to become familiar with some of the terms used in this section. If you are unsure about the performance of this procedure, ask your dealer for assistance.

To run the self-test, do the following:

1. Switch on your Apple computer and load the data communications program of your choice. The NetComm Program is supplied as a part of the accessory kit for the modem.
2. Enter Terminal Mode.

3. Type the modem command 'AT&T1' and press <RETURN>. The letters 'AT&T1' should appear on the screen of your Apple computer as you type them.

The message 'CONNECT' will be displayed on your screen.

4. When you see 'CONNECT' on the screen, type in a short message - anything you want. The letters should appear on the screen as you type them.
5. Type in '+++', wait a while, then type 'AT&T0' and press <RETURN>. This will tell the Apple Personal Modem Plus to finish its self-test. The modem responds with 'OK'. You are now ready to begin normal modem operation.

If It Doesn't Work

If your Apple Personal Modem Plus doesn't work the first time, go back and check your connections. Most problems can be traced to errors in installation.

Go through the following checklist step-by-step:

- ⇒ Did you switch your computer, monitor and modem on?
- ⇒ Did you connect your Apple Personal Modem Plus to your Apple computer?
- ⇒ Did you connect your modem telephone cable to the Telecom wall socket?
- ⇒ Did you configure your communications program correctly?

If the answers to all these questions are 'yes' and your installation still doesn't work, check Appendix B 'Troubleshooting'. For further help, consult your dealer.



Chapter 4



Using the Apple Personal Modem Plus

The Apple Personal Modem Plus is a high-speed modem that allows you to connect your Macintosh to a telephone line. It is designed to be used with the Apple Personal Modem Plus software, which is included with the modem. The modem is easy to use and provides a reliable connection to the Internet.

Setting up the modem is a simple process. First, you need to connect the modem to your Macintosh using the provided cable. Then, you need to connect the modem to a telephone line. Once the hardware is connected, you can install the software and configure the modem settings. The software will guide you through the process, and you can test the connection to ensure it is working properly.

Setting Up and Using Them

There are two main steps to setting up and using the modem. The first step is to connect the modem to your Macintosh and a telephone line. The second step is to install the software and configure the settings. The software will provide instructions for each step, and you can refer to the user manual for more details.

Once the modem is set up, you can use it to connect to the Internet. The software will provide instructions on how to do this, and you can refer to the user manual for more details. The modem is easy to use and provides a reliable connection to the Internet.

Software to Use with the Modem

There are several software programs that can be used with the modem. The most popular ones are the Apple Personal Modem Plus software, which is included with the modem, and the Internet Explorer software, which is available for download. Other software programs that can be used with the modem include Netscape, Opera, and Mozilla.

Customer feedback is a valuable source of information that can help organizations improve their products and services. It provides insights into customer needs, preferences, and pain points, which can be used to make data-driven decisions and enhance the overall customer experience.

There are several ways to collect customer feedback, including surveys, focus groups, interviews, and social media monitoring. Each method has its own strengths and weaknesses, and organizations should choose the most appropriate one based on their specific needs and resources.

Once feedback is collected, it is important to analyze it carefully to identify trends and patterns. This can be done through various techniques such as content analysis, sentiment analysis, and statistical analysis. The goal is to extract meaningful insights that can be used to drive positive change.

Implementing changes based on customer feedback is a critical step in the process. Organizations should prioritize the most impactful issues and develop a clear action plan to address them. Regular communication with customers about the changes being made can help build trust and loyalty.

Customer feedback should be an ongoing process, not a one-time event. Organizations should establish a system for continuously monitoring and responding to customer input. This will ensure that the organization remains customer-centric and able to adapt to changing market conditions.

In conclusion, customer feedback is a powerful tool for improving business performance and customer satisfaction. By listening to their customers and acting on their feedback, organizations can create a more competitive and resilient business.

Effective customer feedback management requires a combination of strategic planning, data analysis, and open communication. Organizations that embrace customer feedback as a core part of their business strategy will be better positioned to succeed in today's market.

By prioritizing customer feedback, organizations can gain a deeper understanding of their customers and make more informed decisions. This leads to improved products, better service, and ultimately, higher customer loyalty and retention.

Customer feedback is not just a means to an end; it is a continuous journey of discovery and improvement. Organizations that listen to their customers and act on their feedback will find themselves thriving in a competitive and ever-changing market.

The key to successful customer feedback management is to be proactive and responsive. Organizations should create a culture where customer feedback is valued and used to drive positive change. This will lead to a more customer-centric organization that is better equipped to meet the needs of its customers.

Customer feedback is a valuable asset that can help organizations improve their products and services. By listening to their customers and acting on their feedback, organizations can create a more competitive and resilient business.

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Customer Feedback



Chapter 4

USING THE APPLE PERSONAL MODEM PLUS

This chapter shows you how to use your Apple Personal Modem Plus, introduces the most common commands used to control the many functions of the Apple Personal Modem Plus and discusses the design concepts which make the Apple Personal Modem Plus easy to use.

NOTE: Almost any communications program that controls a modem using the industry standard 'AT' command set can utilise the features of the Apple Personal Modem Plus automatically. You need not take any action until the connection is dialled, established and (in some cases) until you have automatically logged on to the host. This is certainly the case for the NetComm Program.

Getting On Line And Staying There

Your Apple Personal Modem Plus is intelligent, it is microprocessor driven. It has its own internal program which recognises certain command codes you send it from the keyboard or by program. Using these codes, it can set itself up and commence operation, based on the information you supply from the keyboard.

Your Apple Personal Modem Plus implements the Hayes command set (also known as the 'AT' command set). Full details of the commands are given in Appendix A. A list of all the 'AT' commands can be found in Appendix F of this manual.

Software Versus Direct Commands

There are two ways to control the way your modem works - by selecting commands from the menus provided by your software or by learning the set of commands understood by your modem.

Thus, to issue a 'dial' command, for example, you can either select the appropriate command from your communications program's menu or you can enter the command itself - 'ATD <phone number>'.

If you select from your software program's menu, the program will translate the command you give it into the appropriate 'AT' command to run your modem. Thus, the program serves as an intermediary (or translator) between you and the modem.

If you're like most users, you'll rely on your software to take care of virtually everything you ever want to do with your modem. You'll probably find little need to learn the actual 'AT' commands. If this is the case, all you need do is learn how to use your communications program and let it control the modem.

Getting On line - An Example

So what's involved in actually connecting with someone at the other end of the phone line? If you've already done the self-test described in the preceding chapter and everything's ready to go, all you need do is set the appropriate speed and data format, and tell your communications program the number to dial.

Let's use The NetComm Program as an example (if you're using another communications program, the actual commands will be different, but the general procedure will be the same). You wish to ring a bulletin board service which operates at 1200 bps, with a data format of 8 data bits, one stop bit and no parity. The BBS's phone number is 123 4567.

Set up The NetComm Program for 1200 bps operation with 8 data bits, 1 stop bit and no parity. If you now make your Apple Personal Modem Plus dial the number 123 4567 and it gets a connection, it will let you know by displaying the message 'CONNECT 1200' - you're on line to the system.

You'll find that with The NetComm Program (as well as many other communications programs) you can automate this procedure by saving the details relating to each service you dial (such as name of host, data format, modem speed, phone number) to a file.

What You can do with Your Modem

Services

Convenience and speed are the key advantages offered by on line services. Most of the services available electronically have their traditional counterparts, which may cost less up front but are nowhere near as efficient.

Some of the services available are:

- Electronic Messaging. If you have even been upset by the expense of classified advertising, the speed of Australian mail delivery service, or the frustrations of 'telephone tag', you will appreciate the many new ways your modem allows you to get your message to its destination.
- Bulletin Boards. A good place to begin your investigation of on line communications, the electronic bulletin boards around the country can usually be accessed free of charge. You can leave or read messages on virtually any subject (even religion and politics!).
- Electronic Mail. Send messages across town or across the country in seconds with electronic mail. Prepare one memo and send it instantly to a hundred people.
- File Transfer. Communicate with other computers of all makes and sizes. Let's say you are preparing a spreadsheet on a Macintosh. Using the file transfer process, you could access your company's mainframe to get the data you need and then send your completed work to a colleague in a branch office, running compatible software on a DOS machine.
- Financial Services. Whether on the job or at home, your modem allows you immediate access to your assets and investments.
- Home Banking. Transfer funds, pay bills, or get an up-to-the-minute statement of your bank account balance.

- ❑ **Stock Quotations.** If you're a serious investor, you needn't wait for tomorrow's newspaper to find out about today's stock activity. You can even buy and sell, placing your orders with an on line broker, using a videotex service such as Viatel.
- ❑ **Speciality Shops.** Some retailers operate bulletin board systems in addition to their normal sales outlets, allowing customers to place orders for products via their computers.
- ❑ **Public Domain Software.** Hobbyists who have created a new program they want to share with others will often upload their programs to a bulletin board system. You can use your modem to download and copy such programs for your own use, usually free of charge.

Important! When downloading files over public phone lines, be sure to use a communications program (such as the NetComm Program) which has error checking ability. Such a program detects whether extraneous noise on the phone lines is corrupting the information being transferred to your computer. All it takes is for one character in a program to be wrong to keep the program from running.

WARNING: Telephone communication time costs money. Be aware that STD and ISD charges apply as if it were a normal voice conversation.

Information

If you require your information to be completely up to date, and want your research to be quick but thorough, there are a large number of national information services available which can satisfy your 'need to know' at any time, 24 hours a day. Some of the topics they cover include:

- Travel. Be your own travel agent, digging as deep as you want to find the most convenient transportation and accommodation at the best possible price.
- Airline Reservations. Enter your point of departure, your destination and the computer will give you several possible flights from which to choose.
- Hotel Availability. Do an on line search for hotel accommodation which matches the prerequisites you define and then make your reservations on the spot.
- Restaurant and City Guides. Find a guide to dozens of restaurants in Australia or a city guide that includes everything from the latest at the theatre to the favourite gathering spots of single adults.

Research

A wide variety of information is available at a wide range of prices through highly specialised databases. For example:

- Encyclopedias. Since the data in these files is continually being updated, it is more likely to be more complete than the dusty volumes in your local library.
- News Clipping and Keyword Searches. Want to check up on the past, present, or future activities of Apple Computer Inc? Enter the name Apple as a keyword and search the nation's major newspapers electronically for all articles that mention us.
- Weather Reports. Find out about the short term climate conditions around Australia - check livestock and crop risks.

Professional Data

Doctors, lawyers, pilots and other professionals who need to keep track of an ever expanding universe of complex data will find ready assistance at their fingertips.

- Medical Data.** Doctors can find information on drugs, diseases, and diagnoses from specialised databases.
- Law Library.** Lawyers can access complete libraries full of legal information with a single phone call.
- Demographics.** Marketing personnel can make more informed decisions by obtaining statistics about people in different parts of the country.

Leisure

In addition to its role as an effective work tool for business and the home, your modem can also serve as a vehicle to enliven your spare time.

- Personal Enrichment.** New ideas, new people, new opportunities and new skill development are yours for the asking in the world of on line communications.
- Education Programs.** Download a program that will teach you a new skill, like typing or speed reading.
- Discussion Forums.** Join or start an open discussion of your pet topic on a local bulletin board system.
- Meeting People.** Communicate with people, both famous and infamous, whom you might otherwise never get a chance to meet. You can do so by dropping in on a computerised conference, joining a special interest group or logging onto a bulletin board system devoted to electronic matchmaking.

Finding and Selecting an Information Service

Unfortunately, not all of the services and databases mentioned in this overview are available from any single source nor are most free of cost. You need to decide what kind of information is most important to you and then shop around for an on line service to provide it.

Because membership fees and connect times can be quite substantial, it is unlikely you will want to subscribe to more than one or two information services simultaneously. It is important, therefore, that you make your selection with care.

Determining the exact cost of using an information service is not always a simple task. For example, while many networks require a membership fee, some do not. And while most services vary their rates according to the time of day, many also levy fixed surcharges for accessing certain areas of information. In addition, there are often telecommunications surcharges, although these are sometimes included in the basic fees. So, as you make your decision, take all of these variables into account. A service with a higher hourly fee may actually be a better buy when compared to one that has a lower base cost, but charges \$40 per hour extra for the information you need most.

