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7400B Plus Data Module User's Guide

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PREFACE: ABOUT THIS GUIDE

The purpose of this guide is to provide information for installing, operating, and maintaining the 7400B Plus Data Module.

Note: The 7400B Plus Data Module will be referred to as the "7400B Plus" throughout this guide.

TYPOGRAPHICAL CONVENTIONS

Throughout this guide, command lines that you type are shown in typewriter-style characters, and responses that the 7400B Plus returns are shown in italics. The following is an example.

`at h (Enter)`

OK

Note the following characteristics of the display representation:

- The first line is a command line as it should be typed. The (Enter) symbol, when shown, indicates that you must press the Enter or Return key to complete the command line.
- Spaces are used to separate commands in some examples shown in this guide. In actual use, the spaces may be typed, but they are not required.
- The second line in the example shows a typical response returned by the 7400B Plus.

ORGANIZATION OF THIS GUIDE

The following paragraphs summarize the chapters and appendices contained in this guide.

Chapter 1: Introduction. Discusses the basic operating features of the 7400B Plus and describes the external indicators and connectors.

Chapter 2: Installation. Describes the hardware and software required for installing the 7400B Plus, and outlines procedures for preparing the 7400B Plus for operation.

Chapter 3: Configuration and Operation. Describes how to issue commands to your 7400B Plus. In addition, it describes how to change, store, and recall configuration parameters, and outlines how to create and save custom configuration profiles. It also provides some basics on 7400B Plus operation, outlines a typical on-line data session, and discusses more advanced command usage with example command lines. If you are not familiar with the ‘‘AT’’ command interface and you are not using your 7400B Plus with a PC communications package, you will need to familiarize yourself with this chapter.

Chapter 4: PC Applications. Contains notes on how to configure some popular voice and data PC communications packages for use with the 7400B Plus.

Chapter 5: Troubleshooting. Describes procedures for troubleshooting problems that may be encountered while configuring and operating the 7400B Plus.

Appendix A: AT Command Set. Contains an explanation of each AT command accepted by the 7400B Plus.

Appendix B: Dial Modifiers. Contains an explanation of each Dial Modifier accepted by the 7400B Plus.

Appendix C: S-Registers. Contains an explanation of each S-register used by the 7400B Plus.

Appendix D: Loopback Data Tests. Provides information on how to perform loopback tests and how to isolate problems using the 7400B Plus.

Appendix E: Quick-Reference Summaries. Contains quick-reference summaries of AT commands, S-registers, result codes, factory-default configuration settings, EIA-232-D connector
pin-outs, ASCII character set.

A glossary and an index are provided at the rear of this guide.

RELATED DOCUMENTATION

The following is a list of other manuals that may provide helpful information while installing and using the 7400B Plus. Since each user may have different equipment and software preferences or availability, only generic titles are given for the manuals.

If you are using a terminal device other than a PC:

User's guide for your terminal device. You may need information about the configuration and capabilities of your terminal device from this manual during the installation and preliminary operation of the 7400B Plus.

If you are using a PC as your terminal:

User's guide for Microsoft® MS-DOS®. You may need this reference for explanations of commands used by your PC to install, configure, and run your PC communications package.

User's guide for your PC communications package. You may need this guide for information on how to configure your terminal emulation software to access the 7400B Plus.

CHAPTER 1: INTRODUCTION

This chapter discusses the basic operating features of the 7400B Plus and describes the external indicators and connectors.

The 7400B Plus is a new version of the 7400B Data Module. It is fully compatible with the 7400B and supports all of its functionality and applications. In addition, the 7400B Plus has the following benefits:

- the ability to dial voice calls from your terminal device, and
- enhanced support for calls that utilize higher speed modems (9600 V.32 modems) in a modem pool.

OVERVIEW

Congratulations on the addition of the AT&T 7400B Plus. Following our tradition of excellent quality and high reliability, we have designed this new 7400B Plus with the latest advances in telecommunications technology.

The 7400B Plus is a full-duplex asynchronous, Hayes Compatible data module. It provides integrated voice-data communications at the desktop over standard twisted pair wiring. At the desk, the 7400B Plus provides asynchronous communication speeds ranging from 300 bps to 19.2 Kbps. The 7400B Plus's ability to emulate Hayes compatible modems, makes it compatible with the many standard PC communications packages that use Hayes Command sets. In addition, the 7400B Plus provides a voice dial capability that allows you to initiate voice calls from a PC using industry standard "auto-dialer" PC communications packages.

The 7400B Plus is a data service link between a Data Terminal Equipment (DTE) device and the following AT&T digital PBX equipment:

- DEFINITY™ Communications System Generic 1
- DEFINITY™ Communications System Generic 2
- System 75
- System 85

Note: Unless a specific DTE device is intended, the words *terminal device* shall be used throughout this guide to represent any applicable DTE device, including a dumb terminal, a printer, a plotter, or a personal computer (PC) with an appropriate PC communications package.

FEATURES

A terminal device is connected to the 7400B Plus through a standard EIA-232-D interface (formerly called the RS-232-C), and a Digital Communications Protocol (DCP) interface (using a type D8W modular telephone cord) is used to connect the 7400B Plus to the digital PBX.

An internal DIP-switch allows the 7400B Plus to be optioned for use either with or without a telephone. In the stand-alone case, the 7400B Plus supports data service only, otherwise, the 7400B Plus provides simultaneous data and voice service. The 7400B Plus will work with all of the 7400 series DCP voice terminals in providing simultaneous data and voice service.

The voice dial feature allows you to dial a voice call without touching the telephone, and depending on the communications package, you can store telephone numbers on a PC and recall them for dialing, log phone calls for easy billing, and take notes for later reference during a telephone conversation.

In addition, the 7400B Plus can be used to automatically turn on the speakerphone of the voice terminal when a voice call is dialed from your terminal device. The 7400B Plus voice dial feature can be used with all DCP voice terminals, except for the following:

- 7403D (all models)
- 7404D (all models)
- 7405D (all models)
- 7407D01A

Note: If a 7400 series voice terminal with data features is used with the 7400B Plus, data service is provided by the 7400B Plus and the data features of the voice terminal cannot be used.

Additional features of the 7400B Plus include the following:

- non-volatile, read-write memory for storing two data options profiles and up to four telephone numbers
- an ‘‘AT’’ command interface that emulates a Hayes 2400 Smartmodem and supports the following:
  - ► storage of the wait time for carrier detect interval (S7 register)
  - ► voice call origination using the ‘‘ATDP’’ command
- automatic speed and parity adjustment
- even, odd mark, space or no parity
- automatically adjusts data throughput
- power-up self-test
- local and remote loopback tests with test duration timers
- voice terminal powered by the PBX is not affected if ac power is removed from the 7400B Plus

PHYSICAL DESCRIPTION

The external features of the front and rear panels of the 7400B Plus and the separate power supply unit are described in this section. The 7400B Plus has a removable access panel on top of the unit, which is described further in the hardware installation section of Chapter 2, "Installation."

Front Panel

The front panel of the 7400B Plus is shown in Figure 1-1, and the 10 LEDs on the front panel are described in Table 1-1. In addition to indicating the status of the set during normal operation, the LEDs also indicate the result of the self-tests when initially powered.

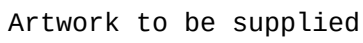


Figure 1 Front Panel

TABLE 1-1
Front Panel LED Indicator Descriptions

Connector	Description
POWER/ TEST	This red LED normally indicates that power is applied to the 7400B Plus. This LED flashes during any test mode, except the start-up self-test. It also flashes along with the *DATA* LED when the 7400B Plus is unable to communicate with the PBX.
DATA METERING	This red LED indicates that the Data Metering option is enabled, and will indicate the state of the CTS (Clear To Send) lead when metering.
AA	Automatic Answer. This red LED lights continuously when Automatic Answer is enabled, and flashes when there is an incoming call.
CD	Carrier Detect. This red LED lights as long as communication is established with the far end device.
RD	Receive Data. This red LED lights when received data is being transferred from the 7400B Plus to the local terminal device.
SD	Send Data. This red LED lights when transmitted data is being transferred from the local terminal device to the 7400B Plus.
TR	Terminal Ready. This red LED normally indicates the state of the DTR lead. The LED is always on when the 7400B Plus is optioned to ignore the DTR lead.
OH	Off Hook. This red LED lights continuously from the time a data communications call is initiated until the call is terminated.
CHECK SPEED	This red LED lights when a call set up fails because of an incompatibility between the configuration of the local terminal device and the far end device. The incompatibility will *usually* occur if a common operating speed cannot be achieved between the two endpoints. Chapter 5, "Troubleshooting," provides information about this and other conditions that may cause this LED to light.
DATA	This green LED lights to indicate that a data call is in progress. This LED flashes along with the *POWER/TEST* LED when the 7400B Plus is unable to communicate with the PBX.

Rear Panel

The rear panel of the 7400B Plus is shown in Figure 1-2, and the connectors located on the rear panel are described in Table 1-2.

Artwork to be supplied

Figure 2 Rear Panel

TABLE 1-2
Rear Panel Connector Descriptions

Connector	Description
PHONE	This connector accepts one end of the D8W telephone line cord used to connect a telephone or voice terminal to the 7400B Plus.
LINE	This connector accepts one end of the D8W telephone cord that connects between the 7400B Plus and the PBX wall jack.
POWER	This connector accepts the output cable of the separate power supply unit used with the 7400B Plus.
PORT 1	This connector accepts a male plug from the EIA-232-D (or RS-232-C) cable that connects between the 7400B Plus and the terminal device.

Power Supply Unit

A separate power supply unit is shipped with the 7400B Plus. This unit connects between a grounded AC outlet and the ‘‘POWER’’ connector at the rear of the 7400B Plus. This power supply unit provides the necessary operating voltages for the 7400B Plus.

Caution: Make certain that the AC outlet to which you connect the power supply is unswitched (for example, not controlled by a wall switch or light dimmer).

Instructions for installing the power supply unit with an illustration are provided in the hardware installation section of Chapter 2, "Installation."

DEFINITY Communications System
7400B Plus Data Module
User´s Guide

CHAPTER 2: INSTALLATION

This chapter describes the equipment required for installing the 7400B Plus, and outlines procedures for preparing the 7400B Plus for operation. If you are using the 7400B Plus with a PC, you will be ready to use a PC communications package after reading this chapter. You should continue reading this guide, if you are using the 7400B Plus with a terminal, printer, or host, or if you want to learn about the ''AT'' interface and operations of the 7400B Plus.

HARDWARE AND SOFTWARE REQUIREMENTS

This section provides information on the equipment packaged with your 7400B Plus, and the additional items required for installation. It uses illustrations to show how equipment is arranged for installations with and without a voice terminal, and with adjunct equipment.

What You Have

Your 7400B Plus package should contain the following:

- 7400B Plus Data Module
- a 7-foot D8W telephone cord for the Data Communications Protocol (DCP) connection between the 7400B Plus ''LINE'' jack and the PBX wall jack
- power supply

What You Need

To install and operate the 7400B Plus, you will need the following items:

- an asynchronous data terminal or personal computer (PC) with a communications package
- an EIA-232-D interface (formerly RS-232-C) cable to connect between the terminal device and the 7400B Plus
- (optional) 7400 series DCP voice terminal (optional for data, required for voice), and associated adjunct equipment, if applicable

  Note: The following list identifies those voice terminals that cannot be used with the 7400B Plus voice dial feature:

  - 7403D (all models)
  - 7404D (all models)
  - 7405D (all models)

- 7407D01A

If you are not using the voice dial feature, the above mentioned voice terminals can be used to provide simultaneous voice and data operation.

- (optional) a second type D8W cord to connect between the 7400B Plus ‘‘PHONE’’ jack and optional voice terminal (you may need an adjunct power supply, adapter, and D6AP cord, if applicable)

Figure 2-1 illustrates the required hardware items for an arrangement without a telephone, Figure 2-2 shows the set up for using a telephone without adjunct equipment, and Figure 2-3 shows a similar setup with some typical adjunct equipment.

Artwork to be supplied

Figure 1 Typical Standalone Installation

Artwork to be supplied

Figure 2 Typical Installation with Telephone

Artwork to be supplied

Figure 3 Typical Installation with Telephone and Adjunct

About the Terminal Device

The 7400B Plus operates with any asynchronous data terminal device that has an EIA-232-D (or RS-232-C) interface. If you are using a PC as your terminal, you will need a suitable PC communications package. EIA-232-D cables and PC communications packages are described in the following paragraphs.

You must set the appropriate configuration options *before* connecting the 7400B Plus to a printer or plotter. To do this, connect a data terminal or PC to Port 1 of the 7400B Plus, change and store the necessary configuration parameters, remove the data terminal or PC, and then connect the printer or plotter. The configuration parameters used for this type of operation are described in the section, Remote Site Use in Chapter 3, "Configuration and Operation."

Selecting an EIA-232-D Cable

Select an EIA-232-D with a male connector at one end to connect with the Port 1 connector of the 7400B Plus, and a connector of the appropriate ‘‘gender’’ at the other end to connect to the communications port of your terminal device.

Note: Cables with the earlier RS-232-C designation will also work.

The most common EIA-232-D cables are supplied with a male connector at both ends. If you have this type of cable and the EIA-232-D port on your terminal device is a male connector, you can use a cable adapter commonly referred to as a ‘‘gender changer’’. Otherwise, obtain an EIA-232-D cable that has the appropriate gender connector at each end to fit your application needs.

Selecting DCP Cords

The 7400B Plus is supplied with a 7-foot D8W cord. Use this, or obtain the appropriate length D8W telephone cord for DCP connection between the 7400B Plus and the PBX wall jack. If you are using the with-telephone option, you will need a second D8W telephone cord to connect between the 7400B Plus and your telephone or voice terminal.

Selecting PC Communications Packages

The purpose of PC communications software is to allow your PC to operate as an asynchronous voice-data communications terminal. Of the many software packages available, all perform essentially the same functions, but often in significantly different ways.

If you do not already have a PC communications package, consult with an experienced user for advice on selecting software to suit your voice-data communications needs. The following, though not required, are a few helpful features that you may wish to look for in the software you select:

- **Local mode.** Also called *direct mode, terminal mode, dumb terminal mode* or *chat mode*, this feature allows you to issue AT commands to the 7400B Plus to configure its options.
- **Dialing directory.** This feature allows you to store several frequently called numbers, often along with configuration of the data options needed for completing the connection.
- **Auto-dialer software.** This feature allows you to automate the process of dialing a voice call without touching the telephone. The following three basic types of auto-dialer software are available:
  - ► **Phone Management** supports call log and note taking
  - ► **DOS Utilities** typically supports auto-dial capabilities
  - ► **Personal Information Managers** (PIM) supports automated calendars, databases, time lines, pert charts
- **Predefined data options profiles.** Some programs include completely defined data option profiles (also called configuration profiles) for popular modems. If available, select the options profile for the Hayes Smartmodem 2400.
- **Command files.** These files, also called *script files*, allow you to define a group of commands that may be executed for automatically logging into specific remote devices.

Chapter 4, "PC Applications," provides guidelines for using a few of the more popular PC communications packages with the 7400B Plus.

Selecting DIP-Switch Options

Five options are selected by setting switches on an 8-position DIP-switch (SW1). These options are described here, and procedures for setting the switches are provided in the next section titled "Setting the DIP-Switch Options."

With/Without Telephone Option (SW1-1)

When this option is set for operation without an associated telephone (SW-1 set to ‘‘ON’’), the 7400B Plus offers only data service between a terminal device and a remote system. Setting this option for operation with an associated voice terminal (SW-1 is set to ‘‘OFF’’) enables simultaneous data and voice service over the same line from the PBX.

When the 7400B Plus is optioned for operation with a telephone, a 7400 series DCP voice terminal must be connected to the 7400B Plus. Data service is provided directly from the 7400B Plus, and any data features that the voice terminal may offer cannot be used.

Note: A change in the setting of this option becomes effective when the 7400B Plus is powered on after being powered off. The setting of this option cannot be changed arbitrarily—it must agree with how the PBX line is administered. Check with your telecommunications manager to administer the line for simultaneous voice and data or data service required.

Data Metering Option (SW1-5)

When the data metering option is disabled (SW1-5 set to ''OFF''), the transfer speed of the 7400B Plus will adjust to match the transfer speed of the remote system. The *CONNECT xxxx* message is displayed when a connection is completed.

When this option is enabled (SW1-5 set to ''ON''), it allows the user to set-up a call to a remote end that is running at a slower speed than the local data module. (This allows the user to communicate with a slower speed device without lowering the speed of the terminal). The *CONNECT xxxx* message will always indicate the speed of the local data transfer. The 7400B Plus performs the speed conversion and uses the CTS lead to flow-control the user's terminal if it is sending too much data too fast. During the data transfer, the *DATA METERING* LED indicates the state of the CTS lead.

Note: If you are using a PC with a communications package, or a dedicated terminal that does not support CTS control, you cannot make file transfers with the data metering option enabled.

A change in the setting of this option becomes effective immediately when the 7400B Plus is in the idle mode or as soon as it is returned to the idle mode. The 7400B Plus is in idle mode any time that it is *not* in test mode or connected to an active data call.

Suppress Touch-Tone/Dial-Tone (SW1-6)

This option is only valid if the speakerphone enable / disable option is set to enable. This option applies only to voice dial calls, and is only valid when the Speakerphone enable / disable option (SW1-7) is set to enable. When the option is disabled (SW1-6 set to ''OFF''), the speakerphone (if available) is activated before dialing, allowing the user to hear the dial-tone and touch-tones. When the switch is enabled (SW1-6 set to ''ON''), the speakerphone is activated after dialing, allowing the user to hear the far-end ringing and answer.

Speakerphone Disable/Enable Option (SW1-7)

This option applies only to voice dial calls. When the speakerphone option is enabled (SW1-7 set to ''OFF''), the speakerphone is turned on automatically when you use your terminal to dial a voice call. If you want to disable the automatic speakerphone feature, disable the speakerphone option (SW1-7 set to ''ON''). This option will have no effect if the voice terminal does not have a speakerphone.

Note: When SW1-6 and SW1-7 are set to ''OFF'', the 7400B Plus automatically activates the speakerphone at the beginning of the voice call so you can hear dial-tone and touch-tones. When SW1-6 is set to ''ON'' and SW1-7 is set to ''OFF'', the activation of the speakerphone is delayed until dialing is complete.

Make Busy on Local Loop Option (SW1-8)

This option controls the make-busy feature of the 7400B Plus. When the option is enabled (SW1-8 set to ''ON''), the 7400B Plus will busyout the DCP line when either the Local Loopback or Local Loopback / Self-Test mode is entered. The busyout condition is released when the test ends.

Note: A change in the setting of this option becomes effective immediately when the 7400B Plus is in the idle mode or as soon as it is returned to the idle mode. The 7400B Plus is in idle mode any time that it is *not* connected to an active data call.

HARDWARE INSTALLATION

This section outlines procedures for setting the DIP-switch options, connecting the EIA-232-D cable, installing the power supply, and connecting the D8W telephone cord(s).

Caution: To avoid possible shock hazards and damage to the equipment, you should perform the installation steps in the order given.

Setting the DIP-Switch Options

Five options are selected by setting switches on an 8-position DIP-switch. Setting these switches is described in the following paragraph.

Note: The factory-default settings of these switches are correct for the majority of applications. Check the default settings shown in Table 2-1 to determine whether you need to make any changes.

TABLE 2-1
Option DIP-Switch Settings

Telephone	**SW1-1**
Without Phone	ON
With Phone *(factory-default)*	**OFF**
Data Metering	**SW1-5**
On—enabled	ON
Off—disabled *(factory-default)*	**OFF**
Suppress Touch-Tone/Dial Tone	**SW1-6***
On—enabled	ON
Off—disabled *(factory-default)*	**OFF**
Speakerphone Disable/Enable	**SW1-7***
On—disabled	ON
Off—enabled *(factory-default)*	**OFF**
Busy Out on Local Loop	**SW1-8**
On—enabled	ON
Off—disabled *(factory-default)*	**OFF**

* Applies to voice dial calls only.

Caution: Disconnect all cables and telephone cords attached at the rear of the unit. Failure to disconnect all cables and cords at this point could result in permanent damage to the 7400B Plus.

1. Remove the top access panel of the 7400B Plus as follows: (See Figure 2-4.)
   a. While applying a gentle lifting pressure at the rear edge of the access panel, insert the tip of a ball-point pen or other suitable device into each of the two tab-lock holes in the rear panel to release the locking tabs.
   b. Lift and remove the access panel.
2. If a ROM board is installed just inside the access opening of the 7400B Plus, grasp the edges of the ROM board inside the access opening and lift the board out of its socket.
3. Locate the 8-position DIP-switch on the main circuit board, approximately in the center of the area exposed by the access opening.
4. Set the appropriate positions of this DIP-switch as shown in the Table 2-1.
5. If a ROM board was removed in step 2, reinsert the board into its connector.
6. Replace the access panel by placing it into position and pressing down at the rear edge to engage the locking tabs.

To access and set the DIP-switch options, refer to Figure 2-4 and perform the following:

Artwork to be supplied

Figure 4 Accessing the DIP Switches

Connecting the EIA-232-D Cable

Connect the EIA-232-D cable between the 7400B Plus and the terminal device as follows:

1. Insert a male connector of the EIA-232-D cable into the connector labeled *PORT* on the rear panel of the 7400B Plus. Tighten both connector retaining screws.
2. Insert the other end of the EIA-232-D cable into the communications port connector on the terminal device. Tighten all retaining screws.

   Note: Be sure to attach any required adapter as discussed previously in the paragraphs titled ‘‘Selecting the EIA-232-D Cable.’’

Connecting the DCP Cord

Attach the DCP type D8W telephone cord as follows:

1. Insert either end of the telephone cord into the connector on the rear panel of the 7400B Plus labeled *LINE*.
2. Insert the other end of the telephone cord into the PBX wall jack.
3. If you are using the with-phone option of the 7400B Plus (voice and data), install the second D8W telephone cord as follows:
   a. Insert one end of the second D8W cord into the jack on your 7400 series DCP voice terminal.
   b. Insert the other end of the second D8W cord into the jack on the rear panel of the 7400B Plus labeled *PHONE*.

      Note: An internal DIP-switch must be set correctly for this option to work (see "Setting the DIP-Switch Options" in this chapter). Also, if your voice terminal has data capabilities, the data features of the voice terminal are not supported while it is connected to the 7400B Plus.

Connecting the Power Supply

Connect the separate power supply unit to the 7400B Plus as follows:

1. Insert the output connector of the power supply into the connector on the rear panel of the 7400B Plus labeled ‘‘POWER.’’

   Caution: Be sure that the side of the power supply cable connector labeled ‘‘TOP’’ is facing upward before inserting the connector.

2. Insert the AC connector of the power supply unit into an appropriate AC outlet.

   Note: Since the 7400B Plus does not have a power on / off switch, the unit will power on as soon as the power supply is connected to an active AC line.

   Caution: Make certain that the AC outlet to which you connect the power supply is unswitched (for example, not controlled by a wall switch or light dimmer).

INITIAL SYSTEM CHECKS

This section describes procedures for initially checking out your hardware and any required software. It is assumed at this point that your hardware and PC communications package have been properly installed and are ready for use.

Note: PC communications software is required only if you are using a PC as your terminal device. A dedicated data terminal does not need PC communications software.

Power-Up Self-Test

When power is first applied to the 7400B Plus, the unit performs a self-test to determine that it is in working order. The progression of the self-test is indicated by the sequential, left-to-right lighting of the 10 front-panel LEDs.

When the self-test completes, the LEDs labeled *POWER/TEST* and *TR* will remain lit and all other LED lamps will go out.

Note: The operation of the LEDs described here assumes that the factory-default options are still in effect. Once certain options have been changed, the operation of the LEDs may differ from this description.

Your 7400B Plus is now installed and ready for data communications operation.

IF YOU ARE USING A PC

PC communications packages provide the capability of configuring the 7400B Plus automatically. When using a PC communications package with the 7400B Plus, there are two items to note:

1. The PC communications package should be configured to work with a Hayes Smartmodem 2400 or Hayes compatible modem.
2. The dialing method of the PC communications package should be set to **Tone** for data calls, and **Pulse** for voice calls.

Many PC communications packages provide the possibility of writing script or command files. These files can then be run to execute a sequence of commands that will configure your system, or even provide an automatic log on procedure for a particular remote end device. Review the documentation for your PC and PC communications package. Once you understand the PC communications package well enough, you will be ready to begin using it with the 7400B Plus.

Since there is such a diversity of functionality among the many PC communications packages available, refer to the user's manual of the package for specific details of its use. Chapter 4, "PC Applications" provides guidelines for using a few of the more popular packages with the 7400B Plus.

For more information about the ''AT'' interface and operation of the 7400B Plus, refer to Chapter 3, "Configuration and Operation."

IF YOU ARE USING A DEDICATED TERMINAL

When a dedicated terminal is used with a 7400B Plus, you must control the operation of the 7400B Plus. In a way, you are acting as a PC communication package. To do this, you must understand the operation of the 7400B Plus. Refer to Chapter 3, "Configuration and Operation."

CHAPTER 3: CONFIGURATION AND OPERATION

This chapter describes how to change, store, and recall configuration parameters, outlines how to create and save custom configuration profiles, and discusses more advanced command usage with example command lines.

This chapter also provides some basics on the 7400B Plus operation, describes how to use a few ''AT'' commands that are essential for most voice-data communications operations, and then outlines a typical on-line session.

Note: The commands for the 7400B Plus are referred to as ''AT'' commands because you must type the letters AT as the first characters on the line for most commands.

OPERATING MODES

Except when a test condition has been initiated, the 7400B Plus is always in one of two states: command mode or data mode. When power is first applied, the 7400B Plus initializes to command mode.

In command mode, the 7400B Plus looks at everything you type on your keyboard. When you type in something that the 7400B Plus recognizes as a valid command with a valid parameter (if required), it will execute the action requested. A valid command with an invalid parameter will produce the *ERROR* result code. An invalid command will also produce the *ERROR* result code, and is ignored.

In data mode, everything you type is passed as data without interpretation by the 7400B Plus, except the *escape sequence.* The escape sequence, described in later paragraphs, provides a way of switching the 7400B Plus back to command mode without disconnecting a data call.

ISSUING COMMANDS

The following paragraphs describe the elements of a command line and how the 7400B Plus responds to a command line when it is issued.

AT Command Line Prefix

All commands issued to the 7400B Plus must begin with the letters ''AT'' or ''at'' with the exception of the ''A/'' command which is discussed later. The command line prefix must be entered as either both uppercase or both lowercase letters (that is, `at` and `AT` will work, but `aT` and `At` will not).

The letters ''AT,'' also known as the **AT**tention command, alerts the 7400B Plus to expect one or more commands to follow. The 7400B Plus examines the command line prefix to determine the communications rate of the terminal equipment as well as its parity setting. The 7400B Plus automatically adjusts the speed and parity settings and uses the setting until another ''AT'' command is received, or until the 7400B Plus is powered down.

Formats supported by the 7400B Plus are shown in Table 3-1.

TABLE 3-1
CHARACTER FORMATS

Data Bits	Parity	Stop Bits
7	even or odd	1
7	mark or space	1
8	none	1

All of these parameters may be changed on the local terminal device as needed. The 7400B Plus will adjust to match the speed and parity of the local terminal device when it receives an ''AT'' command.

If you connect to a remote system and your screen shows a series of nonsense characters (also referred to as ''garbage''), chances are that you need to adjust the speed or parity on the terminal to match the settings of the 7400B Plus.

Command Buffer

As you type in a command, each character is saved in a 40-character buffer. The AT prefix, spaces, and the (Enter) at the end of the command line are not saved and do not add to the character count. If you try to type more than 40 countable characters on one line, the result code *ERROR* will be displayed on your terminal screen, and the command line will be ignored.

Command Line Set Up

A command line begins with the AT prefix, includes one or more commands, and finishes with a line termination character, usually issued by pressing the (Enter) key. The factory-default line termination character is an ASCII carriage return.

If you make an error while typing a command line, you can send the backspace character, usually issued by pressing the (Backspace) key, as often as needed to delete the error. However, as soon as you enter the AT prefix, the 7400B Plus immediately reads it and sets up for a command to follow. Hence, you cannot delete the AT prefix once it is typed. The factory-default backspace character is an ASCII backspace.

Once you complete a command line by pressing (Enter), the 7400B Plus will try to interpret all characters on the command line as valid commands. If the 7400B Plus finds a character that is not a valid command, it will ignore the erroneous character and any remaining characters on the command line.

