

# ATARI® **SX212**<sup>TM</sup> Modem

For use with all ATARI®,  
IBM®, IBM-compatible, and  
RS232-equipped computers.



Owner's Manual

## IMPORTANT INFORMATION

Like any electrical appliance, the ATARI SX212 Modem uses and produces radio-frequency energy. If not installed and used according to the instructions in this manual, the equipment may cause interference with your radio and/or television reception.

If you believe that this equipment is causing interference, try switching it on and off. If the interference problem stops when the equipment is switched off, then the equipment is probably causing the problem. With the equipment switched on, you may be able to correct the problem by trying one or more of the following measures:

- Adjust the position of the radio or television antenna.
- Reposition the equipment in relation to the radio or television set.
- Plug the equipment into a different wall outlet so that the equipment and the radio or television set are connected to different branch circuits.

If necessary, consult your ATARI Computer retailer or an experienced radio-television technician for additional suggestions.

A resource that you may find helpful is a booklet prepared by the Federal Communications Commission (FCC): **How to Identify and Resolve Radio-TV Interference Problems**. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

**WARNING:** This equipment has been certified to comply with the limits of a Class B computing device, pursuant to Subpart J of Part 15 of the FCC rules. These rules are designed to provide reasonable protection against such interference when the equipment is used in a residential setting. However, there is no guarantee that interference will not occur in a particular home or residence. Only the computing devices that have been certified to comply with the Class B limits may be attached to this equipment. Operation of noncertified devices with this equipment is likely to result in interference with radio and television reception. Shielded cables must be used on all I/O connectors; otherwise, radio emission may exceed Class B limits.

**PLEASE NOTE:** Every effort has been made to ensure the accuracy of the product documentation in this manual. However, because Atari Corporation is constantly improving and updating its computer hardware and software, we are unable to guarantee the accuracy of printed material after the date of publication and disclaim liability for changes, errors, or omissions.

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## **SPECIAL INFORMATION REGARDING TELECOMMUNICATIONS DEVICES**

This device has been granted a registration number by the FCC under part 68 of the FCC rules for direct connection to telephone lines. In order to comply with these rules, you must carefully read the following instructions and completely adhere to applicable portions:

1. Direct connection of this device to the telephone lines may be made only through the standard plug-ended cord furnished to the utility-installed jack. No connection may be made to party or coin-operated phone lines.
2. Prior to connecting the device to the telephone lines, call your telephone company and tell them that you have an FCC-registered device that you wish to connect to their telephone lines. Give them the number of the line(s) used, the make and model of the device, the FCC registration number, and the ringer equivalence number. You will find this information on the device itself or enclosed with its instruction manual, as well as the jack suitable for your device.
3. After the telephone company has been advised of the above, you may connect your device to the phone lines only if the proper jack is available, or after the telephone company has made the installation.
4. Repairs to the device may be made only by the manufacturer or its authorized service agency. This applies at any time during and after the manufacturer's warranty on the device. If any unauthorized repair is performed, FCC registration, connection to the phone lines, and the remainder of the manufacturer's warranty are rendered null and void.
5. If, through abnormal circumstances, this device causes harm to the telephone lines, you should disconnect the device from the lines until it can be determined if your device or the telephone lines is the source of the trouble. If your device is the cause, it should not be reconnected until necessary repairs are made.
6. Should the telephone company notify you that your device is causing harm to their lines, you should disconnect the device immediately. The telephone company will, where practical, notify you that temporary discontinuance of service may be required. However, where prior notice is not practical, the telephone company may temporarily discontinue your phone service, if such action is necessary. In such cases, the telephone company must: (a) promptly notify you of such temporary discontinuance; (b) afford you the opportunity to correct the condition; and (c) inform you of your right to bring a complaint to the FCC under their rules and guidelines.
7. The telephone company may make changes to its facilities, equipment, operations, or procedures when such action is reasonably required in its business and is not inconsistent with FCC rules. If such changes are expected to render any customer's telecommunications device incompatible with telephone company facilities, or would require the modification of the device, or would materially affect its performance, adequate written notification must be given to the user so that the user may enjoy uninterrupted service.

# **ATARI<sup>®</sup> SX212<sup>™</sup>** **Modem**

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Owner's Manual

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# INTRODUCTION



The ATARI SX212 Modem is a high-speed telecomputing device that allows you and your computer to communicate with a rapidly expanding world of online information resources.

The SX212 offers a host of advanced features that ensures fast, easy connection to the phone lines and direct, multispeed communication with timesharing services, bulletin board systems, information networks, or other personal computer owners.

The SX212 Modem is compatible with the Bell 103 and 212A industry standards. That means it operates at 75–300 or 1200 bits per second (bps), automatically configuring itself to the operating speed of the modem it's communicating with.

You can use the SX212 to dial a call from your computer keyboard or to automatically answer calls placed by another modem. It operates with Touch-Tone™ and pulse (rotary) dialing systems.

Among the SX212's key features are:

- Hayes® AT™ command-set compatibility
- Built-in speaker with adjustable volume for call monitoring
- RS232 and ATARI SIO port interfaces
- Auto-dial and auto-answer capabilities
- Bell 103 and 212A compatibility (300 and 1200 bps operation)

## Using the Manual

Installing and using your new modem is easy, but there are a few things you should know about your modem before you use it. This manual has been prepared for users at all levels of ability. Whether you are a novice or experienced computer user, you'll easily find the information that suits your needs.

The following outline summarizes the contents of the manual:

**Chapter 1, Getting Started**, describes the equipment you need and how to connect your modem. It shows you step-by-step how to hook up the modem to an ATARI Computer, as well as an IBM, IBM-compatible, or RS232-equipped computer. All users should read this chapter and follow the steps to hook up their modem. You'll also find information on the modem's front panel indicator lights.

**Chapter 2, Getting Yourself Online**, describes how to get online and communicate with a telecommunications service using a communications software program. The chapter also describes how to use modem commands to dial, answer, and disconnect a call, as well as how to perform other communications functions. A table listing all the dialing and operating commands supported by the modem is provided.

**Chapter 3, Programming Your SX212 Modem**, describes how to use programmable options and S registers to customize the operation of your modem. This information is provided for people writing their own communications programs or using their modem in nonstandard applications. Tables listing all the programmable options and all the S registers are provided.

**Chapter 4, Troubleshooting and Preventive Maintenance**, provides simple solutions to possible problems and some helpful hints about the care and maintenance of your modem.

**Appendix A, Connector Pin Assignments**, lists the pin-out descriptions on the RS232 and ATARI SIO ports on the back of the modem.

**Appendix B, ASCII Character Table**, lists the decimal and hexadecimal character codes for the SX212 Modem's extended ASCII character set.

**Appendix C, SX212 Modem Specifications**, summarizes the modem's modulation schemes, carrier frequencies, telephone line connections, and electrical specifications.

**Appendix D, Modem Messages**, lists the messages displayed by the modem in response to commands.

The **Glossary** provides definitions of telecommunications words and terms used in the manual that you may not be familiar with.

An **Index** is included at the back of the manual.