Beyond consideration of price or hardware requirements, an information database user should consider several questions before choosing among the multitude of electronic services available:

1. How easy is the service to use?
2. How accurate, complete and useful is the information?
3. How quickly can you access the information needed?
4. How good is the documentation from the service?
5. How good are the customer relations?

When you do subscribe to a service, you'll probably be given such things as an identification (ID) code, password, account number, and more documentation to read. Before you log on for the first time, be sure you have these things within easy reach so you can figure out what to do when your screen flashes you a message like 'Enter Terminal Identifier'.

Linking up to the Network

The majority of database companies offer their services thru Telecom's AUSTPAC, allowing most users access without having to pay STD rates. AUSTPAC transmits digital information a lower cost than dial-up voice lines. You pay for the cost of the phone call to the facility nearest you - often a local call - and the network transmits the signal to the information service, at an extra monthly charge to either you or the service.

Getting More From Your Apple Personal Modem Plus

For the majority of users, the preceding information and a basic knowledge of their communications program will be all that's needed to use the Apple Personal Modem Plus. The rest of this chapter is for those who want to take full advantage of the capabilities of their modem. It introduces a few simple commands, which are detailed in Appendix A, and discusses some design concepts which will help you get more from your Apple Personal Modem Plus. With the right command, you can take advantage of several modem features:

- ❑ **Automatic Dialling.** To call another computer, you can always dial the phone manually and then order your modem to establish communications. The auto dial feature lets you give all dialling instructions directly from your computer program or keyboard.
- ❑ **Automatic Redial.** If the line you are calling is busy, you can try again simply by typing the command 'A/' (the 'AT' prefix is not needed). 'A/' tells the modem to repeat the last 'AT' command issued. This means that to use 'A/' to redial, you should not give any other 'AT' or software commands between dialling attempts or the modem will repeat the last command, which was probably not a dial command.
- ❑ **Dial Cancellation.** If you want to cancel an auto dial call before it is answered, you can do so by pressing any key on the keyboard. The modem hangs up and sends a 'NO CARRIER' message to your screen (if you cancel a call accidentally, use the auto redial command, 'A/', to try again).

Design Concepts

In order to simplify its operation, the Apple Personal Modem Plus has the ability to store details of its set up. These details can be retained even when the Apple Personal Modem Plus has been switched off. They are stored in a part of the Apple Personal Modem Plus called the 'NV RAM' (Non-Volatile Random Access Memory).

After initial set up, every time the modem is switched on or the reset command is issued, the configuration of the modem is restored from non-volatile RAM.

The 'AT&W' command (see Appendix A) is used to store the current configuration of the Apple Personal Modem Plus. That configuration remains until the next 'AT&W' command is issued and it is overwritten with new configuration information.

Command Control

Your Apple Personal Modem Plus has two levels of operation - the local command state and the on line state. When you switch on the modem, it automatically 'powers up' in the local command state. Commands given by you or your communications program can flip the Apple Personal Modem Plus between local command and on line states.

Local command state allows the selection of options like echo, monitoring the speaker and other control parameters. These commands will be described soon.

On line state is achieved by issuing a 'dial' command ('ATD...'), in which case the modem goes on line but as configured by earlier local commands. There are other commands to allow the modem to go on line (for example, answer - 'ATA').

Most commands to the modem must be preceded by the command prefix, which consists of the letters 'AT' (the only two exceptions are the '+++ ' and 'A/' commands). The 'AT' prefix stands for 'ATtention!' and prepares the modem to accept your instruction.

Most modems need to be set up in one of two modes - originate mode (when the modem originates or initiates a call) and answer mode (when it accepts an incoming call).

The Apple Personal Modem Plus, however, automatically selects originate when it dials and automatically selects answer when you issue the Answer command.

Answer is the default mode. Normally, when the Apple Personal Modem Plus is switched on, it will automatically answer when the phone rings.

NOTE: If you're calling a dumb originate only modem, you can set the Apple Personal Modem Plus to reverse mode after you initiate the connection. See the 'R' command in Appendix A.

To assist in controlling the Apple Personal Modem Plus, it produces response messages or codes to show what state it is in. These may be numeric or verbal for you or a program to inspect and act upon (they may also be suppressed).

Check the 'ATV1' and 'ATX1' commands in Appendix A for more details.

While on line the Apple Personal Modem Plus cannot execute commands, it must be set back to local command state first. This is done by entering the 'escape sequence' (this occurs automatically if the modem loses the phone connection).

Figure 4-1 shows the paths between local command and on line state.

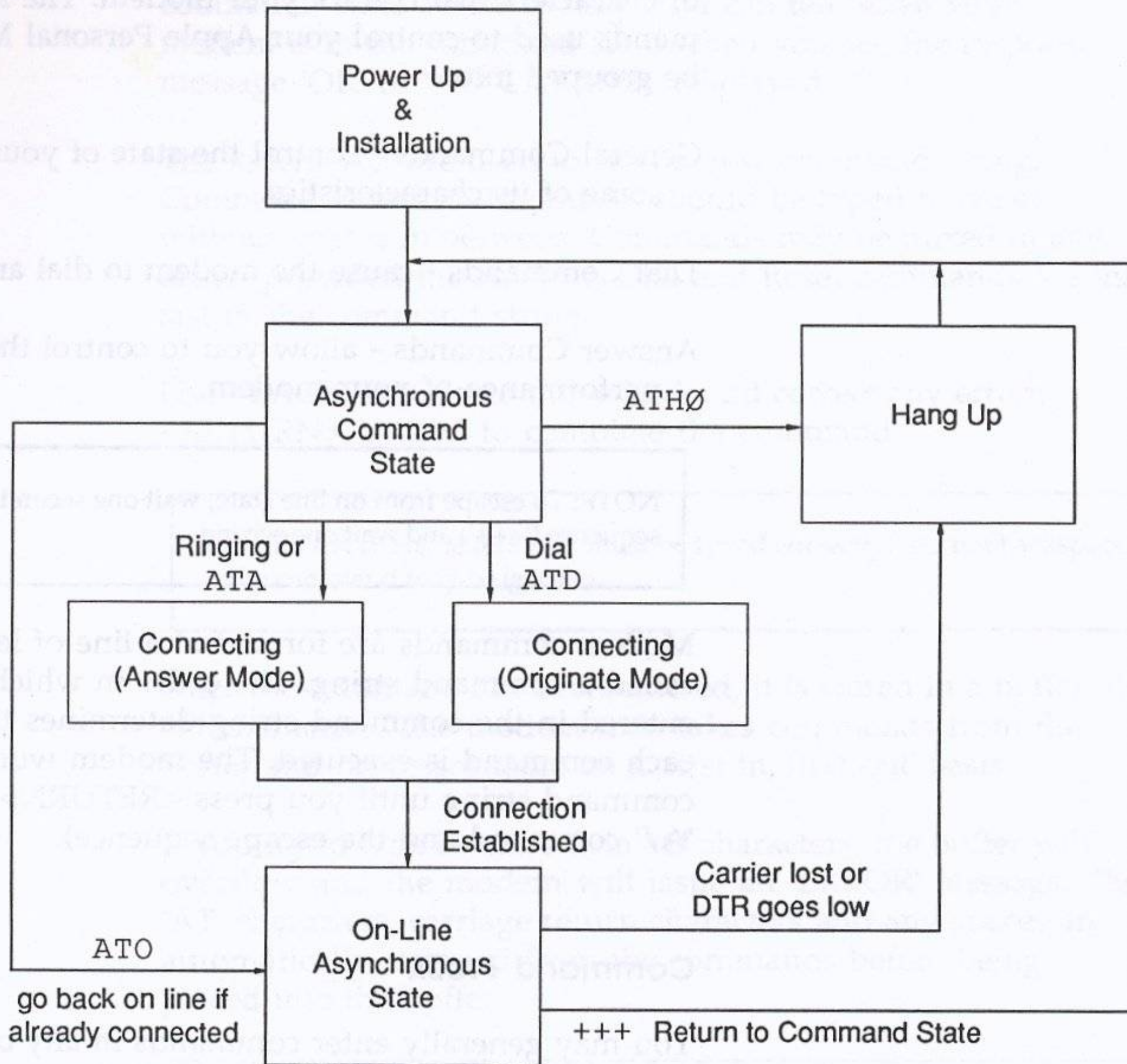


Fig. 4.1 Command State Paths

Modem Commands

An Apple Personal Modem Plus command consists of a series of characters that control your modem. The modem commands used to control your Apple Personal Modem Plus can be grouped into:

General Commands - control the state of your modem and some of its characteristics.

Dial Commands - cause the modem to dial and connect for you

Answer Commands - allow you to control the answering performance of your modem.

NOTE: To escape from on line state, wait one second, type the escape sequence ('+++') and wait one second.

Modem commands are formed of a line of letters and numbers called a command string. The order in which commands are entered in the command string determines the order in which each command is executed. The modem won't execute a command string until you press <RETURN> (except for the 'A/' command and the escape sequence).

Command Prefix

You may generally enter commands in any order, but the letters 'AT' must appear at the start of every command string and a Carriage Return must terminate the string. It is possible to enter several consecutive commands in one command string, preceded by 'AT' and followed by <RETURN>.

NOTE: The 'Carriage Return', 'Return' and 'Enter' keys are shown in this manual as <RETURN>.

Typing Modem Commands

As mentioned previously, the modem powers up in local (or command) state automatically. You can tell when your modem is in the command state when you see the response message 'OK' or 'NO CARRIER' displayed.

The letters 'AT' are used to start a new command string. Command letters and numbers should be typed together without spaces in between. Commands may be mixed in any order, provided the Answer, Dial and Reset commands are the last in the command string.

Use <BACKSPACE> to move back and correct any errors. <RETURN> is used to complete the command.

IMPORTANT: The letters 'AT' must be typed correctly - do not backspace or the command may be ignored.

Once the command has been entered, it is stored in a buffer of 40 characters. The modem then takes commands from the buffer and processes them on a 'first in, first out' basis.

If you try to type in more than 40 characters, the buffer will overflow and the modem will issue an 'ERROR' message. The 'AT' characters, carriage return characters and any spaces are automatically stripped from the commands before being placed into the buffer.

NOTE: When the modem is configured for V23 mode only (1200/75 bps) the CTS signal is raised, except when the output buffer is full. When the buffer fills, CTS is lowered until the buffer is partially emptied. As soon as additional space is available CTS is raised. Data should not be sent from the Apple to the modem while CTS is low. Programs which are not capable of checking the status of this signal may lose data while the buffer is full.

Here is a simple overview of some of the commands:

When You Want To	Type	This Means
Exit from on line, to enter command	+++	Escapes to Local Command state
Return to on line communications	ATO	On line
Enter any command string	AT	Attention!
Originate a call	ATD(nnn...)	Dial (number)
Use Tone (DTMF) Dialling	ATDT(nnn...)	Dial Tone
Dial Tone wait 2 sec Dial Pulse	ATDn,P(nnn...)	Dial Pulse after Tone
Call an "originate only" modem	ATD(nnn...)R	Reverse
Go to Command State after number is Dialed	ATD(nnn...);	Return to Command State
Answer a call	ATA	Answer
End the call	ATH	Hang up
Redial the last number called	A/	Repeat the last AT..command used
Switch on the audio monitor (speaker)	ATM1	Monitor on
	ATMØ	Monitor off

Appendix A

Modem Commands at a Glance

Next you'll find a list of commands, grouped by function. Refer to Appendix A for a more complete description. Unless you are an advanced user, you will probably never need these commands.