Command Acknowledgement

Commands are acted upon immediately and are acknowledged by a result code. Most commands are acknowledged by *OK*. This assumes that the result codes are configured in the verbose form (command V1 is in effect), and are enabled (Q0 in effect). Another option for configuring result codes is the short or numeric form. These result codes are set by the V0 command which would produce a *0* (zero) instead of the message *OK*. A final option for result codes is to configure them for visible acknowledgement (Q1). Refer to Appendix A, "AT Command Set" for descriptions of the V and Q commands.

Several other result codes may appear on your terminal screen while the 7400B Plus is completing a call. The option selected by the X command controls which of these result codes may appear on the screen of your terminal (the X command is described in Appendix A). All result codes that may be returned by the 7400B Plus are shown in Table 3-2 and in Appendix E, "Quick-Reference Summaries."

TABLE 3-2
Result Codes

Verbose Form	Numeric	Description
OK	0	Command accepted
CONNECT	1	Connection made at 300 bps **Note:** If command X0 is in effect, CONNECT means connection made at whatever speed both ends of the call agreed upon.
RING	2	Ring signal detected
NO CARRIER	3	Carrier signal not detected or lost
ERROR	4	Error in command line
CONNECT 1200	5	Connection made at 1200 bps
BUSY	7	Busy signal detected
CONNECT 2400	10	Connection made at 2400 bps
CONNECT 4800	11	Connection made at 4800 bps
CONNECT 9600	12	Connection made at 9600 bps
CONNECT 19200	14	Connection made at 19200 bps

Repeating a Command

As mentioned earlier, the command buffer contains the last completed command line. If you wish to repeat the previous command line without retyping it, type A/ without the AT command prefix and without pressing (Enter). This command is most useful when you have typed a command line to have the 7400B Plus dial a number, and the returns the result code *BUSY*.

Use the A/ command to redial the number as often as you wish.

Sample Command Lines

This section presents a few sample AT command lines with explanations of the results they will produce.

EXAMPLE 1: Checking if your terminal is communicating with the 7400B Plus.

AT (ENTER)

Note: Remember, the two characters of the ''AT'' command prefix must be typed as either both uppercase or both lowercase. That is, you can type either at or AT, but At or aT will not work.

If everything is operating properly, the command should appear on the screen as you type it, and the 7400B Plus should respond with *OK*.

EXAMPLE 2: Using a time saver.

A/

The *A/* command tells the 7400B Plus to repeat the last command line exactly. If you had issued the command to dial a number and the 7400B Plus returned the message *BUSY*, you could type the A/ command to try the number again.

Note: The A/ command must be the only command on the command line, and you do *not* press (Enter) to complete the line.

EXAMPLE 3: Changing data options.

at e1 &d2 s0=5 (Enter)

This command line is a command sequence that sets up the 7400B Plus to automatically answer incoming calls. The commands set the following parameters:

- at is the required command prefix,
- e1 causes characters entered from the keyboard to be echoed to the screen while in command mode
- &d2 causes the 7400B Plus to hang up the call when the local terminal turns off DTR
- s0=5 causes the 7400B Plus to enter automatic answer mode and answer incoming calls on the fifth ring.

CONFIGURATION PARAMETERS

Values for configuration parameters are selected by using ‘‘AT’’ commands. For a description of ‘‘AT’’ commands used by the 7400B Plus, refer to Appendix A, "AT Command Set."

Parameter Storage and Retrieval

Configuration parameter values include the option values selected by ‘‘AT’’ commands that require option values, and the values stored in the S-registers. A set of configuration parameter values is called a profile. The 7400B Plus has four configuration profiles at any given time, one active, two stored, and one that permanently contains the factory-default values.

Unsaved changes to configuration parameters remain in effect until they are changed again, or until the 7400B Plus is disconnected from the AC power source. Before making or storing any changes, or to check changes that you have made, you can issue an ‘‘AT’’ command to view the values that are currently in the active profile and the two stored profiles.

The active profile contains the parameter values that are currently in effect. All parameter values can be changed, and most changes can be stored to one of the two profile storage locations by issuing an ‘‘AT’’ command. Another ‘‘AT’’ command recalls values from one of the two stored profiles into the active profile.

Factory-default parameter values are a selection of values that are appropriate for a wide number of applications. These values are stored permanently in ROM and you can issue an ‘‘AT’’ command to recall them into the active profile at any time.

Commands to view, store, and recall configuration parameters are summarized in Table 3-3. The commands discussed in this section are described in greater detail in Appendix A, "AT Command Set." To determine whether a configuration parameter that affects a particular
S-register can be stored in memory, refer to Appendix C, "S-Registers."

TABLE 3-3
Commands to Store, Recall and View Configuration Parameters

Command Line:	**Action:**
`at&v` (Enter)	Display current ‘‘AT’’ command settings and S-register values in the active profile and the two stored profiles (also displays the four stored telephone numbers, which are described in a section of this chapter titled ‘‘Number Storage’’).
`at&w`*n* (Enter)	Store the configuration parameters in the active profile to one of the two storage locations, where *n* represents the desired location and may be 0 or 1.
`atz`*n* (Enter)	Immediately reset the 7400B Plus and recall one of the two stored configuration profiles into active status, where *n* represents the desired profile and may be 0 or 1.
`at&y`*n* (Enter)	Recall one of the two stored configuration profiles into active status when the 7400B Plus is powered on, where *n* represents the desired profile and may be 0 or 1.
`at&f` (Enter)	Recall the factory-default configuration settings into the active profile.

DATA OPERATION

This section provides information on how to use the 7400B Plus for data calls.

From Data Mode to Command Mode and Back

An *escape sequence*, +++, can be typed at any time during a data call to return temporarily to command mode. Your call does not disconnect, but data is not exchanged. Once you have ‘‘escaped’’ to command mode, the 7400B Plus returns *OK* to acknowledge that it has entered command mode (see section titled ‘‘Command Acknowledgement’’).

At this point, you can issue commands to the 7400B Plus. As long as the data call has not been disconnected, you can use the ‘‘ato’’ command to return to data mode.

One other condition will cause the 7400B Plus to switch from data mode to command mode. If the PBX senses that the remote device has disconnected, it will disconnect the call to the 7400B Plus. The 7400B Plus will turn off the *CD, OH,* and *DATA* LEDs, display a result code message on your terminal screen (such as *NO CARRIER*), and then return to command mode.

The escape sequence and all other commands discussed in this section are explained in Appendix A, "AT Commands."

Dialing a Data Call

The dial command is issued to the 7400B Plus in the form `atdt`*nnn...n*, where `d` is the dial command, `t` is the dial modifier (see "Appendix B" for more information on dial modifiers), and *nnn...n* represents the number you wish to dial. The command line can hold up to 40 characters, so you can usually precede the `d` with other commands on the same line.

The following is an example:

`atdt74768` (Enter)

In the example, the command will cause the 7400B Plus to go off hook, dial the number, and then wait the period of time specified in S-register S7 for the call to be completed.

If the call can not be completed, the 7400B Plus may disconnect and send the result code *NO CARRIER* or *BUSY* to your display screen. When a call is successfully completed, the 7400B Plus will send the result code *CONNECT nnnn* to your screen, where *nnnn*

represents the speed of the 7400B Plus, (for example, 1200).

Storing a Telephone Number

The 7400B Plus is capable of storing up to four telephone numbers, each of which can contain up to 25 characters. Numbers stored in this way remain available indefinitely, even after the 7400B Plus has been powered off and then on again.

Table 3-4 describes the command lines used to store a telephone number, delete a number from storage, and dial a stored number.

Note: Digits 0 through 9 and all letters ‘‘a’’ through ‘‘z’’ and ‘‘A’’ through ‘‘Z’’ may be part of the stored ‘‘number.’’ Spaces and hyphens (-) may be used in the number when typing the command line. Spaces are not stored and do not add to the total count of characters in the stored number, but all other ASCII characters are stored and counted. Any ASCII character may be used, as long as it is acceptable to the PBX. A semi-colon (;) character cannot be stored because it is used to delimit the end of the string being stored so that additional commands can be entered on the same command line.

TABLE 3-4
Commands for Using Stored Telephone Numbers

Command line:	Action:
`at&z`*m*`=`*nnn...n* (Enter)	Store number *nnn...n* in location *m*, which is one of four locations designated by the numbers 0 through 3. For example: `at&z2=918006245123` (Enter) stores the number 918006245123 in number storage location 2.
`at&z`*m*`=` (Enter)	Delete any number stored in location *m*, which is one of four locations designated by the numbers 0 through 3. For example: `at&z2=` (Enter) deletes any number that may have been stored in number storage location 2.
`atds=`*m* (Enter)	Dial the number stored in location *m*, which is one of four locations designated by the numbers 0 through 3. For example: `atds=2` (Enter) causes the 7400B Plus to dial the number stored in location 2.

Automatic Answering

The 7400B Plus can be set up to answer incoming data calls automatically. To initialize this option, type the command line:

`ats0=`*nnn* (Enter)

where *nnn* is a decimal number in the range of 1 through 255, representing the number of rings to wait before answering. If *nnn* is 0 (the factory-default setting), the automatic answer feature is turned off. The red LED on the front of the 7400B Plus labeled ‘‘AA’’ lights when the automatic feature is turned on.

Remote Site Use

The 7400B Plus can be used at a remote site as a dedicated service device to answer incoming data calls, send data to a remote end device, and then hang up. For example, you may wish to provide access to a printer from a remote site.

The following is a typical command line you might use for setting up this operation (spaces are used here for readability, but are not required):

AT &F &C1 &D2 E0 Q1 S0=1 &W0 &Y0 (Enter)

Following the AT prefix, the commands in the example produce the following results:

- &F resets the options to the factory defaults.
- &C1 sets the Data Carrier Detect (DCD) circuit of the 7400B Plus to operate according to the EIA standard.
- &D2 sets the 7400B Plus to go on hook when an on-to-off transition is detected on the Data Terminal Ready (DTR) input, disconnecting the call
- E0 turns off the echo.
- Q1 turns off the result codes that would be the normal responses of the 7400B Plus to commands that it receives. (For example, the ‘‘CONNECT’’ message which is displayed when answering a call would interfere with the printer.)
- S0=1 turns on the automatic answer feature and causes the 7400B Plus to answer an incoming data call on the first ring.
- &W0 causes the current configuration to be stored in data profile storage location 0.
- &Y0 selects the configuration stored in data profile storage location 0 to become the current configuration each time the 7400B Plus is powered on

Refer to Appendix A, "AT Command Set," for a complete description of each command used in this section.

Reset and Configuration Recall

Two commands are available for recovering from various data communications problems. You can reset the 7400B Plus and recall one of two stored profiles as the current configuration. The form for this command is as follows:

`atz`*n* (Enter)

where *n* is the number 0 or 1, representing the configuration profile to be recalled.

A second command allows you to recall the factory-default configuration if, for instance, you loose track of changes you have made and need to start over. The form for this command is as follows:

`at&f` (Enter)

Sample Command Lines

This section presents a few sample AT command lines for data calls, along with explanations of the results they will produce.

EXAMPLE 1: Dialing a data call.

`AT D T 18006245123` (Enter)

CONNECT 2400

In the first line of this example,

- AT is the required command prefix,
- D is the dial command,
- T is the dial modifier for a data call (not required),
- and the remainder of the line is the telephone number.

Note: The spaces between the commands and the telephone number are included only for readability and are not required. You may also insert hyphens (-) anywhere in the telephone number for increased readability.

In the second line of this example, the 7400B Plus returns a response indicating that a connection with the remote end device has been successfully completed at 2400 bps.

EXAMPLE 2: Dialing a data call outside your PBX domain with a few other options thrown in.

```
at &f d 9 1 800 624-5123 (Enter)
```

BUSY

In the first line of this example,

- `at` is the required command prefix,
- `&f` tells the 7400B Plus to restore the factory-default configuration parameters,
- `d` is the dial command,
- `9` represents the access code required to dial a number outside your PBX domain,
- and the remainder of the line is the telephone number.

In the second line of this example, the 7400B Plus indicates that it detected a busy signal, and the call is automatically disconnected.

A Sample On-Line Session

This section outlines how to perform a simple on-line session using the ‘‘AT’’ commands described in this chapter. For more information about all ‘‘AT’’ commands, see Chapter 3, "Configuration and Operation" and Appendix A, "AT Command Set."

Starting the Session

The following is a sample data call to a fictitious bulletin board service. If you know the number of a ‘‘real’’ bulletin board service, you might try an actual log on by using that number and following the suggestions in this session.

```
at d 9-555-7575 (Enter)
```

CONNECT 1200

The `D` command is used to dial the number of the bulletin board. Since the connection was made successfully, the 7400B Plus responded with a message that says the remote end connected and the data speed to be used is 1200 bps.

The remote end may do nothing until you press a particular key a few times, usually (Enter). Typical of many data communications application programs, this sometimes required input lets the remote end determine whether you have connected with the correct communications parameters in effect.

Possible Display Problems

If the response from the remote end is unintelligible ‘‘garbage,’’ chances are that the speed or parity bit selection is incorrect. In this case, assuming that your terminal device allows, the parameters may be corrected without disconnecting the call. Otherwise, you must disconnect, correct the parameters, and then try the call again.

Another possible problem is that the remote end response contains normal words mixed in with strange characters, many of which are left brackets ([). This usually indicates that the remote device is sending ANSI display control sequences, and your terminal does not recognize them (ANSI stands for American National Standards Institute).

On a PC, this can generally be remedied by first disconnecting the call, editing the PC’s *CONFIG.SYS* file to include the line

```
DEVICE=ANSI.SYS
```

rebooting the PC, and then trying the call again. (For a log off procedure, see the alternative method under ‘‘Disconnecting a Data Call,’’ below.)

Note: If the terminal device is not a PC, or the suggested remedy does not seem to solve the problem, you will need to consult the documentation for your dedicated terminal, or for your PC and any software involved.

Disconnecting a Data Call

Most remote systems will have a command or menu selection for logging off. When you select the appropriate means, the remote system will disconnect or hang up. The PBX will disconnect the call and, after a moment, the 7400B Plus will send the following message to your display:

NO CARRIER

Alternatively, you can use the following disconnect procedure:

Selection: +++

OK

The prompt *Selection:* is simply a representation of how the remote system might ask you for your next command or menu selection. Type the escape sequence (default is +++) but do *not* press (Enter). (Pause before typing +++, type +++ quickly, and then pause again after typing +++.) When the 7400B Plus responds with *OK*, type the command line:

`ath` (Enter)

The PBX will disconnect from the remote end device, and the 7400B Plus will send the *OK* message to the terminal display.

VOICE OPERATIONS

This section provides information on how to use the 7400B Plus for voice dialing.

Using the 7400B Plus for Voice Dialing

The 7400B Plus is equipped with a voice dial feature which allows you to place voice telephone calls from the attached terminal device. To place a voice call, just tell the 7400B Plus to use pulse dialing by including the ‘‘P’’ dial modifier. (For data calls, tell it to use tone dialing by including the ‘‘T’’ dial modifier.) If you fail to specify the type of dialing to be used for a call, a data call will be made.

If you have a speakerphone, the 7400B Plus will normally turn it on when a voice call is being dialed. You may option the 7400B Plus to inhibit the speakerphone or delay activating it until after dialing is complete by setting the appropriate DIP switches. For more information on DIP switches, see Chapter 2, "Installation."

If your telephone does not have a speakerphone, you may lift the handset at any time.

Voice calls can be originated from the PC, but you must use the telephone to hang-up a call.

Dialing Instructions

When a voice call is made using the PC, the telephone number should be given to the 7400B Plus in a single ‘‘AT’’ dial command as indicated in the example below.

```
ATD P 9,1 (908) 555-1212
```

The ‘‘P’’ dial modifier must be included to tell the 7400B Plus that the call is a voice call. If an attempt to dial a voice call is made using more than one dial command on a command line, the first dial command will be accepted and the second dial command may be discarded. After dialing the call, the 7400B Plus automatically returns to the command mode.

A second voice call can be made from your PC by manually placing the first call on HOLD, and then entering a dial command for the second call. Any attempt to dial a second voice call while the first call is being dialed will be ignored.

Note: On DEFINITY™ Communications Generic 1, System 75, if you are in directory mode on the telephone, the procedures are ignored.

On DEFINITY™ Communications Generic 2, System 85, after you have manually placed the first call on HOLD, you must select a second call appearance before entering a dial command for the second call.

Dialing Delay

To ensure that dialing does not begin before dial tone is received, dialing a voice call will be delayed by the time stored in the S6 register (Wait Time Before Blind Dialing register) and can be set to a maximum value of 255 seconds. The factory setting of 2 seconds for S6 is adequate for most calls and should not be changed.

Dialing Pause

A pause for second dial tone is normally required for calls outside the PBX. This can be provided by including a comma between the outside line prefix (for example, 9) and the first digit of the telephone number to be dialed. The comma instructs the 7400B Plus, after dialing the prefix number, to pause a fixed time before dialing the first digit of the telephone number. The pause time is stored in the S8 register (Duration of Delay For Comma Dial Modifier) and can be set for any value up to a maximum of 255 seconds. The factory setting of 2 seconds is adequate for most applications and it should not be changed. If added delay is required, additional commas can be added to the number.

Sample Command Line

This section presents a few sample AT command lines for voice dialing, along with explanations of the results they will produce.

EXAMPLE 1: Dialing a voice call.

```
atd p 9,1 9085551212 (Enter)
```

OK

In the first line of this example,

- at is the required command prefix,
- d is the dial command,
- p is the dial modifier required to initiate a voice call,
- 9 represents the access code required to dial a number outside your PBX domain,
- , (comma) is the dial modifier pause required for a second dial tone,
- 1 represents the code required to dial a number outside your area code,
- and the remainder of the line is the telephone number.

EXAMPLE 2: Using the 7400B Plus as a touch tone generator.

```
atd p 8000,,3452#, 999# (Enter)
```

- at is the required command prefix,
- d is the dial command,
- p is the dial modifier required to initiate a voice call,
- 8000 is the internal number for accessing AUDIX, the voice mail system,
- ,, (two commas) introduce a double delay while the call is being established,
- 3452# is the extension for the messages you want to receive,
- 999# is the password or the above extension.

At this point you are in your voice mail system ready to send, receive, etc. messages.

EXAMPLE 3: Using the 7400B Plus to enter multiple commands.

```
at dt 9,1 800 624-5123; dp 555-1212; o
(Enter)
```

- at is the required command prefix,
- d is the dial command,
- t is the dial modifier required to initiate a data call,
- 9 represents the access code required to dial a number outside your PBX domain,
- , (comma) is the dial modifier pause required for a second dial tone,
- 1 represents the code required to dial a number outside your area code,
- 800 624-5123 is the remainder of the data call,
- ; (semi-colon) returns you to the command mode,
- d is the dial command,
- p is the dial modifier required to initiate a voice call,
- 555-1212 is the remainder of the voice call,
- ; (semi-colon) returns you to the command mode, and
- o sends you back to the data connection.

CHAPTER 4: PC APPLICATIONS

This chapter provides information that describes how to configure some popular data and voice PC communications packages for use with the 7400B Plus.

Some of the functions and features mentioned in this chapter may not be available to you depending on the version of the software that you are using.

DATA CALL NOTES

The 7400B Plus has been tested with a variety of communications packages for use with DOS and Macintosh PCs.

To dial a data call, the modem configuration must be set to **TONE** (T) dialing. If given a choice, set the modem type to Hayes 2400 Smartmodem or just Hayes.

These software packages were tested with the 7400B Plus at a rate of 2400. Check with your System 75/85 administrator to determine the appropriate baud rate to use on your system.

When you are placing a call, if the Carrier Detect lamp is on and your computer cannot communicate with the far end, check to make sure that you have set the appropriate communication parameters for that service.

VOICE DIALING NOTES

The 7400B Plus voice dialing feature has been tested with the following PC Communication Packages:

- Hot Line V2.2
- SideKick V1.5 and SideKick Plus V1.0
- PC Tools V6

For PC communication packages to dial voice calls, the modem configuration must be set to **PULSE** (P) dialing (even though the 7400B Plus will use Touch-Tone). If given a choice, set modem type to Hayes 2400 Smartmodem or just Hayes.

Note: While the 7400B Plus supports simultaneous voice and data, the above packages support alternate voice/data **DIALING** only. It is possible to dial a voice call with a data call on hold, but the above voice dialing packages interfere with data operation, by remapping the COM port or by hanging up the data call.

You can dial a data call while on a voice call. In all cases, the linked telephone will work.

PC COMMUNICATIONS PACKAGES

The PC communications package versions documented in this manual are listed in the table below.

PC Communications Packages	
Software Package	Version
CARBON COPY Plus	5.1
Crosstalk XVI	3.71
Crosstalk Mk.4	1.1
Hot Line *	2.2
HyperACCESS	3.32
MicroPhone **	1.5
PC Tools Deluxe *	6
Procomm Plus	1.1B
Relay Gold	3.0
SideKick Plus *	1.0
Smartcom II	2.2
Smartcom II	3.1
Smartcom II **	3.1
Smartcom III	1.1
Smarterm 240	3.0a
Terra Nova	1.1.1
White Knight **	11

* Voice dial PC communications packages

** Macintosh PC communications packages

** A cable is necessary to convert from an 8 or 9 pin RS-232-C connector on the Macintosh to the 25 pin RS-232-C connector on the 7400B Plus.

CARBON COPY PLUS - V 5.1

CARBON COPY Plus is a data communications software package produced by MicroCom.

7400B Plus

The 7400B Plus is configured in the CARBON COPY Plus installation procedure.

Installation Procedure

1 Change to the CARBON COPY Plus directory.

2 At the DOS prompt, type in "**ccinstall.**"

```
435.if 0>0 .nr 38 0/1
        ========CARBON COPY Plus System Parameters (5.1)=======

GENERAL PARAMETERS                  EXIT OPTIONS

A -- Comm Port Address.....COM1     Q -- Quit, changes not saved
B -- Baud Rate.............2400     X -- eXit, changes saved
C -- Modem Type............Hayes V-Series
D -- Keyboard handling.....USA Keyboard
E -- Display TYpe..........Color
F -- Menu Colors...........White on Blue
G -- Working Directory.....C:
H -- Menu Level Options....Advanced

           MENU LIST

1 -- CC Optional Configuration Parameters
2 -- CCHELP Optional Configuration Parameters
c -- Call Table
4 -- Password Table




                    Type letter for selection:
```

Figure 1 CARBON COPY Plus - System Parameters

3 Change the value of the following options by pressing the letter listed next to it. For example, to change the "Comm Port Address" for COM 1 press "**A**" until COM 1 appears.

   a Set the Communication Port Address to which the 7400B Plus is connected (typically COM 1).

   b Set the default Baud Rate (300, 1200, 2400,etc.).

   c Depending on the version of CARBON COPY Plus you are using, select the following for the Modem type:

   - For versions prior to 5.1, choose "**Hayes Compatible.**"
   - For version 5.1, choose "**Hayes V**" series.

Setting Up a Directory Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1 Select the appropriate number for the "Call Table."

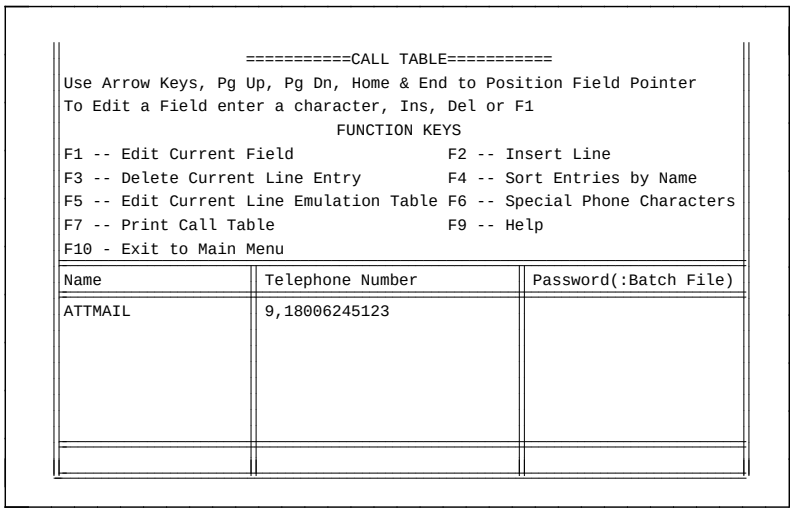


Figure 2 CARBON COPY Plus - Call Table

2 Enter "**ATTMAIL**" in the name field and press < **ENTER**> .

3 Enter "9,18006245123" in the telephone number field and press
< **ENTER**> .

4 Select **"F5"** for the "Edit Current Line Emulation Table."

```
            ============TERMINAL EMULATOR CONFIGURATION============
═══════════════════════════════════════════════════════════════════════════
        Communication PARAMETERS                 ASCII Send Data Filters

A -- Terminal Emulator......VT-100       N -- Discard Line Feeds..No
B -- Communications Speed...Default      O -- Blank Expansion.....No
C -- Word Length............8 bits       P -- Tab Expansion.......No
D -- Parity.................None         Q -- Upper Case only.....No
E -- Stop Bits..............1            R -- Wait Between Lines........
F -- Duplex.................Full
G -- File Transfer Protocol.X-Modem
H -- Backspace / Delete.....Bsp/Ctl-Bsp       More Terminal Options

          Incoming Data Filters          S -- Screen Background...Normal
                                         T -- Number of Columns...80
I -- Filter Incoming Data...Yes          U -- 132 Column Mode...No Adjust
J -- Data Filter Sub-Menu                V -- Control Codes Mode..Interpret
K -- New Line on CR or LF...No
L -- Wrap to Next Line......No           W -- Script file........
M -- Flow Ctrl Stop/Start...^S/^Q        X -- eXit to previous menu
═══════════════════════════════════════════════════════════════════════════
             Press Letter to Toggle Parameter Entry : ESC to Quit
═══════════════════════════════════════════════════════════════════════════
```

Figure 3 CARBON COPY Plus - Terminal Emulator Configuration

5 Change the value of the following options in the figure above 4 by pressing the appropriate letter listed next to that item. For example, to change the "Terminal Emulator" to VT-100 press **"A"** until "VT-100" appears.

6 Set the "Terminal Emulator" value to the type of terminal you need to emulate.

7 Set the following parameters for ATTMAIL:

- **a** Set the "Communications Speed" parameter to **2400.**
- **b** Set the "Word Length" parameter to **8** bits.
- **c** Set the "Parity" parameter to **None.**
- **d** Set the "Stop Bits" parameter to **1.**
- **e** Set the "Duplex" parameter to **Full.**

8 Select **"x"** to return to the Call Table.

9 Select **"F10"** to return to the Main menu.

10 Select **"x"** to exit and save the changes made.

Placing a Call

1. At the DOS prompt, type in: **"cchelp"** and press **< ENTER>** . (Wait a few seconds while CARBON COPY Plus sets up the 7400B Plus.)
2. Select **"F7"** for Terminal Emulation.
3. Select **"ALT M"** to get to the "Terminal Emulator Command Menu."
4. Select **"G"** to call a host system.
5. Move the cursor to the **"ATTMAIL"** entry on the Call Table.
6. Press **< ENTER>** to dial the ATTMAIL directory file.
7. Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1. Select **"ALT M"** to get to the "Terminal Emulator Command Menu."
2. Select the appropriate letter to exit CARBON COPY Plus.

   (Wait a few seconds while CARBON COPY Plus disconnects from the other computer and resets the 7400B Plus.)
3. Select **"F7"** to place another call or select **"F10"** to return to DOS.

CROSSTALK XVI - V3.71

CROSSTALK is a data communications software package produced by Digital Communications Associates.

7400B Plus

The 7400B Plus is configured in CROSSTALK's "Setup" program.

Configuring the Software

1. Change to the CROSSTALK XVI directory.
2. At the DOS prompt, type in: "**xtalk.**"
   The title screen appears for a few seconds, followed by the "Status screen."

