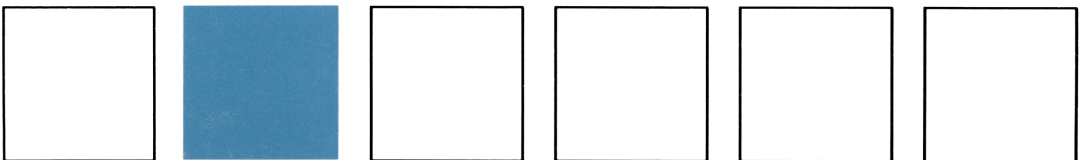




HP 82488A

Data Communications Pac Owner's Manual

For the HP-71



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Data Communications Pac Owner's Manual

For Use With the HP-71

Developed and Written for Hewlett-Packard
by
Iota Systems
and
Firmware Specialists, Inc.

82488-90001

Printed in U.S.A.

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INTRODUCING THE DATA COMMUNICATIONS PAC

The Data Communications Pac provides a versatile terminal emulator software package, the DATACOMM program, for the HP-71 Portable Computer. With this program you can communicate with other computer systems over a phone line to access a variety of information. You can connect to systems such as The Source, Dow Jones News/Retrieval, and other host computer systems via a modem. It is quite easy to obtain stock quotes, send or receive electronic mail, or make airplane reservations using one of these data base services.

A few of the features provided by the system are:

- * Incoming and outgoing data can be sent to the HP-71 display, a printer, and/or a video interface.
- * Special code words can be created that simplify log on procedures.
- * Text files that have been written off-line can be transferred to another host computer system.
- * Incoming data can be saved in a text file for later review or printing.
- * A 500-character input buffer is provided for reviewing information when using the HP-71 display.
- * Command files allow easy implementation of repetitive operations.
- * User programs can call and use DATACOMM'S features.

The DATACOMM program is entirely menu-driven. Most operations can be accessed from the menu by typing a single key.

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HOW TO USE THIS MANUAL

The information in this manual assumes that you have read your HP-71 Owner's Manual. Specifically, you should know how to connect, assign and operate your modem, printer, and video interface.

This manual is both a learning tool and a reference tool. Section 1, "Getting Started," describes how to insert the Data Communications module and how to hook up peripherals. A tutorial is provided which describes logging onto a host computer system. In this example the Dow Jones News/Retrieval Service (R) is used.

Section 2, "Initializing Your System," explains setup files and how to modify them for your own system configuration.

Section 3, "Terminal Mode," discusses how to use DATACOMM commands while your HP-71 is talking to another computer.

Section 4, "Special Code Words," outlines the procedure for creating "typing aid" files and other short-cuts.

Section 5, "Advanced Programmer's Guide," discusses how to call other programs from DATACOMM and how DATACOMM can call other programs.

Section 6, "DATACOMM Command Dictionary," describes each system command and gives an example of how it is used.

There are several Appendices that provide expanded information and examples on specific applications.

- * Appendix A, "Owner's Information" provides warranty and service information.
- * Appendix B, "Error Messages," lists error messages that may appear as a result of an improper operation.
- * Appendix C, "Using the Dow Jones News/Retrieval Service (R)," describes how to log on to the Dow Jones Service and how to transfer data from the service to a text file.
- * Appendix D, "Using the Source," explains how to log on to The Source and how to transfer mail to and from the service.
- * Appendix E, "Setup Files For The HP-3000," gives the changes for the setup files which are required for DATACOMM to communicate with the HP-3000.

Section 1

GETTING STARTED

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WHAT THE DATA COMMUNICATIONS PAC DOES

The Data Communications module contains a program called DATACOMM that allows your HP-71 to easily communicate with other computer systems via a modem, or directly with an RS-232-C interface at up to 1200 baud. You can easily log on to The Source (S), Dow Jones News/Retrieval Service (R), or other computer systems that support the XON/XOFF protocol.

NOTE: Most computer systems support the XON/XOFF protocol. The XON/XOFF protocol allows DATACOMM to control the transmission of characters from the host system. DATACOMM can stop the host system from sending characters by sending an XOFF character (usually a control S). When DATACOMM is ready to accept more information, it restarts transmission by sending an XON character (usually a control Q). DATACOMM may miss incoming data if the connected host system does not support XON/XOFF protocol. Check with the service department of the information service you intend to use if you are in doubt about the use of XON/XOFF.

DATACOMM can be used with other handshaking protocols in addition to XON/XOFF if they are supported by your communication hardware (modem or RS-232C interface). Refer to your owner's manual for information on which protocols are supported.

A number of DATACOMM program commands provide flexibility in how information is displayed when your HP-71 is talking to another computer system. Incoming data can be displayed on the HP-71 display, a video interface, and/or on a printer. When the HP-71 LCD display is turned on, incoming characters are stored in a 500-character buffer. The 500 most recently received characters are saved in the buffer and can be easily reviewed.

Another useful feature of the Data Communications Pac is the text file transfer capability. This allows you to send a text file which you have created off-line to a host system when you log on. The reverse is also true; you can read data from another

system into a text file. Additionally, you can send string data files from the HP-71 to a host computer.

Before logging on to another computer system, DATACOMM needs to know what type of modem, acoustic or RS-232, you are using. The program also needs to know what type of video display and/or printer, if any, you are using. The first time you run DATACOMM, the program creates a setup file (SETUPA1 for acoustic modems or SETUPR1 for RS-232 modems) which can be modified for your particular system configuration. An editor in DATACOMM facilitates changing the setup file to meet your needs.

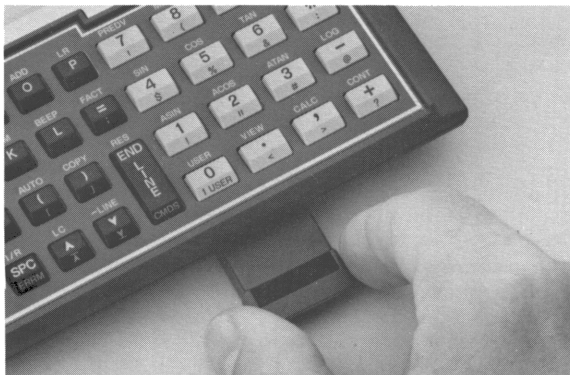
INSTALLING AND REMOVING THE DATA COMMUNICATIONS MODULE

The Data Communications module can be plugged into any of the four ports on the front edge of the computer.

***** CAUTION *****

- * Be sure to turn off the HP-71 (press [f] [on]) before installing or removing any module. If the computer is on while a module is being installed or removed, it might reset itself, causing all stored information to be lost.
- * Do not place fingers, tools or other foreign objects into any of the ports. Such actions could result in minor electrical shock hazard and interference with pacemaker devices worn by some people. Damage to port contacts and internal circuitry could also result.

To insert the module, orient it so that the label is right-side up, hold the computer with the keyboard facing up and push in the module until it snaps into place. Before doing this be sure to observe the precautions described above.



To remove the module, grasp the lip on the bottom of the front edge of the module and pull the module straight out of the port. Install a blank module in the port to protect the contacts.

CONNECTING PERIPHERAL DEVICES

The only peripheral device required to run DATACOMM is some type of communication equipment--acoustic coupler, direct-connect modem, or RS-232-C interface. There are other types of devices you may want to connect to your HP-71 using the HP-IL loop, such as a printer or a video interface. Section 3 of this manual, "Terminal Mode," discusses using a printer and video interface with DATACOMM.

DATACOMM uses information stored in a setup file which resides in your HP-71's memory, to determine what your system configuration is. If DATACOMM does not find a valid setup file in your HP-71, it will ask you if you want to create one. It creates a setup file, SETUPA1 for acoustic modems or SETUPR1 for RS-232 modems. These setup files assume you are .ii HP 82168A acoustic coupler using either an HP 82168A acoustic modem or an HP 82164A HP-IL/RS-232-C interface with Hayes Smartmodem at 300 baud.

Depending upon your equipment and the host computer you will be communicating with, you may have to modify a setup file. Section 2, "Initializing Your System," discusses doing this. For specific connection instructions, also follow the instructions provided with your modem and the host computer.

HP-IL modems and interfaces can be connected anywhere in the loop. DATACOMM automatically makes I/O assignments for devices in the loop: you do not need to execute ASSIGN IO before running DATACOMM.

USING DATACOMM

The remainder of this section demonstrates how to use DATACOMM to log on to the Dow Jones News/Retrieval Service (R). Further information about logging on to Dow Jones is provided in Appendix C. The procedures for logging on to The Source are covered in Appendix D. The procedures for other data base systems are similar, but you should contact the respective service for details of the log on process.

Note: In examples throughout this manual, the computer's messages appear indented in ordinary type. Words in **boldface** indicate your typed-in response.

For this demonstration, we assume the simplest system configuration of an HP-71 and the HP 82168A acoustic modem or the HP-IL/RS-232-C Interface with Hayes Smartmodem at 300 baud. This information matches the setup files created by DATACOMM. If you do not have either of the above configurations, refer to Section

2 for information on how to change the setup file.

RUNNING DATACOMM

To run DATACOMM type:

```
RUN DATACOMM [END LINE]
```

An identifying copyright message will appear on your display, and then the following messages:

```
SETUP FILE NOT FOUND
CREATE SETUP?(Y/N) [Y]
```

Answer Y because you need to create a setup file. If you answered [N] the program will prompt you to input the name of a setup file which already exists in memory.

If you are using an acoustic modem you will answer Y to the following command. However, if you are using the HP-IL/RS-232-C interface, answer N.

```
ACOUSTIC MODEM?(Y/N) [Y]
Creating SETUPA1
Reading SETUPA1
MENU* CDEFHLPQSTUVX?
```

DATACOMM creates a setup file called SETUPA1 if you specified the acoustic modem. If you specified the RS-232-C modem ([N]), DATACOMM creates a setup file called SETUPR1.

You should now see the main menu for DATACOMM. The program is prompting you to select a command. The commands are discussed fully in sections 2 and 3, and in the DATACOMM Command Dictionary (Section 6).

To select a command from the main menu you simply press the corresponding letter. For example, if you press ?, the help command, you will see a new menu.

```
MENU* CDEFHLPQSTUVX? [?]
HELP* CDEFHLPQSTUVX?
```

The Help command gives a brief explanation of each of the commands in the main menu. To see what the C command does type the following

```
MENU* CDEFHLPQSTUVX? [?]
HELP* CDEFHLPQSTUVX? [C]
CHANGE SETUP FILE
```

The C command allows you to change the active setup file. This is useful if your system configuration frequently changes and you have different setup files for each configuration.

Experiment with the Help command and to see what other commands exist in DATACOMM.

If you should accidentally press the [ON] key while using DATACOMM, type CONT [END LINE] to restart the program.

LOGGING ON TO DOW JONES NEWS/RETRIEVAL SERVICE (R)

To log on to any information service, you must first put your HP-71 into "terminal mode." In terminal mode your HP-71 serves as a remote terminal to the host computer. To enter terminal mode from the main DATACOMM menu, press T:

MENU* CDEFHLPQSTUVX? [T]

Your HP-71 will now display:

TERMINAL-[f/] TO EXIT

You are now ready to dial your local Tymnet or Telenet service that will connect you with Dow Jones. In this example, we will log on via Tymnet. Appendix C covers logging on to Dow Jones using Telenet.

Pick up your phone and dial your local Tymnet number.* When you hear the steady tone of the host computer, place the receiver into the HP 82168A acoustic coupler. Be sure the handset is correctly oriented. If you have done this correctly, the following words will appear on your HP-71 display. You should respond by pressing A. No [END LINE] is required.

please type your terminal identifier [A]

Your terminal identifier for Tymnet is the letter A. (The letter A does not appear on the HP-71 display.)

Tymnet responds with some numbers, and then asks you to log in. You respond by entering a control R sequence ([f] R), followed by DOW1 and two semicolons ([g] [;] [g] [;]). You do not need to press [END LINE]. (To enter a control character, press the [f] key and then the [character] key.)

please log in: [f] RDOW1;;

* If you are using the HP 82164A HP-IL/RS-232-C Interface with Hayes Modem, enter terminal mode by pressing a T and then type the modem command to dial the number of your local Tymnet office:

MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT ATDT555-5555 [END LINE]

The [f] [R] (control R) instructs Tymnet to use the XON/XOFF protocol with Dow Jones. Without this, you may lose characters when Dow Jones is sending you information.

The [f] R keystrokes and one of the semicolons (;) do not appear on the display. What you will see is:

```
please log in: DOW1;
```

You should then see a message, and a prompt asking for the service you want. You type DJNS for "Dow Jones News Service."

```
host is online  
WHAT SERVICE PLEASE????? DJNS [END LINE]
```

Next you are prompted for your password. The host computer sends several lines of characters to insure that your password remains confidential.

```
ENTER PASSWORD MMMMMMMMMM WWWWWWWWWW @@@@@@@@@@
```

Type in your personalized password and press [END LINE]. You should get an identifying message from Dow Jones and then it will ask you "ENTER QUERY". You are now able to use the Dow Jones Service. You should consult "The Dow Jones News/Retrieval Fact Finder" book for further information on using the service.

NOTE: Some host systems send control characters for which the HP-71 has assigned characters. These may appear on the HP-71 display. They can be ignored.

Viewing the Display Buffer

DATACOMM has a 500 character buffer in which it stores the most recently received characters from a host computer. The buffer is only active when you are using the HP-71 display. It is useful for reviewing information which has gone by too rapidly for you to take in.

To review the buffer press [f] [*] while you are in terminal mode. This stops the inflow of information by sending an XOFF to the host computer. The HP-71 display now shows the last characters which were received.

NOTE: There may be a slight delay before the display switches to the buffer.

Use the [<] and [>] keys alone or in combination with [g] to view the display buffer. Typing [<] or [>] alone moves the window one character at a time. Pressing [g] [<] or [g] [>] moves the window to the beginning or end of the buffer. Typing [f] [<] or [f] [>] causes the window to move 22 characters to the left or right respectively.

Type [f] [*] to resume receiving incoming information. DATA-COMM sends an XON character to the host computer to tell it to resume sending.

Be careful not to halt incoming information too long. The information service may log you off if you do not enter a command within a certain period of time. If this happens you will have to log in again.

Logging Off Dow Jones

When you have finished your session with Dow Jones, log off by typing :

DISC

in response to the Dow Jones prompt. Dow Jones will send a log off message that includes the log off time. When the message:

Please log in:

appears, hang up the phone**. Return to the main DATACOMM menu by pressing the [f] [/] keys:

Please log in: [f] [/]

To exit DATACOMM, press [Q] to return to the HP-71 operating system.

