
VT320W/16 Telnet Terminal Emulator

Getting Started Guide

Software Version 3

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VT320W Telnet Terminal Emulator

You can work on a VT320–based system from your local PC by using the VT320W Telnet Terminal Emulator. This chapter will help you to get started using the emulator to create a connection to a VT320 based system, execute commands, and run applications on the system.

Refer to the VT320W help system for more information about the application and specific functions. The VT320W help also describes the emulator command language and how to write scripts for use with the VT320W emulator.

What is VT320W Telnet Terminal Emulator?

VT320W Telnet Terminal Emulator (VT320W/16) is an emulation and communications package for IBM and IBM–compatible personal computers running Microsoft Windows 95 or 3.x. The software duplicates virtually all functions of the DEC VT320, VT220, VT102, VT100, and VT52 terminals, allowing you to work on UNIX and VMS host systems from your PC.

You can use VT320W to:

- Create a connection between a local PC system and VT320–based host system to run applications and execute commands on the host system
- Run multiple host sessions in separate windows
- Define the keyboard to work with an application
- Transfer files using the Kermit, ASCII, XMODEM, YMODEM, and ZMODEM protocols
- Save session profiles and create icons to automate the logon and connection to frequently used VT320 systems

- Change the layout of the VT320W Window to suit your preferences
 - Create and use command files to login, dial up, transfer files, manage host programs, log data, and analyze data
-

VT320W Versions

VT320W is available in two versions:

- 16-bit version for Windows 3.1 and Windows NT version 3.51
- 32-bit version for Windows 95 and Windows NT version 4.0

You can install either version using the installation procedure described in this chapter.

System Requirements

For VT320W/16 (16-bit version):

- Intel 386, 486, or Pentium processor
- Microsoft Windows 95, Windows NT version 3.51, Windows 3.1, Windows 3.11, or Windows for Workgroups 3.11 operating system
- A mouse
- One of the following: a) serial port directly connected to host; b) serial port connected to modem; c) network connection to host

For VT320W/32 (32-bit version):

- Intel 486 or Pentium processor
- Microsoft Windows 95 or Windows NT version 4.0
- 8 MB Memory (Windows 95 only) 16 MB recommended, NT requires 16 MB
- 15 MB Hard Disk space

- A mouse
 - One of the following: a) serial port directly connected to host; b) serial port connected to modem; c) network connection to host
-

Registration

There is a registration number on your program disks. Please record this number for future reference, updates, and technical support. Please take a few moments to fill out your product registration card and send it in. This will ensure that you receive prompt service and update notices.

Installing VT320W

VT320W is available in two versions:

- 16-bit version for Windows 95 and Windows NT version 3.51
- 32-bit version for Windows 3.1 and Windows NT version 4.0

Use the procedure in this section to install either the 16-bit or the 32-bit version.

VT320W files are stored in a compressed format on the disk(s). The installation procedure decompresses the file and copies them into the correct directory. To install VT320W, you must be running Windows, but all other programs must be closed.

1. Insert disk #1 of the VT320W distribution into a floppy disk drive.
2. Do one of the following:
 - For Windows 3.x and Windows NT version 3.51, select **Run** from the File menu, and then enter the diskette path followed by *install.exe*. For example:

```
a:install.exe
```

- For Windows 95 and Windows NT version 4.0, click the **Start** button, select **Run**, and then enter the diskette path followed by *install.exe*. For example:

```
a:install.exe
```

3. Follow the on–screen instructions to install VT320W.
 - For Windows 3.1 and Windows NT version 3.51 systems, the 16–bit version is installed. You will not be prompted to choose a version.
 - For Windows 95 and Windows NT version 4.0, you can choose either the 32–bit version (which is recommended on these systems) or the 16–bit version.

The installation program installs the files and creates a program group in Windows 3.x systems or a shortcut for VT320W in Windows 95 systems.

See the remaining sections of this guide for information on how to use the 16–bit version of VT320W.

If you install the 32–bit version, refer to the *VT320W/32 Getting Started Guide* (printed guide) for information on how to use the 32–bit version.

Starting VT320W and Connecting to a Host

This section describes how to start VT320W and how to create a connection to a remote VT320 host system.

Starting VT320W

To start VT320W:

- In Windows 3.x and Windows NT version 3.51, open the **VT320W** folder and double–click the **VT320W16** icon.
- In Windows 95 and Windows NT version 4.0, click the **Start** button and select **Programs**→**VT320W**→**VT320W16**.

The Connect dialog box appears.



Connecting to a Host

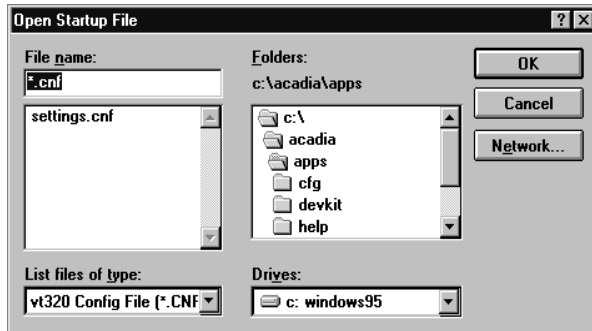
To connect to a host:

1. In the Connect dialog box, select a host name from the list.

The list box displays host names for those hosts listed in the TCP/IP host table. See your system administrator for information on the available hosts.

2. Optionally, specify an alternative VT320W configuration file.

Click the **Config** button. The Open Startup File dialog box appears.



The startup file specifies the protocol used to connect to a host, and other configuration information.

You can use the Open Startup File dialog box to list startup files and select a different startup file for the host selected in the Connect dialog box.

