

TELCOM MANUAL

PC-8300



NEC

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PC-8300

TELCOM MANUAL

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Signs, Symbols and Warnings

The following signs, symbols, and warnings will be found throughout the FC-8300 TELCOM Manual.

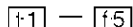
BOLD FACE CAPS Type in the command or text exactly as written.



RETURN key



Shift key



Function keys



Control key

The CTRL (control) key is never used alone. For example when you see **CTRL Q**, hold down the CTRL key while typing the letter Q.



“CAUTION”



“REMEMBER”

THIS REPRESENTS YOUR COMPUTER SCREEN

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CHAPTER 1

INTRODUCING TELCOM

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1.1 INTRODUCTION TO TELCOM

TELCCM is a ROM-based telecommunications program built into the PC-8300. This program is powerful, versatile and easy to use. Using either the optional 300 baud Modem Card PC-8361A or the built-in RS-232C interface, practically every method of data communication is possible.

1.2 LOOKING AT TELCOM

The TELCOM program allows you to communicate with other computers to upload or download files, access interactive data base or electronic data services, or to perform terminal emulation applications. For example, the PC-8300, using TELCOM, can be connectec directly to another personal computer to upload or download text files, such as those created using the PC-8300's ROM-based TEXT program. Access to electronic data services or data bases using the telephone system is easy with the special automatic dial and automatic logon capabilities of TELCOM. In addition, using the optional Modem Card, TELCOM will automatically dial telephone numbers for normal voice to voice communication.

1.3 FEATURES OF TELCOM

The TELCOM program makes it easy for you to set up the PC-8300 for your data communication session. Communication parameters can be changed to a new format. This new format, which is saved in memory, becomes the default value the next time that TELCOM is used. The PC-8300 offers true portability wher the optional 300 baud Modem Card is installed.

With the Modem Card installed the TELCOM program provides automatic dialing capabilities either from the keyboard or from a special directory file that you create

The UPload and DOWNload commands of TELCOM supports "no protocol", XON/XOFF and the Xmodem protocol for data file transfers. The Xmodem protocol provides complete error checking routines for true data integrity. Only ASCII files that are resident in RAM can be transmitted. Files that meet these requirements are those found in the MENU that have the .DO file type designator.

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2.1 HARDWARE REQUIREMENTS

The PC-8300 offers these hardware options for data communications.

- Connection to another computer using the RS-232C interface.
- Connection to the telephone system using the optional 300 baud Modem Card PC-8361A.
- Connection to an external modem or acoustic coupler using the built-in RS-232C interface.

The general requirements for hardware are outlined below for each of these options. There may be some exceptions to these general requirements depending on the particular installation.

2.1.1 Connection to Another Computer Using the RS-232C Interface.

To connect the PC-8300 directly to another computer an RS-232C cable is required. NEC supplies the optional PC-8495A-02 RS-232C Cable (reverse). In most cases this cable is all that is needed for direct computer to computer communications. There may be, as outlined below, exceptions to the use of these cables depending on the particular application.

A. To connect the PC-8300 to an NEC PC-8801A, PC-8401A or PC-8201A Personal Computer the minimum hardware requirements are:

- A PC-8300 Portable Computer
- A PC-8801A, PC-8401A or PC-8201A Personal Computer
- A PC-8495A-02 RS-232C Cable (reverse)

B. To connect the PC-8300 to an IBM PC the minimum hardware requirements are:

- A PC-8300 Portable Computer
- An IBM PC Personal Computer
- A reverse (null) RS-232C cable made especially for this operation. This cable is not supplied by NEC but is available from most computer dealers.

C. To connect a PC-8300 to an Apple //c the minimum hardware requirements are:

- A PC-8300 Portable Computer
- An Apple //c Personal Computer
- A serial printer cable available from Apple Computer, Inc., model number A9C0308

2.1.2 Connection to the Telephone Network Using the Optional PC-8361A 300 Baud Modem Card

To connect your PC-8300 to the telephone system for data communications, data base or electronic data service accessing, or voice to voice communications using the optional Modem Card the minimum hardware requirements are:

- A PC-8300 Portable Computer
- A PC-8361A 300 baud Modem Card
- A phone cable which is supplied with the Modem Card
- A telephone system that uses RJ11 modular connectors

2.1.3 Connection to an External Modem or Acoustic Coupler Using the RS-232C Interface

- A PC-8300 Portable Computer
- An external modem or acoustic coupler
- A telephone system that uses RJ11 modular connectors
- A PC-8495A-01 RS-232C Cable (normal)

2.2 STARTING TELCOM

The TELCOM program is a ROM-resident program and is displayed in the directory field of the MENU as shown below.