** If you are using the HP 82164A HP-IL/RS-232-C Interface with Hayes Smartmodem press [f] [/] to leave terminal mode. Then press H to hang up the phone.

Please log in: [f] [/]
MENU* CDEFHLPQSTUVX? [H]

SUMMARY AND WHAT'S AHEAD

In this section, you have learned how to install your Data Communications Pac, and you have seen an overview of what it does. You have been introduced to the most common peripheral devices used with DATACOMM. You have seen how to use DATACOMM to communicate with an information service, the Dow Jones News-/Retrieval Service (R).

- * In section 2, "Initializing Your System," you will find detailed instructions on how to customize a setup file for your system configuration.
- * Section 3, "Terminal Mode," discusses the features and commands available to you while your HP-71 is in terminal mode.
- * Section 4, "Special Code Words," shows how you can simplify the log on process by creating an automatic log on file.
- * Section 5, "Advanced Programmer's Guide" describes how DATACOMM can call other programs and how user programs can use DATACOMM.
- * Section 6, "DATACOMM Command Dictionary," is a dictionary of both main menu commands and edit mode commands.

Section 2

INITIALIZING YOUR SYSTEM

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INTRODUCTION

In section 1, you learned how to log on to a timesharing service using the simplest system configuration of an HP-71 and a modem. This section shows how to prepare DATACOMM for use with other peripherals.

A setup file must be created which contains the information DATACOMM needs to operate the peripherals which are on the HP-IL loop. DATACOMM needs to be initialized so that it knows what type of modem, video interface, and/or printer you are using. The initialization commands for the modem will also be dependent upon the host system requirements. Once you have ensured that your setup file is correct, you will not need to modify the file until you change some component of your system.

When you first run DATACOMM, the program will check for a file in your system called MSETUP. It is a one line file that lists the name of the the current active setup file. If MSETUP does not exist, DATACOMM will create it and will also create a setup file.

In this section you will learn how to specify the current setup file, how to view the contents of the file, what the preset conditions mean, and how you can modify the file using the edit mode C (Change) command. The first part of this section discusses

commands for reviewing and modifying your setup file and the second part covers the initialization process.

GENERAL SYNTAX FOR COMMANDS

DATAComm utilizes three types of commands. The first type requires you to simply press the letter key corresponding to one of the characters that are shown in the menus on the display of your HP-71. It is not necessary to press [END LINE] after entering this character. For example, to exit DATAComm, press [Q]:

```
MENU* CDEFHLPQSTUVX? [Q]
```

The second type of command displays a prompt and a default input. To accept the default value you simply press [END LINE]. If you want to enter a new value, you enter the new value followed by [END LINE]. For example to change the current setup file, press [C] from the main menu. Then press [END LINE] to keep the default value.

```
SETUP FILE :SETUPA1 [END LINE]
```

The third type of command prompts you to enter an input, then press [END LINE].

```
PHONE CODE OR NO.: TYMNET [END LINE]
```

SELECTING THE CURRENT SETUP FILE [C]

The main menu C (Change) command specifies the current setup file. It can be used to activate a different setup file. This is particularly useful if your system configuration frequently changes and you need to change the DATAComm initialization information. You can keep several setup files in your system, and change DATAComm's initialization by simply selecting the desired setup file. To change setup files press [C] in the main DATAComm menu to display the current setup file:

```
MENU* CDEFHLPQSTUVX? [C]  
SETUP FILE :SETUPA1
```

Press [END LINE] if you want to keep the displayed setup file. If you want to change to a different setup file which resides in the HP-71, enter that file name:

```
SETUP FILE :SETUPR1 [END LINE]
```

SETUPR1 now becomes the current setup file.

If the name you specify is not in the system, you will get an error message:

```
Invalid Setup: SETUPR1
```

The preferred method of creating a different setup file is to use the HP-71 COPY command to make a copy of one of the pre-existing setup files, then run DATACOMM and make the desired changes using the DATACOMM setup file editor (to be discussed later in this section). For example from the HP-71 ">" prompt

```
COPY SETUPA1 TO SETUPA2 [END LINE]
RUN DATACOMM [END LINE]
MENU* CDEFHLPQSTUVX? [C]
SETUP FILE :SETUPA2 [END LINE]
```

USING THE SETUP FILE EDITOR [E]

The E (Editor) command places the system into edit mode. There are six edit mode commands that you can use to modify the currently specified setup file. In this section, you will use only the edit mode commands needed to initialize your setup file.

To enter edit mode, press [E] in response to the main menu prompt. You will see a brief message telling you what setup file is current, and then you will see the editor menu:

```
MENU* CDEFHLPQSTUVX? [E]
SETUP FILE : SETUPA1
EDITOR* ACDLQ?
```

You can now select one of the edit mode commands. Notice that some of the edit mode commands are executed with the same letters as main menu commands, but their meaning may be different.

THE HELP COMMAND [?]

The ? (Help) command displays a one-line description of the DATACOMM commands. If you press [?] in response to the editor prompt, you are prompted to select a command. The help message for the command is then displayed. For example:

```
EDITOR* ACDLQ? [?]
EDIT HELP* ACDLQ? [C]
CHANGE A CODE WORD
```

The following is a list of the edit mode commands and the descriptions of each command:

```
A  ADD A CODE WORD
C  CHANGE A CODE WORD
D  DELETE A CODE WORD
L  LIST THE SETUP FILE
Q  LEAVE THE EDITOR
?  DISPLAY HELP MESSAGES
```

LISTING THE SETUP FILE [L]

The editor L (List) command allows you to list the contents of the current setup file. This is useful for checking to see if a particular code word is in the file or if your output devices are properly specified. The L command causes the first line of the setup file to be displayed. For example (the first line of your current setup file may differ from this):

```
EDITOR* ACDLQ? [L]
CURSOR:MODEM*HP82164A
```

This particular line tells DATACOMM which modem you are using. The word CURSOR tells you that you are in the edit list mode and can use the HP-71 cursor commands to review the setup file. The general format for all lines in the setup file is:

code word*data

The code word is used to reference the data. The code word is separated from the data by an asterisk (*). A few characters in the data portion have special meanings. Refer to the list of special setup characters later in this section for further information.

Once the first line is displayed, you can then use the following cursor control keys to view the remainder of the file:

KEY	ACTION
[^]	Move up one line.
[v]	Move down one line.
[g] [^]	Move to top of file.
[g] [v]	Move to bottom of file.
[>]	Move window right one character.
[<]	Move window left one character.
[f] [>]	Move window right 15 characters.
[f] [<]	Move window left 15 characters.
[g] [>]	Move window right to end-of-line.
[g] [<]	Move window left to beginning of line.

When you have finished looking at your file, press [f] [/] to return to the editor menu. Please note you can not change a line in the setup file while you are using the L (List) command.

Figure 1 shows the contents of setup file SETUPA1 which is created when you first run DATACOMM and chose the acoustic modem option. Figure 2 shows the contents of SETUPR1 which is created if you do not chose the acoustic modem option. The first 18 lines of the files (up through the TIMER line) are required for initialization and are discussed in this section. These lines should not be deleted or renumbered.

The remaining three lines are special code words and are discussed in section 4, "Special Code Words." The numbers shown to the left of the code words do not appear when you execute the L command.

Figure 1
Setup File SETUPA1

```
1MODEM*HP82168A
2VIDEO*DISPLAY
3PRINTER*PRINTER
4IMODEM*!RCO;MO;!N
5IVIDEO*
6IPRINTER*
7LCDON*ON
8VIDEOON*OFF
9PRINTERON*OFF
10ECHOON*OFF
11AUTOLF*OFF
12XON*17
13XOFF*19
14DIAL*
15HANGUP*
16BREAK*!RR;B1;!OB0;!N
17PROMPT*10
18TIMER*.8
19SL02*!2^M!2^M!W=~M!W@C 301 xx^M!W>ID uuuuuu ppp^M
20DJL01*!WfA!W:~RDOW1;;!W?DJNS^M!W@pppppppppp^M
21DJL02*!2^M!2^M!W=~M!W@C 60942^M!W?DJNS^M!W@pppppppppp^M
```

Figure 2
Setup File SETUPR1

```

1MODEM*HP82164A
2VIDEO*DISPLAY
3PRINTER*PRINTER
4MODEM*!RSB6;C0;SW1;SS0;P0;SE0;!N
5IVIDEO*
6IPRINTER*
7LCDON*ON
8VIDEOON*OFF
9PRINTERON*OFF
10ECHOON*OFF
11AUTOLF*OFF
12XON*17
13XOFF*19
14DIAL*ATDT!P^M
15HANGUP*!2+++!2!2ATHO^M
16BREAK*!RR1;B1;!OBO;!N
17PROMPT*10
18TIMER*.8
19SL02*ATDT5555555^M!8!8^M!2^M!W=~M!W@C 301 xx^M!W>
    ID uuuuuu ppp^M
20DJL01*ATDT5555555^M!WfA!W:~RDOW1;;!W?DJNS^M!W@
    pppppppppp^M
21DJL02*ATDT5555555^M!8!8^M!2^M!W=~M!W@C 60942^M!W?
    DJNS^M!W@pppppppppp^M

```

CHANGING THE SETUP FILE [C]

The editor C (Change) command is used to change lines in the setup file. When you press [C] in edit mode, DATACOMM prompts you to enter the code word you want to change. The line containing the desired code word, and the data associated with the code word will be displayed. For example, suppose you want to change the AUTOLF line. You press [C], then enter AUTOLF and [END LINE]:

```

EDITOR* ACDLQ? [C]
ENTER CODE WORD: AUTOLF [END LINE]
CHANGE:AUTOLF*OFF

```

The cursor is automatically positioned on the first character of the code word, in this case over the "A". All of the normal HP-71 line editing keys can be used, including [f] [I/R] and [f] [-char], to change the line.

Use the cursor keys to position the cursor and then type the change you want to make, in this case changing OFF to ON. Press [END LINE] when you are through changing the line. (The cursor does not have to be at the end of the line when you press [END LINE]).

```

CHANGE:AUTOLF*ON [END LINE]

```

If you enter a line improperly, the system will inform you of the error. You are placed back in the Change mode to correct the line. Do not delete the asterisk (*) between the code word and the data. It is necessary for DATACOMM to operate properly.

The changed code word, plus the asterick and the data can be up to 96 characters long. Certain characters have a special meaning in the data portion of the code word. These characters are explained in detail in "Initializing Your System", page 33.

QUITTING THE SETUP FILE EDITOR [Q]

To exit the editor and return to the main menu, press [Q]

```
EDITOR* ACDLQ? [Q]
Reading SETUPA1
MENU* CDEFHLPQSTUVX?
```

INITIALIZING A SETUP FILE

The initialization process consists of eleven steps:

1. Specify the devices (modem, printer, video display) on the HP-IL loop which will be used by DATACOMM.
2. Specify special initialization commands required by the devices to work with various host systems. (For example, setting the baud rate required for your modem.)
3. Define the display devices and their on/off status in terminal mode.
4. Define the "echo" default value.
5. Define the auto line feed default status.
6. Define the characters DATACOMM will send to the host computer system for controlling data flow (XON/XOFF).
7. If you are using an auto dial modem, you must define the character sequences it requires to dial a number and to hang up.
8. Define the host computer's BREAK command sequence.
9. Define the PROMPT character(s).
10. Setting the default TIMER value.
11. Making host dependent setup file changes.

The following paragraphs explain these steps in detail.

Specifying Devices in the Loop

The first three lines in the setup file, MODEM, VIDEO and PRINTER, specify the peripheral devices in your HP-71 system by their device ID, accessory ID, special device word, or loop address. One of these four specification types must be used to identify the modem, video display, and printer.

For example, when using the HP 82164A HP-IL/RS-232-C interface (figure 2), the modem is specified as HP82164A. This is the device ID for that interface.

You could have specified the HP-IL/RS-232-C interface by its accessory ID, 66, or by its loop address (for explanation purposes assume 1.)

To change the specification of a device enter the editor and use the change command. For example to change the modem to the HP-IL/RS-232-C interface using its accessory ID, you type the following:

```
MENU* CDEFHLPQSTUVX? [E]
EDITOR* ACDLQ? [C]
ENTER CODE WORD: MODEM [END LINE]
CHANGE:MODEM*%66 [END LINE]
```

When you specify a device with an accessory ID, you need to add a percentage sign (%) before the ID.

To decide whether to specify a device by its device ID, accessory ID, special device word, or loop address, use these general rules and make the necessary changes to your setup file:

Use	When
Device ID	When you have a device ID for the peripheral. (Check in your owner's manual or see chart below.)
Accessory ID	When there is an accessory ID for the peripheral. (Check in your owner's manual or see chart below.)
Special Device Word	When a special device word such as DISPLAY or PRINTER exists.
Loop Address	Should be used when you do not have a device ID or accessory ID for the peripheral, or if you have two or more of the same type of peripheral on the loop. Refer to section 9, "HP-IL Operations," in the HP-71 Owner's Manual for information on how to determine the loop address of a device.

The following table is a summary of device ID's and accessory ID's for a few common devices.

Device	Device ID	Accessory ID
HP 82168A Acoustic Coupler	HP82168A	65
HP 82164A HP-IL/RS-232-C Interface	HP82164A	66
HP 82162A Thermal Printer	NOT USED	32
HP 82905B Printer	HP82905B	33
HP 2617A Thermal Printer	HP2617A	34
HP 2671G Graphics Printer	HP2671G	35
HP 82163A Video Interface	NOT USED	48
MC00701A Video Interface	MC00701A	50

If you do not have a printer or video display in your system, DATACOMM ignores those device specification lines (unless you turn on the printer or video, either from the main menu ([V] or [P]) or by setting VIDEOON or PRINTERON lines in the setup file to ON. The VIDEOON and PRINTERON code words are discussed below.)

Defining Peripheral Initialization Commands

Some peripherals must be sent an initialization command when they are activated. For instance, a modem may require that its parity be set. The IMODEM, IVIDEO, and IPRINTER lines of the setup file specify the required initialization commands (if any) for the modem, video display, or printer.

Note: The initialization command for the modem (IMODEM) will also vary depending upon the host system you are using. Note "Host Dependent Setup File Changes" in this section.