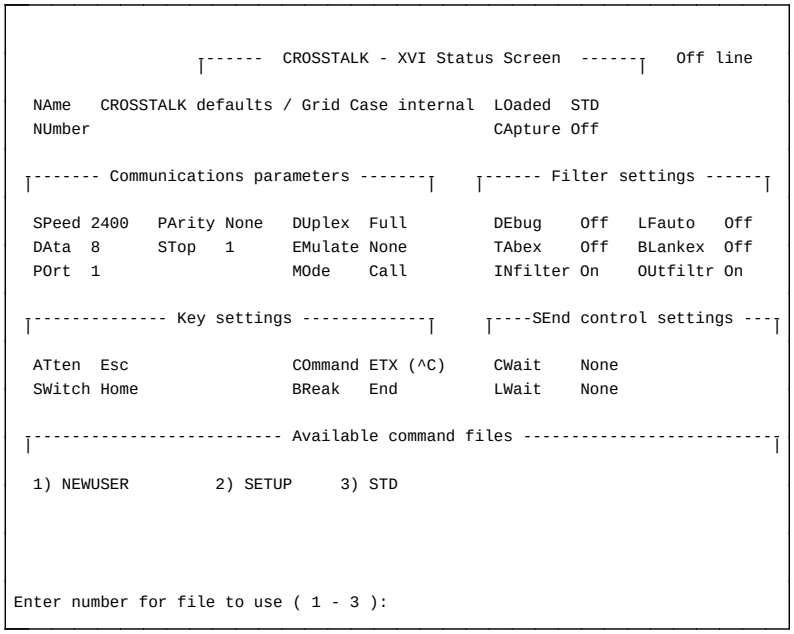


Figure 4 Crosstalk XVI - Status Screen

3. Load the **Setup** file by choosing the number next to the command file **"SETUP"** on your Status screen or press **< ENTER>** to access the command line and type in: **"LO"**ad **"SETUP."**
4. To continue the SETUP program press **< ENTER>** .
5. Select the letter next to **"Hayes Smartmodem (all models)."**
6. Select the letter next to **"Hayes Smartmodem 2400."**
7. Select the communication port to which the 7400B Plus is connected (typically COM1).
8. Press **< ENTER>** (Wait a few seconds as CROSSTALK sets up the 7400B Plus).

9 Select the Baud Rate that will be used most often and press **< ENTER>** .*

10 Select the type of Video Display that you are using and press **< ENTER>** .*

11 Enter **"Y"** to save the new default settings.

12 Press **< ENTER>** to display the Command files on the Status Screen.

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

To create a command file to dial up a computer system that you want to call for the first time, use the **"NEWUSER"** script file.

1 Load the **Newuser** file by either choosing the number next to the command file "**NEWUSER**" on your Status screen or by pressing **< ENTER>** to access the command line and type in: **"LO"**ad **"NEWUSER."**

2 Press **< ENTER>** to continue.

```
Select a modem type from the list below (enter "Z" if modem is not listed).
      A - AT&T (all models)
      B - Bizcomp PC-Intellimodem (internal board)
      C - Bytcom 212 AD
      D - Concord Data Systems Autodial 224
      E - Compaq (all models)
      F - DCA modems (all models)
      G - General DataComm 212 Intelligent Modem
      H - Grid Case internal modem
      I - Hayes Smartmodem (all models)
      J - IBM PC modem or IBM 5841 modem
      K - Lockheed GETEX modem
      L - Multi-Tech (all models, 1200 and 2400 BPS)
      M - Novation modem
      N - Popcom C100 (internal) or Popcom X100 (external)
      O - Racal-Vadic 3451 or Auto-dial VA212
      P - Rixon PC-212a (internal) or Rixon Executive 212
      Q - SmarTEAM modems (all models)
      R - Telebit Trailblazer
      S - U.S. Robotics (all models)
      T - Ven-Tel Modem (all models)
      U - Zoom Telephonics Modem (all models)
      Z - Other modem not listed

Enter modem type (A-U, or Z):_
```

Figure 5 Crosstalk XVI - Services screen

* This option may not be available on earlier versions of CROSSTALK.

3 Select the letter next to ATTMAIL. If it's not listed select **"O"** for "Other service not listed above."

If ATTMAIL is a listed service:

1 Enter **"9,18006245123"** as the telephone number for ATTMAIL.

2 Enter **"2400"** as the Baud Rate.

3 If you want to be automatically logged in each time you are connected to ATTMAIL, enter your account name and password at the prompts, respectively.

4 If you don't want to be automatically logged into ATTMAIL, press **< ENTER>** at both the account name and password prompts, respectively.

5 Enter **"Y"** when asked to make the call.

6 Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

If ATTMAIL is not a listed service:

1 Enter **"9,18006245123"** as the telephone number for ATTMAIL.

2 Enter "ATTMAIL" as the system name you are calling.

3 Enter **"2400"** as the Baud Rate.

4 Enter **"Y"** to save this setup for future use.

5 Enter "ATTMAIL" as the filename for this setup.

6 Enter **"Y"** when asked to make the call.

7 Press **< ENTER>** (CROSSTALK dials the computer and waits for the connection).

8 Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1 Press the **< ESC>** key.

2 Enter **"bye"** at the **"Command?"** and press **< ENTER>** line to disconnect from the other computer.

3 Enter **"quit"** at the **"Command?"** line and press **< ENTER>** to exit CROSSTALK and return to DOS.

CROSSTALK MK.4 - V1.1

CROSSTALK is a data communications software package produced by Digital Communications Associates.

7400B Plus

The 7400B Plus is configured in CROSSTALK's "Setup" program.

Configuring the Software

If installing the software for the first time, leave the **"Outnumber"** and the **"LD"** prefix blank, otherwise disregard the numbers when inputting a telephone number.

1. Change to the CROSSTALK MK.4 directory.
2. At the DOS prompt, enter **"xtalk."**
   (The title screen appears for a few seconds, followed by the Offline menu.)

   Note: If Crosstalk displays the command mode, press **"Alt F10"** to display the Offline menu.

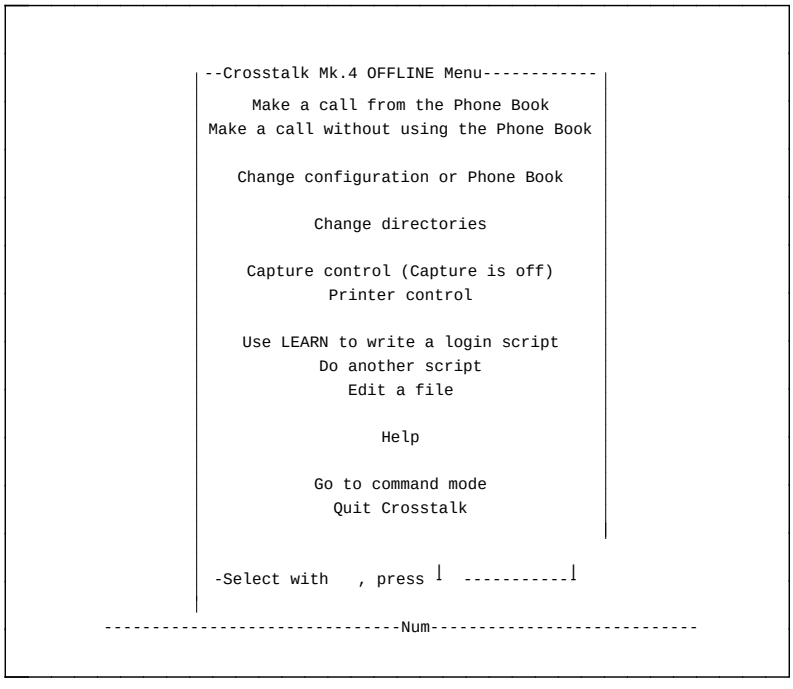


Figure 6 Crosstalk Mk.4 - Offline menu

3. Select the "**Change Configuration or Phone Book**"option from the Offline menu.

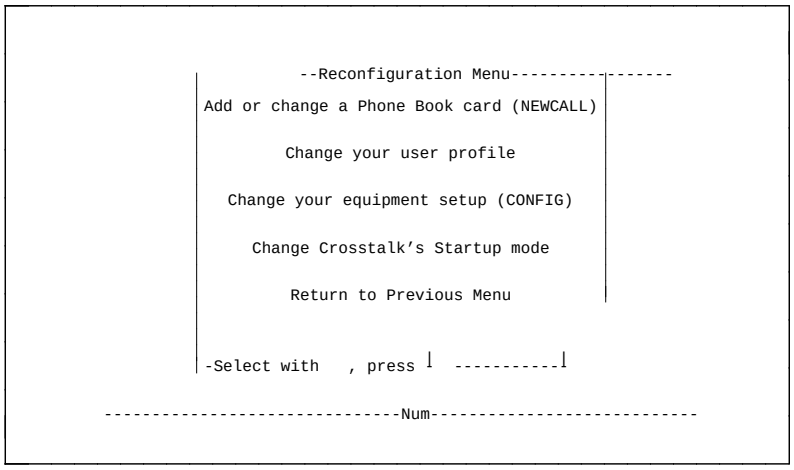


Figure 7 Crosstalk Mk.4 - Reconfiguration menu

4 Select the **"Change your equipment setup (CONFIG)"** option.

5 Press **< ENTER>** to continue the configuration.

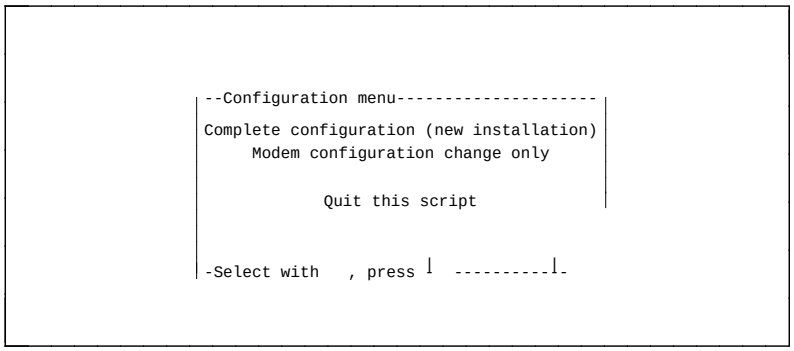


Figure 8 Crosstalk Mk.4 - Configuration menu

6 Select the **"Modem configuration change only"** option.

7 The following screens will ask questions about your communications setup. Provide the following information:

- **a** COM port - The communication port to which the 7400B Plus is connected.
- **b** Modem Speed - The speed that will be used most of the time.
- **c** Modem Brand - **"Hayes Smartmodem (all models)."**
- **d** Modem Type - **"Genuine Smartmodem 2400."**

8 Press **< ENTER>** (Wait a few seconds as CROSSTALK sets up the 7400B Plus).

9 After the setup is complete, press **< ENTER>** to continue.

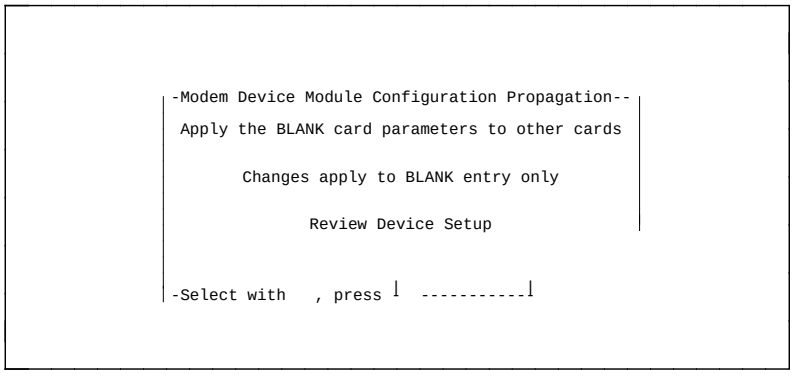


Figure 9 Crosstalk Mk.4 - Modem Device Module Configuration menu

10 Select the **"Changes apply to blank entry only"** option and press **< ENTER>** , or wait momentarily while Crosstalk MK.4 returns to the Reconfiguration menu.

11 Press **< ESC>** to return to the Offline menu.

Placing a Call

Calls can be made directly from Crosstalk's Offline menu. They may be made with or without using the Phone Book.

A) Placing a call from the Phone Book (for existing entries only)

1. Select the **"Make a call from the Phone Book"** option from the Offline menu.
2. Select an entry by using the **Page Up/Page Down** Keys.
3. Press **< ENTER>** to dial the call.
4. Once the call is established, press the **< ENTER>** key to get the login prompt.

B) Placing a call without the Phone Book

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Select the **"Making a call without using the Phone Book"** option from the Offline menu.
2. Select the **"Session Setup"** option.

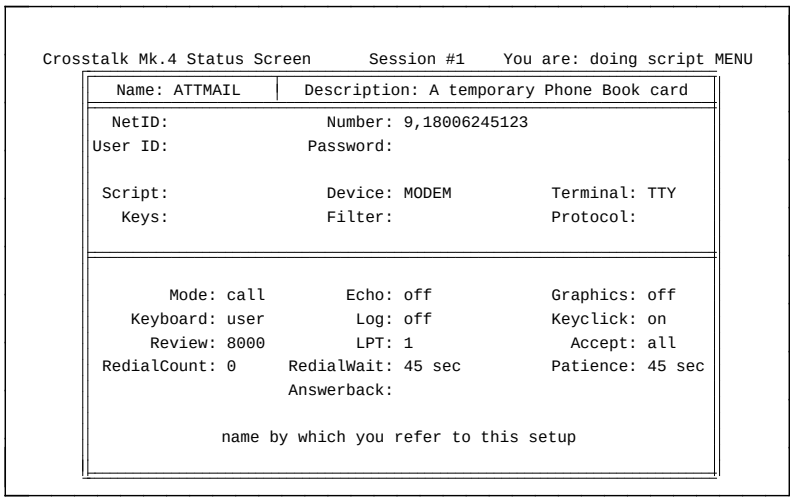


Figure 10 Crosstalk Mk.4 - Session Setup screen

3. Set the call information for this example to match that shown in the figure above.
4. Press **< ENTER>** to move the cursor through the other fields on the screen until the previous menu appears.

5 Select the "**Device Setup**" option.

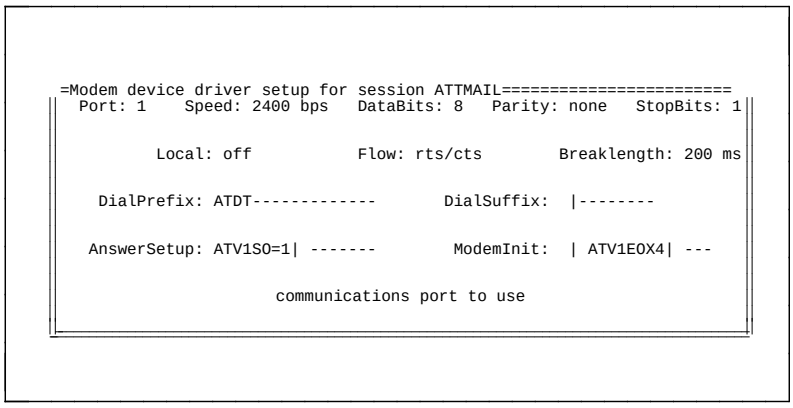


Figure 11 Crosstalk Mk.4 - Modem Device Driver Setup

6 Set the following parameters for ATTMAIL:

- **a** Set the "Port Number" to which the 7400B Plus is connected.
- **b** Set the "Speed" to "**2400.**"
- **c** Set the "Databits" to "**8.**"
- **d** Set the "Parity" to "**None.**"
- **e** Set the "Stopbits" to "**1.**"

7 Press **< ENTER>** to move the cursor through the other fields on the screen until the previous menu appears.

8 **(OPTION) -** This entry can be saved by selecting the "**Save in Phone Book**" option.

9 Select the "**Call**" option (Crosstalk will dial ATTMAIL).

10 Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1 Press "**Alt F10**" to display the Online menu.

2 Select the "**Disconnect from this session**" option.

3 Select the "**Disconnect (Hangup)**" option.

4 Place another call or select the "**Quit Crosstalk**" option to return to DOS.

HOT LINE - V2.2

Hot Line is a voice PC communications package produced by General Information, Inc.

7400B Plus

The 7400B Plus is configured through the Hot Line settings program.

Configuring the Software

1. Change to the Hot Line directory.
2. At the DOS prompt, enter **"hotline/s"**
3. Select **"Settings"** from the Main menu.

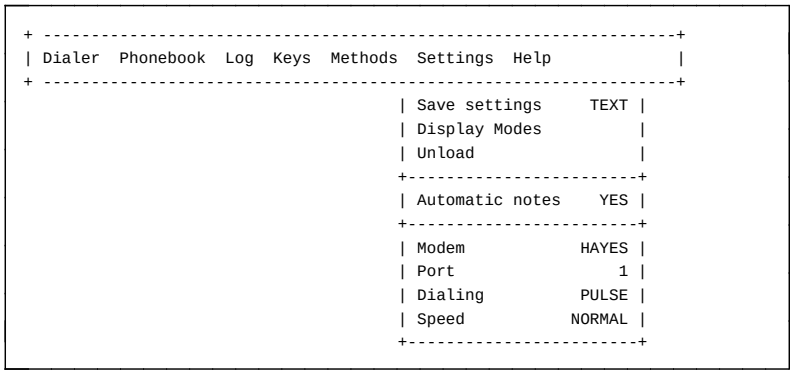


Figure 12 Hot Line - Settings menu

4 Set the Modem type to "**Hayes**", and press <**ENTER**>. The "**Custom modem**" screen is displayed, as shown in the figure below.

   a Set "**Able to dial while off-hook?**" to "**No**".

   b Press <**ENTER**> to save.

```
+-----------------------------------------------------+
| Custom modem                                        |
|                                                     |
| Pulse prefix:   ATDP              Suffix:  ;^M      |
|                                                     |
| Tone prefix:    ATDT              Suffix:  ;^M      |
|                                                     |
| Buffer length:  40             Baud rate:  1200     |
|                                                     |
| Hangup:  ATH^M            Hang up by DTR:  No       |
|                                                     |
| Set dialing speed:  ATS11=###^M>                    |
|                                                     |
| Initialization:                                     |
|                                                     |
| Modem dialing delay (1/10 of seconds): 30           |
|                                                     |
| Able to dial while off-hook?  No                    |
|                                                     |
| Press ENTER to set                 ESC to cancel    |
+-----------------------------------------------------+
```

Figure 13 Hot Line - Custom modem screen

5 Press <**ESC**> to return you to the Setting menu. (Notice that Modem is now set at "**CUSTOM**", as shown in the figure below.)

```
+ ------------------------------------------------------------+
| Dialer  Phonebook  Log  Keys  Methods  Settings  Help       |
+ ------------------------------------------------------------+
                                    | Save settings     TEXT |
                                    | Display Modes          |
                                    | Unload                 |
                                    +------------------------+
                                    | Automatic notes    YES |
                                    +------------------------+
                                    | Modem           CUSTOM |
                                    | Port                 1 |
                                    | Dialing          PULSE |
                                    | Speed           NORMAL |
                                    +------------------------+
```

Figure 14 Hot Line - Settings menu

6 Set the Port address to which the 7400B Plus is connected to "**1**".

7 Set the Dialing method to "**PULSE**".

8 Set the speed to "**NORMAL**".

9 Select **"Save Settings"** on the Settings menu, and press **<ENTER>** to save the settings.

Setting up a Call

Example Setup: (For example purposes, a call to Joe Smith will be used for the setup.)

1 Select **"Dialer"** from the Main menu.

2 Select **"Edit speed dialer"** from the Dialer menu.

3 Press the function key you want to assign to Joe Smith. (Use **"F3"** for example purposes.)

4 On the Speed dial screen, enter the following:
Name: **"Joe Smith"**
Number: **"9>5551212"** (Use "<" or ">" for pause.)
Log these calls? (Press the spacebar to toggle between YES and NO.)

5 When finished, press **<ENTER>** to save or **<ESC>** to cancel.

6 Press **<ESC>** to return you to the Dialer menu.

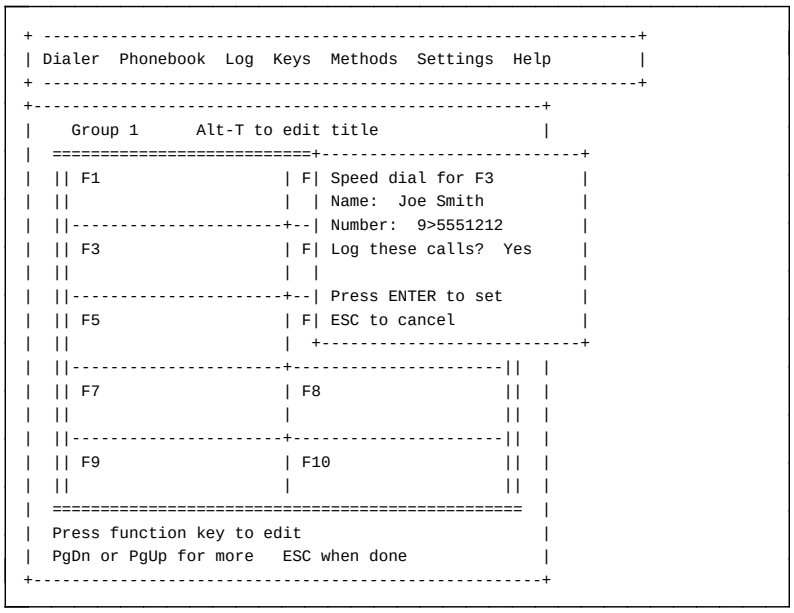


Figure 15 Hot Line - Speed dial screen

Placing a Call

1 Select **"Speed dial"** from the Dialer menu.

2 Press the function key corresponding to the telephone number you want to dial. (The function key block is highlighted, the telephone number replaces the function number, and the prompts change as in figure below.

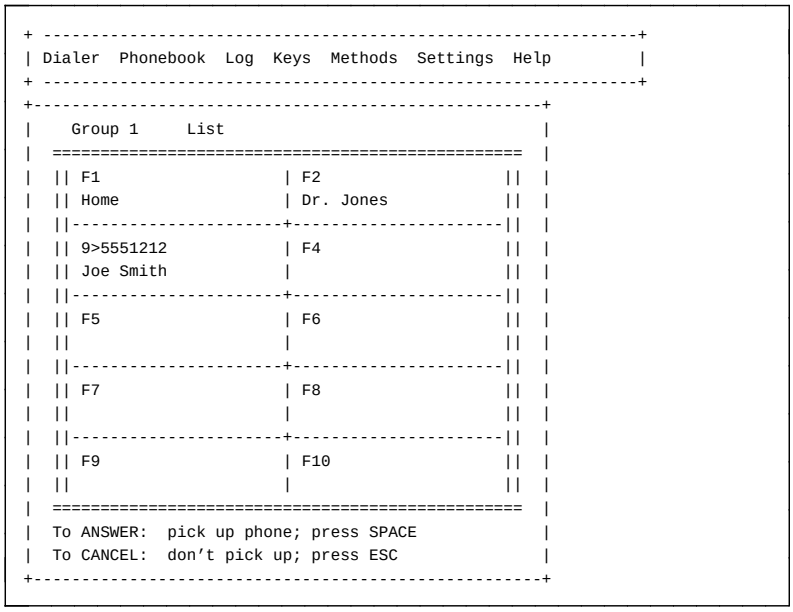


Figure 16 Hot Line - Speed Dial Dialog Box screen

Disconnecting a Call

1 To terminate a call, hang up.

HYPERACCESS - V3.32

HyperACCESS is a data communications software package produced by Hilgraeve, Inc.

7400B Plus

The 7400B Plus is setup through the HyperACCESS Call Setup system.

Configuring the Software

1. Change to the HyperACCESS directory.
2. To begin HyperACCESS type **"ha"** at the DOS prompt.

   (The title screen appears for a few seconds, followed by the Main menu screen.)

```
--------------------------HyperACCESS--------------------------

    Main Menu                        Setup = Call
Press F1-F6 for option or F10 for communications screen


F1 Call             -- Place calls or be a direct-cabled terminal
F2 Answer           -- Answer calls or be a direct-cabled host
F3 Files            -- Set up files for saving or sending data
F4 Use DOS          -- Use DOS commands or other software
F5 Setup            -- Set communications / program options
F6 Quit             -- Exit from HyperACCESS


Save file
  file name = none                                  Revision 3.32
  file size =                                    Serial No. 131655
Send file
  file name = none
  file size =                         Copyright 1987 Hilgraeve Inc.
```

Figure 17 HyperACCESS - Main menu

3. At the Main menu screen select "**F1**" to get the **Call** menu.

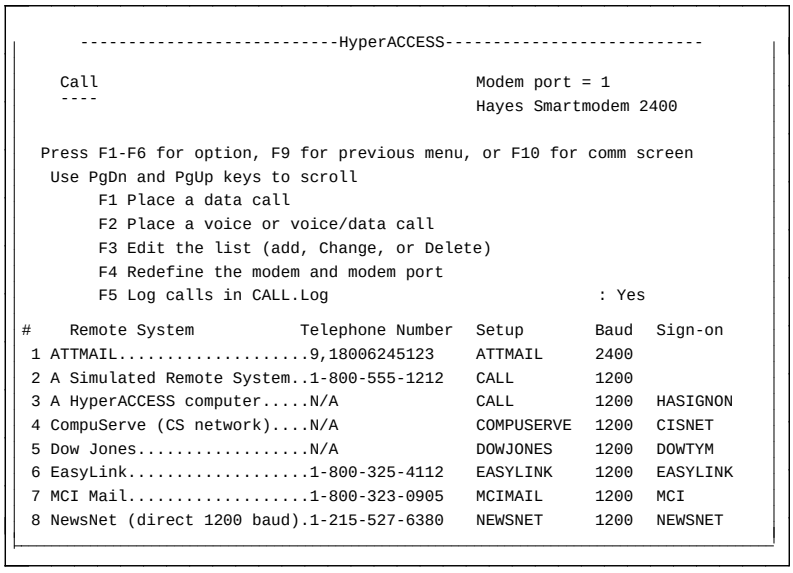


Figure 18 HyperACCESS - Call menu

4 Select **"F4"** to redefine the modem and modem port.

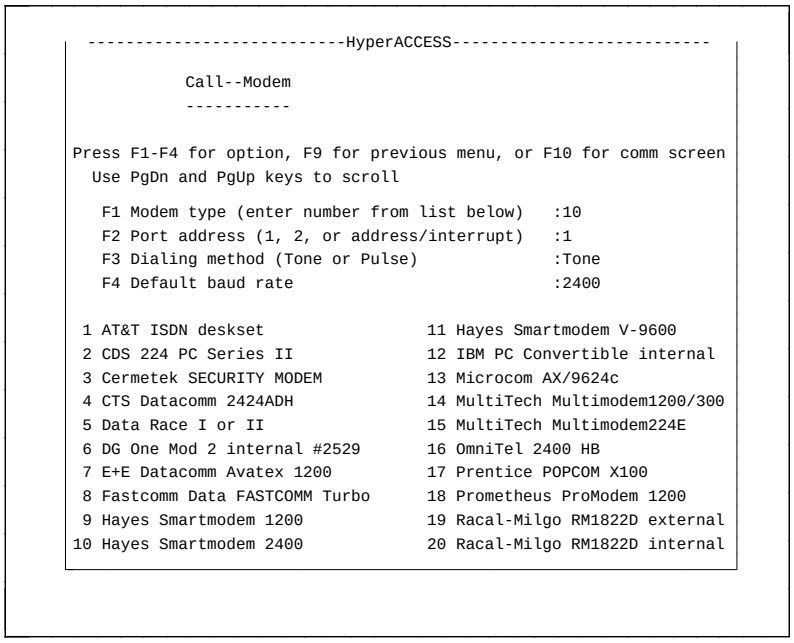


Figure 19 HyperACCESS - Call Modem menu

5 Select the appropriate function keys to setup the following options:

- **a** Set the Modem type to **"Hayes Smartmodem 2400."**
- **b** Set the Port address to which the 7400B Plus is connected.
- **c** Set the Dialing method to **"TONE."**
- **d** Set the Default baud rate to the speed that will be used most frequently (for example 300,1200,2400).

6 Select **"F9"** to return to the Call menu.

Setting Up a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Starting from the Call menu, press **"F3"** to edit the list.
2. Select **"A"** to add an entry and press **< ENTER>**.
3. Enter the line number at which you want to add the entry and press **< ENTER>**.

```
      --------------------------HyperACCESS--------------------------

    Call--Edit
    ----------


  Press F1-F5 for option, F9 for previous menu, or F10 for comm screen
   Use PgDn and PgUp keys to scroll

        F1 Remote system name     : ATTMAIL
        F2 Telephone number       : 9,18006245123
        F3 Setup name             : ATTMAIL
        F4 Baud rate              : 2400
        F5 Sign-on script         :

#    Remote System           Telephone Number  Setup       Baud  Sign-on
 1 ..........................N/A               CALL        2400
 2 A Simulated Remote System..1-800-555-1212   CALL        1200
 3 A HyperACCESS computer.....N/A              CALL        1200  HASIGNON
 4 CompuServe (CS network)....N/A              COMPUSERVE  1200  CISNET
 5 Dow Jones..................N/A              DOWJONES    1200  DOWTYM
 6 EasyLink...................1-800-325-4112   EASYLINK    1200  EASYLINK
 7 MCI Mail...................1-800-323-0905   MCIMAIL     1200  MCI
 8 NewsNet (direct 1200 baud).1-215-527-6380   NEWSNET     1200  NEWSNET
```

Figure 20 HyperACCESS - Call Edit menu

4. Select **"F1"** to enter the remote system name (ATTMAIL) and press **< ENTER>**.
5. Select **"F2"** to enter the telephone number (9,18006245123).
6. Select **"F3"** to enter the setup name (ATTMAIL).
7. Select **"F4"** to enter the baud rate (2400).
8. Select **"F9"** to return to the Call menu.
9. Select **"F9"** to return to the Main menu.
10. Select **"F5"** to Setup Communications.

