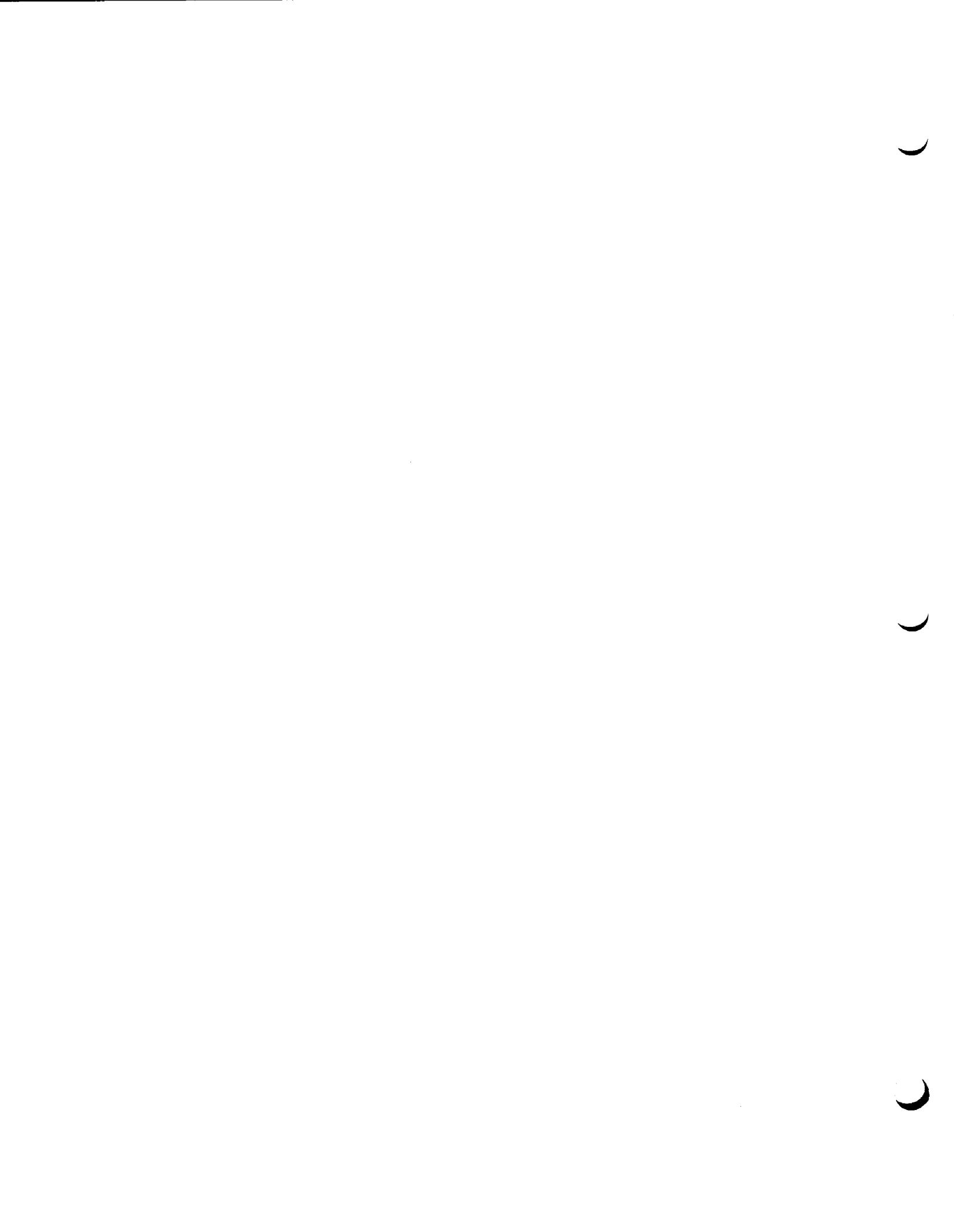


**HEWLETT-PACKARD 9830A CALCULATOR  
TERMINAL I ROM**



# OPERATING MANUAL

## TERMINAL I ROM 11277B & OPTION 277



9830A CALCULATOR SHOWN WITH 9866A PRINTER

HEWLETT-PACKARD CALCULATOR PRODUCTS DIVISION

P.O. Box 301, Loveland, Colorado 80537, Tel. (303) 667-5000

(For World-wide Sales and Service Offices see rear of manual.)

Copyright by Hewlett-Packard Company 1973



# TABLE OF CONTENTS

<b>CHAPTER 1 – INTRODUCTORY DESCRIPTION</b>	<b>1-1</b>
TERMINAL EQUIPMENT REQUIREMENTS	1-1
TIME-SHARE SYSTEM REQUIREMENTS	1-1
OTHER REQUIREMENTS	1-2
SUPPLIED EQUIPMENT	1-2
INSTALLING THE PLUG-IN ROM	1-2
INSPECTION PROCEDURE	1-2
INSTALLING THE MODEM	1-2
SYNTAX	1-3
<b>CHAPTER 2 – THE COMMUNICATIONS TERMINAL</b>	<b>2-1</b>
THE TERM COMMAND	2-1
TERMINAL FUNCTIONS	2-2
THE PARITY STATEMENT	2-3
THE EXIT STATEMENT	2-3
THE STOP KEY	2-4
TIME-SHARE CONNECTION	2-4
AN EXAMPLE SIGN-ON PROCEDURE	2-5
SUMMARY	2-6
<b>CHAPTER 3 – THE 'FREE TEXT' CALCULATOR</b>	<b>3-1</b>
THE COMP COMMAND	3-2
LINE RENUMBERING	3-2
LINE DELETION	3-3
THE USE OF SPACES	3-3
TRANSMITTING LINES FROM MEMORY	3-3
THE LIST AND LISTX COMMANDS	3-4
SAVING INFORMATION FROM A TIME-SHARE SYSTEM 'LIST' COMMAND	3-5
SAVING A TIME-SHARE SYSTEM OUTPUT	3-5
CASSETTE FILE STORAGE	3-6
PAPER TAPE STORAGE	3-6
AN EXAMPLE OF TEXT EDITING PROCEDURES	3-7
<b>APPENDIX A – BAUD RATES</b>	<b>A-1</b>
<b>APPENDIX B – ASCII CODE SIMULATION TABLE</b>	<b>B-1</b>
<b>APPENDIX C – DIAGNOSTIC NOTES</b>	<b>C-1</b>

## PREFACE



The Terminal I Read-Only-Memory (ROM) can be purchased as an accessory plug-in block or as an internal modification to the calculator.

### The Plug-in Version:

The 11277B Terminal I ROM block is installable by the user. It plugs into any of the five slots behind the ROM door on the left side of the calculator.

### The Calculator Modification:

The Option 277 Terminal I ROM must be installed by qualified HP personnel. When it is installed, a decal showing the option number (Option 277) is attached to the inside of the ROM door.

Should you wish to add the option after you have received your calculator, please order accessory number HP 11277F from the sales office nearest to you (see the back of this manual). The Option 277 will then be installed for you by our field personnel.

Once either version of the ROM (the plug-in block or the internal modification) has been installed, the operation is identical. Therefore, this manual makes no further distinction between the two types of ROM.