Special Setup Characters. There are several special setup characters that can be used in the data portion of the setup lines to perform special functions. You will see in a moment how these characters can be used in your setup file data strings. The

following is a list of the characters and their functions:

Character	Function
!R	Enables remote mode. Remote mode is used to send command characters directly to devices on the HP-IL loop.
!N	Disables remote mode and returns the device to local mode. Be sure to terminate a data string with !N if !R was used in the string.
!P	Inserts the telephone number entered with the main menu D (Dial) command into the data string of the DIAL code word.
!E	Inserts an escape character (decimal 27) into a data string. This is often used for initializing peripheral devices. Refer to the owner's manual of the device for more information.
!^	Inserts a caret ("^") into a data string.
!!	Inserts an exclamation point ("!") into a data string.
!/'	Inserts a comma into a data string.
^ <u>char</u>	Inserts a control character into the data string. The character following the ^ will be inserted into the string as a control character. For example, ^R inserts a control R sequence into the string.
^M	Inserts a carriage return (control M) into the data string.
^J	Inserts a line feed (control J) into the data string.
!W <u>char</u>	Causes DATACOMM to wait for the "char" to be received before sending the next character in the data string. For example !WA causes DATACOMM to wait until it receives an "A" from the host computer before it sends the next character in the data string. Multiple characters can be concatenated. For example, !WA!WB will cause a wait for the sequence "AB".
!0	Causes a 200-millisecond pause to occur before the next character in the data string is sent.
!1	Causes a 1-second pause to occur before the next character in the data string is sent.

- !2 Causes a 2-second pause to occur before the next character in the data string is sent.
- !8 Causes an 8-second pause to occur before the next character in the data string is sent.

NOTE: Some devices require a pause before sending additional commands. For example, the four delay characters (!0, !1, !2, !8) can be used to put in a wait time for an auto dial modem. The delay characters can be issued as many times as necessary to obtain the desired wait time.

Initializing the Modem

The default data string for the HP 82168A Acoustic Coupler is:

```
IMODEM*!RCO;M0;!N
```

In analyzing the data string associated with the code word IMODEM, you first see a !R. This means you are going to send command characters directly to the modem. The CO;M0; is the command string for the modem. Finally, !N specifies the end of the command and a return to local mode.

The default initialization string for the HP 82164A HP-IL/RS-232-C interface is:

```
IMODEM*!RSB6;C0;SW1;SS0;P0;SE0;!N
```

The following table lists the characters used in the default modem initialization line. For more information about these default values or other options (such as D;, which disables the activity timeout for the HP 82168A), look for "Remote Mode Instructions" (or a similar heading) in your modem owner's manual.

Character	Meaning
CO;	No software protocol in the modem.
C2;	Software protocol turned on in modem or interface.
M0;	System service request mask is 0.
SB6;	Set baud rate to 300 bps.
SW1;	Word length is 7 bits
SS0;	Show parity error disabled.
P0;	Even parity selected.
SE0;	All service requests disabled.

NOTE: When using Dow Jones, your modem or HP-IL/RS-232-C interface should be set for no software protocol (C0;) because DATACOMM will handle the XON/XOFF protocol. If you are using a different host system such as The Source, your modem or HP-IL/RS-232-C interface should be set for "software protocol on" (C2;). Examples are given in "Host Dependent Setup File Changes" at the end of this section. If the host computer system requires something other than an XON/-XOFF protocol, (such as the ENQ/ACK protocol), change the IMODEM line to include the proper handshake, then change the XON and XOFF lines in the setup file to 0.

If you are using a different kind of modem or RS-232 interface, you will need to check the manual for the device to determine the appropriate initialization sequence, then edit the IMODEM line.

Initializing the Video Interface and Printer

The IVIDEO and IPRINTER lines are left blank in the standard setup files SETUPA1 and SETUPR1. If you are using the MC00701A Video Interface, you may wish to set IVIDEO to "!E>". This causes the cursor to be displayed. The IPRINTER line in figure 1 assumes the use of the HP 82162A Thermal Printer and includes the escape sequence !E&k!H. This causes the printer to print whole words only and not to break words at the end of a line.

If your video interface or printer requires other initialization sequences, or if you wish to add to or modify the default sequences, you will need to change the IVIDEO and IPRINTER lines to reflect those initialization requirements.

If you are not using a video interface or printer, DATACOMM will ignore these lines unless you have set VIDEOON or PRINTERON to ON.

Defining the Display Devices

When you are using the HP-71 as a terminal, you can view the data being transferred to and from the modem on the HP-71 LCD display, on a printer, or on a video display. The setup file code words LCDON, PRINTERON, and VIDEOON specify whether these devices will be on or off while the system is in terminal mode. (Terminal mode is discussed in section 3, "Terminal Mode." The main menu L, V, and P commands, which affect these three code words, are also discussed in section 3.)

The default values for these code words are:

```
LCDON*ON  
VIDEOON*OFF  
PRINTERON*OFF
```

We suggest that you leave these default values as they are. It is easy to change them from the main DATA COMM menu by typing L, V, or P. As mentioned these commands are explained in section 3.

NOTE: Whenever you have LCDON*ON, the 500-character buffer is activated, and the data transmission rate will be noticeably slower.

Defining the Echo Default Value

The ECHOON code word determines whether DATA COMM or the host computer "echos" characters back to your display. Some host computers do not send the characters you send it back to your system, and you will not be able to see what you type. When ECHOON is set to ON, DATA COMM displays the characters you type at the same time they are being sent. If the host computer system does echo and ECHOON is set to ON, each character you type will be displayed twice.

The default is:

```
ECHOON*OFF
```

Use the editor if you need to change this default value.

Defining the Default Auto Line Feed Value

The AUTOLF code word determines whether DATA COMM adds a line feed after an [END LINE] (^M) character. (Most computers include a line feed as part of an [END LINE] sequence.) The default value is:

```
AUTOLF*OFF
```

Defining the XON and XOFF Characters

Most host computer systems use the XON/XOFF protocol to start and stop character transmission. The XON and XOFF code words allow you to define the characters being used by the HP-71 for XON/XOFF protocol so that you can match the protocol used by the host computer.

There are two ways to implement the XON/XOFF protocol in your system. One way is to let the modem or HP-IL/RS-232-C inter-

face do it, or the DATACOMM software can do it. The preferred method is for the modem or HP-IL/RS-232-C interface to perform the XON/XOFF protocol. When using this method, the code words XON and XOFF in the setup file must be set to 0. If both the code words XON and XOFF are to 0, DATACOMM will not issue any XON or XOFF commands. You must instruct your modem or HP-IL/RS-232-C interface to control the protocol.

If your modem or HP-IL/RS-232-C interface will not handle the protocol, or you need a type of protocol that it can not handle (as in the case of using Dow Jones), you should use the protocol controlled by the DATACOMM software.

The data for the XON and XOFF code words are the decimal values of the desired characters. For example, the default value for XON is a 17 which is the decimal representation of a control Q. The default value for XOFF is a 19 which is the decimal representation of a control S.

```
XON*17
XOFF*19
```

If the host system requires a protocol other than XON/XOFF, you can set XON and XOFF to 0 in the setup file, and change the IMODEM codeword to the appropriate protocol value (assuming your modem or interface supports the needed protocol). When XON and XOFF are set to 0, DATACOMM will not send any protocol characters. If the modem or RS-232 interface is not set to perform this function, then DATACOMM will lose characters.

Note: "Host Dependent Setup File Changes" at the end of this section gives recommended values for XON/XOFF depending upon the host system used.

Defining the DIAL and HANGUP Sequences

An auto-dial modem requires a certain string of characters to get its attention and then dial a number. There are two lines in the setup file that are used for automatic dialing and hanging up: DIAL and HANGUP.

The default DIAL line for the Hayes Smartmodem is

```
DIAL*ATDT!P^M
```

The ATDT command gets the attention of the Hayes modem. This must be followed by a phone number and a carriage return. The !P takes the phone number entered with the main menu D (Dial) command. (The D command prompts you for the number.)

If your auto-dial modem requires a different dialing sequence, use the editor C (Change command) to change the DIAL code word.

In addition to the dial sequence, many auto-dial modems have a special sequence for hanging up. The HANGUP line is used to define the hang-up data sequence. You access this sequence with the main menu H (Hang-up) command. Both the D and H commands are discussed in section 3, Terminal Mode.)

The default HANGUP sequence for the Hayes Smartmodem is

```
HANGUP*+++!2!2ATHO^M
```

If you have a different auto-dial modem, check the manual of your modem to determine the required sequence and edit the setup file to change the HANGUP line. As a special note, some modems such as the Hayes require pauses (!2) before sending further commands.

Defining the BREAK Sequence

At times you may want to send a BREAK to the host computer to perform some special function, such as interrupting the host when it is sending data. The code word BREAK is used to set up the proper sequence to allow the modem or RS-232 interface to perform the BREAK function. Consult your modem or interface manual if you are not using the HP 82164A HP-IL/RS-232-C interface or the HP 82168A Acoustic Coupler.

The default BREAK sequence for the Acoustic Coupler is:

```
BREAK*!RR;B1;!OB0;!N
```

The default BREAK sequence for the HP-IL/RS-232-C interface is:

```
BREAK*!RR1;B1;!OB0;!N
```

The following table explains the symbols used in the BREAK line:

Symbol	Meaning
R	Clears input and output buffers
R1	Clears receive buffer
B1	Break ON
B0	Break Off

While in terminal mode you can press [f] [8] to send the BREAK sequence.

Defining the Prompt Character

The PROMPT code word allows the user to specify the prompt character(s). The prompt character(s) will only be used in outputting a file to the host computer. If the prompt character(s) is specified, DATACOMM will wait for the character(s) from the host computer before sending the next line of data.

The prompt character(s) is specified by its decimal value, similar to the way an XON character is specified. For example, the following prompt specification would cause DATACOMM to wait for two XON (17) characters before sending the next line of data.

```
PROMPT*17,17
```

The default value for the prompt character is a line feed (10).

```
PROMPT*10
```

Defining the TIMER Interval

The DATACOMM program uses an ON TIMER statement to ensure that the modem is read often enough so that incoming characters are not lost. The TIMER code word specifies in seconds the time interval used in the ON TIMER statement. The standard setup files use a TIMER value of 0.8 seconds, which is appropriate for 300 baud communications and for 1200 baud communications when using the XON/XOFF protocol controlled by your modem or HP-IL/RS232-C interface.

As the timer interval is shortened, the keyboard response grows slower because DATACOMM is interrupted more frequently to service the modem. This is needed if the XON/XOFF protocol is being handled by the DATACOMM software and not in the modem. A timer value of 0.4 is needed if using the DATACOMM software to control the XON/XOFF protocol and you are operating at 1200 baud.

Host Dependent Setup File Changes

The default setup files, SETUPA1 and SETUPR1, are correct if you are logging on to Dow Jones. You can not use the acoustic coupler or HP-IL/RS232-C interface software protocol for XON/XOFF with Dow Jones. However with most other host systems you will want to use the software protocol in your acoustic coupler or HP-IL/RS-232-C interface. Following is a list of changes which need to be made to your setup file which allow correct operation with such host systems as The Source and CompuServe. If you do not make these changes to the setup file you may lose characters.

If you are using the HP-IL/RS-232-C interface at 300 baud with such hosts as The Source and CompuServe, the following setup should be used:

```
IMODEM*!RSB6;C0;C2;SW1;SS0;P0;SE0;!N
XON*0
XOFF*0
TIMER*.8
```

If you are using the HP-IL/RS-232-C interface at 1200 baud with such hosts as The Source and CompuServe, change the setup file so that

```
IMODEM*!RSB8;C0;C2;SW1;SS0;P0;SE0;!N
XON*0
XOFF*0
TIMER*.8
```

If you are using the acoustic coupler (HP 82168A) with host systems such as The Source, CompuServe and most other computer systems except Dow Jones News/Retrieval Service (R), change the setup file so that

```
IMODEM*!RC0;MO!N
XON*0
XOFF*0
TIMER*.8
```

If you are using the HP-IL/RS-232-C interface at 300 baud with Dow Jones the values are as follows. Note that these are the standard default values when DATACOMM creates SETUPR1.

```
IMODEM*!RSB6;C0;SW1;SS0;P0;SE0;!N
XON*17
XOFF*19
TIMER*.8
```

Finally if you are using the acoustic coupler (HP 82168A) with Dow Jones the following should be true:

```
IMODEM*!RC0;MO;!N
XON*17
XOFF*19
TIMER*.8
```

Section 3

TERMINAL MODE

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INTRODUCTION

In Section 1, you learned how to use DATACOMM to log on to an information service. Before beginning to log on, you put the HP-71 into terminal mode. When you do this, your HP-71 becomes a remote terminal to the host system. That demonstration assumed the simplest system configuration of an HP-71 and a modem. In this section, you will learn how you can use HP-IL peripherals while your HP-71 is connected to a host computer system, and you will also learn how to transfer files between systems.

CONFIGURING YOUR DATACOMM SYSTEM

If you plan to use an optional printer or monitor (video interface) with DATACOMM, you must confirm that you have a setup file that contains the correct information for your components. This is covered in Section 2, "Initializing Your System."

ENTERING TERMINAL MODE (T AND D)

Your HP-71 must be in terminal mode in order to communicate with another computer system via the modem. There are four commands that will put the HP-71 into terminal mode: the T command (enter terminal mode), the D command (dial a phone number), the X command (transfer a file) and the S command (send a special code word). (The X command is discussed in Section 6, "DATACOMM Command Dictionary". The S command is covered in Section 4, "Special Code Words.")

Use the T command if you have an acoustic coupler or other manually-dialed modem, or if you have a direct connection to the host computer. You can use the D command if you have an auto-dial modem and you have initialized the DIAL line in your setup file.

The Terminal Mode Command [T]

The T command puts the HP-71 into terminal mode. To enter terminal mode, press [T] when prompted by the main menu:

```
MENU* CDEFHLPQSTUVX? [T]
```

You can now proceed with your manual log on process. (The log on procedures are described in appendix C for the Dow Jones News/Retrieval Service (R), and in appendix D for The Source (S).)

The Dial Command [D]

The D command dials the phone number when using an auto-dial modem, and then puts the HP-71 into terminal mode. You can dial the number in two ways: you can enter the actual digits of the number, or you can enter a previously defined code word for the number. (Code words are discussed in Section 4, "Special Code Words.")

