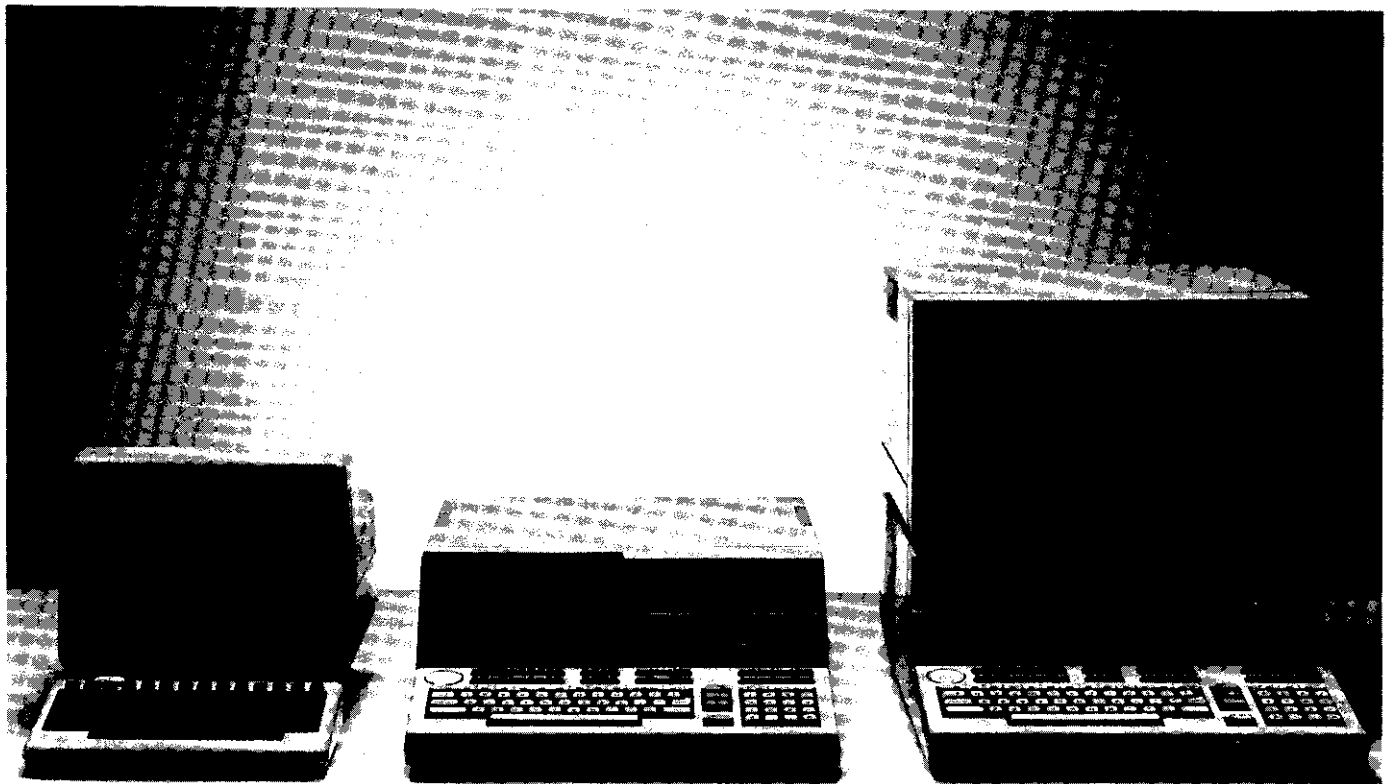


Series 200 Terminal Emulator Technical Data



Effective Date: January 1983



The HP Series 200 Terminal Emulator software package manages the the keyboard, CRT and mass storage of the HP Model 16, 26, or 36 computer so that it responds like an intelligent terminal, bridging the gap between two computing environments—the powerful, stand-alone desktop computer and the central host computer.