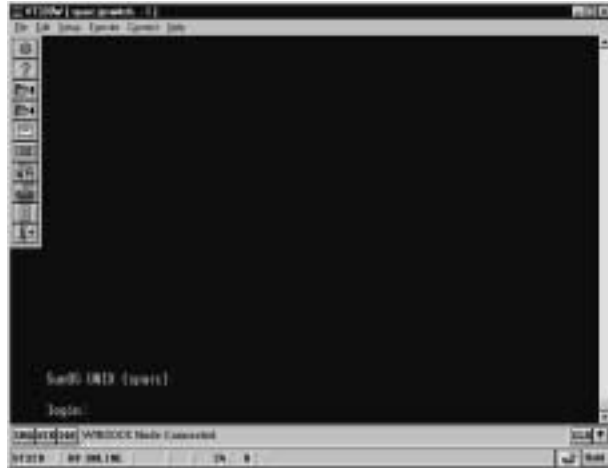
3. Optionally, create an icon to represent this host connection.

You can click the **Make Icon** button to create an icon that represents the host connection. A dialog box will prompt you for a caption for the icon. Enter a caption name that identifies the host to which the icon connects. The icon appears in the VT320W program group.

If you connect to any host on an ongoing basis, you may want to create an icon so that you do not have to use the menus every time you connect. Create a separate icon for each host you use regularly.

4. Click **OK** to connect to the host.

VT320W makes the requested connection and displays the main window, which prompts for your login information.



5. Enter your login name for the host system and press Return. Then enter your password for the login account and press Return.

VT320W now establishes a user session on the host system. In the main window, you will see a message that identifies the operating system type for the host system, followed by a command line prompt, for example:

```
Operating System/2 Command Interpreter  
Version 1.3  
  
[C:\]
```

Setting Up the Keyboard

The VT320W emulator maps the keyboard on your PC to the default key settings on a VT320 terminal. This mapping lets you use applications on hosts that require VT320 function keys. Many applications map some of their functions to keys or combinations of keys.

For example, some editor applications use the PF1 key in combination with other keys to provide quick access to editor functions, such as selecting multiple components for cut and paste.

Selecting the Keyboard Type

The VT320W emulator provides four keyboard types. The keyboard type that you select will establish the default key assignments. The first time you start the VT320W emulator, it displays a dialog box in which you can specify your keyboard type.



The keyboard types are described in the following table:

Keyboard Type	Description
AT	Selects the AT keyboard configuration regardless of the type of PC. Also selects the AT configuration when using an AT keyboard.
Enhanced	Closely resembles an actual VT320 keyboard. This keyboard provides near-perfect VT320 keyboard emulation.
LK250/LK450	The DEC LK250 and LK450 keyboards are PC/AT compatible VT320 keyboards that support an extended VT320 mode. Both keyboards provide perfect VT320 keyboard emulation. Both keyboards require a special device driver. If this driver was not installed during setup, you will be asked if you want to install it the first time you select either keyboard.

To select a keyboard type, click on the button next to the type, then click **OK**.

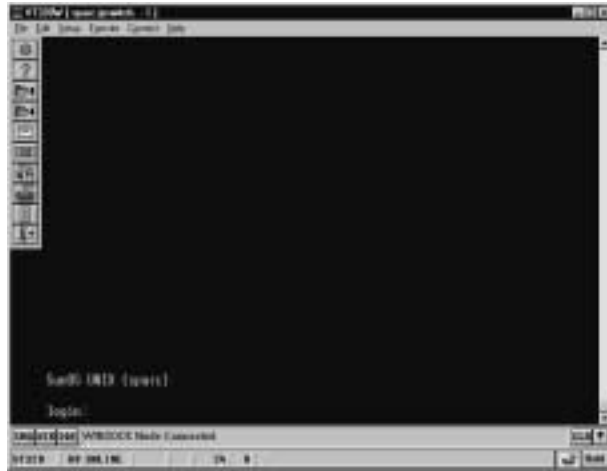
If you later want to change the keyboard type, you can display the dialog box by selecting **Keyboard: Type** from the **Setup** menu.

Remapping Keys

If necessary, you can redefine any of the key assignments. For information on how to redefine keys, see “Remapping the Keyboard” in this chapter.

Using the VT320W Window

The VT320W main window displays many standard Microsoft Windows features such as scroll bars, maximize/minimize buttons, and a Control Menu icon.



Main Window Components

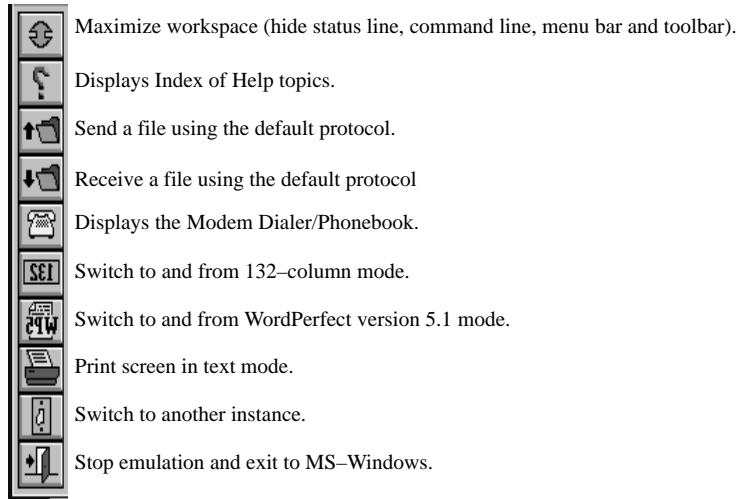
The menu bar lists common Windows features such as File and Edit commands and also contains emulator-specific features, such as Setup, Execute, and Connect. To view descriptions of each menu item, select **Index** from the **Help** menu, then click on **Drop Down Menus**.

The Status Line displays terminal settings and messages indicating active features such as LOG and PRINT.

All host communications scroll through the window as they are received.

Toolbar

The Toolbar contains icons that you can use as shortcuts for the commonly used functions.



