



AT&T

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For use with 3.51 Software

AT&T UNIX[®] PC
Remote Access
User's Guide

This section contains important information for remote users of version 3.51 software. Please review this information before accessing the UNIX PC from a remote terminal, and keep it with your AT&T UNIX[®] PC Remote Access User's Guide. Page numbers below refer to related information in this guide.

NEW FEATURES:

- 1 Page 4-3. AT&T terminal models 510D and 615 are now supported for use with the Office windows and menus. The AT&T 5620 and 620 terminals are supported for use with the UNIX shell and certain other applications.

TECHNICAL TIPS:

- 1 Page 1-2. A standard null modem cable is now required for use with many applications. Prior to Version 3.5, many applications tolerated non-standard cables.
- 2 Page 4-3. If you are using the IRMA software application on an AT&T 615 terminal for remote access to a UNIX PC, you must type:

610 <Enter>

in response to the **terminal name** prompt when you login.

- 3 Page 4-8. To access the Office windows and menus on an AT&T 510A or 510D terminal without displaying touch targets, type:

510n <Enter>

in response to the **terminal name** prompt when you login. Menus will appear just as they do on other terminals that do not support touch targets. You may make selections by moving the highlight with the arrow keys and pressing the <Enter> key.

- 4 Page 4-13. A display line under the status line at the top of the terminal indicates that you enter "<ESC>CM" to access local commands. If you use the lowercase c and m, nothing happens. To access the Local Commands menu, you must use the uppercase C and M as indicated in the guide:

<Esc> <Shift>-<C> <Shift>-<M>

- 5 Page 4-14. A display line under the status line indicates that you enter "<ESC>EX" to exit from the Emulator. If you use the lowercase e and x, nothing happens. To exit from the Terminal Emulator, you must use the uppercase E and X as indicated in the guide:

<Esc> <Shift>-<E> <Shift>-<X>

- 6 Pages A-2, A-9. When setting up the characters to be transmitted when the <Enter> key is pressed, the field may be cleared by pressing [Default Values]. The space bar cannot be used to clear the field; it puts space characters in the field. This applies to the AT&T 513BCT and 610BCT terminals.

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Preface

Welcome to the **AT&T UNIX[®] PC Remote Access User's Guide**. This guide explains how to connect a remote terminal to a **UNIX PC** functioning as a host computer. The guide is organized into the following sections:

- o **Introducing Remote Access to the UNIX PC** gives you an overview of what you can do from a remote terminal, and what you need to connect a remote terminal to a **UNIX PC**.
- o **Comparing Remote and Console Access** describes capabilities and limitations of working with the **UNIX PC** from a remote terminal.
- o **Setting Up a Remote Connection** explains how to establish the connection between your host **UNIX PC** and a remote terminal.
- o **Using a Remote Terminal** provides procedures for logging into your host **UNIX PC** from a remote terminal, entering commands from the remote terminal, and logging out.
- o **Appendix A Terminal Setup Procedures** provides configuration details for the most commonly used terminals that can be connected to the **UNIX PC**.
- o **Appendix B The UNIX termcap File** contains an alphabetically arranged list of all terminal types that can be connected to the **UNIX PC**.
- o **Appendix C Keyboard Mapping Sequences** provides methods for entering **UNIX PC** functions that are not available as keys on many remote terminals.
- o **Appendix D Problem-Solving Checklist** offers possible solutions to problems you may encounter during remote access.
- o **Appendix E RS-232 Technical Information** provides pin assignments and technical details for RS-232 connections.

Preface

How to Proceed

If you are not already familiar with the basics of the UNIX PC, read through the AT&T UNIX® PC Getting Started Guide. The AT&T UNIX® PC Owner's Manual contains important reference information for all remote access setups. See the section, **Managing the UNIX PC**.

Refer to the manuals in your AT&T UNIX® PC Communications Management User's Guide binder for more specific information about remote access connections and setups using the optional AT&T UNIX PC Telephone Manager and Asynchronous Terminal Emulations (ATE) applications. For information about using the terminal emulator during remote access, see the AT&T UNIX® PC Terminal Emulation User's Guide. The AT&T UNIX® PC Telephone Manager User's Guide describes how to set up the telephone lines, and how to make data call entries. For information about your terminal, consult your terminal's Owner's Manual.

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1 Introducing Remote Access to the UNIX PC

This guide provides the information you need to use the remote access capabilities of the UNIX PC. From a remote terminal you can log into your UNIX PC and perform most of the functions that you normally do with the UNIX PC.

Your terminal can be located at a distance from your UNIX PC--for example, in another room, at home, or in your company's branch office in another city. You can use most popular types of terminals; you can even use another UNIX PC as a terminal.

What You Will Need

There are two basic types of connections you can make to a UNIX PC from a remote terminal. You can use:

- o A modem and the telephone lines
- o An RS-232 cable

If you have networking hardware and software such as AT&T STARLAN Network or Ethernet, other types of connections are also possible.

To use modems and telephone lines to gain access to the UNIX PC, you will need:

- o A UNIX PC with the telephone lines set up in Administration so the computer can receive data calls.

To use RS-232 cables to gain access to the UNIX PC, you will need:

- o A UNIX PC with one RS-232 port per terminal, and enough memory to support connections to remote terminals. The UNIX PC comes with one standard RS-232 port. Consult your AT&T Account Representative for details on adding more ports and memory.

Introducing Remote Access to the UNIX PC

If the **UNIX PC** is used as a remote terminal, it must have a terminal emulator program installed such as the AT&T **UNIX PC Telephone Manager** and **Asynchronous Terminal Emulations (ATE)** applications.

As an alternative, experienced UNIX system users can use the UNIX **cu** command to establish connection; refer to the AT&T **UNIX**® PC UNIX System V User's Manual for an explanation of this command.

Conventions

This guide uses the following conventions:

Information displayed on the screen is shown in **boldface** type. For example:

Please login:

Information you type is shown in **boldface** type. For example:

Type **610**

Names of keys on the keyboard are enclosed in <>'s. For example:

<Exit>

The mouse buttons are represented as follows:

Left mouse button	<B1>
Middle mouse button	<B2>
Right mouse button	<B3>

Screen keys are enclosed in []'s. For example:

[HOLD]

Items to select (highlight) from menus are enclosed in ||'s. For example:

|RS232 Setup|

Key combinations are represented by the two keys separated by a hyphen. For example:

<Shift>-<Cmd>

To type this key combination, you hold down the Shift key, press the Cmd key, and then release both keys.

The exit symbol in the lower-left corner of a window is shown as:

[X]

The help symbol in the upper-right corner of a window is shown as:

[?]

The symbol at the bottom of a form used to implement changes is shown as:

[OK]

2 Comparing Remote and Console Access

When you work with the **UNIX PC** using a remote terminal, you can use the Office and its functions in much the same way you use them when you work on your computer console directly. The differences are described in this chapter.

You will find that you have the most capabilities in your Office and applications software if your remote terminal is another **UNIX PC**, an AT&T Personal Terminal 510A and 510D, an AT&T Teletype 610 terminal, or an AT&T 513 BCT. The 510 terminals display touch-targets for easy access to the **UNIX PC Office**. The AT&T Teletype 4410, 4420, 5410, 5420, and 5425 terminals, and other terminals compatible with the DEC-VT100 terminal, are also supported. Appendix B lists other terminals that you can use to work with the **UNIX shell**.

Remote Access Capabilities

From a remote terminal you can do the following:

- o Access your Office and all of the objects in it.
- o Open your Filecabinet and most of your files, except those requiring a bit-mapped display such as graphics files.
- o Run most applications and languages, except those requiring a bit-mapped display.
- o Make native screen prints from some remote terminals; check the Owner's Manual for your terminal to see if yours falls into this category. You can print files that you can print directly from the **UNIX PC**.
- o Print using the printer attached to your host **UNIX PC**.

Comparing Remote and Console Access

- o Place data calls to another host when the optional AT&T UNIX PC Telephone Manager and ATE applications are installed, and when the host UNIX PC has more than one data line--a modem on the RS-232 port, for example, or when the onboard modem is free.
- o Use the directories, call notes and history functions when the optional AT&T UNIX PC Telephone Manager application is installed.
- o Send and read electronic mail. Transmission may be delayed if the same data line that you used to log in to your host UNIX PC is needed for mail.
- o Perform most of the administrative functions that you perform from your host UNIX PC, except those requiring you to physically connect equipment. For example, you can change your password.
- o Work with the UNIX system and use its facilities.

Remote Access Limitations

There are some limits to what you can do from a remote terminal. Some limitations apply to all remote terminals. In other cases, what you can do and how you do it depends on the terminal you are using. These limitations are summarized below.

- o You cannot perform operations that require use of a mouse. You must give all of your commands, change windows, move the cursor and highlight, request help, and make selections using the keyboard. (Users with the 510 terminals can use touch-targets to perform some of these functions.)
- o You cannot use software that requires a bit-mapped display, such as graphics application packages or packages that have not been set up to run on both bit-mapped and character displays. (The Office software is one example of a set of programs that will run in both environments.)

Comparing Remote and Console Access

- o The Telephone Manger's telephone function keys (HOLD, HANGUP, LINE SELECT, REDIAL, and TIMER) are disabled for remote users when this application is installed.
- o You cannot have more than one application program active at once; you cannot suspend and resume an application program. For example, you cannot have a spreadsheet open in an active window and a document open in a suspended window. To move from the spreadsheet to the document, you must exit from the spreadsheet, return to your Filecabinet, and then open the document.
- o No UNIX PC status line appears on your remote terminal, so the date and time are not displayed. However, the date and time are available by selecting **Time** from the Office Commands menu.
- o Notification of system messages does not appear on most terminals.
- o No system-busy indicator is provided; the working icon is not displayed.
- o Performance may be slower than when you work directly with the UNIX PC, especially if you use a dialup connection. Scrolling through lists may be slower, and you may prefer to use the Page key instead.
- o Not all applications prevent you from modifying a file that is already open. When this happens, you may be able to change a file that another user is currently editing. The UNIX ed and vi editors in particular have this problem when files have been left at the Public setting for write permissions. Use the Private file access read and write permissions in Office Preferences, and the Security command, to prevent other users from gaining access to your files.
- o The CALL key on the 513 BCT terminal cannot be used to display the Telephone Manager Call screen. (Its function is defined by this terminal; consult the 513 BCT Owner's Manual for details.)