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: 555-5555 [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
```

In this example, "555-5555" represents a seven-digit local number. The D command accepts prefixes and area codes as well as local numbers. The number that you enter becomes the !P parameter of the DIAL line in your setup file. (Be sure the DIAL line in the setup file is correctly initialized for your modem. Refer to Section 2 for more information.)

If you have defined a special code word to represent the number, you can enter that when prompted. For example, you may have defined the word TYMNET as the telephone number of your local Tymnet service. Then you could enter TYMNET instead of the number:

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: TYMNET [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
```

If you enter a phone code which does not exist in the setup file, DATACOMM assumes you are sending an actual phone number and sends those actual characters to the modem.

SCROLL OR LINE DISPLAY MODES

When you are in terminal mode and using the HP-71 display, there are two modes for displaying the data: line mode and scroll mode. In scroll mode the characters will move across the display one at a time as though they are marching one behind the other. In line mode the display is updated every 22 characters. So you will see a new set of 22 characters after a slight pause.

To toggle between scroll and line modes press the [f] [9] keys while you are in terminal mode. There may be a slight delay before the mode changes.

NOTE: Do not use Dow Jones in scroll mode. Dow Jones has a two minute time out period in which you must enter characters or the system will log you off. In scroll mode it may take longer than 2 minutes to display a full page of text.

VIEWING THE DISPLAY BUFFER

If you are using the HP-71 display, you can review the 500 most recent bytes in the display buffer with the following steps:

1. Press the [f] [*] keys. This stops the inflow of information and accesses the display buffer. It does not disconnect you from the information service.
2. Use [<] and [>] alone or in combination with [g] or [f] to view the display buffer. Typing [<] or [>] alone moves the window one character at a time. The [f] [<] or [f] [>] moves the window 22 characters at a time. Typing [g] [<] or [g] [>] moves the window to the beginning or end of the display buffer. Do not press the [g] [^] or [g] [v] sequences.
3. Press [f] [*] to resume incoming information. Be careful not to halt incoming information too long or the information service may log you off.

CHANGING BETWEEN UPPER AND LOWER CASE

If you want to change from upper to lower case (or visa versa) while you are in terminal mode, press [f] [LC].

If you wish to type a single character in upper or lower case while you are in terminal mode, press [g] followed by the character which you wish to be in the other case.

You can also change case anytime you are in the main menu or in the editor menu. When you are not in terminal mode and you change the case, you will see the message "Case Selected".

SENDING CONTROL SEQUENCES TO THE HOST COMPUTER

While you are logged on to the host computer, you may want to send certain control sequences to the host. The DATACOMM program allows you to stop and restart the flow of data, to cause a carriage return or line feed, to backspace over an error, or to send a BREAK sequence to the host. The following table lists the DATACOMM control sequences:

Control Sequence	Action
[f] [H]	Causes a backspace (BS).
[f] [J]	Causes a line feed (LF).
[f] [M]	Causes a carriage return (CR).
[f] [Q]	Sends a control Q (the most common XON character). This resumes data flow).
[f] [S]	Sends a control S (the most common XOFF character). This halts data flow).
[f] [1]	You will be prompted to enter the decimal CHARACTER NUMBER of the character which you wish to send. If you enter 65 an A will be sent. This is useful for sending characters which do not exist on the HP-71 keyboard.
[f] [7]	Sends an ESCAPE character.
[f] [8]	Sends a BREAK sequence.

ACCESSING THE MAIN MENU FROM TERMINAL MODE

You do not need to log off of the host computer to access commands in the main menu. Simply press [f] [/] and you will return to the main menu. You can then execute whatever commands you want. You re-enter terminal mode by pressing [T] again. (If you are using the HP-71 display and the host system is expecting an input from you, the terminal mode message remains on the display until you enter something. If you are using the video interface and the HP-71 display is turned off, the terminal mode message remains on the display until you leave terminal mode.)

NOTE: Some computer systems will automatically disconnect you if you do not respond within a certain period of time. If you need to perform a lengthy operation, such as editing your setup file, you should log off first.

USING THE PERIPHERAL DEVICES IN TERMINAL MODE

Setup files contain lines that control the display output in terminal mode: LCDON, VIDEOON, and PRINTERON. The initial conditions in the setup file are:

```
LCDON*ON
VIDEOON*OFF
PRINTERON*OFF
```

To change these conditions either enter the editor and use

the change command, or use the L, V, or P commands in the main menu. (Note: You should not activate a display device if it does not exist or has not been initialized properly in the setup file, see Section 2.)

Toggling the HP-71 LCD Display On/Off

The L command turns the HP-71 display on or off. Each time you enter this command, the ON or OFF value of the LCDON line in the setup file toggles to the other value. The new value is then briefly displayed. The new value may cause a warning condition, "No Outputs Active," if neither the printer, video interface or HP-71 display are active.

```
MENU* CDEFHLPQSTUVX? [L]
LCD OFF
No Outputs Are Active
MENU* CDEFHLPQSTUVX? [L]
LCD ON
MENU* CDEFHLPQSTUVX?
```

NOTE: Whenever you have LCDON*ON, the 500-character buffer is activated, and the data transmission rate will be noticeably slower than if you were using just the video interface.

Toggling the Video Interface On/Off

The V command toggles the video interface on or off. Each time you enter this command, the ON or OFF value of the VIDEOON line in the setup file toggles to the other value. The new value is briefly displayed. A warning condition may tell you that no video was found on the loop. This could be caused by improper initialization of the video interface (see Section 2).

```
MENU* CDEFHLPQSTUVX? [V]
VIDEO ON
Video Not Found On Loop
MENU* CDEFHLPQSTUVX? [V]
VIDEO OFF
MENU* CDEFHLPQSTUVX?
```

NOTE: When the video interface is active and you are in terminal mode, the incoming characters will be displayed in little groups that burst on the screen. This is the normal operation of the system.

Toggling the Printer On/Off

The P command turns the printer on or off. Each time you enter this command, the ON or OFF value of the PRINTERON line in the setup file toggles to the other value. The new value is briefly displayed. If the printer is not found in the loop a

warning is displayed.

```
MENU* CDEFHLPQSTUVX? [P]
PRINTER ON
Printer Not Found On Loop
MENU* CDEFHLPQSTUVX? [P]
PRINTER OFF
MENU* CDEFHLPQSTUVX?
```

One use of this feature is that you only need to turn on the printer when you want to make a hard copy of specific information. For example, suppose you want a copy of some stock market quotes from Dow Jones News/Retrieval Service (R). When you are prompted for the name of the first stock, press [f] [/]

```
ENTER QUERY [f] [/]
MENU* CDEFHLPQSTUVX? [P]
```

If you are using the HP-71 LCD display the message "PRINTER ON" will briefly appear and then the display will be blanked.

```
PRINTER ON
MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT
```

Enter the name of the stock plus an [END LINE]. For example:

```
HWP [END LINE]
```

All the information you send or receive will be printed. When you have printed the information you want, press [f] [/] to go back to the main menu and then turn off the printer.

TRANSFERRING FILES TO AND FROM THE HP-71

DATAComm allows you to transfer text or data files to and from the HP-71. The data files should consist only of string data and not numeric data. Unpredictable results may occur if you try and send numeric data files.

There are three ways to transfer files between the HP-71 and a host computer. You can use the X command from the main menu or you can use the [f] [6] or [f] [5] command sequences while in terminal mode. The main difference between the X command and the [f] [6] or [f] [5] commands is that with the latter you do not need to exit Terminal mode to transfer a file.

The [f] [6] and [f] [5] commands are similar, except when you transfer a file into the HP-71 the [f] [5] command adds the information to the previously opened file. A file is previously opened if you have transferred data to it during this session of using DATAComm. If no previous files were transferred in, the [f] [5] command opens a new file. The [f] [6] command always opens a

new file. If the file you specify already exists, the [f] [6] command will cause it to be overwritten.

The transfer file commands are useful for sending or receiving mail, obtaining stock quotes or retrieving other data. The following steps describe the transfer process using the [f] [6], and [f] [5] commands. The X command is explained in the Command Dictionary, Section 6.

To transfer information from the host computer into an HP-71 text file:

1. Log on to the host computer from which you wish to gather data.
2. Prepare the host system so it is ready to send you the desired data. However, do not actually start the data transfer. (Usually you start a data transfer with an [END LINE]. Do not press [END LINE] yet.)

For example, if you are using the Dow Jones News-/Retrieval Service (R) and wish to save the latest stock quote for Hewlett-Packard in a text file, you would prepare the Dow Jones system to send the data:

```
ENTER QUERY
HWP
```

However, you should not press [END LINE] after entering HWP. The HP-71 must be prepared to receive the data first (steps 3 through 7 below).

Similarly, if you wanted to save "mail" from The Source, you would again prepare the host system to send the data:

```
-> MAIL READ
...
--MORE-- [Y]
```

but you would not press [END LINE] after the Y response until the HP-71 system is prepared to receive the data.

3. Press [f] [6] to transfer a file. (If you wanted to add this data to information you previously saved during this session with DATACOMM, type [f] [5].)

```
TERMINAL-[f/] TO EXIT
[f] [6]
```

4. Press [I] to input a file.

```
INPUT OR OUTPUT?(I/O) [I]
```

5. Enter the input file name followed by an [END LINE]. (If you are using the [f] [5] command to transfer information to a previously opened file, you will not be prompted to enter the file name.)

ENTER FILE NAME: MYFILE [END LINE]

If you wish to input the file to a mass memory device such as the HP 82161A Digital Cassette Drive, you would type:

ENTER FILE NAME: MYFILE:TAPE [END LINE]

NOTE: If the file does not exist on tape, DATACOMM will create a 12k text file for you. This file is large enough to hold three to four pages of text. If you need a longer file, you must create it before entering the DATACOMM program, using the HP-71's CREATE TEXT command. If the file you specify is not long enough, the data transfer will stop when the file is full.

If you run out of memory when transferring a file into the HP-71, the transfer will be terminated and you will be given the message "Not Enough Memory". You will need to exit DATACOMM and purge extra files from your system. DATACOMM needs approximately 3000 free bytes to run.

6. Enter the character(s) that will start the host system sending the data. In the examples shown in step 2 (above), pressing [END LINE] will start the transfer:

INPUT ([f/] TO EXIT) [END LINE]

7. Press [f] [/] at any time to terminate the transfer. Data transfer will be automatically terminated if DATACOMM does not receive data within 20 seconds.

To send an HP-71 text file to the host computer:

1. Create the file you want to send before running DATACOMM.
2. Prepare the host computer to receive the data you will be sending. For example, if you created an HP-71 text file containing a letter that you want to send to a friend using The Source mail system, you would first prepare The Source to receive the data up to the point of seeing the input prompt:

ENTER TEXT:

3. Press [f] [6] to transfer a file.

4. Press [O] to output a file.

INPUT OR OUTPUT?(I/O) [O]

5. Enter the file name of the file you wish to transfer to the host computer.

ENTER FILE NAME: LETTER [END LINE]

In this example the text file LETTER is sent to The Source. (If you are sending a text file to The Source, it is a good idea to include The Source .S command as the last line of your file--this causes the letter to be "sent".

If the file you wish to output is on a mass memory device such as the HP 82161A Digital Cassette Drive, you would type the following:

ENTER FILE NAME: LETTER:TAPE [END LINE]

6. When the file transfer is complete, the HP-71 beeps and returns to terminal mode. Press [f] [/] if you want to terminate the file transfer before it is completed.

DATAComm does not recognize lower case file names such as "keys". It is necessary to copy these files to another file before transferring (COPY keys TO KEYS).

LOGGING OFF THE HOST SYSTEM

When you are finished with your session, enter the correct log off word to terminate the session. For Dow Jones, enter:

DISC [END LINE]

For The Source, enter:

OFF [END LINE]

(Consult your system reference manual for the log off word(s) for other systems.)

Then press [f] [/] to return to the main menu. If you have an acoustic modem, you then manually hang up the phone.

HANGING UP [H]

The main menu H command sends a hang-up command to your auto dial modem and disconnects the HP-71 from the host computer. The H command works in conjunction with the HANGUP line in your setup file. (Be sure the HANGUP line is initialized for your modem. Refer to Section 2 for more information.)

To use the H command, press [f] [/] to return to the main menu and then press H to hang up:

[f] [/]
MENU* CDEFHLPQSTUVX? [H]
Please wait...
MENU* CDEFHLPQSTUVX?

Section 4

SPECIAL CODE WORDS

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INTRODUCTION

This section explains how to use special code words, and how you can create (or delete) them in your setup file using the editor commands A (Add) and D (Delete).

USING SPECIAL CODE WORDS

Special code words are tools that make DATACOMM even quicker and easier to use. Code words can be defined for almost any sequence of characters and numbers, such as a log on sequence or a frequently executed host computer command.

The general format for special code words is the same as for other code words in your setup file:

code word*data

The combined length of the code word, plus the asterick (*) and the data can be up to 96 characters long.

Sending a Special Code Word [S]

Special code words are quite simple to use. Once you have defined a special code word, you use it by executing the S command in the main menu. For example, suppose you have defined a code word, DJLO, that contains the complete log on procedure for Dow Jones News/Retrieval Service (R) including the phone number (if you have an auto-dial modem) and your personalized password. Thereafter, whenever you want to log on to the Dow Jones you would first press [S] in the main menu:

```
MENU* CDEFHLPQSTUVX? [S]
ENTER CODE WORD:
```

You then type the special code word DJLO:

```
ENTER CODE WORD: DJLO [END LINE]
```


Please wait...

The log on now proceeds automatically.

NOTE: If you have an acoustic modem, the procedure is the same except that you do not press [END LINE] immediately after typing the special code word. Instead, you must first dial the number and when you hear the steady tone of the host computer, place the receiver in the acoustic coupler. At that point, press [END LINE] for DATACOMM to take over. DATACOMM then uses the sequence referenced by the word DJLO to perform the log on.

Using an Auto Log On Code Word

For your convenience, SETUPA1 and SETUPR1 contain a "skeleton" log on procedure for Dow Jones News/Retrieval Service (R) using Tymnet and Telenet, and The Source (S) using Telenet. You can easily modify these by using the editor C (Change) command to add your personalized password and the telephone numbers for auto-dialing if appropriate.

Code Word

Use

SLO2	To use Telenet to log on to The Source.
DJLO1	To use Tymnet to log on to Dow Jones.
DJLO2	To use Telenet to log on to Dow Jones.