# Chapter 1

## INTRODUCTORY DESCRIPTION

The Terminal I Read-Only-Memory (the Terminal ROM) provides additional capabilities to the Model 30, permitting the calculator to be used as a communications terminal. Basically, the Terminal ROM makes the calculator work like a teleprinter when communicating with a time-share system, with the following additional features.

- Typing errors are easy to correct with the calculator editing keys.
- The Special Function keys can be used as typing aids for quicker and more accurate data entry.
- The calculator memory can be used as an intermediate storage and work area for data or program lines in any language. The calculator can receive and save 'free text' lines in memory from a time-share system, and these lines can be stored on the cassette. The calculator can also transmit from memory to the time-share system.
- 'Free text' lines can be printed without line numbers for text editing applications.
- You can continue to store and run BASIC programs and perform calculations while in terminal mode operation.

### ◆◆◆ TERMINAL EQUIPMENT REQUIREMENTS ◆◆◆

In addition to the 9830A Calculator, the following equipment is necessary for the operation of your communications terminal.

- -hp- Model 9866A Printer.
- Low-speed modem with either a telephone data set or an acoustic coupler. The modem must meet EIA† Standard RS-232-C. For installation information see below.
- -hp- Model 11206A Modem Interface Card.

### ◆◆◆ TIME-SHARE SYSTEM REQUIREMENTS ◆◆◆

To use your calculator as a communications terminal, your computer time-share service must offer the following options.

- No echo-back, or suppressible echo-back.
- Low-speed operation, up to 300 baud transmission. See Appendix A for more information about baud rates.



## OTHER REQUIREMENTS

It is assumed that you are familiar with BASIC programming and with the operating procedures for the 9830A Calculator. It is also assumed that you are familiar with the time-share service which you plan to use and that your terminal equipment is installed.



## SUPPLIED EQUIPMENT

Two Operating Manuals, -hp- Part Number 09830-90010, and one Key Overlay, -hp- Part Number 7120-3563, which fits over the Special Function keys, are supplied with the Terminal ROM.



## INSTALLING THE PLUG-IN ROM

The complete procedure to install the plug-in ROM is in the Operating and Programming Manual for the 9830A Calculator. Following are some reminders:

- The ROM can be installed in any of the five ROM slots.
- Switch the calculator off before installing or removing a ROM.
- The label on the ROM should be 'right-side-up' and facing the ROM door when the ROM is properly installed.
- Ensure that the ROM is properly mated to the connector at the back of the slot before switching the calculator on.



## INSPECTION PROCEDURE

Refer to Appendix A in the 9830A Calculator Operating and Programming Manual for the procedures used to verify the operation of ROM's.



## INSTALLING THE MODEM

The -hp- Model 11206A Modem Interface Card connects the calculator with your modem. To connect the modem interface card to the calculator and to the modem, refer to the Installation and Service Manual shipped with the interface card.

At shipment, the select code for the modem interface card is set to 4. To change the select code, refer to the Installation and Service Manual shipped with the Modem Interface Card.

When your modem is not connected, or for some other reason it is not ready for communication with a time-share system, you can use the Terminal ROM as described in this manual, except that any attempt to transmit through the modem will cause the calculator to wait until the modem is ready to transmit.

## SYNTAX

The syntax notation used in describing the Terminal ROM statements and commands is as follows.

- Colored items are required and must appear in the statement or command as shown.
- Items contained in brackets, [ ], are optional.



**NOTES**



## Chapter 2

# THE COMMUNICATIONS TERMINAL

This chapter describes the use of the calculator as a time-share terminal. Using the information in this chapter, you can utilize the facilities offered by your time-share service. For example, you can send program lines written in BASIC or FORTRAN † to a time-share system, and then receive the printed output of results on your printer by transmitting a 'RUN' command to the time-share computer.

Chapter 3 describes the additional advantages of using the calculator with the Terminal ROM for time-share applications and for text editing. For example, Chapter 3 shows how to store 'free text' data or program lines internally from the keyboard, from a cassette or paper tape storage, or from a time-share computer output, and how to send 'free text' from the calculator memory to the time-share system or to a printer. The number of words of memory in the calculator is decreased by 10 with the Terminal ROM installed.

### THE TERM COMMAND

The TERM command establishes the 'terminal' or 'free text' mode, and must be executed before the other Terminal ROM statements and commands can be used.

Syntax:

TERM [select code[, baud rate]]

When the TERM command is executed, the word 'TEXT' appears in the display, indicating that the calculator is in 'terminal' mode. Terminal mode operation continues until an EXIT statement is executed.

If the select code for the modem is not specified, select code 4 is assumed. If the baud rate\* is not specified, 110 baud is assumed.

- 1 TERM
- 2 TERM6
- 3 TERM4,300
- 4 TERM6,300

With line 1 above, the calculator will transmit and receive on select code 4 at 110 baud.

With line 2, the calculator will transmit and receive on select code 6 at 110 baud.

With line 3, the calculator will transmit and receive on select code 4 at 300 baud.

With line 4, the calculator will transmit and receive on select code 6 at 300 baud.

†FORTRAN is the mnemonic for 'FORmula TRANslation', a scientific programming language.

\*The baud rate represents the rate of character transmission (in bits per second) and is determined by your time-share service. Refer to Appendix A for more information about baud rates.



## THE TERM COMMAND

(Continued)

While the calculator is in terminal mode, the editing operations are unchanged except for the END OF LINE key. During terminal mode operation, lines stored in the calculator by using the END OF LINE key are not checked for syntax errors.

Since lines are not checked for BASIC language syntax, 'free text' data or any programming language used by your time-share service can now be stored in the calculator. For example, a FORTRAN program can be entered into the calculator memory. All statements or lines stored in the calculator are still required to have line numbers, however, since the editing features, including line insertion, are still in effect during terminal mode operation. Lines entered via the END OF LINE key which do not have line numbers will not be stored in the calculator memory and an error message will appear in the display. Also, as in calculator mode, the lines are limited to eighty characters in length.

The use of the calculator memory while in terminal mode is described in Chapter 3.

You can store and run a BASIC language program while in terminal mode by using the COMP command, explained in Chapter 3, to perform the BASIC language syntax checking required to prepare the BASIC program for calculator execution.

Four of the Special Function keys,  $f_5$ ,  $f_6$ ,  $f_8$  and  $f_9$ , are controlled by the Terminal ROM. If you define these keys before entering terminal mode, their operation is 'overlaid' by the terminal functions until you EXIT from the terminal mode, at which time they resume the functions previously assigned to them.†

The remaining Special Function keys are especially useful as typing aids while in terminal mode operation. You can refer to the 9830A Operating and Programming Manual to review the procedure used.



## TERMINAL FUNCTIONS

Two of the Special Function keys used by the Terminal ROM,  $f_5$  and  $f_6$ , correspond to the teleprinter SHIFT and CTRL keys, respectively. If your time-share system uses non-printing characters, for example in assigning passwords for sign-on, refer to the ASCII Code Simulation Table in Appendix B. Key  $f_8$ , the SAVE function, will be discussed later in Chapter 3. Key  $f_9$ , the TRANSMIT function, is used to send data or instructions to the time-share system line-by-line. Normally, the transmitted line is terminated by a carriage return; if your time-share system requires lines to be terminated with both a carriage return and a line feed, this can be specified in a PARITY statement as explained below.