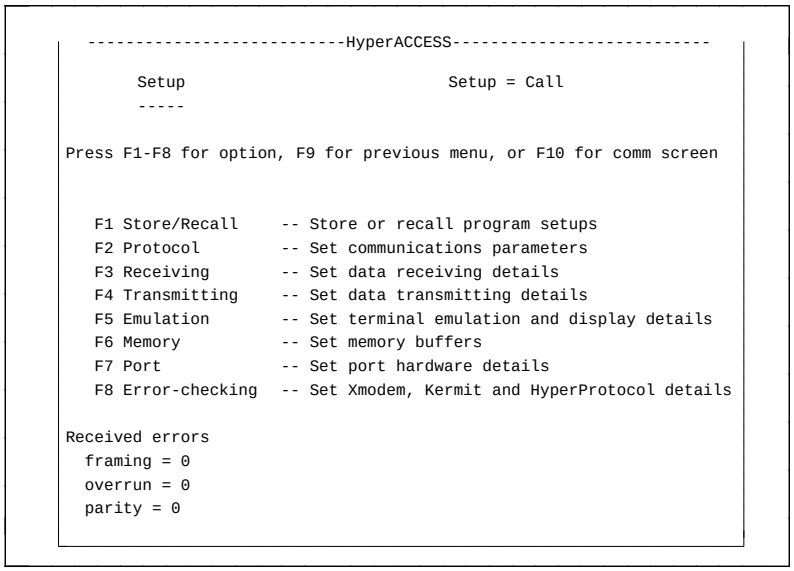


Figure 21 HyperACCESS - Setup menu

11 Select the "**F1**" recall the setup.

12 Select the "**F1**" key again to store the setup.

13 Type in the setup name to be saved (ATTMAIL) and press < **ENTER**>.

14 Press "**F9**" to return to the Setup menu.

Changing the default protocol.

1 Select **"F2"** to set the communication parameters.

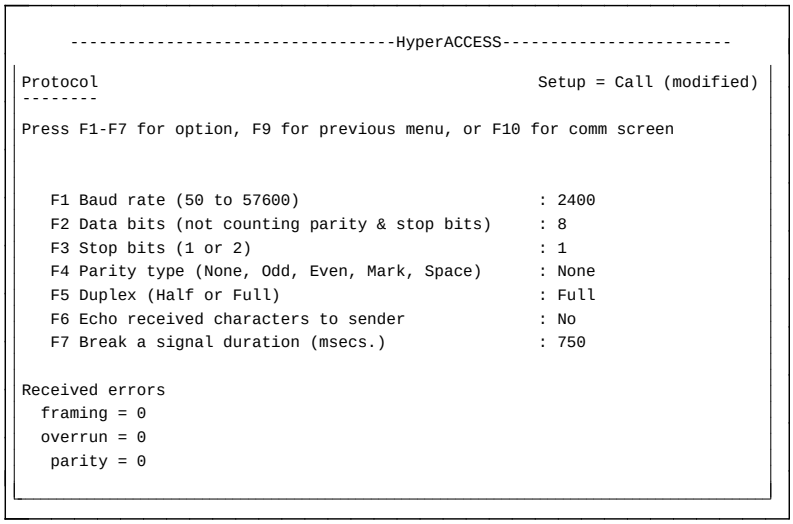


Figure 22 HyperACCESS - Protocol menu

(Set the Protocol Settings for ATTMAIL to match those in the figure above.)

2 Select **"F9"** to return to the Setup menu.

3 Select **"F1"** for the Store/Recall function.

4 Select **"F1"** to store the protocol setup.

5 Type in the setup name for the protocol to be saved under (ATTMAIL).

6 Select **"Y"** to replace the existing Setup.

7 Select **"F9"** to return to the Setup menu.

8 Select **"F9"** to return to the Main menu.

Placing a Call

1. Starting from the Main Menu select **"F1"** to get the Call menu.
2. Press **"F1"** to place a call.
3. Select the number corresponding to ATTMAIL and press **< ENTER>** (HyperACCESS will dial ATTMAIL).
4. Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1. Select **"F7"** to hangup.
2. After the call is terminated, select **"F9"** to return to the Main Menu.
3. Select **"F1"** to place another call, or **"F6"** to exit to DOS.

MICROPHONE - V1.5

MicroPhone is a data communications software package produced by Software Ventures Corporation. The following procedure is based on V 1.5 for use with Macintosh PCs.

7400B Plus

The 7400B Plus is configured in the MicroPhone installation procedure.

Configuring the Software

1. Change to the Microphone directory.
2. Select the **"MicroPhone"** icon from the file menu.
3. Select the **"Settings"** from the Main Communications menu.
4. Choose **"Communications"** from the Settings menu.

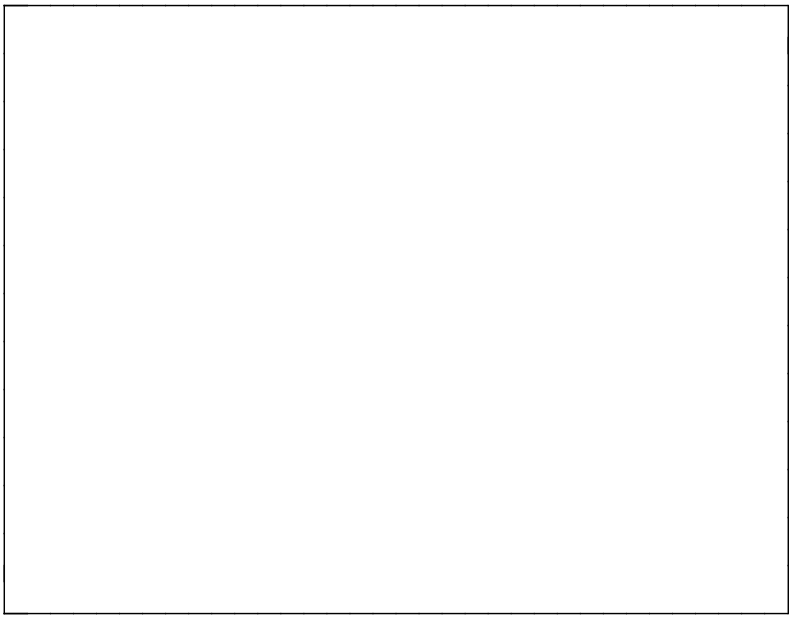


Figure 23 MicroPhone - Settings menu

5 Check that the options displayed on the **"Communications Settings"** screen match those on the screen below. Change any options that do not match.

Figure 24 MicroPhone - Communications Settings screen

6 When you are finished, click **"OK"** to return to the Main communications menu.

Setting Up a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Starting from the Main communications menu, select "**Phone**".
2. Choose "**Set Up Service...**" from the Phone menu.
3. Enter the following on the "**Set Up New Service**" screen.
   a. Service Name: **ATTMAIL**
   b. Phone Number: **9,18006245123**
   c. Dialing Mode: **Tone**
4. Click "**OK**" to save this setup and to return to the Main communications menu.

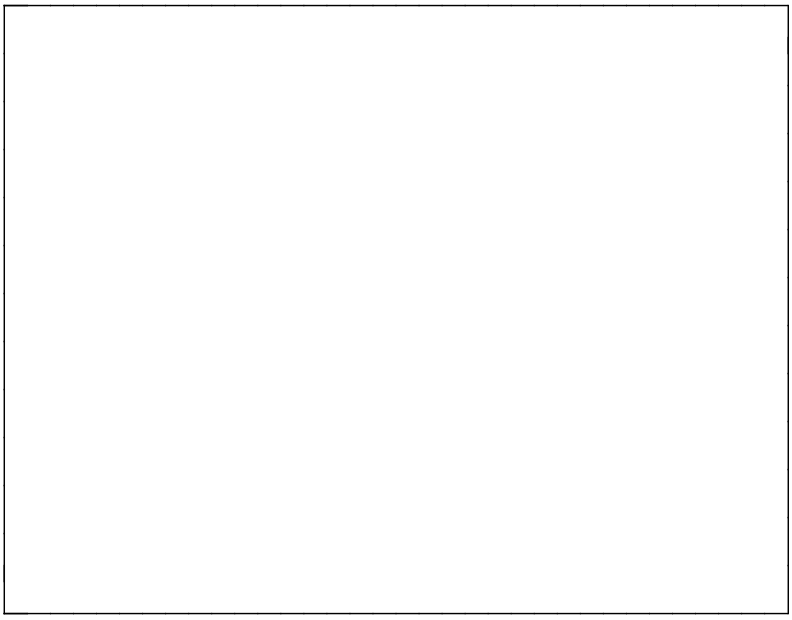


Figure 25 MicroPhone - Set Up New Service Screen

Placing a Call

1. Select **"Phone"** from the Main communications menu.
2. Choose **"ATTMAIL"** from the Phone menu.
3. Wait for a **CONNECT** message.
4. Once the call is established, press **<ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1. Select **"Phone"** from the Main communications screen.
2. Choose **"Hang Up"** from the Phone menu (the 7400B Plus will disconnect).

PC TOOLS DELUXE - V 6

PC TOOLS Deluxe is a voice DOS utility package produced by Central Point Software, Inc. It provides auto-dialer capabilities.

7400B Plus

The 7400B Plus is configured by the PC Setup Program.

Configuring the Software

1. Change to the PC Tools directory.
2. At the DOS prompt, type **"desktop"**.
3. Select **"Databases"** from the main menu.
4. Choose **"Load sample.dbf"** from the Database menu.
5. Select **"Controls"** from the main menu.
6. Choose **"Configure autodial"** from the Controls menu.

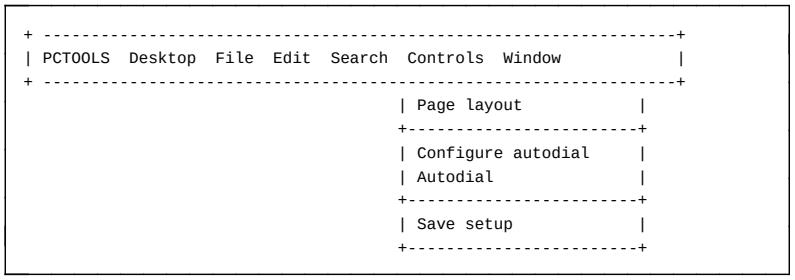


Figure 26 PC Tools - Menu

7 Check that the options displayed on your screen match those on the Configure Autodialer screen below. Change any options that do not match. (The baud rate can be set at any speed).

8 When you are finished, click **"OK"** to save the new transmission settings. The current record is displayed for you to dial the telephone number.

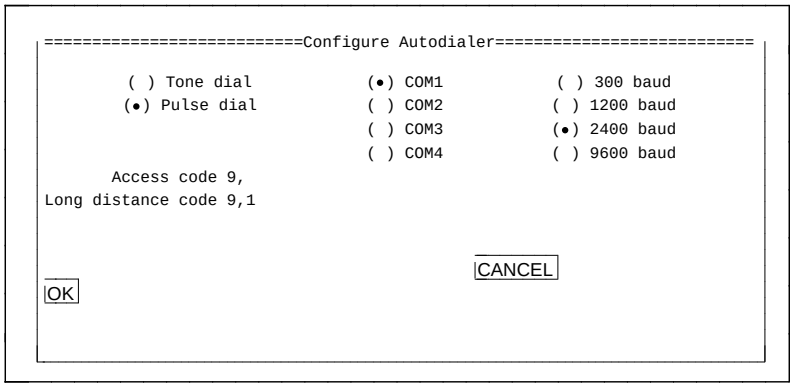


Figure 27 PC Tools - Configure Autodialer screen

Setting Up a Call

Example Setup: (For example purposes, a call to Joe Smith will be used for the setup.)

1. Select **"Edit"** from the Main communications menu.
2. Choose **"Add New Record"** from the Edit menu.
3. Enter the following information on the Edit Phone Directory screen:
   a. **"Company"**
   b. **"Last-Name"**
   c. **"First-Name"**
   d. **"Salut"**
   e. **"Phone"**
   f. **"Address"**
   g. **"City"**
   h. **"State"**
   i. **"ZIP"**
   j. Check that the other default values are correct, and make the changes.

Placing a Call

1. Select **"Controls"** from the Main communications menu.
2. Choose **"Autodial"** from the Controls menu.
3. Select **"Joe Smith"** from the Autodial screen.
4. Select **"Local"** or **"Distant"**.
5. Once the call is established, press **<ENTER>** or **<ESC>**.

Disconnecting a Call

1. To terminate a call, hang up.

PROCOMM PLUS - V 1.1B

PROCOMM Plus is a data communications software package produced by Datastorm Technologies, Inc.

7400B Plus

The 7400B Plus is configured by the Procomm Plus Setup Utility.

Configuring the Software

If Procomm Plus is being installed for the first time, select **"Hayes 2400"** as the modem type.

1. Change to the PROCOMM Plus directory.
2. To begin Procomm Plus, type in **"pcplus"** at the DOS prompt.
3. Enter Terminal Mode by striking any key.
4. Select **"Alt-s"** for the Setup Facility.
5. Select **"Modem Options."**
6. Select **"General Options."**
7. Check that the options displayed match those on the screen below. Change any options that do not match.

```
PROCOMM Plus SETUP UTILITY                          MODEM OPTIONS

A - Initialization command .. ATE1V1X4Q0&C1&D2 S7=255 S0=0^M

B - Dialing command ......... ATDT

C - Dialing command suffix .. ^M

D - Hangup command ..........    +++   ATH0^M

E - Auto answer command .....    +++   ATS0=1^M

F - Wait for connection ..... 45 seconds

G - Pause between calls ..... 4 seconds

H - Auto baud detect ........ ON

I - Drop DTR to hangup  ..... YES

J - Send init if CD high .... YES

      Alt-Z: Help | Press the letter of the option to change: | Esc: Exit
```

Figure 28 Procomm Plus - Modem Options

8. When finished, press the < **ESC**> key.
9. Select **"Result Messages."**

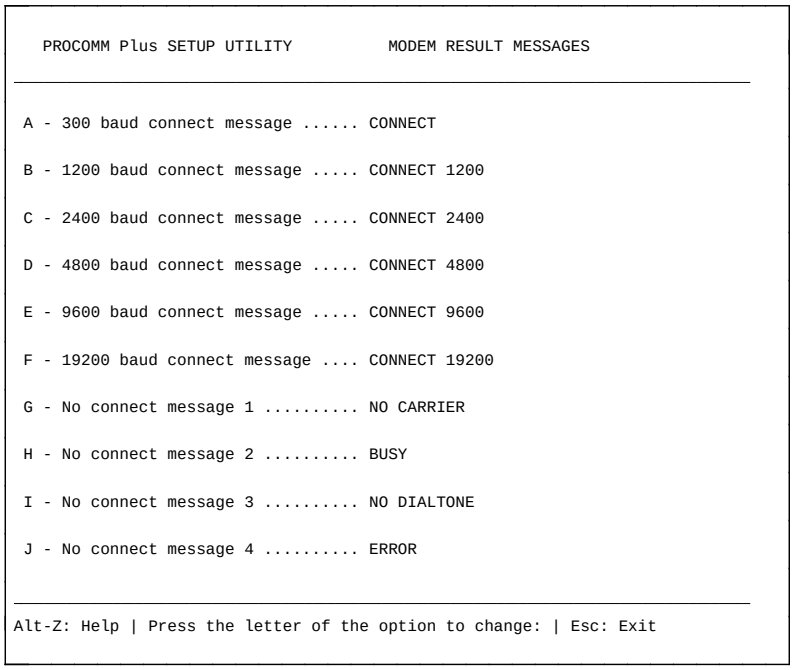


Figure 29 Procomm Plus - Modem Result Messages

1. Check that the messages shown on the screen match those in the above figure. It is likely that you will have to add messages for options D, E, and F. The connect message in option F should read, "**Connect 1920**" to work correctly at 19.2 kbps.
2. Press < **ESC**> twice to return the Main menu of the Procomm Plus Setup Utility.
3. Select "**Save Setup Options**" and press < **ENTER**>.
4. Press the < **ESC**> key to return to the Terminal Mode Screen.
5. Press "**Alt-x**" to exit from Procomm Plus.
   (It is necessary to exit and restart Procomm Plus to properly configure the 7400B Plus.)
6. Select "**Y**" to exit Procomm Plus and return to DOS.
7. Type "**pcplus**" at the DOS prompt to restart Procomm Plus.

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Starting at the Terminal Mode Screen, select "**Alt-d**" to get into the dialing directory.
2. Use the arrow keys to select an available entry line.
3. Select "**R**" to revise the entry.

```
 DIALING DIRECTORY: PCPlus
──────────────────────────────────────────────────────────────────────────────

      NAME                                    NUMBER  BAUD P D S D  SCRIPT
   1 ATTMAIL                          9,1800-624-5123 2400 N-8-1 F
   2                                                  2400 N-8-1 F
   3                                                  2400 N-8-1 F
   4                                                  2400 N-8-1 F
   5                                                  2400 N-8-1 F
   6                                                  2400 N-8-1 F
   7                                                  2400 N-8-1 F
   8    |--| Revise Entry 1 |-----------------|       2400 N-8-1 F
   9    |       NAME: ATTMAIL                |       2400 N-8-1 F
  10    |     NUMBER: 9,1800-624-5123        |       2400 N-8-1 F
---------|       BAUD: 2400                   |--------------------------------
  PgUp S |     PARITY: NONE                   | e Entry      C Clear Marked
  PgDn S |  DATA BITS: 8                      |  Entry(s)    L Print Directory
  Home F |  STOP BITS: 1                      | Entry        P Dialing Codes
  End La |     DUPLEX: FULL                   | Again        X Exchange Dir
  Esc Ex |     SCRIPT:                        | Entry        T Toggle Display
---------|   PROTOCOL: XMODEM                 |-------------------------------
  Choice |   TERMINAL: VT102                  |
──────────────────────────────────────────────────────────────────────────────
   PORT: COM1    SETTINGS:  2400 N-8-1  DUPLEX: FULL   DIALING CODES:
```

Figure 30 Procomm Plus - Dialing Directory

4. Enter the following information into the Dialing Directory of Procomm Plus. The information listed below is also shown in the above figure.
   - **a** Enter "**ATTMAIL**" for the name.
   - **b** Enter "**9,1800-624-5123**" for the number.
   - **c** Enter "**2400**" for the baud rate.
   - **d** Enter "**None**" for the Parity.
   - **e** Enter "**8**" for the Data Bits.
   - **f** Enter "**1**" for the Stop Bit.
   - **g** Enter "**Full**" for the Duplex.

5 Press < **ENTER**> to save the entry.

6 Press < **ENTER**> again to dial ATTMAIL.

Note: Once a connection is established "CONNECT 2400" will flash on the screen and you will automatically be returned to the Terminal Mode Screen.

7 Press < **ENTER**> to get the ATTMAIL login prompt.

Disconnecting a Call

1 To terminate a call, press "**Alt-h.**"

2 Once the call is terminated, select "**Alt-d**" to return to the Dialing Directory or select "**Alt-x**" to exit to DOS.

RELAY GOLD - RELEASE 3.0

RELAY GOLD is a data communications software package produced by Relay Communications, Inc.

7400B Plus

The 7400B Plus can be configured in the Relay Gold installation procedure for a first time install or the parameters can be modified from within the application.

Configuring the Software

1. Change to the RELAY GOLD directory.
2. At the DOS prompt, type in "**relay.**"
3. Select "**F4**" to set the Personal Computer options.
4. Depending on which port the 7400B Plus is connected to, move the cursor to its "Modem Type" field for COM 1 or COM 2, respectively.
5. Press "**F10**" to list the modem types available.
6. Select the letter that corresponds to the "**Hayes Smartmodem 2400 or compatible.**"

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

```
RELAY Gold  (c) Copyright 1985,88 RELAY Communications, Inc. OFFLINE

                        Your PC ID is: relay.gold

                  F1 = Call a HOST

                  F2 = Answer a Call From A PC

                  F3 = Review the Directory of Computers

                  F4 = Set Personal Computer Options

                  F6 = Edit a File

                  F7 = Print Files

                  F8 = Run a Program

                  F9 = Stop Printer or Script


            Esc = Exit     F10 = HELP      Alt K = More Keys
```

Figure 31 Relay Gold's - Offline menu

1 Starting from the Offline menu, select "**F3**" to review the "Directory of Computers."

2 Move the cursor down to an entry you would like to use as your model. (Connect options will be defaulted to that of the model entry.)

3 Select "**F3**" to add a new name into the directory.

4 Type in "**ATTMAIL**" for the new entry name.

5 Press < **Tab**> to move the cursor to the number field.

6 Enter "**9,18006245123**" for the ATTMAIL telephone number.

7 Press < **Tab**> to move the cursor to the speed field.

8 Enter "**2400**" for the speed.

9 Press < **Tab**> to move the cursor to the type field.

10 Enter the type of terminal you want Relay Gold to emulate (for example, VT100 or VT220).

11 Select "**F4**" to review the connect options.

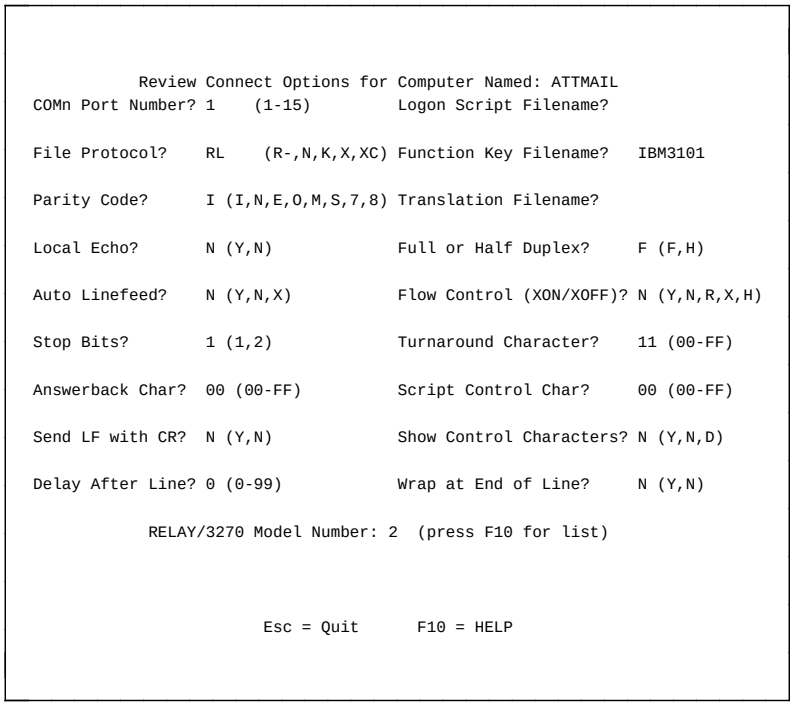


Figure 32 Relay Gold - Connect Options

12 Review the Connect Options, although the following information is usually the default, it is essential to properly make a call to ATTMAIL.

a Set the COM Port to which the 7400B Plus is connected.

b Set the Parity selected to **(N) None**.

c Set the Stop Bits to **1**.

d Set Duplex to **Full**.

13 Press **<ENTER>** to save any changes made and to return to the "Directory of Computers."

14 Select **"F1"** to call ATTMAIL (Relay Gold will dial ATTMAIL).

Disconnecting a Call

1 Press **<ESC >** to return to the Online menu.

2 Select **"ALT F2"** to hang up and return to the Offline menu.

3 Select **"F3"** to place another call, or press **<ESC >** to exit Relay Gold and return to DOS.

SIDEKICK PLUS - V1.0

Side Kick is a voice PC communications package produced by Borland International, Inc.

7400B Plus

The 7400B Plus is configured through the SideKick Plus INSTALL program.

Configuring the Software

1. Change to the SideKick Plus directory.
2. At the DOS prompt, type in "skplus."
3. Activate SideKick Plus by pressing **"Ctrl""Alt"**
4. Select **"Phonebook"** from the Main menu, and press **<ENTER>**.
5. Press **"F10"** on the Phonebook screen.
6. Select **"Communications"** from the Summary menu, and press **<ENTER>**.
7. Select the following, as shown in the Communications window below:
   a. Type: VOICE
   b. Line: COM1
   c. Dial Method: PULSE
8. Press **<ESC>** to save your changes and return you to the Summary menu.

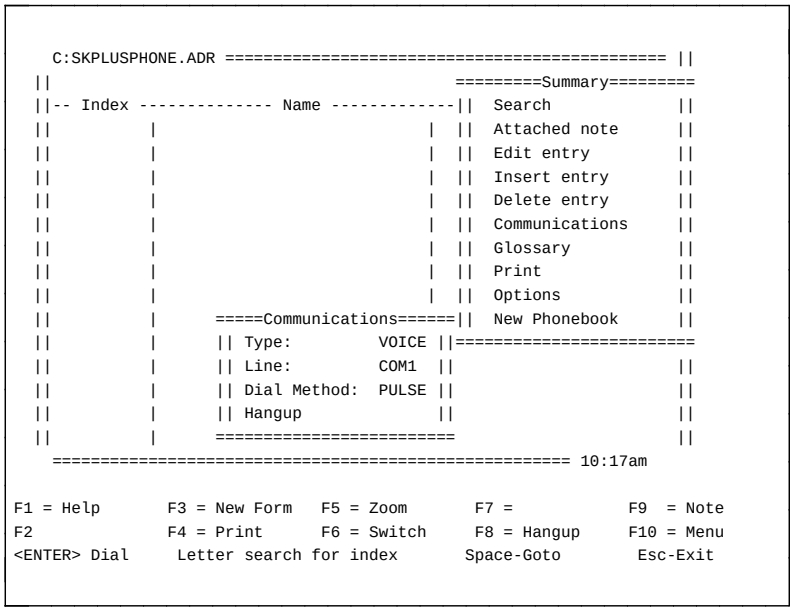


Figure 33 SideKick Plus - Summary menu and Communications window

Placing a Call

Example Setup: (For example purposes, a call to Joe Smith will be used for the setup.)

1. Select "**Insert Entry**" from the Summary menu.
2. Enter the following information on the New Form screen. (The Phonebook ignores spaces, hyphens, and parentheses in phone numbers.)

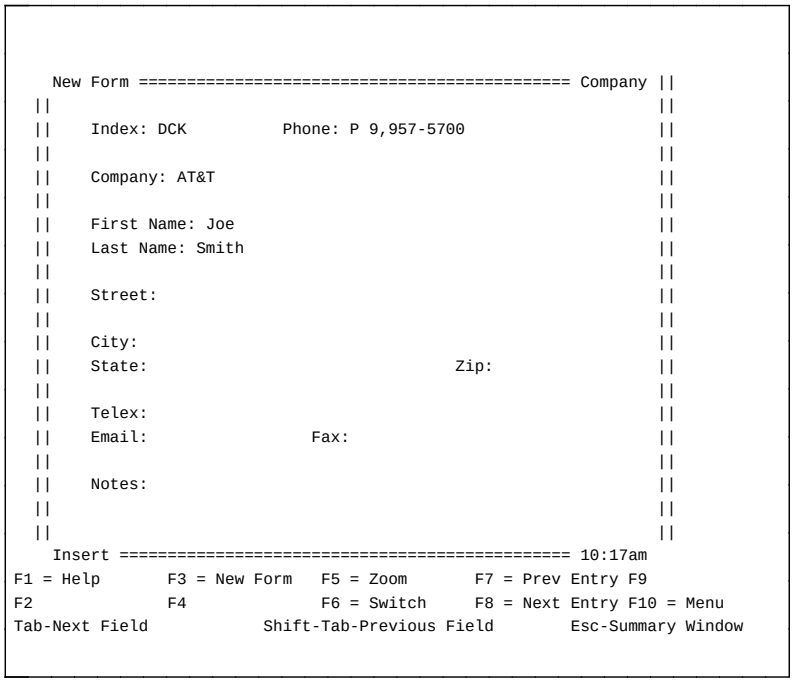


Figure 34 SideKick Plus - New Form screen

3 Press **<ESC>** to store the form and return you to the Phonebook screen. (The Phonebook screen displays an alphabetically sorted index of all entries saved in the New Form screen.)