These code words provide a correct log on sequence to which you enter your own information. For example, the code words if you are using an acoustic modem are set up like this:

```
SLO2*!2^M!2^M!W=~M!W@C 301 xx^M!W>ID uuuuuu ppp^M
```

```
DJLO1*!WfA!W:~RDOW1;;!W?DJNS^M!W@pppppppppp^M
```

```
DJLO2*!2^M!2^M!W=~M!W@C 60942^M!W?DJNS^M!W@pppppppppp^M
```

SLO2 is used for logging on to The Source using Telenet. (The Source is not available through Tymnet). Use the editor C (Change) command to replace xx with your Source system number. Replace uuuuuu with your user ID, and ppp with your user password.

The second two lines, DJLO1 and DJLO2 are for logging on to the Dow Jones News/Retrieval (R) via Tymnet and Telenet, respectively. Replace pppppppppp with your personalized password.

NOTE: Your ID and password may be slightly different than the examples given. Modify the given skeletons to meet your needs.

If you are using an auto dial modem, the code words SLO2, DJLO1 and DJLO2 are defined a little differently to accomodate

the phone numbers. In this case you can incorporate the dial command into the code word definition. For example, the auto log on code words are:

```
SL02*ATDT5555555~M!8!8~M!2~M!W=~M!W@C 301 xx~M!W>
ID uuuuuu ppp~M
```

```
DJL01*ATDT5555555~M!WfA!W:~RDOW1;;!W?DJNS~M!W@
pppppppppp~M
```

```
DJL02*ATDT5555555~M!8!8~M!2~M!W=~M!W@C 60942~M!W?
DJNS~M!W@pppppppppp~M
```

ATDT is the dial command for the Hayes Smartmodem. Use the editor C (Change) command to replace 5555555 with the local phone number for Tymnet or Telenet. For The Source auto log on code word, SL02, replace xx with your Source system number, uuuuuu with your user ID, and ppp with your password.

For the Dow Jones auto log on code words (DJL01 and DJL02), replace pppppppppp with your password.

If you are using an auto dial modem other than the Hayes Smartmodem, you will also need to change the dial command to match that of your modem's. You may also need to change the delay requirements (!8).

CREATING YOUR OWN SPECIAL CODE WORDS

A special code word can be defined for character sequences that you frequently use. You use the edit mode A (Add) command to create a new code word in your setup file. For example, suppose you want to create a code word for the Telenet phone number. First, enter edit mode by pressing [E] while in the main menu:

```
MENU* CDEFHLPQSTUVX? [E]
SETUP FILE: SETUPA1
EDITOR* ACDLQ? [A]
```

Press [A] to execute the Add command. Enter a code word that is easy to remember, such as TELE for the Telenet phone number.

```
ENTER CODE WORD: TELE [END LINE]
DATA: 555-5555 [END LINE]
EDITOR* ACDLQ?
```

When prompted for the data, enter the digits of the number. You can now enter TELE when prompted for the phone number by the D command instead of typing the number.

New code words which are added to your setup file are placed at the end of the setup file. You can use the L (List) command to see your new code word.

You can also create code words to use when you are logged on to an information service. For example, if you use The Source and like to read the POST HEWLETT-PACKARD section, you can create a code word to speed access to that data. Normally you would type:

```
POST READ HEWLETT-PACKARD [END LINE]
```

However, you can use the A command to create a code word that contains that command line. First, enter edit mode. Then create a code word that is easy to remember, such as PRHP for POST READ HEWLETT-PACKARD.

```
MENU* CDEFHLPQSTUVX? [E]  
EDITOR* ACDLQ? [A]  
ENTER CODE WORD: PRHP [END LINE]
```

When prompted for the data, enter the information you would normally type in. Be sure to use the correct special setup characters to represent carriage returns, timing delays, etc. (A table of special setup characters is in Section 2).

```
DATA* POST READ HEWLETT-PACKARD~M [END LINE]  
EDITOR* ACDLQ?
```

Your new code word is now added to the end of the current setup file. To view your code word, enter L from the editor menu, and scroll through the setup file to the bottom. You can also use the [g] [v] key sequence to quickly cursor to the end of the setup file.

```
EDITOR* ACDLQ? [L]  
CURSOR:MODEM*HP82164A [g] [v]  
CURSOR:PRHP*POST READ HEWLETT-PACKARD
```

To execute the PRHP command from terminal mode, press [f] [/] to leave terminal mode. Then press [S] to send a special code word. Enter your code word and [END LINE]:

```
[f] [/]  
MENU* CDEFHLPQSTUVX? [S]  
ENTER CODE WORD: PRHP [END LINE]  
Please wait...  
TERMINAL-[f/] TO EXIT
```

You should now see the POST HEWLETT-PACKARD category.

The combined length of the code word, plus the asterick (*) and the data can be up to 96 characters long.

DELETING A CODE WORD [D]

In some instances, you may want to delete a code word from your setup file. To do so, enter the editor and press [D] for delete:

```
EDITOR* ACDLQ? [D]
ENTER CODE WORD:
```

Now enter the name of the code word you want to delete. DATACOMM gives you a chance to change your mind.

```
ENTER CODE WORD: PRHP [END LINE]
DELETING PRHP
ARE YOU SURE?(Y/N)
```

If you type anything but [Y], your code word will not be deleted.

DATACOMM will not allow you to delete one of the first 18 lines of the setup file which it needs for initialization. If you try to delete one of these lines, you will get an error message and be returned to the editor menu:

```
ENTER CODE WORD: ECHOON [END LINE]
Deletion Not Allowed!
EDITOR* ACDLQ?
```

Section 5

ADVANCED PROGRAMMER'S GUIDE

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INTRODUCTION

This section will describe features which allow the user to use DATACOMM with other programs, to call other programs from DATACOMM, and to run DATACOMM without user intervention.

EXECUTING A COMMAND FILE

The F command is used to execute a previously written command file. This command file can be either a TEXT or DATA file. The main reason for having the command file is to allow the running of DATACOMM without user intervention. (Text files can be created using various text editors which are available from HP and from user groups.)

When the F command is executed from the keyboard, DATACOMM will start to read the command from a file instead of reading it from the keyboard as it normally would. For example, suppose you have created a command file called "COMMAND". To run this file you would type the following:

```
MENU* CDEFHLPQSTUVX? [F]
COMMAND FILE NAME: COMMAND [END LINE]
```

DATACOMM will read its commands from the file COMMAND until it reaches the end of the command file or until it reads the keyword "KYBD" in the command file. If DATACOMM reads the keyword "KYBD" in a command file, it then starts reading the commands from the keyboard instead of the command file.

If the command file input is terminated by reaching the end

of the file, the next [F] command issued will ask the command file name again. If the command file input is aborted by the keyword "KYBD", the next [F] command will continue to read the previous command file where it left off.

Another keyword that will be recognized in the command file is "SEND". The data string following the "SEND" will be directly sent to the modem. The difference between the S command in the main menu and the "SEND" is that the S command can only send a data string associated with a code word, but "SEND" can send anything. The data string will be processed the same way as the data string in the setup file. This means the special setup characters will be recognized (section 2).

Since the special setup character '!W' can be used to wait for a specific terminating character, the "SEND" keyword can be used for receiving data too. For example, SEND !W^M!W^J will read data from the modem until a carriage return and line feed are received. Any spaces following the "SEND" keyword, but preceding the data string will not be treated as part of the data string.

Following is an example of a command file:

```
D
18001234567
SEND GET_READY_TO_RECEIVE_FILE_ABC
SEND !WO!WK!2
X
O
ABC
```

The first line 'D' executes the Dial command. Next the phone number is dialed. The message 'GET_READY_TO_RECEIVE_FILE_ABC' is sent to the host computer. DATACOMM then waits for the letters 'OK' and then 2 seconds to pass before it executes the X (transfer command) to send the file. The 'O' command says to output a file, and 'ABC' is the file name.

CALLING A USER SUBPROGRAM

The U command allows the user to call a subprogram from DATACOMM. When the subprogram is finished executing, control will return to DATACOMM. To call a user subprogram, MYPROGRAM, enter the following:

```
MENU*CDEFHLPQSTUVX? [U]
SUBPROG NAME: MYPROG [END LINE]
```

DATACOMM passes five parameters to the subprogram.

```
CALL <subprogram name> (A1,A2,A3,#1,S)
```

Parameter	Meaning
A1	HP-IL address of the modem.
A2	HP-IL address of the video interface.
A3	HP-IL address of the printer device.
#1	Channel number opened to the setup file.
S	Flag to indicate to DATACOMM that the current setup file has been changed. If the subprogram changes the setup file, it should set S equal to zero (0). If the subprogram does not change the setup file, then S should not be changed.

THREE SUBPROGRAMS WITHIN DATACOMM

There are three subprograms in DATACOMM which you may want to use for your programming purposes.

1. DCSUB
2. DCSEND
3. DCGEN

DCSUB

The subprogram DCSUB is a program almost identical to the main program DATACOMM except it allows you to pass in the setup file name and optional command file name as parameters. With the command file, DATACOMM can be run completely without user intervention.

Syntax:

```
SUB DCSUB(F$,FO$)
```

Parameters:

```
F$ - Setup file name
FO$ - Command file name
```

DCSEND

The subprogram DCSEND sends a command string to a given device. The phone number is required only if the command string needs a phone number. The special setup characters used in setup file data lines will be recognized.

Syntax:

```
SUB DCSEND(AO$,AO,P$)
```

Parmaters:

AO\$ - Command string to send to the modem.
AO - Device's HPIL address.
P\$ - Optional phone number.

DCGEN

The subprogram DCGEN creates a setup file for the acoustic modem or for the HP 82164A HP-IL/RS-232-C interface.

Syntax:

SUB DCGEN(S\$,E\$)

Parameters:

S\$ - Set equal to the name of the setup file you want to create. SETUPR1 and SETUPA1 are recognized explicitly. Any other name will cause DCGEN to generate a setup file like SETUPR1, except it will not have the special code words SLO2, DJLO1 and DJLO2.
E\$ - Return null string if the setup file is created successfully. Otherwise return error message.

KEYWORDS IN THE DCLEX FILE

There are three keywords and one function in DCLEX. The three keywords are imported from the HP-71 Editor ROM. All of these keywords use the same XROM number and function number so that DCLEX can coexist with the Editor ROM.

The Keyword DELETE

The DELETE keyword deletes the specified record from the text file which is assigned to the selected channel number. The channel number and record number can be expressions. The keyword rounds each of the resulting values to an integer. An error message is given if the assigned file is external, protected or not text compatible.

Syntax:

DELETE #<channel number>,<record number>

Example: DELETE #11,14

The Keyword INSERT

The INSERT keyword inserts the new record as the specified record number in the file assigned to the selected channel number. The new record is an HP-71 string expression. The channel number and the record number can be expressions. An error occurs if the file is external, protected or not text compatible.

Syntax:

```
INSERT #<channel number>,<record number>; new record
```

Example: INSERT #11,35 "The new line."

The Keyword REPLACE

The REPLACE keyword replaces the specified record and record number with a new record in the file assigned to the specified channel number. The new record is an HP-71 string expression. The channel number and record number can also be expressions. An error message will occur if the file is external, protected or not text compatible.

Syntax:

```
REPLACE #<channel number>,<record number>; new record
```

Example: REPLACE #11,35; "Replacement"

The FTYPE\$ Function

The FTYPE\$ function returns the file type of the specified file or of a file assigned to a particular channel number. The file specifier is an HP-71 string expression. A device specifier can be included to allow access to external files.

The FTYPE\$ function always returns a five character string which represents the file type such as 'TEXT', 'BASIC', or 'DATA'. If the HP-71 does not recognize the file type it returns a five digit number in string form. If the specified file does not exist FTYPE\$ will return a null string. This is useful in a program for determining whether a file already exists.

Syntax:

```
FTYPE$(<file specifier>:<channel number>)
```

Examples:

```
A$ = FTYPE$('DCLEX')  
B$ = FTYPE$('DATACOMM:TAPE')  
C$ = FTYPE$(3)
```

Response to the VER\$ Poll

DCLEX will display 'DC:A' when you execute the VER\$ function on the HP-71.

List TEXT Files

The basic HP-71 computer can only list BASIC programs. However with the DATACOMM DCLEX plug in, the LIST and PLIST commands can be used to list TEXT files also.

Section 6

DATACOMM COMMAND DICTIONARY

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INTRODUCTION

This reference section reviews the general syntax of DATACOMM commands, then discusses the meaning and use of each command.

GENERAL SYNTAX FOR COMMANDS

DATACOMM utilizes three types of commands. The first type requires you to simply press the letter key corresponding to one of the characters that is shown in the menus on the display of your HP-71. It is not necessary to press [END LINE] after entering this character. For example, to exit DATACOMM, press Q:

```
MENU* CDEFHLPQSTUVX? [Q]
```

The second type of command displays a prompt and a default input. To accept the default value you simply press [END LINE]. If you want to enter a new value, you do so and follow it by an [END LINE]. For example, to change the current setup file, press

C from the main menu. Then press [END LINE] to keep the default value.

SETUP FILE :SETUPA1 [END LINE]

The third type of command prompts you to enter an input, then press [END LINE].

PHONE CODE OR NO.: TYMNET [END LINE]

HP-71 KEYS

The [f] [/] keys in combination serve a special purpose in DATACOMM. When you are using any DATACOMM command except the editor (E) command, pressing [f] [/] will abort what you are doing and return the system to the main menu, terminal mode, or the editor menu.

Pressing the [ON] key will cause the program to stop. If this happens the program may be restarted by typing:

CONT [END LINE]

The screen may stay blank. In this case DATACOMM may be expecting you to type in an answer where you left off. If this occurs press the ON key and restart DATACOMM.

You can restart DATACOMM by typing:

RUN DATACOMM [END LINE]

THE MAIN MENU COMMANDS

There are fourteen commands that are accessible from the main menu:

MENU* CDEFHLPQSTUVX?

These commands are discussed alphabetically in this section. Under each heading is a reference to the section in which the command is discussed.

There are an additional six commands in the edit mode. (Edit mode is accessed by pressing [E] in the main menu). These commands are grouped alphabetically after the main menu commands.

C: Change to Another Setup File (Section 2)

The C command enables you to specify the current setup file when you have more than one setup file in memory. When you press [C], the current setup file is displayed:

```
MENU* CDEFHLPQSTUVX? [C]
SETUP FILE:DCSETUP
```

Press [END LINE] if you want to keep the displayed setup file as the current setup file. Or enter another file name and press [END LINE].

If the name you specify is not in the system, you will get an error message "Invalid Setup: filename". You must change the file name to a valid setup file.