Command	What it Controls	Default
---------	------------------	---------

Commands to Control Modem Features

M	Modem Speaker	M1 (on)
Z	Reset Modem/Restore Parameters	
A	Auto Answer	S0=1 (answers first ring)
E	Command State Echo	E1 (on)

Commands to Control Result Code Messages

Q	Stop/Don't Stop Messages	Q0 (don't stop)
X	Show Some/All Messages	X0 (some)
V	Show Word/Code Messages	V1 (words)

Commands to Redefine Keys

S2	Escape Character	S2=43	(+)
S3	Return Character	S3=13	(<CR>)
S4	Line Feed Character	S4=10	(<LF>)
S5	Backspace Character	S5=8	(<BS>)

Commands to Control Timing

S6	Wait Before Dialling	S6=2	(seconds)
S7	Wait for Carrier	S7=30	(seconds)
S8	Length of Pause	S8=2	(seconds)
S9	Required Carrier Tone Length	S9=12	(tenth secs)
S10	Wait Before Hang Up	S10=14	(tenth secs)
S12	Required Delay Before/ After Escape Code	S12=50	(50ths/sec)

Commands for Special Circumstances

B	Bell/CCITT mode	See Appendix B
I	Identification	Display of Product Type
I9	Full Display for Technical Support	I0 (numeric)

1	1982-1983	1982-1983
2	1983-1984	1983-1984

CONTENTS OF VOLUME 1

1	1982-1983	1982-1983
2	1983-1984	1983-1984
3	1984-1985	1984-1985
4	1985-1986	1985-1986
5	1986-1987	1986-1987
6	1987-1988	1987-1988

CONTENTS OF VOLUME 2

1	1982-1983	1982-1983
2	1983-1984	1983-1984
3	1984-1985	1984-1985
4	1985-1986	1985-1986

CONTENTS OF VOLUME 3

1	1982-1983	1982-1983
2	1983-1984	1983-1984
3	1984-1985	1984-1985

CONTENTS OF VOLUME 4

1	1982-1983	1982-1983
2	1983-1984	1983-1984
3	1984-1985	1984-1985
4	1985-1986	1985-1986

CONTENTS OF VOLUME 5

1	1982-1983	1982-1983
2	1983-1984	1983-1984

CONTENTS

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Appendix A

Apple Personal Modem Plus Command Reference

This section contains a list of the modem's commands and its various options, parameters, defaults, and the amount of time it takes to execute each command. General commands, dialing commands, answer commands, and register settings.

General Commands

General commands are used to initialize the modem and start or stop communication. General commands and options only apply to specific modes of operation.

Escape Sequence

The Escape Sequence puts the Apple Personal Modem Plus back into its operational state from the off-hook state. Its format is ESC, but the parameters may vary. The format is a Time Delay followed by a character entered three times, followed by another Time Delay. The Default Time Delay is one second, which is indicated by the number 27 in the following.

The following is the format for the escape sequence:

1. Wait at least 1 second after the last command was entered.
2. Type ESC three times.
3. Wait at least 1 second after the last character was entered.

You will know when you have successfully entered the escape sequence because the modem responds with OK. If the modem does not respond, the escape sequence was not entered correctly. The command ATZ will reset the modem to its factory default settings. The command ATDT will dial the number that follows it. The command ATDT will dial the number that follows it. The command ATDT will dial the number that follows it.

Common references

Apple Personal Modern Plus

Appendix A

Appendix A

APPLE PERSONAL MODEM PLUS COMMAND REFERENCE

This section details each of the modem's commands and its various formats, parameters, defaults, etc. The commands are presented in four sections - General commands, Dialling commands, Answer commands and Register settings.

General Commands

General commands are used to determine how the modem and computer communicate. Certain commands and options only apply to specific modes of operation.

Escape Sequence '+++'

The Escape Sequence puts the Apple Personal Modem Plus back to local command state from the on line state. Its format is fixed, but the parameters may vary. The format is a Time Delay followed by a character entered three times, followed by another Time Delay. The Default Time Delay is one second, while the default character is '+' (the 'plus' sign).

Thus, to enter the Escape sequence using the default values, enter the following:

1. Wait at least 1 second (after the last character was entered).
2. Type in '+++¹' rapidly.
3. Wait at least 1 second (before trying to transmit another character).

You will know you're back in local command state when you see the modem respond with 'OK'. The telephone line at this stage is not released. This only happens when the Hang Up command ('ATH0' - see the section later in this appendix) is issued or if the DTR signal is dropped by your Apple.

The time delay either side of the escape sequence is a protection mechanism to avoid situations where the three escape characters are part of a message you are sending.

WARNING: *When in answer mode, it is recommended that the escape sequence be disabled or set to a value other than that used by the originator. Refer to registers 2 and 12 in the section titled 'Available Special Registers' which appears later in this Appendix.*

On line Command 'O'

To return the Apple Personal Modem Plus to on line state from local command state issue the 'O' command (letter O). The format is:

O To go back on line.

NOTE: All AT commands except 'A/' and '+++' must be terminated with a carriage return. The symbol used in this manual for a carriage return is <RETURN>.

Hang Up Command 'H'

This command causes the Apple Personal Modem Plus to hang up the telephone line. It is issued from the local command state after the escape sequence ('+++') has been issued. Use:

H0 or H Hang up the telephone line (go 'on hook').

H1 Pick up the telephone line (go 'off hook').

Identification Command

'I'

This command is used to display the product identity and version number. The format is:

I To view product identity. The modem responds with '123'. This response is expected by some software applications.

I9 The full product identity is displayed. This information is often required when requesting customer support.

Monitor Echo Command

'E'

When the modem is in local command state, this command can display the characters you type on the keyboard onto your screen. Use:

E0 or E Switches off the command echo.

E1 Switches on the command echo.

Transmission Mode Command

'B'

The 'B' command is used to determine the appropriate mode for the speed selected.

NOTE: Ninety percent of users will only use B0, B1 or B2. Only users who need fixed mode operation will need to consider B3 to B7.

If you select a 'B' value and then start dialling at a particular speed (that is, you or your software issue 'AT' commands at 3000 or 12000) the modem automatically adopts the mode shown in the following table.

For example:

B0 + originate speed of 1200 = V23 mode
 B2 + originate speed of 300 = V21 mode
 B1 + originate speed of 1200 = Bell 212A mode
 B2 + originate speed of 1200 = V22 mode

Command	Standard	300	1200
B0	CCITT	V21	V23
B1	Bell	103	212A
B2	CCITT	V21	V22
B3	CCITT	V21	
B4	Bell		103
B5	CCITT		V23
B6	CCITT		V22
B7	Bell		212A

Monitor Speaker Command

'M'

This command controls the monitor speaker:

- M0 Switches the speaker off.
- M1 Switches the speaker on when going on line while dialling or answering. The speaker switches off when the modem recognises a return carrier tone from another modem. This is the default command.
- M2 Switches the speaker on when going on line while dialling or answering and remains on until the line is disconnected.

Response Code Command

'V'

A Response Code is a message the Apple Personal Modem Plus displays on your screen to prompt you to type commands or data, to report whether the telephone line is connected or disconnected or to report an error. Each message has a number and a text message attached to the code.

V0 or V Displays numeric responses.

V1 Displays verbal (text) responses.

See the section 'Response Codes' which appears later in this appendix.

Quiet Command

'Q'

This command allows you to suppress Response Codes from being displayed on your screen.

Q0 or Q Sends modem response messages to your screen (Quiet off).

Q1 Stops the modem from sending response messages to your screen (Quiet on).

Self-Test Command

'&T'

There are two forms of the '&T' command. These control the Local Loopback test. This test is designed to give confidence that the modem is working satisfactorily.

&T0 or &T Halts any test currently in progress.

&T1 Starts a Local Analog Loopback test. This is carried out in accordance with CCITT standard V54, L3.

Extended Response Code Command 'X'

This command is used to signal the result of an Apple Personal Modem Plus Dial or Answer command, after a connection has been established.

X0 or X Send the message 'CONNECT' once a connection has been made.

X1 The Apple Personal Modem Plus sends the message:

CONNECT = 300 bps

CONNECT 1200 = 1200 bps or 1200/75

Carrier Detect Command '&C'

This command gives the Apple Personal Modem Plus control over the Carrier Detect signal (DCD) it issues.

&C0 or &C Carrier Detect is always on.

&C1 Carrier Detect follows the mode of the data carrier from the remote modem.

Data Terminal Ready Command '&D'

This command allows the Apple Personal Modem Plus to override the mode of the Data Terminal Ready (DTR) signal it receives.

&D0 or &D The modem ignores the computer's signal and acts as if the DTR signal is always asserted.

&D1 The Apple Personal Modem Plus will operate normally, following the computer's setting of DTR. The modem will not Answer or Dial unless DTR is asserted.

Dialling Commands

All Dial commands are preceded by 'D', which causes the modem to interpret all numbers appearing after the 'D' as a telephone number that it must dial. Certain characters act as further commands to modify the dial process.

REMEMBER: if you use the Dial command by itself you must precede it with 'AT'.

ATS = IDT.

The Apple Personal Modem Plus will automatically originate a telephone call in response to the dial command. The extra commands which are used to modify the dialling process are:

- ';' Pause. Causes the Apple Personal Modem Plus to pause for a pre-determined time (usually two seconds - see S Register 8) during the dialling sequence. This dial modifier is useful in waiting for an outside line when dialling through a PABX.
- 'T' Use Tone dialling.
- 'P' Use Pulse dialling.
- 'R' Reverse mode. Puts the Apple Personal Modem Plus into answer mode after dialling an originate only modem. This must be the last character in the dial string before pressing <RETURN>.
- ';' Return to command state after dialling the telephone number and don't go on line. Useful, for example, when in tone dialling mode to enter information like customer ID or password to banking services etc.

NOTE: You must terminate the dial command with a <RETURN> to cause the Apple Personal Modem Plus to correctly wait for a carrier signal. You can cancel the dial process by pressing any key at any time before connection on line. The Apple Personal Modem Plus automatically returns to local command state after a predetermined delay (usually 30 seconds - see S Register 7) when no connection can be made.

Dial a Number 'Dnnn'

The format of the phone number is 'nnn' where 'nnn' is a string of characters, some of which may be valid Apple Personal Modem Plus Dial Commands intermingled with the digits of the phone number, e.g.,:

```
ATDTØ,P1234567<RETURN>
```

This command will do the following - Attention, Tone dial the number Ø for an outside line, wait 2 seconds, Pulse dial the telephone number '1234567' and wait for carrier tone from the remote modem. If no carrier is detected the Apple Personal Modem Plus releases the telephone line and returns a 'NO CARRIER' message. If a carrier tone is detected, a 'CONNECT' message is returned and the Apple Personal Modem Plus goes to on line state.

Pause ;

The comma is used to insert a pause (the normal pause is 2 seconds) during the dialling of a telephone number. This is most commonly used in dialling through a PABX to allow a pause while the PABX is seizing an outside line, e.g.,:

```
ATDØ,1234567<RETURN>
```

will do the following - Attention, Dial Ø, pause 2 seconds, Dial '1234567'.

Tone and Pulse Dialling 'T' or 'P'

The Apple Personal Modem Plus is capable of DTMF (Tone) and Pulse (Decadic) dialling, even intermingled within the same dial command, e.g.,:

```
ATDTPØ,T1234567<RETURN>
```

will do the following - Attention, Pulse dial Ø, Pause, Tone dial '1234567'

Originating a Call in Answer Mode 'R'

The Apple Personal Modem Plus normally dials in originate mode. The 'R' command allows the modem to dial someone with an originate only modem and, after dialling, leaves the Apple Personal Modem Plus in answer mode, e.g.,:

ATD1234567R<RETURN>

will do the following - Attention, dial '1234567', switch the Apple Personal Modem Plus to answer mode (Reverse mode) and wait for the other modem to transmit the originate carrier tone.

Repeat 'A/'

The repeat command repeats the last 'AT' command. Generally it is used to redial the last telephone number dialled. 'A/' is used in place of 'AT' and no <RETURN> is required, e.g.,:

A/

Return to Command State ';'

The Apple Personal Modem Plus can be forced to re-enter the local command state after dialling (without hanging up) by finishing the dial command with a semi-colon. This is useful, for example, when calling a phone order service or bank service.