**Customer Support** tells you how to get more information about your SX212 Modem.



# CHAPTER 1

## GETTING STARTED



### Required Equipment

Before you can connect your modem to the telephone line and your computer, you will need the following equipment:

- Shielded RS232 cable with one male and one female DB-25 connector (or a DB-9 connector for an IBM PC AT computer), or an ATARI SIO cable (if connecting the modem to an ATARI XE™, XL™, or 800™ Computer).
- Modular phone cable with 4-pin RJ11C-compatible plugs at each end.
- "Y" adapter (if you plan to connect your modem and telephone to the same phone jack).

You can purchase an ATARI SIO cable from your ATARI Computer retailer and the other items from almost any electronics supply store.

Before you can get online with a telecommunications service, you will also need a communications software program designed specifically for your type of computer. Such programs, sometimes called "terminal emulation" programs, allow your modem to communicate over the phone lines with another modem. See your computer retailer for a program compatible with your computer, or contact your local user's group for free public domain software programs.

**Note:** If you have an ATARI ST™ Computer, you can use the VT®52 Emulator available through the GEM™ desktop to dial and get online with another computer. This emulator program is not a full-featured communications program, however, and you may not be able to use all of the options available from most information networks, such as sending and receiving files. See **Using the VT52 Emulator on an ATARI ST Computer** in Chapter 2.

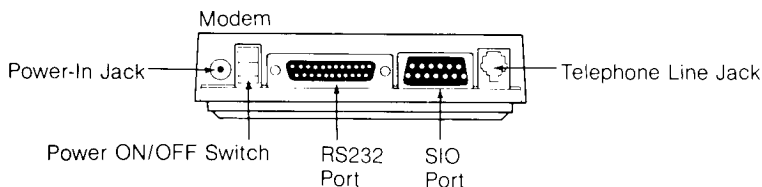
## Connecting the Modem

When choosing a location for your SX212 Modem, avoid places that expose it to dust, grease, extreme temperatures, or high humidity. You should place your SX212 Modem near the computer and a readily accessible phone jack.

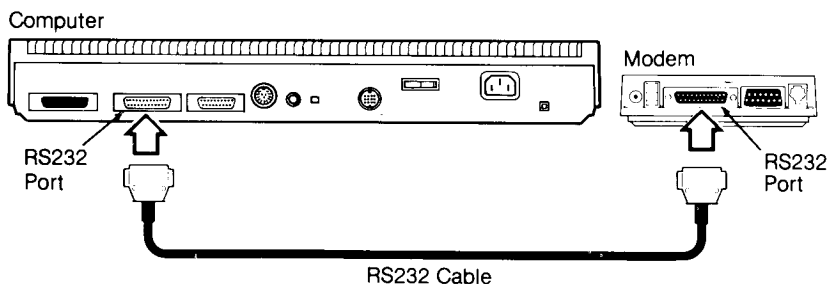
**Note:** If you have an ATARI Disk Drive, you can place the modem on top of the drive and the phone on top of the modem if you wish.

Arrange the components securely on a firm, level surface and follow the instructions below:

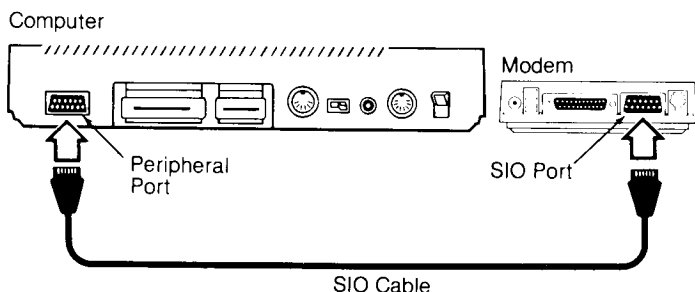
1. Make sure all the components of your computer system are off and that the ON/OFF switch on the back of the modem is in the OFF (or **O**) position.



2. For ATARI ST, IBM, IBM-compatible, or RS232-equipped computers, plug the pronged end of the RS232 cable into the port marked RS232 on the back of the modem. Plug the other end into a 25-pin serial port (or a 9-pin port on an IBM PC AT) on the back of your computer or terminal. This port may be labeled RS232 or MODEM, depending on the type of computer or terminal you own.

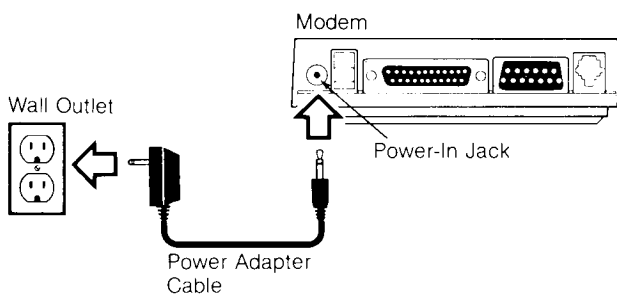


For ATARI XE, XL, or 800 Computers, plug an ATARI SIO cable into the port labeled SIO on the back of the modem. Plug the other end into the port labeled PERIPHERAL on the back of your computer or into a free port on the back of a disk drive or other ATARI peripheral.



**Note:** If you are connecting your SX212 Modem to an ATARI 800XL™ Computer, you cannot operate the modem and a cassette recorder at the same time. Remove the recorder before using the modem.

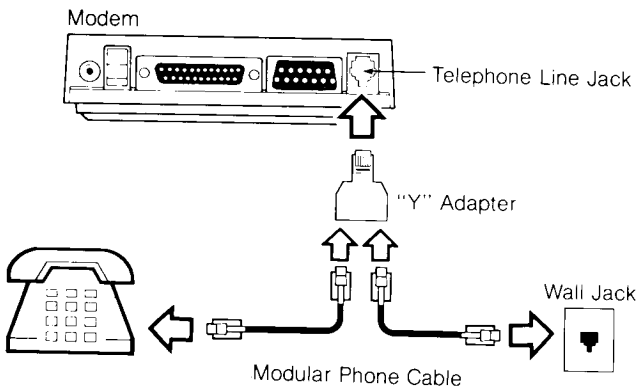
3. Plug the small round plug at the end of the power adapter cable into the power-in jack on the modem. Then plug the small black box at the other end of this cable into a properly grounded wall outlet.



4. Now connect the modem to the telephone line. How you do this depends on whether you plan to connect your telephone to the modem, or whether you plan to bypass the telephone (which requires disconnecting it). Unless you want to use your telephone wall jack exclusively for the modem, you should connect your telephone to the modem.

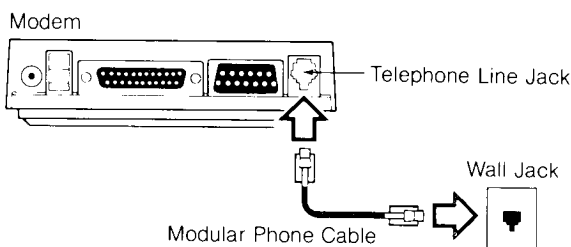
If you want to connect your telephone to the modem, follow these steps:

- Plug the single connector end of the "Y" adapter into the telephone line jack on the back of the modem. This leaves two identical connectors available for modular phone plugs.
- Unplug the telephone cable from its wall jack and plug it into one of the connectors on the "Y" adapter.
- Plug one end of a modular phone cable into the free connector on the "Y" adapter.
- Plug the other end of the modular phone cable into the telephone wall jack.
- Pick up the telephone handset and listen for a dial tone. If you can't hear it, check the connections you made, then try again.