D: Dial a Phone Number (Section 3)

The D command dials a phone number for an auto-dial modem, then it puts the HP-71 in terminal mode so that you can log on to the host computer system you have called. The D command works in conjunction with the DIAL line in your setup file: the DIAL line must be initialized for your modem.

There are two ways to dial a number. The first is to enter actual digits of the phone number of your local Tymnet, Telenet, or other service, and press [END LINE]:

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: 5555555 [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
```

The second dialing method is to enter a previously defined special code word and press [END LINE]. In the following example, the word TELE was previously defined as the local phone number of Telenet:

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: TELE [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
```

In either case, after the number is dialed, the system is automatically placed in terminal mode.

E: Enter Edit Mode (Section 2)

The E command calls up the DATACOMM editor which is used to edit the current setup file. There are six edit mode commands which are discussed in this section following the main menu commands.

```
MENU* CDEFHLPQSTUVX? [E]
SETUP FILE: DCSETUP
EDITOR* ACDLQ?
```

F: Execute a Command File

(Section 5)

The F command is used to execute a previously written command file. This command file can be either a TEXT or DATA file. The main reason for having the command file is to allow the running of DATACOMM without user intervention.

When the F command is executed from the keyboard, DATACOMM will start to read the command from a file instead of getting it from the keyboard as it normally would. For example, suppose you have created a command file called "COMMAND". To run this file you would type the following:

```
MENU* CDEFHLPQSTUVX? [F]
COMMAND FILE NAME: COMMAND [END LINE]
```

DATACOMM will read its commands from the file COMMAND until it reaches the end of the command file or until it reads in the keyword "KYBD" in the command file.

If the command file input is terminated by reaching the end of the file, the next [F] command will ask the command file name again. If the command file input is aborted by the keyword "KYBD", the next [F] command will continue to read the previous command file where it left off.

Another keyword that will be recognized in the command file is "SEND". The data string following the "SEND" will be directly sent to the modem. The difference between the S command in the main menu and the "SEND" is that the S command can only send a data string associated with a code word, but "SEND" can send anything. The data string will be processed the same way as the data string in the setup file. This means the special setup characters will be recognized (section 2, page 33).

Since the special setup character '!W' can be used to wait for a specific terminating character, the "SEND" keyword can be used for receiving data too. For example, SEND !W^M!W^J will read data from the modem until a carriage return, line feed are received. Any spaces following the "SEND" keyword, but preceding the data string will not be treated as part of the data string.

Section 5 contains an example of a command file and its use.

H: Hang Up

(Section 3)

The H command sends a hang-up command to your auto-dial modem and disconnects the HP-71 from the host computer. The H command works in conjunction with the HANGUP line in your setup file: the HANGUP line must be initialized for your modem.

If the system is in terminal mode and you wish to hang up, press [f] [/] to return to the main menu and then press [H] to hang up:

```
[f] [/]
MENU* CDEFHLPQSTUVX? [H]
Please wait...
MENU* CDEFHLPQSTUVX?
```

L: Toggle the HP-71 Display On/Off (Section 3)

The L command turns the HP-71 LCD on or off depending upon its state before issuing the L command. The L command also causes the LCDON line in the setup file to change state. If you turn the HP-71 display off and you have no other output devices active, you will get a warning message:

```
MENU* CDEFHLPQSTUVX? [L]
LCD OFF
No Outputs Are Active
MENU* CDEFHLPQSTUVX? [L]
LCD ON
MENU* CDEFHLPQSTUVX?
```

NOTE: Whenever the HP-71 display is active in terminal mode (LCDON*ON), the 500-character data buffer is activated, and the data transmission rate will be noticeably slower.

P: Toggle the Printer On/Off (Section 3)

The P command toggles the printer on or off each time you enter the command. (The PRINTERON line in your setup file changes from ON to OFF or visa versa.) When the printer is activated, all input and output while in terminal mode goes to the printer. If you do not have a printer in the loop and you turn the printer on, you will get a warning message:

```
MENU* CDEFHLPQSTUVX? [P]
PRINTER ON
Printer Not Found On Loop
MENU* CDEFHLPQSTUVX? [P]
PRINTER OFF
MENU* CDEFHLPQSTUVX?
```

WARNING: A printer slower than 30 characters-per-second (cps) may not be able to keep up with your modem and you could lose characters.

Q: Quit DATACOMM
(Section 1)

The Q command exits the DATACOMM program and returns you to the HP-71 prompt (>):

```
MENU* CDEFHLPQSTUVX? [Q]
bye...
>
```

Quitting DATACOMM does not turn off the HP 82168A Acoustic Coupler. However, after 10 minutes of loop inactivity the HP 82168A will automatically turn itself off unless the IMODEM line includes the D; option.

S: Send a Special Code Word Sequence
(Section 4)

The S command sends to the modem a sequence of characters or numbers that you have defined. For example, you can define a code word called SLO that contains the phone number and log on procedure, including password, for The Source. Then, whenever you wish to log on to The Source, you would simply send the code word SLO.

To send a special code word sequence, press [S] from the main menu, then type the desired code word:

```
MENU* CDEFHLPQSTUVX? [S]
ENTER CODE WORD: SLO [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
```

To use an automatic log on sequence with an acoustic coupler, press [S] and enter the code word but do not press [END LINE] yet. Dial the phone number, listen for the carrier tone of the host computer, and insert the handset into the coupler. Then press [END LINE].

If you enter a code word that does not exist, the computer will beep and prompt you to enter another code word. If you do not know what the code word is, press [f] [/] to return to the main menu. You can then review the available code words with the editor L (List) command.

T: Enter Terminal Mode
(Section 3)

Terminal mode is used to communicate with another computer system via the modem. Characters typed on the HP-71 keyboard are sent to the modem and characters received from the modem are displayed on the active output devices.

To enter terminal mode, press [T] in the main menu. To exit

terminal mode, press [f] [/].

```
MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT
```

If you have interrupted terminal mode, you can re-enter terminal mode by pressing [T] in the main menu. Communication with the host system will resume. Some computer systems will automatically disconnect you if you do not respond within a certain period of time.

Section 3, "Terminal Mode," gives a complete description of all of the available terminal mode commands.

U: Call a User Subprogram (Section 5)

The U command allows the user to call a user subprogram from DATACOMM. When the subprogram is finished executing, control will return to DATACOMM. To call a user subprogram, MYPROG, enter the following:

```
MENU*CDEFHLPQSTUVX? [U]
SUBPROG NAME: MYPROG [END LINE]
```

DATACOMM passes five parameters to the subprogram.

```
CALL <subprogram name> (A1,A2,A3,#1,S)
```

Parameter	Meaning
-----------	---------

A1	HP-IL address of the modem.
A2	HP-IL address of the video interface.
A3	HP-IL address of the printer device.
#1	Channel number opened to the setup file.
S	Flag to indicate to DATACOMM that the current setup file has been changed. If the subprogram changes the setup file, it should set S equal to zero (0). If the subprogram does not change the setup file, then S should not be changed.

V: Toggle the Video Display On/Off (Section 3)

The V command toggles the video display mode on or off. This causes the VIDEOON line in your setup file to also toggle ON or OFF. When the video interface is activated, all input and output during terminal mode go to it. If you turn the display ON and you

do not have a video interface in the loop, you will get a warning message:

```
MENU* CDEFHLPQSTUVX? [V]
VIDEO ON
Video Not Found On Loop
MENU* CDEFHLPQSTUVX? [V]
VIDEO OFF
MENU* CDEFHLPQSTUVX?
```

X: Transfer Files

(Section 3)

DATACOMM allows you to transfer text or data files to and from the HP-71. The data files should be string data and not numeric data. Unpredictable results may occur if you transfer numeric data.

There are three ways to transfer files between the HP-71 and a host computer. You can use the X command from the main menu or you can use the [f] [6] or [f] [5] command sequences while in terminal mode. The main difference between the X command and the [f] [6] or [f] [5] commands is you do not exit Terminal mode to transfer a file when using the latter. The [f] [5] and [f] [6] commands are explained in Section 3, Terminal Mode.

To transfer information from the host computer into an HP-71 text file using the X command:

1. Log on to the host computer from which you wish to gather data.
2. Prepare the host system so it is ready to send you the desired data. However, do not actually start the data transfer. (Usually you start a data transfer with an [END LINE]. Do not press [END LINE] yet.)

For example, if you are using the Dow Jones News-Retrieval Service (R) and wish to save the latest stock quote for Hewlett-Packard in a text file, you would prepare the Dow Jones system to send the data:

```
ENTER QUERY
HWP
```

However, you should not press [END LINE] after entering HWP. The HP-71 must be prepared to receive the data first (steps 3 through 7 below).

Similarly, if you wanted to save "mail" from The Source, you would again prepare the host system to send the data:

-> MAIL READ

...

--MORE-- [Y]

but you would not press [END LINE] after the Y response until the HP-71 system is prepared to receive the data.

3. Press [f] [/] to exit terminal mode and then press X to transfer a file.

TERMINAL-[f/] TO EXIT

[f] [/]

MENU* CDEFHLPQSTUVX? [X]

4. Press [I] to input a file.

INPUT OR OUTPUT?(I/O) [I]

5. Enter the input file name followed by an [END LINE].

ENTER FILE NAME: MYFILE [END LINE]

If you wish to input the file to a mass memory device such as the HP 82161A Digital Cassette Drive, you would type:

ENTER FILE NAME: MYFILE:TAPE [END LINE]

NOTE: If the file does not exist on tape, DATACOMM will create a 12k text file for you which is adequate to hold 3 or 4 pages of text. If you need a longer file, you must create it before entering the DATACOMM program using the HP-71's CREATE TEXT command. If the file you specify is not long enough, the data transfer will stop when the file is full.

If you run out of memory when transferring a file into the HP-71, the transfer will be terminated and you will be given the message "Not Enough Memory". You will need to exit DATACOMM and purge extra files from your system. DATACOMM needs approximately 3000 free bytes to run.

6. Enter the character(s) that will start the host system sending the data. In the examples shown in step 2 (above), pressing [END LINE] will start the transfer:

INPUT ([f/] TO EXIT) [END LINE]

7. Press [f] [/] at any time to terminate the transfer. Once data has been received, data transfer will be automatically terminated if DATACOMM does not receive data within 20 seconds.

To send an HP-71 text file to the host computer using the X command:

1. Create the file you want to send before running DATACOMM.
2. Prepare the host computer to receive the data you will be sending. For example, if you created an HP-71 text file containing a letter that you want to send to a friend using The Source mail system, you would first prepare The Source to receive the data up to the point of seeing the input prompt:

ENTER TEXT:

3. Press [f] [/] to exit terminal mode and then press X to transfer a file.

TERMINAL-[f/] TO EXIT
[f] [/]
MENU* CDEFHLPQSTUVX? [X]

4. Press [O] to output a file.

INPUT OR OUTPUT?(I/O) [O]

5. Enter the file name of the file you wish to transfer to the host computer.

ENTER FILE NAME: LETTER [END LINE]

In this example the text file LETTER is sent to The Source. (If you are sending a text file to The Source, it is a good idea to include The Source .S command as the last line of your file--this causes the letter to be "sent".

If the file you wish to output is on a mass memory device such as the HP 82161A Digital Cassette Drive, you would type the following:

ENTER FILE NAME: LETTER:TAPE [END LINE]

6. When the file transfer is complete, the HP-71 beeps and returns to terminal mode. Press [f] [/] if you want to terminate the file transfer before it is completed.

DATACOMM does not recognize lower case file names such as "keys". It is necessary to copy these files to another file before transferring (COPY keys TO KEYS).

?: Help
(Section 1)

The ? (Help) command is accessed from the main menu by pressing [?]. You are then prompted to enter one of the command characters (CDEFHLPQSTUVX?). A one-line description of the com-

mand character will be displayed for a short time. For example, to obtain the description of the command character D, press [?] in response to the main menu prompt and then [D] in response to the help menu prompt:

```
MENU* CDEFHLPQSTUVX? [?]  
HELP* CDEFHLPQSTUVX? [D]  
DIAL PHONE (AUTO DIAL)
```

The main menu commands have these help messages:

```
C    CHANGE SETUP FILE  
D    DIAL PHONE (AUTO DIAL)  
E    EDIT SETUP FILE  
F    EXECUTE COMMAND FILE  
H    HANG UP PHONE  
L    LCD ON/OFF  
P    PRINTER ON/OFF  
Q    QUIT - EXIT PROGRAM  
S    SEND CODE WRD TO MODEM  
T    ENTER TERMINAL MODE  
U    CALL USER SUBPROGRAM  
V    VIDEO ON/OFF  
X    TRANSFER FILE IN/OUT  
?    DISPLAY HELP MESSAGES
```

THE EDIT MODE COMMANDS

There are six edit mode commands. To enter edit mode, press [E] in the main menu:

```
MENU* CDEFHLPQSTUVX? [E]  
SETUP FILE: DCSETUP  
EDITOR* ACDLQ?
```

These commands are listed alphabetically.

NOTE: When using the A, C or D commands in the edit mode, the HP-71 may time out and shut itself off after ten minutes and no keyboard entry is made.

A: Add a Code Word to the Setup File (Section 4)

The A command adds a new code word to the end of the setup file. The command prompts you for the name of the code word and then prompts you for the data. If the code word already exists, the HP-71 will beep and give you an error message. For example, to create a code word for the Telenet phone number, enter your code word and then the number:

```
EDITOR* ACDLQ? [A]
ENTER CODE WORD: TELENET [END LINE]
DATA: 555-5555 [END LINE]
```

The combined length of a code word, plus the asterick (*), and the data can be up to 96 characters long.

C: Change a Code Word in the Setup File (Section 2)

The C command allows you to change a code word in the setup file. To change a code word, press [C] in the editor menu, and enter the code word you want to view. Use the cursor movement keys to position the cursor over the part you want to change. When the line is the way you want it, press [END LINE].

```
EDITOR* ACDLQ? [C]
ENTER CODE WORD: ECHOON [END LINE]
CHANGE:ECHOON*OFF [END LINE]
```

D: Delete a Code Word From a Setup File (Section 4)

To delete a code word from the current setup file, use the D command. The D command asks if you really want to make the deletion. If you type anything but Y, the code word will not be deleted.

```
EDITOR* ACDLQ? [D]
ENTER CODE WORD: TELENET [END LINE]
ARE YOU SURE?(Y/N) [Y]
EDITOR* ACDLQ?
```

The first eighteen lines of a setup file are required for system initialization and can not be deleted. If you attempt to delete one of these code words you will see:

Deletion Not Allowed!

