WIN100

Introduction

WIN100 is a basic communications program for Microsoft Windows 3.0. **WIN100** features DEC VT52 and VT100 capability in a simple-to-use application. **WIN100** also supports the Kermit file transfer protocol and can log a session to a disk file.

Although not all VT100 features (such as double-wide and double-high characters) have yet been implemented, some additional commands such as line and character insertion and deletion are available. Therefore in the UNIX environment, **WIN100** can be used with a termcap entry of VT52, VT100, VT102, or VT132. A complete list of terminal commands appears below. Kermit operation is explained in another document.

Operation

The program requires no special installation other than to copy **WIN100.EXE** to a convenient directory. If you have a VGA display, you also may want to install the font file **WIN100E.FON**. See your Windows documentation if you are not familiar with using the Control Panel to add a new font to your Windows system.

After the program runs, it reads **WIN100.INI** for initialization parameters; if none are found or if the file is not present, **WIN100.INI** is created with default parameters. **WIN100** then attempts to open the first communications port specified in **WIN100.INI**. If that port is not available the program cycles in succession through the remaining ports. If none is free then the program exits; otherwise, the emulator is ready to communicate on the first port found. The current version of **WIN100** supports COM1 through COM4.

WIN100 contains a 24-line by 80-column terminal window placed inside the main program window. When the program first runs, the main window expands to show as many lines and columns as the display resolution permits. Of course, during the life of the program, the main window's size may change. Nevertheless, the terminal window will position itself dynamically so that the row containing the text cursor will always be visible. However with menu and/or keyboard commands, you can always move any invisible part of the window into view.

Limited text rollback is also available. When lines scroll off the screen, they are saved to a rollback buffer. You can easily access the last few pages by either menu or keyboard commands.

The terminal window does not automatically scroll horizontally. However, if not all columns are visible, you can use the horizontal scroll bar to position the window. If the main window resizes, the horizontal position is reset.

The terminal defaults to the Windows fixed system font. Some video attributes such as bold text and DEC special graphics will therefore not be available. However, if you are using a VGA, you may want to install the supplied font file, **WIN100E.FON.** This font is designed for the VGA and contains ANSI and DEC special graphics symbol sets in bold and normal weights in widths that are suitable for both 80 and 132 column modes.

WIN100 uses the Windows ANSI symbol set, which is essentially the same as ISO-8859-1 (ECMA 94, Latin-1). Latin-1 is also quite similar to the DEC Multinational character set. If you need DEC Multinational characters, contact the program's author.

The Setup Menu

The Setup Menu offers many parameters that you can change when **WIN100** is running. If you check 'Save Settings' on the dialog screens, your selections are saved to **WIN100.INI** and become the program's defaults.

Mini-Setup

Mini-Setup allows you to choose line state, basic screen mode, type of scroll, and the number of columns.

When you select <u>line</u>, the keyboard and display are connected to the communications line; in <u>local</u> mode, the output from the keyboard goes to the screen. Local mode can help you explore the terminal's command set. In addition, in local mode it is easy to view lines that may not be currently visible by using the home and arrow keys.

The screen may be displayed in <u>normal</u> mode or you can <u>reverse</u> the text and screen colors. Note that if you try to change the screen and background colors (see below) while the screen is reversed, the colors you select will also be interchanged. For example, if you select a white background and blue text when the screen is in reverse mode, the text will be white and the screen blue.

Vertical scrolling may be <u>smooth</u> at one, two, four, or eight pixels at a time or <u>jump</u> an entire line. Note that smooth scrolling slows the effective communication rate.

Finally, you can choose to have either <u>80</u> or <u>132</u> columns. In 132-column mode, the maximum number of visible characters will depend on the fonts available as well as the width of the window. Typically you will be able to see at most 128 columns if your display has no more than 640 pixels of horizontal resolution.

Modem

The modem dialog allows you to select the communications parameters.

<u>Baud</u> rate selections range from 110 to 19200. <u>Parity</u> and <u>word</u> size are gathered together for simplicity. Typical settings are eight bits and no parity or seven bits and even parity. <u>Stop</u> bits can be one or two; one stop bit is usual for baud rates over 110.

You can enable <u>parity checking</u>. When a character having incorrect parity is received, a '?' is displayed. This feature is useful when attempting to match the host's parity setting.