You can change the toolbar display. See the “Changing the Layout of the Main Window” section for more information.


Emulation Mode


When you complete a successful logon to the host system, the VT320W screen is in emulation mode. In emulation mode, you will see the command prompt for the host system. From the command prompt, you can run host applications, execute commands, and run command files (ECL scripts).

See “Emulator Commands” in the online help for a description of each command.


Message Line/ Command Line


The message line at the bottom of the screen displays the last emulator message.


 To display a history of past messages, click the **Up Arrow** button located on the message line. Click the **Up Arrow** a second time to collapse the history display.


 To clear the current message, click the **Clear** button.


The message line toggles between message mode and three command modes: emulator command mode, Kermit command mode, and DDE command mode.

 To enter an emulator command, click the Command button. The command line will replace and reposition the message line. You can also activate the command line by pressing the Command key (default is Alt C). To leave command mode, enter a command or click the Cancel button.

 To change the command line to Kermit mode, click the KERMIT button. You can then enter Kermit commands to transfer files between the host and your PC. See the online help for information on Kermit commands.

 To change the command line to DDE mode, click the DDE button. You can then enter Dynamic Data Exchange (DDE) commands. See the online help for more information on DDE commands.

 To stop the screen from scrolling when receiving input, click the Hold button.

 To provide more workarea space, you can click this button to hide the scroll bar. Click it again to redisplay the scroll bar.

Line Recall and Editing

In emulation mode and when using the command line for the three command modes, you can recall and edit input lines.

You can recall and edit all input to emulator commands, including input entered in response to the CMD: prompt or emulator functions activated by function keys. The following keys are available for command line editing:

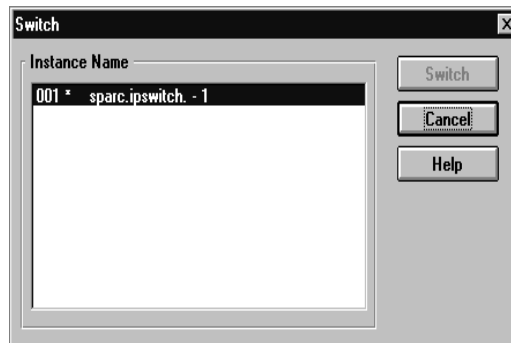
Key	Function
Up Arrow	Recall previous line
Down Arrow	Recall next line
Left Arrow	Move cursor left
Right Arrow	Move cursor right
Del	Delete character
Backspace	Delete character left of cursor
Ins	Toggle Insert/Overstrike mode
Ctrl U	Delete entire line

Creating Multiple Host Sessions

You can create multiple sessions (connections to) one or more host computers by starting multiple instances of VT320W. To start an additional instance of the emulator, return to the window and click the VT320W16 icon.

You can display a list of the instances at any time and switch from one to the other. To display the listing:

1. From the Connect menu, select **Switch**.



The current instance is highlighted.

2. To switch to another instance, click the desired instance, then click **Switch**. Double-clicking the desired instance also initiates the switch.

Printing Files

The VT320W emulator supports all VT100 and VT320 print modes.

Print Modes

Print Mode	Function
Print Screen	Sends the contents of the screen to the printer. If the screen is set to 132 columns, up to 132 columns can be sent to the printer.
Auto Print	Prints every line sent to the screen. Also known as Continuous Print mode.
Printer Controller	Prints every character received by the emulator without displaying it on the screen.
Print Cursor Line	Prints the line the cursor is on.
Print Extent	When set, the print screen function only prints the contents of the scrolling region.

Print Screen, Auto Print and Controller Print Mode can be initiated using a function key, emulator PRINT command, or by a host control sequence. The other print modes can only be selected by using control sequences.

Print Options

Print Mode	Token	Command
Print Screen	PRTSCR	PRINT SCREEN
Auto Print	PRTAUTO	PRINT ON/OFF
Controller Print	PRTCTL	PRINT/CONTROLLER ON/OFF

Programs can use an escape sequence to turn the printer off and on.

Escape[5i Turns the printer on.

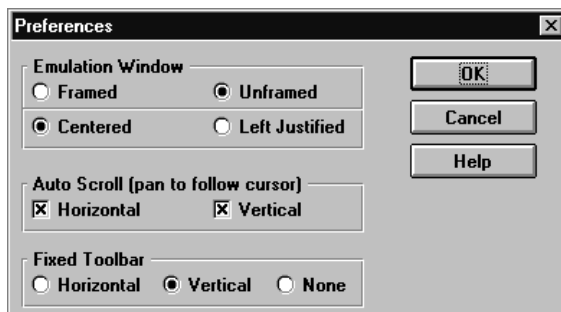
Escape[4i Turns the printer off.

Changing the Layout of the Main Window

Several Setup options control the appearance of the emulation mode presentation. The emulation window can be framed, unframed, left justified, or centered. A fixed toolbar can be displayed horizontally or vertically. (A user-definable, floating toolbar is also available.)

Setting Preferences

To change these settings, select **Preferences** from the **Setup** menu. The Preferences dialog box appears.



Click a setting to select it, then click **OK**.

Changing Window Size

The size of the emulation window is determined by the font selected for the presentation window size. The emulator automatically selects a font that utilizes as much of the presentation window as possible while displaying all lines and columns currently configured.

Presentation window sizing is accomplished in the typical Windows manner; Use mouse button 1 to grab a border and drag it to size the window. However, the emulator will not allow you to resize the emulator smaller than the smallest font. To size the emulator without automatic font selection (so not all columns and rows are visible without scrolling), press mouse button 2 while dragging the borders.

Changing Number of Lines

The number of emulation lines is configured by selecting **Display** from the **Setup** menu. The number of lines is continuously variable from 24 to 48.

Maximizing Workspace Area

Maximize workspace mode maximizes the emulation window (working area) by “hiding” the menu bar, status line, message line and fixed toolbar.