4 Select the entry you want to call from the Phonebook screen, and press **<ENTER>**.

   a A dialing message is displayed, as shown below.

   b Followed by a second message, *Press any key when connection is established.*

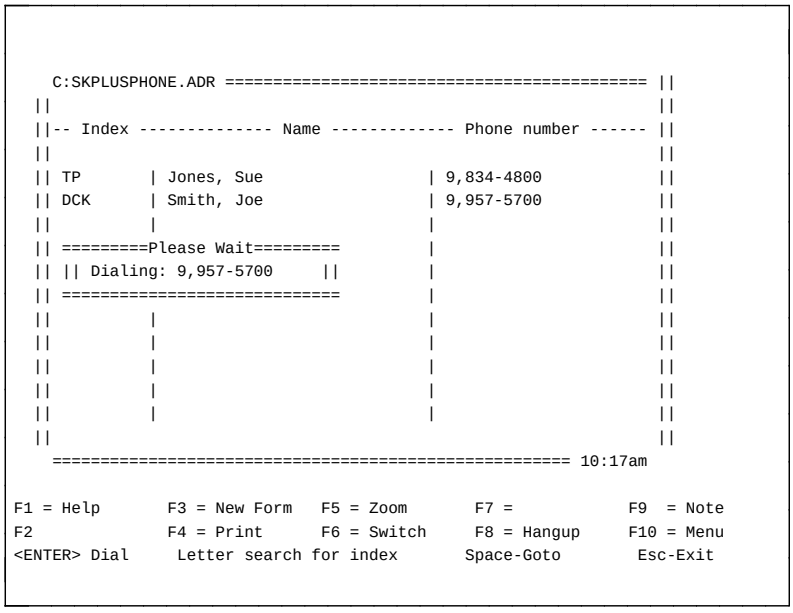


Figure 35 SideKick Plus - Summary screen

Disconnecting a Call

1 Hang-up.

SMARTCOM II - PRIOR TO VERSION 3.1

SMARTCOM is a data communications software package produced by Hayes Microcomputer Products, Inc.

7400B Plus

The 7400B Plus is set up in Smartcom II's Direct Mode.

Caveats

1. When originating calls, the type of connection **must always** be set to DIRECT CONNECTION.
2. When setting the Remote Access feature, the connection type selected should be either *CCITT 1200* or *CCITT 2400.*
3. When selecting a file transfer protocol, *xmodem* should be selected.

Configuring For Direct Mode

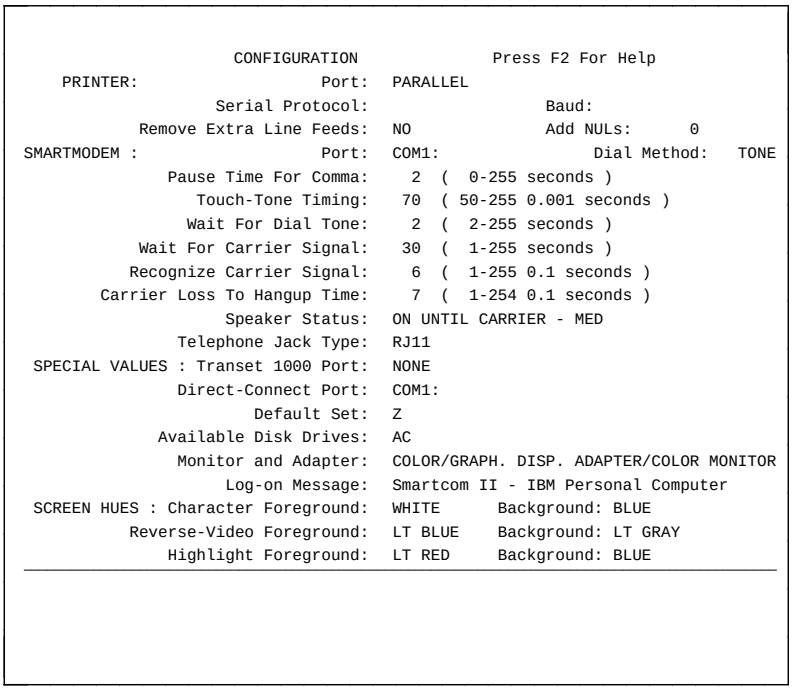
1. Change to the SMARTCOM II directory.
2. At the DOS prompt type in **"scom"** to load in Smartcom II.

```
     Smartcom II       Hayes Microcomputer Products, Inc.

1. Begin Communication *. Receive File           7. Change Printer Status (OFF)
2. Edit Set            *. Send File              *. Select Remote Access (OFF)
3. Select File Command 6. Change Configuration   9. Display Disk Directory (OFF)
A,C - Change Drive                               0. End Communication/Program
                       Press F2 for Help
Enter Selection: 1     Press F1 To Return On-Line
                    Dials or answers phone with Smartmodem
```

Figure 36 Smartcom II - MAIN Menu

3. Select **"6"** for the **"Change Configuration"** menu at the Enter Selection prompt.



```
                    CONFIGURATION              Press F2 For Help
   PRINTER:                    Port:  PARALLEL
                  Serial Protocol:                  Baud:
           Remove Extra Line Feeds:  NO              Add NULs:      0
SMARTMODEM :                   Port:  COM1:                Dial Method:   TONE
             Pause Time For Comma:     2  (  0-255 seconds )
                Touch-Tone Timing:    70  ( 50-255 0.001 seconds )
              Wait For Dial Tone:     2  (  2-255 seconds )
          Wait For Carrier Signal:    30  (  1-255 seconds )
         Recognize Carrier Signal:     6  (  1-255 0.1 seconds )
      Carrier Loss To Hangup Time:     7  (  1-254 0.1 seconds )
                  Speaker Status:  ON UNTIL CARRIER - MED
              Telephone Jack Type:  RJ11
 SPECIAL VALUES : Transet 1000 Port:  NONE
              Direct-Connect Port:  COM1:
                      Default Set:  Z
            Available Disk Drives:  AC
              Monitor and Adapter:  COLOR/GRAPH. DISP. ADAPTER/COLOR MONITOR
                   Log-on Message:  Smartcom II - IBM Personal Computer
 SCREEN HUES : Character Foreground:  WHITE      Background: BLUE
          Reverse-Video Foreground:  LT BLUE     Background: LT GRAY
              Highlight Foreground:  LT RED      Background: BLUE
```

Figure 37 Smartcom II - Configuration Menu

4 Set the Dial Method option to **"TONE"** and the Port and Direct Connect Port option to either **"COM 1"** or **"COM 2"** (The port to which the 7400B Plus is connected).

5 After the options are set, press the down arrow until "**Record to Disk? (Y/N):**" appears on the bottom of the screen.

6 Save the new set of options.

Setting the Call Parameters

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Select "**2**" (Edit Set) from the MAIN menu at the Enter Selection prompt.
2. Select "**S**" (Set).
3. Select the letter next to the ATTMAIL set or if one does not exist select a blank set.
4. Select "**P**" (Parameters).
5. If you have chosen a blank set, enter "**ATTMAIL**" for the label.

```
                                  PARAMETERS
        Name of Set: Q - ATTMAIL                    Press F2 For Help

         TRANSMISSION PARAMETERS                  KEYBOARD DEFINITIONS
             Duplex:Full                            Escape Key:128 (F1)
     Connection Type:DIRECT 2400                      Help Key:129 (F2)
Character Processing:FORMATTED                      Printer Key:130 (F3)
  Show Control Codes:NO                             Capture Key:131 (F4)
         Page Pause:NO                           Macro Prefix Key:132 (F5)
   Show Status Lines:YES                                Break Key:133 (F6)
       Confidential:NO                            Break Length: 35 (0.01 sec.)
  Include Line Feeds:NO                             Protect Key:134 (F7)
    Character Delay:  0 (0.001 sec.)
         Line Delay:  0 (0.01 sec.)                 PROTOCOL PARAMETERS
   Character Format:8 DATA + NONE + 1 STOP     Receive Time-out:60 (sec.)
           Emulator:TTY                           Send Time-out:10 (sec.)
                    Error-Free Protocol:                HAYES
          TELEPHONE PARAMETERS           Stop/Start- Stop Char:19 (DC3)
     Answer On Ring:1                                 Start Char:17 (DC1)
      Remote Access:NONE  Password:        Send Lines- EOL Char:10 (LF)
       Phone Number:                                  Prompt Char:32 (LF)
```

Figure 38 Smartcom II - Parameters menu

6. Set the following parameters for ATTMAIL:
   a. Set the Connection Type to "**DIRECT 2400.**"
   b. Set the Character Format to "**8 DATA + NONE + 1 STOP.**"
   c. Set the Emulator to the type of terminal you need to emulate.
7. After the parameters are set, press the down arrow until "**Record to Disk? (Y/N):**" appears on the bottom of the screen.
8. Save the new set of options.

Building a Macro

Two macros must be created to operate the 7400B Plus with Smartcom II. A macro for initialization of the unit and the other for terminating the call.

Initialization Macro

1. Select "**2**" (Edit Set) from the Main menu at the Enter Selection prompt.
2. Select "**S**" (Set).
3. Select the letter next to ATTMAIL.
4. Select "**M**" (Macros).
5. Select macro "**Z**" (Automatic Logon) to initialize the 7400B Plus.
6. Enter the information, shown the figure below, into the macro field.

```
                    MACRO DEFINITION          Press F2 For Help
Name Of Macro: Z - Automatic Log-On      Set: Q - ATTMAIL
Time-out  Prompt     Data                                    Send CR
--------  ------     ------------------------------------    -------
    0      0 (off)   atz^^                                    YES
    1      0 (off)   at &c1 &d2 e1 v1                         YES
    1      0 (off)   atdt9,1-800-624-5123                     YES









                  R(ecord, I(gnore, E(race: R
```

Figure 39 Smartcom II - Initialization macro

7. Press < **ESC**> to select the macro options (Record, Ignore, Erase).
8. Select "**R**" to record the macro.

Call Disconnect Macro

1. Select "**2**" (Edit Set) from the Main menu at the Enter Selection prompt.
2. Select "**S**" (Set).
3. Select the letter next to ATTMAIL.
4. Select "**M**" (Macros).
5. Select a macro (excluding Z) for the disconnect macro.
6. Type in the information shown in the figure below into the macro field.

```
                      MACRO DEFINITION          Press F2 For Help
Name Of Macro: H - Hangup                Set: Q - ATTMAIL
Time-out  Prompt     Data                                    Send CR
--------  ------     ------------------------------------    -------
    0      0 (off)   +++                                      NO
    2      0 (off)   at0                                      YES









                   R(ecord, I(gnore, E(race: R
```

Figure 40 Smartcom II - Call Terminating macro

7. Press < **ESC**> to select the macro options (Record, Ignore, Erase).
8. Press "**R**" to record the macro.

Placing a Call

1. Select "**1**" (Begin Communication) from the Main menu at the Enter Selection prompt.
2. Select "**O**" to Originate the call.
3. Select the "ATTMAIL" set (wait a few seconds while Smartcom II places a call to ATTMAIL).
4. Once the call is established, press < **ENTER**> to get the ATTMAIL login prompt.

Disconnecting a Call

1. To terminate the call, press **"F5"** and the appropriate letter for the disconnect macro.
2. Press **"F1"** to return to the Main menu.
3. Select **"0"** (End Communication/Program) at the Enter Selection prompt.
4. Select **"H"** to hang up, Smartcom II will reset automatically.
5. To place another call, repeat the steps in the "Placing a Call" section or select **"0"** and press **"E"** to exit Smartcom II.

PC to PC Calls

On PC to PC calls, the call originator and the call receiver should refer to the sections for "Configuring the Direct Mode," "Setting the Call Parameters," "Building a Macro," and "Placing a Call".

In addition to this, the call receiver should use the guidelines below to set the PC to answer calls automatically.

1. Edit the Automatic Log-on macro by replacing the **atdt<phone#>** entry with **ats0=1**.
2. At the Main Menu, select **O** to *Originate a call*.

SMARTCOM II - V 3.1

SMARTCOM is a data communications software package produced by Hayes Microcomputer Products, Inc.

7400B Plus

The 7400B Plus is set up through Smartcom II's **DIRECT MODEM CONTROL OPTION**.

Caveats

1. For PC to PC calls, it is recommended that both the call originator and the call receiver choose the connection type to be DIRECT CONNECTION.
2. The Remote Access feature works only if the 7400B Plus that is being called is accessed via a modem pool.
3. Select the error-free protocol to be *xmodem*.

Configuring the Software

To configure the program to use the DIRECT MODEM CONTROL OPTION, you must replace the standard modem control file **MODEM.OVL** with the new modem control file **NEWMODEM.OVL** by doing the following:

1. Change to the disk or directory that contains the Smartcom II file MODEM.OVL.
2. Rename the file MODEM.OVL to OLDMODEM.OVL by typing in:

   "**REN MODEM.OVL OLDMODEM.OVL <ENTER>**"
3. Copy the file NEWMODEM.OVL to MODEM.OVL by typing in:

   "**COPY NEWMODEM.OVL MODEM.OVL <ENTER>**"

4 Access the Smartcom II utility program SCOMMDM.EXE by typing in: "**SCOMMDM.**"

The following screen is displayed:

```
                          MODEM CONFIGURATION

                 COMMANDS:  Initialize 1:   ATEO V1 QO X1 S0-0 & C1 & D2

                            Initialize 2:

                                    Dial:   ATDT

                             Auto Answer:   ATS0=1

                                  Hangup:   ATHO

                          Escape Sequence:   +++

                        Escape Guard Time:   1100 ( 0-5100 0.001 seconds )

                 RESULT CODE:  Connection:   CONNECT

       These commands are sent to the modem when the program begins.
    Save and Exit: F1        Default Setting: F2              Quit: ESC
```

Figure 41 Smartcom II - SCOMMDM.EXE File

5 Set the commands for the Modem Configuration to match those in the figure above.

6 Press **F1** to save and exit.

Configuring the Software

To configure the software do the following:

1 To display the Main menu, type "**scom**" at the DOS prompt.

```
  Smartcom II v3.1    Hayes Microcomputer Products, Inc.

1. Begin Communication *. Receive File          7. Change Printer Status (OFF)
2. Edit Set            *. Send File             *. Select Remote Access (OFF)
3. Select File Command 6. Change Configuration  9. Display Disk Directory (OFF)
A,B - Change Drive                              0. End Communication/Program
                       Press F2 for Help
Enter Selection: 1     Press F1 To Return On-Line
                    Dials or answers phone with Smartmodem
```

Figure 42 Smartcom II - Main menu

2 Select **"6"** for the "Change Configuration" menu at the "Enter Selection" prompt.

```
                    CONFIGURATION              Press F2 For Help
   PRINTER:                    Port:  PARALLEL
                   Serial Protocol:                  Baud:
           Remove Extra Line Feeds:  NO              Add NULs:      0
SMARTMODEM :                   Port:  COM1:                Dial Method:   TONE
              Pause Time For Comma:    2  (  0-255 seconds )
                 Touch-Tone Timing:   70  ( 50-255 0.001 seconds )
               Wait For Dial Tone:    2  (  2-255 seconds )
           Wait For Carrier Signal:   30  (  1-255 seconds )
         Recognize Carrier Signal:    6  (  1-255 0.1 seconds )
       Carrier Loss To Hangup Time:    7  (  1-254 0.1 seconds )
                   Speaker Status:  ON UNTIL CARRIER - MED
              Telephone Jack Type:  RJ11
 SPECIAL VALUES : Transet 1000 Port:  NONE
              Direct-Connect Port:  NONE
                       Default Set:  Z
            Available Disk Drives:  AB
                  Log-on Message:  Smartcom II v3.1 - IBM PC
           Default Printer Status:  OFF
 SCREEN HUES : Character Foreground:  GREEN      Background: BLACK
          Reverse-Video Foreground:  WHITE      Background: BLUE
              Highlight Foreground:  LT RED     Background: BLACK
```

Figure 43 Smartcom II - Configuration menu

3 Set the options to match those shown on the Configuration menu.

4 After all the options are set, press the down arrow until "**Record to Disk? (Y/N):**" appears on the bottom of the screen.

5 Save the new set of options.

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Select **"2"** (Edit Set) from the Main menu.
2. Select **"S"** (Set).

```
   Smartcom II v3.1     Hayes Microcomputer Products, Inc.

 1. Begin Communication  *. Receive File         7. Change Printer Status (OFF)
 2. Edit Set             *. Send File            *. Select Remote Access (OFF)
 3. Select File Command  6. Change Configuration 9. Display Disk Directory (OFF)
 A,B - Change Drive                              0. End Communication/Program
                         Press F2 for Help
 Enter Selection: 2      P(arameters, M(acros, R(eports, C(opy, S(et, B(atch: S
 Enter Label: Z

Communication Directory:
 A - CompuServe Direct   J - OAG EE Telenet      S - GEnie GEISCO
 B - CompuServe Telenet  K - OAG EE Tymnet       T - Telemail Telenet
 C - CompuServe Tymnet   L - OAG EE Datapac      U - EasyLink W. Union
 D - CompuServe Datapac  M - THE SOURCE          V - ATTMAIL
 E - DJN/R Telenet       N - THE SOURCE Datapac  W - X.25 PAD
 F - DJN/R Tymnet        O - Online With Hayes   X - Tet Set
 G - DJN/R Datapac       P - KNOWLEDGE INDEX Tel Y - Remote Access
 H - MCI Mail Direct     Q - KNOWLEDGE INDEX Tym Z - Standard Values
 I - MCI Mail Tymnet     R - KNOWLEDGE INDEX Data
```

Figure 44 Smartcom II - Communication Directory

3. Select the letter next to the ATTMAIL set or if one does not exist select a blank set.
4. Select **"P"** (Parameters).

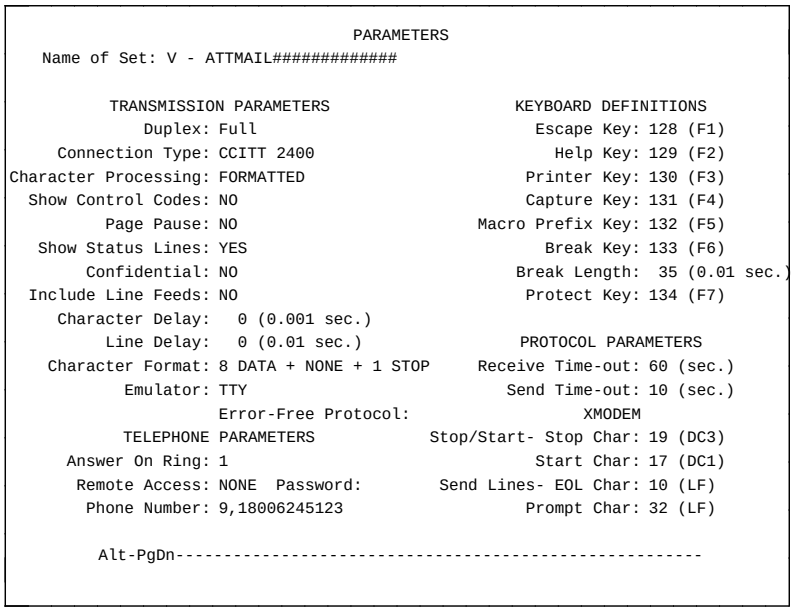


Figure 45 Smartcom II - Parameters menu

Set the following parameters for the ATTMAIL set:

1. If you have chosen a blank set, enter "**ATTMAIL**" for the label.
2. Set the Connection Type to "**CCITT 2400.**"
3. Set the Character Format to "**8 DATA + NONE + 1 STOP.**"
4. Set the Emulator to the type of terminal you need to emulate.
5. Enter "**9,18006245123**" for the ATTMAIL telephone number.
6. Press "**Alt PgDn**" to skip to the next parameter screen and press the down arrow until "**Record to Disk? (Y/N):**" appears on the bottom of the screen.
7. Save the new set of options.
8. Select "**1**" (Begin Communication) at the "Enter Selection" prompt.
9. Select "**O**" to Originate the call.
10. Select the label for "**ATTMAIL.**"
11. Press < **ENTER**> (SMARTCOM II dials the computer).
12. Once the call is established, press < **ENTER**> to get the ATTMAIL login prompt.

Disconnecting a Call

1 Press **"F1"** to return to the Main menu.

2 Select **"0"** (End Communication/Program) at the "Enter Selection" prompt.

3 Select **"H"** to hang up (Smartcom II will hang up and reset the 7400B Plus).

4 To place another call, repeat the steps in the "Placing a Call" section or select **"O"** and press **"E"** to exit Smartcom II and return to DOS.

PC to PC Calls

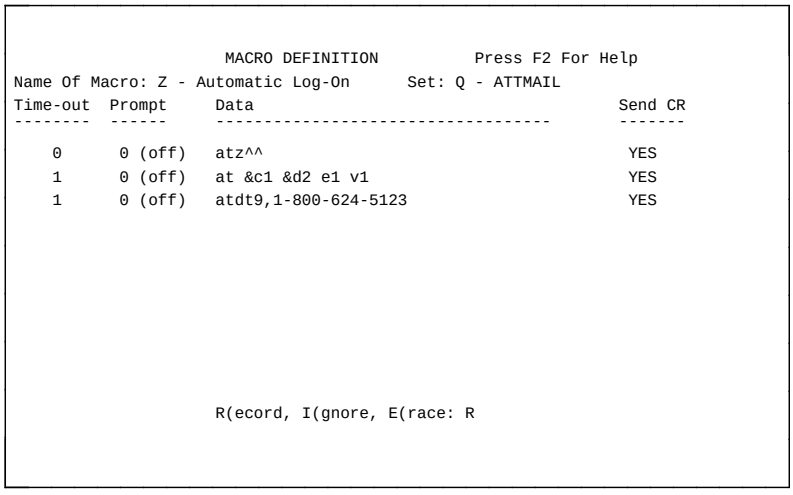
1 **Call Originator**

a From the Main Menu, select **6** for *Change Configurations*.

□ From the *Configurations* screen, under *Direct Connect Port*, select **COM1**.

b At the parameter set to be used for the call, select **DIRECT <speed>** as the *Connection Type*.

c Select the Macro screen and edit the Automatic Log-on Macro as shown below:



```
                    MACRO DEFINITION          Press F2 For Help
Name Of Macro: Z - Automatic Log-On      Set: Q - ATTMAIL
Time-out  Prompt     Data                                  Send CR
--------  ------     ------------------------------------  -------
    0      0 (off)   atz^^                                  YES
    1      0 (off)   at &c1 &d2 e1 v1                       YES
    1      0 (off)   atdt9,1-800-624-5123                   YES









                  R(ecord, I(gnore, E(race: R
```

Figure 46 Smartcom II - Initialization macro

d From the Main Menu, select **O** to *Originate a Call*.

2 **Call Receiver**

a Follow the same steps as outlined above for the Call Originator, but on the last line of the Automatic Log-on Macro, replace the **atdt<phone#>** entry with **ats0=1**.

SMARTCOM II - V 3.1 (MACINTOSH)

SMARTCOM II is a data communication software package produced by Hayes Microcomputer Products, Inc. The following procedure is based on V 3.1 for use with Macintosh PCs.

7400B Plus

The 7400B Plus is set up through Smartcom II's **Direct Mode**.

Configuring the Software

To configure the software do the following:

1. Change to the **"SMARTCOM II"** directory.
2. Select the **"SMARTCOM II"** icon from the file menu.
3. Select **"Settings"** from the Main communications menu.
4. Choose **"Speed & Format..."** from the Settings menu.
5. Set the appropriate options on the Speed & Format screen.
   a. Transmission speed (baud): **"2400"**
   b. Bits per character: **"Eight"**
   c. Stop bits: **"One"**
   d. Parity: **"None"**
6. After all the options are set, click **"OK"** to save the new set of options and to return to the Main communications screen.

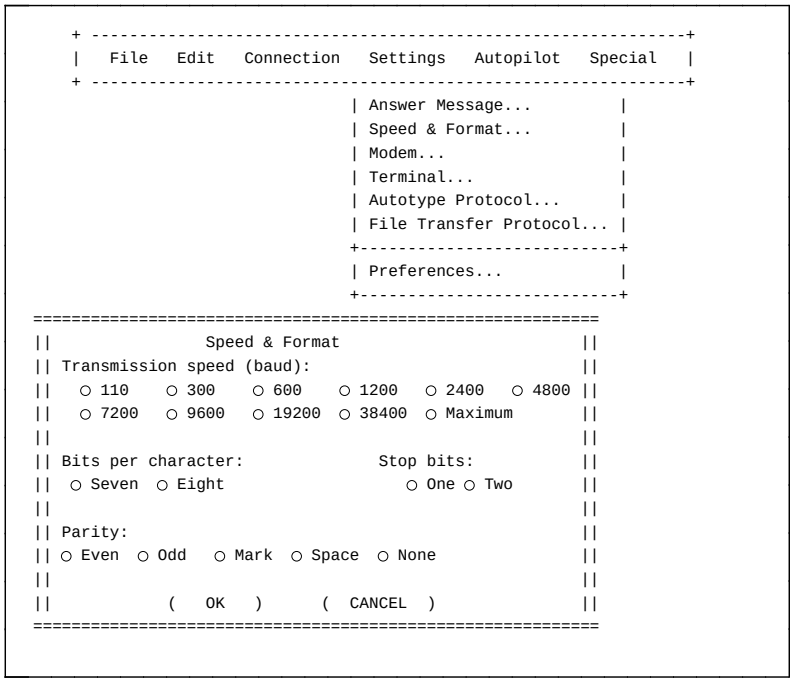


Figure 47 Smartcom II - Speed & Format screen

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Type **"atd 9,18006245123"** on the Main communications menu.
2. Press <**ENTER**>.
3. Wait for the "CONNECT" message.
4. Once the call is established, press **<ENTER>** to get the ATTMAIL login prompt.

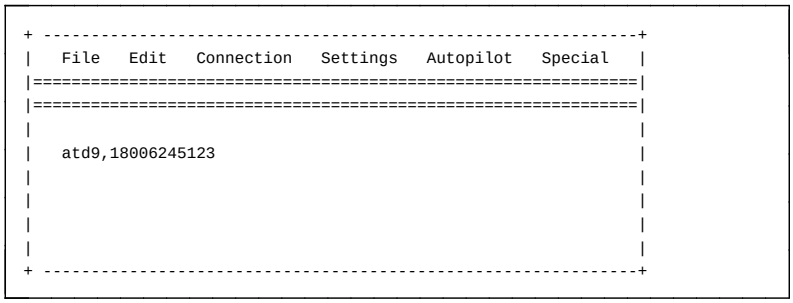


Figure 48 Smartcom II - Main Communications Menu

Disconnecting a Call

1. Type **"+++"** on the Main communications menu, and wait for an "OK" from the 7400B Plus.
2. Type **"ath"** and press <**ENTER**>. (The 7400B Plus disconnects from the other computer.)

SMARTCOM III - V 1.1

SMARTCOM is a data communications software package produced by Hayes Microcomputer Products, Inc.

7400B Plus

The 7400B Plus is set up in Smartcom III's Direct Mode.

Caveats

1. Under the "Connection Settings" option, the type of connection **must always** be set to DIRECT CONNECTION.

   If the type of connection is set to either *Modem Originate* or *Modem Answer*, the 7400B Plus will not respond to the commands that are sent. Smartcom III will reply with *Modem not responding on COM1*.

   In the event that *Modem Originate* or *Modem Answer* has been selected as a connection setting (as recommended by the Smartcom III documentation) and a set-up sequence has been transmitted to the 7400B Plus, the 7400B Plus must be reset to its default settings before it can operate in the Direct Connect mode. To reset the 7400B Plus, the following default procedures should be executed:

   a. Terminate the call that sent the *Modem Originate* or *Modem Answer* sequence.

   b. Establish a new call using the Direct Connection option.

   c. Send the following command sequence to the 7400B Plus:

      - Press the **<CTRL>** and ^ keys simultaneously.
      - Type **at&f**
      - Press <ENTER>

2. When calling a PC running Smartcom III that is set up for Remote Access, the call originator must always set the transmission speed to 2400 and below.

   If a higher speed has been selected, the calling party will get a garbled screen upon connection.

3. When selecting file transfer protocol, select either *XModem* or *XModem CRC*.

Configuring the Software

1. Change to the SMARTCOM III directory.
2. At the DOS prompt, type in "**scom3.**"
   The title page will appear on the screen, press **< ENTER>** to continue.