†The TERM statement causes ten words of calculator memory to be allocated to the terminal functions.



## THE PARITY STATEMENT

The PARITY statement permits the calculator to match the time-share system requirements for parity and for line-terminating characters. Normally, the terminal transmits with even parity and with a carriage return at the end of each line. Since many time-share systems accept even parity and a carriage return terminating each line, the PARITY statement is often unnecessary. However, the PARITY statement can be used as often as needed.

Syntax:

PARITY expression

To change the parity, or to transmit with a carriage return and a line feed instead of only a carriage return, refer to the following table:

	CARRIAGE RETURN ONLY	CARRIAGE RETURN AND LINE FEED
PARITY BIT ZERO	0	4
PARITY BIT ONE	1	5
EVEN PARITY	2	6
ODD PARITY	3	7

If no PARITY instruction is executed, PARITY 2 (even parity with a carriage return only) is assumed. The following PARITY statement results in even parity with a carriage return and line feed.

PARITY6

The calculator does not perform parity checking on received data, and can therefore accept whatever parity is transmitted from the time-share system.



## THE EXIT STATEMENT

The EXIT statement cancels terminal mode operation, and returns the calculator to keyboard mode.

Syntax:

EXIT

When the EXIT statement is executed, the symbol '†' appears in the display. The Special Function keys,  $f_5$ ,  $f_6$ ,  $f_8$  and  $f_9$ , which had been overlayed by the terminal functions now resume their normal operation.

EXIT

The END OF LINE key resumes its normal operation, and only BASIC language program lines can be stored. As mentioned earlier, if you wish to run a BASIC language program which has been stored during terminal mode operation, the COMP command must be used while in terminal mode. (The COMP command is explained in Chapter 3.)



## THE STOP KEY

While in terminal mode, the calculator STOP key corresponds to the teleprinter BREAK key, causing the modem to 'space' for approximately 200 milliseconds. Some time share systems use the BREAK to interrupt a program or print operation. Before using the STOP key, however, make sure that its purpose is defined for your particular time share system.



## TIME-SHARE CONNECTION

Before you can connect with a time-share system, you must know the following general facts about the system:

1. The transmission rate, in baud, which the time-share system accepts. Refer to Appendix A for information about baud rates.
2. The parity requirements of the time-share system.
3. Does the time-share system require both a carriage return and line feed or just a carriage return at the termination of each line?
4. The sign-on procedure of the time-share system: this usually includes a combination of accounting information and user protection passwords, which are supplied to the time-share system in an established sequence.
5. The computer telephone number. Special telephone lines are usually dedicated to the computer and are not the same lines used for conversation with your time-share service representatives.

With the above information, you are ready to establish a connection with your time-share system.

1. Turn ON the 9866A printer, the calculator, and the modem or acoustic coupler.
2. Execute a TERM command. If the select code for your modem is not 4, or if you plan to transmit at a speed other than 110 baud, include the appropriate parameters. If you want to change speed at any time after you have executed the TERM command, simply execute another TERM command.
3. If the time-share system uses a carriage return and a line feed, or if a parity other than even parity is required, execute a PARITY instruction.
4. Call the computer number. If your terminal equipment includes:

Acoustic coupler and telephone:

- a. If the coupler has a duplex switch, set to HALF.
- b. Dial the computer number.
- c. When the computer answers with a high pitched tone, place the handset in the coupler. Be sure to check that the handset is inserted in the correct position, which should be marked on the coupler.
- d. If the coupler has a line switch, set it to ON-LINE.

**Data Set:**

- a. Press the TALK button on the data set.
- b. Dial the computer number.
- c. When the computer answers with a high pitched tone, press the DATA button until the DATA light is on.
- d. Replace the handset.
5. Using the TRANSMIT key,  $f_9$ , to send each line to the computer, perform the sign-on procedure prescribed by your time-share service. In many systems, the connection will be dropped if you do not respond to the system's sign-on requests within a given time period, for example, 2 minutes.
6. As you type the characters, they are represented in the display; when the  $f_9$  key is pressed, the line represented in the display is transmitted to the time-share system. (Special characters produced by using the SHIFT and CTRL function keys,  $f_5$  and  $f_6$ , may be represented by other characters in the display, but will be transmitted correctly.)

**◆◆◆ AN EXAMPLE SIGN-ON PROCEDURE ◆◆◆**

Below is an example of one time-share system's sign-on procedure. In this particular system, when the connection is established, the computer responds with "PLEASE LOG IN". In the following 'conversation', the user response is shown in color:

PLEASE LOG IN

HELLO-H200, SECRET

PORT#03 SIGNED ON 03:42PM 11-15-72

READY

CATALOG

The 'READY' response indicates that the computer is waiting for further instructions from the user. At this point, the user has provided a valid sign-on account number, 'H200', and password, 'SECRET'. The date and time are provided by the computer for the user's benefit. 'PORT' is a term used by computers in describing terminal connections. The 'CATALOG' command is recognized by this computer and begins this user's terminal activity.

**SUMMARY**

If you are familiar with the commands recognized by your time-share system, you can now operate your calculator as a communications terminal. You have already seen that the calculator has some advantages over teleprinters and other terminals which do not have memory capabilities: you can edit each line before you transmit it, and you can make use of the Special Function keys as typing aids. But there are many other advantages in having the calculator memory available, and these are explained in Chapter 3.

**NOTE**

Although the calculator keyboard is available for use while the time-share system is 'busy', it is not recommended that you attempt to use it during this time.

## Chapter 3

### THE 'FREE TEXT' CALCULATOR

This chapter describes more of the statements and commands available with the Terminal ROM, and how they can be used in time-share applications and for text editing. Also, this chapter provides a more complete understanding of how the calculator operates while in terminal mode.

- Savings in Connect Time

You need not be connected to the time-share computer while keying in a program or data. You can store the program or data lines in the calculator memory until you have a number of lines which are correct, then you can connect to your time-share system and transmit the lines all at once. In this way charges for connect time can be greatly reduced.

- Savings in Storage Charges

Any 'free text' lines received from a time-share system can be stored in the calculator memory as long as each line has a reference line number. From the calculator memory, you can store the 'free text' lines on cassette files or on paper tape. Since most time-share services provide overnight storage to their customers at additional cost, you save on these charges by using cassette or paper tape storage, as well as increasing the security of your data.

- Text Editing Capabilities

Since 'free text' is not restricted only to programs and data but also includes manuscripts, letters, and other forms of text, you can type, edit and store text items the same way as program instructions. The provision for line insertion allows you to insert as many lines in the text as necessary, and there is a LISTX command, which allows you to print copies of the text without the line numbers.

- Running BASIC Programs

You can still store and run BASIC programs and use the Special Function keys for BASIC functions and programs while in terminal mode, by using the COMP command as described in this chapter.