Comparing Remote and Console Access

- o Some differences will be evident in the way the Office and windows appear and are used when you gain access to the Office from a remote terminal.
- o Window borders are composed of characters. If your terminal is a 510, 610, 513 BCT, or VT-100-compatible unit, or if it is another UNIX PC, these characters will be solid reverse video blocks in the active window. They will not contain any border icons because these windows are not accessible by a mouse. In an inactive window, these characters will be either half-bright reverse video blocks or dots (periods).

See the **Using a Remote Terminal** section for a discussion of capabilities and limitations of particular types of terminals and detailed instructions for working in the Office from a remote terminal.

3 Setting Up a Remote Connection

You can use several methods to gain access to a host UNIX PC from a remote terminal. You can log in to a host UNIX PC from a remote terminal connected to an RS-232 port, or, if your terminal is connected to a modem or contains one, you can dial to a DATA line using a telephone line on the host UNIX PC.

The following types of remote access are available:

Caller

Host UNIX PC

Remote data terminal

RS-232 direct connection with a null modem cable (or unmodified RS-232 cable for the AT&T 510A and 510D terminals)

Modem on RS-232 port

Internal modem (DATA line)

Remote UNIX PC
(acting as a terminal)

RS-232 direct connection with a null modem cable

Modem on RS-232 port

Internal modem (DATA line)

Setting Up a Remote Connection

To set up a connection between a remote terminal and a UNIX PC host, you need to do the following:

- o Set up the UNIX PC host to communicate with a terminal.
- o Set up the terminal to communicate with a UNIX PC host.
- o Make the connection.

This chapter describes the procedures for connecting a remote terminal to a host UNIX PC and setting up the host UNIX PC to recognize the remote connection.

Providing for Multiple Users

When two or more users are working at the same time on a UNIX PC, a minimum of 1 megabyte of memory is required. Additional memory may also be needed to accommodate more users, according to the following table:

Users	Minimum Memory (megabytes)
1 to 2	1
3	1.5
4	2
5*	2.5

If you need more memory, you can easily add EIA/RAM Combo boards through expansion slots in the back of the UNIX PC. These boards add additional RS-232 ports as well as additional memory. The EIA/RAM Combo Board Installation Guide, included with the boards, explains how to set up the ports and offers information on the memory requirements for additional users. Contact your AT&T Account Representative for more information.

* Five concurrent users is the recommended limit. More than five users may degrade system's performance, unless they are occasional users.

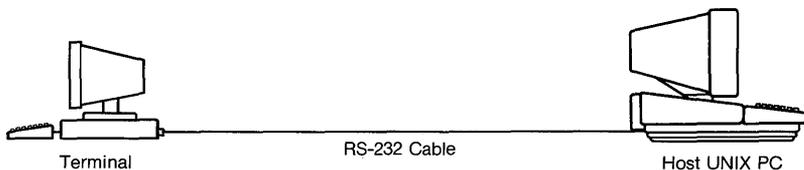
Making RS-232 Connections

The **UNIX PC** is equipped with one standard RS-232 port on its back panel. If you need to connect more than one remote terminal to the **UNIX PC** through RS-232 connections, you will need to install expansion cards containing additional RS-232 ports. You will also need to install the software that allows you to use these additional ports. Refer to the EIA/RAM Combo Board Installation Guide regarding installation of these expansion cards. See your AT&T UNIX PC Owners's Manual regarding the software installation for the extra RS-232 ports.

Connecting a Terminal to an RS-232 Port

You can connect a terminal to a host **UNIX PC** by attaching an RS-232 null modem cable to any RS-232 port on the computer back panel. Refer to Appendix E for further information on the RS-232 port and null modem cable. (Remember to use an unmodified RS-232 cable to connect the AT&T 510A and 510D terminals to the **UNIX PC**.)

A conceptual diagram of a terminal connected to a **UNIX PC** using an RS-232 cable is shown below:

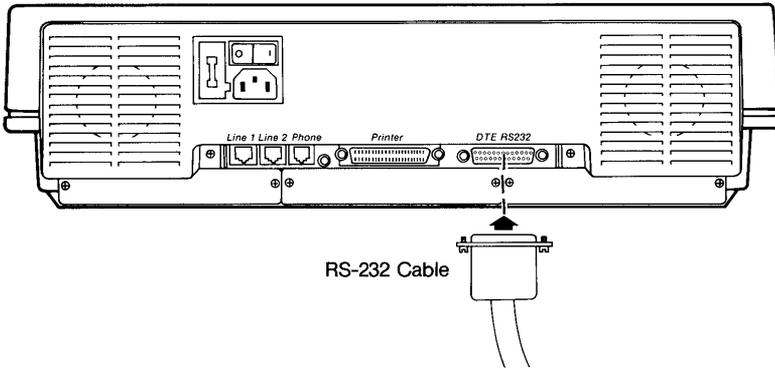


RS-232 cable connections are typically limited to 50 feet for proper operation at 9600 baud; however, longer cables can be used depending upon the environment and baud rates.

Setting Up a Remote Connection

To connect an RS-232 null modem cable from the **UNIX** PC to a terminal:

- 1 Plug the male end of an RS-232 null modem cable into the port labeled **DTE RS-232** on the back panel of the **UNIX** PC. (If you have additional RS-232 ports, you can plug the null modem cable into one of those instead.)
- 2 Secure the cable screws in the holes provided in this connector.



- 3 Plug in and secure the other end of the cable to the appropriate connector on the back of your terminal.
- 4 Set up your terminal as described in Appendix A, referring to the owner's manual for your terminal.
- 5 Set up the RS-232 port for connection to a terminal.

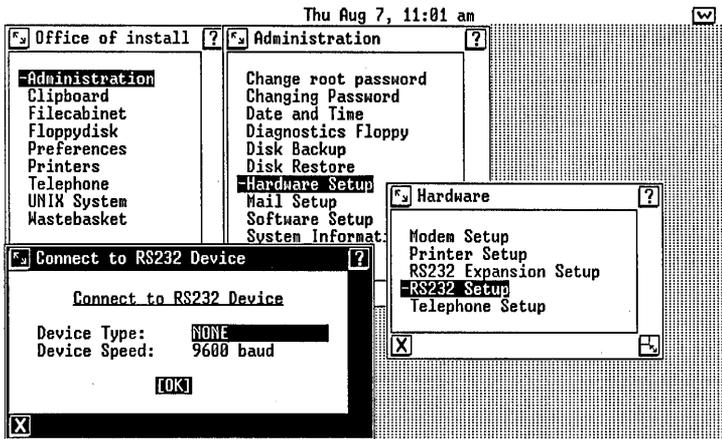
The port setup procedures follow.

Setting Up an RS-232 Port for a Terminal

To connect a terminal to an RS-232 port of your UNIX PC, configure the port as follows:

- 1 Log in to your UNIX PC as install.
- 2 Select |Administration| from the Office of install window.
- 3 Select |Hardware Setup| from the Administration menu, then either select |RS-232 Setup| or |RS232 Expansion Setup| to display the Connect to Device form.

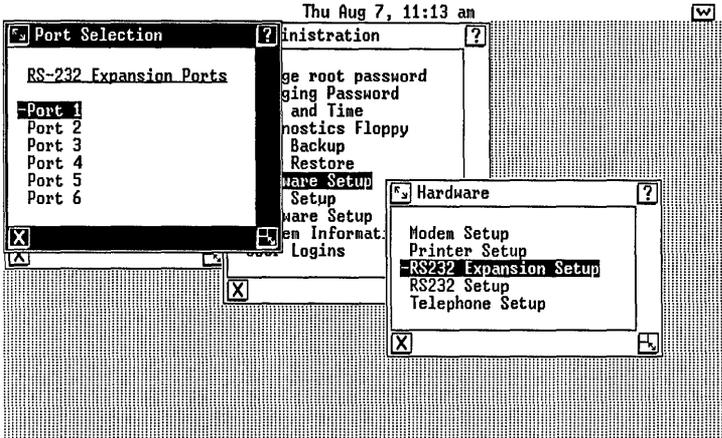
If you are using the standard RS-232 port, select |RS232 Setup| from the Hardware menu.



Use CMD key or middle mouse key and select value.

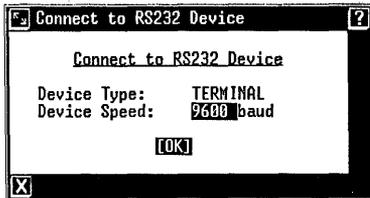
Setting Up a Remote Connection

If you are using an expansion RS-232 port, select **[RS232 Expansion Setup]**, and then select the appropriate port number from the Port Selection menu. The ports are numbered from left to right when looking at the back of the UNIX PC.



Cursor to the desired expansion port and ENTER

- 4 To set up the port for either selection, press **<Mark>** until **TERMINAL** is displayed in the **Device Type:** field of the **Connect to Device** form.
- 5 Point to the **Device Speed:** field, and press **<Mark>** until the appropriate baud rate is displayed.



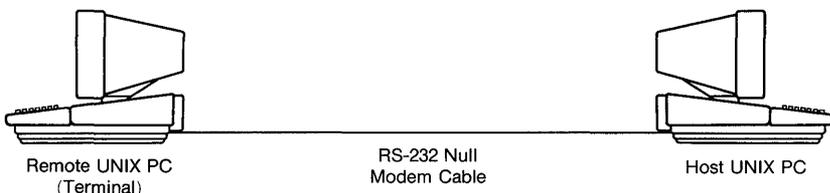
The terminal must be set up to run at the same baud rate as that entered in the Device Speed: field.

- 6 Press <Enter> to save this information and exit from the form.

The RS-232 port is now ready to address a terminal connected to this port.

Connecting Another UNIX PC as a Remote Terminal

You can use an RS-232 connection to attach one **UNIX** PC functioning as a remote terminal to another **UNIX** PC functioning as a host:



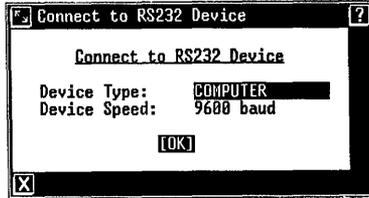
To attach a **UNIX** PC as a terminal to a host **UNIX** PC using the standard RS-232 port, set up the RS-232 port on the host **UNIX** PC for connection to a **COMPUTER** acting as a **HOST**.