After a connection is made, you may be required to use Touch-Tones to enter additional information (e.g.,: customer ID, password). This is commonly used throughout the USA. For example:

Type: ATD1234567;<RETURN> (dial telephone number and return for command)

Response: OK

Type: ATDT45678;<RETURN> (transmit ID number and return for command)

Response: OK

Type: ATD1234;<RETURN> (transmit password and return for command)

Response: OK

Type: ATD476Ø;<RETURN> (enter transaction and return for command)

Response: OK

Type: ATHØ<RETURN> (Hang up)

Response: OK

NOTE: Characters not in the above command set are ignored during the dial command. That is, no error message is generated. This allows punctuation (for example with space) in the telephone number for easy reading, e.g.,:

ATDTØ, 123 - 4567 <RETURN>

Command Format

'T', 'P' and 'R' should be used from within the dial command. Other commands should be placed before the 'D' command. If the command is terminated with a semi-colon, then additional commands may follow but must be terminated with <RETURN>, e.g.,:

AT M2 V1 DT 1234567<RETURN>

The previous example instructs the Apple Personal Modem Plus to:

M2 keep the speaker on
V1 send word response codes
DT Tone Dial 1234567

Setting The S Registers

Timing parameters in the dialling sequence are controlled by values assigned to special registers in the Apple Personal Modem Plus. The function of each of these registers (S0 through S12) and their default values are listed in the table 'Available Special Registers' which appears later in this appendix. The S Registers control such parameters as length of time before dialling starts, the time the modem waits for a carrier, for the escape guard time, dial pause length, etc.

Use the 'S' Command to change the values assigned to these registers. For example, if you normally have difficulty getting a dial tone and the Apple Personal Modem Plus begins to dial before the dial tone appears, you should increase the value of the S6 register, e.g.,:

```
ATS6=3<RETURN> (wait 3 seconds before dialling)
```

NOTE: Not all S Registers from 0 to 12 are used.

Answering Commands

The Apple Personal Modem Plus is automatically in Answer mode and will answer the phone automatically unless it is:

1. Dialling
2. Performing a local test
3. Switched off
4. Programmed not to answer

The following section describes the commands that alter the way the Apple Personal Modem Plus answers incoming calls and goes on line. Use these commands, for example, when you wish to dial into your computer from a remote location.

Controlling Auto Answer

The SØ register controls the number of rings, if any, that must occur before the Apple Personal Modem Plus answers a call. The register may range in value from Ø - 255.

SØ=Ø	Do not answer telephone
SØ=1	Answer on Ring 1
SØ=2	Answer on Ring 2, etc

When the register is set to Ø, the auto-answer option is not in effect. You may set the Apple Personal Modem Plus so that it will answer on the first ring, the sixth ring, and so on. Often the telephone system will terminate an unanswered call after a minute or so.

As long as the power to the modem remains on, the Apple Personal Modem Plus answers the telephone call on the ring corresponding to the current value of the SØ register. When power to the Apple Personal Modem Plus is switched off and then on again, or a 'ATZ' (Reset) command is given, the Apple Personal Modem Plus resets the value of the SØ register to the value stored in non-volatile memory.

Auto Answer Process

When the telephone rings, the Apple Personal Modem Plus counts the rings and then answers (see SØ register). The Apple Personal Modem Plus then sends a carrier signal to the originating (calling) modem and waits for the other modem to send its carrier signal.

If no carrier signal is received from the originating modem within a specified time (usually 3Ø seconds), the Apple Personal Modem Plus hangs up, sends a 'NO CARRIER' response and returns to the local command state.

If the carrier signal is received then the Apple Personal Modem Plus sends a 'CONNECT' response code and goes on line.

The Answer Command

'A'

The Answer Command forces the Apple Personal Modem Plus to answer the telephone without waiting for a ring, that is, answer immediately, e.g.:

ATA<RETURN>

The Apple Personal Modem Plus immediately answers a call and waits for a carrier signal. It will not execute any command entered after 'A'. Additional commands must be placed before the 'A' command.

NOTE: Use 'ATD <RETURN>' to answer the phone in originate mode.

Answering Range

The Apple Personal Modem Plus will answer calls at one preset communications standard. The standard that the Apple Personal Modem Plus will answer at is selected by a 'B' command.

The Apple Personal Modem Plus can be preset to answer at V21, V23, V22, Bell 103 or Bell 212A.

The setting selected by the 'B' command dictates the speed ranges. Where more than one speed is available in a range (e.g., B0, B1 and B2) the 'B' command and the speed of the last command issued will govern the answering standard.

For example, with command 'B0' the modem will answer at V21 standard only if the last command issued was at 3000 bps. It would answer at V23 standard if the last command issued was at 12000 bps.

Command	Standard	3000	12000
B0	CCITT	V21	V23
B1	Bell	103	212A
B2	CCITT	V21	V22
B3	CCITT	V21	
B4	Bell		103
B5	CCITT		V23
B6	CCITT		V22
B7	Bell		212A

The value of the 'B' command may be stored in Non-Volatile RAM, allowing the modem to always power up in the correct answer state. Issue the command:

`AT&W <RETURN>`

when you have selected the mode you require. (This saves that particular mode setting.) See the Section titled 'Write to S Registers' which appears later in this appendix.

Register Settings

In addition to the S0 register, you have the option of adjusting the values of each register. The default values are summarised in the table, 'Available Special Registers' which appears later in this appendix.

Write to S Registers

'S='

This command allows any of the S Registers to be modified. The particular function of each register is described later in this appendix.

Sn=p n = register number from 0 to 12
 p = register value from 0 to 255

For example: ATS4 = 10<RETURN>
Response: OK

Read S Registers

'S?'

This command allows the S Registers to be read. The particular function of each register is described later in this appendix.

Sn? n = register number from 0 to 12

For example: ATS0?<RETURN>
Response: 002 i.e.,: register S0 has a value of 2.
 OK

NOTE: Not all S registers between 0 to 12 are used.

Response Codes

The modem's Response codes are sent to your Apple to show acknowledgement of commands. All implemented Response codes are listed below.

Code (Numeric)	Code (Verbal)	Description
Ø	OK	Command line accepted and executed, command state ready.
1	CONNECT	Carrier detected at 3ØØ bps.
2	RING	Ringing signal detected.
3	NO CARRIER	Carrier lost or not detected.
4	ERROR	Command line longer than 4Ø characters.
5	CONNECT 12ØØ	Carrier detected at 12ØØ/75 bps (if V23 selected) or at 12ØØ bps (if V22 or Bell 212A is selected).
6-9		Not used

Available Special Registers

Register	Saveable	Value	Default	Function
Ø	Y	Ø-255	Ø1	Answer incoming call at 'n'th ring. (Ø = do not answer.)
2	Y	Ø-127	43	ASCII Value for Escape Code Sequence. (A value of 255 will disable Escape Code sequence recognition.)
3	Y	Ø-127	13	ASCII Value for Carriage Return.
4	Y	Ø-127	1Ø	ASCII Value for Line Feed Character.
5	Y	Ø-127	Ø8	ASCII Value for Backspace Character.
6	Y	1-3Ø	Ø2	Wait time for dial tone, in seconds.
7	Y	1-6Ø	3Ø	Time, in seconds, to wait for carrier.
8	Y	Ø-3Ø	Ø2	Length of dial pause, in seconds.
9	Y	1-255	12 second).	Carrier detect response time (1/1Ø
1Ø	Y	1-255	14	Carrier loss response time. Delay time after loss of carrier before hang up. Carrier loss to hang up delay is (S1Ø-S9) in 1/1Ø second.
12	Y	3-255	5Ø	Escape sequence delay time, 1/5Øths of a second.

NOTE: If you set 'S1Ø=255' the modem will not hang up the connection if carrier is lost. You must subsequently use 'ATHØ<RETURN>', or drop DTR.

Sample Commands

Here are some sample commands. Look at them first then try them from your keyboard (don't forget to end each command by pressing <RETURN>).

ATS0=6<RETURN>. This command sets the S0 register to answer a telephone call on the sixth ring. This gives you a chance to answer the phone before the modem.

ATDP0, 1234567<RETURN>. Attention, Dial the following number, using Pulse and pause after the 0 digit (e.g., going through a PABX).

ATE1M0V0<RETURN>. Attention, Echo all commands, switch the speaker off and return response codes as digits.

ATQ0E1DT0,00111,714 7340221<RETURN>. This command tells the modem to display all modem response codes and modem command characters on your screen and then dial an overseas (USA) telephone number using Tone dialling.

ATS7=20S0=1V1M2DT0,,P01955<RETURN>. This command sets the carrier wait register S7 to wait 20 seconds for a carrier before hanging up. Then it tells the modem to answer the telephone on the first ring, display response codes as verbal messages on your screen and leave the monitor speaker switched on during data transmission. The modem uses Tone dialling to dial a PABX 'outside line' access code then switches to Pulse dialling for the national VIATEL service.

NOTE: Register Commands and General Commands may be mixed in any order between the AT characters and the D character that follows. The letter D always marks the start of the telephone number. In the above example the modem uses tone dialling to dial 0, which is the number often used by private telephone exchange systems like PBX's to access the public telephone system (get the outside dial tone). Two consecutive commas in a command string cause the modem to wait four seconds (two seconds per comma) for an outside telephone connection.

Default Settings

The factory default settings for the Apple Personal Modem Plus can be re-established by using the 'AT&F' command.

The first modems to use the 'AT' command set did not have any non-volatile memory. Their default operation was established by switch settings. When a command was issued to the modem, the default parameters were established from the settings of the command switches. The present generation of 'AT' command set modems, including the Apple Personal Modem Plus, can be instructed to store the equivalent of 'switch' settings (and many other parameters) in non-volatile memory.

The 'AT&F' command resets the Apple Personal Modem Plus' parameters to a known state - the factory default settings. The 'AT&F' command by itself will only reset the parameters for the modem until you change parameters individually or issue a command.

To make the modem remember the factory default settings (for re-establishing with the 'ATZ' command) you should also issue an 'AT&W' command.

Because the 'AT&F' command establishes a known set of parameters in the Apple Personal Modem Plus it is a good starting point for establishing your own individual set of preferred parameters.

NOTE: The 'AT&F' command resets the modem to its factory default settings. This includes the baud rate, parity, and stop bits. If you have changed these settings, you will need to reconfigure the modem after issuing the 'AT&F' command. For example, if you have set the baud rate to 115200, you will need to issue the 'AT+BAUD=115200' command after issuing 'AT&F' to return the modem to that baud rate.

APPENDIX B

The factory default settings established by the 'AT&F' command are:

B0	Transmission mode
E1	Echo commands
M1	Speaker on during dialling
I0	Numeric identification
Q0	Send responses
V1	Send verbal responses
X0	Basic response codes
&C1	DCD determined from remote modem
S0=01	Auto answer (on 1st ring)
S2=43	Escape code is '+++'
S3=13	Carriage return
S4=10	Line feed
S5=08	Backspace
S6=02	Wait 2 seconds for dial tone
S7=30	Wait 30 seconds for carrier detect
S8=02	Dial pause for 2 seconds
S9=12	Carrier detect response is 1.2 seconds
S10=14	Carrier loss response is 1.4 seconds
S12=50	Escape sequence delay is 1 second

(other S registers are not used)

Other conditions established by 'AT&F' are:

- 7 bits, even parity
- 1200 baud initial serial interface speed
- off line
- pulse dialling

1. Introduction

2. Objectives

3. Methodology

4. Results and Discussion

5. Conclusion

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Appendix B

Troubleshooting, Test and Diagnostic Guide

Troubleshooting

A good approach when troubleshooting is to start with the most common causes and work your way through the list until the problem is resolved. This approach is often referred to as the "most likely to least likely" method.

The first step in troubleshooting is to identify the problem. This is often done by asking the user what the problem is and when it occurred.

Once the problem is identified, the next step is to determine the scope of the problem. This is often done by asking the user if the problem is affecting all users or just a few.

After determining the scope of the problem, the next step is to check the most common causes. This is often done by checking the network connectivity, the server status, and the user's permissions.

If the problem is not resolved after checking the most common causes, the next step is to check the less common causes. This is often done by checking the server logs, the network configuration, and the user's profile.

Once the problem is resolved, it is important to document the problem and the solution. This is often done by creating a knowledge base article or a troubleshooting guide.

Finally, it is important to prevent the problem from recurring. This is often done by implementing a preventive maintenance schedule and by keeping the system up to date.

