

## Chapter 3

### AT Command Operation

#### GENERAL

This chapter explains how to use the AT commands to operate and configure the BitSURFR Pro ISDN modem. Chapter 4, Option Configuration discusses configuration and operation commands in detail. Additionally, the entire BitSURFR Pro AT Command Set is contained in Appendix C.



#### Note

*You must use a terminal emulation mode from your communications software package to enter AT commands.*

#### AT COMMAND STATEMENT

You must type the command statement in a specific form for the BitSURFR Pro to recognize and follow the instruction. The command statement begins with the letters **AT** (indicating ATtention). This is followed by one or more commands which can each consist of a sequence of keyboard symbols such as & and %, letters, or numbers, and is then followed by a carriage return (the **Return** key) or end-of-line character.

#### AT COMMAND MODE

You can issue AT commands only when the DTE port (*also referred to as the Data port*) is configured for AT command mode. Normally, the DTE port is in AT command mode whenever it is off-line. If you type **AT**, press **Return** and the response is **OK**, you are in AT command mode. After the BitSURFR Pro connects with another ISDN modem and goes into the on-line data mode, characters sent to the BitSURFR Pro by your computer are interpreted as data (not as commands) and are transmitted to the remote ISDN modem.

#### ESCAPE SEQUENCE    + + +

If the BitSURFR Pro is in data mode, the escape sequence will return the BitSURFR Pro to AT command mode and remain on-line. The escape sequence consists of a pause (normally 1 second), three escape

characters, and then another pause. The default escape sequence characters are:

+ + +

The escape sequence character is set by the S2 command and can be changed if necessary. If there is a possibility that the data being transferred may contain the escape sequence, you can disable the escape sequence to prevent any possibility of false escapes from data mode into AT command mode.

Once you have escaped to AT command mode using the escape sequence, you can now enter AT commands. The ATO command returns the BitSURFR Pro to the data mode.

## **CREATING A COMMAND STATEMENT    AT**

Use the following steps to create a command statement:

1. Type **AT** and the command string.
2. Press the **Return** key to send the command statement to the BitSURFR Pro.

The following is an example of a command statement using the dial command (D):

**ATD555-1212**

This statement can be read as "Attention: dial 555-1212".

Here's another example of a command statement:

**AT>Z**

This command statement means "Attention: reload switch parameters and restart the ISDN network."

After entering a command line, the BitSURFR Pro either returns a response message indicating whether or not the command was accepted, or gives the data requested by the command line.

The AT command also sets some of the data parameters--namely the port speed, parity, stop bits, and bits per character--to match your computer. This process is repeated each time the AT prefix is typed.

## COMMAND STATEMENT GUIDELINES

When typing command statements, the following rules apply:

- The attention code (AT) may be upper or lower case, but not a combination like "aT".
- The **Return** key must be pressed to execute (enter) a command.
- The command buffer can hold up to 128 characters including spaces.
- The backspace or delete key erases the last character (depending on your terminal).

## DTE CHARACTER ECHO E

As commands are typed, they normally appear on your monitor so you can verify the input. This is called *local character echo*. To determine if echo is set properly, type **AT**. If the terminal displays **AT**, echo is set correctly. If it displays **AATT**, then disable echo by typing **ATE** and press **Return**. If the terminal does not display the AT at all, enable echo by typing **ATE1** and press **Return**. The echo option only affects command mode operation.

## COMMAND STATEMENT BUFFER

The BitSURFR Pro temporarily stores up to 128 characters in a buffer. If you attempt to enter more than 128 characters, the BitSURFR Pro will ignore everything after the first 128. To correct this condition, retype the command using 128 characters or less.

The characters used by the AT command interpreter to represent end-of-line, line feed, and backspace are set respectively by the **S3**, **S4**, and **S5** AT commands and can be changed if necessary.

The punctuation used in telephone numbers takes up space in the buffer, as do spaces. For example, the dash (-) in 555-1212 represents a punctuation in a telephone number.

## BACKSPACE KEY

Use the backspace key to change the command statement or correct errors. The backspace key allows the cursor to be moved back to the character(s) in error. The command can then be retyped from that point.

For example: **ATD5551211** has been typed. To change the last 1 to 2, press the **backspace** key once, type **2**, and press **Return** to execute the command.

#### **REPEATING A COMMAND    A/**

This command tells the BitSURFR Pro to repeat the last command stored in its buffer. The command is automatically executed without any need to retype the command or press the **Return** key.

For example: The **ATD5551212** command has been executed, and the phone is busy. To repeat the instruction, type **A/**, but do not use **AT** before this command because **AT** would empty the command string buffer and the **A/** command would not execute.

#### **VOICE PORT COMMANDS    \*X**

Some options may be configured for the voice port in addition to the data port. To use an AT command to configure a voice port, enter an asterisk (\*) followed by a **1** or **2** (designating voice port 1 or voice port 2) immediately after the AT. The following example shows enabling Caller ID logging for voice port 1.

**AT\*1@N0=1**

#### **DISPLAYING AN OPTION VALUE    ?**

To display the value of a configuration option, follow the command with a question mark. For example, to display the DTE speed, enter:

**AT@P2?**

Alternately, you may enter **AT@P2=?** which is equivalent to the above command.

#### **NUMBERED COMMANDS**

Commands starting with the same letter are distinguished by a number following the letter.