- 1 Refer to "Setting Up an RS-232 Port for a Terminal" above, and follow steps to select either the standard or the extended RS-232 setup.
- 2 In the Connect to RS232 Device form, point to the Device Type: field, and press <Mark> until **COMPUTER** is displayed.
- 3 Point to the Device Speed: field, and press <Mark> until the desired baud rate is displayed. For the best system performance, the recommended speed is 9600 baud.

Setting Up a Remote Connection

The RS-232 port on the UNIX PC that is serving as the terminal must be set up at the same baud rate.

Your form should look like the illustration below:

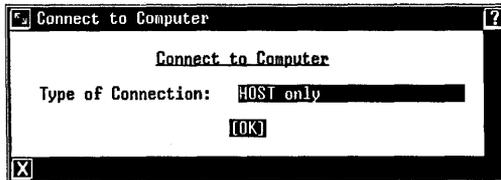


A screenshot of a terminal window titled "Connect to RS232 Device". The window has a title bar with a close button (X) on the left and a help button (?) on the right. The main content area displays the title "Connect to RS232 Device" followed by two fields: "Device Type:" with the value "COMPUTER" and "Device Speed:" with the value "9600 baud". Below these fields is a button labeled "[OK]". At the bottom left of the window is another close button (X).

- 4 Press <Enter> to save your entries.

You will see the Connect to Computer form, which prompts you to specify the type of connection.

- 5 Press <Mark> until **HOST only** is displayed in the **Type of Connection:** field.



A screenshot of a terminal window titled "Connect to Computer". The window has a title bar with a close button (X) on the left and a help button (?) on the right. The main content area displays the title "Connect to Computer" followed by a field: "Type of Connection:" with the value "HOST only". Below this field is a button labeled "[OK]". At the bottom left of the window is another close button (X).

- 6 Press <Enter> to save your entries.

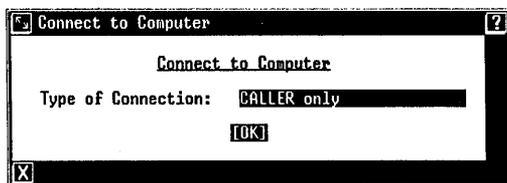
The host's RS-232 port is now ready to treat a UNIX PC connected to this port as a terminal.

Setting Up a UNIX PC as a Terminal

If you connect one UNIX PC set up as a host to another host UNIX PC, the system will no longer function properly. When the RS-232 port is configured as host, connect only terminals, or other UNIX PCs configured as CALLER.

Follow these steps to set up the RS-232 port on your remote UNIX PC as a COMPUTER, CALLER only.

- 1 Display the Administration menu and select |Hardware Setup|.
- 2 Select |RS232 Setup| or |RS232 Extended Setup| from the Hardware menu.
- 3 At the Connect to RS232 Device form, press <Mark> or <Cmd> to select **COMPUTER** in the **Device Type:** field.
- 4 Press <Mark> or <Cmd> to select the appropriate baud rate in the **Device Speed:** field.
- 5 Press <Enter> to save the selections and display the Connect to Computer form.
- 6 Press <Mark> or <Cmd> to select **CALLER** only.



- 7 Press <Enter> to save your setup; press <Enter> again to exit.

Consult the AT&T UNIX PC Terminal Emulation User's Guide for more details on setting up this configuration.

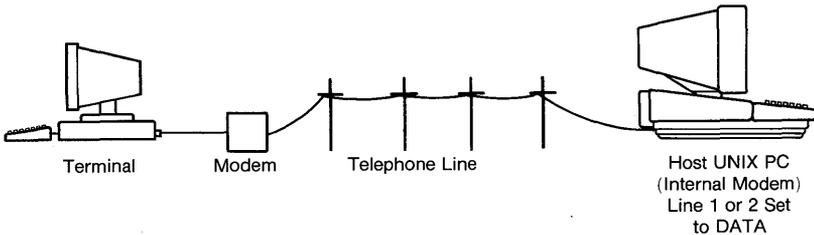
Setting Up a Remote Connection

Once you have completed this hardware setup on your remote **UNIX** PC, you must define a means for it to call the host **UNIX** PC. If you have installed the AT&T **UNIX** PC Telephone Manager and ATE applications, and are using the RS-232 port on the remote **UNIX** PC, you will need to create an RS-232 Profile and a Data Entry in the AT&T **UNIX** PC Telephone Manager's Call screen or Directory. See the AT&T UNIX PC Telephone Manager User's Guide for additional information on this configuration.

To place a data call from your remote **UNIX** PC to the host **UNIX** PC, select the data entry from the Call screen or Directory on your remote **UNIX** PC, and press the Enter key. See the AT&T UNIX PC Terminal Emulation User's Guide for details.

Setting Up Telephone Connections

The diagram below shows a terminal connected to a **UNIX** PC through telephone lines:



Setting Up the Telephone Lines for Data Calls

How you set up the telephone lines depends on the number of lines you have and whether you plan to install Telephone Manager or ATE.

Setting Up a Remote Connection

If you aren't installing Telephone Manager or ATE, set up the lines as follows:

- o Plug the telephone line you want to use for placing or receiving data calls into the jack labeled Line 2 on the back of the UNIX PC. In Telephone Setup from the Administration menu, set up Line 1 for VOICE (even though you have no Voice line) and set up Line 2 for DATA.

If you are installing Telephone Manager and ATE, set up the lines as follows:

- o One Telephone Line - Plug the telephone line into the jack labeled Line 1 on the back of the UNIX PC. In the Telephone Setup from the Administration menu, set up Line 1 for VOICE and leave Line 2 as NONE. When you place a call, Telephone Manager automatically switches the configuration to VOICE or DATA, as appropriate. You can also use the LINE SELECT screen key to switch between VOICE and DATA.
- o Two Telephone Lines, One for Data - Plug the telephone line into the jack labeled Line 1 and the Data line into the jack labeled Line 2 on the back of the UNIX PC. In Telephone Setup from the Administration menu, configure Line 1 for VOICE and Line 2 for DATA.

You can receive data calls as long as you have configured one of the telephone lines, an RS-232 port, or an external modem.

You can place data calls using the Telephone Manager and ATE applications, an Electronic Mail application, cu, or other applications.

Consult the AT&T UNIX PC Telephone Manager User's Guide in this binder and the Managing the UNIX PC section of the AT&T UNIX PC Owner's Manual for details on setting up a modem connection using the telephone lines. Using the UNIX cu command is described in the AT&T UNIX® PC UNIX System V User's Manual.

Setting Up a Remote Connection

Using Modems

The internal modem on the **UNIX** PC has autobaud capability; that is, it automatically adjusts to the baud rate of the calling device, so no additional setup is necessary.

To receive data calls using the telephone lines and an external modem attached to the **UNIX** PC's RS-232 port, the RS-232 port must be set up as a MODEM device type. See the Managing the UNIX PC section of the AT&T UNIX PC Owner's Manual for details on setting up the RS-232 port for connection to a modem. See the owner's manual for your modem to find out if it has autobaud capability.

4 Using a Remote Terminal

This chapter describes how to log in to the **UNIX** PC and identify your terminal type. The mnemonic names that identify terminal types are listed in Appendix B The **UNIX** termcap File.

You can log in to a **UNIX** PC using a direct RS-232 connection, or you can make a connection by placing a data call to a modem on the **UNIX** PC. After you enter your user name and password, you are prompted to identify the type of terminal you are using. Before starting, read the entire chapter to understand the login sequence and how to use the system from a remote location.

Establishing a Connection

Before you can log in, you need to establish a connection with the host **UNIX** PC.

- o If you are using a terminal that is cabled directly to the host's RS-232 port, turn the terminal on and press its Return key.
- o If you are using a remote **UNIX** PC as a terminal cabled directly to the host's RS-232 port, place a data call to the host **UNIX** PC. Use the AT&T **UNIX** PC Telephone Manager, or compatible, application. Do not use the default RS-232 profile. Create your own 9600 baud RS-232 profile and select UNIXPC as your Terminal Type and 8 as the Character Size in the profile setup form.
- o If you are using a remote terminal connected to a modem, place a data call to the host **UNIX** PC.

Using a Remote Terminal

- o If you are using a remote **UNIX** PC as a terminal connecting through a telephone line, place a data call to the host **UNIX** PC using **AT&T UNIX PC Telephone Manager**. Do not use the default modem profile. Create your own 1200 baud modem or RS-232 profile and select UNIXPC as your Terminal Type and 8 as the Character Size in the profile setup form.

See the AT&T UNIX PC Terminal Emulation User's Guide for instructions to create RS-232 and modem profiles.

When the connection is established, the host **UNIX** PC responds with:

Welcome to the AT&T UNIX pc

Please login:

If you do not immediately see this prompt, try pressing the Return or Enter key on your terminal.

Logging In and Selecting the Terminal Type

Generally, you log in as follows:

- 1 Respond to the login prompt by typing your user name, or the user name assigned to guest users, and pressing <Return>.
- 2 If you are prompted to enter a password, type your password and press <Return>.

When you have logged in successfully, a terminal prompt appears:

Please type the terminal name followed by RETURN:

- 3 Find the name of your terminal in Appendix B of this guide. Type one of the mnemonic names for your terminal, as listed in the right-hand column.

For example, if you are using an AT&T Personal Terminal 510A, type 510a or 510A

If you are logging in from another **UNIX** PC using the 513 BCT terminal emulation, type **unixpc**

You can also type ? to display a list of terminal types that are compatible with the Office. Other useful information about remote logins is also displayed.

- 4 Press <Return>.

If the host **UNIX** PC does not recognize the terminal name that you entered, it prompts you to retype the entry or to type ? for help.