Diagnostic Guide
for the 2010-2011 Test and

Appendix B

Appendix B

TROUBLESHOOTING, TEST AND DIAGNOSTIC GUIDE

Troubleshooting

A good approach when trying to solve any problems with the operation of your modem is to start with the simple and obvious things. You should unplug any cables and reconnect them, even if you're sure they're connected properly.

There are several steps you can take that will assist you in solving any problems:

- ⇒ 1. What is the real problem?
Identify the problem by looking at the symptoms.
- ⇒ 2. Determine what is working correctly.
Your modem is only one part of your communications system. You should try to determine if the other parts of the system are working correctly. You should also try to determine the last thing you can do that appears to work correctly, before you strike the problem.
- ⇒ 3. Try methodical changes.
Change any variables in your operation of the modem, such as the speed, data format, phone number, etc. and see whether that makes any difference.
- ⇒ 4. Double check.
Once you think you have narrowed down the problem, you should double check your theory by testing to see if the problem is repeatable.
- ⇒ 5. Fix it.
Once you are sure of the nature of the problem you may well have discovered the solution as well.

IMPORTANT: This is not a repair procedure. Modems requiring adjustments not covered here should be returned to your dealer for service.

Sending and receiving data requires more than a modem. Your computer is part of a system that includes a telephone line and another computer system.

You can solve some operating problems by checking your programs and adjusting your modem - you cannot solve problems caused by the telephone line or the other computer system. You also need to know how to use your communications program to ensure you are giving your modem the appropriate commands.

The Quick Fix List

Most of the problems with your modem will occur during installation.

You can solve most problems by checking the following things:

1. Recheck each cable, even though you may be sure it is plugged in properly. Do not try to clean jacks or connectors.

Check to see the cable connected to the modem is securely connected at both ends.

Is the telephone cable (the one that came with the modem) connected to the modem and the telephone wall socket?

2. Check to see that your software and the remote computer system have each selected the same speed (bps or baud), data bit selection (either 7 or 8 bits) and parity.

3. Check the following:

- Does the modem accept any commands?
- Does it respond to the 'ATI' command?
- Does it display messages?
- Does it send or receive data?
- Does the problem repeat, or does it seem to come and go irregularly?
- Can the modem continue to process commands?
- What happens to the command, message or data that fails to work correctly?
- What is the last correct action just before something goes wrong?
- What is the last screen message displayed?

Check over what you've learned about the problem. Do you have a modem problem - or is it really a problem with something else? You will solve most problems by checking all the cables and by checking your software.

Detailed Check List

Any of these things could be causing the problem: the telecommunications line, the hardware, the communications software or the quality of the phone line.

Telecommunications Line Checklist

If you're using a direct switched (dial-up) telephone line, check these things to find out if the problem is in the telecommunications line (that is, at the host, host modem or on the telephone line):

1. Is the host down? Is the host modem working? Is the port on the host available? The usual indication of a problem is a ringing phone with no answer.
2. Is the modem set up for Bell or CCITT standards? In Australia it should be CCITT. Have you set up the modem so it is compatible with the host modem?
3. Are you calling the correct phone number for the host? Call the number and listen for the characteristic tone signal. If a person answers, you've probably got the wrong number!
4. After you've installed your modem, can you still make a voice phone call from your attached handset (if you have one)?
5. If you're using automatic dialling, check to make sure it's the correct number. Check that a dial tone is present before commencing dialling.

WARNING: *Some PABXs and most Telecom Commander systems can cause serious operational problems. Call Telecom and ask them to provide a direct switched line or a modem piggyback socket and read Appendix F for more information on using these systems.*

Hardware Checklist

You can use the modem's own in-built self-test to check that your Apple and the Apple Personal Modem Plus are operating correctly. Follow these steps:

1. Enter terminal mode in your communications software.
2. Type 'AT&T1<RETURN>' to begin the local analog loopback test.
3. The message 'CONNECT' should appear on the screen. If it doesn't, then there is a problem in either your Apple, the Apple Personal Modem Plus or the cable. Check that the modem has been properly installed (see chapter 3).
4. Once the 'CONNECT' message appears on the screen, type 'AT&T0'. If you cannot get the modem to work, contact your dealer.

Communications Package

Check these things to find out if you have a problem in the way you have set up your communications software.

Problems on the screen

When the data appearing on your screen contains unreadable, random characters it is called garbage. Garbage can consist of a quick burst of erroneous characters in an otherwise readable message, or a complete screen of hopeless gobbledygook. Garbage is quite common and if you are receiving totally unreadable characters then there is a good chance that you will be able to fix the fault.

Here are some possible causes and cures:

1. Incompatible baud rates. Check that the other modem is set to the same baud rate that you are set to.
2. Incompatible parity setting. Try another parity setting, experiment until you fix the problem.
3. Incompatible duplex setting. Make sure that both your modem and Apple have the same duplex setting as the modem you are calling.

Other problems

Most problems you encounter when using communications programs can be traced to a set up characteristic that does not match the remote computer. The problem generally shows up as soon as you start to receive and transmit data.

On the following page is a table that lists some of the display problems you may encounter.

Appendix C

What you see	Possible cause	How to fix it
Data sent by the host doesn't show on your screen	Baud rate is incorrect	Consult a manual or call the service you are accessing to find out what baud rate is expected. Experiment until you find a baud rate that works.
Missing random characters	An overflow of the buffer has occurred	Set your software for XON/XOFF operation, otherwise use a slower baud rate.
Characters appear on your screen from the host but not from your keyboard	Host is using half duplex	Switch on local echo - 'ATE1'
Data appears as double characters (e.g., hheellloo)	Both host and your modem are echoing characters	Switch off local echo - 'ATE0'
Lines of incoming data are double spaced	Both the host and your Apple are sending Newline characters	Switch off the Newline ability in your communications software
Incoming data writes over the same line	Host expects you to begin a new line	Switch on the Newline ability in your communications software
Incoming characters disappear off the right-hand side of the screen	Host expects your software to provide wrap-around	Switch on your software's wrap-around ability

Phone Line Quality Checklist

If you're using a switched (dial-up) telephone line, lift the handset and check if the phone line is noisy.

Some phone line problems that affect high speed modems may be imperceptible to the human ear. The symptoms of such phone line problems are lots of errors and poor communication with a variety of hosts. If you encounter these problems, hang up and dial again. If these problems persist, contact Telecom.

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Appendix C

Using PABXS, Switchboards and Commanders

PABXS and Switchboards

1. PABXS are a type of PBX system. They have a central control system and are able to route calls between different extensions.

2. Switchboards are a type of PBX system that are used to route calls between different extensions.

3. Commanders are a type of PBX system that are used to route calls between different extensions.

4. PABXS, switchboards and commanders are all used to route calls between different extensions in a telephone system.

5. PABXS are the most common type of PBX system. They are used in most businesses and organizations.

6. Switchboards are used in some businesses and organizations.

7. Commanders are used in some businesses and organizations.

8. Some private PABX and switchboard systems are used in homes.

and commands
using PABX, switchboard

Appendix C

Appendix C

USING PABXS, SWITCHBOARDS AND COMMANDERS

PABXs and Switchboards

1. Always use a direct outside telephone line if you can. They have a much cleaner signal and are not as readily susceptible to operator interrupts and random disconnection.
2. If you must dial through a PABX or Switchboard then you need to bear these points in mind:
 - a) Don't forget to put the 'Ø' or '9' at the front of the number you're dialling, if required.
 - b) If it takes a while to get an internal line and/or an outside line, don't be afraid to put in a couple of commas to make sure that you get connected (e.g., ATD,,Ø,,1234567<RETURN>). The commas indicate to the modem that a pause of approximately two (2) seconds is required.
 - c) Check if your PABX or switchboard only supports pulse dialling. If it is, then you won't be able to tone dial the '9' or 'Ø' to get your outside line. You can get around this by telling the modem to pulse dial the prefix (e.g., ATDP,,Ø,,T1234567<RETURN>). This dials the outside line prefix in pulse and the telephone number in tone.
3. Connections into PABXs, Switchboards and Commander Systems:

The Telecom 6Ø5 plug supplied on the end of the cable supplied with each Apple Personal Modem Plus is wired for a standard telephone connection and what Telecom calls 'Mode 1' (for modems).

Some private PABX and Switchboards wire up the wall sockets differently to Telecom and can cause some confusion to the modem.

Commander Systems

The wiring of the sockets for Commander systems is different to standard telephone handsets. One of Telecom's suggestions for including devices such as the Apple Personal Modem Plus into an organisation with only Commanders is to get Telecom to install a Y-switch:

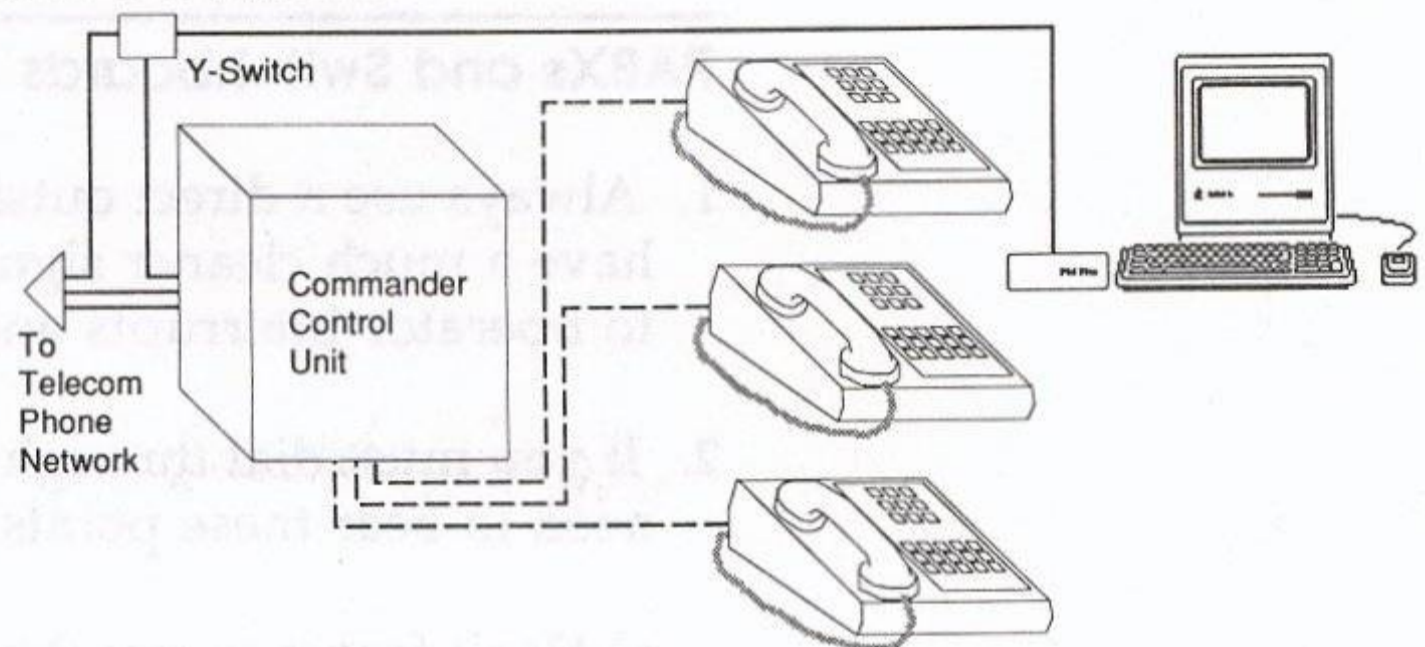



Fig. C-1

This means that at the flick of a switch, you intercept one of the telephone lines before it gets into the Commander system. For the period you require it, that line is dedicated to you and your communications and is not available to the Commander system. Telecom will install this system for a small charge. The Telecom Australia pamphlet 'Data Communications through Telecom Commander Systems' describes the methods by which modems may be used with Commanders.

1. You can't tone dial on pulse (decadic) only Telecom exchanges, but you can usually pulse dial on tone exchanges.
2. If you like your current telephone handset and still want to use it along with the Apple Personal Modem Plus, NetComm has available a range of 'Super Snap' connectors that allow just that. You can connect your normal phone or one of the NetComm optional handsets to the spare RJ11 jack.