To enable maximize workspace mode, do one of the following:

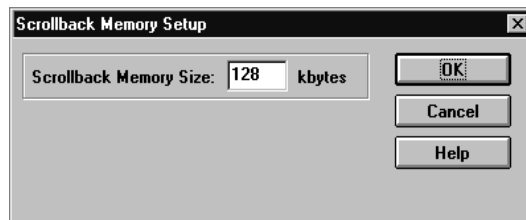
- In the toolbar, click the **Maximize Workspace** button.
- From the **Execute** menu, select **Maximize Workspace**.
- In the upper-left corner of the emulator title bar, click the **Control Menu** icon to display the Control Menu. Click **Maximize Workspace**.

To disable Maximize Workspace mode, click the **Control Menu** icon again. A checkmark appears next to Maximize Workspace when it is enabled – click it again to disable. Maximize Workspace is also disabled whenever you press the Command key (default is Alt C) or the Kermit key (default is Alt K).

All emulator drop down menus are always available through the Control Menu.

Setting Screen Scrollback

The size of the scrollback memory can be set to a maximum of 999 K-bytes. From the **Setup** menu, select **Scrollback**. The Scrollback Memory Setup dialog box appears.



The scrollback display is manipulated through the vertical scroll bar. To move one line, click the arrows at the ends of the scroll bar. To move a page, click in the gray area near the ends of the scroll bar.

If the scroll bar is not displayed, click the scroll bar button located on the status line. If the screen is maximized, the scroll bar may shrink to allow a full screen display. Clicking the scroll bar button may expand the scroll bar to full length, but will also change the font size.

The scroll bar button rotates the scroll bar through three modes:

- Invisible
- Visible and full length
- Visible, shrunk, and located in the frame

Transferring Files

You can transfer files between your personal computer and the VT320 host. The emulator includes an ASCII file transfer plus four popular protocols for error free file transfer:

- Kermit
- XMODEM
- YMODEM
- ZMODEM

ASCII transfer moves text files between computer systems using standard file utilities that already exist on the remote computer. ASCII transfers are not guaranteed to be error free and can only be used for sending and receiving text files that do not contain binary coded information.

Error free file transfer protocols insure the correct delivery of binary and ASCII information. One or more of these protocols are usually supported by host systems and bulletin boards. Use of an error free protocol is recommended over ASCII transfers due to the increased performance and reliability.

Typical File Transfer Sequence

When transferring files with an error free file transfer protocol, the following scenario typically takes place:

1. Make the initial connection to, and ready the remote computer for transfer.
2. Tell the remote computer which file to transfer.
3. The file is broken into smaller pieces called packets. The file is sent packet by packet until complete.
4. The receiver inspects the arriving packet; acknowledging if it's okay, NAKing (rejecting) if it's damaged. If the packet is accepted, the next one is sent. If the packet is rejected, it is sent again. If the packet is retransmitted and rejected too many times, or if an acknowledgment is not received, the file transfer fails.
5. When the file transfer is complete, the sender tells the receiver that it has reached the "End of File."
6. Repeat steps 2 – 5 to send more files. When all the files are sent, the two programs disconnect.

Setting Up File Transfer

To access the file transfer options, select **File Transfer** from the **Setup** menu. The File Transfer Setup dialog box appears.



The File Transfer Setup dialog box is divided into two sections, the Common section and the Protocol Options section. The Protocol Options section varies depending on the protocol selected in the protocol list. For each protocol, you can set the following common options:

Option	Description
Overwrite Protection	Determines what action to take if the received file already exists.
Partial Files	Determines what action to take if a file is partially transferred. An incomplete file can result when a transfer is aborted due to an error or operator intervention.
Auto Command Mode	When enabled, the file transfer program sends the commands stored in Auto Command Mode Setup to the host to automatically start up the host transfer program.
Set Defaults	Sets the file transfer defaults for the selected protocol.

Depending on which protocol you select, you can also set options for error checking, prefixing, and other options.

Click the **Help** button in the File Transfer Setup dialog for detailed descriptions of each option.

The operation of all file transfer dialog boxes is essentially the same. However, there are a few features that are available for only some of the protocols.

File Transfer Directory

When you display the File Send or Receive Selection dialog boxes, the default file transfer directory is used to display the list of PC files. If the file transfer directory is changed, the new directory is remembered until you exit the emulator. When you restart the emulator, it sets the file transfer directory back to the default. Normally the default file transfer directory is the directory where the emulator was installed. However, you can override the normal default by selecting **Directories** from the **Setup** menu and entering a **File Transfer Directory** string.

Sending Files (Kermit Example)

You can send, or upload, a file to the VT320 host using the following procedure (the procedure uses Kermit as the protocol):

1. Start the host file transfer program. If you are using Auto Command Mode (in the File Transfer Setup dialog box), the start command is issued automatically by the emulator. If you are using Manual Command Mode, you must enter the start commands.

Example of a manual start command:

```
$KERMIT  
Kermit>SERVER
```

Starts Kermit in Server mode on a VAX/VMS host.

2. From the **File** menu, select **Send** to display the File Send Selection dialog box. Insure that the desired transfer protocol is selected. If you are using Kermit, select Server or Non-Server mode.



3. Select the PC files to send by entering the PC file name or using the mouse. When entering the PC File Name, you can use wildcards and path names.

If wildcards are used, pressing Return updates the file list to display the selected files.

To select files using the mouse, click the desired directory in the **Directories** list. Next, select a file from the **File** list by clicking once on the name. Click the name again to deselect the file.

To select multiple files individually, hold down the Ctrl key while clicking file names. To select a range of files, click and hold the mouse button on the first file, drag the mouse to include the last file, then release.

Note: If you double-click a filename, the file is selected and the transfer begins immediately.