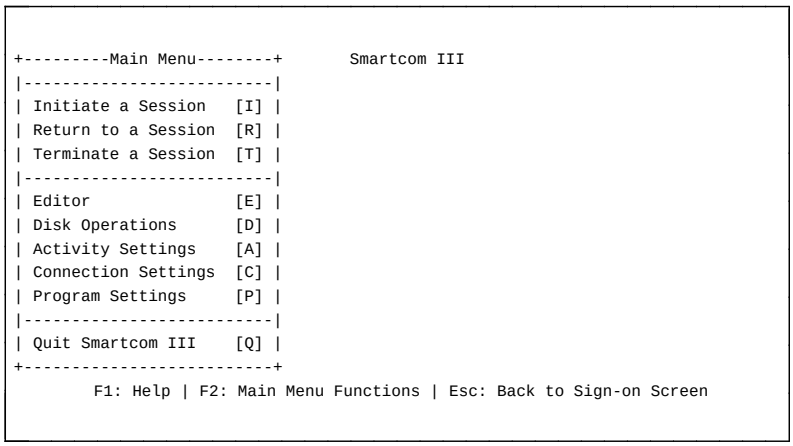


Figure 49 Smartcom III - Main menu

3. At the Main menu, select "**C**" for the "Connection Settings."
4. Select "**N**" for a "New Connection."
5. Enter "**7400B Plus**" as the connection filename and press **<ENTER>.**

6 Select **"S"** for the "Major Settings."

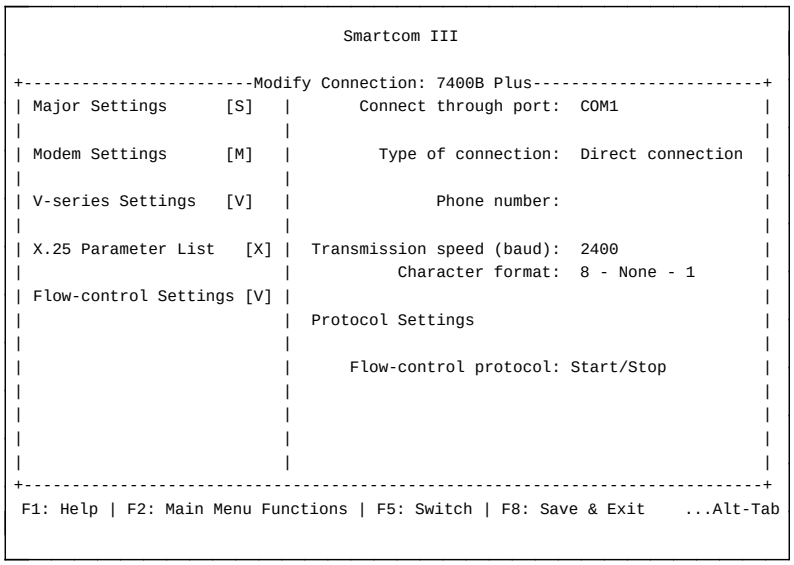


Figure 50 Smartcom III - Modify Connection menu

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

a Set the "Connect Through Port" option to the port which the 7400B Plus is connected.

b Set the "Type of Connection" option to **"Direct Connection."**

c Set the baud rate to **"2400"** for ATTMAIL.

d Set the "Character Format" to **"8 - None - 1"** for ATTMAIL.

7 Select **"F8"** to save and exit.

8 Press **< ESC>** to return to the Main menu.

Building the Call Setup Macro

1. Starting from the Main menu, select **"A"** for the "Activity Settings."
2. Select **"N"** for a "New Activity."
3. Enter "ATTMAIL" as the file name for the new activity and press **<ENTER>.**
4. Select **"M"** for the Keyboard Macro parameters.
5. Choose an appropriate key combination to use for the macro string.

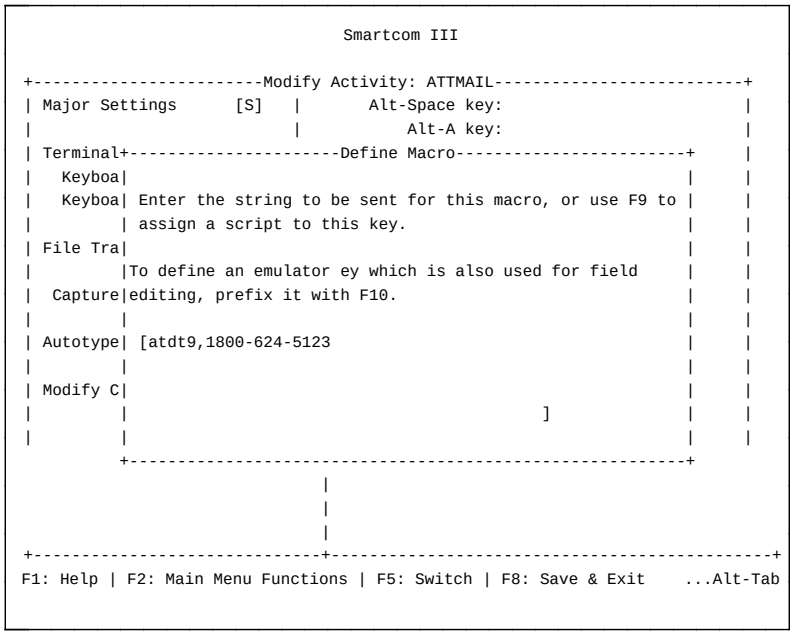


Figure 51 Smartcom III - New Activity Macro menu

6. On one line, enter **"atdt 9,1800-624-5123"** and press **<ENTER>.**
7. Enter **"Y"** for a carriage return to be put on the end of the macro string.
8. Select **"F8"** to save and exit.
9. Press **< ESC>** to return to the Main menu.

Placing a Call

1. At the Main menu select **"I"** to "Initiate a Session."
2. Select the ATTMAIL activity file.
3. Select the 7400B Plus connection file. (Smartcom III will connect into the Direct Mode).
4. Select the ATTMAIL call setup macro which contains the **"atdt"** command and phone number. (Smartcom III will dial out to ATTMAIL).
5. Wait for a "CONNECT" message.
6. Once the call is established, press **<ENTER >** to get the ATTMAIL login prompt.

Disconnecting a Call

1. Type in: **+++** , wait for an "OK" from the 7400B Plus.
2. Type in: **ath<ENTER>** (The 7400B Plus will disconnect from the other computer).
3. Select **"F2"** to return to the Main menu.
4. Select **"T"** to "Terminate the Session."
5. Select the proper session to terminate and press **<ENTER>.**
6. Initiate another call by selecting **"I"** or select **"Q"** to quit Smartcom III and exit to DOS.

PC to PC Calls

On PC to PC calls, the call originator and the call receiver should refer to the sections for "Configuring the Software," "Building the Call Set-up Macro," and "Placing a Call".

Neither party should select the maximum speed option.

To set a PC to answer calls automatically, the following command sequence must be sent to the attached 7400B Plus:

ats0=1 x1 &w

Enter this command manually or via a keyboard macro key. This command instructs the 7400B Plus to automatically answer calls on the first ring, enable the extended numeric result codes (indicates speed at which connection is made), and store this configuration profile in non-volatile RAM location 0.

SMARTERM 240 - V3.0A

SMARTERM is a data communications software package produced by Persoft, Inc.

7400B Plus

The 7400B Plus is setup by executing a macro that contains the proper "AT" commands to initialize it.

Configuring the Software

1. Change to the SMARTERM 240 directory.
2. At the DOS prompt, type in: **"st240."**
3. Select **"Alt s"** for the "Setup Mode."
4. Select a setup configuration number (1-8).

   Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

```
=Setup mode=================================================
| ◘ My favorite parameters                                  |
| ◘ Configuration name                          ATTMAIL     |
|                                               VT100       |
| ◘ Terminal mode                                           |
| ◘ Communications parameters                               |
| ◘ Printer and plotter parameters                          |
| ◘ Keyboard customization                                  |
| ◘  National character mapping                             |
| ◘ Softkey definitions                                     |
| ◘ File transfer parameters                                |
| ◘ DEC terminal emulation parameters                       |
| ◘ Tektronix emulation parameters                          |
| ◘ Quit setup                                              |
| ◘ Back to DOS                                             |
|-----------------------------------------------------------|
|   Defines current configuration name.                     |
|                                                           |
|                                                           |
|                                                           |
=Keyboard Usage=============================================================
|         |   : selects option              : moves cursor, up/down         |
|          Exc: cancels             Home,End: moves cursor,first/lat option |
|        Alt-S: exits Setup         Keypad +: adds to My Favorite Param     |
|         Alt-X: exits SmarTerm                                             |
===========================================================================|
```

Figure 52 Smarterm 240 - Setup Mode Menu

5 Once in the setup mode, select the "**Configuration Name**" option.

6 Enter "**ATTMAIL**" as the configuration name and press **< ENTER>** .

7 Select the "**Terminal Mode**" option.

8 Select the type of terminal emulation needed and press **< ENTER>**.

9 Select the "**Communications Parameters**" option.

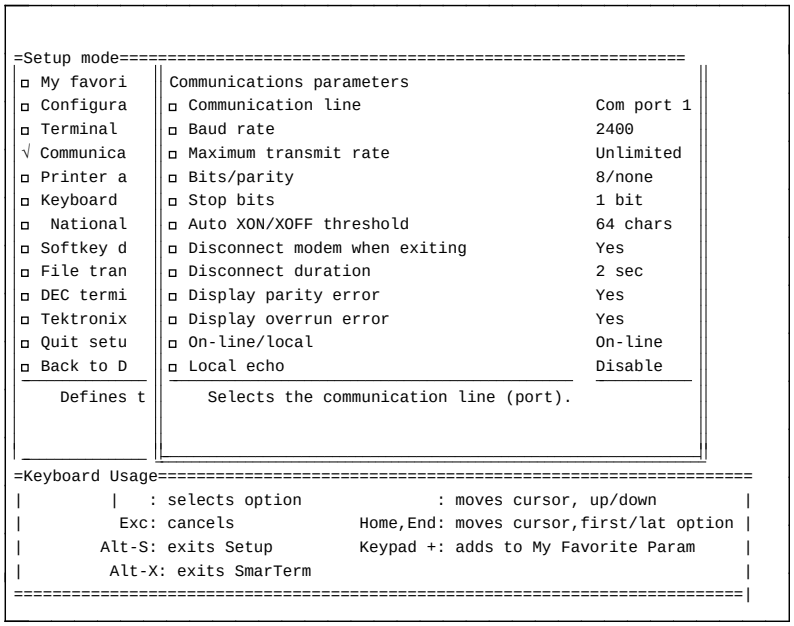


Figure 53 Smarterm 240 - Communication Parameters

a Set the "Communication Line" to the port which the 7400B Plus is connected.

b Set the Baud Rate to "**2400.**"

c Set the Bits / Parity option to "**8/none.**"

d Set the Stop Bits option to "**1.**"

10 After the communications parameters are set, press **< ESC>** to return to the Setup Mode menu.

Setting Up a Call

1 Select the **"Softkey Definitions"** option from the Setup Mode menu.

Note: The initialization and dial strings can be setup up either on the same softkey or separate ones.

The initialization command string for the 7400B Plus is: **at &f &c1 &d2 e1 v1<ENTER>**.

The dial string is: **"atdt** + **9,18006245123<ENTER>"** for ATTMAIL. If the two strings are going to be combined in the same softkey, the **"at"** part of the dial string should not be included. Combined together the string should look like this:

"at &f &c1 &d2 e1 v1 dt9,18006245123<ENTER> "

2 After defining the softkey(s), select **"Alt s"** to exit the Setup Mode.

3 Select **"Y"** to save the current settings (SMARTERM 240 will return to the main menu screen).

4 Select the number for the configuration that you want to dial.

5 Press the previously selected Softkey(s) which will initialize the 7400B Plus and dial the call respectively.

6 Wait for a "CONNECT" message.

7 Once the call is established, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1 Type in: **+++** , wait for an "OK" from the 7400B Plus.

2 Type in: **ath<ENTER>** (the 7400B Plus will disconnect from the other computer).

3 Select **"Alt s"** to return to SMARTERM 240 or select **"Alt x"** to exit to DOS.

AT&T TERRA NOVA - V1.1.1

Terra Nova is a data communications software package produced by AT&T.

7400B Plus

The 7400B Plus will be setup automatically by modifying the existing **Hayes.dia** file in the Terra Nova Software. This procedure is explained is the next section.

Configuring the Software

Note: If you chose the option of loading the TERRA NOVA menu system when booting up your machine, press **"F10"** to exit back to DOS.

1. Change to the directory where the TERRA NOVA software is installed. (The installation default directory is **Network**.)
2. By using your system editor (vi, edlin, norton editor, etc), edit the "**DEV**" file to include the word **"7400B"** on a separate line by itself.
3. Change to the TERRA NOVA sub directory, "**DEVICE.**"
4. Copy the **"HAYES.DIA** file over to a new file. Call the new file **"7400B.DIA."**
5. By using the system editor, edit the new file **7400B.dia** to include the following information shown in the figure below.

```
#
# CONNECT SCRIPT FOR 7400B Plus
#
#TRACE ON
#CAPTURE hayes.tmp
    SET var "3"
    PRINT "\r\nATTEMPTING TO CONNECT TO MODEM......\r\n"
    SEND "AT&C1&D2&F&W\r"
#WAIT 1 "?"
WAITFOR 10 "O"  "OK" GOTO digit GOTO verbose
TIMEOUT GOTO problem
LABEL digit
    WAIT 2 "?"
    SEND "ATDT"
    SEND "%2"
    SEND "\r"
    #WAIT 1 "?"
    WAITFOR 40 "1" "2" "3" "4" "5" "10" "11" "12" "13" GOTO conn GOTO ring GOTO
no_carr GOTO error GOTO conn GOTO conn GOTO conn GOTO conn GOTO conn
    TIMEOUT GOTO loop
LABEL verbose
    #WAIT 2 "?"
    SEND "ATDT"
    SEND "%2"
    SEND "\r"
    #WAIT 1 "?"
    WAITFOR 40 "CONNECT" "RING" "NO CARRIER" "ERROR" GOTO conn GOTO ring GOTO
no_carr GOTO error
LABEL loop
    TRY var GOTO error
    DROPDTR 5
    #WAIT 2 "?"
    SEND "+++"
    #WAIT 2 "?"
    SEND "ATH\r"
    # WAIT 1 "?"
    WAITFOR 5 "O" "OK" GOTO digit GOTO verbose
    TIMEOUT GOTO loop
LABEL conn
    LOOKAGAIN "CONNECT"
    TIMEOUT PRINT "\r
    CONN_FG SAVE 0
    STOP
LABEL ring
    WAITFOR 15 "CONNECT" "1" "NO CARRIER" "3" "5" "10" "11" "12" "13" GOTO conn
GOTO conn GOTO no_carr GOTO no_carr GOTO conn GOTO conn GOTO conn GOTO conn GOTO
conn
    TIMEOUT GOTO problem
LABEL no_carr
    WAIT 2 "?"
    PRINT "\r\nCARRIER LOST OR NEVER DETECTED."
    PRINT "\r\nATTEMPTING TO RECONNECT. PLEASE WAIT.\r\n"
    GOTO loop
LABEL error
    WAIT 2 "?"
    PRINT "\r\nERROR CONDITION ENCOUNTERED --- SCRIPT ABORTED. \r\n"
    CONN_FG SAVE 1
    STOP
LABEL problem
    WAIT 2 "?"
    PRINT "\r\nCANNOT RCEIVE RESPONSE FROM MODEM."
    PRINT "\r\nATTEMPTING TO RECONNECT. PLEASE WAIT.\r\n"
    GOTO loop
```

Figure 54 AT&T Terra Nova - 7400B.dia file

6 After the 7400B.dia file is edited, type in "**tc1**" at the DOS prompt.

After executing the TERRA NOVA program, the option screen should appear.

It should look similar to the figure below.

```
  --------------------------TERRA*NOVA Release 1/1/1 -1-190-----------------
|                                                                            |
|                                                                            |
|------------OPTIONS----------------------------SYSTEM FILES--------------|
|HOST:         OTHER      |           |                                    |
|PORT:           1        |           |              7400B     CFG         |
|BAUD:         2400       | use or    |             ATTMAIL  SCR           |
|PARITY:       None       | to select |                                    |
|WORD SIZE:      8        | options   |                                    |
|STOPBITS:       1        |           |                                    |
|DUPLEX:        Full      |           |                                    |
|LINE CONTROL: SET Y?     | hit return|                                    |
|EMULATOR:    VT100       | key or y  |                                    |
|WRAPAROUND:    OFF       | to enter  |                                    |
|SWITCH KEY:    ALT A     |  option   |                                    |
|FUNCTION KEYS: SET Y?    |           |                                    |
|COLOR:         SET Y?    |           |                                    |
|PROTOCOL:      SET Y?    | hit key   |                                    |
|FILE TRANSFER: SET Y?    | to switch |                                    |
|PRINTER:       SET Y?    | to SYSTEM |                                    |
|CONNECT DEVICE: ALT A    |  FILES    |                                    |
|PHONE DIR.:    SET Y?    |           |                                    |
|LEARN MODE:    SET Y?    |           |                                    |
|----------------------------------------------------------------------------|

  1 HELP  2EXIT  DL3DROP  LN4SAV  SET5SYSFILE6    7DOS  CMD8   9 VT100 0 EXIT
```

Figure 55 AT&T Terra Nova - Option Setup Menu

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

There are eight functions on the option screen that need to set before communicationing with the 7400B Plus, they are:

a HOST - Set it to "**Other.**"

b PORT - Select the COM Port to which the 7400B Plus is connected (Com 1 or 2).

c BAUD - Set it to "**2400.**"

d PARITY - Set it to "**None.**"

e WORD SIZE - (Data Bits) Set it to "**8**" bits.

f STOP BITS - Set it to "**1.**"

g DUPLEX - Set it for "**Full.**"

h CONNECT DEVICE - Set it to "**7400B.**" (This is the modified Hayes.dia file.)

7 Select **"F4"** to save the options.

8 Enter **"ATTMAIL"** as the filename for these options.

This file will be saved as **"ATTMAIL.cfg"** located in the System Files. These files are listed on the right hand side of the Options menu.

To select these parameters for future logins, move the cursor to the **"ATTMAIL.cfg"** file and press **< ENTER>** .

Placing a Call

1 Select the **"Phone Dir:"** option located in the left bottom corner of the option screen.

2 Select **"F8"** to enter the phone number.

3 Enter the **"9,18006245123"** for ATTMAIL.

4 Enter **"ATTMAIL"** for the label name.

5 Select **"F9"** to dial the number (TERRA NOVA will dial ATTMAIL).

6 Wait momentarily, after a "CONNECT 2400" message appears on the screen, press **< ENTER>** to get the ATTMAIL login prompt.

Disconnecting a Call

1 Select **"F10"** to return to TERRA NOVA's option menu screen.

2 Select **"F3"** to Drop the line.

WHITE KNIGHT - V 11

White Knight is a data communications software package produced by The FreeSoft Company. The following procedure is based on V 11 for use with Macintosh PCs.

7400B Plus

The 7400B Plus is configured in the White Knight installation procedure.

Configuring the Software

1. Change to the WHITE KNIGHT directory.
2. Select the "**White Knight**" icon from the file menu.
3. Select "**Local**" from the Main communications menu.
4. Choose "**Serial Port Settings**" from the Local menu.
5. Select the appropriate functions on the Local menu.
   a. Set the Serial port to "**Phone**".
   b. Set the Baud rate to "**2400**".
   c. Set Parity to "**None**".
   d. Set Data Bits to "**8**"
   e. Set Stop Bits to "**1**"
   f. Set Duplex to "**Full**"

Figure 56 White Knight - Serial Port Settings screen

6. Click "**OK**" to save this setup and to return to the Main communications menu.

Placing a Call

Example Setup: (For example purposes, a call to ATTMAIL will be used for the setup.)

1. Select "**Service**" from the Main communications menu.
2. Choose "**Dial or Redial...**" from the Service Menu.
3. Enter the number, "**9,18006245123**" for ATTMAIL.
4. Wait for the "CONNECT" message.
5. Once the call is established, press **<ENTER>** to return to the ATTMAIL login prompt.

Disconnecting a Call

1. Select "**Service**" the Main communications menu.
2. Choose "**Modem...**" from the Service menu.
3. Choose "**Hang Up**" from the Modem menu.

CHAPTER 5: TROUBLESHOOTING

This chapter describes procedures for troubleshooting most problems that may be encountered while installing, configuring, and operating the 7400B Plus.

HOW TO USE THIS CHAPTER

Use the following guidelines to isolate and correct a problem:

1. Scan through the ‘‘Symptom’’ column in the chart to find the description that best describes the problem situation you have encountered.
2. In the ‘‘Problem’’ column, one or more problem descriptions is offered. Select the one that best describes the observable condition, or try each suggestion in turn until the trouble has been corrected.
3. Perform the task described in the ‘‘Solution’’ column. In cases where you are directed to type an AT command to correct the problem and the 7400B Plus is in the data mode, simply do the following:
   a. Type the escape sequence (+++) to enter command mode; the data module will respond with *OK* or *0* (unless the `Q1` option has been set to disable result codes).
   b. Type the suggested command line (if the solution suggests disconnecting the call), type the command line

      `ath` (Enter.)

4. To return to data mode after using the escape sequence to enter command mode, type the command line

   `ato` (Enter.)

Symptom	Problem	Solution
All LEDs are off.	Power is off.	Check that the AC outlet is working. Check that the power supply unit is connected to the 7400B Plus and to the AC outlet.
POWER/TEST and *DATA* LEDs flash together.	The 7400B Plus has lost communications with the PBX.	Check that the D8W cord is connected between the *LINE* connector of the 7400B Plus and a PBX wall jack. Note also that the line from the PBX must be properly administered for the 7400B Plus.
Characters typed on keyboard are not displayed on the screen of the terminal device.	If the *SD* LED does not flash when keys on the terminal are pressed, the EIA-232-D cable is not connected or not properly wired.	Connect or replace the EIA-232-D cable between the 7400B Plus and the local terminal device.
	If the *SD* LED flashes but the *RD* LED does not flash, the command echo option is turned off.	Press (Enter) to start a new command line, and then type `ate1` (Enter) to turn on the command echo.
	The *SD* and *RD* LEDs flash, but certain EIA signal leads are turned off.	Press (Enter) to start a new command line, and then type `at&s0&c0` (Enter) to ensure that the appropriate EIA signal leads are turned on.

Symptom	Problem	Solution
Call disconnects immediately after an attempt to connect; *NO CARRIER* may be displayed on the local terminal device; *CHECK SPEED* LED lights.	The speed of the far end device is higher than the speed of the local terminal device.	Change the speed of the local terminal device to match that of the far end device. If the speed of the far end device is not known, set the local terminal device to the highest speed available.
	The far end device is set up for half-duplex or synchronous operation.	The 7400B Plus cannot communicate with a far end device that is operating half-duplex or synchronous. This problem can be resolved only if the far end device can be reconfigured for full-duplex, asynchronous operation.
Call disconnects immediately after an attempt to connect; *BUSY* or *NO CARRIER* may be displayed on the local terminal device; *CHECK SPEED* LED does not light.	The far end device is busy with another call.	Try the call again.
	The telephone number was dialed incorrectly.	Check the number of the far end device that you wish to call and try the call again.
	The far end device is not busy, but the PBX has restricted access to the called device.	This situation can only be resolved by having the PBX readministered to remove the access restriction.
	The S7 register value does not allow enough time for the call to complete.	Set the S7 register to a larger value.

Symptom	Problem	Solution
An AT prefix is typed, and it is displayed as AATT.	The command echo option is enabled.	Disable the command echo by entering ATE0. As you type the ATE0 command, AATTEE00 will appear, and the 7400B Plus will send the response code OK to your screen. The next command that you enter should appear in single characters.
The PC communications software indicates that the call has been disconnected, but the *DATA* LED remains lit.	The 7400B Plus has ignored the on-to-off transition of the DTR lead.	From command mode, type the command at&d2 (Enter) to set the DTR lead option to disconnect on DTR lead transition from on-to-off. Alternatively, determine and use the command provided by the communications software to implement this change.
	The 7400B Plus has ignored the H (hang-up) command.	Ensure that after the escape sequence (+++) has been entered to switch the 7400B Plus to command mode, an adequate pause before and after the +++ is allowed before issuing the H command. In escaping to command mode with the result codes enabled, the 7400B Plus must be given time to return *OK* or *0* before it is ready to accept a command.

Symptom	Problem	Solution
The speakerphone does not turn on when a voice call is dialed.	Incorrect option settings.	Change the DIP-switch SW1-7 setting from ON to **OFF**.
The speakerphone turns on when a voice call is dialed, but touch-tones are not heard.	Incorrect option settings.	Change the DIP-switch SW1-6 setting from ON to **OFF**.
Data calls are dialed instead of voice calls.	Incorrect dial modifier is used with the ATD dial command.	Change the PC communications package to use **Pulse** dialing, or insert a ‘‘P’’ as the first digit of the telephone number.
Dialing begins before the dial-tone is heard on a voice call.	Incorrect blind dial delay.	Check the value stored in the S6 register by typing `ats6?` (Enter) *nnn* (system responds with value) *OK* Add 1 second to the above value by typing `ats6=(`*nnn*`+1)` (Enter) *OK* and try again.

Symptom	Problem	Solution
Dialing begins before the second dial tone is heard.	Incorrect dialing pause.	Insert a comma in the telephone number after the 9 (digit used for calls outside the PBX). `atdp9,555-1212` (Enter) If the problem persists, insert another comma for a second pause. `atdp9,,555-1212` (Enter) and try again. Check your PC communications package to make sure it is a valid character.
The 7400B Plus does not dial a voice call.	The voice terminal is not connected to the 7400B Plus, an unsupported voice terminal is being used, or the 7400B Plus is not optioned for voice dialing.	Check to make sure the voice terminal is plugged into the PHONE jack of the 7400B Plus. Check the Features section of Chapter 1, "Introduction" to determine if the voice terminal is supported. Check that the line is administered correctly and optioned for voice dial (SW1-1).
The 7400B Plus does not pause when a comma is inserted for a voice dial call.	The comma delay is set to 0 (zero).	Check your PC communications package to make sure it is a valid character. Enter `ATS8=2` (Enter) to set the pause to 2 seconds.

Symptom	Problem	Solution
The *AA* LED flashes but the 7400B Plus does not automatically answer the incoming call.	The automatic answer option is not enabled; when there is no incoming call, the *AA* LED is off.	From the command mode, type `ats0=1` (Enter) to turn on the automatic answer feature. Set the value following the equal sign (1 in the example) to the ring number on which you want the 7400B Plus to answer an incoming call. The automatic answer feature is turned off by setting this value to 0.
	The automatic answer option is enabled; the *AA* LED is on when there is no incoming call, but the terminal device is not ready (*TR* LED is off).	If the local terminal is a PC, configure the communications software to turn on the DTR lead, or set the 7400B Plus to ignore the DTR lead by typing `at&d0` (Enter)
	The automatic answer option is enabled; the *AA* and *TR* LEDs are lit, but the *POWER/TEST* lamp is flashing, indicating that the 7400B Plus is in a local loopback test mode.	Terminate the local loopback test by typing `at&t0` (Enter)

Symptom	Problem	Solution
Transmitted and/or received data contains errors.	Speed settings of the terminal device and the 7400B Plus are not the same.	Change terminal device speed to agree with the speed that was indicated in the *CONNECT* nnnn message.
	The local terminal device and the far end device are configured for different parity settings.	Change the parity setting of the local terminal device to match that of the far end device.
Far end data errors only during file transfer with PC communications package.	PC does not support hardware flow control.	Disconnect the call, set the data metering option to off (refer to the section, Setting the DIP-Switch Options in Chapter 2, "Installation"), re-establish the call, and try the file transfer again.
The *DATA* LED is lit, but a *CONNECT* xxxx message or numeric result code was not displayed.	The display result codes option is turned off.	Turn on the display result codes option by typing `atq0 o` (Enter) The `O` command at the end of the above command line will cause the 7400B Plus to return to the on-line mode and send the *CONNECT xxxx* message, or an equivalent numeric code, to the terminal display (see ‘‘Result Codes’’ in Appendix E).
Numeric code returned when `CONNECT` *xxxx* message is preferred.	The result code format option is set to numeric form.	Change the result code format option to message form by typing `atv1` (Enter)

Symptom	Problem	Solution
Commands are displayed without error as they are typed (echoed), but the 7400B Plus does not respond to any command.	The local terminal device is set to a speed not supported by the 7400B Plus.	Set the terminal device for one of the supported speeds: 300, 1200, 2400, 4800, 9600, or 19200 bps.
The *CONNECT* message is sent without a speed indication, but the far end device is not set at 300 bps.	The 7400B Plus is configured to display only the basic set of result codes (option `x0`).	Configure the 7400B Plus to send *CONNECT* nnnn messages for all speeds except 300 bps by typing `atx4` (Enter)
The terminal device has its DTR lead turned on, but the *TR* LED is off.	A defective or non-standard (null-modem) EIA-232-D cable is in use.	Replace the EIA-232-D cable with one that is wired correctly.