1985/09/01	03:45:58	(C) Microsoft #1	
BASIC	TEXT	TELCOM	.-.-
.-.-	.-.-	.-.-	.-.-
.-.-	.-.-	.-.-	.-.-
.-.-	.-.-	.-.-	.-.-
.-.-	.-.-	.-.-	.-.-
.-.-	.-.-	.-.-	.-.-
Load	Save	Name	List 28758

The MENU feature of the PC-8300 makes it easy for you to start TELCOM. Use the cursor keys or the space bar to move the directory cursor over the file name TELCOM and press . The default communication parameters will appear on the first line of the screen and the **Telcom:** prompt followed by a flashing block cursor will appear on the second line. Function key commands are always displayed on the last line. This is what the screen looks like after entering the TELCOM program.

```
8171XSP10
Telcom: █

Call   Find   Stat   Term
```

You are now in the TELCOM program and are ready to begin. Commands may be entered by typing them directly from the keyboard or, more conveniently, by pressing the appropriate function key. This section gives a very brief description of the commands and what they do. For an explanation of the communication parameters that appear when you enter the TELCOM program please see the explanation given under the STAT command. A more detailed description of each command and the communication parameters is given in Chapter 7.

CALL

The CALL command is used in conjunction with the optional 300 baud Modem Card to automatically dial a telephone number. The telephone number that you wish to call must be entered from the keyboard. Be sure that the communication parameters explained under the STAT command are set correctly for your telephone system and the type of call that you making. The CALL command can be used to automatically dial a voice or data call.

FIND

The FIND command is used in conjunction with a directory file created using the TEXT program or another word processor. Input the FIND command by pressing **[f2]** and enter the name or label of the directory entry that you want to use. You can search sequentially through the directory by entering the FIND command by itself. In this case the first directory entry will be displayed. Press **[f2]** to view the next entry in the directory. Pressing **[f3]** will now cause the previous directory entry to be redisplayed. Pressing **[↓]** will cause the current listing to be executed. If you wish to leave FIND without dialing a number press **[SHIFT][f5]** (QUIT). The directory can contain communication parameters, telephone numbers and auto-logon sequences for specific data services.

An example of using a directory file to automatically dial and logon to a remote data service is given in Chapter 4. Its use in auto-dialing voice to voice calls is shown in Chapter 5 and a complete description of how to create the directory is in Chapter 7.

STAT

The STAT command allows the user to alter the default communication parameters. The parameters are listed in the following order:

- Communications speed or "M" to select the optional Modem Card
- Party
- Word length
- Stop bit
- XON/XOFF flow control
- Shift In/Shift Out flow control
- Pulse or Tone dialing
- Pulses per second (applies only if the previous parameter is set for Pulse)
- Answer/Originate

The STAT command allows the user to modify these parameters to suit specific communication needs. To modify the parameters press **[f3]** to input the STAT command. The new parameters should be typed after STAT and in the order listed above. If the STAT command is entered with no parameters following it the default parameter setting will be displayed. The default parameter format after a cold start and a short explanation of each parameter is shown next.

8I71XSP10 (This is the default parameter string. The meaning of each character meaning is listed below as it appears in the string.)

Communication speed is 9600 bps (bits per second)

Parity ignored

Word length is 7 bits

1 stop bit

XON/XOFF is active

SI/SO flow control is active

Pulse dial

10 PPS (pulses per second)

Modem is in the Originate mode

Check the user manual of the data service that you are using for the communications parameters required. Parameters required vary from service to service. The last entered parameter setting is saved in memory and is the default setting the next time that TELCOM is entered.

TERMinal

The TERMinal command causes the TELCOM program to enter the terminal mode. The terminal mode is where you actually perform data communications operations such as uploading and downloading files, interactive electronic data service activities and terminal emulation functions.

The terminal mode has two display screens (called display pages) of eight lines each. Display page 2 is normally displayed while in terminal mode. Line eight of this display page is reserved to show the available terminal mode commands.

While you are in terminal mode all of the commands must be input by pressing the appropriate function key or **[SHIFT]** and one of the function keys simultaneously. In terminal mode there are ten commands that can be used. These commands are PREVIOUS, FULL/HALF, ECHO, UPLoad, DOWNload, BRKS, BRKL, CHR~, CHR~ and BYE.