If you want to bypass the telephone, follow these steps:

- Unplug the telephone cable from its wall jack.
- Plug one end of a modular phone cable into the telephone line jack on the back of the modem.
- Plug the other end of the modular phone cable into the telephone wall jack.



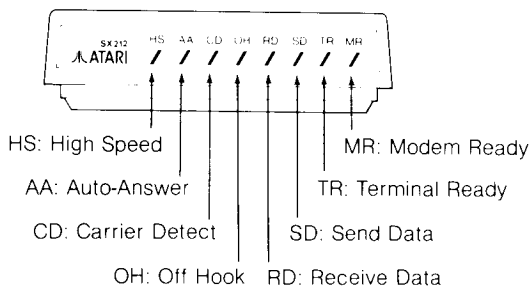
Your modem is now installed and ready to use. (See **Chapter 2, Getting Yourself Online**, for instructions on using your modem.)

## **Adjusting the Volume of the Modem's Speaker**

Your modem's built-in speaker allows you to listen in when the modem places a call so you can hear the dial tone, the carrier signal, and other tones while the call is being made. If you want to adjust the volume of the speaker, turn the recessed screw on the bottom of your modem using a flathead screwdriver. Turn the screw clockwise to increase the volume, counterclockwise to decrease the volume.

## The SX212 Modem's Indicator Lights

The front panel of the SX212 Modem contains eight LED (light-emitting diode) indicator lights that let you see at a glance the status of the modem. These lights come on when you perform certain functions with your modem.



HS (High Speed) indicator is on only when the modem is operating at 1200 bps. The modem automatically operates at 1200 bps unless you change the speed setting in your software program or when the modem answers a call at a lower speed.

AA (Auto-Answer) indicator is on when the modem has been set to automatically answer an incoming call (see **Chapter 2, Getting Yourself Online**).

CD (Carrier Detect) indicator is on when a connection is established with another modem over the telephone line.

OH (Off Hook) indicator is on when the modem is using the phone line. Off hook is the equivalent of lifting the phone's handset up and off the receiver buttons.

RD (Receive Data) indicator flashes when the data received from another modem is transferred from your modem to your computer or terminal. The indicator is also illuminated when the modem “echoes” your commands and displays them on the screen.

SD (Send Data) indicator flashes whenever you send data or commands to the modem.

TR (Terminal Ready) indicator is on when your computer or terminal is ready to send or receive data. The modem must receive a terminal ready signal before it can execute commands and exchange data. This signal must be supplied by the computer or terminal.

MR (Modem Ready) indicator comes on and stays on when the modem is turned on.

When your computer and modem are properly connected and your modem is turned on, the TR, MR, and HS (if you are using 1200 bps) lights are on. When you dial a call, the OH light comes on, and when a connection is established with another computer, the CD light comes on.

## CHAPTER 2

# GETTING YOURSELF ONLINE



Once your modem is installed and connected to your computer and the telephone line (see **Connecting the Modem** in **Chapter 1**), you'll need to load a communications software program to get online.

Most computer retailers carry a wide variety of communications programs that offer a range of features, such as automatic dialing and the capability of sending and receiving files. Your retailer can help you choose a program that is compatible with your computer and your special needs. Or, contact your local user's group for information on free public domain communications programs.

To use the program, simply follow the loading procedure described in the user's guide that came with your software.

What appears on your screen will depend on your particular software program. Usually, a menu is displayed listing the program options. Generally, you will use these options to perform all your communications functions, such as setting up your system, dialing a call, answering a call, and disconnecting a call. However, if your program supports a "terminal" or local command mode, you can also communicate directly with your modem by issuing commands to perform these functions. (These commands are described later in this chapter under **Using Modem Commands**.)

### Setting Up the System

Before you can get online, you will first need to set several communications parameters to match the system you are calling. These parameters include:

- Communication speed—either 300 bps or 1200 bps
- Parity—either odd, even, or none
- Character length—either 5, 6, 7 or 8 data bits
- Number of stop bits—either 1 or 2
- Number of start bits—either 0 or 1

**Note:** If you are using your modem to answer an incoming call, the modem automatically adjusts the communication speed to match the calling system.



You can obtain the appropriate settings for these parameters from the telecommunications service with which you wish to communicate. To make the settings on your computer, follow the instructions in your software user's manual. A typical setting is 1200 bps, 8 data bits, no parity, and 1 stop bit. (If you are using a terminal instead of a microcomputer, the settings may have to be made with hardware switches.)

## **Using the VT52 Emulator on an ATARI ST Computer**

The VT52 Emulator is a communications program that comes as a desk accessory on the ST Language disk with most ATARI ST Computers. The program (with the filename EMULATOR.ACC or DESK2.ACC) is an industry-standard telecommunications terminal program that is most useful for communicating with large multi-user systems. You can use it, for example, to read and send electronic mail and receive other types of information.

To use the VT52 Emulator, follow these steps:

1. With your ST Computer switched off, insert your ST Language disk (or any bootable disk that contains the EMULATOR.ACC or DESK2.ACC file) into drive A and switch on your computer.
2. Select VT52 Emulator from the Desk menu.
3. Press **[Help]** to view the RS232 Port Configuration dialog box, which displays the options for setting several communications parameters.
4. Select the communications parameters that match those of the system you want to call by clicking in the appropriate box. For example, select 1200 next to "Baud Rate" to communicate at 1200 bps.
5. Click on the OK button when you are ready to get online.

You are now in the local command mode and can enter commands to dial a call or perform other functions. (See **Using Modem Commands** later in this chapter.)

## Communicating Online

When you've set the communications parameters to match those of the system you are calling, you are ready to get online. You can use your SX212 Modem to communicate with a telecommunications service or to exchange data with a friend who has the proper equipment.

1. Turn on your SX212 Modem by pushing the ON/OFF switch on the back of the modem to the ON (or **I**) position. The TR (Terminal Ready) and the MR (Modem Ready) lights should be on.
2. Dial the number of the service or friend you wish to contact. Follow the dialing instructions in your software user's guide, or see **Using Modem Commands** later in this chapter to issue dialing commands directly to the modem. The OH (Off Hook) light comes on and the modem's built-in speaker lets you hear the progress of your call, including the dial tone, carrier signal, and other tones.
3. When you are online, you will be informed that a connection has been made and the CD (Carrier Detect) light will be on. If you receive a prompt such as NO CARRIER, your call was not completed because the phone line to the modem was improperly connected, the telephone was busy, the call was not answered, or there was no modem at the access number. Check your cable connections and the accuracy of your telephone number and try dialing again. (If you still encounter problems, see **Chapter 4, Troubleshooting and Preventive Maintenance**.)
4. When a connection is made to a telecommunications service, type the appropriate command (available from the service or its user's guide) for logging on to the system. Prompts are usually displayed on your screen telling you how to gain access, such as entering your user ID and password, and how to use the service. In some systems, you may be required to press **[Return]** after answering the prompts.

When a connection is made to a friend's system, you can send messages back and forth by typing characters on your keyboard, or you can send and receive files. See your software user's guide for instructions.

5. To end your communications session, use the service's log-off procedure (to ensure that you will be billed only for the time actually spent online), or let your friend know you are finished by typing a message (such as "bye").

6. Disconnect the call using the options in your software program or by issuing the appropriate modem command (see **Using Modem Commands** below). The OH (Off Hook) and CD (Carrier Detect) lights will go off. (You can also disconnect the call by turning your modem off.)