**NOTE**

While in terminal mode, you can store 'free text' lines in the calculator memory, but only if each line is assigned a number. (You can still use the AUTO# key for line numbering while in terminal mode.)



## THE COMP COMMAND

The COMP command performs syntax checking on program lines which are stored in the calculator memory and thus prepares your programs for execution. You can continue to enter BASIC programs in the calculator memory while you are in terminal mode. But since the terminal does not check syntax on statements as they are stored, you must execute the COMP command before you can run your BASIC programs.

Syntax:

COMP [ beginning line number [,ending line number] ]

When the COMP command is executed successfully, the word 'TEXT' returns to the display. You can run programs using the same procedures as used when in calculator mode.

The COMP command performs a function similar to other computer language compilers, and therefore the mnemonic 'COMP' is used, for 'compile'. If beginning and ending line numbers are specified, only the specified lines are 'compiled'; if only a beginning line number is specified, lines are 'compiled' beginning with the specified line number.

With the COMP command, each line is checked for correct BASIC language syntax by the same calculator routines used when lines are entered one by one during calculator mode operation. Although any ERROR notes are displayed, they are quickly overlayed, and can easily be missed. To make sure that the COMP command is executed successfully, PRT-ALL should be turned ON before the COMP command is executed. Also, the COMP command should not be used with programs containing calculator commands such as SCRATCH, LIST or RUN, because they cause the results of the COMP command to be unpredictable.

**NOTE**

If a change is made to a program line, or new lines of program are entered via the END OF LINE key while in terminal mode, the COMP command must be executed again. The COMP command can be used as often as needed.



## LINE RENUMBERING

The REN command, described in the 9830A Calculator Operating and Programming Manual, renumbers the lines stored in the calculator memory, and can be used to adjust the line numbers so that additional lines can be inserted in your data or program. Also, the lowest line number and spacing between consecutive line numbers can be specified.

REN  
REN5  
REN1,5

While in terminal mode, however, the REN command does not adjust the references to program line numbers within statements (e.g. GO TO 20), unless the program is in the BASIC language, and the COMP command has been executed.

## LINE DELETION

While in terminal mode, the DELETE LINE key functions the same as the CLEAR key does, and clears the display. To delete lines stored in the calculator memory, the DEL command can be used, or individual lines can be deleted as follows.

To delete a series of consecutive lines, the DEL command is used. If begin-deletion and end-deletion line numbers are not specified, all lines are deleted. If just a begin-deletion line number is specified, all lines are deleted beginning with the specified line.

```
DEL
DEL60
DEL30,100
```

To delete individual lines, the line number is keyed in, and the END OF LINE key is pressed.

## THE USE OF SPACES

In terminal mode, spaces are considered significant and are not removed from lines when they are entered into the memory. To include blank lines in 'free text', such as for text editing applications, the line number, followed by one or more spaces, is keyed in.<sup>†</sup>

Spaces preceding the line number are not permitted while in terminal mode.

## TRANSMITTING LINES FROM MEMORY

The TRANSMIT key causes the line which appears in the display to be transmitted. To transmit an individual line from memory, retrieve it to the display by using the FETCH, ↑ or ↓ keys, and then transmit.

<sup>†</sup>The BASIC syntax checking routines, used during calculator mode operation, cause the unnecessary spaces to be removed from the lines. Since these same routines are also used for the COMP command, 'compiled' BASIC lines will also have unnecessary spaces removed.

**THE LIST AND LISTX COMMANDS**

Syntax:

LIST [X][# select code,][beginning line number[,ending line number]]

You can transmit lines stored in the calculator memory by using the LIST command if your time-share system has a 'TAPE' command†, because data is transmitted from the calculator with the LIST command in the same way that data is transmitted from a paper tape when a teleprinter is used. You can specify the select code for your modem, and you can include optional beginning and ending line numbers. Also, to store the contents of the calculator memory on paper tape, you can specify the select code for your paper tape punch device in the LIST command.

LIST#4  
LIST#4,50  
LIST#4,10,140

When the LIST command is executed, the numbered lines are transmitted to your time-share system one at a time. You can also transmit lines to your time-share system without line numbers by using the LISTX command. The LISTX command works like the LIST command except that the line numbers are not transmitted.

LISTX#4  
LISTX#4,65  
LISTX#4,30,90

The LISTX command can also be used in text editing applications to get the text printed on your printer without line numbers.

LISTX

**NOTE**

While in terminal mode the LIST and LISTX commands do not cause the number of words of remaining memory to be displayed. To determine the remaining available memory, you must EXIT from terminal mode before performing the LIST operation.

†A 'TAPE' command or any equivalent time-share system command will cause suppression of diagnostic messages and line feeds normally returned to the calculator after a line is received.

## SAVING INFORMATION FROM A TIME-SHARE SYSTEM 'LIST' COMMAND

While in terminal mode, information which is transmitted from the time-share system to the calculator is automatically printed. You can save this information in the calculator memory, provided that each line has a line number, if you use the following procedure.

1. Type a 'LIST' command recognized by your time-share system. This command should be the same command you use to obtain a line-by-line printed copy of your program or data with line numbering.
2. Press the SAVE key,  $f_8$ . Simultaneously, the 'LIST' command is transmitted and the calculator is made ready to receive the information transmitted from the time-share system.
3. After the 'LIST' operation is completed, press the SAVE key,  $f_8$ , a second time. The saved lines are prepared for storage and are available for use at this time. If PRT ALL is turned ON, the 'free text' is printed. If two lines are transmitted to the calculator which have the same line number, the most recent (latest) content is accepted. If lines are transmitted without line numbers, they are not saved.

### NOTE

The SAVE key must be pressed the second time, as in step (3), above, before other operations are performed, or the transmitted lines can be lost. If there are no lines to be saved, the CLEAR key must be pressed at this time in order to complete the SAVE operation.

## ◆◆◆ SAVING A TIME-SHARE SYSTEM OUTPUT ◆◆◆

The procedure for saving information by using the 'LIST' command can also be used for other outputs from your time-share system. The procedure is the same, but you use a program written to run on your time-share system to generate the information.

1. Write a program which gives outputs with unique line numbers at the beginning of each line, and which will run on your time-share system.
2. Type a 'RUN' command recognized by your time-share system.
3. Press the SAVE key,  $f_8$ . Simultaneously, the 'RUN' command is transmitted and the calculator is made ready to receive the output transmitted from the time-share system.
4. After the 'RUN' operation is completed, press the SAVE key,  $f_8$ , a second time. All properly numbered lines will be stored sequentially in memory at this time.



## CASSETTE FILE STORAGE

While in terminal mode, cassette files can be used for storage of 'free text' lines contained in the calculator memory.

To store 'free text' lines on a cassette from the calculator memory, the STORE command is used, and a cassette file number is specified. (Of course, files must be marked before the STORE command can be used — for more information, refer to the 9830A Calculator Operating and Programming Manual.)

To store the contents of the calculator memory on Cassette File 1, execute the following command.

STORE1

To load 'free text' lines from a cassette file into the calculator memory, the LOAD command is used, and a cassette file number is specified. Execute the following command to load the contents of Cassette File 3 into the calculator memory.