For example, the **E0** command selects echo off, and the **E1** command selects echo on.

## GROUP COMMANDS

A group of commands can be typed in a single command statement. Pressing the **Return** key sends the entire command string to the BitSURFR Pro. The BitSURFR Pro executes each command individually in the order it appears in the command statement, reading from left to right.

For example, the command statement **ATQ0V1D5551212** means:

- **AT** Attention
- **Q0** Allow status messages to be sent
- **V1** Select verbose messages
- **D5551212** Dial 555-1212

The BitSURFR Pro executes the AT command followed by the **Q**, **V**, and **D** commands, and returns the response message corresponding to the last command on the line. If an error is encountered in a command line, subsequent commands on the same line are ignored.

Some commands use special formats or have special rules concerning their use. For example, the dial **D** command initiates the dial process so that only dial modifier commands can follow the **D** command.

## DISPLAYING HELP &H

The BitSURFR Pro contains an AT Command Help feature accessed by using the **&H** command. The **&H** command has two forms. If **&H** is entered without an = sign, help is displayed for all AT commands. If **&H** is entered with an = sign followed by a list of AT commands separated by commas, help will be displayed for each command listed. For example, to display help for the **&V**, **!C0**, and **!C1** commands, enter:

**AT&H=&V,!C0,!C1**

If the help information requires more than one screen, then the following message will be displayed:

**--- SPACE to continue, A to abort, or C for continuous display ---**

If you press the spacebar, the next screen of information will be displayed. If you press the "A" key, then the display of help information will be aborted and an "OK" message will be returned. If you press the

"C" key, then help information will be displayed continuously without prompting at the end of each screen.

## COMMAND SCOPE

Command scope refers to the extent of a command's effect on the BitSURFR Pro. All AT commands have a scope of Global, Channel, or Port.

Global commands affect the BitSURFR Pro as a whole, potentially disrupting operation on all of the ports and channels. Use a global command cautiously (or not at all) if there are active calls on any port.

Channel commands affect only the B1, B2, or D-channels of the BitSURFR Pro. Use a channel command cautiously if there are active calls on any port.

Port commands affect only the operation of the DTE port or voice port.

## CONFIGURING USING AT COMMANDS

To use the AT commands to configure your BitSURFR Pro, you must use a terminal or the terminal window of your communications software program.

Table 3-1 is a step-by-step sequence of the actual AT commands used to configure switch options for the BitSURFR Pro.

**Table 3-1. BitSURFR Pro Configuration Using AT Commands**

Step	AT Command	Explanation
1	AT>F	Sets Switch and Global parameters to factory default.
2	AT!C0= <i>n</i>	This is the Switch Type. For <i>n</i> , enter <b>0</b> AT&T 5ESS <b>1</b> Northern Telecom DMS-100 <b>2</b> National ISDN 1 (NI-1) <i>&lt;default&gt;</i>
3	AT!C1= <i>n</i>	This is the switch version. For <i>n</i> , enter <b>0</b> AT&T Point-to-Point <b>1</b> AT&T Multi-Point <b>2</b> DMS100 PVC IC-0 <b>3</b> DMS100 PVC IC-1 <b>4</b> National ISDN 1 (NI-1) <i>&lt;default&gt;</i>

**Table 3-1. BitSURFR Pro Configuration Using AT Commands**

4	AT!C6=x...x	This is the data SPID. For x...x, enter the SPID value up to 20 digits in length. <i>default is null</i>
5	AT!N1=x...x	This is the data Directory Number (DN). For x...x, enter the DN value up to 20 digits in length. <i>default is null</i>
<b>If the Voice SPID and DN are not required, then skip steps 5 through 8.</b>		
6	AT*1!C6=x...x	This is the Voice 1 SPID. For x...x, enter the SPID value up to 20 digits in length. <i>default is null</i>
7	AT*1!N1=x...x	This is the Voice 1 DN. For x...x, enter the DN value up to 20 digits in length. <i>default is null</i>
8	AT*2!C6=x...x	This is the Voice 2 SPID. For x...x, enter the SPID value up to 20 digits in length. <i>default is null</i>
9	AT*2!N1=x...x	This is the Voice 2 DN. For x...x, enter the DN value up to 20 digits in length. <i>default is null</i>
<b>Step 9 is required for proper operation.</b>		
10	AT>W>Z	Saves switch parameters to stored profile and restarts the network.

To review the switch configuration, use the following steps:

1. Enter **AT!C0?** and press **Return**.
2. Enter **AT!C1?** and press **Return**.

To review all of the SPIDs and DNs you have entered, enter the **AT>V=C** command and press **Return**.

Now, that you have successfully used the AT commands to configure the switch options for your ISDN line, you are ready to establish ISDN connection.

1. To make sure that you are in AT command mode, type **AT**, then press **Return**. You should receive an **OK** response.

2. Type **ATI8** and press **Return**. The screen that appears identifies the BitSURFR Pro's features and other details about your BitSURFR Pro ISDN modem.
3. Next, type **AT&F** and press **Return** to configure the BitSURFR Pro to connect to the ISDN Motorola Bulletin Board Service (BBS). Make sure that you type the command string in ALL uppercase or ALL lowercase.
4. To connect to ISDN Motorola BBS, type **ATDT15083377304** and press **Return**.