4. If a **Host File Name** text box exists, you can rename the file as it is transferred by entering a valid host name. If the host file name is left blank, the file name on the host computer will be the same as the PC file name.

Normally, files are sent to the host's default directory. However, you can send the file to other than the default directory by editing the host file name to include the host's directory specification after selecting the files to send. If you are using Kermit and want to enter the host directory, you must have entered the KERMIT command for literal file naming or Kermit will not translate the directory name correctly.

Kermit commands vary between hosts. However, here are two examples of setting literal file naming:

```
SET FILE NAMING UNTRANSLATED  
SET FILE NAMING LITERAL
```

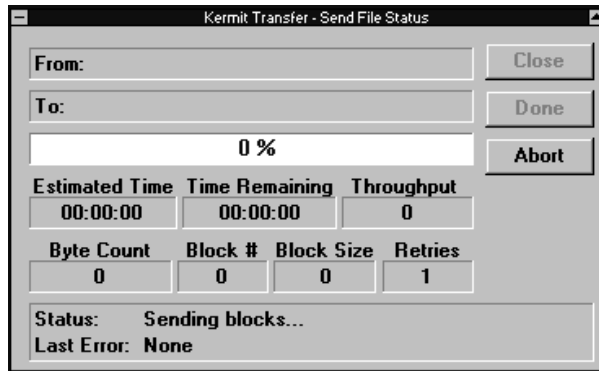
5. Send the files.

The File Send Status dialog box appears while the transfer is in progress.

6. After the file transfer is complete, click **Done** to return to emulation mode or click **Close** to return to the File Send Selection dialog box.

File Transfer Status

The status box displays all or some of the following information depending on the protocol selected.



- The From and To filenames.
- The percentage of data transferred.
- The estimated time of the transfer and the amount of time remaining in the transfer.
- The transfer throughput in characters per second.
- The byte count (in K-bytes) of data transferred.
- The current packet count and packet size.
- The number of times a packet has been retransmitted or NAKed.
- The status of the transfer and error messages.

The file transfer can be aborted by clicking on **Abort**. Aborting a file transfer may cause the Kermit server to exit server mode.

To “roll-up” the Status dialog box, click on the triangular-shaped arrow in the upper-right corner. The dialog box will roll up, and the percentage of the transfer will display in the caption. Click on the arrow again to unroll the dialog box.

Additional file transfer information will also appear in the emulator’s message box. The message box is automatically popped up during file transfers.

Receiving Files (Kermit Example)

You can receive (download) files from the VT320 host using the following procedure (the procedure uses Kermit as the protocol):

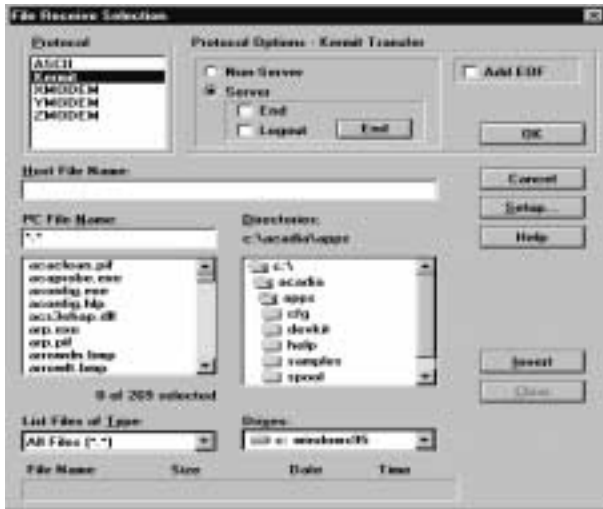
1. Start the host file transfer program. If you are using Auto Command Mode (in the File Transfer Setup dialog box), the start command is issued automatically by the emulator. If you are using Manual Command Mode, you must enter the start commands.

Example of a manual start command:

```
$KERMIT  
Kermit>SERVER
```

Starts Kermit in Server mode on a VAX/VMS host.

2. From the **File** menu, select **Receive** to display the File Receive Selection dialog box. Insure that the desired transfer protocol is selected. If you are using Kermit, select Server or Non-Server mode.



3. If the Host File name input box appears, enter the name of the host file to transfer. If the Host File name input box is not visible, enter the name for the PC file.

4. If the host file is the same name as an existing PC file, you can select the host files using the mouse. To select file using the mouse, click the desired directory in the **Directories** list. Next, select a file from the **Files** list by clicking the name. Click the name again to deselect the file.

If a Host File Name input box exists, you can rename the file as it is transferred by entering a PC file name. A PC file name is not required, if left blank, the file name on the host computer will be the same as the host file name.

Normally, files are received from the host's default directory. However, you can receive files from a directory other than the default directory by editing the host file name to include the host's directory specification. If you are using Kermit and want to enter the host directory, you must have entered the host's KERMIT command for literal file naming or Kermit will not translate the directory name correctly.

Kermit commands vary between hosts. However, here are two examples of setting literal file naming:

```
SET FILE NAMING UNTRANSLATED  
SET FILE NAMING LITERAL
```

5. Send the files.

The Receive File Status dialog box is displayed while the transfer is in progress. The status box displays the same information as the Send File Status dialog box, see File Transfer Status in the previous section.

6. After the file transfer is complete, click **Done** to return to emulation mode or click **Close** to return to the File Send Selection dialog box.

Connecting and Disconnecting Hosts

You can connect and disconnect VT320W instances from within the VT320W main window.

You can connect to a VT320 host by using any of the following methods:

- Network connection

A network connection uses a network protocol to connect to a remote host. VT320W supports network connections using the following protocols: CTERM, LAT, NASI, NCSI, NWDA, and WINSOCK. users will most often use WINSOCK, which gives users access to a TCP/IP stack.

If you select a network connection, you will need to enter the TCP/IP address of the host. When the connection is initiated you will need to enter your login information.