LOAD3



## PAPER TAPE STORAGE

Paper tape, like cassette files, provides an inexpensive storage medium for 'free text' lines when used with the Terminal ROM.

To read from paper tape, the PTAPE# command is used, and you specify the select code for your paper tape reader. For example, if your paper tape reader has select code 7, use the following PTAPE# command.

PTAPE#7

While in terminal mode, all numbered lines are stored in the calculator memory in sequence. Syntax is not checked, and therefore you may use the PTAPE# command to store data or program lines in the calculator.

To punch the contents from the calculator memory on paper tape, the LIST command is used. For example, if your paper tape punch has select code 9, use the following LIST command.

LIST#9

## ← AN EXAMPLE OF TEXT EDITING PROCEDURES →

This example of text editing is intended to suggest some similar application you might have, and to review some of the commands used so that you will have a better understanding of how the calculator operates while in terminal mode.

*A local school system keeps a list of qualified teachers' aides who have volunteered to help at the school for one week during the school year. The list is updated as needed, when addresses and telephone numbers change and when names are added or deleted.*

Here is a partial list of the entries which have been typed and stored on a cassette.

10	BLACK, SARA	800 N. 2ND ST.	772-6227
20	DAVIS, JOAN	516 GEORGIA CT.	772-6381
30	THOMPSON, LOU	223 JUNIPER ST.	267-5555

To read the 'free text' list from Cassette File 1 into the calculator memory, the following commands are executed.

TERM  
LOAD1

Here are some changes which must be made to the list.

Additions:	Johnson, Lee 215 S. 4th St.	772-6381
	Walker, Edna 157A Crawford Ave.	267-4692
Corrections:	Thompson, Lou 27 W. Main St.	267-6162
Deletions:	Davis, Joan	

Lines 25 and 40 are typed to make the two additions to the list, and the END OF LINE key is pressed after each line, to store the lines in memory.

25	JOHNSON, LEE	215 S. 4TH ST.	772-6381
40	WALKER, EDNA	157 A CRAWFORD AVE.	267-4692

To correct the line for Lou Thompson, FETCH30 is executed and the corrected line is stored.

30	THOMPSON, LOU	27 W. MAIN ST.	267-6162
----	---------------	----------------	----------

To delete the line for Joan Davis, the line number 20 is keyed in and stored. Another way to delete line 20 is by executing the following command.

DEL 20,20

**◆ AN EXAMPLE OF TEXT EDITING PROCEDURES ◆**

(continued)

The following commands are executed to renumber the lines and print a new listing of the names.

```
REN  
LIST
```

The line numbers are not wanted on the list which is to be circulated, so the text is listed again. This time the line numbers are not printed.

```
LISTX
```

Here is the updated list, ready for circulation.

BLACK, SARA	1800 N. 12ND ST.	772-6227
JOHNSON, LEE	215 S. 4TH ST.	772-6381
THOMPSON, LOU	227 W. MAIN ST.	267-6162
WALKER, EDNA	157 A CRAWFORD AVE.	267-4692

To store the new list back onto the cassette, the STORE command is executed, and the 'free text' operation is completed. The EXIT command is used to return the calculator to keyboard mode.

```
STORE1  
SCRATCH  
EXIT
```

## APPENDIX A

### BAUD RATES

Most major time-share services offer several transmission speed options to customers. This is a common practice because there are some types of terminal equipment in use which can operate at only a single speed (usually 10, 20 or 30 characters per second). However, the calculator can operate at any speed within the range of 3 to 440 baud.

The baud rate is a precise method of expressing the rate of character transmission, because it represents the number of time periods (sometimes called bits) transmitted per character, as well as the number of characters transmitted per second (cps).

$$\text{BAUD RATE} = \text{CHARACTERS / SECOND} * \text{TIME PERIODS / CHARACTER}$$

The baud rate is sometimes referred to as 'bps,' or 'bits per second.'

In general, eleven time periods per character are transmitted when operating at 10 cps; at higher speeds, ten time periods are transmitted per character. The following rates are offered only as a guideline, since there are known exceptions.†

$$\begin{aligned}10 \text{ cps} &= 110 \text{ baud} \\20 \text{ cps} &= 200 \text{ baud} \\30 \text{ cps} &= 300 \text{ baud}\end{aligned}$$

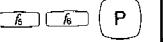
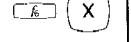
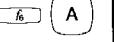
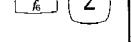
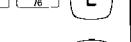
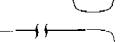
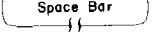
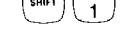
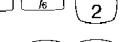
You can calculate the baud rate if you know the transmission speed for your time-share system in characters per second and the number of time periods (or bits) transmitted per character, as shown above. Your time-share service representative should be able to supply this information.

If your time-share service offers several speed options for ASCII character transmission, you will probably want to choose the highest speed available, so that you save on connect time charges. In fact, some time-share services encourage the use of faster terminal equipment by charging less for connect time at the higher speeds.

†One system we contacted transmits 20 cps at 220 baud, or eleven time periods per character.

## APPENDIX B

## ASCII CODE SIMULATION TABLE

BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)	BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)*
00 000 000	000	NULL		00 011 000	030	S <sub>0</sub>	
00 000 001	001	SOM		00 011 001	031	S <sub>1</sub>	
00 000 010	002	EOA		00 011 010	032	S <sub>2</sub>	
00 000 011	003	EOM		00 011 011	033	S <sub>3</sub>	
00 000 100	004	EOT		00 011 100	034	S <sub>4</sub>	
00 000 101	005	WRU		00 011 101	035	S <sub>5</sub>	
00 000 110	006	RU		00 011 110	036	S <sub>6</sub>	
00 000 111	007	BELL		00 011 111	037	S <sub>7</sub>	
00 001 000	010	FE <sub>0</sub>		00 100 000	040	space	
00 001 001	011	HT/SK		00 100 001	041	!	
00 001 010	012	LF		00 100 010	042	"	
00 001 011	013	V TAB		00 100 011	043	#	
00 001 100	014	FF		00 100 100	044	\$	
00 001 101	015	CR		00 100 101	045	%	
00 001 110	016	SO		00 100 110	046	&	
00 001 111	017	SI		00 100 111	047	,	
00 010 000	020	DC <sub>0</sub>		00 101 000	050	(	
00 010 001	021	DC <sub>1</sub>		00 101 001	051	)	
00 010 010	022	DC <sub>2</sub>		00 101 010	052	*	
00 010 011	023	DC <sub>3</sub>		00 101 011	053	+	
00 010 100	024	DC <sub>4</sub> /STOP		00 101 100	054	,	
00 010 101	025	ERR		00 101 101	055	-	
00 010 110	026	SYNC		00 101 110	056	.	
00 010 111	027	LEM		00 101 111	057	/	

\*When  is shown, the SHIFT key is held down while the following key is pressed.

BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)	BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)
00 110 000	060	0	0	01 001 000	110	H	H
00 110 001	061	1	1	01 001 001	111	I	I
00 110 010	062	2	2	01 001 010	112	J	J
00 110 011	063	3	3	01 001 011	113	K	K
00 110 100	064	4	4	01 001 100	114	L	L
00 110 101	065	5	5	01 001 101	115	M	M
00 110 110	066	6	6	01 001 110	116	N	N
00 110 111	067	7	7	01 001 111	117	O	O
00 111 000	070	8	8	01 010 000	120	P	P
00 111 001	071	9	9	01 010 001	121	Q	Q
00 111 010	072	:	*, :	01 010 010	122	R	R
00 111 011	073	;	+, ;	01 010 011	123	S	S
00 111 100	074	<	SHIFT, <, ,	01 010 100	124	T	T
00 111 101	075	=	=	01 010 101	125	U	U
00 111 110	076	>	SHIFT, >, .	01 010 110	126	V	V
00 111 111	077	?	SHIFT, ?, /	01 010 111	127	W	W
01 000 000	100	@	SHIFT, RESULT	01 011 000	130	X	X
01 000 001	101	A	A	01 011 001	131	Y	Y
01 000 010	102	B	B	01 011 010	132	Z	Z
01 000 011	103	C	C	01 011 011	133	[	K
01 000 100	104	D	D	01 011 100	134	\	L
01 000 101	105	E	E	01 011 101	135	]	M
01 000 110	106	F	F	01 011 110	136	↑	N
01 000 111	107	G	G	01 011 111	137	←	O

## ASCII CODE SIMULATION TABLE

(continued)

BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)	BINARY CODE	OCTAL CODE	ASCII CHARACTER	CALCULATOR KEY(S)*
01 100 000	140	unassigned		01 111 000	170	x	
01 100 001	141	a		01 111 001	171	y	
01 100 010	142	b		01 111 010	172	z	
01 100 011	143	c		01 111 011	173	{	
01 100 100	144	d		01 111 100	174	ACK	
01 100 101	145	e		01 111 101	175	}	
01 100 110	146	f		01 111 110	176	ESC	
01 100 111	147	g		01 111 111	177	DEL	
01 101 000	150	h					
01 101 001	151	i					
01 101 010	152	j					
01 101 011	153	k					
01 101 100	154	l					
01 101 101	155	m					
01 101 110	156	n					
01 101 111	157	o					
01 110 000	160	p					
01 110 001	161	q					
01 110 010	162	r					
01 110 011	163	s					
01 110 100	164	t					
01 110 101	165	u					
01 110 110	166	v					
01 110 111	167	w					

\*When is shown, the SHIFT key is held down while the following key is pressed.

## APPENDIX C

## DIAGNOSTIC NOTES

INDICATION	MEANING
ERROR 78	The TERM command contains invalid select code or baud rate specification. The select code for your modem must be between 1 and 9, and the baud rate must be between 3 and 440.
ERROR 79	The RUN command is non-executable because untranslated program lines are stored in the calculator memory. If the stored program lines are valid BASIC language instructions, execute the COMP command and then execute the RUN command.

---

**NOTES**



## NOTES



## ELECTRONIC

### SALES & SERVICE OFFICES

#### UNITED STATES

**ALABAMA**  
 P.O. Box 4207  
 2003 Byrd Spring Road S.W.  
 Huntsville 35802  
 Tel: (205) 881-4591  
 TWX: 810-726-2204

**ARIZONA**  
 2335 E. Magnolia St.  
 Phoenix 85034  
 Tel: (602) 244-1361  
 TWX: 910-951-1330

5737 East Broadway  
 Tucson 85711  
 Tel: (602) 298-2313  
 TWX: 910-952-1162

**CALIFORNIA**  
 1430 East Orangeborro Ave.  
 Fullerton 92631  
 Tel: (714) 870-1000  
 TWX: 910-592-1288

3939 Lankershim Boulevard  
 North Hollywood 91604  
 Tel: (213) 877-1282  
 TWX: 910-499-2170

**GEORGIA**  
 P.O. Box 28234  
 450 Interstate North  
 Atlanta 30328  
 Tel: (404) 436-6181  
 TWX: 810-850-0113

**HAWAII**  
 2875 So. King Street  
 Honolulu 96814  
 Tel: (808) 955-4455  
 TWX: 910-328-6148

**ILLINOIS**  
 5500 Howard Street  
 Skokie 60076  
 Tel: (312) 677-0400  
 TWX: 910-223-3613

**INDIANA**  
 3839 Meadows Drive  
 Indianapolis 46205  
 Tel: (317) 546-4891  
 TWX: 810-341-3263

**LOUISIANA**  
 P. O. Box 840  
 3239 Williams Boulevard  
 Kenner 70062  
 Tel: (504) 721-6201  
 TWX: 810-955-5524

**COLORADO**  
 7965 East Prentice  
 Englewood 80110  
 Tel: (303) 771-3455  
 TWX: 910-935-0705

**CONNECTICUT**  
 12 Lunar Drive  
 New Haven 06525  
 Tel: (203) 389-6551  
 TWX: 710-465-2029

**FLORIDA**  
 P.O. Box 24210  
 2806 W. Oakland Park Blvd.  
 Ft. Lauderdale 33307  
 Tel: (305) 731-2020  
 TWX: 510-955-4099

5737 East Broadway  
 Tucson 85711  
 Tel: (602) 298-2313  
 TWX: 910-952-1162

**CALIFORNIA**  
 1430 East Orangeborro Ave.  
 Fullerton 92631  
 Tel: (714) 870-1000  
 TWX: 910-592-1288

3939 Lankershim Boulevard  
 North Hollywood 91604  
 Tel: (213) 877-1282  
 TWX: 910-499-2170

**GEORGIA**  
 P.O. Box 28234  
 450 Interstate North  
 Atlanta 30328  
 Tel: (404) 436-6181  
 TWX: 810-850-0113

**HAWAII**  
 2875 So. King Street  
 Honolulu 96814  
 Tel: (808) 955-4455  
 TWX: 910-328-6148

**ILLINOIS**  
 5500 Howard Street  
 Skokie 60076  
 Tel: (312) 677-0400  
 TWX: 910-223-3613

**INDIANA**  
 3839 Meadows Drive  
 Indianapolis 46205  
 Tel: (317) 546-4891  
 TWX: 810-341-3263

**LOUISIANA**  
 P. O. Box 840  
 3239 Williams Boulevard  
 Kenner 70062  
 Tel: (504) 721-6201  
 TWX: 810-955-5524

**COLORADO**  
 7965 East Prentice  
 Englewood 80110  
 Tel: (303) 771-3455  
 TWX: 910-935-0705

**MARYLAND**  
 6707 Whitestone Road  
 Baltimore 21207  
 Tel: (301) 944-5400  
 TWX: 710-862-9157

**FLORIDA**  
 P.O. Box 24210  
 2806 W. Oakland Park Blvd.  
 Ft. Lauderdale 33307  
 Tel: (305) 731-2020  
 TWX: 510-955-4099