The Terminal Emulator's friendly features allow the HP Series 200 computers to be more than just glass Teletypes; they make it easy for you to get the datacomm channel up and running. In other words, you can "log-on" to your central host and transfer data without having to write a program on the desktop computer to do it.

Emulator Features

The Series 200 Terminal Emulator provides a feature set similar to that of the HP 2621 terminal. It is written in Pascal, and includes a minimal Pascal system so that it runs independently of the language systems. It requires the 98628A Datacomm Interface, 98626A Serial Interface, or the built-in serial port on the Model 16 computer. The emulator has the following features:

- File Transfer

- Menu Driven
- HP2621 Escape Code Subset
- Line Modify and Character modes
- Operates independent of the language system
- 24-line CRT plus one line for softkey labels
- ENQ/ACK Handshake
- XON/XOFF Host/Terminal Handshake
- Display Functions
- Remote/local key
- Remote/local operation
- 2400 Baud throughput to CRT independent of line length
- Auto-dial to 13265A, 300 Baud Modem Pod (US/CANADA only)
- Break key
- Emulator Status display
- Hardcopy on/off key
- Copy all to hard-copy devices (from cursor to end of display memory)

Emulator Operation

The terminal emulator software can be operated in LINE MODIFY mode or CHARACTER mode. In CHARACTER mode each key is sent to the computer as soon as it is pressed. LINE MODIFY mode is used to correct and retransmit a line of input. In this mode the input line is not retransmitted until one of the end-line keys (ENTER, EXECUTE) is pressed.

The file transfer allows you to share data with a host computer. With this capability you can transfer ASCII files from the Series 200 computer to the host or vice versa by simply pressing the UPLOAD or RECORD special function key and specifying the source/destination files.

Menu-driven configuration allows you to tailor the emulator for the datacomm characteristic of your particular host computer. The following variables may be changed:

Characteristic	Legal Values	Default Values
Speed (Baud rate)	50 baud – 19.2K baud	2400 baud
Bits/character	5, 6, 7 or 8	7 bits/character
Number of stop-bits	0, 1, 1.5 or 2	1 stop bit
Parity	Odd, Even, "0" or "1"	odd parity
Software Handshake	ENQ/ACK, DC1/DC3 host or terminal	ENQ/ACK
Modem Handshake	full-duplex or handshake off	Handshake off
Prompt sequence	any two ASCII characters	DC1
End-of-Record sequence	any two ASCII characters	C _R
End-of-File sequence	any two ASCII characters	none

The user has the option of saving the current configuration in a file for the next powerup. At powerup the system will take the configuration values from the configuration file. If it is not present, then the default values will be taken from the switch settings on the interface.

Escape Codes

The Series 200 Terminal Emulator implements a subset of the HP 2621 Terminal Control Escape Code sequences. The implemented escape codes and their functions are listed below:

Terminal Control Escape Codes

esc A Cursor up	esc Q Start insert character mode
esc B Cursor down	esc R End insert
esc C Cursor right	esc S Roll up
esc D Cursor left	esc T Roll down
esc E Power on reset	esc U Next page
esc F Cursor home down	esc V Previous page
esc G Move cursor to the left margin	esc Y Display functions mode on
esc H Cursor home up	esc Z Display functions mode off
esc J Clear screen from cursor to the left margin	esc @ Delay one second
esc K Clear line from cursor to the end of line	esc ^ Primary terminal status
esc L Insert line	esc h Cursor home up
esc M Delete line	esc ~ Secondary terminal status request
esc P Delete character	esc g Soft reset

User definable keys f1 – f8 send esc P – esc w respectively as the default definition.