PREVIOUS

The PREVIOUS command causes display page one to be displayed.

This page contains up to eight of the most recent lines that have scrolled off the top of the page two screen. This first screen is used for display purposes only and pressing any key will cause a return to page one. All data communications take place in page one.

Any data received while page one is being displayed will be stored in the buffer. If XON/XOFF flow control is not being used data will be lost as soon as the 128 character buffer becomes full and overflows.

FULL/HALF

[F-2] toggles the transmission format between full and half duplex. The current format is indicated by the display on line eight. In the full duplex mode data is sent only to the Modem Card or RS-232C interface and not to the PC-8300 screen. Data displayed on the screen must be echoed back to the PC-8300 by the remote computer. In the half duplex mode data is sent to the screen for display as well as to the remote computer. If you cannot see any data as it is sent or if every letter is doubled try changing the FULL/HALF setting.

ECHO

Pressing [F-3] causes the word "ECHO" to be displayed on line eight of the screen. While in the echo mode all received data is sent to both the screen and the printer that is attached to the built-in parallel port. Pressing [F-3] again causes data to be sent to the screen only.

UPLoad

The UPLoad command is used to transfer a text file in RAM out through the optional Modem Card or the RS-232C port. If [F-4] is pressed the PC-8300 will prompt you for the name of the file that you wish to transfer. This file must be a text file that is currently in RAM. Because only text files can be transferred the TELCOM program automatically searches for programs having the .DO file type extension therefore you do not have to enter the extension after the file name.

Entering a valid file name will cause the PC-8300 to ask if you wish to transfer the file using the Xmodem protocol. Both the sending and receiving computers must use the same method. Xmodem is an error checking protocol that ensures that the file is accurately transferred even over noisy telephone lines.

DOWNload

The DOWNload command is used when transferring a file from a remote computer to the PC-8300. Pressing [F-5] causes the PC-8300 to ask for a file name. Since all received files are saved as text files this function cannot be used to transfer files of other types. The downloaded file will be saved in the PC-8300 RAM and the file name will be added to the MENU.

As with the UPLoad function the user is asked if the error checking Xmodem protocol is to be used. Remember, both the sending and receiving computers must use the same file transfer protocol.

BRKS

Pressing **[SHIFT f-1]** will cause a short break signal to be transmitted.

BRKL

Pressing **[SHIFT f-2]** will cause a long break to be transmitted. Refer to the user manual of the data service that you are using for the function of these signals.

CHR`

Pressing **[SHIFT f-3]** will generate a ` (ASCII code 60H) which is not included on the PC-8300 keyboard.

CHR~

Pressing **[SHIFT f-4]** will generate a ~ (ASCII code 7EH) which is not included on the PC-8300 keyboard.

BYE

The BYE command is input by pressing **[SHIFT f-5]**. This command allows the user to leave terminal mode and return to the TELCOM menu. After inputting the BYE command the PC-8300 will prompt with "Disconnect?". Entering a \uparrow and pressing **[]** exits terminal mode and the **Telcom:** prompt is displayed.

MENU

The MENU command allows the user to exit the TELCOM program and return to the PC-8300 MENU. To input the MENU command press

[SHIFT f-5] .

CHAPTER 3

USING TELCOM WITH THE RS-232C INTERFACE

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3.1 USING TELCOM WITHOUT THE OPTIONAL MODEM CARD

The most widely used standard for serial data communication in the world is called Revision C of the EIA RS-232 standard. The PC-3300 has a built-in RS-232C serial interface that can be used to connect the PC-8300 to a variety of other devices, such as acoustic couplers, modems, other computers or terminals, printers, and other serial devices.

3.2 USING A SERIAL PRINTER

When you are not using the PC-8300 for data communications you can use the built-in RS-232C interface and the TELCOM program to print files on many serial printers. Most printers can use one of several setups so check the manual that comes with the printer for the settings particular to that printer. The following are general guidelines for using TELCOM and the RS-232C interface for direct connection to a serial printer. Unless the user manual for the printer states that a cable other than a standard RS-232C cable, such as the PC-8495A-01 Cable supplied by NEC, is required the standard cable should be all that you need.

No matter what printer you connect to the PC-3300, the computer must pass information to the printer at a certain prearranged speed, called the baud rate. Check the printer manual for the fastest baud rate that it can handle. You are now ready to set the communication parameters in TELCOM.