- Auto Connect Port

The Auto Connect Port connects you to a particular host when you click on the icon. If you use the Auto Connect Port, provided one has been set up, you do not need to enter information about the network protocol and hostname. When the connection is initiated you will need to enter your logon information. To set up an Auto Connect port, see Setting Up Auto Connect in this section.

- COM port

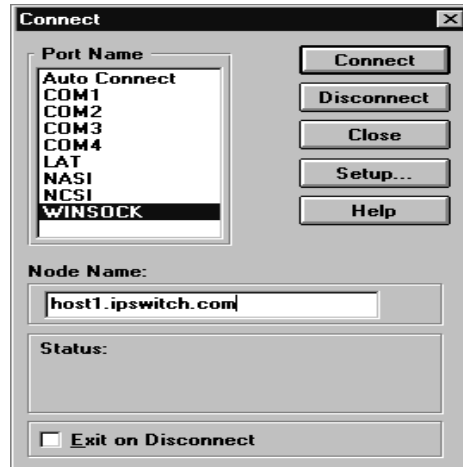
COM ports are standard PC serial ports and can be used for a dial-in connection or a direct cable connection to a host. If you select a dial-in connection, you will need to enter the modem commands to dial in to the host. When the connection is initiated you will need to enter your logon information.

Connecting to a Host

To connect to a host:

1. From the **Connect** menu, select **Conn./Disc.**

The Connect dialog box appears.

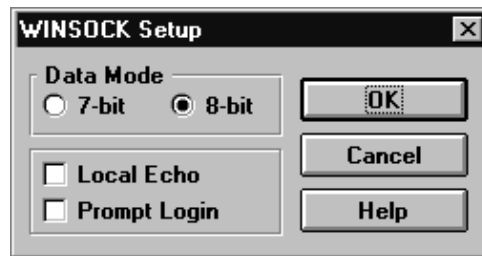


2. Click a port name to select the desired network or port (usually WINSOCK).

If you click on **Auto Connect**, VT320W connects to the host specified in the Auto Connect setup. To set up an Auto Connect port, see Setting Up Auto Connect in this section.

3. Enter or select a node name for network connections.
4. Click the **Setup** button. The Setup dialog box for the selected port appears.

For example, if you selected the WINSOCK port, you will see the Winsock Setup dialog box.



Make any desired parameter changes, then click **OK**.

5. Click the **Connect** button or double-click the network name or COM port.

The Status area of the Connect dialog will display the message:

```
Connecting to ...
```

VT320W makes the requested connection and displays the main window which prompts for your login information.

6. Log on to the host system.

If you selected a COM port that represents a dial-in connection, enter the modem commands to dial in to the host.

Enter your login name for the host system and press Return. Then enter your password for the login account and press Return.

VT320W now establishes a user session on the host system. In the main window, you will see a message that identifies the operating system type for the host system, followed by a command line prompt, for example:

```
Operating System/2 Command Interpreter  
Version 1.3
```

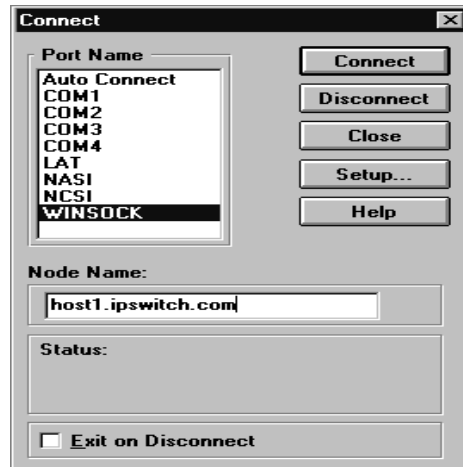
```
[C:\]
```

Disconnecting from a Host

To disconnect from a host:

1. From the **Connect** menu, select **Conn./Disc.**

The Connect dialog box appears.



2. Click the port name to select the desired network or port (usually WINSOCK).
3. Enter or select the name of the node to which you are connected.
4. Click the **Disconnect** button.

The Status area of the Connect dialog will display the message:

Disconnecting ...

VT320W Keyboard Remapping

The operation of the emulator can be customized using Key Mapping, Mouse Mapping or by creating Floating Tool bars. These features allow you to map mouse clicks, keystrokes, or tool bar icons to a wide variety of functions. A consistent user interface is used on three productivity tools to simplify ease-of-use.

User-Defined Keys (UDKs)

VT320W has fifteen programmable function keys (F6–F20). The emulator also allows function keys F1 through F5 to be programmed. This makes a total of twenty programmable function keys.

To access the programmed value of the function keys, press any of the UDK1 through UDK20 keys.

Tokens UDK1 through UDK5 are not assigned by any default keyboard configuration. They must be assigned using the Key Mapper.

Key Mapping

Through the Key Mapping dialog box, the keyboard can be configured to perform many different functions. An individual key can be defined to send a string, a VT320 keystroke, execute a command file, access a help file, switch between multiple tool bars, or perform an emulator function.

To configure the keyboard, from the **Setup** menu, select **Keyboard: Key Mapping**. The Key Mapping dialog box appears.



Creating a New Keymap

The top of the dialog box contains a section that deals with the keymaps as whole entities. The name of the current keyboard map is listed in the **Current Keymap** list box. You can select the following commands:

Button	Description
New	New button Creates a new keymap. When this button is clicked, the Keymap Name dialog box appears. Enter the new keymap name, then click OK.
Rename	Used to change the current keymap's name. When clicked, this button displays the Keymap Name dialog box. Change the keymap's name, then click OK.
Delete	Deletes the currently selected keymap. All of the data for the current keymap is deleted from the <i>settings.ini</i> file.

Configuring the Keymap

The middle of the dialog box displays the layout for the keyboard selected in **Keyboard: Type**. To select a key to be defined, click on the desired key(s). (You can precede each definition with Alt, Shift, Ctrl or any combination of the three.)