In addition to dialing calls, your SX212 is also capable of automatically answering a call. See your software user's guide for instructions on using this feature.

## Using Modem Commands

After you've loaded your communications software program, you can operate your modem by typing commands rather than using the program options. Entering commands in the terminal or local command mode allows you to communicate directly with your modem before, after, and even during online communication.

**Table 1** (on page 16) includes a complete list of all the dialing and operating commands supported by your SX212 Modem, with an example in parentheses of how to type them in. (See **Chapter 3, Programming Your SX212 Modem**, for information on the programming commands.)

The sections that follow describe how to use these commands to dial, answer, and disconnect a call and to perform other communications functions.

### Dialing a Call

1. Load your communications software program.
2. Make sure your modem is turned on and the MR (Modem Ready) and TR (Terminal Ready) lights are on.
3. If you are using tone dialing, type ATDT in uppercase letters. If you are using pulse (rotary) dialing, type ATDP in uppercase letters. On the same line immediately following the command, type your telephone access number (up to 38 characters) with or without punctuation. (For example: ATDT5551212.) If you make a mistake, press [**Backspace**] to erase one character at a time. Then press [**Return**].

You should hear the progress of your call through the modem's speaker if the volume level is set.

## Answering a Call

You can set your SX212 Modem to automatically answer an incoming call. This feature is convenient when you're away from your computer but you or a friend wants to access your system. The modem automatically adjusts the communication speed to match the speed of the calling system—either 300 bps or 1200 bps.

1. Load your communications software program.
2. Make sure your modem is turned on and the MR (Modem Ready) and TR (Terminal Ready) lights are on.
3. Type the command `ATS0=4` and press **[Return]**. An OK message will appear on your screen indicating that your modem is accepting the command from you. The modem will answer all incoming calls on the fourth ring.

**Note:** If your modem does not respond, check your cable connections and try again.

To cancel automatic answering, type the command `ATS0=0` and press **[Return]**. An OK message will appear on your screen. (See **Chapter 3, Programming Your SX212 Modem**, for more information on this S register command.)

## Disconnecting a Call

Once you are connected to another modem over the telephone line (online), the only command your modem will recognize is the escape command, which returns you to the local command mode. This command is convenient when you need to communicate with your modem during a telecommunications session; for example, to disconnect the call from a service that does not have a specific log-off procedure.

**Warning:** If you are online with a telecommunications service that has a specific log-off procedure, use it to disconnect the call. Otherwise, you may be charged for the time it takes the remote system to discover that you have disconnected the call.

1. Type the escape command `+++`.
2. Type the command `ATH` and press **[Return]** to disconnect a call. (See **Chapter 3, Programming Your SX212 Modem**, for more information on this command.)

**Note:** Your SX212 Modem will automatically disconnect a call whenever the carrier signal is lost; for example, when the other system disconnects the call.

**TABLE 1 MODEM COMMANDS**

COMMAND	FUNCTION (example)
A	Instructs the modem to go off hook and transmit a carrier signal so that the modem automatically answers an incoming call. (ATA)
A/	Repeats the last command you entered, allowing you to redial a telephone number after receiving a busy signal. (A/)
AT	Prepares the modem to receive your commands and must precede all commands except A/ and + + +. (AT)
D	Tells the modem to dial the telephone number that follows. (ATD5551212)
O	Returns you online without disconnecting the call. (ATO)
P	Instructs the modem to use pulse dialing. (ATDP5551212)
R	Reverses, or changes, the originate mode of your modem to answer mode after dialing a call. (ATDP5551212R)
T	Instructs the modem to use tone dialing. (ATDT5551212)
Z	Resets the modem to its default settings. (ATZ)
, (Comma)	Instructs the modem to pause while dialing (to wait for a second dial tone) allowing you to place a call through a switchboard or PBX. (The default is 2 seconds, set by S register 8.) (ATDT9,5551212)
! (Exclamation point)	Transfers your call to an extension number that follows it in a dial command. (ATDT9,5551212!9876)
+ + + (Pluses)	Puts you in local command mode while you are online so you can communicate directly with your modem without disconnecting a call. ( + + + )

## Performing Other Functions

In addition to the commands described for dialing, answering, and disconnecting a call, your SX212 supports other commands that provide flexibility and convenience when operating your modem. These commands allow you to change your modem from originate mode to answer mode (necessary when you call an originate-only modem), repeat the last command without retyping, return online from local command mode without disconnecting the call, reset the modem to its default settings, and place a call through a switchboard or PBX. These commands, which must be prefixed with the AT command, are described below.

### A

The A command allows you to put your modem in answer mode after making a connection. In order for two computers to communicate, one modem must be in originate mode; the other in answer mode. When you dial, or originate, a call, your SX212 Modem is by default in originate mode. You can change to answer mode after dialing a call by appending A at the end of the dial command or by typing ATA. The modem will immediately answer the call without waiting for a ring.

### A/

The A/ command repeats the last command you entered. It is especially useful to redial a phone number after receiving a busy signal. Type A/ without pressing [Return].

### AT

The AT attention command must precede all commands you enter except the repeat command A/ and the escape command + + + . This command prepares the modem to receive your command.

### D

The D command tells your modem to dial the number that follows it. This command can also be used to manually answer a call in originate mode.

### O

The O command allows you to return online from local command mode. For example, when you are online during a telecommunications session, you can enter the local command mode by entering the escape command + + + . To return online without disconnecting the call, enter O at the end of any command or type ATO.

## **P**

The P command tells the modem to use pulse, or rotary, dialing. You can type P between digits in the telephone number to alternate between tone dialing (see the T command) and pulse dialing. The modem will then use pulse dialing until you type T.

## **R**

The R command puts your modem into answer mode when you call an originate-only modem. In order for two computers to communicate, one modem must be in originate mode; the other, in answer mode. When you originate a call, your SX212 Modem is by default in the originate mode. To reverse this to answer mode, type R at the end of the dial command.

## **T**

The T command tells the modem to use tone dialing. You can type T between digits in the telephone number to alternate between pulse dialing (see the P command) and tone dialing. The modem will use tone dialing until you type P.

## **Z**

The Z command resets the modem to all its default settings which may have been changed by previous commands. Type ATZ to reset your modem.

## **, (Comma)**

The comma command allows you to place a call through a switchboard or PBX. Enter a comma between the number that accesses an outside line (such as 9) and the telephone number. (For example: ATDT9,4155551212.) The command causes the modem to pause for two seconds (the default) and wait for the second dial tone before dialing the rest of the number. Several commas can be entered side by side to increase the delay. (The length of the delay can be changed by programming S register 8; see **Chapter 3, Programming Your SX212 Modem.**)

## **+++ (Pluses)**

The +++ escape command puts you in the local command mode while you are online so you can communicate directly with your modem without disconnecting a call. Wait at least one second after the last character is transmitted before typing +++ so that the modem has time to recognize it as the escape command. Then wait another second before typing the next command. You do not need to press **[Return]** after entering this command.

**! (Exclamation point)**

The exclamation point command allows your call to be transferred to an extension number. Type the exclamation point (!) in your dial command after the telephone number and before the extension number. This command works the same way as manually holding down the telephone's receiver buttons for one-half second.