The following parameter settings are a general guideline, check your printer manual for specific requirements:

Baud rate	check printer manual
Parity	no parity
Word length	8 bits
Stop bits	1 bit
XON/XOFF	not active
SI/SO	active

These parameters can be entered by using the STAT command as explained in Chapter 7. Other parameters have no meaning when using the RS-232C interface and any acceptable value may be entered.

When all parameters are set you are ready to enter the terminal mode by pressing **[F4]** (TERMinal). Once in terminal mode press **[F4]** (UPload). The PC-8300 will prompt with "File to upload?". Since the TELCOM program can transfer only text files it will automatically search for files ending with the .DO file type extension. The file names "MYFILE" and "MYFILE.DO", for example, will be treated the same. If an improper name is input or the file cannot be found the PC-8300 will beep and display an "Upload aborted" message. If this happens confirm that you entered a valid file name for a text file that is stored in RAM. Disk based files cannot be transferred without loading them into RAM first.

If you entered a valid file name the PC-8300 will prompt with "Xmodem?". Answer **N** for NO to this question and continue. The PC-8300 will now prompt with "Width?". You should enter the line length that your printer can print, usually 72 or 80. After the file has been successfully printed the PC-8300 will display a message that the upload is complete. The PC-8300 is now ready to print another file or continue with another task. If the system "locks" or you want to interrupt the process press **[SHIFT][STOP]**.

3.3 TRANSFERRING FILES BETWEEN THE PC-8300 AND OTHER COMPUTERS

To connect the PC-8300 directly to another personal computer, the PC-8801A or an Apple //c for example, all that is needed in most cases is a reverse (null) RS-232C cable with the proper connectors for each computer. Hardware requirements for three example situations are listed in Chapter 2. The communication parameters of the TELCOM program and the parameters of the communications software being used with the other computer must be set to the same values. You are now ready to transfer files between the two personal computer systems.

File transfer between computer systems that are connected directly can be accomplished at a much higher baud rate (communications speed) and with fewer errors. An example of file transfer between the PC-8300 and an Apple //c would be as follows.

Connect the PC-8300 and the Apple //c using the cable described in Chapter 2. Turn on the PC-8300 and select the TELCOM program. Turn on the Apple //c and boot the communications program of your choice. Set the parameters in TELCOM to 9600 baud, no parity, 8 bit words, 1 stop bit and XON/XOFF active. The setting of the remaining parameters will not affect file transfer between the two computer systems. A complete description of the parameters and the STAT command can be found in Chapter 7. Make sure that the parameters of the Apple's program are set to the same values and you're ready to begin uploading or downloading text files.

Enter terminal mode by pressing **[f4]** . After entering terminal mode select UPload by pressing **[f4]** again. The PC-8300 will prompt with the same prompts as in the example of printing with a serial printer given just before

Remember, the TELCOM program can transfer only files that are in RAM and have the .DO file type extension. For this reason you cannot transfer machine language or other binary data files such as those having .BA or .CO file type extensions.

If a valid file name is entered the PC-8300 will prompt with "Xmodem?". You can UPload a file either with or without Xmodem as long as both computers are using the same file transfer method. Xmodem is an error checking protocol that ensures true integrity of transferred data.

Files can be DOWNloaded to the PC-8300 in the same manner. Check Chapter 7 for a description of the DOWNload command.

CHAPTER 4

USING TELCOM TO ACCESS ELECTRONIC DATA SERVICES

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4.1 INTRODUCTION TO ELECTRONIC DATA SERVICES

Electronic data services are useful for sending and receiving personal messages and letters, receiving the latest news, checking airline schedules, checking stock quotes, electronic shopping and much more. These data services are merely large data bases where data is updated by the service company. Subscribers to the electronic data services use their own computers with telecommunication programs to access the data bases.

The TELCOM program in the PC-8300 makes electronic data service access fast and easy. In addition, the optional 300 baud Modem Card allows you to use the PC-8300 for telecommunications almost anywhere.

As an example of the accessing electronic data bases, this section will show you how to use the automatic dial and automatic logon capabilities of TELCOM to access MCI Mail using the optional Modem Card.

4.2 SETTING PARAMETERS AND MANUALLY CALLING MCI

When calling a data base service always check the communication parameters that are required by that service and set the TELCOM program to those parameters.

The first parameter (baud rate) must be set to "M" if you are using the optional Modem Card.