Only <u>Xon-Xoff</u> flow control is available. The receiving buffer is 1024 bytes. When the buffer has <u>Xoff Point</u> characters, the program sends an Xoff (control S) to the host. When the buffer drops to 32 bytes, an Xon (control Q) is sent. The Xoff point can be set at any one of five values from 64 to 768. On a fast connection, you may find it helpful to increase the Xoff point from the default of 64 characters.

Connections can be made to ports <u>COM1</u> through <u>COM4</u>. In addition, you can choose which of these will be tried first when

the program loads. Note that the initial port selection is disabled if you have not checked the Save Settings box.

Unless your computer can share interrupts (Microchannel or EISA buses), you should **not** try using COM3 and COM4 when in Windows enhanced mode even if you have the proper hardware installed. These ports will be usable in real or standard mode Windows, but do not expect to be able to maintain simultaneous sessions on ports sharing the same interrupt (usually COM1/COM3 and COM2/COM4).

You should use Local echo only if the remote host does not echo characters typed at the keyboard. For example, if you are communicating with another PC then you should set local echo.

Display

The display dialog sets basic cursor control and related features.

The cursor can have block or underline styles and be either blanked or displayed. In addition, the terminal can be set to wrap lines automatically and to add a linefeed (LF) character with every carriage return (CR) transmitted. Finally, you can toggle the margin bell to ring when the text cursor approaches the end of a line.

If you select Control Representation Mode, then all characters received, including control characters, will be displayed on the screen. Linefeed, vertical tab, and formfeed characters will also generate new lines. Actions by other control characters are disabled. This mode is mainly useful for analyzing and debugging information coming from the remote host.

General

Using this dialog you can set screen and text colors, enable and disable the warning bell, and select VT52 or VT100 emulation. You can use VT100 mode in 8-bit mode if your host computer permits. When in 8-bit mode, the terminal recognizes DEC 8-bit controls such as NEL, CSI, etc., and the full Windows symbol set is available.

You can choose from any of sixteen basic colors for screen or

text if you have a color or gray scale display. Note, however,
that you cannot choose the same color for both text and screen.
An attempt to do so will force a selection of complementary
colors.

Keyboard

      You use the keyboard dialog to set the behavior of the keypad
and cursor keys as well as the operation of the backspace mode
and answer-back feature. The overall behavior of the keyboard is
quite close to a real VT100 or VT52. The actual keyboard layout
is discussed in more detail later.

      Both the keypad and the cursor keys have two modes. The user
can set the keypad to send <u>numerical</u> values or special
<u>application</u> sequences. Similarly, the arrow key sequences can be
chosen to send the <u>normal</u> cursor movement codes or the
<u>application</u> set.

Most terminals have a backspace key that transmits the backspace character (CTRL-H) and a delete key that sends ASCII code 127. The typical keyboard on a personal computer also has backspace and delete keys, but the latter does not usually transmit the delete character. However, a delete can be sent with the backspace key if the control key is also depressed. By selecting the appropriate backspace mode, you can interchange the rolls of Backspace and Ctrl-Backspace and convert the backspace key into a true delete key.

The break key is assigned to function key F5. Enabling the break key causes F5 to send a short break to the host. Whatever the break key setting, shift-F5 will cause a long break (disconnect) to be executed. Finally, Ctrl-F5 transmits the contents of the Answerback message. In addition, if Auto Answer is checked and an ENQ (Ctrl-E) arrives, the Answerback message is transmitted.

Fonts

The fonts dialog helps you to choose font sizes that give a reasonable display in both 80 and 132 column widths. For each selected facename, you will see a list of pixel widths and heights. You must choose a width/height pair for both 80 and 132 column modes. Generally, an 8-pixel wide font gives the fastest display and is most useful for 80 columns. A narrower width, if available, can show you more information in 132-column mode. The **WIN100** font provides the best selection for VGA displays.

Recall Saved Setup

Permanently saved parameters can be recalled with this menu item. They are stored in **WIN100.INI**. You may change their values by executing the Save option in a dialog box or by directly editing **WIN100.INI**. The former method is preferred since the program checks values for validity.

Clear Comm Port

If the communications port appears to have become blocked, use this option to free it. The most common problem is the receipt of an Xoff character with no subsequent Xon.