L: List the Contents of the Setup File (Section 2)

The L command lists the contents of the current setup file. When you press [L], the first line of the file is displayed. The word CURSOR at the beginning of the line tells you that you are in the edit list mode and can cursor around to review the setup file.

```
EDITOR* ACDLQ? [L]
CURSOR:MODEM*HP82164A
```

The modem line will vary depending upon the type of modem you

are using.

The following cursor movement keys can be used to view the file:

KEY	ACTION
[^]	Move up one line.
[v]	Move down one line.
[g] [^]	Move to top of file.
[g] [v]	Move to bottom of file.
[>]	Move window right one character.
[<]	Move window left one character.
[f] [>]	Move window right 15 characters.
[f] [<]	Move window left 15 characters.
[g] [>]	Move window right to end-of-line.
[g] [<]	Move window left to beginning of line.

When you have finished looking at your file, press [f] [/] to return to the editor menu. Please note you can not change a line in the setup file while you are using the L (List) command.

Q: Quit the Setup File Editor (Section 2)

The Q command exits the setup file editor and returns you to the main menu:

```
EDITOR* ACDLQ? [Q]
Reading DCSETUP
MENU* CDEFHLPQSTUVX?
```

? : Help (Section 2)

The ? (Help) command displays a one-line description of a command character. When you press [?], you are prompted to enter one of the command characters (ACDLQ?).

```
EDITOR* ACDLQ? [?]
EDIT HELP* ACDLQ? [A]
ADD A CODE WORD
```

The following messages appear in response to the ? command:

```
A    ADD A CODE WORD
C    CHANGE A CODE WORD
D    DELETE A CODE WORD
L    LIST THE SETUP FILE
Q    LEAVE THE EDITOR
?    DISPLAY HELP MESSAGES
```

APPENDICES

Appendix A

Owner's Information

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Maintenance

The HP-71 Data Communications module does not require maintenance. However, there are several precautions listed below that you should observe.

CAUTION

- * Do not place fingers, tools, or other objects into the plug in ports. Damage to plug-in module contacts and the computer's internal circuitry may result.
- * Turn off the computer (press [f][ON]) before installing or removing a plug-in module.
- * If a module jams when inserted into a port, it may be upside down. Attempting to force it further may result in damage to the computer or the module.
- * Handle the plug-in modules very carefully while they are out of the computer. Do not insert any objects in the module connector socket. Always keep a blank module in the computer's port when a module is not installed. Failure to observe these cautions may result in damage to the module or to the computer.

Limited One-Year Warranty

What We Will Do

The Data Communications module is warranted by Hewlett-Packard against defects in materials and workmanship affecting electronic and mechanical performance, but not software content, for one year from the date of original purchase. If you sell your unit or give it as a gift, the warranty is transferred to the new owner and remains in effect for the original one-year period. During the warranty period, we will repair or, at our option, replace at no charge a product that proves to be defective, provided you return the product, shipping prepaid, to a Hewlett-Packard service center.

What Is Not Covered

The warranty does not apply if the product has been damaged by accident or misuse or as the result of service or modification by other than an authorized Hewlett-Packard service center.

No other express warranty is given. The repair or replacement of a product is your exclusive remedy. **ANY OTHER IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS IS LIMITED TO THE ONE-YEAR DURATION OF THIS WRITTEN WARRANTY.** Some states, provinces, or countries do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. **IN NO EVENT SHALL HEWLETT-PACKARD COMPANY BE LIABLE FOR CONSEQUENTIAL DAMAGES.** Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Warranty for Consumer Transactions in the United Kingdom

This warranty shall not apply to consumer transactions and shall not affect the statutory rights of a consumer. In relation to such transactions, the rights and obligations of Seller and Buyer shall be determined by statute.

Obligation to Make Changes

Products are sold on the basis of specifications applicable at the time of manufacture. Hewlett-Packard shall have no obligation to modify or update products once sold.

Warranty Information

If you have any questions concerning this warranty, please contact an authorized Hewlett-Packard dealer or a Hewlett-Packard sales and service office. Should you be unable to contact them, please contact:

*** In the United States:**

Hewlett-Packard
Corvallis Division
1000 N.E. Circle Blvd.
Corvallis, OR 97330
Telephone: (503) 758-1010
Toll-Free Number: (800) 547-3400
(except in Oregon, Hawaii, and Alaska)

*** In Europe:**

Hewlett-Packard S.A.
7, route du Nant-d'Avril
P.O. Box
CH-1217 Meyrin 2
Geneva
Switzerland

Telephone: (022) 83 81 11

Note: Do not send units to this address for repair.

*** In other countries:**

Hewlett-Packard Intercontinental
3495 Deer Creek Rd.
Palo Alto, California 94304
U.S.A.

Telephone: (415) 857-1501

Note: Do not send units to this address for repair.

Service

Service Centers

Hewlett-Packard maintains service centers in most major countries throughout the world. You may have your unit repaired at a Hewlett-Packard service center any time it needs service, whether the unit is under warranty or not. There is a charge for repairs after the one-year warranty period.

Hewlett-Packard products are normally repaired and reshipped within five (5) working days of receipt at any service center. This is an average time and could vary depending upon the time of year and the work load at the service center. The total time you are without your unit will depend largely on the shipping time.

Obtaining Repair Service in the United States

The Hewlett-Packard United States Service Center for battery-powered computational products is located in Corvallis, Oregon:

Hewlett-Packard Company
Corvallis Division Service Department
P.O. Box 999
Corvallis, Oregon 97339, U.S.A.
or
1030 N.E. Circle Blvd.
Corvallis, Oregon 97330, U.S.A

Telephone: (503) 757-2000

Obtaining Repair Service in Europe

Service centers are maintained at the following locations.
For countries not listed, contact the dealer where you purchased
your unit.

AUSTRIA

HEWLETT-PACKARD Ges.m.b.H.
Kleinrechner-Service
Wagramerstrasse-Lieblgasse 1
A-1220 Wien (Vienna)
Telephone: (02) 23 65 11

BELGIUM

HEWLETT-PACKARD BELGIUM SA/NV
Woluwedal 100
B-1200 Brussels
Telephone: (02) 762 32 00

DENMARK

HEWLETT-PACKARD A/S
Datavej 52
DK-3460 Birkerød (Copenhagen)
Telephone: (02) 81 66 40

EASTERN EUROPE

Refer to the address listed under Austria.

FINLAND

HEWLETT-PACKARD OY
Revontulentie 7
SF-02100 Espoo 10 (Helsinki)
Telephone: (90) 455 02 11

FRANCE

HEWLETT-PACKARD FRANCE
Division Informatique Personnelle
S.A.V. Calculateurs de Poche
F-91947 Les Ulis Cedex
Telephone: (6) 907 78 25

GERMANY

HEWLETT-PACKARD GmbH
Kleinrechner-Service
Vertriebszentrale
Berner Strasse 117
Postfach 540 140
D-6000 Frankfurt 56
Telephone: (611) 50041

ITALY

HEWLETT-PACKARD ITALIANA S.P.A.
Casella postale 3645 (Milano)
Via G. Di Vittorio, 9
I-20063 Cernusco Sul Naviglio (Milan)
Telephone: (2) 90 36 91

NETHERLANDS

HEWLETT-PACKARD NEDERLAND B.V.
Van Heuven Goedhartlaan 121
NL-1181 KK Amstelveen (Amsterdam)
P.O. Box 667
Telephone: (020) 472021

NORWAY

HEWLETT-PACKARD NORGE A/S
P.O. Box 34
Oesterndalen 18
N-1345 Oesteraas (Oslo)
Telephone: (2) 17 11 80

SPAIN

HEWLETT-PACKARD ESPANOLA S.A.
Calle Jerez 3
E-Madrid 16
Telephone: (1) 458 2600

SWEDEN

HEWLETT-PACKARD SVERIGE AB
Skalholtsgatan 9, Kista
Box 19
S-163 93 Spanga (Stockholm)
Telephone: (08) 750 20 00

SWITZERLAND

HEWLETT-PACKARD (SCHWEIZ) AG
Kleinrechner-Service
Allmend 2
CH-8967 Widen
Telephone: (057) 31 21 11

UNITED KINGDOM

HEWLETT-PACKARD Ltd
King Street Lane
GB-Winnersh, Wokingham
Berkshire RG11 5AR

Telephone: (0734) 784 774

International Service Information

Not all Hewlett-Packard service centers offer service for all models of HP products. However, if you bought your product from an authorized Hewlett-Packard dealer, you can be sure that service is available in the country where you bought it.

If you happen to be outside of the country where you bought your unit, you can contact the local Hewlett-Packard service center to see if service is available for it. If service is unavailable, please ship the unit to the address listed above under "Obtaining Repair Service in the United States." A list of service centers for other countries can be obtained by writing to that address. All shipping, reimportation arrangements, and custom costs are your responsibility.

Service Repair Charge

There is a standard repair charge for out-of-warranty repairs. The repair charges include all labor and materials. In the United States, the full charge is subject to the customer's local sales tax.

Products damaged by accident or misuse are not covered by the fixed repair charges. In these situations, repair charges will be individually determined based on time and materials.

Service Warranty

Any out-of-warranty repairs are warranted against defects in materials and workmanship for a period of 90 days from date of service.

Shipping Instructions

Should your unit require service, return it with the following items:

- * A completed Service Card, including a description of the problem and system setup when the problem occurred.
- * A sales receipt or other documentary proof of purchase date if the one-year warranty has not expired.

The product, the Service Card, a brief description of the problem and system configuration, and (if required) the proof of purchase date should be packaged in the original shipping case or other adequate protective packaging to prevent in-transit damage. Such damage is not covered by the one-year limited warranty;

Hewlett-Packard suggests that you insure the shipment to the service center. The packaged unit should be shipped to the nearest Hewlett-Packard designated collection point or service center. Contact your dealer for assistance.

Whether the unit is under warranty or not, it is your responsibility to pay shipping charges for delivery to the Hewlett-Packard service center.

After warranty repairs are completed, the service center returns the unit with postage prepaid. On out-of-warranty repairs in the United States and some other countries, the unit is returned C.O.D. (covering shipping costs and the service charge).

Further Information

Service contracts are not available. Circuitry and designs are proprietary to Hewlett-Packard, and service manuals are not available to customers.

Technical Assistance

The keystroke procedures and program material in this manual are supplied with the assumption that the user has a working knowledge of the concepts and terminology used. Hewlett-Packard's technical support is limited to explanations of operating procedures used in the manual and verification of answers given in the examples. Should you need further assistance, you may write to:

Hewlett-Packard Company
Portable Computer Division
Customer Service
1000 N.E. Circle Blvd.
Corvallis, OR 97330

Dealer and Product Information

For U.S.A dealer locations, product information, and prices, please call (800) 547-3400. In Oregon, Alaska, and Hawaii, call (503) 758-1010.

Appendix B

Error Messages

The Data Communications system displays certain error messages under specific conditions. In most cases, an error message does not halt the DATACOMM program.

"beep"

An incorrect entry was typed or a file transfer was terminated.

Code Word Already Used

The code word you specified in the A command already exists.

Code Word Not Found

The code word you specified does not exist in the setup file.

Code Word Too Long

Your code word, plus an asterick (*) and the data are longer than 96 characters.

Deletion Not Allowed!

Certain code words are necessary for DATACOMM to work properly. This message occurs if you try to delete one of these code words.

End Of Medium

There is not enough room on the cassette tape to create a 12K file. Either insert a new tape or exit DATACOMM and purge some files on the tape.

File Not Found

Output file does not exist.

File Open Or Low Mem

Could not open a command file, an input file, or an output file because it was already open or there is not enough memory for the file control block.

File Too Small

The file which you created on tape is too small to hold all of the data you are trying to save to it.

HP-IL Error

The HP-IL loop is open, a device on the loop is not specified correctly, or a device on the loop is not on.

Improper Data Format

The code word or its data is too long, the code word is missing, or the asterisk separator is missing.

Input Error

An incorrect entry was typed.

Invalid Command File

The specified command file is not of type text or data.

Invalid File Type

Input or output file exists but is not of type TEXT or DATA, or the file name given is not syntactically valid.

Invalid Filespec

The file specifier contains an invalid name or invalid device specifier. The specified file resides in a device that is not appropriate for the attempted operation.

Invalid MSETUP File

The MSETUP file which tells DATACOMM what setup file to use is empty or contains illegal characters.

Invalid Setup: <filename> or <filename> Invalid Setup

The specified setup file does not exist or it is invalid.

Line Too Long

A line in the current setup file is longer than 96 characters.

No Data In Setup File

The setup file which you have specified does not contain any data. The file is empty.

No Modem Found

No modem was found on the loop. Either no modem is on the loop or the modem was not properly defined in the setup file.

No Outputs Are Active

Neither the HP-71 display nor a printer or video display are enabled. At least one of these devices must be enabled to use terminal mode. However, file transfers may be done with no output devices active.

No Printer Found

You enabled the printer, but the specified one was not found on the loop or was not properly defined.

No Video Found

You enabled the video, but the specified one was not found on the loop or was not properly defined.

Not Enough Memory

This message can occur when you first run DATACOMM. DATACOMM needs about 3000 free bytes for variables. (Use PURGE to free more space.) This message can also occur if a text file you were entering requires more memory than is available. The transfer will be discontinued and you are returned to the main menu.

Appendix C

USING THE DOW JONES/NEWS RETRIEVAL SERVICE

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There are several ways to log on to Dow Jones News/Retrieval Service (R). These methods depend upon the type of modem you are using and whether you use Telenet or Tymnet. In this section, the log on methods are divided into two main categories based on the modem type: acoustic and auto dial modems. Refer to the section headings that are appropriate for your type of modem.

NOTE: If you are using the HP-71 display you may at times see unusual characters. This is due to the fact that Dow Jones sends control characters for which the HP-71 has assigned displayable characters. You can ignore these characters.

At the end of this appendix is a section on transferring information from Dow Jones News/Retrieval Service (R) to an HP-71 text file.

SPECIAL NOTES ON USING DOW JONES

Dow Jones has a timeout feature which can be between 1 and 3 minutes. If Dow Jones does not receive a command or character from you within this time frame it may log you off of the system. This usually occurs when using the LCD and receiving a large volume of data such as if you did a //NEWS. It takes longer than the timeout time to display a full page of text on the LCD display. If you are receiving a large volume of data, we suggest you not use the LCD display.