# CHAPTER 3

## PROGRAMMING YOUR SX212 MODEM



The SX212 Modem supports a wide range of programmable options and S registers. These options and S registers allow you to change the modem's default settings and customize its operation to suit your specific communications needs. In most telecommunications situations, the defaults will not need to be changed (or can be set using a communications software program before getting online). However, if you are writing your own communications program or are using your modem in nonstandard applications, the options and S registers provide the flexibility for increasing the performance of the SX212 for special uses.

In order to program your modem, you will need to load a communications software program and enter the local command mode so you can communicate directly with your modem. Once you've loaded your program, you can type and execute the commands described in this chapter for changing options and S registers.

### Using Programmable Options

Table 2 (on page 22) lists the nine programmable options, their corresponding defaults, and the range of values that can be used with each option. An example of how to type in each command appears in parentheses immediately following the description of each option's function.

To change the value of any option, follow these steps:

1. Type the attention command AT followed by the letter of the option and the numeric value you want to set for this option; for example, ATC0. (The number you type must be within the range of values supported by the option.)
2. Press [Return] to change the option to the new value. An OK message tells you the option has been changed.

To reset the modem to its default option settings (and its default S register settings), type the command ATZ and press [Return]. (You can also reset the modem by turning it off, then on, and typing AT.)

**Note:** If you do not enter a numeric value in your command, the modem sets the value to 0.

**TABLE 2 PROGRAMMABLE OPTIONS**

Option	Function (example)	Default	Range
C	Turns the modem's carrier signal on and off. (ATC1)	1	0 = off 1 = on
E	Controls whether the command characters you type are "echoed" or displayed on your screen. (ATE1)	1	0 = not echoed 1 = echoed
H	Connects and disconnects the modem to the telephone line. (ATH0)	0	0 = on hook (automatic) 1 = off hook (manual)
I	Prompts the modem to display a product code or checksum. (ATI0)	1	0 = product code 1 = checksum
M	Controls the modem's speaker. (ATM1)	1	0 = always off 1 = on until a carrier signal is detected 2 = always on
Q	Controls whether modem messages are displayed on your screen. (ATQ0)	0	0 = displayed 1 = not displayed
V	Controls whether modem messages are displayed in words or numbers. (ATV1)	1	0 = numbers 1 = words
X	Determines which set of modem messages the modem will send. (ATX0)	0	0 = basic set 1 = extended set 4 = BUSY and NO DIALTONE messages

## The Options

### C

The C option allows you to turn the modem's carrier signal on and off. By default, the transmitter is on and the modem turns the carrier signal on and off automatically. For example, the modem turns the signal on when it originates and answers a call and when it is online. You can turn the transmitter off if you want to use your modem only for dialing calls (that you would normally dial yourself on the telephone) by typing the command ATC0.

### E

The E option lets you determine whether the characters you type while in the local command mode are displayed on the screen. Since most computers support full-duplex communication, the default is set to "echo" the command characters you type and display them on the screen. If you are using a half-duplex computer or terminal, turn the echo option off by typing ATE0.

### H

The H option lets you control how the modem goes on hook (hangs up) and off hook (uses the telephone line). By default, the modem goes off hook automatically only when it originates (dials) or answers a call; otherwise it is on hook and not using the telephone line. If you want to manually command the modem to go off hook, type ATH1.

### I

The I option prompts the modem to display one of two values—a three-digit product code that identifies the modem and its revision number, or a checksum value that is used in manufacturing to test the modem. (The checksum is a hexadecimal code for the software in the modem's ROM chip.) This option is not used for telecommunications.

### M

The M option lets you control when the modem's speaker is on. By default, the speaker is always on until a carrier signal is detected; then it's turned off. This setting allows you to hear the progress of your call, such as the dial tone, the dialing process, and a busy signal or carrier signal. If you want to listen in on a call after a connection is made, type ATM2.

## Q

The Q option lets you determine whether modem messages are displayed on your screen. By default, your modem displays messages in response to your commands. These messages are listed in **Appendix D**. If you don't want messages displayed, type ATQ1.

## V

The V option lets you determine whether modem messages are displayed in words or numbers. By default, all messages are displayed in words. If your program does not handle or display these messages well, type ATV0 to display them in numbers. (See **Appendix D** for a list of modem messages and their number equivalents.)

## X

The X option lets you determine which set of modem messages will be displayed and allows the modem to monitor the progress of your call. By default, the basic message set is used by the modem. This set excludes the CONNECT 1200 message which identifies your communication speed as 1200 bps. If you want this message included, choose the extended message set by typing ATX1. If you want the extended message set plus the NO DIALTONE message, type ATX2. If you want the extended message set plus the NO DIALTONE and BUSY messages, type ATX4. (See **Appendix D** for a complete list of the modem messages.)

## Using the S Registers

Table 3 (on page 27) lists the 19 S registers supported by the SX212 Modem along with their defaults and the range of values that can be used with each register. It is unlikely that you will need to change any of the S register defaults for most of your telecommunications. This section is intended only for users who want to customize the operation of their modem for non-standard applications or special equipment.

**Note:** Several S registers have not been documented in this manual because their defaults, values, and functions may vary depending on the internal design of your modem. These registers are described as "reserved" and should not be changed.

To read the value of an S register, follow these steps:

1. Type the command ATS followed by the number of the register you want to read (0 to 18) and a question mark; for example, ATS6?
2. Press **[Return]** to view the current value of that register.

To change the value of an S register, follow these steps:

1. Type the command ATS followed by the number of the register you want to change (0 to 18), an equal sign, and the numeric value you want to set for this register; for example, ATS6 = 4.
2. Press **[Return]** to change the register to the new value. An OK message tells you the register has been changed.

To reset the modem to its default register settings (and its default option settings), type the command ATZ and press **[Return]**. (You could also reset the modem by turning it off, then on, and typing AT.)

## **Determining Values for Bit-Mapped Registers**

Your SX212 Modem supports five bit-mapped S registers (registers 13, 14, 15, 17, and 18). Bit-mapped means that each of the eight bits in the register has a separate meaning or function. This means that you can set eight separate functions for your modem by entering one numeric value for the entire register.

Each bit can be either on or off. When a bit is off, it has a numerical value of zero. When a bit is on, it has a unique numerical value, depending on which bit it is. These values are shown below.

Bit 0	1
Bit 1	2
Bit 2	4
Bit 3	8
Bit 4	16
Bit 5	32
Bit 6	64
Bit 7	128

To determine a value of a bit-mapped register, follow these steps:

1. Decide which bits in the register you want on or off by referring to **Table 3**. (See also the explanation of the individual S registers in **The S Registers** section.)
2. Add up the values of all the bits that you want on. (Bits that are off have a numeric value of zero.)
3. Type the command to change the S register as described above, entering the new value as a three-digit number; for example, `ATS14 = 074`.

To interpret the value of a bit-mapped register, you need to determine which bit values equal that number when added together. For example, if S register 14 has a value of 074, bits 1, 3, and 6 must be on, since the values of bit 1 (2), bit 3 (8), and bit 6 (64) add up to 74. See **Table 3** to find out what modem functions are controlled by the bits in the register.