5737 East Broadway  
 Tucson 85711  
 Tel: (602) 298-2313  
 TWX: 910-952-1162

**CALIFORNIA**  
 1430 East Orangeborro Ave.  
 Fullerton 92631  
 Tel: (714) 870-1000  
 TWX: 910-592-1288

3939 Lankershim Boulevard  
 North Hollywood 91604  
 Tel: (213) 877-1282  
 TWX: 910-499-2170

**GEORGIA**  
 P.O. Box 28234  
 450 Interstate North  
 Atlanta 30328  
 Tel: (404) 436-6181  
 TWX: 810-850-0113

**HAWAII**  
 2875 So. King Street  
 Honolulu 96814  
 Tel: (808) 955-4455  
 TWX: 910-328-6148

**ILLINOIS**  
 5500 Howard Street  
 Skokie 60076  
 Tel: (312) 677-0400  
 TWX: 910-223-3613

**INDIANA**  
 3839 Meadows Drive  
 Indianapolis 46205  
 Tel: (317) 546-4891  
 TWX: 810-341-3263

**LOUISIANA**  
 P. O. Box 840  
 3239 Williams Boulevard  
 Kenner 70062  
 Tel: (504) 721-6201  
 TWX: 810-955-5524

**COLORADO**  
 7965 East Prentice  
 Englewood 80110  
 Tel: (303) 771-3455  
 TWX: 910-935-0705

**MASSACHUSETTS**  
 32 Hartwell Ave.  
 Lexington 02173  
 Tel: (617) 861-8960  
 TWX: 710-326-6904

**MICHIGAN**  
 2385 Research Drive  
 Farmington 48024  
 Tel: (313) 476-6400  
 TWX: 710-242-2900

**MINNESOTA**  
 2459 University Avenue  
 St. Paul 55114  
 Tel: (612) 645-9461  
 TWX: 910-563-3734

**MISSOURI**  
 11131 Colorado Ave.  
 Kansas City 64137  
 Tel: (816) 763-8000  
 TWX: 910-771-2087

**MISSOURI**  
 148 Weldon Parkway  
 Maryland Heights 63043  
 Tel: (314) 567-1455  
 TWX: 910-764-0830

**NEVADA**  
 Las Vegas  
 Tel: (702) 382-5777

**NEW JERSEY**  
 W. 120 Century Road  
 Paramus 07652  
 Tel: (201) 265-5000  
 TWX: 710-990-4951

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 82 Washington Street  
 Poughkeepsie 12601  
 Tel: (914) 454-7330  
 TWX: 510-248-0012

**NEW YORK**  
 39 Saginaw Drive  
 Rochester 14623  
 Tel: (716) 473-9500  
 TWX: 510-253-5981

**NEW YORK**  
 5858 East Molloy Road  
 Syracuse 13211  
 Tel: (315) 454-2486  
 TWX: 710-541-0482

**NEW YORK**  
 1021 8th Avenue  
 King of Prussia Industrial Park  
 King of Prussia 19406  
 Tel: (215) 265-7000  
 TWX: 510-660-2670

**NEW YORK**  
 873 Waterman Ave.  
 East Providence 02914  
 Tel: (401) 434-5535  
 TWX: 710-381-7573

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW YORK**  
 1 Crossways Park West  
 Woodbury 11797  
 Tel: (516) 921-0300  
 TWX: 510-221-2168

**NEW MEXICO**  
 P.O. Box 8366  
 Station C  
 6501 Lomas Boulevard N.E.  
 Albuquerque 87108  
 Tel: (505) 265-3713  
 TWX: 910-989-1665

**NEW MEXICO**  
 P.O. Box 1648  
 2 Choke Cherry Road  
 Rockville 20850  
 Tel: (301) 948-6370  
 TWX: 710-828-9684

**MASSACHUSETTS**  
 32 Hartwell Ave.  
 Lexington 02173  
 Tel: (617) 861-8960  
 TWX: 710-326-6904

**MISSOURI**  
 11131 Colorado Ave.  
 Kansas City 64137  
 Tel: (816) 763-8000  
 TWX: 910-771-2087

**MISSOURI**  
 148 Weldon Parkway  
 Maryland Heights 63043  
 Tel: (314) 567-1455  
 TWX: 910-764-0830

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI**  
 1060 N. Kings Highway  
 Cherry Hill 08034  
 Tel: (609) 667-4000  
 TWX: 710-892-4945

**MISSOURI</**

## EUROPE

### AUSTRIA

Hewlett-Packard Ges.m.b.H  
Handelskai 52/3  
P.O. Box 7  
A-1205 Vienna  
Tel: (0222) 33 66 06 to 09  
Cable: HEWPACK Vienna  
Telex: 75923 hewpak a

### BELGIUM

Hewlett-Packard Benelux  
S.A./N.V.  
Avenue de Col-Vert, 1,  
(Groenplaats)  
B-1170 Brussels  
Tel: (02) 72 22 40  
Cable: PALOBEN Brussels  
Telex: 23 494 paloben bru

### DENMARK

Hewlett-Packard A/S  
Datavej 38  
DK-3460 Birkerød  
Tel: (01) 81 66 40  
Cable: HEWPACK AS  
Telex: 166 40 hp as

Hewlett-Packard A/S  
Torvet 9  
DK-6000 Silkeborg  
Tel: (06) 82 71-66  
Telex: 166 40 hp as  
Cable: HEWPACK AS

### FINLAND

Hewlett-Packard Oy  
Suluvärdi 26  
P.O. Box 12185  
SF-00120 Helsinki 12  
Tel: (90) 13730  
Cable: HEWPACKY Helsinki  
Telex: 12-15963 hel

### FRANCE

Hewlett-Packard France  
Quartier de Courtabœuf  
Route Postale No. 6  
F-91401 Orsay  
Tel: (1) 907 78 25  
Cable: HEWPACK Orsay  
Telex: 66048

Hewlett-Packard France  
4 F-69321 Lyon Cedex 1  
Tel: (78) 42 63 45  
Cable: HEWPACK Lyon  
Telex: 31617

Hewlett-Packard France  
29 rue de la Gare  
F-31700 Blagnac  
Tel: (61) 85 82 29  
Telex: 51957

### GERMAN FEDERAL REPUBLIC

Hewlett-Packard GmbH  
Vertriebszentrale Frankfurt  
Bernerstrasse 117  
Postfach 560 140  
D-6000 Frankfurt 56  
Tel: (0611) 50 04 1  
Cable: HEWPACKSA Frankfurt  
Telex: 41 32 49 fra

Hewlett-Packard GmbH  
Vertriebsbüro Böblingen  
Herrenbergerstrasse 110  
D-7030 Böblingen, Württemberg  
Tel: (0703) 65 72 87  
Cable: HEPAK Böblingen  
Telex: 72 65 739 bbn

Hewlett-Packard GmbH  
Vertriebsbüro Düsseldorf  
Vogelsanger Weg 38  
D-4000 Düsseldorf  
Tel: (0211) 63 80 31/35  
Telex: 85/86 533 hpd d

Hewlett-Packard GmbH  
Vertriebsbüro Hamburg  
Wendenerstr. 23  
D-2000 Hamburg 1  
Tel: (0411) 24 13 93  
Cable: HEWPACKSA Hamburg  
Telex: 21 63 032 hpd d

Hewlett-Packard GmbH  
Vertriebstuero Hannover  
Meliendorfer Strasse 3  
D-3000 Hannover - Kleefeld  
Tel: (0311) 55 06 26