Using the Terminal

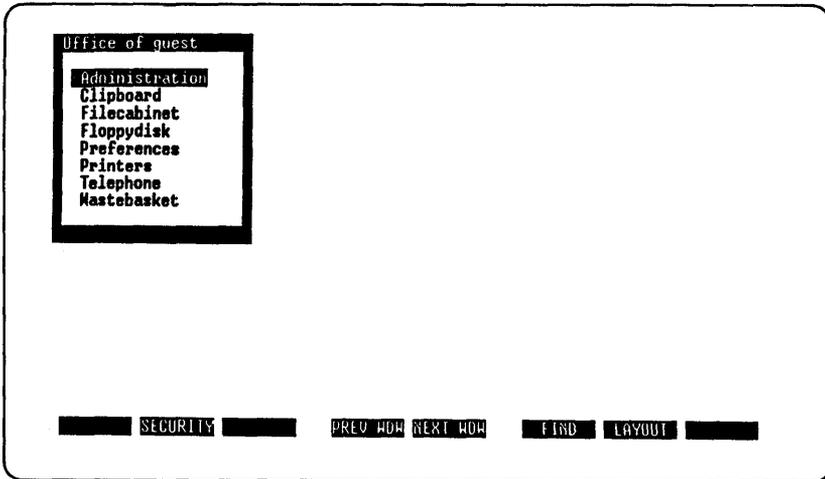
The following terminals are compatible with the Office:

<u>Terminal</u>	<u>Mnemonic Name</u>
AT&T 513 BCT or 513 BCT emulation	b513
AT&T PC6300+	pc6300plus
AT&T Personal Terminal 510A	510a
AT&T Personal Terminal 510D	510d
AT&T Teletype 4410	4410
AT&T Teletype 4420	4420
AT&T Teletype 5410	5410
AT&T Teletype 5420	5420
AT&T Teletype 5425	5425
AT&T Teletype 610	610
AT&T Teletype 620	620
AT&T UNIX PC (set up as terminal)	unixpc
DEC VT-100 or VT-100 emulation	vt100
Hewlett-Packard 2621	hp2621
Televideo 925	tvi925

If you have one of these terminals, type the appropriate name in response to the prompt.

Using a Remote Terminal

The Office you log in to will look something like the illustration below:



In a remote Office, window borders appear reversed and do not have icons. The screen keys are smaller than in the Office on a **UNIX** PC screen. See "Working from a Remote Terminal" later in this chapter for instructions on working in this Office using your particular model of terminal.

Using VT-100 Compatible Terminals

Some terminals are compatible with the VT-100; that is, they use most of the same escape sequences (you can determine if this is the case for your terminal by consulting your owner's manual). If so, entering **vt100** for the terminal name may produce better results than typing the mnemonic for your terminal. You must experiment to determine whether this is true.

Using Terminals Not Supported in the Office

You may have a terminal that is present in the `/etc/termcap` file on your UNIX PC but not supported in the Office (see Appendix B for `termcap` information). Most terminals fall into this category. You can use such a terminal to work in your Office, but the screen will not be set up properly. To issue commands, you must use the escape sequences discussed later in this chapter. Details are given in Appendix C.

You can gain direct access to the UNIX System V Shell by typing `?` in response to the terminal name prompt and then selecting the menu item that takes you directly to the default shell (for experienced UNIX users only).

Logging In as Root

You can also log in as `root` and gain direct access to the UNIX System V shell, but this is not recommended unless you are an experienced UNIX system user. If you do this, you risk deleting essential programs.

Logging Out from an Unsupported Terminal

If, after you log in, you see a screen in which the cursor moves rapidly from right to left several times and you see an Office that is bordered by asterisks, you have entered the name of a terminal that is not supported for the Office (the HP 2621 terminal is the exception, as described below).

If you want to log out at this point, press the following keys in sequence:

`<Esc> <e> <x>`

then type this control sequence:

`<Ctrl>-<j>`

You will be logged out, and, if you have dialed in, your line will be disconnected.

Using a Remote Terminal

Working from a Remote Terminal

The following sections explain how to use the functions of your host UNIX PC through remote access from various types of terminals. They explain how to enter commands using escape sequences, a method you can use from any terminal. Special considerations for each of the remote terminals that are compatible with the Office are also covered.

Entering Commands

When you are logged in from a remote terminal, you enter commands from the keyboard. How you do this and the limitations you will encounter depend on the terminal you are using.

In general, you will find that you can enter commands more rapidly if you select items from menus by typing, and type the commands themselves on the command line. You can also save time if you turn off the display of the Commands menu when you have become familiar with all of the Office commands. See the AT&T UNIX PC Owner's Manual for instructions on typing commands and turning off the Commands menu display.

You can select objects and enter commands by typing if you cannot use your terminal's arrow keys (see the descriptions of individual terminals below). In addition, you can type escape sequences for certain commands, such as `Cancl`, that appear on UNIX PC keys and do not appear on command menus.

Using Escape Sequences

You can give any command that is available from the UNIX PC keyboard by typing an escape sequence. (As mentioned previously, some functions are not available when you log in remotely.) A complete list of the escape sequences and the keys that each one represents is in Appendix C. Most of the commands you will want to use can be selected from a menu or typed.

The following sequences are the most frequently used. Esc represents the Escape or Esc key on your terminal keyboard:

<u>UNIX PC key</u>	<u>Equivalent Escape Sequence</u>
Cancel	Esc c n
Cmd	Esc c m
Delete Char	Esc d c
Enter	Control-J (hold down the Control key and type J)
Esc	Esc Esc (press the Escape key twice)
Exit	Esc e x
F1	Esc 1
F2	Esc 2
F3	Esc 3
F4	Esc 4
F5	Esc 5
F6	Esc 6
F7	Esc 7
F8	Esc 8
Help	Esc ?
Input Mode	Esc i m
Mark	Esc m k
Page	Esc p g
Shift-Page	Esc P G
Print	Esc p r

To enter a command by typing an escape sequence, press the key labeled Escape or Esc, release it, then type the one or two characters that follow. Do not press the Return key. The command is carried out when you finish typing the sequence.

For example, to display the Commands menu, press these keys:

<Esc> <c> <m>

Typing this escape sequence has the same effect as pressing the Cmd key on the UNIX PC.

Using a Remote Terminal

Using a Remote UNIX PC

When you are logged in to a host UNIX PC from a remote UNIX PC in terminal emulation mode and you have identified your terminal at login as `unixpc`, you will see very little difference from working directly with a UNIX PC when you enter commands from the keyboard. Most keys can be used as usual. The following keys do not work from the remote UNIX PC: `Msg`, `Suspd`, `Rsume`, the `Print` key pressed with the `Shift` key, and the `Shift` key combined with the function keys `F1` through `F8`.

You can use the arrow keys to move the cursor or the highlight in forms and menus. The `Return` and `Enter` keys work as they normally do. You can use the screen keys by pressing the corresponding function keys, `F1` through `F8`.

Using an AT&T 510A or 510D Terminal

When you use the AT&T Personal Terminal 510A or 510D for remote work, you will find that, on many Office menus and forms, the objects available on the UNIX PC can be selected by touch-targets, and that additional targets are available with some of the windows for entering, selecting and exiting. The cursor Roll keys on the 510A or 510D keyboards can also be used to highlight objects; use the `Enter` key to select or open them.

Some of the UNIX PC action keys have been added to the keyboard function keys, so that using these terminals greatly simplifies remote operation. These keys are listed on a label strip placed below the function keys.

	F1	F2	F3	F4	F5	F6	F7	F8
Ctrl:	CLR Line	Print	Rfrsh	Move	Copy	Mark	Create	Save
Shifted:	Help	Exit	Cancel	Beg	Undo	End	Previous	Clear
Unshifted:	Help	Close	Cmd	Input Mde	Delete	Del Char	Next	Home

The Personal Terminal 510 Owner's Manual describes the action keys available on the keyboards.

Because the function keys have been programmed to respond as some of the UNIX PC action keys, it will not be possible to use them to select screen key functions as on the UNIX PC. Use the touch-targets that appear in the screen keys (called action blocks on the 510 terminals) instead.

Using an AT&T 513 BCT

If your terminal is a 513 BCT and you have identified the terminal at login as a 513, you will see very little difference from working directly with a UNIX PC when you enter commands from the keyboard. Most keys can be used normally. Some of the keys of the 513 BCT do not have legends. You may find it useful to copy the legends from the UNIX PC's keyboard onto the 513 BCT keyboard; the keys in the same position have identical functions. (Appendix C contains an illustration of the UNIX PC keyboard.)

If you find that the Enter key or the cursor arrow keys on the 513 BCT does not work as you expect, you should make sure that the terminal is set up as described in Appendix A.

Using Other AT&T Terminals

If you are using an AT&T Teletype 4425, 5410, 5420, or 5425, and have identified your terminal correctly when logging in, you can use the arrow keys and function keys to work in the Office. For all other special UNIX PC keys (including the Exit, Cmd, Help, and Mark keys) you need to type escape sequences as described previously and in Appendix C.

Using an AT&T PC6300

If you use an AT&T PC6300 as a dialup terminal connected to the UNIX PC, you need to use the 513 BCT Terminal Emulation Package and enter 513 for the terminal name when you log in.

You can work with the Office applications and use the arrow keys and function keys. For all other special UNIX PC keys (including the Exit, Cmd, Help, and Mark keys) you will need to type escape sequences as described previously and in Appendix C.

Using a Remote Terminal

You can perform the functions of two very frequently used UNIX PC keys as follows:

- o <Esc>: Press the <Esc> key twice.
- o <Enter>: Press and hold the <Ctrl> key, then press the <j> key.

Using a DEC VT-100 Terminal

If you have a VT-100 terminal and you have identified it as a vt100 at login, you can work with the Office and your applications, and you can use the arrow keys to move the cursor, but you will need to type escape sequences for other functions as described previously and in Appendix C. For example, to use the screen keys, type the escape sequences, Esc 1 through Esc 8, which are equivalent to keys F1 through F8, respectively. Use the VT-100 Line Feed key whenever you would press the Enter key on the UNIX PC. The Enter key on the VT-100 numeric keypad does not have the same function.

If you have a VT-100 compatible terminal, and the terminal uses and responds to most of the same escape sequences, you can probably use it in the same way as described for a VT-100.

Using a Hewlett-Packard 2621 Terminal

If you are using an HP 2621 terminal and have identified your terminal correctly when logging in, you can use the function keys at the top of your keyboard with the Shift key to gain access to the screen key functions. For example, to use the screen key that corresponds to F1 on the UNIX PC keyboard, hold down the Shift key and press the leftmost function key on the HP 2621 keyboard.