Each keystroke selection is then displayed in the **Current Key: Key** section. If the keystroke is to perform a specific function, you can set it to one of the following:

Set To

This list box defines the action to perform when the key is pressed.

Option	Description
Command	Execute a specified ECL command.
Command File	Execute a specified command file.
Help File	Launch a specified help file.
Internal Function	Execute an internal function
Nothing	Ignores any key action (disables the key.)
String	Send a specified string to the host.
Token	Execute a specified token (see the Tokens section that follows)
Switch Toolbar	Switches to a different toolbar.

Set To Data Field

This field is located below the **Set To** box. What appears in this field depends on the **Set To** selection above.

Option	Description
Command	Enter an ECL command to be executed when the key is pressed. See the Emulator Command language section for more information.
Command File	Enter the path name for a command file or click Browse to display the Command File Selection dialog box. Select a command file, then click on OK .
Help File	Enter the path name of a help file or click Browse to display the Help File Selection dialog box. Select a help file then click OK .
Internal Function	Enter the name of an internal function to execute. When the cursor is placed on the data field, a list appears to allow selection of valid functions. Invalid function names are ignored.

Option	Description
Nothing	The Set To Data field is disabled for this selection. Nothing can be entered.
String	A simple ASCII string can be entered. This string is sent to the host when the button is clicked. Special characters can be entered by specifying the ASCII value and enclosing it inside angle brackets << >>.
Token	Click on this field to display two lists of valid tokens: VT Tokens and Emulator Tokens. Select the desired token from one of the lists. The selected token is appended to any existing data in the token field. Token names may be entered manually by enclosing the token name in a pair of square brackets []. Also, ASCII strings may be combined with token names by editing the token data string. A token string can be up to 255 characters long. A “beep” indicates that additional characters will make the string too long. See the Tokens section in this chapter.
Switch Toolbar	Enter the name of an alternate toolbar to switch to.

Add

When you are satisfied with the key combination, click the **Add** button. The key definition displays in the **Mapped Keys** list box, and the keystroke combination is highlighted so that it won't be defined twice.

Change

Changes the existing configuration for the currently selected keystroke.

Delete

Deletes the currently selected keystroke. The remaining keystrokes are moved to fill the empty space.

Browse

Displays a Help File or Command File selection dialog depending on the option selected in the **Set To** box.

Note:

Be sure to click the Add or Change button before selecting another keystroke from the keyboard map, otherwise all changes to the current keystroke will be lost.

Mapping Keys

You can assign a string, emulator function, or a combination of both to any key supported for remapping. Keys are remapped using the **Keymap** command.

The following sections provide information on the functions and tokens that you can use to map specific functions to a key.

Internal Functions

Internal functions are routines that handle specific tasks that cannot be performed by tokens or ECL commands. Some of these functions also allow the use of buttons that remained unselected to indicate the current selection. For example, the 132 function remains unselected while in 132 column mode.

See the online help for a list of internal functions.

Mnemonics

Mnemonics represent keyboard functions.

Mnemonic	Decimal Value	Mnemonic	Decimal Value	Mnemonic	Decimal Value
NULL	00	XOFF	19	HTJ	137
SOH	01	DC4	20	VTS	138
STX	02	NAK	21	PLD	139
ETX	03	SYN	22	PLU	140
EOT	04	ETB	23	RI	141
ENQ	05	CAN	24	SS2	142
ACK	06	EM	25	SS3	143
BELL	07	SUB	26	DCS	144
BS	08	ESC	27	PU1	145
HT	09	FS	28	PU2	146
LF	10	GS	29	STS	147
VT	11	RS	30	CCH	148
FF	12	US	31	MW	149
CR	13	SP	32	SPA	150
SO	14	DEL	127	EPA	151
SI	15	IND	132	CSI	155
DLE	16	NEL	133	ST	156
DC1	17	SSA	134	OSC	157
XON	17	ESA	135	PM	158
DC2	18	HTS	136	APC	159
DC3	19				

Tokens

A token is a name given to an emulator function or VT320 function that can be mapped to a key. For example, the token PF1 is normally mapped to the keypad escape key when using an Enhanced keyboard. Tables of Emulator Tokens and VT320 tokens follow.

<i>Emulator Tokens</i>	
Token Name	Emulator Function
ANSWERBACK	Send answerback message
BREAK	Send a short break
CMD	Emulator command line
DDE	DDE command line
DEBUG	Debug on/off
DROP_DTR	Drops DTR for 2 Seconds
EDIT COPY	Copy selected text to Clipboard
EDIT PASTE	Paste information from Clipboard
EDIT SEND	Send selected text to host
EXIT	Exit the emulator
HELP	Help
KERMIT	Kermit command line
KP NUMLOCK	Keypad numeric toggle
KP NUMERIC	Keypad top numeric mode
KP FUNCTION	Keypad top function mode
LONG BREAK	Sends a long break
LINE EDIT	Line edit mode
LOG	Log file
MAX WORK-SPACE	Toggle maximizes the workspace
MODEM DIALER	Modem Dialer dialog box
PRINT AUTO	Continuous print mode (auto)
PRINT CONTINUE	Continuous print mode
PRINT CONTROL	Controller print mode
PRINT SCREEN	Print contents of screen
REPLAY LOG	Log file replay
VT MODE	VT terminal mode
4014 MODE	Enter Tektronix 4014 mode