Hewlett-Packard GmbH  
Vertriebsbüro München  
Unterhachinger Strasse 28  
ISAR Center  
D-8012 Ottobrunn  
Tel: (0811) 601 30 61/7  
Telex: 52 49 85

Hewlett-Packard GmbH  
(West Berlin)  
Vertriebsbüro Berlin  
Wilmersdorfer Strasse 113/114  
D-1000 Berlin W. 12  
Tel: (0311) 3137046  
Telex: 18 34 05 hpbln d

Hewlett-Packard GmbH  
Vertriebsbüro Berlin  
Wilmersdorfer Strasse 113/114  
D-1000 Berlin W. 12  
Tel: (0311) 3137046  
Telex: 18 34 05 hpbln d

### GREECE

Kostas Karayannis  
18, Ermo Street  
GR Athens 126  
Tel: 3230-303, 3230-305

Cable: RAKAR Athens  
Telex: 21 59 62 /kar gr

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
The Graftons  
Stamford New Road  
Altringham, Cheshire, England  
Tel: (061) 928-8626

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

### NETHERLANDS

Hewlett-Packard Benelux  
S.A./N.V.  
Avenue du Col-Vert, 1,  
(Groenplaats)  
B-1170 Brussels  
Tel: (02) 72 22 40  
Cable: PALOBEN Brussels  
Telex: 23 494

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

### NETHERLANDS

Hewlett-Packard Benelux/N.V.  
Wedersteinen 117  
NL-Amsterdam, Z1011  
Tel: 020-42 77 77, 44 29 66

Cable: PALOBEN Amsterdam  
Telex: 13 216 hepna n

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

### NETHERLANDS

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

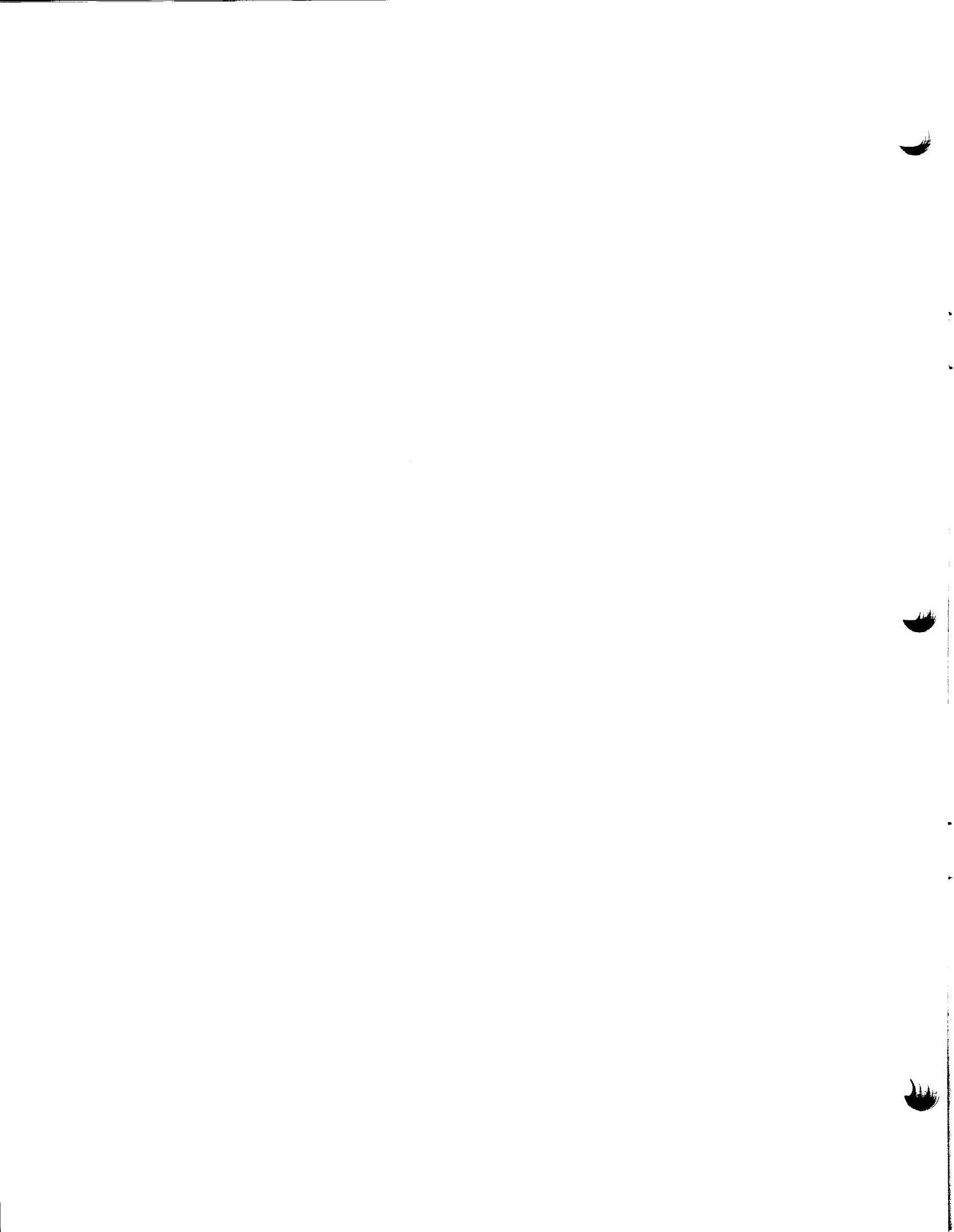
Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Packard Ltd.  
224 Bath Road  
B.G.-Slough, SL1 4 DS, Bucks  
Tel: (0753) 33341  
Cable: HEWPIE Slough

Hewlett-Pack



## TERMINAL OPERATIONS

### THE TERM COMMAND

Establishes terminal mode. The TERM command must be executed before the other Terminal ROM statements and commands can be used.

TERM [select code [,baud rate] ]

### THE EXIT STATEMENT

Cancels terminal mode operation.

EXIT

### THE PARITY STATEMENT

Changes the parity; also causes lines to be transmitted with a carriage return and line feed.

PARITY expression

### THE COMP COMMAND

Compiles BASIC program lines stored in memory.

COMP [beginning line number [,ending line number] ]

### THE LISTX COMMAND

Lists lines from memory without line numbers. The modem select code may be specified.

LISTX [# select code,] [beginning line number [,ending line number] ]

### THE TERMINAL FUNCTIONS

SHIFT		Equivalent to teleprinter SHIFT key.
CONTROL		Equivalent to teleprinter CTRL key.
SAVE		Transmits commands and saves inputs from a time-share system.
TRANSMIT		Transmits lines to a time-share system.

The calculator STOP key corresponds to the teleprinter BREAK key.

© 9830A TERMINAL I ROM  
11277B & OPTION 277

OPERATING MANUAL

Scan Copyright ©  
The Museum of HP Calculators  
[www.hpmuseum.org](http://www.hpmuseum.org)

Original content used with permission.

Thank you for supporting the Museum of HP  
Calculators by purchasing this Scan!

Please do not make copies of this scan or  
make it available on file sharing services.