For all other special **UNIX** PC keys (including the Exit, Cmd, Help, and Mark keys) you will need to type escape sequences as described previously and in Appendix C. You will find the following two sequences particularly useful:

- o **Ctrl-J**: This sequence is equivalent to the **UNIX** PC <Enter> key. Hold down the Control key (labeled **CTRL**) and press the **J** key.
- o **Esc r f**: This sequence clears and redisplay the screen.

When you work in the Office, the border of the active window is made up of asterisks (*) on your HP 2621 screen. Borders of other windows are displayed as periods (.).

Using Other Remote Terminals

To use the Office and its available applications on a terminal that is not compatible with the Office or a VT-100, you need to do one of the following:

- o Type commands by typing the item name in menus to select it, or by typing escape sequences.

Other terminals are not well supported for use in the Office, and their behavior is unpredictable when you work in the Office.

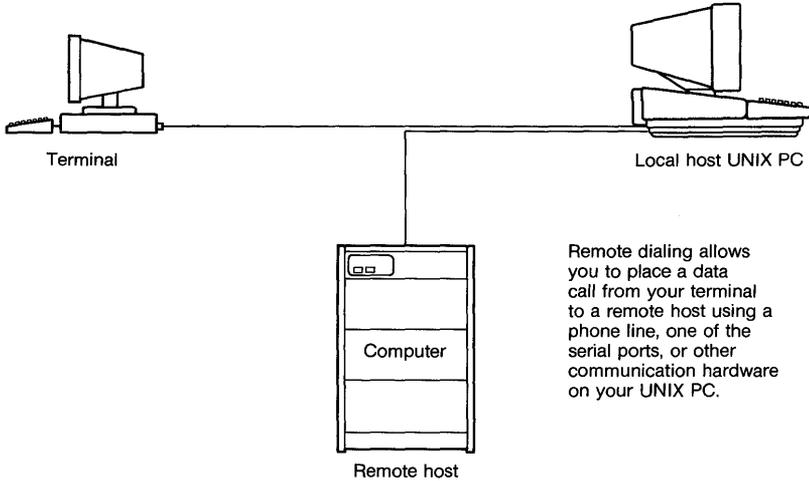
You can use any terminal listed in Appendix B to work within the **UNIX** operating system using the **UNIX** System V Shell or the Korn Shell.

Dialing a Remote Host from a Terminal

When the host **UNIX** PC has the AT&T **UNIX** PC Telephone Manager and ATE applications installed, you can place a data call to a remote host just like you can from the console using the Call screen or Directory. This allows you to use the communications capabilities of the **UNIX** PC to access yet another computer system.

Using a Remote Terminal

This setup is depicted in the following illustration:



Remote dialing allows you to place a data call from your terminal to a remote host using a phone line, one of the serial ports, or other communication hardware on your UNIX PC.

Users with the 510 terminals can also place voice calls from the Telephone Manager directory by selecting an entry and pressing the Enter key. This places the call using the 510 terminal's built-in telephone.

Remote data calls assume that a port such as Line 1, Line 2, or an RS-232 serial port on the host **UNIX PC** is set up and available for the call. The data call will be placed using the REMOTE Terminal Type. This is selected in the Terminal Setup form of the Modem or RS-232 Profile when the data call entry is created. However, if another terminal type such as 513 BCT is selected, the call automatically defaults to the REMOTE Terminal Type after the call is placed. Setting up REMOTE Terminal type before dialing speeds the connection process, but is not required, especially if you place data calls from the console (local **UNIX PC** host) to the same remote host.

The procedures for setting up and placing a remote data call are similar to placing a data call from the console.

Here's a typical remote dialing procedure:

- 1 From the remote terminal, open |Telephone| from the Office to display the Call screen.
- 2 Select the data call entry for the host you want to call from the directory and press <Enter>. You can also create a data call entry at this time. Data call entries are marked with an asterisk.

The call uses the port or line defined in the Modem or RS-232 profile for the data call entry to establish connection. Onscreen messages advise you of any problems in establishing the connection between the host UNIX PC and the remote computer.

- 3 When connection is made, the screen blanks, then displays the remote host's login prompt. If you don't see the prompt, try pressing <Enter> once or twice. Follow the remote host's login procedure.

During your session with the remote host, you can use the Local Commands menu of the ATE application on the UNIX PC. This menu offers file transfer and print commands, allowing you to transfer data between the local UNIX PC host and the remote host.

- 4 To display the ATE Local Commands menu, press these keys in sequence:

<Esc> <Shift>-<C> <Shift>-<M>

- 5 To make a selection, point to the command and press <Enter>.
- 6 To exit the Commands menu, press these keys in sequence:

<Esc> <e> <x>

- 7 To end your session, log out of the remote host's system, following its logout procedure. It's important to remember to do this since the port on the remote host may remain open if you forget to do so.

Using a Remote Terminal

- 8 After you have logged out, type these keys in the sequence indicated to disconnect the data telephone line connection and end the remote login session:

`<Esc> <Shift>-<E> <Shift>-<X>`

The Call screen reappears on the terminal screen when the line is disconnected.

The AT&T UNIX PC Terminal Emulation User's Guide explains setting up remote data call entries and using the Local Commands menu.

Logging Out

When you have finished working at your remote terminal, you should log out. There are several methods that you can use to log out:

- o If you are using the Office of the host UNIX PC, you can log out using the Commands menu. On your remote terminal, press the Cmd key, or press the Escape key followed by the letters **cm**. The Commands menu is displayed. Select Logout from this menu.
- o You can also log out by pressing the Exit key, or press the Escape key followed by the letters **ex**. The Logout window is displayed. Press the Return key or the Enter key to log out.
- o From the 510 terminals, press the **X** target, then the Enter target.
- o If you are using a UNIX shell, such as the UNIX System V shell, you can log out by holding down the Control key and pressing the **D** key in response to the UNIX shell prompt.

A Terminal Setup Procedures

This appendix contains setup procedures for terminals most commonly used with the UNIX PC. It is always a good idea to consult the owner's manual for whatever terminal you are trying to connect.

The host **UNIX** PC is set up as follows:

- o Full duplex
- o 8 data bits
- o No parity
- o No mapping on CR characters
- o No mapping on LF characters

A general setup for remote terminals, compatible with the host setup given above, is as follows:

- o 9600 baud
- o 8-bit data
- o Parity off
- o 1-stop bit
- o Full duplex
- o XON/XOFF flow control enabled
- o No automatic LF on CR

Terminal Setup Procedures

Setting Up an AT&T 513 BCT Terminal

Display the terminal setup screen by pressing the Shift-F5 key combination, then pressing the F1 key (labeled **terminal setup**). Set up the options so that they match the values in the following table, then press the F6 key, labeled **SAVE ALL**.

AT&T 513 BCT Terminal Setup

Field	Setting	Field	Setting	Field	Setting
Speed	Same as RS-232 or modem for dial-in	Return Key	CR*	Trans- mission	char*
Duplex	full*	Newline on LF	no*		
Send Parity	space	Autowrap	on		
Check Parity	no	Cursor	any	Send From	cursor*
Memory Access	scroll*	Keyclick	any	Send Edit Seq	yes*
Clock	asynch*	Margin Bell	any	Send Graphics	no*
Enter Key	L _F (Ctrl-j) *				
Answer-back	(Leave blank)				

* Must be set as shown for proper operation with the UNIX PC.

Set the modes as follows using the 513 BCT screen keys:

<u>Mode</u>	<u>Setting</u>
REMOTE	on
CHARACTER	on
BLOCK	off
MONITOR	off

Notes

The values in the **Speed** field should match the RS-232 port or modem speed.

The **Send Edit Seq** option must be set to **yes** to enable the keyboard mapping sequences to be transmitted correctly.

The **Enter Key** field should contain only a character that looks like this: L_F
This linefeed character is generated by pressing the <Ctrl>-<j> key combination while this field is selected.

Make sure the modem or the null modem cable is connected to the connector labeled **MODEM** on the rear of the terminal.

Consult your AT&T 513 BCT Owner's Manual for details on setting up the terminal.

Terminal Setup Procedures

Setting Up a VT-100 Terminal

Consult your VT-100 owner's manual for details. The following table shows the terminal setup.

The keyboard has seven light-emitting diodes. The ON LINE indicator must be ON. Scroll lock must be OFF.

Four groups of features are displayed at the bottom of the screen. They should be configured as in the chart that follows:

VT-100 Terminal Setup

1) 1101 2) 0011 3) 0100 4) 1011

T Speed = (same as RS-232, set at 1200 for dialup)

R Speed = (same as RS-232, set at 1200 for dialup)

Group	Function	Setting
1)	Scroll Autorepeat Screen Cursor	1 = smooth 1 = ON 0 = dark background 1 = block
2)	Margin bell Keyclick ANSI/VT52 Auto Xon/Xoff	0 = off 0 = off 1 = ANSI* 1 = on*
3)	#/ (shifted) Wrap around New Line Interlace	0 = # 1 = on 0 = off 0 = off
4)	Parity Sense Parity Bits per char. Power	1 = even 0 = off 1 = 8 bits* 1 = 60 Hz* (USA)
* Must be set as shown for proper operation with the UNIX PC.		

Setting Up an AT&T PC6300 as a Terminal

The AT&T PC6300 can be used as a terminal connected to the UNIX PC, if the 513 BCT terminal emulation software is running. To use the PC6300 this way, set up the options so that they match the values in the following table:

AT&T PC6300 Terminal Setup

Field	Setting	Field	Setting	Field	Setting
Speed	same as RS-232 or modem	Return Key	CR*	Transmission	char*
Duplex	full*	Newline on LF	no*	Line Send	Keyed*
Check Parity	no	Cursor	any	Send From	cursor*
Flow Control	on	Key-click	any	Send Edit Seq	yes*
Comm Port	COM1	Margin Bell	any	Send Graphics	no*
Memory Access	Scroll*				
Enter Key	(leave blank)			Block Terminator	any
Answer-back	(leave blank)				
*Must be set as shown for proper operation with the UNIX PC.					

Notes

The **Speed** field should match the modem speed.

The **Send Edit Seq** option must be set to **yes** to enable the keyboard mapping sequences to be transmitted correctly.

The **Enter Key** field should be left blank; that is, no entry should be present.