**TABLE 3 S REGISTERS**

Register	Function	Default	Range
S0	Sets the automatic answer feature and the number of rings required for the modem to answer a call.	0 rings	0 to 255
S1	Contains the count of the number of rings before a call is answered or disconnected.	0 rings	0 to 255
S2	Determines the escape command character.	43 (ASCII value for + sign)	0 to 127
S3	Determines which key or character ends a command line	13 (ASCII value for [Return])	0 to 127
S4	Determines whether the cursor moves to the next line after a message	10 (ASCII value for line feed)	0 to 127
S5	Determines which key or character moves the cursor back one space to erase the preceding character.	8 (ASCII value for [Back-space])	0 to 32, 127
S6	Determines how long the modem waits for the dial tone before dialing.	2 seconds	2 to 255
S7	Determines how long the modem waits for a carrier signal before hanging up.	30 seconds	1 to 255
S8	Determines the length of the comma command (,) which causes the modem to wait for a second dial tone when dialing through a switchboard.	2 seconds	0 to 255
S9	Reserved register.		
S10	Reserved register.		
S11	Reserved register.		

**TABLE 3 S REGISTERS**

Register	Function	Default	Range
S12	Determines the delay periods required for the modem to recognize the escape command.	50 fiftieths of a second (1 second)	20 to 255
S13	Determines how characters are formatted for communication to take place. Bit 0 undefined Bit 1 off = basic message set on = extended message set Bit 2 off = parity disabled on = parity enabled Bit 3 off = odd parity on = even parity Bit 4 off = 7 data bits on = 8 data bits Bit 5 undefined Bit 6 off = buffer overflow on = no buffer overflow Bit 7 off = eighth data bit set to space (if bit 4 is on) on = eighth data bit set to mark (if bit 4 is on)	off off off off on (16) on (64)	0 to 255
S14	Determines a variety of modem functions. Bit 0 reserved Bit 1 off = local echo disabled on = local echo enabled Bit 2 off = messages displayed on = messages not displayed Bit 3 off = messages displayed in numbers on = messages displayed in words	on (2) off on (8)	0 to 255



**TABLE 3 S REGISTERS**

Register	Function	Default	Range
	Bit 4 off = command recognition enabled on = command recognition disabled	off	
	Bit 5 reserved		
	Bit 6 reserved		
	Bit 7 reserved		
S15	Determines the modem's operating parameters.		0 to 255
	Bit 0 (same as bit 4)	on (1)	
	Bit 1 (same as bit 5)	on (2)	
	Bit 2 off = answer mode on = originate mode	off	
	Bit 3 off = half-duplex on = full-duplex	on	
	Bit 4 off = undefined if bit 5 is off or 300 bps if bit 5 is on on = 110 bps if bit 5 is off or 1200 bps if bit 5 is on	on (16)	
	Bit 5 off = undefined if bit 4 is off or 110 bps if bit 4 is on on = 300 bps if bit 4 is off or 1200 bps if bit 4 is on	on (32)	
	Bit 6 off = carrier signal off on = carrier signal on	off	
	Bit 7 off = data terminal ready signal enabled on = data terminal ready signal disabled	off	
S16	Reserved bit-mapped register.		
S17	Reserved bit-mapped register.		
S18	Reserved bit-mapped register.		

## The S Registers

### S0

The S0 register allows you to set the automatic answer feature and control how many times your telephone rings before the modem answers a call. By default, the value of this register is zero (0), which means that the modem will not answer incoming calls. If you want your modem to answer a call, change the value of this register to the number of rings you want the modem to wait before it answers the call.

### S1

The S1 register contains the count of the number of times the telephone has rung. This register only operates when the value of the S0 register is greater than zero. The register is cleared eight seconds after the last ring counted.

### S2

The S2 register contains the character used as the escape command. By default, the escape character is +. (By entering the escape command + + + while online, you can communicate directly with your modem in the local command mode.) You can change the escape command to any character that has an ASCII decimal value. (See **Appendix B** for a list of characters and their ASCII values.) To change this register, enter the ASCII decimal value for the character you want to use in the escape command. For example, typing S2 = 47 changes the escape command to a slash (/), which must be typed three times when you are online to enter the local command mode. If you change this register to a value greater than 127 (which is beyond the range of ASCII decimal values), you will disable the escape command and will not be able to enter the local command mode while online.

**Warning:** When changing the escape command, be sure to use a character that is infrequently used when you are online. Otherwise, you may accidentally disconnect the telephone line.

### S3

The S3 register lets you change which key or character ends a command line. By default, the **[Return]** key ends a line. If you want to use another key to end a line, change the value of this register to the ASCII decimal value of the key you want. (See **Appendix B** for a list of key characters and their ASCII decimal values.) You would only want to change this register when using nonstandard equipment, such as an ATARI XE, XL, or 800 Computer or a terminal program in ATASCII mode.

#### **S4**

The S4 register lets you change whether the cursor advances to the next line after a message. By default, a line-feed character is generated after a modem message, which moves the cursor to the next line. To change the value of this register, enter the ASCII decimal value of another key you want to use. (See **Appendix B** for a list of keys and their ASCII decimal values.) To keep the cursor on the same line after a message, change the value of the register to a nonprintable key, such as the [Space Bar] (S4 = 32).

#### **S5**

The S5 register allows you to set the backspace character. By default, the [Backspace] key moves the cursor backwards. To change the value of this register, enter the ASCII decimal value of the key you want to use. (See **Appendix B** for a list of keys and their ASCII decimal values.) Do not use ASCII values 33 to 126; these values are for printable characters.

#### **S6**

The S6 register lets you specify how long the modem waits for a dial tone before dialing a number. This delay ensures that a dial tone is present before the modem dials the telephone number. By default, the modem waits 2 seconds—the minimum delay you can set. (If you change the value of this register to 0 or 1, the modem will ignore the setting.)

#### **S7**

The S7 register allows you to specify how long the modem will wait for a carrier signal from another modem before disconnecting the call. If the modem doesn't detect a carrier signal within the specified time, it hangs up and displays a NO CARRIER message. By default, the delay is 30 seconds.

#### **S8**

The S8 register lets you specify how long the modem waits for a second dial tone when you place a call through a switchboard or PBX. The value of this register determines the length of the delay caused by the comma (,) in a dial command. (A comma placed after the number that accesses an outside line and before the telephone number in a dial command causes the modem to pause before dialing the telephone number.) By default, the modem waits two seconds. If you are having difficulty making a connection when dialing through a switchboard, increase the value of this register to increase the delay, or use multiple commas.

### **S9**

Reserved register. (Functions are subject to change without notice.)

### **S10**

Reserved register. (Functions are subject to change without notice.)

### **S11**

Reserved register. (Functions are subject to change without notice.)

### **S12**

The S12 register allows you to change the time required for the modem to recognize the escape command + + + . Delay periods occur immediately before and after entering the escape command. By increasing the delay, you reduce the possibility of entering the escape command accidentally while online. If you change the value of this register to zero (0), no delay is required for the modem to recognize the escape command; you may not be able to type the command fast enough for it to be recognized, but a remote system will probably be fast enough.

### **S13**

The bit-mapped S13 register determines how characters are formatted so that communication can take place. It is primarily used for factory testing and is not meant to be used to control your modem. By default, the modem uses the basic set of messages (described in **Appendix D**), no parity, 8 data bits for character length, and sets the eighth data bit for space. (See **Table 3** for the individual bit settings.)