Appendix D



Apple II SSC Interface

In order to use your Apple II Serial Modem Card with an Apple II Plus or IIe Computer, you must use the Apple II Super Serial Card. This card is available from Apple Computer, Inc. and is described in the Apple II Super Serial Card User's Manual. This manual applies to the Apple IIe and IIc computers.

Apple II Super Serial Card

Using an Apple IIe

If you have a primary modem of Apple Super Serial Card in your Apple IIe, you can use the Apple II Super Serial Card in your Apple II Plus or IIc. To do this, you must first disconnect the modem from your Apple IIe. Then, you can connect the Apple II Super Serial Card to your Apple II Plus or IIc. This card is described in the Apple II Super Serial Card User's Manual.

Apple II Super Serial Card

If you have a primary modem of Apple Super Serial Card in your Apple II Plus or IIc, you can use the Apple II Super Serial Card in your Apple IIe. To do this, you must first disconnect the modem from your Apple II Plus or IIc. Then, you can connect the Apple II Super Serial Card to your Apple IIe. This card is described in the Apple II Super Serial Card User's Manual.

The first part of the report discusses the background of the project and the objectives that were set at the beginning. It also outlines the methodology used for data collection and analysis.

The second part of the report presents the results of the study, including the data collected and the findings that were derived from the analysis. The results are presented in a clear and concise manner, with appropriate use of tables and figures.

The third part of the report discusses the implications of the findings and the conclusions that were drawn from the study. It also provides recommendations for future research and for the implementation of the project.

The fourth part of the report provides a summary of the key findings and conclusions of the study. It also includes a list of references and a list of appendices.

The fifth part of the report provides a list of references and a list of appendices. The references are listed in alphabetical order, and the appendices are listed in numerical order.

The sixth part of the report provides a list of references and a list of appendices. The references are listed in alphabetical order, and the appendices are listed in numerical order.

Appendix D

APPLE II SSC INTERFACE

In order to use your Apple Personal Modem Plus with an Apple IIe, II Plus or II Computer, it is first necessary to install an Apple Super Serial Card into the computer. Complete illustrated instructions can be found in the Super Serial Card User's Manual. This appendix merely provides a quick summary, applicable to the Apple Personal Modem.

NOTE: You may also use a serial card made by another manufacturer. If you use a non-Apple card, however, some of the information in this appendix may not apply. Consult the operating instructions for the particular product you are using.

Using an Existing Card

If you have previously installed an Apple Super Serial Card to run a serial printer, plotter or other serial peripheral, your Apple II computer already contains all the electronic circuitry it needs to communicate with your modem. Just switch off the computer and remove the data cable from the card. Take the card out of its slot to make it easier to adjust the jumper block and DIP switches (shown in Table D-1) then re-install the card as described in the next section (skip steps 4 and 5).

Adjusting and Installing a New Card

If you intend to use your modem and printer simultaneously, or intend to switch back and forth often, you should have a separate card for each. The card for the printer goes in slot 1, the card for the modem in slot 2.

WARNING: Before opening your Apple computer, make sure that the power switch is switched off. This is important. You can damage your Apple by working on it while the power is on. Leave the power cable plugged in, however, to maintain the grounding circuit.

To install the Super Serial Card, follow these steps:

1. Check to see that the triangle mark on the jumper block of your Super Serial Card is pointing to the word MODEM. If the jumper block is pointing to the word TERMINAL, gently pry it loose with a small screw-driver and turn it around so it points the right direction and plug it back in. When you reinstall the jumper block, be sure the pins are lined up exactly with the sockets on the card before you press it down into place.
2. Set the switches on your Super Serial Card as indicated in Table D-1.

SW1	Setting	Description	SW2	Setting	Description
1	OFF	Baud Setting	1	ON	Data Stop
2	ON	Baud Setting	2	OFF	Data Stop
3	ON	Baud Setting	3	ON	Odd Parity
4	ON	Baud Setting	4	ON	No Parity
5	ON	Comms Mode	5	OFF	No LF
6	ON	Comms Mode	6	ON	Interrupts
7	ON	Comms Mode	7	OFF	RS-232

Table D-1 Super Serial Card DIP Switches and Jumper Block

Appendix E

3. Open the case of your Apple computer and touch the power supply case to discharge any static electricity that might be present on your clothes or body.
4. Slide the nut plate onto the flat ribbon cable, making sure the nuts on the nut plate face away from the 25 pin connector.
5. Hold the connector and nut plate up to one of the large openings in the back panel of your computer and attach the 25 pin connector to the back panel, using the screws and wrench that came with the Super Serial Card.

NOTE: Apple II Plus users. If you are connecting your Super Serial Card to an Apple II or an Apple II Plus, you'll need a special clamp to attach the cable to the back panel. Ask your dealer for service parts 805-0084 and 805-0085.

6. Connect the ribbon cable to the Super Serial Card.
7. Put the Super Serial Card in slot 2. This is the recommended slot for communication (the slots are numbered 1 through 7 on the circuit board toward the back of the computer). Install the card by rocking from back to front. Don't rock side to side, and don't touch the gold plating along the bottom edge of the card.
8. Your Super Serial Card is ready to use. Put the cover back on your computer and return to chapter 3 to complete your modem installation and testing.

Journal Entry

Date	Account	Debit	Credit	Description
12/1/20	Accounts Receivable	100.00		Invoice #1234
	Sales		100.00	
12/2/20	Accounts Payable	50.00		Invoice #5678
	Purchases		50.00	
12/3/20	Bank	200.00		Deposit
	Cash		200.00	
12/4/20	Accounts Payable	75.00		Invoice #9012
	Purchases		75.00	
12/5/20	Accounts Receivable	150.00		Invoice #3456
	Sales		150.00	
12/6/20	Accounts Payable	100.00		Invoice #7890
	Purchases		100.00	
12/7/20	Bank	300.00		Deposit
	Cash		300.00	
12/8/20	Accounts Payable	125.00		Invoice #1122
	Purchases		125.00	
12/9/20	Accounts Receivable	175.00		Invoice #3344
	Sales		175.00	
12/10/20	Accounts Payable	150.00		Invoice #5566
	Purchases		150.00	
12/11/20	Bank	400.00		Deposit
	Cash		400.00	
12/12/20	Accounts Payable	175.00		Invoice #7788
	Purchases		175.00	
12/13/20	Accounts Receivable	200.00		Invoice #9900
	Sales		200.00	
12/14/20	Accounts Payable	200.00		Invoice #1100
	Purchases		200.00	
12/15/20	Bank	500.00		Deposit
	Cash		500.00	
12/16/20	Accounts Payable	225.00		Invoice #1200
	Purchases		225.00	
12/17/20	Accounts Receivable	250.00		Invoice #1300
	Sales		250.00	
12/18/20	Accounts Payable	250.00		Invoice #1400
	Purchases		250.00	
12/19/20	Bank	600.00		Deposit
	Cash		600.00	
12/20/20	Accounts Payable	275.00		Invoice #1500
	Purchases		275.00	
12/21/20	Accounts Receivable	300.00		Invoice #1600
	Sales		300.00	
12/22/20	Accounts Payable	300.00		Invoice #1700
	Purchases		300.00	
12/23/20	Bank	700.00		Deposit
	Cash		700.00	
12/24/20	Accounts Payable	325.00		Invoice #1800
	Purchases		325.00	
12/25/20	Accounts Receivable	350.00		Invoice #1900
	Sales		350.00	
12/26/20	Accounts Payable	350.00		Invoice #2000
	Purchases		350.00	
12/27/20	Bank	800.00		Deposit
	Cash		800.00	
12/28/20	Accounts Payable	375.00		Invoice #2100
	Purchases		375.00	
12/29/20	Accounts Receivable	400.00		Invoice #2200
	Sales		400.00	
12/30/20	Accounts Payable	400.00		Invoice #2300
	Purchases		400.00	
12/31/20	Bank	900.00		Deposit
	Cash		900.00	

Appendix E

Appendix E

GLOSSARY

Glossary

A

Analog data: Data in the form of continuous quantities, such as temperature, compared with digital data.

Analog-to-digital test: A type of test in which a continuous signal is converted into digital characters on the monitor screen at 100 characters per second.

Analog transmission: Transmission of data in the form of a continuous signal, such as a radio wave, a light beam, or a sound wave. In contrast to digital transmission, analog transmission is subject to noise and distortion. Analog transmission is used for long-distance communication, such as radio and television, and for short-distance communication, such as telephone and cable.

Asynchronous: A type of transmission in which the sender and receiver do not have to be synchronized. The receiver can start at any time and will receive the data as it is transmitted.

Application program: A program that runs on a computer and is used to perform a specific task, such as word processing, database management, or accounting.

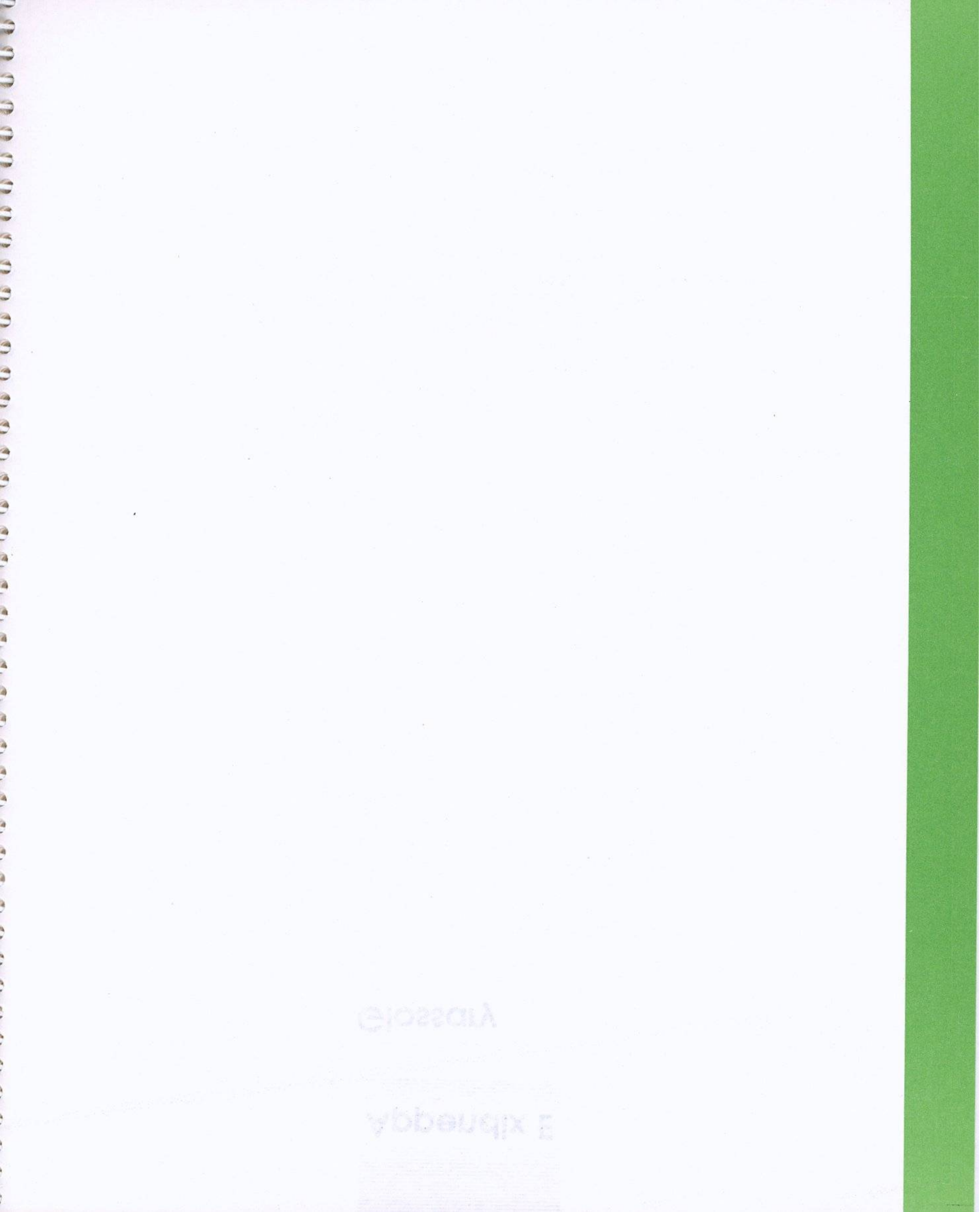
ASCII: American Standard Code for Information Interchange. A character encoding standard that uses 7-bit characters (including the alphabet, numbers, and control characters) to represent text for transmitting over binary channels.