Setting Up an AT&T Personal Terminal 510A

To connect the 510A terminal to the UNIX PC, set up the options on the COMMUNICATION SETUP or Modem Setup screens so that they match the values in the following table:

AT&T Personal Terminal 510A Setup

Field	Value	Field	Value
Speed	same as RS-232 or modem	Check Parity	no
Duplex	full	Return Key	CR
Flow Control	XON/XOFF	Newline on LF	no
Send Parity	space	Autowrap	on

Use an unmodified RS-232 cable to make a serial connection.

Terminal Setup Procedures

Setting Up an AT&T Personal Terminal 510D

To connect the 510D terminal to the UNIX PC, set up the options on the Terminal Setup screen so that they match the values in the following table:

AT&T Personal Terminal 510D Setup

Field	Value	Field	Value	Field	Value
Speed	same as RS-232 or modem	Send Parity	space	Return Key	CR
Duplex	full	Check Parity	no	Newline on LF	no
Flow Control	on	Columns	80	Autowrap	on
Scroll	smooth	Cursor	any	Auto-Repeat	on
Transmission	char	Screen Keyboard	off	Keyclick	off

Use an unmodified RS-232 cable to make a serial connection.

Setting Up an AT&T Teletype 610 Terminal

The AT&T 610 terminal is set up similar to setting up an AT&T 513 BCT terminal.

Press and hold the Ctrl key then press the F1 key (labeled Set-Up) to display the OPTIONS SETUP screen. Use the cursor Roll keys to move to the options. Press the CHANGE OPTIONS screen key to change the option settings.

AT&T 610 Terminal Setup

COMMUNICATIONS		USER PREFERENCES	
Speed	9600 or same as device	Columns	80/132
		Scrolling	jump/smooth
Send Parity	space	Reverse Video	no/yes
Check Parity	no	Volume	1-7
Local Echo	off	Key Click	on/off
Monitor Mode	off	Cursor Type	blk/line
Auto-wrap	on	Cursor Blink	yes/no
Newline on LF	no	Labels	on/off
Return Key	CR		
Enter Key	Ctrl-j		

Terminal Setup Procedures

The USER PREFERENCES can be set at any option.

Press the SAVE screen key to save your selections.

Press and hold the Ctrl key, then press F1 again to exit from the OPTIONS SETUP screen.

B The UNIX termcap File

The following list is a summary of the UNIX termcap file (/etc/termcap). Expert UNIX users may want to check the complete UNIX termcap file for new entries whenever the UNIX PC system software is updated. You may also want to check this file for any special or nonintelligent terminal listings, since the list below describes only the more commonly used terminals.

<u>Terminal</u>	<u>Mnemonic Names</u>
Adds Consul 980	ac, a980
Adds Regent 100	a1, regent100
Adds Regent 20	a2, regent20
Adds Regent 25	a3, regent25
Adds Regent 40	a4, regent40
Adds Regent 60	a6, regent60, regent 200
without arrow keys	a7, regent60na
Adds Regent series	a0, regent
Adds Viewpoint	av, viewpoint, addsviewpoint
ADM 31	adm31, 31
ADM 3A	adm3a, 3a
AED 512	Ma, aed512, AED512
AMPEX Dialogue 80	ME, ampex, d80, dialogue
Anderson-Jacobson 830	Aj, aj830, aj832, aj
Ann Arbor 4080	N4, aa, annarbor, 4080

The UNIX termcap File

Terminal

Mnemonic Names

Ann Arbor Ambassador

18 lines NB, aaa-18
20 lines NC, aaa-20
22 lines ND, aaa-22
24 lines NE, aaa-24
24 lines, reverse video NP, aaa-24rv
26 lines NF, aaa-26
28 lines NG, aaa-28
29 lines, reverse video NN, aaa-29rv
30 lines NH, aaa-30
30 lines, destructive
backspace Nd, aaa-db
30 lines, reverse video NO, aaa-rv, aaa-30rv
36 lines NI, aaa-36
40 lines NJ, aaa-40
48 lines NK, aaa-48
59 lines, status line NM, aaa-59
59 lines, reverse video NN, aaa-59rv
60 lines NL, aaa-60

APL VC415 vc, 415, vc415, 415ap1

AT&T PC6300+ pc6300plus, PC6300PLUS, 6300+,
AT&T PC6300+

AT&T Personal Terminal 510A 510A, 510a

AT&T Personal Terminal 510D 510D, 510d

AT&T 513 BCT b513, 513, att513, bct513

AT&T Teletype 33 T3, 33, tty, tty33

AT&T Teletype 37 T7, 37, tty37

AT&T Teletype 40 T0, 40, tty40

AT&T Teletype 43 T4, 43, tty43

AT&T Teletype 4420 t4, 4420

AT&T Teletype 4424M TT, 4424, tty4424

AT&T Teletype 4410 4410, att4410

AT&T Teletype 4415 att4415

AT&T Teletype 4425 4425, att4425

Terminal	Mnemonic Names
AT&T Teletype 5410	5410, tty5410
AT&T Teletype 5420	5420, tty5420
AT&T Teletype 5425	5425, tty5425
AT&T Teletype 610	b610, 610, 610bct, tty610
AT&T Teletype 620	620
AT&T UNIX PC	3b1, pc7300, AT&T UNIX pc
Beehive	b2, sb2, sb3
Beehive II	bh, bh3m, beehiveIIIm
Beehive Microbee series	bm, microb, microbee
Beehive Super Bee	bs, sb1, superbee, superb
with insert character	bi, superbeeic
BBN BitGraph Terminal	MG, bg, bitgraph
CDI 1203	Mi, cdi, cdi1203
Concept 100	co, c100, concept
with 4 pages	c4, c1004p
with no arrows	cn, c100-rv-na
with printer port	cp, c100-rv-pp
with reverse video	cr, c100-rv
with reverse video, 4 pages	cR, c100rv4p
with underline cursor	cc, c100uc
with underline cursor, 4 pages	c4, c1004u
with underline cursor, 8 pages	c8, c1008u
Concept 108 w/4 pages	cS, c108, c108-4p
with reverse video, 4 pages	cT, c108-rv-4p
with 8 pages	c8, c108, c108-8p
with 8 pages, no arrows	ca, c108-na
with reverse video, no arrows	cA, c108-rv-na
with reverse video, 8 pages	cR, c108-rv-8p
Control Data 456	Ca, cdc456, cdc Cc
Convergent Technologies AWS (ATE)	aws
Convergent Technologies PT	pt, gt, t0

The UNIX termcap File

Terminal **Mnemonic Names**

Convergent Technologies WorkSlate w0, wks

Cybernex MDL 110 My, mdl110

Cybernex XL-83 Mn, xl83

Data General 6053 Mg, dg, dg6053

Data Media 1520 D0, 1520, 1521, dm1520, dm1521

Data Media 2500 D2, dm2500, datamedia2500

Data Media 3025 D3, dm3025

Data Media 3045 D4, 3045, dm3045

Data Media 80 D5, dt80, dmdt80, dm80

Data Media 80/132 D6, dt80w, dmdt80w, dm80w

Data Point Md, datapoint, dp3, dp3360

Datagraphix 132 MH, dl32, datagraphix

Dataspeed 40 TO, ds40, ds40-2

DEC Decwriter I dI, dw1

DEC Decwriter II, III dw, dw2, dw3

DEC Decwriter IV df, dw4

DEC GT-40 d4, gt40, dec gt40

DEC GT-42 d2, gt42, dec gt42

DEC VT-100 d0, vt100, vt100-am
for VT100sys di, vt100-23
with 132 columns ds, vt-100-s
with advanced video dt, vt100-w

DEC VT-132 d3, vt132

DEC VT-50 d5, vt50

DEC VT-50H dh, vt50h, dec vt50h

<u>Terminal</u>	<u>Mnemonic Names</u>
DEC VT-52	dv, vt52
Delta Data 5000	Mx, delta, dd5000
Diablo 1620	A6, 1640-m8, 1620, 1640, 450
Digilog 333	MP, digilog 333
Direct 800/A	M7, d800
DTC 300	Ad, dtc300s, 300, 300s, dtc 300s
DTC 382	Ac, 382, dtc382, dtc, ps
Execuport 4000	MR, ep40, ep4000
Execuport 4080	MQ, ep48, ep4080
Freedom 100	v9, freedom
GE Terminet 300	terminet300, tn300
GE Terminet 1200	MS, terminet1200, tn1200
Hazeltine 1000	H1, h1000
Hazeltine 1420	H4, h1420
Hazeltine 1500	H5, h1500
Hazeltine 1510	H6, h1510
Hazeltine 1520	H8, h1520
Hazeltine 1552	H2, h1552
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Hazeltine 2000	H7, h2000
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with underline cursor	ku, h19-u
with keypad shifted, underline cursor	kU, h19-us
Heathkit 19	kb, h19, h19-b, heath, z19, zenith, heathkit h19

The UNIX termcap File

Terminal **Mnemonic Names**

Hewlett-Packard 2600 series hb, 2640b, 2644a
with 48 lines hl, 2621-48
with labels hw, 2621-wl
without tabs ht, 2621-nt
without labels hn, 2621-nl
with 45 keyboard h3, k45, 2622, 2621k45