You could use the STAT command to setup TELCOM with the correct communication parameters, enter CALL, input the local MCI telephone number and finally type each response to MCI's logon sequence from the keyboard. It is, however, much more convenient to write a directory file which will contain not only the needed parameters but also the telephone number and automatic logon sequence necessary for each of the different data services that you use.

4.3 MAKING A DIRECTORY FILE

Before you can set up a directory file that will automatically set the TELCOM parameters and automatically logon to a service you must first determine some basic facts, such as, what communication parameters are needed, what is the service's telephone number, what questions will the logon sequence ask and what responses does it expect in return. The parameters and telephone numbers should be supplied with the user manuals when you subscribe to a data service. The first time you may have to logon manually to

determine what questions to expect and how to answer them. The following is an example of how to create a directory file to automatically call and logon to MCI Mail.

What parameters are necessary?

Baud rate	M (this tells TELCOM to use the optional Modem Card)
Parity	N (no parity)
Word length	8 bits
Stop bits	1 bit
XON/XOFF	X (active)
SI/SO	N (no: active)
Pulse/Tone	P or T (set to P if you have a dial phone or T if you have a touch tone telephone)
Pulses per second	1 or 2 (if you are using a dial type phone you should set this to 1 for 10 pulses per second or 2 for 20 pulses per second depending on the telephone network)
Answer/Originate	O (this tell the Modem Card that you will "originate" the call)

Find the telephone number that you will use to access MCI. We will use **045-9999** as an example only of the local access number.

What is the sequence of events when logging on to MCI?

1. Dial the local access number.
2. Type twice.
3. At the "**Please enter your user name:**" prompt you must type your MCI user name and press .
4. At the "**Password:**" prompt you must type your password and press .

At this point you should be logged onto MCI mail.

To design the automatic dial and automatic logon sequence simply add the special TELCOM logon commands. There are only three special logon commands and they are:

- = pause for 2 seconds and then continue
- ? waits for the string following the ?. Enclose what you are expecting to receive in double quotes.
- ! Send the string after the !. Enclose what you are expecting to send in double quotes.

Control characters can be sent by preceding the letter with a ^.

4.4 AUTOMATIC DIAL AND LOGON TO MCI

Now that the directory file containing the necessary parameters, number and logon sequence needed for MCI is complete enter the TELCOM program and press **[F2]**. Type MCI, the name we used for our service in the directory file, and press **[J]**. If you enter a name that is not in the directory the PC-3300 will beep. If TELCOM finds an entry it will be displayed on the screen. After the directory entry is displayed press **[J]** and the PC-8300 will change the communication parameters and begin dialing the number. After connecting to MCI the automatic logon sequence will be executed and you are ready to send or receive messages.

```
Telcom: Find MCI
MCI:MN81XNP10:045-9999:<>
```

```
Call   Find   Stat   Term
```

CHAPTER 5

USING TELCOM FOR VOICE TO VOICE COMMUNICATIONS

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In Chapter 4 the automatic dial and automatic logon features of TELCOM when used with the optional Modem Card were explained. The automatic dial feature, along with the telephone directory feature, can also be used for voice to voice communications.

In this chapter the automatic dial and telephone directory features, and how they can be used for voice to voice communications will be explained even further.

5.1 ADDITIONAL INFORMATION ABOUT AUTOMATIC DIALING

Telephone numbers may contain punctuation and/or spaces for better readability.

For example, all of the telephone numbers below look different but result in the same telephone number being dialed.

```
312/999-9999
312 (999) 9999
312 999 9999
```

The extra characters provide better readability, especially if several numbers are stored in a telephone directory. This makes it easier to find the correct number when working with the telephone directory.

```
8I71XSP10
Telcom: Find MCI
MCI:MN81XNF10:045-9999:◊
Calling MCI: MN81XNF10:0459999:
Username? edbracha
Passw_
Call Find Stat Term
```

Some telephone systems require a short pause while switching to another line after the number that requests the switch is entered. The TELCOM pause command "=" will result in a two second pause.

For example, if you are using a PBX system that uses the number 8 to reach an outside line and the selection takes 3 seconds before the outside number can be dialed, use the format shown below.

8==0459999

The two "=" commands will cause a 4 second pause after the "8" is sent. Any number of pause commands are acceptable.

5.2 USING THE CALL COMMAND FOR VOICE TO VOICE COMMUNICATIONS

When using the automatic dialing feature for voice to voice communications follow these steps.