### **S14**

The bit-mapped S14 register sets a variety of modem functions. Most of these functions can and should be controlled by using the programmable options, described in **Using Programmable Options**, or the basic modem commands, described in **Chapter 2** under **Using Modem Commands**. The register is primarily used for factory testing and is not meant to be used to control your modem. By default, the automatic answer feature is disabled, the characters you type are "echoed" (displayed on the screen), messages are displayed on your screen in words, the modem recognizes your commands and is set for pulse dialing, and the built-in speaker is on until a carrier signal is detected.

## **S15**

The bit-mapped S15 register sets several communications parameters. In most cases, these parameters can and should be set by your communications software program. This register is primarily used for factory testing and is not meant to be used to control your modem. By default, the modem operates in originate mode using full-duplex communication at 1200 bps.

## **S16 to S18**

These registers are used only for factory testing and should not be changed.

## CHAPTER 4

# TROUBLESHOOTING AND PREVENTIVE MAINTENANCE



### Troubleshooting

Having trouble getting your ATARI SX212 Modem to operate? Don't panic—it's probably just a minor hitch that you can take care of yourself. This chapter describes some of the possible problems and suggests some simple solutions.

**Warning:** Do not try to "fix" the internal workings of the modem; this voids the modem's warranty and makes it illegal for you to connect it to the phone lines. Only qualified service technicians certified by ATARI may repair this modem. (See the FCC Warning in the **Important Information** section, inside front cover of this manual.)

### It Just Won't Work

One of the most common problems is that the modem just won't work—the MR (Modem Ready) indicator does not illuminate when you turn the modem on.

Correcting this problem is usually quite simple. Take the following steps:

1. Turn the modem off (and all other components connected to your computer). Now check to see that all connections are correct and secure. Check the power cord—is it plugged into the wall properly and is the small round plug seated securely in the modem?
2. Turn the modem on again.
3. If it still doesn't come on, make sure the outlet you are using works. Plug in another appliance (such as a lamp) that you know works and turn it on. If the appliance works but the modem does not, your modem or its power supply may need service. If the appliance doesn't work, your outlet is faulty. Use another one.

## **The Modem Doesn't Detect a Carrier Signal**

If the modem comes on but doesn't detect a carrier signal (even though you can hear it through a telephone connected to the modem), make sure the phone connections are secure. This is particularly important if you are using a "Y" adapter to connect both the modem and a phone to the line.

Check to make certain the "Y" adapter is plugged securely into the back of the modem and that the modular phone connectors from the modem and the telephone set are properly plugged into the adapter. Make sure that both phone cables are terminated in RJ11C-compatible plugs. A local electronics supply house or your ATARI retailer can tell you if you have the correct phone cable.

## **No Data Is Exchanged**

If no data is being exchanged by your modem and computer [the SD (Send Data) and RD (Receive Data) indicators on your modem aren't flashing when they should be], check to be sure that the RS232 or SIO cable connecting the modem to the computer is plugged in securely and in the correct port. The modem's RS232 cable must be plugged into a port labeled RS232 or MODEM on the back of the computer. (Do NOT plug it into a port labeled PARALLEL.) Also, because some computers have more than one serial port, make sure you've used the proper software command to direct your computer's data output to the correct serial port.

Check that the cable's pin-out connections match those of the modem and computer. See your computer's owner's manual for a list of pin-out signals for your computer's serial port. Compare those signals with your modem's pin-out signals listed in **Appendix A**. If you are in doubt about your cable, see your retailer.

Make sure that you've set the communications parameters to match those of the system you are calling. Both systems must use the same communication speed and parity, character length, and stop bit settings. These settings can be made using your software communications program.



## **The Modem Won't Execute Your Commands**

If your modem won't execute the commands you enter (but responds with OK messages) and your TR (Terminal Ready) light is off, your modem is not receiving a terminal ready signal. You can have your computer send this signal (sometimes called a DTR signal for "Data Terminal Ready") by using your software program or by installing a jumper cable. See your computer dealer for obtaining the appropriate cable.

## **Software Problems**

If you experience trouble getting the modem online, it may be that the software program you are using is faulty or that the disk it is on is damaged or contains garbled data. If you are using a backup copy of your program, try using another copy or the original disk. If the problem persists, try switching the modem and computer off for a few seconds, then on again. If this helps, it may be that the program is defective. Contact the retailer who sold you the program.

## **Preventive Maintenance**

To ensure top performance from your modem, follow these simple guidelines:

- Use only the power cord with adapter supplied with your modem. Connecting the wrong power cord can cause irreversible damage to the modem.
- Keep the modem dust free.
- Clean the outside of the modem with a soft, damp cloth only. Do not use household cleansers or abrasives—they may damage the modem's plastic housing.
- When you turn the modem off, wait at least two seconds before you turn it on again. Otherwise, the modem may not initialize properly.
- Keep your modem out of direct sunlight.
- Avoid exposing your modem to extreme temperature changes. Operate the modem only at temperatures ranging from 41°F to 95°F (5°C to 35°C). Store your modem only at temperatures ranging from -4°F to 140°F (-20°C to 60°C).
- For shipping and storing the modem, repack it in its original factory packing materials.
- Never remove the plastic housing from your modem. The modem has no user-repairable parts, and you can void your modem's warranty and FCC registration by taking it apart.



## A Final Note

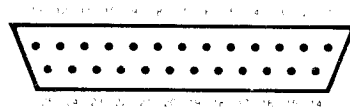
Your ATARI SX212 Modem is designed for low maintenance and high reliability. If you experience problems that you think may be serious, the best course is to take your modem to an authorized ATARI Service Center. For the location of the nearest ATARI Service Center, contact your ATARI retailer or write: ATARI Customer Relations, P.O. Box 61657, Sunnyvale, CA 94088. Write "Service Center Information" on the envelope.

# APPENDIX A CONNECTOR PIN ASSIGNMENTS

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## RS232 Port

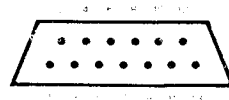
- 1 — Protective Ground
- 2 — Transmitted Data
- 3 — Received Data
- 4 — Not Connected
- 5 — Clear to Send
- 6 — Not Connected
- 7 — Signal Ground
- 8 — Carrier Detect
- 9–19 — Not Connected



- 20 — Data Terminal Ready
- 21 — Not Connected
- 22 — Ring Indicator
- 23–25 — Not Connected

## Serial I/O Port

- 1 — Clock Input
- 2 — Clock Output
- 3 — Data Input
- 4 — Ground
- 5 — Data Output
- 6 — Ground
- 7 — Command
- 8 — Motor Control
- 9 — Proceed