DEFINITY Communications System
7400B Plus Data Module
User´s Guide

APPENDIX A: AT COMMAND SET

This appendix contains an explanation of each AT command accepted by the 7400B Plus. Labels used in the descriptions are defined as follows:

Label	Description
Command:	The command is shown as it should be typed. The command may be typed in uppercase or lowercase. Spaces may be typed between multiple commands on the same command line for readability, but the spaces are ignored by the 7400B Plus.
Function:	A brief, functional description of the command is provided here.
Type:	Type may be *immediate* or *configuration*. An immediate command causes the 7400B Plus to perform an action as soon as the command is sent (for example, go off-hook or dial a number). A configuration command modifies a configuration parameter during the current session.
Arguments:	Many commands accept or require a numerical argument. Whether an argument is required and the range of acceptable values for the argument is shown here.
S-Register:	The S-registers consist of 28 1-byte memory locations in the data module, designated as S0 through S27. The S-registers hold values for defining the current configuration of the 7400B Plus. Some commands modify a specific S-register, and some commands perform an action based on the current value stored in an S-register. Whether an S-register is modified or read by the current command is explained here.

(more)

Label	Description
	(Contd.)
Example:	A sample command line follows this label to demonstrate how the command may be used.
Comments:	An explanation of the example and any other information about the command not provided elsewhere is provided here. Additional commands may be typed on the same command line with the command currently under discussion, unless noted otherwise.
See Also:	Following this label are suggestions on where to look for more information about the current command and a listing of any other commands that may be used with or affect the use of the current command.

Command: +++

Function: Escape sequence.

Type: immediate

Arguments: none

S-Register: S2 and S12

Example: +++

Comments: The purpose of the +++ command is to provide a way to switch the 7400B Plus from on-line or data mode to command mode without disconnecting a data call that is in progress. As long as the call is not disconnected, you can return to the data mode with the O command.

This is one of the two commands that does not require the ''AT'' prefix (A/ is the other one), and it is never followed by pressing (Enter). The value in S12 determines how long your keyboard should remain idle before entering the escape sequence, as well as the maximum allowable time between entering each character of the sequence. The character used in the escape sequence is determined by the value in S2 (default is ASCII 43, the plus sign).

See Also: Chapter 3, "Configuration and Operation"; the O command in this appendix; S2 and S12 in Appendix C.

Command: A

Function: Go off-hook in Answer mode.

Type: immediate

Arguments: none

S-Register: Bit 7 of S14 is set to 0.

Example: ata (Enter)

Comments: The A command causes the 7400B Plus to go off-hook in answer mode and attempt to answer an incoming call. The option set by the &D command and the contents of S0 and S1 are ignored when this command is issued.

See Also: Command &D; Appendix C, "S-Registers."

Command: A/

Function: Re-execute the last valid command line.

Type: immediate

Arguments: none

S-Register: none

Example: a/

Comments: This is one of the two commands that does not require the ‘‘AT’’ prefix (+++ is the other one). To repeat the previously executed command line exactly, type A/ without pressing the Return or Enter key. This command cannot be combined with any other command.

See Also: Chapter 3, "Configuration and Operation."

Command: D

Function: Dial a call.

Type: immediate

Arguments: The D command requires an ASCII character string to specify the telephone number to be dialed as follows:

- For voice calls, the valid characters are limited to ‘‘*’’, ‘‘#’’, and digits 0 through 9. Voice dial commands with invalid characters are accepted and the invalid characters are ignored; only the valid characters are dialed.
- For data calls, the character string may include any ASCII character with the following restrictions:
  - ► If the letters ‘‘t’’ (uppercase or lowercase) is typed as the first character following the D command, or as the first character of a stored number when a ‘‘t’’ does not follow the D command, the 7400B Plus will delete the character.

    For example, if you want your dial string to be the mnemonic ‘‘TEXAS,’’ you must type the ‘‘T’’ twice (the first ‘‘t’’ may be uppercase or lowercase), producing the command line:

    atdtTEXAS (Enter)

    The ‘‘t’’ following the D command will be discarded and the string ‘‘TEXAS’’ will be sent to the PBX as a dial mnemonic (the PBX must be administered to recognize this mnemonic as the representation of a number to be dialed).

    Note: Mnemonic dialing is valid for data calls only.
- The PBX may interpret certain non-alphanumeric characters as commands and perform an unexpected action, if you did not intend to send the command to the PBX. Consult the documentation for your PBX to determine which characters may be interpreted as commands.
- The dial modifier S=*n*, where *n* may be a number from 0 through 3, will cause the 7400B Plus to send the contents of its respective telephone number storage location to the PBX as the telephone number. For details on how to use this feature, refer to ‘‘Storing a Telephone Number’’ in Chapter 3, "Configuration and Operation."

(more)

Arguments: *(Contd.)*
In addition to a telephone number, the following Dial Modifiers may be used with the dial command:

Dial Modifier	Description
`P (Pulse)`	Used with a dial command to indicate a voice call. Must be the first character in the dial string or the stored telephone number.
`T (Tone)`	Used with a dial command to indicate a data call. Must be the first character in the dial string or the stored telephone number. A data call will be dialed if neither the ''P'' or ''T'' dial modifier is used.
`, (Comma)`	May be used to provide a dialing pause for second dial tone. For voice calls, the pause interval is controlled by the S8 register setting. For data calls, the delay is controlled by the PBX.
`; (Semi-colon)`	Used to delimit a dial command from other commands that follow it on the same command line. The semi-colon dial modifier causes the 7400B Plus to remain in command mode after the call is dialed.
`S=n`	Used to dial a telephone number stored with the &Zn=x command.

S-Register: Bit 7 of S14 is set to 1.

Example 1:
```
atdp 9,1 201-555-1212 (Enter)
```

Example 2:
```
at &Z1=Texas (Enter)
atdp 9,1 201-555-1212;dts=1 (Enter)
```

Comments: Dial modifiers can be combined in a dial command to perform a series of operations. In example 1, the ''p'' dial modifier is used to indicate that it is a voice call and the comma is used to provide a pause for a second dial tone.

Note: The 7400B Plus always returns to the command mode after dialing a voice call.

In example 2, the mnemonic dial string Texas is first stored in non-volatile memory location 1

and then

(more)

Comments: *(Contd.)*
used in conjunction with the S=1 dial modifier on the next command line to dial a data call after a voice call is dialed.
The semi-colon dial modifier is used to delimit the dial command for the voice call from the dial command for the data call.
The ‘‘t’’ dial modifier is used with the dial command for the data call will be deleted and the character string ‘‘Texas’’ will be sent to the PBX.

Note: If the ‘‘t’’ dial modifier is omitted, a data call will be dialed. However, the ‘‘T’’ in ‘‘Texas’’ will be deleted and only ‘‘exas’’ will be sent to the PBX resulting in a wrong number being dialed.

The maximum length of the ASCII string is 39 characters; the ‘‘AT’’ prefix, the carriage return, and spaces used for readability do not add to the character count for the line.

See Also: Chapter 3, "Configuration and Operation," Appendix B, "Dial Modifiers," Appendix C, "S-Registers," Registers S6 and S8.

Command: E

Function: Turn the command echo on or off.

Type: configuration

Arguments: No argument or an argument of 0 disables echo and an argument of 1 enables echo. The factory-default is 1.

S-Register: Bit 1 of S14 is set according to the argument of the command.

Example: `ate1` (Enter)

Comments: Typically, for a display terminal operating in full-duplex mode, use the 1 argument if you wish to see the ''AT'' commands on the screen as you type them. If your display terminal is operating in half-duplex mode, use the 0 argument (the 1 argument would cause characters typed to appear on the screen like `tthhiiss`).

See Also: Chapter 3, "Configuration and Operation."

Command: H

Function: Switch hook control.

Type: immediate

Arguments: No argument or an argument of 0 causes the 7400B Plus to go on-hook.

S-Register: none

Example: `ath` (Enter)

Comments: The H command with no argument can be used during a data call to cause the 7400B Plus to go on-hook (hang up) after using the escape sequence (+++) to return to command mode. An argument of 0 produces the same result, and an argument of 1 is accepted but causes no action.

See Also: The escape sequence command (+++); Chapter 3, "Configuration and Operation."

Command: I

Function: Request product code or ROM checksum.

Type: immediate

Arguments: The I command accepts one of three arguments as follows:

0 - The 7400B Plus displays the decimal number 249, followed by a carriage return and line feed.

1 - The 7400B Plus displays the ROM checksum as two four-digit hexadecimal values, followed by a carriage return and line feed.

2 - The 7400B Plus displays *OK*, followed by a carriage return and line feed.

S-Register: none

Example: ati0 (Enter)

Comments: In the example, the 7400B Plus will return its product ID code as the value *249*.

See Also: none

Command: O

Function: Return to the on-line mode.

Type: immediate

Arguments: No argument or an argument of 0 (zero) causes the 7400B Plus to return from command mode to on-line mode, if a data call is still active.

S-Register: none

Example: ato (Enter)

Comments: The 7400B Plus accepts an argument of 1 but treats it the same as no argument or an argument of 0.

See Also: Chapter 3, "Configuration and Operation;" the +++ command in this appendix.

Command: Q

Function: Turn the display of result codes on or off.

Type: configuration

Arguments: No argument or an argument of 0 enables the display of result codes; an argument of 1 disables the display of result codes. The factory-default is result codes enabled.

S-Register: Bit 2 of S14 is set according to the argument used with the Q command.

Example: atq1 (Enter)

Comments: In the example, the result codes are disabled. Use this option only if you wish to prevent the 7400B Plus from returning result codes after an ''AT'' command is issued.

See Also: Chapter 3, "Configuration and Operation;" result codes in Appendix E, "Summary Tables;" the V and commands in this appendix.

Command: V

Function: Select format for result codes.

Type: configuration

Arguments: No argument or an argument of 0 causes the 7400B Plus to return the short form or numeric result codes; an argument of 1 causes the 7400B Plus to return the verbose form or text message result codes. The factory-default setting is the verbose form.

S-Register: Bit 3 of S14 is set according to the argument used with the V command.

Example: atv (Enter)

Comments: The example would set the short form or numeric result code format.

See Also: Chapter 3, "Configuration and Operation"; result codes in Appendix E, "Summary Tables;" the Q and commands in this appendix.

Command: X

Function: Control the extended result code.

Type: configuration

Arguments: The command accepts one of 5 arguments as follows:

0 - The basic result code set (0—4) is enabled. No busy code sent when line is busy. No speed indication with connect code.

1 - Result codes 0—5, 10—12, and 14 are enabled. No busy code sent when line is busy. Speed indication with connect code.

2 - Result codes 0—5, 10—12, and 14 are enabled. No busy code sent when line is busy. Speed indication with connect code.

3 - Result codes 0—5, 7, 10—12, and 14 are enabled. Busy code sent when line is busy. Speed indication with connect code.

4 - Result codes 0—5, 7, 10—12, and 14 are enabled. Busy code sent when line is busy. Speed indication with connect code.

S-Register: Bits 4, 5, and 6 of S22 are set according to the argument given with the command.

Example: `atx2` (Enter)

Comments: In the example, the results described under argument value 2 are implemented. Regardless of which argument is used, the data module will wait until the call is completed, or the time set in register S7 expires. All arguments do change the appropriate bits in S22 and affect the result codes returned.

See Also: Chapter 3, "Configuration and Operation"; result codes in Appendix E, "Summary Tables;" the `Q` and `V` commands in this appendix.

Command: Z

Function: Reset the 7400B Plus and recall a stored profile.

Type: immediate

Arguments: No argument or an argument of 0 recalls the configuration profile stored in location 0; an argument of 1 recalls the configuration profile stored in location 1.

S-Register: none

Example: `atz1` (Enter)

Comments: In the example, the Z command causes the 7400B Plus to reset, and then loads the configuration profile stored in location 1 into the active location.

See Also: Chapter 3, "Configuration and Operation."

Command: &C

Function: Data Carrier Detect (DCD) options.

Type: configuration

Arguments: The &C command accepts one of two arguments as follows:

0 - (or no argument) maintain the DCD circuit *on* at all times (factory-default setting)

1 - the DCD circuit operates according to the EIA-232-D standard

S-Register: Bit 5 of S21 is set according to the argument used with the &C command.

Example: at&c1 (Enter)

Comments: In the example, the DCD circuit operates according to the EIA-232-D standard. This would be an appropriate setting for when the 7400B Plus is used at a remote site.

Regardless of which option is currently in effect, the DCD circuit of the 7400B Plus is always off during self-test.

See Also: Chapter 3, "Configuration and Operation"; Appendix C, "S-Registers."

Command: &D

Function: Data Terminal Ready (DTR) options.

Type: configuration

Arguments: The &D command accepts one of four arguments as follows:

0 - ignore the DTR interchange circuit (factory-default setting).

1 - return to the command state if an on-to-off transition is detected on the DTR input; an active data call is *not* disconnected.

2 - go on hook when an on-to-off transition is detected on the DTR input (EIA-232-D standard); an active data call *is* disconnected.

3 - perform a reset if an on-to-off transition is detected on the DTR input; an active data call is disconnected.

S-Register: Bits 3 and 4 of S21 are set according to the option used with the &D command.

Example: at&d2 (Enter)

Comments: In the example, the DTR circuit is set according to the EIA-232-D standard. This would be an appropriate setting for when the 7400B Plus is used at a remote site as a dedicated device to automatically answer an incoming data call.

For the 0 option, the front panel DTR indicator (TR LED) is always on, regardless of the state of the DTR input; for all other options the indicator follows the state of the DTR input.

If the change of state for the DTR circuit persists for a time shorter than specified in S25, the change is ignored.

See Also: Chapter 3, "Configuration and Operation", Appendix C, "S-Registers."

Command: &F

Function: Load the factory-default configuration.

Type: immediate

Arguments: none

S-Register: none

Example: at&f (Enter)

Comments: The factory-default configuration values are permanently stored in ROM and can be recalled at any time. No reset or self-test is initiated by issuing the &F command.

See Also: Chapter 3, "Configuration and Operation."

Command: &S

Function: Data Set Ready (DSR) options.

Type: configuration

Arguments: The &S command accepts one of two arguments as follows:

0 - (or no argument) the DSR circuit is maintained on at all times (factory-default setting)

1 - the DSR circuit operates according to the EIA-232-D standard.

S-Register: Bit 6 of S21 is set according to the argument used with the &S command.

Example: at&s1 (Enter)

Comments: In the example, the DSR circuit is configured to operate according to the EIA-232-D standard. Regardless of which option is currently in effect, the DSR circuit of the 7400B Plus is always off during self-test.

See Also: Chapter 3, "Configuration and Operation."

Command: &T

Function: Control diagnostic and test facilities.

Type: immediate

Arguments: The &T command accepts one of eight arguments (see comment 2) as follows:

0 - (or no option) terminate any test in progress (see comment 3)

1 - initiate local loopback test

2 - same as 1

3 - initiate local data loopback test

4 - allow remote loopback requests from the remote system (factory-default selection)

5 - deny remote loopback requests from the remote system

6 - initiate remote loopback test

7 - initiate remote loopback test with self-test

8 - initiate local loopback test with self-test

S-Register: Bits 0 and 2—6 of S16 are set according to the argument used with the &T command.

Example: at&t3 (Enter) *(see comment 1)*

Comments

1 In the example, a local data loopback test is initiated.

2 All argument values in the range of 0—8 are valid. All of the options selected by the command arguments described above are accepted and implemented by the 7400B Plus.

3 If the local digital loopback or remote digital loopback tests are in progress, it is necessary to issue the escape sequence to return to command mode before the &T0 command can be used to terminate these tests. The test timer value stored in S18 can also be set to halt automatically any locally initiated test in progress.

See Also: Chapter 3, "Configuration and Operation"; Appendix C, "S-Registers."

Command: &V

Function: View the active configuration and stored profiles.

Type: immediate

Arguments: The &V command does not take an argument.

S-Register: none

Example: at&v (Enter)

Comments: The &V command displays all active and stored configuration data as follows (see sample screen below):

- command and S-register settings for the active configuration profile
- command and S-register settings saved in configuration profile locations 0 and 1
- contents of the four telephone number storage locations

See Also: Chapter 3, "Configuration and Operation."

```
ACTIVE PROFILE:
B1 E1 L2 M1 Q0 V1 X4 Y0 &C0 &D0 &G0 &J0 &L0 &P0 &Q0 &R0 &S0 &X0 &Y0
S00:000 S01:000 S02:043 S03:013 S04:010 S05:008 S06:002 S07:060
S08:002 S09:006 S10:014 S12:050 S14:AAH S16:00H S18:000 S21:00H
S22:76H S23:0BH S25:005 S26:001 S27:40H

STORED PROFILE 0:
B1 E1 L2 M1 Q0 V1 X1 Y0 &C0 &D0 &G0 &J0 &L0 &P0 &Q0 &R0 &S0 &X0
S00:000 S14:AAH S18:000 S21:00H S22:46H S23:0BH S25:005 S26:001
S27:40H

STORED PROFILE 1:
B1 E1 L2 M1 Q0 V1 X4 Y0 &C0 &D0 &G0 &J0 &L0 &P0 &Q0 &R0 &S0 &X0
S00:000 S14:AAH S18:000 S21:00H S22:46H S23:0BH S25:005 S26:001
S27:40H

TELEPHONE NUMBERS:
&Z0= 34017
&Z1= 95551212
&Z2= 74802
&Z3= PPARIS

OK
```

Command: &W

Function: Store the active configuration profile.

Type: immediate

Arguments: No argument or an argument of 0 stores to location 0, an argument of 1 stores to location 1.

S-Register: none

Example: at&w0 (Enter)

Comments: In the example, the currently active configuration profile is stored to memory location 0. Only a subset of the configuration parameters are actually stored.

See Also: Chapter 3, "Configuration and Operation"; Appendix C, "S-Registers."

Command: &Y

Function: Designate the default configuration profile.

Type: configuration

Arguments: An argument of 0 will recall stored profile 0; an argument of 1 will recall stored profile 1. Factory-default selection is stored profile 0.

S-Register: none

Example: at&y1 (Enter)

Comments: In the example, the configuration profile stored in location 1 will be recalled the next time that the 7400B Plus is powered on. When the &Y command is issued, the currently active profile does *not* change until the 7400B Plus is powered off and then on again.

See Also: Chapter 3, "Configuration and Operation."

Command: &Z

Function: Store a telephone number.

Type: immediate

Arguments: The &Z command accepts one of four arguments (0 through 3), which designates the memory location in which the dialing string that follows the command will be stored.

S-Register: none

Example: `at&z2=555-1212` (Enter)

Comments: In the example, the dial string *555-1212* is stored in memory location 2. Each of the four number storage locations can store a maximum of 25 characters.

See Also: Chapter 3, "Configuration and Operation".

APPENDIX B: DIAL MODIFIERS

Dial modifiers are only recognized when they appear in a dial string. A dial string is a string of characters followed by the ‘‘D’’ (dial command) unless otherwise noted. This appendix contains an explanation of each dial modifier accepted by the 7400B Plus. Labels used in the descriptions are defined as follows:

Label	Description
Dial Modifier:	The dial modifier is shown as it should be typed. The dial modifier may be typed in uppercase or lowercase. Spaces may be typed between commands and dial modifiers on the same command line for readability, but the spaces are ignored by the 7400B Plus.
Function:	A brief, functional description of the dial modifier is provided here.
S-Register:	The S-registers consist of 28 1-byte memory locations in the data module, designated as S0 through S27. The S-registers hold values for defining the current configuration of the data module. Some commands modify a specific S-register, and some commands perform an action based on the current value stored in an S-register. Whether an S-register is modified or read by the current command is explained here.
Example:	A sample command line follows this label to demonstrate how the command may be used.
Comments:	An explanation of the example and any other information about the command not provided elsewhere is provided here. Additional commands may be typed on the same command line with the command currently under discussion, unless noted otherwise.
See Also:	Following this label are suggestions on where to look for more information about the current command and a listing of any other commands that may be used with or affect the use of the current command.

Dial Modifier: P

Function: Request to make a voice call.

S-Register: S6

Example: atdp9,9570000

Comments: The purpose of the P dial modifier is to signal the 7400B Plus to dial the number that follows as a voice call. When entered immediately after the D in a dial command and/or as the first character in a stored number, the 7400B Plus will place a voice call. When the P is omitted or the T is used, the 7400B Plus will place a data call. When the P is entered after the D and a stored number is dialed, a voice call is made even if the first character of a stored number is the T dial modifier. The blind dial register is used to delay between going off-hook and dialing the first digit.

See Also: Chapter 3, "Configuration and Operation."

Dial Modifier: S=n

Function: Dial the number stored in location n, where n has a value 0-3.

S-Register: none

Example: atds=0 (Enter)

Comments: The S=n dial modifier allows the 7400B Plus to dial a number previously stored with the &Zn command. In the above example, the number stored in location 0 is dialed. The S=n dial modifier can also be used for voice calls.

See Also: Chapter 3, "Configuration and Operation."

Dial Modifier: T

Function: Request to make a data call.

S-Register: none

Example: atdt918006230718 (Enter)

Comments: The purpose of the T dial modifier is to signal the 7400B Plus to dial the number that follows as a data call. When entered immediately after the D in a dial command and/or as the first character in a stored number, the 7400B Plus will place a data call. When the T is omitted, the 7400B Plus will still place a data call.

See Also: Chapter 3, "Configuration and Operation."

Dial Modifier: , (comma)

Function: Used as the pause character for voice calls.

S-Register: S8

Example: atd p 9,1,8005551212

Comments: The comma causes the 7400B Plus to delay dialing. On voice calls, the pause time is stored in the S8 register. Dialing is not delayed when the stored value is zero. On data calls, the comma (,) is passed to the PBX which will delay dialing by the parameter set in administration.

See Also: Chapter 3, "Configuration and Operation."

Dial Modifier: `; (semi-colon)`

Function: Terminates the dial string, and returns to command state after processing a dial command.

S-Register:

Example: `at dt 9,1 800 624-5123; dp 555-1212; O`

Comments: The semi-colon returns you to a command state and allows you to enter more commands.
In the above example, a data call is made, and the semi-colon returns you to the command mode. A voice call is then made and the `O` sends you back to the data connection.
When the dial command specifies a stored number to be dialed, the semi-colon can be entered after the S=n command. If a semi-colon is omitted, the voice call is made, but all commands following the dial command will be ignored.
If the dial command for a voice call is the last command on the command line, the semi-colon dial modifier may be omitted (the 7400B Plus will still return to the command mode).

See Also: Chapter 3, "Configuration and Operation."

APPENDIX C: S-REGISTERS

This appendix contains an explanation of each S-register used by the 7400B Plus. There are 25 S-registers used to store configuration parameters. Nine of these registers can be stored in non-volatile memory, which will be restored when the unit is powered up. There are two sets of stored registers, or profiles. When the 7400B Plus is first powered on, the values that were last stored in the S-registers are the values in effect until ''AT'' commands are issued to change them.

You can check the current value stored in all S-registers with the &V command (see description in Appendix A, "AT Command Set"). To look at the contents on just one register, use the command S*mm*?, where *mm* is the number of the S-register.

To change the value in any one S-register directly, use the command S*mm*=*nnn*, where *mm* is the number of the S-register and *nnn* is the number you wish to place in the register. The following dialog illustrates the use of the S command to read and change the value contained in an S-register:

```
ats18?     (Enter)
055

OK
ats18=120 (Enter)
OK
```

The first command requests the value stored in register S18. The 7400B Plus returns the value *055*, followed by *OK*. The next command changes the value in register S18 to *120*, and the data responds with *OK*. You could enter the first command a second time to verify that the value was changed correctly.

More information is provided in the following definitions of the labels used in the S-register descriptions.

Label	Description
Register:	The S-register is identified following this label. Note that the names for S-registers 1 through 9 may be typed as two-digit numbers with leading zeros, if desired, for readability (e.g., S01 is equivalent to S1).
Description:	The purpose and use for the S-register is explained following this label.
Range of Values:	The range of values that may be assigned to the register is explained following this label. The units for the value may be as follows: • *decimal*—a one- to three-digit decimal number. Decimal numbers are typically used to represent a count, seconds, or fractions of a second. • *ASCII*—a one- to three-digit decimal number that represents the decimal equivalent for an ASCII character (see ASCII Character Table in Appendix E, "Quick-Reference Summaries"). • *hexadecimal*—a two-digit hexadecimal number used to represent the contents of a bit-mapped S-register. Bit-mapped S-registers are not usually set by entering a complete value for the register, but are set one or more bits at a time by various ‘‘AT’’ commands. Hexadecimal digits include the decimal digits 0 through 9, and the letters A through F. **Notes:** **1** A value typed as a decimal or ASCII argument to a command may be entered as a one, two, or three digit number, as required, but will always be displayed as a three digit number (for example, you type the command `ATS0=3` to set automatic answer feature to answer an incoming call on the third ring, and then type the `AT&V` command to verify the value, which is displayed as `S00:003`). **2** The `&V` command, which displays the contents of all S-registers, presents the contents of bit-mapped registers as two hexadecimal digits followed by an uppercase letter `H` (for example, assuming that S-register S14 contains the value AA hexadecimal, the `AT&V` command displays `S14:AAH`).

(more)

Label	Description
	(Contd.)
Storable:	A *yes* after this label indicates that the contents of this S-register will be written when the current configuration profile is saved to one of the two configuration profile storage locations. A *no* here indicates that the contents of the S-register will *not* be written to storage. **Note:** Any changes to non-storable S-registers are lost when power is removed from the Data Module; however, the &Y command can be set to load a specific stored configuration profile at start up, and the values set by ''AT'' command arguments in the recalled profile will be placed into effect.
Comments:	Additional information about the S-register is presented following this label.
See Also:	Following this label are references to other parts of this manual where you will find more information, and/or a list of other S-registers or ''AT'' commands that are associated with this S-register.

Register: S0

Description: The value in this S-register represents the ring number on which an incoming call will be automatically answered.

Range of Values: The value may be 000 through 255 rings. The factory-default setting is 000 rings.

Storable: yes

Comments: Setting S-register S0 to any value from 001 through 255 enables automatic answer; a value of 000 disables automatic answering. The count of incoming rings is stored in S-register S1.

See Also: Chapter 3, "Configuration and Operation"; S-register S1.

Register: S1

Description: The number of incoming rings detected. Incremented each time a ring is detected. It is cleared if no rings are detected for eight seconds.

Range of Values: The value may be 000 through 255 rings. The factory-default setting is 000 rings.

Storable: no

Comments: In the 7400B Plus, incoming rings are not detected as such. The PBX notifies the 7400B Plus of an incoming call and a ring cycle (RI lead) is generated internally. The register is incremented after each ring cycle.

See Also: Chapter 3, "Configuration and Operation"; S-register S0.

Register: S2

Description: This S-register stores the ASCII value of the escape sequence character.

Range of Values: Value may be 000 through 127 (see comments); factory-default setting is 043, the ASCII code for a plus sign (+).

Storable: no

Comments: Setting the value greater than 127 will disable escape sequence detection, in which case the escape sequence cannot be used to move to command mode. The operation of the Data Terminal Ready (DTR) circuit, set by the &D command, can still be used to move to command state without disconnecting the call.

See Also: Chapter 3, "Configuration and Operation"; ''AT'' command &D in Appendix A.

Register: S3

Description: This S-register stores the ASCII value of the carriage return character.

Range of Values: Value may be 000 through 127; factory-default setting is 013, usually output by the **Enter** or **Return** key or the **Ctrl-M** key combination from a data terminal.

Storable: no

Comments: This character serves as the command terminator on an ''AT'' command line. It is also output following all result codes.

See Also: Chapter 3, "Configuration and Operation."

Register: S4

Description: This S-register holds the ASCII value for the line feed character.

Range of Values: Value may be 000 through 127; factory default setting is 010, usually output by the **Ctrl-J** key combination from a display terminal.

Storable: no

Comments: none

See Also: Chapter 3, "Configuration and Operation."

Register: S5

Description: This S-register holds the ASCII value for the backspace character.