VT320 Function Tokens

Token Name	VT320 Function
PF1 – PF4	PF1 – PF4
KP0–KP9	Keypad 0 – 9
KP COMMA	Keypad comma
KP ENTER	Keypad enter
KP MINUS	Keypad minus
KP PERIOD	Keypad period
BACKSPACE	Backspace
COMPOSE	Compose
DELETE	Delete
DO	Do
ESCAPE	Escape
FIND	Find
HOLD SCREEN	Hold Screen
INSERT HERE	Insert Here
LINE FEED	Line feed
NEXT SCREEN	Next Screen
NULL	Null
PREVIOUS SCREEN	Previous Screen
REMOVE	Remove
SELECT	Select
VT HELP	Help
UP ARROW	Up Arrow
DOWN ARROW	Down Arrow
LEFT ARROW	Left Arrow
RIGHT ARROW	Right Arrow
UDK1 – UDK20	UDK 1–20
VTF6–VTF20	F6 – F20

Key Name Conventions

Key names are one to six characters long. Shift keys can be designated by preceding the key name with one of the following shift key symbols:

Symbol	Shift Key
A^	Alt
C^	Control
S^	Shift
A^S^	Alt/Shift

Examples

A^K Alt K
A^S^F1 Alt/Shift F1
C^KP1 Control Keypad 1

Control/Shift (pressing Control and Shift simultaneously) keys are not supported for remapping.

Key names may be displayed interactively by entering SCAN mode and then pressing the key combination. SCAN mode is set by entering SCAN at the command prompt.

The keypad number keys are referred to as KP0–KP9. They are not referenced by their alternate function names (such as PgUp, PgDn, etc). The key names Home, Ins, Del, End, PgUp, and PgDn are reserved for the six keys located in the edit keypad above the cursor pad. The cursor pad arrow keys are named Up, Down, Right, and Left. The Edit and the Cursor pad keys do not exist on all keyboards.

Key Names

All of the keys in the Key Names table can be remapped with or without preceding the key definition by a state key. Some keyboards do not have all of the listed keys.

Using Key Definitions

Defined keys can be used for the following:

- Remapping emulator function keys
- Remapping VT320 function keys
- Outputting strings
- Macro keys

Reassigning Emulator Keys

Emulator function keys are represented by tokens. Emulator function keys activate emulator functions, such as Setup, Kermit, Log File, etc. The emulator function tokens are listed above.

To remap an emulator function, define the desired key equal to the token that represents the emulator function. Remember, the default definition still exists unless it is defined to a null string.

Reassigning VT320 keys

VT320 function keys are represented by tokens. VT320 function keys are keys that generate VT320 control characters or sequences that are sent to the host. PF1–PF4, Find, and Keypad Enter are examples of VT320 function keys.

To remap a VT320 function key, define the desired key equal to the token that represents the VT320 function. Remember, the default definition still exists unless it is defined to a null string.

Output Strings

Using strings, keys can be defined to automate sending data to the host or to supply arguments to emulator commands. When a key defined as a string is pressed, the string's characters are output as if they were entered from the keyboard.

Macro Keys

Macro keys are keys defined to hold a combination of tokens and strings. Macro keys are especially useful for creating new emulator function keys.

Any combination of strings and tokens can be entered. A space must be inserted between any token name and a quoted string. A macro key can also be defined to execute a command file.

Using the /NOECHO Qualifier

When you use CMD (enter Command Mode) in a key definition, use the /NOECHO qualifier. The /NOECHO option prevents the CMD prompt from displaying and suppresses the echo of any string data. Suppressing the echo also speeds up the execution of the key definition.

If /NOECHO is not specified and Screen is selected as the Message Location, the CMD prompt may cause the screen to scroll. /NOECHO has no affect on definitions containing VT320 tokens or strings sent to the host computer. Host data is not echoed by the key processor.

Loading Keyboard Definitions

Keyboard definitions can be entered interactively as emulator commands. However, it is more useful to insert the keyboard definitions into the emulator startup command file. By using the startup command file, the keyboard mapping commands are executed automatically each time the emulator loads.

vtinit.ecf is the **vt320** startup command file. In **vt320** (DOS) the startup command filename is defined in the Special Setup Menu. From **vt320w**, select Command Files from the Setup Menu. Note that **vt320w** appends the *.ecf* suffix to the filename you specify.

Custom Keyboards

Using command files, keyboard mapping can be changed quickly. This can be useful when defining custom keyboards for specific host applications. By defining keys to execute keyboard definition command files, custom keyboards can be loaded with a single keystroke.

Displaying Key Names

The SCAN command puts the emulator into scan mode. In scan mode, the keyboard scan codes convert to key names. After entering scan mode, pressing a key displays its key name. To exit scan mode, press Control Z.

Keypad Mode

One of the most important features of **vt320** is its ability to use the arrow keys on the IBM keypad as the VT102/VT320 arrow keys when the PC's keyboard does not have separate arrow keys.

The keypad can be operated in two modes: Numeric or Arrow mode.

Numeric Mode

All of the number keys on the keypad correspond to the number keys of a VT102 or VT320 terminal. The arrow codes are generated by pressing Shift and the desired arrow key.

Arrow Mode

The keypad keys 2, 4, 6, and 8 (arrow keys) generate the VT102/VT320 arrow key codes. The Shift key generates the codes for keypad 2, 4, 6, and 8. The remainder of the keypad keys are unaffected by the mode change and generate the VT102/VT320 numeric keypad codes.

The status line displays "Numeric" in Numeric mode and "Arrows" in Arrow mode. Control Num Lock toggles the Keypad mode on the standard PC keyboard.

The initial Keypad mode is determined by the IBM Keypad parameter in the Keyboard Setup Menu.

VT320 function keys are disabled in VT100 and VT102 modes.

Mapping Mouse Buttons

You can assign different functions to the mouse buttons by selecting the **Mouse** item from the **Setup** menu. Through the Mouse Mapping dialog box, the mouse buttons can be configured to perform the same functions as the floating toolbar buttons. A mouse button can be defined to send a string, a VT320 keystroke, a mouse position report, execute a command file, or perform an emulator function, such as Exit. See the **Mouse Mapper** topic in the online help for more information.

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