1. Move the directory cursor over the TELCOM file name and press .
2. Check that the communication parameters match your telephone system by pressing and then . The first parameter cannot be set to "N" as that selects the Modem Card. If you have a pulse phone the seventh parameter should be "P" and, if you are using a touch tone phone, to "T".
3. Press to input the CALL command.
4. Enter the number to be called, lift the telephone handset and press .
5. To complete the communication simply hang up the handset.

5.3 USING THE TELEPHONE DIRECTORY FOR VOICE TO VOICE COMMUNICATIONS

In Chapter 4 you learned how to create a directory file for automatic logon to a data service. The directory feature can also be used for voice to voice communications.

If one does not exist you can create a new telephone directory for voice communications or add the entries to an existing directory. The entries will all contain two lines just as they did in the previous examples. The first line is the label and the second line contains the actual telephone number. A typical entry might look like this.

NEC Home Electronics
:312 228 5900

Be sure to press after each entry. Add as many entries as you need to the directory. If you are using a PBX that requires a pause enter the "=" pause command. Because parameters are omitted remember to begin the second line with a colon.

When you finish adding entries close the file and return to the MENU by pressing **[SHIFT f:5]**.

To use the telephone directory file for voice to voice communications use the TELCOM's FIND command as shown below.

1. Start TELCOM and enter the FIND command by pressing **[f:2]**.
2. Type the name or label that you want. In this case NEC Home Electronics. If you enter a name that is not listed in the directory or if the TELCOM program cannot find a directory file the PC-8300 will beep and return to the **Telcom:** prompt.
3. When the correct entry is displayed, lift the telephone handset and press **[↓]**. The PC-8300 will immediately begin dialing the number.
4. To complete the communication simply hang up the handset.

If you hear a busy signal after dialing you must first hang up the telephone before redialing the number.

```
8I71XSP10
Telcom: Find ROBERT JONES
ROBERT JONES: :045-9999:<>
Calling ROBERT JONES: :0459999
Telcom: █

Call      Find      Stat      Term
```

CHAPTER 6

USING OTHER MODEMS AND ACOUSTIC COUPLERS

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7.1 THE CALL COMMAND

The **[F1]** (CALL) command is used to automatically dial a call using the optional Modem Card.

After entering the TELCOM program check that the communication parameter is set correctly to either "P" for Pulse dial or "T" for Tone dial depending on your telephone system. This setting is the seventh character in the abbreviated parameter listing that appears at the top of the screen after the TELCOM program is selected. If this parameter requires changing use the STAT command to do so before proceeding.

At the **Telcom:** prompt you can input the CALL command by typing it directly from the keyboard or by pressing **[F1]**. Type the number that you want to call, lift the telephone handset and press **[J]**. The optional Modem Card will begin dialing immediately. To end simply hangup the handset.

As the call is being made you can abort out by pressing **[SHIFT][STOP]**. This will return you to the **Telcom:** prompt.

7.2 THE FIND COMMAND

The **[F2]** (FIND) command is used in connection with the optional Modem Card and a telephone directory file, that you have prepared, to automatically set communication parameters, dial a telephone number, and/or execute an automatic logon sequence to a remote data service.

To use the FIND command you must first prepare a telephone directory. The TEXT program built into the PC-8300 works well for this purpose. The directory file must be named TELDIR and must appear in the MENU as a text file (a file having the .DC file type extension). Each entry in the directory will consist of two lines. The first line is the name or label of entry. The second line consists of the communication parameters, telephone number and the auto-logon sequence. Each of these entries must be separated by a colon and both lines must be ended by pressing **[J]**. The communication parameters may be omitted by simply beginning this line with a colon and then the telephone number, in fact any of the fields may be left out.

To place a call using this command press **[F2]** to input the FIND command. Type the name of the service that you want to call as it appears in your telephone directory and press **[J]**. If the TELCOM program cannot find a listing by that name it will beep and return you to the **Telcom:** prompt. If an entry is found the name and information will be displayed. Pressing **[J]** will

cause the PC-8300 to begin dialing. Press **[SHIFT][f.5]** to leave the FIND command without executing the file.



For more information on creating a directory file and the requirements for each field with-in the directory file please refer to section 4.1.

You can scan the directory sequentially entry by entry by entering the FIND command and pressing **[J]** without inputing a service name. This will cause following to happen. The first entry in the directory file will be displayed, **[f.2]** will take on the NEXT function, **[f.3]** will become PREVIOUS and **[SHIFT][f.5]** will become QUIT. Pressing **[f.2]** will cause the next entry to be displayed and **[f.3]** will redisplay the previous entry. Pressing the **[J]**

key will cause the entry that is currently displayed to be executed. If you wish to leave FIND without dialing a number press **[SHIFT][f.5]** (QUIT). If you press **[J]** the PC-8300 will respond with Calling... and dialing will begin immediately.