Hewlett-Packard 2621 h2, 2621, hp2621, hp2621-fl,
hp2621a, 2621a, 2621p

Hewlett-Packard 2626 h6, hp2626, 2626, hp2626a,
2626a, hp2626p, 2626p

Hewlett-Packard 2640 ha, 2640, hp2640a, 2640a

Hewlett-Packard 2645 h4, hp2645, 2645, hp45

Hewlett-Packard 2648 Graphics h8, hp2648, 2648,
2648a, hp2648a

IBM 3101 I9, ibm, 3101, i3101

Infoton (General Terminal) il, i100, gt100

Infoton 400 (General Terminal) i4, i400, 400

Intecolor 8001 I8, 8001, ISC8001

Intecolor Compucolor II IG, compucolor2,

Interactive Systems owl 1200 It, intext

Lear Siegler ADM 2 12, adm2, lsi adm2

Lear Siegler ADM 3 13, adm3, lsi adm3

Lear Siegler ADM 31 lo, oadm31, old adm31,
11, adm31, 31, lsi adm31

Lear Siegler ADM 3A+ 1b, 3a+, adm3a+, adm3aplus

Lear Siegler ADM 3A la, adm3a, 3a, lsi adm3a

Lear Siegler ADM 42 14, adm42, lsi adm42

Lear Siegler ADM 5 15, adm5, lsi adm5

Terminal	Mnemonic Names
Microterm Act IV	m4, microterm, act4
Microterm Act V	m5, microterm5, act5, act5s
Microterm Mime 1	mm, mime, mimel, mime2
with full bright	mf, mime-fb
with half bright	mh, mime-hb
emulating 3a	m3, mime3a
emulating Soroc 120	ms, mime2a-s
emulating VT-52	mv, mime2a-v
emulating enhanced 3a	mx, mime-3ax
Multiwriter 2	M5, mw2
NEC Spinwriter 5520	An, 5520, nec, spinwriter
Omron 8025AG	Mo, omron
Perkin Elmer 1100	pf, fox
Perkin Elmer 1200	po, owl
Perkin Elmer 550	pb, bantam, 550, pe, pe550
Qume Sprint 5	Aq, qume, qume5
SOL	ml, sol
Soroc 120	MI, soroc, Soroc 120
Southwest Technical Products	
CT82	Ms, swtp, ct82
TAB 132/15	M1, tab132, tab
with reverse video	M3, tab132rv
TEC 400	MJ, tec400
TEC 500	MK, tec500
Tektronix 4012	Xa, tek, 4012, tek4012
Tektronix 4013	Xb, tek4013, 4013
Tektronix 4014	Xc, tek4014, 4014
with small font	Xe, tek4014-sm, 4014-sm

The UNIX termcap File

Terminal Mnemonic Names

Tektronix 4015 Xd, tek4015, 4015
with small font Xf, tek4015-sm, 4015-sm

Tektronix 4023 X4, tek4023, 4023

Tektronix 4025 X5, 4024, 4025, 4027
with 17 line window X7, 4025-17, 4027-17
with 17 line window
in workspace X8, 4025-17ws, 4027-17ws

Tektronix 4110 series Xs, 4112, 4113, 4114, tek4112

Teleray 1061 y6, t1061, t10

Teleray 1061 w/ fast PROMs yf, t1061f

Teleray 3700 yl, t3700, teleray

Teleray 3800 series y3, t3800

Teletec Datascreen MM, teletec, tec

Televideo 912 v2, 912b, 912c
new with 2 pages) v4, tvi912-2p, 912-2p
old v1, tvi912

Televideo 920 v3, 920b, 920c

Televideo 925 v3, tvi925

Televideo 950 va,950, tvi950
with 2 pages vb, tvi950-2p, 950-2p
with 4 pages vc, tvi950-4p, 950-4p
with reverse video vd, tvi950-rv, 950-rv
with reverse video,
2 pages ve, tvi950-rv2p, 950-rv2p
with reverse video,
4 pages vf, tvi950-rv4p, 950-rv4p
with alt pages v5, tvi950-ap
without is v6, tvi950-b
without standout v7, tvi950-ns

Terak emulating Datamedia 1520 Mt, terak

Texas Instruments 700 series t3, ti, ti700,
ti733, ti735, ti745

Texas Instruments Omni 800 t8, ti800

Terminal **Mnemonic Names**

TRS-80 Model I M6, trs80, trs-80

UNIX PC s4, PC7300, unixpc, pc7300

VIRTUAL Mv, virtual

Visual 200

 without function keys Vf, vi200-f, visual

 with function keys V2, vi200

 with insert char Vt, vi200-ic

 with reverse video Vr, vi200-rv

 with reverse video,
 insert character VR, vi200rvic

Volker-Craig 303 MD, vc303, vc103, vc203

Volker-Craig 303A MC, vc303a, vc403a

Volker-Craig 404 M8, vc404

 without arrow keys MA, vc404-na

 with standout mode M9, vc404-s

 with standout mode,
 without arrow keys MAB vc404-s-na

Xerox 1700 series Ax, x1720, x1700, 1700, x1750

Zentec 30 Mz, zen30, z30

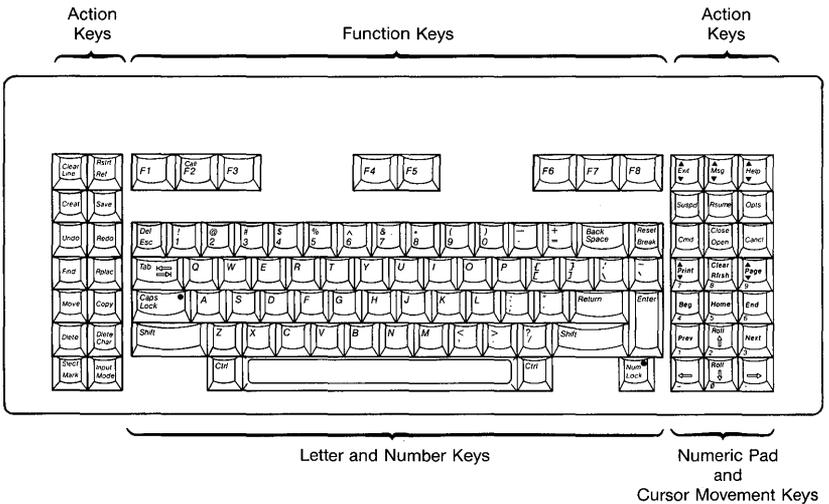
C Keyboard Mapping Sequences

This keyboard map provides an alternate means of entering the commands and functions on the UNIX PC keyboard and screen from a remote terminal. Pressing a key on the UNIX PC is equivalent to typing the escape sequences below. Typing the sequence for the Cmd key, for example, is done by pressing three keys in succession:

`<Esc> <C> <M>`

Esc is the Escape or Esc key on your terminal keyboard. The characters following Esc must be typed in capitals or lowercase, as shown in the tables.

The UNIX PC keyboard is illustrated below.



Keyboard Mapping Sequences

Function Keys

<u>UNIX_PC Key</u>	<u>Equivalent Escape Sequence</u>
F1	Esc 1
F2	Esc 2
F3	Esc 3
F4	Esc 4
F5	Esc 5
F6	Esc 6
F7	Esc 7
F8	Esc 8
Shift-F1	Esc !
Shift-F2	Esc @
Shift-F3	Esc #
Shift-F4	Esc \$
Shift-F5	Esc %
Shift-F6	Esc ^
Shift-F7	Esc &
Shift-F8	Esc *

Alphanumeric Keys

<u>UNIX_PC Key</u>	<u>Equivalent Escape Sequence</u>
Esc	Esc Esc
Tab	Esc t
Break	Esc b r
Reset	Esc r x
Shift-Break	Esc B R

Left Action Keys

<u>UNIX PC Key</u>	<u>Equivalent Escape Sequence</u>
Clear Line	Esc c i
Rstrrt	Esc r s
Ref	Esc r e
Creat	Esc c r
Save	Esc s v
Undo	Esc u d
Redo	Esc r o
Find	Esc f i
Rplac	Esc r p
Move	Esc m v
Copy	Esc c p
Dlete	Esc d l
Dlete Char	Esc d c
Dlete Char	Esc Del
Slect	Esc s l
Mark	Esc m k
Input Mode	Esc i m
Clear Line	Esc c i
Shift-Clear Line	Esc C I
Shift-Rstrrt	Esc S T
Shift-Ref	Esc R E
Shift-Creat	Esc C R
Shift-Save	Esc S V
Shift-Undo	Esc U D
Shift-Redo	Esc R O
Shift-Find	Esc F I
Shift-Rplac	Esc R P
Shift-Move	Esc M V
Shift-Copy	Esc C P
Shift-Dlete	Esc D L
Shift-Dlete Char	Esc D C
Shift-Slect	Esc S L
Shift-Mark	Esc M K
Shift-Input Mode	Esc N J

Keyboard Mapping Sequences

Right Action Keys

<u>UNIX_PC Key</u>	<u>Equivalent Escape Sequence</u>
Exit	Esc e x
Msg	Esc m s
Help	Esc h l
Help	Esc ?
Suspd	Esc s s
Rsume	Esc r m
Opts	Esc o t
Cmd	Esc c m
Open	Esc o p
Close	Esc c l
Cancl	Esc c n
Print	Esc p r
Clear	Esc c e
Rfrsh	Esc r f
Page	Esc p g
Shift-Exit	Esc E X
Shift-Msg	Esc M S
Shift-Help	Esc H L
Shift-Suspd	Esc S S
Shift-Rsume	Esc R M
Shift-Opts	Esc O T
Shift-Cmd	Esc C M
Shift-Open	Esc O P
Shift-Close	Esc C L
Shift-Cancl	Esc C N
Shift-Print	Esc P R
Shift-Clear	Esc C E
Shift-Page	Esc P G

Cursor Movement Keys

<u>UNIX PC Key</u>	<u>Equivalent Escape Sequence</u>
Beg	Esc b g
Home	Esc h m
End	Esc e n
Prev	Esc p v
Up arrow	Esc r u
Up arrow	Esc u p
Next	Esc n x
Left arrow	Esc b w
Down arrow	Esc r d
Down arrow	Esc d n
Right arrow	Esc f w
Shift-Beg	Esc B G
Shift-Home	Esc H M
Shift-End	Esc E N
Shift-Prev	Esc P V
Shift-Up arrow	Esc U P
Shift-Next	Esc N X
Shift-Left arrow	Esc B W
Shift-Down arrow	Esc R D
Shift-Right arrow	Esc F W

D Problem-Solving Checklist

Refer to the chart below if you have problems making or maintaining connection during remote terminal access.

<u>Problem</u>	<u>Possible Cause/Remedy</u>
Unable to establish communications	Incompatible baud rates. Set host and terminal port to same rate. RS-232 port on host UNIX PC not set up or set up incorrectly. Data terminal not set up or set up incorrectly. Faulty cable connection. Check for loose connections. Improper cable connection. Connect properly wired RS-232 cable (see Appendix E).
Garbled data on screen	Line interference. Try another cable, or place a data call again at a later time. Incorrect parity settings. Set terminal to match the UNIX PC. Incorrect terminal type selected. Check termcap file (Appendix B) for correct or compatible terminal type.

Problem-Solving Checklist

<u>Problem</u>	<u>Possible Cause/Remedy</u>
Improper line spacing on screen	Incorrect Return key setting. Set terminal to send Returns (CR) only; Returns and line feed (CR/LF) cause double spacing; No Returns (CR OFF) causes no line spacing.