Because of an unusual protocol used by Dow Jones, you must initialize your setup file and your modem as outlined in Section 2, "Host Dependent Setup File Changes". The examples provided there will only work at 300 baud. At 1200 baud, you may occasionally lose characters. We recommend that you only operate Dow Jones at 300 baud.

The HP 82162A thermal printer prints at 24 characters per second. When operating with the acoustic modem and using the DATACOMM software XON/XOFF protocol, you may lose characters due to the slowness of the printer.

USING AN ACOUSTIC MODEM

These examples show the procedures for logging on to Dow Jones/News Retrieval Service (R) using an acoustic modem (also called acoustic coupler) and Tymnet or Telenet.

Using Tymnet

First, enter terminal mode by pressing [T] in the main menu:

```
MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT
```

Dial your local Tymnet number. When you hear the steady tone of the host computer, place the receiver into the acoustic modem making sure the handset is correctly oriented. Then enter your terminal identifier ([A]), and Dow Jones log on ([f] [R] DOW1;;). (NOTE: Only the DOW1; will show on your display.) When prompted for the service you desire, enter DJNS [END LINE]. When prompted to do so enter your password and press [END LINE].

```
please type your terminal identifier [A]
please log in: [f] [R]DOW1;;
TC Host is Online
WHAT SERVICE PLEASE?????DJNS[END LINE]
ENTER PASSWORD XXXXXXXXXXXX pppppppppp [END LINE]
```

NOTE: The [f] [R] tells Tymnet to use the XON/XOFF protocol with Dow Jones. Without this the system will not function properly.

Refer to the Dow Jones/News Retrieval Service (R) Fact Finder for further instructions.

Using Telenet

First enter terminal mode by pressing [T] in the main menu:

```
MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT
```

Dial your local Telenet number. When you hear the loud steady tone of the host computer, place the receiver into the acoustic modem, making sure the handset is correctly oriented. Then press:

[END LINE] [END LINE]

When you are prompted for Terminal =, press [END LINE]. Enter the Dow Jones log on (C 60942) after the @ prompt. When asked what service, enter DJNS [END LINE], then your personalized password followed by [END LINE] when prompted to do so:

```
Terminal = [END LINE]
@C 60942 [END LINE]
609 42 CONNECTED
WHAT SERVICE PLEASE????? DJNS [END LINE]
ENTER PASSWORD XXXXXXXXXXXX pppppppppp [END LINE]
```

Refer to Dow Jones News/Retrieval Fact Finder for further information.

Using Auto Log On with an Acoustic Modem

In this example the special code words DJLO1 (for use with Tymnet) and DJLO2 (for use with Telenet) are used to automatically log on to Dow Jones News/Retrieval Service (R). These code words are found in setup file SETUPA1. Before using these code words, you must modify them to include your password. (Modifying special code words is discussed in Section 4.)

To use a special code word, first press [S] in the main menu, then enter the code word: (Do not press the [END LINE] key yet!)

```
MENU* CDEFHLPQSTUVX? [S]
ENTER CODE WORD: DJLO1 or DJLO2
```

Next dial the local Tymnet or Telenet number, as appropriate. When you hear the tone of the host computer, insert the receiver into the modem, making sure the handset is correctly oriented. Now press

[END LINE]

You should not have to type anything else until you see the ENTER QUERY prompt.

USING AN AUTO DIAL MODEM

These examples show how to use an auto-dial modem with Tymnet or Telenet to access Dow Jones News/Retrieval Service (R).

Using Tymnet

Before doing this procedure, be sure the DIAL line in your setup file is initialized for the modem you are using.

To use an auto-dial modem, first press [D] in the main menu, then enter the local Tymnet phone number. (If you have defined a special code word to represent that number, you may enter the code word.) When prompted for the terminal identifier, press [A]. When asked to log on, enter ([f] [R] DOW1;;). When asked what service, enter DJNS [END LINE]. Enter your password and [END LINE] when prompted to do so.

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: 5555555 [END LINE]
Please wait ...
TERMINAL-[f/] TO EXIT
ATDT5555555
CONNECT
please type your terminal identifier [A]
-2361-031
please log in: [f] [R] DOW1;;
TC Host is Online
WHAT SERVICE PLEASE?????DJNS [END LINE]
ENTER PASSSSWORD XXXXXXXXXXXX pppppppppp [END LINE]
```

NOTE: The [f] [R] instructs Tymnet to use the XON/XOFF protocol with Dow Jones. Without this, the system will not function properly.

Using Telenet

Before doing this procedure, be sure the DIAL line in your setup file is initialized for the modem you are using.

To use an auto-dial modem, first press [D] in the main menu, then enter the local Telenet phone number. (If you have defined a special code word to represent the phone number, you may enter the code word instead of the number.) After the word CONNECT appears, press [END LINE] twice. When prompted for the terminal, press [END LINE] again, then enter the Dow Jones log on (C 609 42). When prompted what service you want, enter DJNS [END LINE]. Enter your password followed by an [END LINE] when prompted to do so.

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: 5555555 [END LINE]
Please wait...
TERMINAL-[f/] TO EXIT
ATDT5555555
CONNECT
[END LINE] [END LINE]
Terminal = [END LINE]
@C 609 42 [END LINE]
609 42 CONNECTED
WHAT SERVICE PLEASE????? DJNS [END LINE]
ENTER PASSWORD XXXXXXXXXXXX pppppppppp [END LINE]
```

Refer to the Dow Jones News/Retrieval Service (R) Fact

Finder for further instructions.

Using Auto Log On With An Auto-Dial Modem

In this example the special code words DJLO1 (for use with Tymnet) and DJLO2 (for use with Telenet) are used to automatically log on to Dow Jones News/Retrieval Service (R). These code words are found in setup file SETUPR1. Before using these code words, you must modify them to include your local Tymnet or Telenet phone number, and your password. (Modifying special code words is discussed in Section 4.)

To use a special code word, first press [S] in the main menu, then enter the code word and [END LINE]:

```
MENU*CDEFHLPQSTUVX? [S]
ENTER CODE WORD: DJLO1 or DJLO2 [END LINE]
Please wait...
```

The special code words contain all of the information necessary for log on. You should not have to type anything else until you see the ENTER QUERY prompt.

SAVING A DOW JONES NEWS STORY

This example shows how to transfer text from the host computer to an HP-71 text file. For the purpose of this example, suppose that you want to check the headlines of the news stories concerning Hewlett-Packard. To obtain the story headlines you type:

```
//DJNEWS [END LINE]
DOW JONES NEWS IS BEING ACCESSED
ENTER QUERY
.HWP 01 [END LINE]
```

Dow Jones will send you the first page of the story headlines. To transfer a story (the story labeled AE, for example) into a text file called NEWS:

```
[f] [6]
INPUT OR OUTPUT?(I/O) [I]
ENTER FILE NAME: NEWS [END LINE]
INPUT ([f/] TO EXIT) AE [END LINE]
```

When you type the AE [END LINE], the transfer begins. All of the data including the AE [END LINE] is saved in the HP-71 text file NEWS.

To stop the transfer, type [f] [/].

SAVING A CURRENT STOCK QUOTE

To enter the current stock quote mode, you type:

//CQ [END LINE]

To transfer Hewlett-Packard's current stock quote into an HP-71 text file called QUOTE type:

```
[f] [6]
INPUT OR OUTPUT?(I/O) [I]
ENTER FILE NAME; QUOTE [END LINE]
INPUT ([f/] TO EXIT) HWP [END LINE]
```

The stock quote information and the HWP are saved in the HP-71 text file QUOTE.

To stop the transfer at any time, press [f] [/].

Appendix D

USING THE SOURCE

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There are several ways to log on to The Source. These methods depend upon the type of modem you are using. In this appendix, the log on methods are divided into two main categories based on the type of modem used: acoustic and auto dial. Refer to the section headings that are appropriate for your type of modem.

NOTE: If you are using the HP-71 display you may at times see unusual characters. This is due to the fact that The Source sends control characters for which the HP-71 has assigned displayable characters. You can ignore these characters.

At the end of this appendix is a section on transferring mail to and from The Source and an HP-71 text file.

USING AN ACOUSTIC MODEM

These examples show the procedures for logging on to The Source using an acoustic modem (also called an acoustic coupler), and Telenet.

Using Telenet

First, enter terminal mode by pressing [T] in the main menu:

```
MENU* CDEFHLPQSTUVX? [T]
TERMINAL-[f/] TO EXIT
```

Dial your local Telenet number. When you hear the tone of the host computer, place the receiver into the acoustic modem, making sure the handset is correctly oriented. Then press:

[END LINE] [END LINE]

When you see the Terminal prompt, press [END LINE] again. Then enter the Source log on, followed by [END LINE]. (The xx represents the Source system number. Enter the appropriate

number.) When you see the angle prompt >, enter your user ID and password.

```
Terminal = [END LINE]
@C 301 xx [END LINE]
301 xx CONNECTED
Connected to THE SOURCE
> ID uuuuuu ppp [END LINE]
```

You are now ready to enter Source commands. If you have any questions concerning the log on procedure, check your Source user's manual for further information.

Using Auto Log On

In this example the special code word SLO2 (for use with Telenet) is used to automatically log on to The Source. This code word is found in setup file SETUPA1. Before using this code word, you must modify it to include your user ID and password, and the appropriate Source system number. (Modifying special code words is discussed in section 4.)

To use a special code word, first press [S] in the main menu, then enter the code word. Do not press the [END LINE] key yet!

```
MENU* CDEFHLPQSTUVX? [S]
ENTER CODE WORD: SLO2
```

Next dial the local Telenet number. When you hear the tone of the host computer, insert the receiver into the modem, making sure the handset is correctly oriented.

Now press [END LINE].

The special code word contains all of the information necessary to log on. You should not have to type anything else until you see the prompt: Enter item number or HELP.

USING AN AUTO-DIAL MODEM

These examples show how to use an auto-dial modem with Telenet to access The Source.

Using Telenet

Before doing this procedure, be sure the DIAL line in your setup file is configured for the modem you are using.

To use an auto-dial modem, first press [D] in the main menu, then enter the local Telenet phone number. (If you have defined a special code word to represent that number, you may enter that

instead of the number.) After the word CONNECT appears, press [END LINE] twice. When prompted for the terminal, press [END LINE] again. Then enter the Source log on. (The xx represents the Source system number. Enter the appropriate number.) When you see the angle prompt >, enter your user ID and password.

```
MENU* CDEFHLPQSTUVX? [D]
PHONE CODE OR NO.: 5555555 [END LINE]
Please wait ...
TERMINAL-[f/] TO EXIT
ATDT55555555
CONNECT
[END LINE] [END LINE]
TERMINAL = [END LINE]
@C 301 xx [END LINE]
301 xx CONNECTED
Connected to THE SOURCE
> ID uuuuuu ppp [END LINE]
```

You should now be able to enter Source commands. If you have any questions about the log on procedure, check your Source user's manual for further information.

Using Auto Log On

In this example the special code word SLO2 (for use with Telenet) is used to automatically log on to The Source. This code word is found in setup file SETUPR1. Before using this code word, you must modify it to include your local Telenet phone number, your user ID and password, and the appropriate Source system number. (Modifying special code words is discussed in section 4.)

To use a special code word, first press [S] in the main menu, then enter the code word and an [END LINE]:

```
MENU* CDEFHLPQSTUVX? [S]
ENTER CODE WORD: SLO2 [END LINE]
Please wait...
```

You should see a series of characters on your display. The special code words contain all of the characters necessary to log on. You should not have to type anything else until you see the prompt: Enter item number or HELP.

SAVING "MAIL" FROM THE SOURCE IN A TEXT FILE

This example shows how to transfer text from the host computer to an HP-71 text file. For the purpose of this example, suppose that there is a letter for you on The Source that has the subject title MAIL. To transfer this letter from The Source to a text file in the HP-71 you would type the following:

```
-> MAIL READ [END LINE]
```

```
VERSION 6.47 SOURCEMAIL
<S>end,<R>ead,<SC>an,<D>isplay, or <Q>uit? R [END LINE]
SUBJECT: MAIL
--MORE-- [Y]
```

Do not press [END LINE] yet! You must set up the text file in the HP-71 first, and then press [END LINE] to start receiving the mail:

```
[f] [6]
INPUT OR OUTPUT?(I/O) [I]
ENTER FILE NAME: SMAIL [END LINE]
INPUT ([f/] TO EXIT) [END LINE]
```

The letter will now be saved to a text file called SMAIL.

To stop the transfer at any time, press [f] [/].

TRANSFERRING A TEXT FILE FROM THE HP-71 TO THE SOURCE

In this example an HP-71 text file called LETTER is transferred to another user of The Source. The LETTER file must be created prior to starting the transfer process. To make sending the file simpler, the last line of the text file should be:

.S

which causes the letter to be sent once The Source receives it.

After you have created a letter, log on to The Source. When prompted for the T0: enter your friend's user ID. You can enter a subject of your choice. When you are prompted to Enter text:, you must prepare the HP-71 to output the file.

Press [f] [6] to transfer a file. Specify 0 to output a file and enter the file name.

```
-> MAIL SEND
VERSION 6.47 SOURCEMAIL
To: uuuuuu [END LINE]
Subject: NEWS [END LINE]
Enter text: [f] [6]
INPUT OR OUTPUT?(I/O) [0]
ENTER FILE NAME: LETTER [END LINE]
```

The LETTER text file is sent to The Source. If you wish to stop the transfer before the transfer is complete, type [f] [/]. Once the LETTER is completely sent, including ".S", The Source will prompt you with:

```
<S>end,<R>ead,<SC>an,<D>isplay, or <Q>uit?
```

Appendix E

SETUP FILES FOR THE HP-3000

To use the HP-71 with the HP-3000, the setup files need to be changed. If you are using the HP 82164A HP-IL/RS-232-C interface, you will need to change the following four lines as shown:

```
IMODEM*!RSB8;C2;SW1;SS0;P2;SE0;!N
XON*0
XOFF*0
PROMPT*
```

The baud rate is optional and can be set for up to 1200 baud.

If you are using the HP 82168A acoustic coupler, the following setup file lines need to be changed as shown:

```
IMODEM*!RC0;P0;!N
PROMPT*17
```

When you exit terminal mode, DATACOMM sends an XOFF to the HP-3000. This is echoed back and interpreted as the first character of the next command. Placing a backspace (^H) at the beginning of special code words will allow you to use them with the HP-3000.

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82488-90001 English

Printed in U.S.A. 10/84