Menu Map

The terminal emulator is menu-driven for speed and ease of operation. The user-definable keys (UDK) are used for the menus. The menu sequence is:

(MENU 1 – Main)

UDK0	UDK1	UDK2	UDK3	UDK4
UDK5	UDK6	UDK7	UDK8	UDK9
LN_MDFY*	RECORD*	REMOTE*	F_keys	setup

(MENU 2 – F_keys)

UDK0	UDK1	UDK2	UDK3	UDK4
UDK5	UDK6	UDK7	UDK8	UDK9
Cpg/f5	f1/f6	f2/f7	f3/f8	f4/main

(MENU 3 – Setup)

UDK0	UDK1	UDK2	UDK3	UDK4
		SAVE_CNF	PWRU_VAL	
UDK5	UDK6	UDK7	UDK8	UDK9
term_cnf	datacomm	files		main

(MENU 4 – Term_cnf)

UDK0	UDK1	UDK2	UDK3	UDK4
	AUTOLF*	LC_ECHO*	DIAL	PHONE #
UDK5	UDK6	UDK7	UDK8	UDK9
HARD_SC	HPIB-ADR	SAVE_CNF	setup	main

(MENU 5 – Datacomm)

UDK0	UDK1	UDK2	UDK3	UDK4
speed	bits_chr	stop_bit	parity	ptL_hk
UDK5	UDK6	UDK7	UDK8	UDK9
modem_hk	PROMPT		setup	main

(MENU 6 – Files)

UDK0	UDK1	UDK2	UDK3	UDK4
PREFIX	VOLUMES	CREATE	PURGE	CAT
UDK5	UDK6	UDK7	UDK8	UDK9
UPLOAD*	RECORD*	F_names	setup	main

(MENU 7 – F_names)

UDK0	UDK1	UDK2	UDK3	UDK4
SOURCE	DEST			
UDK5	UDK6	UDK7	UDK8	UDK9
EOF chrs	EOR chrs	files	setup	main

UDK Menu Functions

(1)

LN_MDFY – Used in Remote mode. When enabled, this mode allows editing a line of data while in Character mode, then using the ENTER or EXECUTE key to transmit the line to the computer. The line sent to the computer has the characters from column 1 to end of the line displayed on the screen. Line Modify ends when the ENTER or EXECUTE key is pressed.

RECORD – Turns on/off recording of the received data from the computer onto the mass storage file.

REMOTE – Switches the terminal between remote and local mode. If the Remote is active, a "" appears after the REMOTE label. The data is sent/received to/from the host. If local, the output from the computer is ignored and the keyboard entries are put on the screen.

F_keys – These correspond to f1 – f8 keys, which send escape sequences. The key's function is performed any time a key is pressed. When F_keys is pressed, menu (2) appears on the screen.

setup – Displays the next menu (3).

(2)

f1 – f8 – See F_keys above.

Main – returns to main menu.

(3)

Note: this menu displays the current terminal status whenever the setup menu is accessed.

SAVE_CNF – Saves the current configuration in nonvolatile memory, for the next powerup.
PWRU_VAL – Reconfigures the terminal with the default values present at powerup.
term_cnf – Allows the user to change terminal configuration. Causes menu (4) to appear on display.
Datacomm – Displays menu (5) to configure the datacomm card.
files – Displays menu (6).

(4)

AUTOLF – When on, this generates a line feed with every carriage return (pressing the ENTER key).
LC_ECHO – If the local echo is turned on, the emulator program will print a copy of the transmitted data on the screen, since the option is normally used when the computer is not echoing back the data. Default: local echo off.
DIAL – If a phone number was given before, it dials the number. If no number was given, it asks for a number, and then dials.
PHONE # – Used alone, the key allows entering a new number, or to change the old one. If the DIAL key is pressed before "phone no.", the user is asked for the phone number, which is then dialed.
SAVE_CNF – Saves the current configuration in a nonvolatile memory, for the next powerup.
setup – Returns to the previous menu. The current values are displayed on the screen.
main – returns to the main menu.