Asynchronous: Having a variable time interval between operations.

Asynchronous transmission: A type of transmission in which the sender and receiver do not have to be synchronized. The receiver can start at any time and will receive the data as it is transmitted. Usually by the use of start and stop bits, the data is sent out in a stream, and the receiver necessarily finds the beginning of the message.

Auto answer: A modem operation that automatically answers incoming phone rings.

Auto dial: The ability to make a connection with a remote terminal automatically.



ΕΠΙΣΤΗΜΗ

ΕΠΙΣΤΗΜΗ

Appendix E

GLOSSARY

A

Analog data: Data in the form of continuously variable physical qualities. Compare with digital data.

Analog loopback test: A simple self-test which directs the modem to display characters on the monitor screen as they are typed.

Analog transmission: Transmission of a continuously variable signal as opposed to a discretely variable signal. Physical quantities such as temperature are continuously variable and so are described as analog. Data characters, on the other hand, are coded in discrete separate pulses or signal levels, and are referred to as digital. The normal way of transmitting a telephone or voice signal has been analog, but now digital encoding is coming into use over trunks. Compare with digital signal.

Answer/originate: Assignment of transmit and receive signals between two computers so that the transmit signals from each system will be received by the other.

Application program: A program that puts the resources and capabilities of the computer to use for some specific purpose or task, such as word processing, data-base management, graphics, or telecommunications.

ASCII: Pronounced ask'ee, an acronym for American Standard Code for Information Interchange; a code in which the numbers from 0 to 127 stand for text characters (including the alphabet, digits 0-9, punctuation marks, special characters and control characters), used for representing text inside a computer and for transmitting text between computing devices.

Asynchronous: Having a variable time interval between characters.

Asynchronous transmission: Not synchronized by or with a clocking signal. Transmission in which each information character is individually synchronized, usually by the use of start and stop bits. The gap between each character isn't necessarily fixed. Compare with synchronous transmission.

Auto answer: A modem capability that allows automatic "pick-up" when the phone rings.

Auto dial: The ability to make a connection with another modem automatically.

B

Backup: A copy of a disk. It's a good idea to make backup copies of all your important disks and use the backup.

Baud: Unit of signaling speed taken from the name Baudot. The speed in bauds is equal to the number of discrete conditions or signal events per second regardless of the information content of those signals. Often equated (though not precisely) with bits per second. Compare with bit rate.

BBS: Bulletin board system. A small database, usually accessible free of charge, in which you can share information and programs with other computer users.

Binary: The representation of numbers in terms of powers of two, using the two digits 0 and 1. Commonly used in computers, since the values 0 and 1 can easily be represented in physical form in a variety of ways, such as the presence or absence of current, positive or negative voltage, or a white or black dot on the display screen.

Bit: A binary digit (0 or 1); the smallest possible information unit, consisting of a simple two-way choice, such as yes or no, on or off.

Bit rate: The speed at which bits are transmitted, usually expressed as bps, bits per second. Compare with baud.

Board: See printed circuit board.

BPS: (bits per second) The basic unit for measurement of data communications transfer rate. Usually refers to the rate of the information being transmitted. It is also sometimes inaccurately known as the baud rate.

C

Card: See peripheral card.

Carrier: A signal of known characteristics (for example, frequency) that is altered (modulated) to transmit information.

Channel: (1) A one-way path in data communications, along which signals can be sent between two or more points. Compare with circuit. (2) In telecommunications, a one or two-way transmission path between two or more points. Provided by a common carrier; also called a link, line, circuit, or facility .

Character: Any symbol that has a widely understood meaning. Some characters - such as letters, numbers, and punctuation - can be displayed on the monitor screen and printed on a printer. Others are used to control various functions of the computer (see control characters).

Circuit: A two-way path along which signals can be sent between two or more points. Also see channel.

Click: To position the pointer on something, and then press and quickly release the mouse button.

Code: A number or symbol used to represent some piece of information in a compact or easily processed form.

Command: A communication from the user to a computer system (usually typed from the keyboard) directing it to perform some immediate action.

Command mode: The state the modem is in when the characters being sent to it by the computer are recognized as command codes to be executed. Contrast with data mode.

Communications session: The condition of being connected to the other computer and accessible by the other computer.

Computer: An electronic device for performing predefined (programmed) computations at high speed and with great accuracy.

Computer system: A computer and its associated hardware, firmware and software.

Configuration: A list of changeable modem characteristics that must be properly set to allow a computer to communicate with a modem.

Connector: A physical device such as a plug, socket, or jack, used to connect one hardware component of a system to another. A connector can also be called a port.

Connect time: The amount of time spent on line with an information service, usually billed at an hourly rate.

Control character: Any character assigned a numeric code less than the SPACE character. Also a symbol you can create by pressing one of your computer's keys while holding down the <CONTROL> key. These symbols are not usually printed, and are generally used to control screen formatting; hence, the name.

Copy-protect: To prevent the copying of information recorded on a storage medium, such as a disk containing software sold as a commercial product.

CTS: An acronym for Clear To Send, this signal is generally only used by modems that have the ability to send and receive data synchronously. The Apple Personal Modem Plus ignores this signal.

D

Data: Any type of information, such as numbers, letters, or symbols that can be processed by a computer.

Database: A collection of information organised in a form that can be accessed and processed by a computer system.

Data communications: A broad term covering any exchange of information between computers or similar systems over telephone lines.

Data mode: The state the modem is in when it is communicating with another computer. Contrast with command mode.

DB: The abbreviation for decibel (dB), the unit of measurement for sound volume.

DCD: An acronym for Data Carrier Detect. The carrier signal that you can hear when you initially dial up another modem.

Decimal: The common form of number representation used in everyday life, in which numbers are expressed in terms of powers of ten, using the ten digits 0 to 9.

Default: A value, action, or setting that is automatically used by a computer system when no other explicit information has been given.

Demodulate: To recover the information being transmitted by a modulated signal; for example, a conventional radio receiver demodulates an incoming broadcast signal to convert it into sound emitted by a speaker.

Device: A piece of equipment connected to a computer. The Apple Personal Modem Plus is a device.

Dial tone: A call progress signal returned by a telephone switching machine to indicate that it is ready to accept a telephone number.

Digit: (1) One of the characters 0 to 9, used to express numbers in decimal form. (2) One of the characters used to express numbers in some other form, such as 0 and 1 in binary or 0 to 9 and A to F in hexadecimal.

Digital data: Information represented by a code consisting of a sequence of discrete elements. Compare with analog data.

Digital signal: A discrete or discontinuous signal; one whose various states are discrete intervals apart. Compare with analog transmission.

Digital-to-analog converter: A device that converts quantities from digital to analog form.

DIP: See dual in-line package.

Display device: A device that exhibits information visually, such as a television receiver or video monitor.

Display screen: The glass or plastic panel on the front of a display device, on which images are displayed.

Double-click: To position the pointer where you want an action to take place and then press and release the mouse button twice in quick succession without moving the mouse.

Dual in-line package: An integrated circuit packaged in a narrow rectangular box with a row of metal pins along each side; looks like an armored centipede.

Duplex transmission: Independent simultaneous two-way transmission.

E

Echo: To send an input character back to the originating device for display or verification.

Edit: To change or modify; for example, to insert, remove, replace or move text in a document.

Error code: A number or other symbol representing a type of error.

Error message: A message displayed or printed to notify the user of an error or problem in the execution of a program.

Escape character: The ASCII character defined by the modem's S2 register. Unless otherwise specified, the plus sign (+) is recognized as the escape character.

Escape code: The sequence of three escape characters preceded and followed by a one-second pause that signals the modem to switch from data mode to command mode.

Even parity: Use of an extra bit set to 0 or 1 as necessary to make the total number of 1 bits in a character an even number. For example, the 7-bit ASCII code for the letter A (1000001) has two 1 bits; for even parity, the transmitting device appends an eighth bit equal to 0 so that the total number of 1 bits remains even (0100001). The receiving device can count the bits as a way of checking for transmission errors.

Execute: To perform or carry out a specified action or sequence of actions, such as those described by a command string.

Expansion slot: A connector inside the Apple II computer in which a peripheral card can be installed; sometimes called peripheral slot.

Format: The form in which data is stored, manipulated, or transferred. Serial data transferred by the Apple modem has a format of one start bit, seven or eight data bits, a parity bit, and one or two stop bits.

Full-duplex: (1) A setting causing characters which you enter on your computer to be echoed from a remote system. (2) A four-wire communications circuit or protocol that allows simultaneous two-way transmission.

G

Graphics: (1) Information in the form of pictures or images. (2) The display of pictures or images on a computer's display screen.

H

Half duplex: (1) A setting causing characters which you enter on your computer not to be echoed from a remote system, but simultaneously transmitted and immediately displayed on your screen. (2) A two-wire circuit designed for communications in either direction but not both directions simultaneously.

Handshake: A protocol for devices to exchange information about the communications connection itself, such as when to start and stop transmitting.

Hardware: Those components of a computer system consisting of physical (electronic or mechanical) devices. Compare software.

Hertz: The unit of frequency measurement. One hertz equals one cycle per second. Abbreviated Hz.

Hexadecimal: The representation of numbers in terms of powers of sixteen, using the sixteen digits 0 to 9 and A to F. Hexadecimal numbers are easier for humans to read and understand than binary numbers, but can be converted easily and directly to binary form; each hexadecimal digit corresponds to a sequence of four binary digits, or bits.

Host computer: A computer that manages information for many terminals. A host computer may be a mainframe, minicomputer, or another microcomputer (that's handling a bulletin board, for example).

I

IC: See integrated circuit.

Icon: A graphic representation of an object, a concept, or a message.

Information: Facts, concepts, or instructions represented in an organised form.

Input: (1) Information transferred into a computer from some external source, such as the keyboard, a disk drive, or a modem. (2) The act or process of transferring such information.

Integrated circuit: An electronic component consisting of many circuit elements fabricated on a single piece of semiconducting material, such as silicon.

Interface: The devices, rules, or conventions by which one component of a system communicates with another.

Interface card: A peripheral card that implements a particular interface (such as a parallel or serial interface) by which the computer can communicate with a peripheral device such as a printer or modem. The Apple In/Modem is an interface card and a modem combined.

I/O: Input/output; the transfer of information in and out of a computer. See input.

I/O device: Input/output device; a device that transfers information into or out of a computer. See input, peripheral device.

J

Jack: A socket used for telephone line or other electrical connections.

K

Keyboard: The set of keys built into your Apple computer, similar to a typewriter keyboard, for typing information to the computer.

Keystroke: The act of pressing a single key or a combination of keys on the Apple keyboard.

L

Load: To transfer information from a peripheral storage medium (such as a disk) into main memory for use; for example, to transfer a program into memory for execution.

Local echo: A method of communication in which your modem or software displays data "locally" on your screen, without relying on the host computer to echo the characters back.

Log off: To type a command to the host computer that terminates the communications session.

Log on: To enter a series of responses to prompts by the host computer to identify yourself, your account number, sometimes your terminal, and so forth, to start a communications session.

M

Mainframe computer: A large computer whose speed and storage capacity allow it to handle huge amounts of data and work with many terminals.

Menu: A list of choices presented by a program, usually on the display screen, from which the user can select.

Microcomputer: A computer, such as the Apple II whose processor is a microprocessor.

Microprocessor: A computer processor contained in a single integrated circuit.

Millisecond: One thousandth of a second; abbreviated ms.

Mode: A state of a computer or peripheral that determines its behaviour.

Modem: A device for converting serial information into tones that can be transmitted over telephone lines. The tones are modulated; (changed in pitch) to represent the information: modem stands for "modulator/ demodulator".