- 10 — + 5/Ready
- 11 — Audio Input
- 12 — Not Connected
- 13 — Interrupt

# APPENDIX B

## ASCII CHARACTER TABLE

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII
0	00	NUL	31	1F	US	62	3E	>
1	01	SOH	32	20	SP	63	3F	?
2	02	STX	33	21	!	64	40	@
3	03	ETX	34	22	"	65	41	A
4	04	EOT	35	23	#	66	42	B
5	05	ENQ	36	24	\$	67	43	C
6	06	ACK	37	25	%	68	44	D
7	07	BEL	38	26	&	69	45	E
8	08	BS	39	27	'	70	46	F
9	09	HT	40	28	(	71	47	G
10	0A	LF	41	29	)	72	48	H
11	0B	VT	42	2A	*	73	49	I
12	0C	FF	43	2B	+	74	4A	J
13	0D	CR	44	2C	,	75	4B	K
14	0E	SO	45	2D	-	76	4C	L
15	0F	SI	46	2E	.	77	4D	M
16	10	DLE	47	2F	/	78	4E	N
17	11	DC1	48	30	0	79	4F	O
18	12	DC2	49	31	1	80	50	P
19	13	DC3	50	32	2	81	51	Q
20	14	DC4	51	33	3	82	52	R
21	15	NAK	52	34	4	83	53	S
22	16	SYN	53	35	5	84	54	T
23	17	ETB	54	36	6	85	55	U
24	18	CAN	55	37	7	86	56	V
25	19	EM	56	38	8	87	57	W
26	1A	SUB	57	39	9	88	58	X
27	1B	ESC	58	3A	:	89	59	Y
28	1C	FS	59	3B	;	90	5A	Z
29	1D	GS	60	3C	<	91	5B	[
30	1E	RS	61	3D	=	92	5C	\

Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII
93	5D	}	106	69	i	117	75	u
94	5E	^	106	6A	j	118	76	v
95	5F	—	107	6B	k	119	77	w
96	60	'	108	6C	l	120	78	x
97	61	a	109	6D	m	121	79	y
98	62	b	110	6E	n	122	7A	z
99	63	c	111	6F	o	123	7B	{
100	64	d	112	70	p	124	7C	
101	65	e	113	71	q	125	7D	}
102	66	f	114	72	r	126	7E	~
103	67	g	115	73	s	127	7F	DEL
104	68	h	116	74	t			

# APPENDIX C

## SX212 MODEM

### SPECIFICATIONS



Data Rates	75–300 bps and 1200 bps	
Operation	Full-duplex and half-duplex	
Registration	FCC-registered for direct connection to the switched telephone network; connects with RJ11W, RJ11C, RJ12C, RJ13W, and RJ13C modular phone jacks	
Dialing Capability	Tone and pulse (rotary) dialing	
Data Format	1200 bps	
	Serial, binary, asynchronous, 7 data bits, 1 or 2 stop bits; odd, even, or fixed parity or 8 data bits, 1 or 2 stop bits, no parity	
	75–300 bps	
	Serial, binary, asynchronous, 7 or 8 data bits; odd, even, or no parity	
Carrier Frequencies	1200 bps	
	ORIGINATE	Transmit 1200 Hz Receive 2400 Hz
	ANSWER	Transmit 2400 Hz Receive 1200 Hz
	75–300 bps	
	ORIGINATE	Mark 1270 Hz Space 1070 Hz
	ANSWER	Mark 2225 Hz Space 2025 Hz
Modulation Scheme	4-level differential phase-shift keying (DPSK) at 1200 bps	
Dibit Encoding	1200 bps	
	Dibit	Phase Shift
	00	+ 90
	01	0
	10	180
	11	–90

Bit Error Rate	Less than 1 in $10^5$ bits for signal-to-noise ratio of 8 dB with 300 to 3400 Hz Gaussian noise over a receive level range of -10 to -35 dBm
Clear-to-Send Delay	1200 bps, 212A 774 $\pm$ 27 milliseconds after carrier detect 75-300 bps, 212A/103 265 $\pm$ 6 milliseconds after carrier detect
Loss of Carrier	Disconnects automatically in 1 $\pm$ 1 second after loss of carrier
Receive Signal Frequency Tolerance	$\pm$ 7 Hz
Compatibility	Bell 103 and Bell 212A for asynchronous communication in originate and answer modes Hayes command set compatible
Command Buffer	40-character command buffer
Receiver Sensitivity	-40 dBm
Transmit Level	-9 dBm
Interface	RS232 and ATARI SIO
Size	25 cm x 15 cm x 7.5 cm, exclusive of power supply and connectors
Power Supply	U.L.-listed wall-mounted transformer capable of 115 VAC ( $\pm$ 10%) at 60 Hz in and 9 VDC out
Operating Environment	0° to 45°C, 5% to 95% relative humidity
Storage Environment	-30° to 70°C

# APPENDIX D

## MODEM MESSAGES\*

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Number	Word	Meaning
0	OK	Your command has been executed without errors.
1	CONNECT	A connection has been made at 300 or 1200 bps depending on the set of modem messages you are using. (See the footnote and the X option described in <b>Chapter 3, Programming Your SX212 Modem.</b> )**
2	RING	A ringing signal has been detected on the telephone line from an incoming call.
3	NO CARRIER	A connection was not established.
4	ERROR	Your command cannot be executed because of a syntax error, an invalid character format or command, or because more than 40 characters were entered.
5	CONNECT 1200	A connection has been made at 1200 bps.
6	NO DIALTONE	No dial tone has been detected.
7	BUSY	The dialed number is busy.

\*The basic set of modem messages includes messages 0, 1, 3, and 4.

\*\*The extended set includes all seven commands, which allow you to monitor the progress of your call and your communication speed.

# GLOSSARY



**ASCII** Abbreviation for American Standard Code for Information Interchange (pronounced ask-ee). A set of standard 8-bit information codes used by most microcomputers.

**ATASCII** Stands for ATARI ASCII. Letters and numbers in the ATASCII character set have the same values as those in ASCII, but some of the special characters are different. See **ASCII**.

**Answer mode** The default mode when the modem answers an incoming call. See **Originate mode**.

**Auto-dial** A feature that allows a phone call to be dialed from the keyboard or automatically through a communications software program.

**Bell 103/212A compatibility** A set of standards established by the Bell System during the early days of telecomputing. These standards define the parameters for 300 bps (103) and 1200 bps (212A) communication over the telephone lines.

**Bits per second (bps)** The speed at which bits are transmitted during communication.

**Echo** The process of returning, or sending back, the characters you type while in the local command mode (the modem's default).

**Full-duplex** Data transmission in both directions simultaneously; similar to a telephone conversation in which both parties can talk at the same time.

**Half-duplex** Data transmission in both directions, but only one direction at a time; similar to a CB conversation in which only one party can talk at a time.

**Local command mode** The state of being able to communicate directly with your modem by entering commands.

**Off hook** Use of the telephone line described in terms of the telephone receiver being lifted from its cradle. When a modem is off hook, it is connected to the telephone line.

**On hook** Disconnection from the telephone line described in terms of the telephone receiver being in its cradle. When a modem is on hook, it is disconnected from the telephone line.

**Online** The state of being connected to another computer system over the telephone lines.

**Originate mode** The default mode when the modem dials a call. See **Answer mode**.

**PBX** Abbreviation for private branch exchange. A switching device serving a single customer's telephone lines.



**Pulse dialing** Rotary dialing; the older of the two methods used to dial telephone numbers. (Each number dialed is represented by a corresponding number of pulses, with zero represented by 10 pulses.) See **Tone dialing**.

**RS232** A set of rules established by the Electronics Industries of America (EIA) that standardizes the interface requirements between modems and computers. The ATARI SX212 Modem has a standard RS232 connector and can be connected to any computer with a similar connector.

**S Registers** Specific locations in memory where the modem's communication parameter settings are stored. The settings in the S registers can be changed to customize the modem for special kinds of communication.

**Tone dialing** One of two methods used to dial telephone numbers; synonymous with pushbutton or Touch-Tone dialing. See **Pulse dialing**.

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