Range of Values: Value may be 000 through 032 and 127; factory-default value is 008, usually output by the **Backspace** key of a data terminal.

Storable: no

Comments: The operation of the backspace character is to move the cursor left one character space and (on a command line) erase the character moved to. If command echo is enabled (AT command E1), the output of the backspace character is actually three characters: backspace, space, backspace.

See Also: Chapter 3, "Configuration and Operation."

Register: S6

Description: This S-register controls the blind dial delay interval for voice dial calls.

Range of Values: Value may be 000 through 255 seconds; factory-default is 2 seconds.

Storable: no

Comments: The 7400B Plus uses the blind dialing method to originate voice calls since it does not contain a dial tone detector. When an offhook message is sent to the PBX, the 7400B Plus pauses for the specified time before dialing the call.

See Also:

Register: S7

Description: Wait time for connection to remote endpoint. If the data mode is not entered within this time, the call will be disconnected.

Range of Values: Value may be 001 through 255 seconds; factory-default value is 060 seconds.

Storable: yes

Comments: Even though S7 is storable, it is not displayed with the stored profile data generated by the `at&V` command.

See Also: Chapter 3, "Configuration and Operation."

Register: S8

Description: This S-register controls the duration of delay for pauses for voice calls.

Range of Values: Value may be 000 through 255 seconds; factory-default is 2 seconds.

Storable: no

Comments: The 7400B Plus supports the comma dial modifier to provide pauses in the dialing process for a voice call. (The comma is sent to the switch for data calls).

See Also: Appendix B, "Dial Modifier."

Register: S9 — not used

Register: S10

Description: The value in this S-register determines how long the 7400B Plus will wait after loss of line signal is detected before disconnecting.

Range of Values: Value may be 000 through 255 tenths (0.1) of a second; factory-default value is 014 tenths of a second (1.4 sec.).

Storable: no

Comments: The delay set by this S-register allows the receive line signal to disappear momentarily without causing a disconnect (hang-up). Setting this S-register to the maximum value (255) causes the Data Module to ignore receive line signal status and not disconnect the data call if line signal is lost.

See Also: Chapter 3, "Configuration and Operation."

Register: S11 — not used

Register: S12

Description: The value in this S-register determines the minimum delay required immediately before and after entering the escape sequence (guard time). It also determines the maximum interval allowed between entering each of the three consecutive characters of the sequence.

Range of Values: Value may be 000 through 255 fiftieths (0.02) of a second; factory-default value is 050 fiftieths of a second (1 sec.).

Storable: no

Comments: If the value in this S-register is set to 0, timing is not a factor in escape sequence recognition.

See Also: Chapter 3, "Configuration and Operation."

Register: S13 — not used

Register: S14

Description: This S-register is used to store the status of bit-mapped options as follows:

bit 0 — not used (always set to 0)

bit 1 — 0 = command echo disabled, 1 = command echo enabled (default = 1, see E command)

bit 2 — 0 = result codes enabled, 1 = result codes disabled (default = 0, see Q command)

bit 3 — 0 = short result codes, 1 = verbose result codes (default = 1, see V command)

bit 4 —not used (always set to 0)

bit 5 — 0 =not used (see comment 1)

bit 6 — not used (always set to 0)

bit 7 — 0 = originate mode, 1 = answer mode (default = 1, see A and D commands)

Range of Values: Value may be 00 to FF hexadecimal; factory-default settings produce a value of AA (see comment 2).

Storable: yes

Comments:

1. In the DCP operating environment of the 7400B Plus, tone and pulse dialing have no meaning. If the T or P dial modifiers are used, bit 5 is changed accordingly, but the 7400B Plus performs no other action.
2. Refer to the explanation of hexadecimal values under the **Range of Values** label description at the beginning of this appendix.

See Also: Chapter 3, "Configuration and Operation"; refer to the indicated ‘‘AT’’ commands in Appendix A, "AT Command Set.

Register: S15 — not used

Register: S16

Description: This S-register stores test function status in a bit-mapped format as follows:

bit 0 — local digital loop test; 0 = test disabled, 1 = test in progress (default = 0, see the &T1 and &T2 commands)

bit 1 — not used (always set to 0)

bit 2 — local data loop test; 0 = disabled, 1 = test in progress (default = 0, see &T3 command)

bit 3 — status bit for remote digital loop initiated by remote system; 0 = off, 1 = in progress (default = 0, see &T4 and &T5 commands)

bit 4 — remote digital loop; 0 = disabled, 1 = in progress (default = 0, see &T6 command)

bit 5 — remote digital loop with self-test; 0 = disabled, 1 = in progress (default = 0, see &T7 command)

bit 6 — local digital loop with self-test; 0 = disabled, 1 = in progress (default = 0, see &T8 command)

bit 7 — not used (always set to 0)

Range of Values: Value may be 00 to FF hexadecimal; factory-default settings produce a value of 00 (see comment 1).

Storable: no

Comments:

1. Only one of the tests may be in progress at any time. The T0 command terminates any locally initiated test in progress and sets S-register 16 to 00.
2. Refer to the explanation of hexadecimal values under the **Range of Values** label description at the beginning of this appendix.

See Also: Chapter 3, "Configuration and Operation;" refer to the indicated ‘‘AT command in Appendix A, "AT Command Set."

Register: S17 — not used

Register: S18

Description: The value in this S-register establishes the duration of diagnostic tests initiated by the &T command.

Range of Values: Value may be 000 through 255 seconds. The factory-default value is 0.

Storable: yes

Comments: Any locally initialized test in progress is automatically terminated when the time specified in S-register 18 has elapsed. If S-register 18 is set to 0, a test initiated by the &T command must be terminated manually. Issuing the &T0 command terminates any locally initiated test immediately, regardless of the value in S-register 18.

See Also: Chapter 3, "Configuration and Operation;" Appendix A, "AT Command Set."

Register: S19 — not used

Register: S20 — not used

Register: S21

Description: This S-register is used to store the status of bit-mapped options as follows:

bit 0 — not used (default = 0, see comment 1)

bit 1 — not used (always set to 0)

bit 2 — not used (default = 0, see comment 1)

bits 3 and 4 — DTR options; value depends on argument of DTR option command (default = 00, see &D command)

bit 5 — DCD options; 0 = always on, 1 = EIA-232-D standard (default = 0, see &C command)

bit 6 — DSR options; 0 = always on, 1 = EIA-232-D standard (default = 0, see &S command)

bit 7 — not used (default = 0 see comment 1)

Range of Values: Value may be 00 to FF hexadecimal; factory-default settings produce a value of 00 (see comment 2).

Storable: yes

Comments:

1. For the 7400B Plus, bits 0, 2, and 7 will be set by the appropriate command, however, there will be no other effect.
2. Refer to the explanation of hexadecimal values under the **Range of Values** label description at the beginning of this appendix.

See Also: Chapter 3, "Configuration and Operation;" refer to the indicated ‘‘AT’’ command in Appendix A, "AT Command Set."

Register: S22

Description: This S-register is used to store the status of bit-mapped options as follows:

bits 0 and 1 — not used (default = 2, see comment 1)

bits 2 and 3 — not used (default = 1, see comment 1)

bits 4, 5 and 6 — result codes; value depends on argument of result code options command (default = 0, see X command)

bit 7 — not used (default = 0, see comment 1)

Range of Values: Value may be 00 to FF hexadecimal; factory-default settings produce a value of 76 hexadecimal (see comment 2).

Storable: yes

Comments:

1. For the 7400B Plus, bits 0 through 3 and bit 7 will be set by the appropriate command, however, there will be no other effect.
2. Refer to the explanation of hexadecimal values under the **Range of Values** label description at the beginning of this appendix.

See Also: Chapter 3, "Configuration and Operation;" refer to the indicated ‘‘AT’’ command in Appendix A, "AT Command Set."

Register: S23

Description: This S-register is used to store the status of bit-mapped options as follows:

bit 0 — allow remote loop request from remote system; 0 = disabled, 1 = enabled (default = 1, see &T command)

bits 1, 2, and 3 — local communications speed (see comment 1)

0 = 300 bps
1 = not used
2 = 1200 bps
3 = 2400 bps (factory-set default)
4 = 4800 bps
5 = 9600 bps
6 = 19200 bps
7 = not used

bits 4 and 5 — local parity setting; 0 = even, 1 = space, 2 = odd, and 3 = mark / none (default = 0)

bit 6 and 7 — not used (see comment 2)

Range of Values: Value may be 00 to FF hexadecimal; factory-default settings produce a value of 07 hexadecimal (see comment 3).

Storable: yes

Comments:

1. Hayes compatible modems use only bits 0, 1 and 2 for speeds up to 2400 bps. The 7400B Plus uses bit 3 to support speeds above 2400 bps.
2. Bits 6 and 7 are set by the appropriate command, but there will be no other effect.
3. Refer to the explanation of hexadecimal values under the **Range of Values** label description at the beginning of this appendix.

See Also: Chapter 3, "Configuration and Operation"; refer to the indicated ‘‘AT’’ command in Appendix A, "AT Command Set."

Register: S24 — not used

Register: S25

Description: The value in this S-register determines how long a change of state (OFF to ON or ON to OFF) on the Data Terminal Ready (DTR) lead must persist before it is acknowledged. If the change of state persists for a shorter time than is specified in S-register 25 it is ignored.

Range of Values: Values may be 000 through 255 hundreds of a second (0.01 sec.). The factory-default setting is 5 (0.05 sec.).

Storable: yes

Comments: none

See Also: Chapter 3, "Configuration and Operation."

Register: S26 — not used

Register: S27 — not used

APPENDIX D: LOOPBACK DATA TESTS

This appendix provides information on how to perform loopback tests and how to isolate problems using the 7400B Plus.

LOOPBACK DATA TEST

The 7400B Plus Loopback Data Test Arrangement provides a simple mechanism for isolating problems. In the Loopback Data Test Arrangement one or more 7400B Plus are set up for auto answer, and have the received data lead looped back to the transmit data lead on the data module's EIA interface. A user can then dial up the Loopback Data Test Arrangement and see if the data typed in at the local station is echoed back. A typical use for this would be a user who calls the Help Desk with the complaint that they can not access a local host. The user can be instructed to call the Loopback Data Test Arrangement (see Figure A).

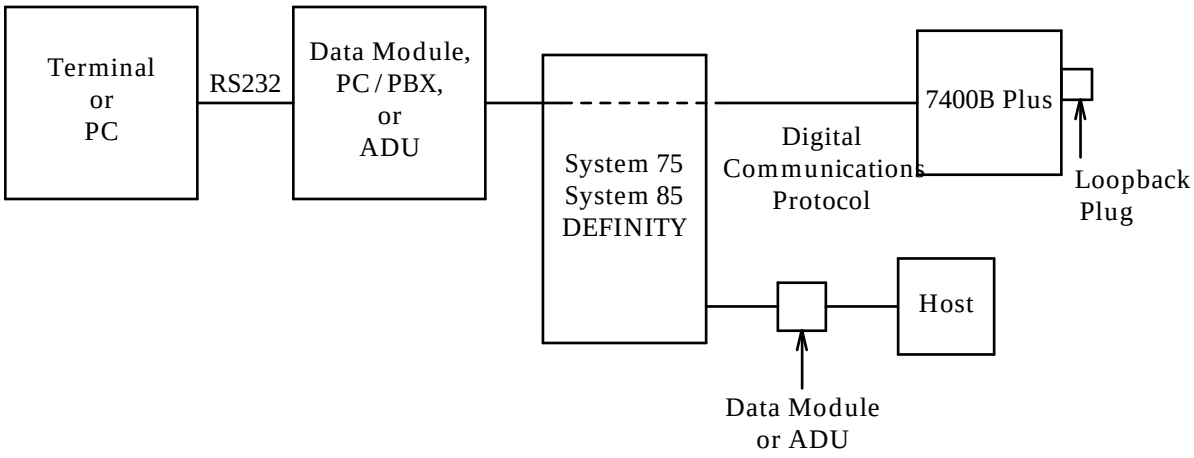


Figure A Local Loopback Data Test Arrangement

If the user is successful in connecting to the Test Arrangement (the data typed in is echoing back) then be assured that the user's desktop equipment and connection through the switch are functioning correctly. Help Desk personnel can than look elsewhere for the problem, saving valuable time in trouble isolation.

A Loopback Data Test Arrangement can also be useful for modem pool calls. An off-premises user having trouble connecting to a host can call the Loopback Data Test Arrangement (see Figure B). Again, if the call succeeds, the problem is not in the modem pool.

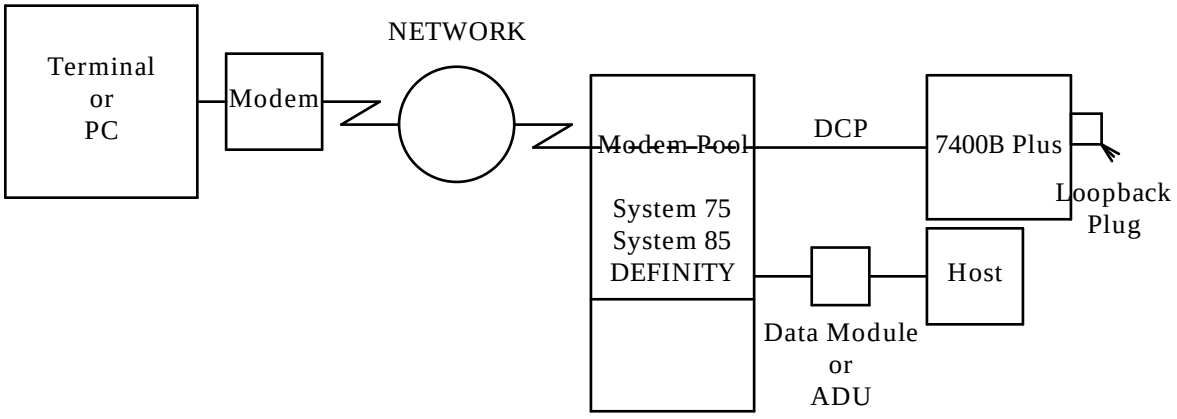


Figure B Using the Loopback Data Test Arrangement with Modem Pooling

The Loopback Data Test Arrangement is also useful for isolating problems in networks of digitally connected switches. The scenario is a user at one site needing to access a host at another site and having problems. The user is instructed by the Help Desk to call the local Loopback Data Test Arrangement. If this succeeds, the problem is isolated to the network or to the remote host equipment. The user is then instructed to call a Loopback Data Test Arrangement at the host site (see Figure C). If this call succeeds than the problem is not in the network between the switches.

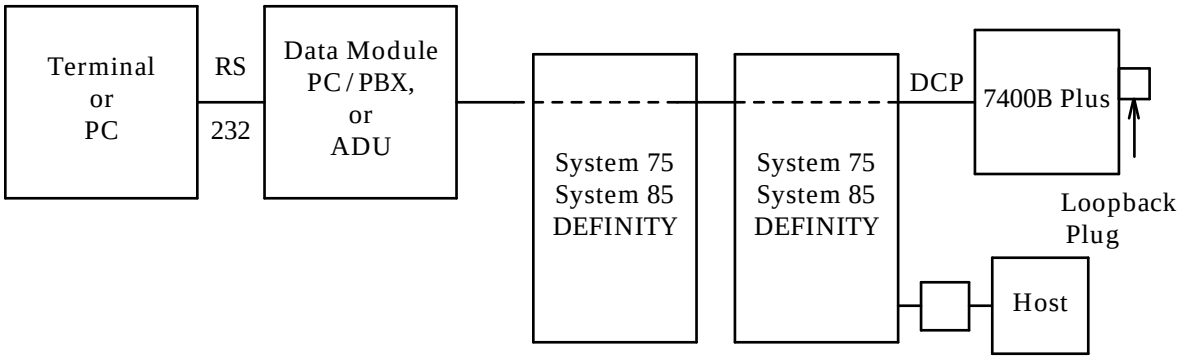


Figure C Using the Loopback Data Test Arrangement in a Network

Setting up a loopback data test arrangement

The Loopback Data Test Arrangement does not require special switch administration over and above the normal switch administration procedure for a 7400B Plus. If additional information is necessary, reference the following documents:

- The 7400B Application Notes for System 75 and Generic 1.1, (555-209-017)
- *System 85 and DEFINITY Generic 2 Terminals and Adjuncts Reference* (555-015-201) or the *System 85 and DEFINITY Switch Administration Procedures* (555-104-506). 7400B Application Notes for System 85 and DEFINITY Generic 2,

If the Loopback Data Test Arrangement is being used to test modem pools (see Figure B), separate 7400B Plus Data Module's must be setup for each modem pool group to be tested. Separate telephone numbers should be administered for the Loopback Data Test Arrangements used for modem pool testing.

The 7400B Plus must be connected to the PBX and powered up prior to using it in the Loopback Data Test Arrangement. Connect an asynchronous data terminal to the RS-232 port of the 7400B Plus. The speed of the terminal should be set as follows:

ACCESS	TERMINAL DATA RATE SETTING
on site	19200bps
1200bps, 300bps modem pool	1200bps
2400bps, 1200bps, 300bps modem pool	2400bps
9600bps, 4800bps, 2400bps, 1200bps modem pool	9600bps
9600bps, 4800bps modem pool	9600bps

Once the data rate has been set on the terminal type in the following commands:

```
AT&FS0=1E0Q1&W0&W1
```

You should now disconnect the terminal from the 7400B Plus. The 7400B Plus will retain the option settings during loss of power.

A looparound plug must now be connected to the RS-232 interface of the 7400B Plus. A looparound plug connects pin number 2 to pin number 3 on the 7400B Plus Data Module's RS-232 interface using a modified RS-232 connector. The modified RS-232 connector is shown in Figure D.

Figure D RS-232 Connector Wired as a Loopback Plug

Using the Loopback Data Test Arrangement

The user calls the Loopback Data Test Arrangement from a terminal/PC. Once connected the user checks to see if characters entered from the keyboard are successfully echoed back. If the terminal/PC is set for full duplex and the user types in

The cat

then

The cat

is echoed back in a successful test.

If the terminal/PC is set for half duplex then characters will be duplicated. For example if set for half duplex (local echo) and the user slowly types in

The cat

then

TThhee ccaatt

is echoed back in a successful test.

APPENDIX E: QUICK-REFERENCE SUMMARIES

This appendix contains quick-reference summaries for the following data:

- AT Command Set
- Dial Modifiers
- S-Registers
- Result Codes
- Factory-Default Configuration
- EIA-232-D Pin Assignments
- ASCII Character Set

TABLE E-1
AT COMMAND SET

Command	Description
AT	Command prefix—precedes most commands.
A	Answer an incoming call.
A/	Repeat the last command line.
D	Enter originate mode and dial number that follows.
E0	Inhibit command state echo.
E1	Enable command state echo.
H0	Go on-hook (hang up).
H1	Accepted but causes no action.
I0	Returns decimal number 249 to data terminal.
I1	Returns ROM checksum as two 4-digit hexadecimal numbers.
I2	Returns *OK*.
O	Return to on-line mode.
Q0	Enable display of result codes.
Q1	Disable display of result codes.
S*r*	Set pointer to S-register *r*.
S*r*=*n*	Set S-register *r* to value *n*.
S*r*?	Display value stored in S-register *r*.
V0	Display short form (numeric) result codes.
V1	Display verbose form (text) result codes.
X0	Enables features of result codes 0-4.
X1	Enables features of result codes 0-5, 10-12, 14.
X2	Enables features of result codes 0-5, 10-12, 14.
X3	Enables features of result codes 0-5, 7, 10-12, 14.
X4	Enables features of result codes 0-5, 7, 10-12, 14.
Z0	Reset and recall stored configuration profile 0.
Z1	Reset and recall stored configuration profile 1.

(more)

TABLE E-1
AT COMMAND SET (Contd.)

Command	Description
&C0	Maintain DCD circuit in ON state.
&C1	DCD circuit operates according to EIA-232-D specification.
&D0	Ignore DTR signal.
&D1	Return to command mode if ON / OFF transition of DTR is detected; active call is *not* disconnected.
&D2	Return to command mode if ON / OFF transition of DTR is detected; active call is disconnected.
&D3	Perform reset if ON / OFF transition of DTR is detected.
&F	Recall factory-default configuration profile.
&S0	Maintain DSR circuit in state.
&S1	DSR circuit operates according to EIA-232-D specification.
&T0	Terminate any test in progress.
&T1	Initiate local loopback test.
&T2	Same as &T1.
&T3	Initiate local data loopback test.
&T4	Allow remote loopback request from remote endpoint.
&T5	Deny remote loopback requests from remote endpoint.
&T6	Initiate remote loopback test.
&T7	Initiate remote loopback test with self-test.
&T8	Initiate local loopback test with self-test.
&V	Display active and stored configuration profiles.
&W0	Store active configuration profile in location 0.
&W1	Store active configuration profile in location 1.
&Y0	Recall configuration profile stored in location 0 at start-up.
&Y1	Recall configuration profile stored in location 1 at start-up.
&Z0	Store the following telephone number in location 0.
&Z1	Store the following telephone number in location 1.
&Z2	Store the following telephone number in location 2.
&Z3	Store the following telephone number in location 3.

TABLE E-2
DIAL MODIFIERS

Dial Modifier	Description
P	Initiate voice call—follows the dial command.
T	Initiate data call—follows the dial command.
,	Comma—pause character.
;	Semi-colon—return to the command mode.
S=n	Dial the telephone number stored with the &Zn=x command.

TABLE E-3
S-REGISTER SUMMARY

Register	Description	Range / Unit
S0	Ring to answer on.	000-255 count
S1	Incoming ring count.	000-255 count
S2	Escape sequence character.	000-127 ASCII
S3	Carriage return character.	000-127 ASCII
S4	Line feed character.	000-127 ASCII
S5	Back space character.	000-032, 127 ASCII
S6	Blind dial delay for voice calls.	000-255 sec.
S7	Wait time for call completion.	001-255 sec.
S8	Duration of delay for the comma.	000-255 sec.
S9	Not used.	—
S10	Delay between lost line signal and hang up.	000-255 0.1 sec.
S11	Not used.	—
S12	Escape sequence guard time.	000-255 0.02 sec.
S13	Not used.	—
S14	Bit mapped options (see Appendix C).	00-FF hex.
S15	Not used.	—
S16	Test function status (see Appendix C).	00-FF hex.
S17	Not used.	—
S18	Diagnostic test duration timer.	000-255 sec.
S19	Not used.	—
S20	Not used.	—
S21	Bit mapped options (see Appendix C).	00-FF hex.
S22	Bit mapped options (see Appendix C).	00-FF hex.
S23	Bit mapped options (see Appendix C).	00-FF hex.
S24	Not used.	—
S25	DTR change detect time.	000-255 0.01 sec.
S26	Not used.	—
S27	Not used.	—

TABLE E-4
RESULT CODES

Verbose Form	Numeric	Description
OK	0	Command accepted
CONNECTED	1	Connection made at 300 bps **Note:** If command `X1` is in effect, CONNECT means connection made at whatever speed both ends of the call agreed upon.
RING	2	Ring signal detected
NO CARRIER	3	Carrier signal not detected or lost
ERROR	4	Error in command line
CONNECT 1200	5	Connection made at 1200 bps
BUSY	7	Busy signal detected
CONNECT 2400	10	Connection made at 2400 bps
CONNECT 4800	11	Connection made at 4800 bps
CONNECT 9600	12	Connection made at 9600 bps
CONNECT 19200	14	Connection made at 19200 bps

TABLE E-5
FACTORY-DEFAULT CONFIGURATION

Parameter	Value	AT Command
Command state echo	enabled	E1
Communication mode	asynchronous	&Q0
Default user profile	profile 0	&Y0
DCD circuit option	always on	&C0
DSR circuit option	always on	&S0
DTR circuit option	DTR ignored	&D0
Not used by 7400B Plus	—	&G0
Not used by 7400B Plus	—	Y0
Not used by 7400B Plus	—	&P0
RDL request	granted	&T4
Result codes	enabled	Q0
Result code format	text	V1
Result code subset	0-5,7,10-12,14	X4
Not used by 7400B Plus	—	&R0
Not used by 7400B Plus	—	M1
Not used by 7400B Plus	—	L2
Not used by 7400B Plus	—	B1
Not used by 7400B Plus	—	&J0

(more)

TABLE E-5
FACTORY-DEFAULT CONFIGURATION (Contd.)

Parameter	Value	S-Register
Auto-answer on ring	disabled	S0=0
Backspace character	ASCII 8	S5=8
Carriage return character	ASCII 13	S3=13
Not used by 7400B Plus	—	S9=6
Pause time for comma	2 sec.	S8=2
Not used by 7400B Plus	—	S11=95
DTR detection	0.05 sec.	S25=5
Escape sequence character	ASCII 43	S2=43
Escape sequence guard time	1 sec.	S12=50
Hang up after lost carrier	1.4 sec.	S10=14
Line feed character	ASCII 10	S4=10
Ring count	0 rings	S1=0
Not used by 7400B Plus	—	S26=1
Test timer duration	0 sec.	S18=0
Wait for call completion	60 sec.	S7=60
Wait for blind dial (voice call)	2 sec.	S6=2

TABLE E-6
EIA-232-D PIN ASSIGNMENTS

Pin	Circuit	Direction	Function
1	—	—	not used
2	BA (SD)	to 7400B Plus	transmit data
3	BB (RD)	from 7400B Plus	receive data
4	CA (RTS)	to 7400B Plus	request to send
5	CB (CTS)	from 7400B Plus	clear to send
6	CC (DSR)	from 7400B Plus	data set ready
7	AB (SG)	common	signal ground
8	CF (RLSD)	from 7400B Plus	receive line signal detector
9	—	—	not used
10	—	—	not used
11	—	—	not used
12*	CI	from 7400B Plus	data signal rate select
13	—	—	not used
14	—	—	not used
15	—	—	not used
16	—	—	not used
17	—	—	not used
18	—	—	not used
19	—	—	not used
20	CD (DTR)	to 7400B Plus	data terminal equipment ready
21	—	—	not used
22	CE (RI)	from 7400B Plus	ring indicator
23*	CI	from 7400B Plus	data signal rate select
24	—	—	not used
25	—	—	not used

*CI on pin 12 is Bell 212A, on pin 23 is EIA-232-D

TABLE E-7
ASCII CHARACTER SET

ASCII VALUE	CONTROL CHARACTER	KEY	ASCII VALUE	CONTROL CHARACTER	KEY
000	NUL	Ctrl-@	032		spacebar
001	SOH	Ctrl-A	033		!
002	STX	Ctrl-B	034		"
003	ETX	Ctrl-C	035		#
004	EOT	Ctrl-D	036		$
005	ENQ	Ctrl-E	037		%
006	ACK	Ctrl-F	038		&
007	BEL	Ctrl-G	039		’
008	BS	Ctrl-H	040		(
009	HT	Ctrl-I	041		)
010	LF	Ctrl-J	042		*
011	VT	Ctrl-K	043		+
012	FF	Ctrl-L	044		,
013	CR	Ctrl-M	045		-
014	SO	Ctrl-N	046		.
015	SI	Ctrl-O	047		/
016	DLE	Ctrl-P	048		0
017	DC1	Ctrl-Q	049		1
018	DC2	Ctrl-R	050		2
019	DC3	Ctrl-S	051		3
020	DC4	Ctrl-T	052		4
021	NAK	Ctrl-U	053		5
022	SYN	Ctrl-V	054		6
023	ETB	Ctrl-W	055		7
024	CAN	Ctrl-X	056		8
025	EM	Ctrl-Y	057		9
026	SUB	Ctrl-Z	058		:
027	ESC	Ctrl-[	059		;
028	FS	Ctrl-\	060		<
029	GS	Ctrl-]	061		=
030	RS	Ctrl-^	062		>
031	US	Ctrl-_	063		?

(more)

TABLE E-7
ASCII CHARACTER SET (Contd.)

ASCII VALUE	CONTROL CHARACTER	KEY	ASCII VALUE	CONTROL CHARACTER	KEY
064		@	096		‘
065		A	097		a
066		B	098		b
067		C	099		c
068		D	100		d
069		E	101		e
070		F	102		f
071		G	103		g
072		H	104		h
073		I	105		i
074		J	106		j
075		K	107		k
076		L	108		l
077		M	109		m
078		N	110		n
079		O	111		o
080		P	112		p
081		Q	113		q
082		R	114		r
083		S	115		s
084		T	116		t
085		U	117		u
086		V	118		v
087		W	119		w
088		X	120		x
089		Y	121		y
090		Z	122		z
091		[	123		{
092		\	124		|
093		]	125		}
094		^	126		~
095		_	127	DEL	Delete
T}					

Index

T

V