7.3 THE STAT COMMAND

Before you can begin data communications you must first set some basic communication parameters that control the way the PC-8300 'talks' to the other communications device, whether it is another computer connected directly to the RS-232C interface, a connection to another system through the optional Modem Card, an external modem or acoustic coupler, or a connection to a serial printer.

The default parameters can be viewed by inputing the STAT command by pressing **[f.3]** and then pressing **[J]**. If the optional Modem Card is not installed the PC-8300 will respond with a six character string. If the PC-8300 has the optional Modem Card installed a nine character string will be displayed.

To change a parameter press **[f.3]** to input the STAT command and then type the complete string including any changes that you wish to make. Press **[J]** to complete the process. If the PC-8300 beeps the string was not accepted because of an error and you must enter the complete string again.

When changing the parameters using the STAT command the screen will appear as below. Notice that all parameters, even if they will not be changed, must be input after the STAT.

```
817XSP10
Telcom: Stat
8171XSP10
Telcom: Stat MN81XNP10
Telcom: █

Call      Find      Stat      Term
```

The communications parameters shown in the string following the STAT command and the possible options for each are explained in the following pages. The parameters are listed in the same order as displayed in the string.

SPEED

This parameter selects the I/O and/or speed at which data bits are transferred. By entering a "M" the optional 300 baud Modem Card, if installed, is connected. If a number from one to nine is entered the RS-232C interface is active at the communications speed as shown below. Be sure to set the

speed to the same value as the system with which you wish to communicate.

M- selects optional 300 baud Modem Card if installed

- 1 - 75 bps
- 2 - 110 bps
- 3 - 300 bps
- 4 - 600 bps
- 5 - 1200 bps
- 6 - 2400 bps
- 7 - 4800 bps
- 8 - 9600 bps
- 9 - 19200 bps

PARITY

This parameter selects the parity values.
You may select:

- N - No parity
- E - Even parity
- O - Odd parity
- I - Ignore the parity bit. (default)

Ignore is selected only if the word length is seven bits. If eight bit words is selected then No parity is assumed if either an **I** or an **N** is entered. In this case, when sending data the parity bit is always set to 0.

WORD LENGTH

This parameter selects the number of bits per character.
You may select:

- 7 - seven bits per character
- 8 - eight bits per character (default)

STOP BITS

This parameter selects the number of stop bits. These bits signify the end of a "word" to the receiving system.

- 1 - one stop bit (default)
- 2 - two stop bits

XON/XOFF

This parameter indicates whether or not the data flow is controlled by the control-S and control-Q codes. The communications buffer of the PC-8300 is 128 bytes. A control-S (the XOFF code which is the same as pressing **CTRL S**) will be sent when the buffer is 75% full. When the buffer is 25% full a control-Q (the XON code which is the same as pressing **CTRL Q**) is sent. This prevents data overflow and the loss of such data. If OFF is selected this method of controlling data flow is not used. Because some systems cannot use the XON/XOFF method of flow control, be sure to check the service that you are using.

You may select:

- X - on (default)
- N - off

SI/SO

This parameter makes the Shift In/Shift Out sequence active or inactive. Both 7 and 8 bit word length is supported.

You may select:

- S - on (default)
- N - off

If your PC-8300 has the optional Modem Card installed the following parameters will also be displayed.

PULSE/TONE DIAL

This parameter controls the way the optional Modem Card dials a telephone number and must be set according to your telephone system.

You may select:

- P - Pulse dial (default)
- T - Tone dial

PULSES PER SECOND

This parameter is valid only if the preceding parameter was set to "P" and controls the number of pulses per second (PPS) during the dialing sequence. You may select:

- 1 - 10 PPS (default)
- 2 - 20 PPS

ANSWER/ORIGINATE

When computer systems are connected for data communications it must be agreed before communications which system will "originate" the communication and which will "answer". This is because the originate and answer frequencies are different allowing full duplex operation over one line. You may select:

- A - The modem uses the Answer frequencies
- O - The modem uses the Originate frequencies (default)