<center>**Edit Options**</center>

Copy line range

     A range of lines displayed on the terminal window can be
copied to the clipboard. The default is the entire screen (lines
1 to 24).   A dialog box allows the user to change the range.
Once transferred to the clipboard, the lines can be edited,
printed, and /or saved to a file with any Windows editor.

Paste

     You can paste text from another application. In reality, the
text is transmitted to the host and echoed back, giving the
illusion that the text has been pasted directly into **WIN100**.
This technique can be used for limited file transfer to the host.

Program function keys

     You can load some of the function keys (F1 to F12) with your
own text strings. Not all keys are programmable since some are
dedicated to sending VT52/VT100 escape sequences or other uses.
However, most are available when used in combination with the
shift, control, or control-shift keys.

     You can record the entered string for each key by hitting
return or by using the 'Save' button. A key's string can be
deleted by clearing its entry and saving. When you have finished
programming the keys, press 'Quit' to exit the dialog.

     Any printable character can be placed into a string. Control
characters are entered by prefixing the corresponding printable
character with a '$' symbol. Thus, $M (or $m) is a carriage
return, $J ($j) is a line feed, and $[is escape. $$ provides
the '$' character itself.

Buffer

     By using the six commands available on this submenu, you can
navigate through the rollback text. Generally, you will find it
much more convenient to use the corresponding accelerator keys,
however.

Window

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From this menu you can execute a set of actions similar to the Buffer commands to help you move through the terminal window. Again, you will probably find it more useful to use the accelerator keys rather than the menu commands.

Session Logging

All or part of a session can be logged to a file. The default file name is **WIN100.LOG.** Unless the user provides a full path name, the log file will be created in the current directory.

All incoming text is written to the file until you close it. If you reopen a logging file, you may choose to append additional text to the current contents or to empty the file and begin anew.

Certain cautions should be observed when logging a session. If you are running two instances of **WIN100**, then you must be careful not to attempt to log both sessions to the same file. And, if you are logging to a floppy disk, then do not remove the disk until you close the file.

Using the Keyboard

Every effort has been made to emulate the DEC VT100 keyboard. In particular, the keypad functions in two modes that depend on the setting of the Num-Lock key. When depressed, the keypad actions are quite similar to the numeric/application mode of the VT100. Therefore, if in numeric mode, the keypad transmits numbers; otherwise, it sends escape sequences appropriate to the emulation mode. The keypad does not transmit the standard cursor movement sequences. However, on an extended (101/102-key) keyboard, the additional arrow keys and home key function as does a VT52/VT100.

When Num-Lock is released, then the keypad transmits the usual VT52/VT100 arrow key sequences. The home key also sends the correct VT52/VT100 sequences.

A delete character can be sent using Ctrl-Backspace. Do not overlook the option to program the Backspace key to send a delete character if your computer favors this key over the backspace. Ctrl-Enter sends a line feed.

Scroll-Lock can be used to start and stop screen display. Function keys F1 - F4 act just as the PF1 - PF4 keys on a VT52/VT100. F-6 to F-9, F11, and F12 are programmable. Finally, except for F5 (break key) and F10 (Windows secondary ALT key), all shift, control, and control-shift combinations can be programmed.

Function and arrow/home key sequences are as follows. Those in parenthesis apply when in application cursor key mode.

Key	VT100	VT52
F1	ESC [P	ESC P
F2	ESC [Q	ESC Q
F3	ESC [R	ESC R
F4	ESC [S	ESC S

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Up              ESC [ A (ESC O A)    ESC A
Down            ESC [ B (ESC O B)    ESC B
Right           ESC [ C (ESC O C)    ESC C
Left            ESC [ D (ESC O D)    ESC D
Home            ESC [ H (ESC O H)    ESC H
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Keypad sequences in application mode are given below.