E RS-232 Technical Information

This appendix provides technical information for the UNIX PC's DTE RS-232 ports, including cabling considerations.

RS-232 Signals Supported

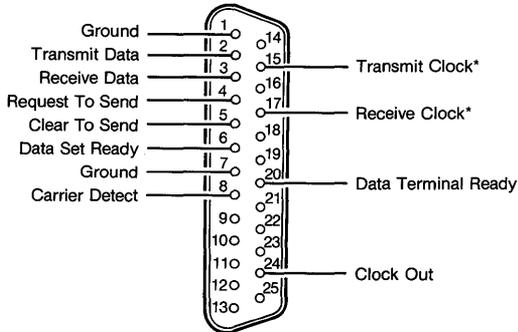
The UNIX PC has an RS-232 port labeled **DTE RS-232** on its back panel. RS-232 is a standard developed by the Electronics Industry Association (EIA) to define the signals used in communications between a computer and a serial device such as a terminal or a printer.

DTE stands for Data Terminal Equipment. Data Terminal Equipment includes output devices such as a printer, and typically a printer is connected at this port. But this port can also be used to connect an intermediate device such as a modem, and these devices are referred to as Data Communications Equipment (DCE).

An RS-232-C cable is used to connect a device to the RS-232 port. This cable has a connector that attaches to the pins on the RS-232 port. How the cable is wired to the connector determines which signals will be addressed on the port. The figure below illustrates the pins that are supported on the UNIX PC's RS-232 port, including ports added using the EIA/RAM Combo boards.

RS-232 Technical Information

The **UNIX** PC RS-232 ports are female DB25 connectors.



* Synchronous Only

Connecting a modem to the DTE port sets up a DTE-to-DCE communications link, and the RS-232-C cable, referred to as an unmodified RS-232-C cable, will support this link.

When a DTE device such as a terminal or another computer is connected at the RS-232 port using the unmodified RS-232-C cable, a problem occurs. A DTE-to-DTE communications link, which is normally what the user must set up to attach a terminal to the **UNIX** PC, requires that the transmit and receive signals and some of the control signals be crossed. This type of connection requires a null modem cable. The pins of concern are pins 2 and 3, which must be reversed on one of the connectors. (The exceptions to this are the 510 terminals, which act as modems and require unmodified RS-232-C cables for connection to the **UNIX** PC.)

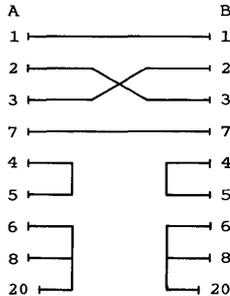
RS-232-C Cable Types

The null modem function can be built into an RS-232-C null modem cable or it can be supplied in a separate box that plugs into an unmodified RS-232-C cable.

Both unmodified and null modem cables can be found at most large computer dealers and electronics retailers. Some of these businesses make custom cables for particular applications. The figures below show wiring diagrams for null modem and unmodified cables.

Null Modems

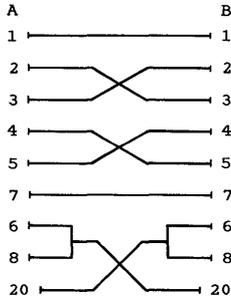
A cable using this pinout is known to work for terminal and UNIX-to-UNIX (uucp) connection. It is equivalent to Black Box Model ME202B.



This null modem will always work since no control leads are passed across the interface. But because of this, turning the terminal off does not log the user out.

RS-232 Technical Information

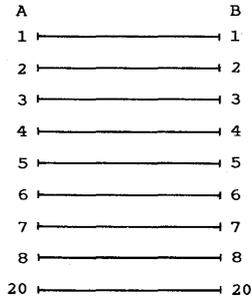
A null modem cable using this pinout offers a bit more control but may not be compatible with all equipment:



This type of cable is used primarily in terminal-to-UNIX PC connections. Turning off the terminal disconnects the line.

Standard Unmodified Cable

This pinout is used for standard, unmodified, asynchronous cable connections:



Use this type of cable when connecting 510 terminals and modems to the UNIX PC.

Glossary

ASCII	Abbreviation for American Standard Code for Information Interchange--a standard file format with no formatting codes. This format allows data to be transmitted between computers and other electronic devices in a form easily recognized and translated.
autobaud	The capability of a modem to adjust to the transmission speed of an incoming data call so that the baud rate does not have to be set by the user.
baud rate	The rate at which data is transmitted over communications lines. Typical rates are 300, 1200, and 9600 bits per second.
bit	Contraction of the words <u>b</u> inary <u>d</u> igit. A bit is represented by the binary number system (0s and 1s), and is the smallest unit of information used by a computer.
Call screen	A window that displays up to 15 names and telephone numbers when the optional AT&T UNIX PC Telephone Manager application is opened.
character	A letter, number, or symbol.
command	An instruction that tells the computer to perform a function or carry out an activity.

Glossary

computer	A machine that processes information by accepting data, performing operations on the data, and supplying the results of these operations.
configuration	The way in which the computer is set up to allow for particular uses or situations. For example, the telephone lines are configured to set up voice and data calls.
control character	An ASCII character that affects the way data is processed or displayed.
control sequence	A series of characters that affect the processing or display of data.
data	Facts, numbers, letters, and symbols that a computer can process.
data bits	A string of bits that represents a character. Eight bits make up one byte, or one character.
data calls	Calls made using a modem or the RS-232 port. Data is transmitted through communication lines.
default	A value that the computer uses if you do not specify a value.
delete	To remove, erase, or discard data.
directory list	The list of all directory entries listed with the optional Telephone Manager, including those on the Call screen.

disk	Circular magnetic medium used to store data and programs. This term can refer to a floppy (flexible) or hard disk.
emulate	The ability to imitate the functions of another system and thereby be compatible with programs that expect those functions. The UNIX PC's display screen emulates a 513 BCT terminal during data communications when ATE is installed, for example.
escape sequence	A control sequence starting with the ASCII character ESC.
field	An area in a form that you fill in with your choice or response. For example, you type a file name in a file name field.
file	A collection of data organized as a unit and identified by a name. All of the work you store in the computer is kept in files.
Filecabinet	An Office object in which you can store work, including files and folders.
file folder	A named container used to store files and other folders.
flow control	A means of regulating the exchange of data so that the input areas of the communicating computers do not overflow.
form	A display that provides blanks for you to fill in to give the computer information it needs to complete a task.

Glossary

format	(1) To prepare a new floppy disk to use with the UNIX PC. (2) The way the data appears on your screen or printed copy.
function keys	The top row of keys, F1 through F8, that perform the commands displayed on the screen keys.
hard copy	Information that has been printed by a computer on paper.
host computer	A separate computer system that you work with using a terminal.
install	To set up the hardware and software of a computer so it can be used. Installing often includes customizing the system for a particular situation or user.
log in	To type your user name into a computer to identify yourself so you can gain access to your files.
log out	To exit from the Office when you are finished working.
menu	A list of selectable items displayed by a program. As in a restaurant, you must choose from the menu before anything else happens.
mnemonic	A word or code that represents another, usually longer, term. A mnemonic device usually helps one remember codes more easily. Mnemonics are used for the large list of terminals that can access the host UNIX PC.

modem	Contraction of the words modulator-demodulator . A device that encodes and decodes data transmitted over communication lines.
network	A system of computers connected locally by cable, or remotely by telephone lines, whereby information can be shared by the computer users.
Office	The central part of the UNIX PC system, from which you can get to objects and to which you return when you are finished doing work.
operating system	The software that controls and allocates the UNIX PC resources, such as memory, disk storage, and the screen display.
parity check	A means of checking whether data transmitted through telephone lines or an RS-232 cable is garbled during transmission. The UNIX PC offers an even- or odd-parity check in which garbled characters are displayed as small squares when a parity error is detected.
password	A word or series of characters you type to gain access to a computer system after responding to the login prompt.
pathname	A means of identifying a file by including the names of the folders that must be opened to reach it from the Filecabinet. The names of the folders are separated by slashes (/). For example, the pathname of the file myfile , stored in the practice folder, is practice/myfile .

Glossary

point	To select an object, command, or field for action by highlighting it. There are several ways to point: by moving the mouse, pressing the arrow keys, or typing the name or first few characters of an item. You can select several items by pointing to each and pressing the B3 mouse button or the Mark key.
port	A place where data enters and exits from the computer. For example, the RS-232 port is a connector on the back of the UNIX PC where data can be transmitted between two computers.
printer	An output device that transfers information stored in or received by the computer onto paper as a permanent or <u>hard</u> copy.
program	A set of step-by-step instructions that tells a computer how to do a particular task.
remote terminal	A communications device such as a display screen and keyboard, you can use to enter data into and access data from a computer system.
RS-232	The number given to a standard that governs the signals used in devices that electronically transmit strings of data. Data calls and Electronic Mail can be transmitted through the RS-232 port on the UNIX PC.
Save	A command to preserve information by storing it in a file on a disk.

screen	The UNIX PC's workstation display.
screen keys	The commands displayed at the bottom of the screen. Use these commands by pointing with the mouse or pressing a corresponding function key, F1 through F8.
scroll	An action that causes the window contents to move up or down, right or left, allowing you to display information not visible when a window is first opened. To scroll, point with the mouse to the scroll icons (arrows) in the lower-right window border and press the B1 mouse button.
select	To point to an object, command, or field for action by highlighting it. There are several ways to select: by moving the mouse, pressing the arrow keys, or typing the name or first few characters of an item. You can select several items by pointing to each and pressing the B3 mouse button or the Mark key.
software	Computer programs that have been stored on a disk or other medium.
status line	An area at the top of the screen reserved for information about the current state of the computer and its activities.
Suspend	A command that makes the current window inactive, so you can use a different window or give window management commands.
system	A general term for a computer and its software and data.

Glossary

telecommuni- cations	A means of exchanging information electronically over a distance, as through a telephone line.
terminal	A communications device, such as a display screen and keyboard, you can use to enter data into and access data from a computer system.
value	Information, often a number, that is entered in a field.
voice call	Calls made using the standard handset in which voice is transmitted through communication lines.
window	A section of the screen surrounded by a border containing a portion of your work, or information necessary to perform your work. Windows are used to separate many tasks you may be working on at the same time.

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