Modulate: To modify or alter a signal so as to transmit information. For example, conventional broadcast radio transmits sound by modulating the amplitude (amplitude modulation, or AM) or the frequency (frequency modulation, or FM) of a carrier signal.

○

Odd parity: Use of an extra bit set to 0 or 1 as necessary to make the total number of 1 bits in a character an odd number. For example, the 7-bit ASCII code for the letter A (1000001) has two 1 bits; for odd parity, the transmitting device appends an eighth bit equal to 1 so that the total number of 1 becomes odd. The receiving device can count 1 bits as a way of checking for transmission errors.

Off line: Describes equipment and activities connected to, but not accessible by, the other computer because you've temporarily interrupted (without terminating) your session to do something else.

On line: Describes activities and equipment currently connected to and accessible by the remote computer; see data mode.

Originate/answer: See answer/originate.

P

Parity: A method of detecting errors in data transmission. Due to increasingly higher-quality telephone lines, many host computers don't support parity. See odd and even parity.

Parity bit: A check bit appended to an array of binary digits to make the sum of all the binary digits, including the check bit, always odd or always even.

Parity error: Absence of the correct parity bit in a received character.

PABX: Private Automatic Branch Exchange. An automatic switchboard for handling large concentrations of telephones (extensions).

Peripheral: At or outside the boundaries of the computer itself, either physically (as a peripheral device) or in a logical sense (as a peripheral card).

Peripheral card: A removable printed circuit board that plugs into one of the Apple II's expansion slots and expands or modifies the computer's capabilities by connecting a peripheral device or performing some subsidiary or peripheral function.

Peripheral device: A device, such as a video monitor, disk drive, printer, or modem, used in conjunction with a computer. Often (but not necessarily) physically separate from the computer and connected to it by wires, cables, or some other form of interface.

Peripheral slot: See expansion slot.

Port: The point of connection, usually a physical connector, between a computer and a peripheral device, another computer, or a network.

Power strip: An extension cord made to plug into a grounded electrical socket, to expand the number of available outlets.

Printed circuit board: A hardware component of a computer or other electronic device, consisting of a flat piece of rigid material, commonly fiberglass, to which integrated circuits and other electronic components are connected.

Protocol: An agreement between computers about the form and content of the information they exchange in order to achieve some end.

Pulse: An abrupt and relatively short change in voltage, either positive or negative, resulting in the conveyance of data in a circuit.

R

Register: A location in a computer or peripheral processor where an item of information, such as a byte, is held and modified under program control.

Remote computer: A computer other than your Apple, but connected to it, either directly or through your modem and telephone lines. A remote computer can be at any distance from your computer, from right beside it to thousands of miles away.

RS232: A physical and electrical interface between computers, modems, and communications lines. A standard developed by the Electronics Industries Association.

RTS: An acronym for Request to Send. This signal is only used with modems that allow you to send and receive data synchronously. The Apple Personal Modem Plus ignores this signal.

S

Screen: See display screen.

Serial communication: Data is transmitted one bit at a time over one wire, as compared with parallel communication, where data is transmitted several bits at a time over several wires. Serial cables plug into serial ports.

Serial interface connector: A socket (or port) on the back of your computer designed to connect with a serial device.

Software: Those components of a computer system consisting of programs that determine or control the behaviour of the computer. Compare hardware.

Synchronous: Having a constant time interval between successive bits, characters or events. The term implies that all the equipment in the system is in step.

Synchronous transmission: A transmission process such that between any two significant instances there is always an integral number of unit (time) intervals.

T

Telecommunications: The transmission of information across long distances, such as over telephone lines.

Terminal: An input/output device consisting of a typewriter-like keyboard and a display device, used for communicating with a large computer. Personal computers typically have all or part of a terminal built into them.

Troubleshoot: To locate and correct the cause of a problem or malfunction in a computer system. Typically used to refer to hardware-related problems.

V

Video monitor: A display device capable of receiving video signals by direct connection only, and which cannot receive broadcast signals such as commercial television. Can be connected directly to the Apple II computer as a display device.

X

XModem: A protocol devised by Ward Christensen to send files from one computer to another that informs you if an error occurs. Also known as MODEM7.

XOn/XOff: A handshake protocol (transmit-On/transmit-Off) used by computers and intelligent terminals to control the flow of data between the systems.

Appendix F

Cable Diagrams with Register & Command Summary

Table 1: Register

Table 2: Command

DRR	Data Ready
DR	Data Ready
SR	Signal Ready
TR	Transmit Data
SR	Signal Ready
DCD	Data Carrier Detect
TXD	Transmit Data

Table 3: Command

Command	Signal Description
0x00	Transmit Data
0x01	No Connection
0x02	Signal Ground
0x03	No Connection
0x04	Transmit Data
0x05	No Connection
0x06	Data Carrier Ready
0x07	No Connection
0x08	Receive Data

Notes: 1. All commands are 8-bit. 2. All registers are 8-bit. 3. All signals are active-low.

Command Summary
Copy Diagrams with Codes

1 kibraqa

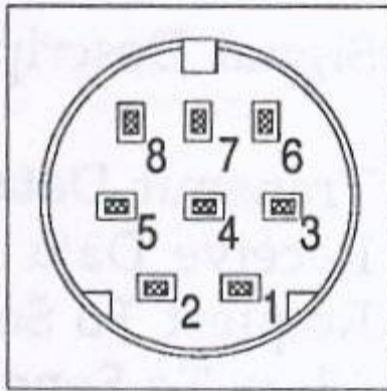
Handwritten notes or a small diagram at the bottom of the page.

Appendix F

CABLE DIAGRAMS WITH REGISTER & COMMAND SUMMARY

Cable diagrams

Modem Mini Din-8 socket



Pin No.	Signal Name	Signal Description
1	DSR	Data Set Ready
2	DTR	Data Terminal Ready
3	RXD	Receive Data
4	SG	Signal Ground
5	TXD	Transmit Data
6	SG	Signal Ground
7	DCD	Data Carrier Detect
8	NC	No Connection

Macintosh 128K, 512, 512E

Pin No.	Signal Name	Signal Description
1	FG	Frame Ground
2	NC	No Connection
3	GND	Signal Ground
4	NC	No Connection
5	TXD	Transmit Data
6	NC	No Connection
7	DSR	Data Set Ready
8	NC	No Connection
9	RXD	Receive Data

Note: Be aware that there are low voltages present on pin 2 and pin 6.

Macintosh Plus, SE, Macintosh II

Pin No.	Signal Name	Signal Description
1	HSKO	Handshake out
2	HSKI	Handshake in
3	TXD-	Transmit Data -
4	GND	Signal ground
5	RXD-	Receive Data -
6	TXD+	Transmit Data +
7	NC	No Connection
8	RXD+	Receive Data +

Macintosh XL/LISA

Pin No.	Signal Name	Signal Description
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
8	DCD	Data Carrier Detect
15	TXC	Transmit clock input
17	RXC	Receive clock input
20	DTR	Data Terminal Ready
24	TEXT	Transmit clock output

Apple II, II Plus, IIe

Pin No.	Signal Name	Signal Description
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send (jumpered to pin 8)
6	DSR	Data Set Ready (jumpered to pin 20)
7	GND	Signal Ground
8	DCD	Data Carrier Detect (jumpered to pin 4)
20	DTR	Data Terminal Ready (jumpered to pin 6)

Apple IIc

Pin No.	Signal Name	Signal Description
1	DTR	Data Terminal Ready
2	TD	Transmit Data
3	GND	Signal Ground
4	RD	Receive Data
5	DSR	Data Set Ready

MODEM port (slot 2) defaults to 300 baud.
DTR is an output. DSR is an input.

Apple IIGS

Pin No.	Signal Name	Signal Description
1	HSKO	Handshake Out
2	HSKI	Handshake In
3	TXD-	Transmit Data -
4	GND	Signal Ground
5	RXD-	Receive Data -
6	TXD+	Transmit Data +
7		DCD input on SCC
8	RXD+	Receive Data +

Apple III/III Plus

Pin No.	Signal Name	Signal Description
1	SGND	Shield Ground
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	GND	Signal Ground
8	DCD	Data Carrier Detect
9-19	NC	No Connection
20	DTR	Data Terminal Ready
21-25	NC	No Connection

Available Special Registers

Register	Value	Default	Function
0	0-255	01	Answer incoming call at "n"th ring. (0= do not answer)
2	0-127	43	ASCII Value for Escape Code or Sequence. (A value of 255 will disable Escape Code sequence recognition)
3	0-127	13	ASCII Value for Carriage Return
4	0-127	10	ASCII Value for Line Feed Character
5	0-127	08	ASCII Value for Backspace Character
6	1-30	02	Wait time for dial tone, in seconds
7	1-60	30	Time, in seconds, to wait for carrier
8	0-30	02	Length of dial pause, in seconds
9	1-255	12	Carrier detect response time (1/10 second)
10	1-255	14	Carrier loss response time. Delay time after loss of carrier before hang up Carrier loss to hang up delay is (S10- S9) in 1/10 second
12	3-255	50	Escape sequence delay time, 1/50th of a second

NOTE: If you set S10=255 the modem will not hang up the connection if the carrier is lost. You must subsequently use ATH0<CR>, or drop DTR.

'AT' Commands

Bold = Factory and Default Settings

COMMAND	CODE	PARAMETERS																											
Escape Sequence	+++	Pause 1 second before and after																											
On-Line	O	Ø = Go back on-line;																											
Dial	D	Followed by Ø-9, T P R ;																											
Answer	A	Answer call																											
Hang Up	H	Ø = Hang up 1 = Go off-hook																											
Redial Last Number	A/	Repeats last AT command																											
Response Code	V	Ø = Display numeric 1 = Display verbal responses																											
Extended Responses	X	Ø = Basic responses Ø to 4 1 = Extended responses Ø to 5																											
Monitor Speaker	M	Ø = Off 1 = On during dial/answer. Goes off on connection 2 = On always																											
Read Registers	Sn?	n = Ø-12 = Special Registers																											
Set Registers	Sn=	n = Ø-12 = Special Registers																											
Bell	B	<table style="margin-left: 20px;"> <tr> <td></td> <td>3ØØ</td> <td>12ØØ</td> </tr> <tr> <td>Ø =</td> <td>V21</td> <td>V23</td> </tr> <tr> <td>1 =</td> <td>1Ø3</td> <td>212A</td> </tr> <tr> <td>2 =</td> <td>V21</td> <td>V22</td> </tr> <tr> <td>3 =</td> <td>V21</td> <td></td> </tr> <tr> <td>4 =</td> <td>1Ø3</td> <td></td> </tr> <tr> <td>5 =</td> <td></td> <td>V23</td> </tr> <tr> <td>6 =</td> <td></td> <td>V22</td> </tr> <tr> <td>7 =</td> <td></td> <td>212A</td> </tr> </table>		3ØØ	12ØØ	Ø =	V21	V23	1 =	1Ø3	212A	2 =	V21	V22	3 =	V21		4 =	1Ø3		5 =		V23	6 =		V22	7 =		212A
	3ØØ	12ØØ																											
Ø =	V21	V23																											
1 =	1Ø3	212A																											
2 =	V21	V22																											
3 =	V21																												
4 =	1Ø3																												
5 =		V23																											
6 =		V22																											
7 =		212A																											
Write to NV RAM	&W	No parameters																											
Restore from NV RAM	Z	No parameters																											
Read Factory Defaults	&F	No parameters																											
Echo	E	Ø = Off 1 = On																											
Quiet	Q	Ø = Send responses 1 = Responses off																											
Carrier Detect	&C	Ø = Always on 1 = From remote modem																											
DTR	&D	Ø = Always high 1 = From local computer																											
Identify	I	Gives numeric product identity																											
	I9	Gives verbal product identity																											

Response Codes

Short form	Verbal	Description
Ø	OK	Command accepted & executed
1	CONNECT	Carrier detected & connection established
2	RING	Ringing signal detected
3	NO CARRIER	Carrier lost or not detected
4	ERROR	Command > 4Ø chars or timeout
5	CONNECT 12ØØ	Carrier detected at 12ØØ/75 or 12ØØ



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