Key	VT100	VT52
0	ESC O p	ESC ? p
1	ESC O q	ESC ? q
2	ESC O r	ESC ? r
3	ESC O s	ESC ? s
4	ESC O t	ESC ? t
5	ESC O u	ESC ? u
6	ESC O v	ESC ? v
7	ESC O w	ESC ? w
8	ESC O x	ESC ? x
9	ESC O y	ESC ? y
+	ESC O l	ESC ? l
–	ESC O m	ESC ? m
*	ESC O M	ESC ? M

Terminal Commands

WIN100 recognizes those VT100 series escape sequences which generate the commands listed below. The symbol Pn represents an optional string of decimal digits. If absent or 0, then the default value is 1. For example, ESC [A, ESC [1 A, and ESC [0 A all move the cursor up 1 line. Note also that mode commands or video commands can be combined if the selective parameter is separated by semicolons. For example, ESC [? 4 ; 5 h is the same as ESC [? 4 h followed by ESC [? 5 h.

WIN100 also responds to the following 8-bit control codes when VT100 8-bit mode is active. The corresponding 7-bit sequences are also shown.

IND	(0x84)	ESC D
NEL	(0x85)	ESC E
HTS	(0x88)	ESC H
RI	(0x8D)	ESC M
CSI	(0x9B)	ESC [

Command	VT100	VT52
Cursor Commands		
Cursor home	ESC [H	ESC H
	ESC [0;0 H	
	ESC [1;1 H	
	ESC [f	
	ESC [0;0 f	
	ESC [1;1 f	
Cursor up	ESC [Pn A	ESC A
Cursor down	ESC [Pn B	ESC B
Cursor right	ESC [Pn C	ESC C
Cursor left	ESC [Pn D	ESC D
Cursor addressing (1)	ESC [r;c H	ESC Y r c
	ESC [r;c f	
Cursor index	ESC D	
Reverse cursor left	ESC M	ESC I
Next line	ESC E	
Save cursor	ESC 7	
Restore cursor	ESC 8	
Set scrolling region	ESC [R1;R2 r	
Mode Commands		
Begin control representation	ESC [3 h	
Insert character mode	ESC [4 h	
Replace character mode	ESC [4 l	
Local Echo	ESC [12 h	
Local Echo off	ESC [12 l	
Newline mode	ESC [20 h	
Newline mode off	ESC [20 l	
Cursor key application mode	ESC [? 1 h	
Cursor key normal mode	ESC [? 1 l	
VT52 mode	ESC [? 2 l	
VT100 mode		ESC <
132 columns	ESC [? 3 h	
80 columns	ESC [? 3 l	
Smooth scroll	ESC [? 4 h	
Jump scroll	ESC [? 4 l	
Reverse video	ESC [? 5 h	
Normal video	ESC [? 5 l	
Set origin mode	ESC [? 6 h	
Reset origin mode	ESC [? 6 l	
Auto screen wrap	ESC [? 7 h	
No screen wrap	ESC [? 7 l	

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Text cursor enabled          ESC [ ? 25 h
Text cursor off              ESC [ ? 25 l
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Erase Commands	**VT100**	**VT52**
Cursor to end of line	ESC [K	ESC K
	ESC [0 K	
Start of line to cursor	ESC [1 K	
Entire line	ESC [2 K	
Cursor to end of page	ESC [J	ESC J
	ESC [0 J	
Beginning of page to cursor	ESC [1 J	
Entire page	ESC [2 J	
Insert line at cursor	ESC [Pn L	
Delete cursor line	ESC [Pn M	
Delete character	ESC [Pn P	

Video Commands		
Video attributes off	ESC [m	
	ESC [0 m	
Bold	ESC [1 m	
Underline	ESC [4 m	
Reverse	ESC [7 m	
Not Bold	ESC [22 m	
Not underline	ESC [24 m	
Not reverse	ESC [27 m	

Miscellaneous Commands		
Primary Terminal ID	ESC [c	ESC Z
	ESC [0 c	
Set tab	ESC H	
Clear tab current position	ESC [0 g	
Clear all tabs	ESC [3 g	
Read cursor location	ESC [6 n	
Read terminal condition	ESC [5 n	
Enter application keypad	ESC =	
Exit application keypad	ESC >	
Align screen	ESC # 8	
Display character set	ESC # 7	

(1) In VT100 mode r and c are row and column numbers expressed as a string of digits. In VT52 mode, r and c are single characters whose ASCII value represent the row and column number offset by 32.

   WIN100 does not recognize the following VT100/102/220

commands:

       Lock/Unlock keyboard
       Selective erase in line or page
       Blinking or dim text
       Double width/height characters
       Printer commands
       Special character sets
       The 8-bit controls SS2, SS3, DCS, and ST