7.4 THE TERM COMMAND

It is in the terminal mode that all data communications actually take place. Press **[F4]** to enter terminal mode. The last line of the screen will now show the subcommands that are available while in the terminal mode. These subcommands can only be executed by pressing the appropriate function key. The subcommands and their functions are as follows:

PREVIOUS **[F1]**

This causes the screen to display the immediate last eight lines that have scrolled off the top of the screen. Data communications do not take place in the "window" and, if XON/XOFF flow control is not being used, any data that is received during this time will be lost as soon as the communications buffer overflows. If possible momentarily stop communications by sending the XOFF character (**[CTRL S]**) to tell the other computer system to stop transmitting. You can signal the other system to begin transmitting again by sending the XON character (**[CTRL Q]**). Pressing any key will cause a return to the original screen and data communications can continue.



After using the PREVIOUS command in TELCOM the parameters of TEXT PRINT are initialized to the default values. If special settings are necessary they will have to be reset the next time that TEXT PRINT is to be used.

CHR~ [SHIFT] f.4

This function causes the PC-8300 to transmit a ~ (ASCII code 7EH). This function is included because this character is not included on the PC-8300 keyboard.

BYE [SHIFT] f.5

Pressing this function allows you to leave terminal mode and return to the TELCOM menu. After pressing [SHIFT] f.5 you will be prompted with "Disconnect?". Answer **y** if you really want to terminate the connection with the other system and return to the menu.

7.5 THE MENU COMMAND

The MENU command can be entered by pressing [SHIFT] f.5 while in the TELCOM menu. Executing this command allows you to exit the TELCOM program and return to the MENU of the PC-8300.

After returning to the MENU you can select another program or do other work with your PC-8300.

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ESC +	ASCII Code (decimal)	Function
Q	27,81	Displays the cursor
T	27,84	Displays function keys
U	27,85	Hides function keys
V	27,86	Freezes the display
W	27,87	Starts scrolling
Y <y> <x>	*	Moves the cursor to the designated location
j	27,106	Clears the screen
p	27,112	Changes the display to inverse
q	27,113	Restores normal display (changes inverse to normal)
i	27,108	Clears the line that the cursor is currently on

* ESC + Y <y> <x>



The cursor position is designated by the horizontal and vertical coordinates (x and y) respectively.

Characters and capital letters beginning at ASCII code 32 are used in the coordinate designation. A space corresponds to 0, the exclamation point (!) corresponds to 1, etc. Refer to an ASCII code chart for the complete list.

To move the cursor to the home position (coordinate 0,0), for example, you would input the following string:

ESC Y SPACE SPACE



In Terminal mode, when  is pressed, only the carriage return code (decimal 13) is transmitted. The line feed code (decimal 10) is NOT transmitted. When the carriage return code is received a new line is not started. If the computer system that you are connected to requires the line feed code the user must input  to actively perform a line feed.

The line feed code is transmitted when using the UPLoad function to transmit a file.

APPENDIX C

TELCOM MESSAGES

File to Upload? uploaded.	User asked to input the name of the file to be uploaded.
File to download?	User asked to input the name of the file to be downloaded.
Xmodem?	User asked whether Xmodem file transfer protocol is to be used or not.
Width?	User asked to input length in characters of each line to be transmitted.
Disconnect?	User asked to confirm that session is complete and to exit terminal mode.
Continue?	User asked whether or not to continue the current process.
Calling	Auto setup, auto dial and/or auto login is in progress as a result of the FIND command.
Calling...	TELCOM is dialing a number as a result of the CALL command.
No file	Requested file not found.
No carrier canceled.	No carrier detected. Terminal mode
Upload aborted	Upload was aborted.
Download aborted	Download was aborted.
Short break generated	Short break signal (0.3 sec) was generated.

Long break generated	Long break signal (3.5 sec) was generated.
Synchronizing... started.	Synchronization for Xmodem file transfer has started.
Received block n	Packet reception was successful.
Sent block n	Packet transmission was successful.
Receive retry n	Packet reception was not successful.
Send retry n	Packet transmission was not successful.
Receive cancelled	Sender received CANCEL signal.
Send cancelled	Receiver sent CANCEL signal to terminate transmission.
Reporting end of transmission	EOT (End Of Transmission) signal was received.
Reported end of transmission	EOT (End Of Transmission) signal was sent to signal that there is no more data to be sent.
Illegal data	Illegal data was received.
Illegal response	Sender received an illegal response from the remote computer.
Timeout time limit.	A response from the remote computer system has not been received within the specified
Completed	Xmodem file transfer completed.

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