(5)

speed – Sets up the receive and transmit speeds (ext, 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 3600, 4800, 9600, 19200). When the 98626A is used, a 7200 baud rate is also available. Default: 2400 baud from configuration file, or from card switches.
bits/chr – Sets up for 5, 6, 7, or 8 bits/character. Default: 7 bits/character from configuration file, or from card switches.
stop_bit – 0, 1.5, or 2. Default: 1 from configuration file, or from card switches.
parity – None, odd, even, "0", or "1". Default: odd.
ptclhk – None, EQ/AK as terminal, D1/D3 as host and terminal. Default: EQ/AK as terminal.
modem_hk – Hardware handshake off, full duplex. Default: handshake off, from configuration file, or from card switches.
prompt – Specifies the prompt sequence for upload operation (maximum 2 characters). If no prompt is specified, then no prompt handshaking operation is assumed. Default: DC1.
setup – Returns to the previous menu.
main – Returns to the main menu.

(6)

HARD_SC – Allows the user to select the hardcopy select code (card interface select code) by pressing the adjacent Special Function key. Values are 7 – 31.
HPIB_ADR – Allows user to specify the HP-IB bus address. Values are 0 – 30. If the user selects a value 8 – 31 for hard_sc and hp-ib field indicates "off," the hardcopy device communicates through the GPIO card. If hp-ib field indicates a value 0 – 30, this value is used to form the select code of the hardcopy device. Device select code = (hard_sc)*100 + hp-ib. Default: 701.
CREATE – Creates a new ASCII file. This will display a field on the screen that is filled by the user with the file name, mass storage unit, number of sectors to be created, and password.
PURGE – Deletes the specified file's directory entry from the mass storage medium. This will display a field on the screen for the file name and mass storage unit.
CAT – This outputs a mass storage medium's directory to the screen or the specified hardcopy (if on). The user specifies the mass storage unit. After the user presses "CAT" key, he or she

is asked to enter the unit number and press EXECUTE or ENTER.

UPLOAD – Begins or terminates information transfer from the mass storage device to the computer.
RECORD – Turns on/off recording of the received data from the computer onto the mass storage file.
F_names – Displays menu (7) to allow assigning source destination files (name, mass storage device), and EOF, EOR characters.

(7)

SOURCE – Allows the user to specify the source of the file used to upload data to the host computer. The user can enter a new file name, or change the old assignment. The field to be modified, which will appear on the screen, contains the file identifier (mass storage specified and password). Default file name: blank.
EOF_chrs – Characters that will be sent to the host when the file's EOF mark is reached, or characters that are expected from the host when recording. If this happens, recording is turned off. Default: off.
EOR_chrs – Characters that the emulator expects from the host computer at the end of the text record being recorded. When these characters are seen, the emulator writes the received record to the destination file. Also, if uploading, the EOR characters are sent to the host when EOR is reached in the source file. Default: C_R.
setup – Returns to menu (3).
files – Returns to the previous menu.
main – Returns to the main menu.



Throughput

The Terminal Emulator provides a throughput of 98% of line speed to the CRT up to 3200 baud, independent of the line length.

Hardware Required

The following hardware is required to run the terminal emulator.

- Series 200 computer with any language system
- 320K bytes RAM
- 98628A Opt 100 with any cable option, or 98626A Opt. 001 or 002, or Model 16 serial port

The following optional hardware is supported:

- Pods
 - 13265A 300 Baud Modem (US/CANADA only)
 - 13266A Current Loop Interface
- Printers
 - all HP-IB and GPIO printers, and serial printers interfaced to the 98626A supported by PASCAL on the Series 200 computer.
- Mass Storage
 - 7908/11/12 8" Winchester Disc Drive
 - 9885M/S 8" Flexible Disc Drive
 - 9895M/S 8" Double-sided Flexible Disc Drive
 - 913x Family 5¼" Winchester Disc Drive
 - 8290x Family 5¼" Flexible Disc Drive
 - 9121 Family 3¼" Micro Flexible Disc Drive
 - SRM Shared Resource Manager

The terminal emulator can be ordered for the Series 200 Model 16, 26, or 36 computer on one of three media options using the following 10-digit product numbers:

- 09800-10380 3½" externally-formatted micro flexible disc
- 09800-10580 5¼" externally-formatted mini flexible disc
- 09800-10680 5¼" internally-formatted mini flexible disc

