Chapter 2
Using Your BitSURFR Pro

Your new BitSURFR Pro is capable of handling a variety of data transfers. The following subsections provide instructions for setting up and using your BitSURFR Pro to perform the most common types of data communications.

TYPES OF CALLS

Your BitSURFR Pro handles two types of calls: data and voice. Data calls transmit information in digital form and are placed from the BitSURFR Pro. Voice calls carry analog communications and are placed via the BitSURFR Pro analog ports with the help of your analog equipment (such as your phone, analog modem, or fax machine). Depending on your ISDN line configuration and the protocol you are using, you may place a call on each B-channel at the same time: one data call using both B-channels together, one data call and one voice call, or two voice calls.

☞ **Note**
In order for your BitSURFR Pro to accomplish multiple calls at once, it must prioritize use of the ISDN line. For example, if you have both B-channels in use when making a AIMux data call, you will be unable (temporarily) to place a voice call. On the other hand, you will not lose your voice channel when making a multi-link point-to-point protocol (MLPPP) call. In any case, your line must be configured for two B-channels to place or receive two simultaneous calls.

Your BitSURFR Pro can place and receive data calls using a communications software package. To place a voice call, you simply use your telephone or related device exactly like you always have.

PLACING AND RECEIVING A DATA CALL

Using a PC-based Communications Program

In many cases, your communications program will treat your BitSURFR Pro like an analog modem. All you need do is provide your program with the appropriate information to send the call.

☞ **Note**

You need to verify that your communications program is set to use hardware flow control (RTS/CTS) so that the vast majority of programs will work with these settings.

To prepare your communications program to place BitSURFR Pro ISDN data calls, select **Motorola BitSURFR Pro**, **BitSURFR**, or **TA210** under Modem Command Defaults or Modem Type. If none of these selections is available, then select **Generic Compatible High-Speed** or **Hayes Compatible High-Speed**.

If you choose the Generic or Hayes default setting, then you must replace the initialization string (sometimes referred to as the "originate string") with an initialization string that matches your configuration requirements. Initialization strings are composed of AT commands; for more information on using AT commands, refer to Chapter 3 of this guide.

Initialization Strings

Initialization strings are AT command strings that are used to configure your BitSURFR Pro. Most communications packages allow you to store an initialization string so the communications program can initialize the BitSURFR Pro before a call is attempted. Before you select the appropriate initialization string, make sure you know the protocol supported by the remote application you will be calling.

Table 2-1 describes the initialization strings for some of the most commonly used protocols: single-link point-to-point protocol (PPP), multi-link PPP, and V.120. Using the following table, identify the type of connection required by your application, and then read across the table to find the appropriate AT command initialization string.

Table 2-1. Protocol Initialization Strings

Type of Connection	Common Applications	Number of Channels	Initialization String
V.120 at 56 kbps	PC-to-PC, PC-to-Mac, Mac-to-PC, and some ISPs	One	**AT&F&C1&D2**
V.120 at 64 kbps	PC-to-PC, PC-to-Mac, Mac-to-PC, and some ISPs	One	**AT&F&C1&D2 %A4=0**
Point-to-Point Protocol (PPP) at 56 kbps	Internet	One	**AT&F1&C1&D2**
Point-to-Point Protocol (PPP) at 64 kbps	Internet	One	**AT&F1&C1&D2 %A4=0**
Multi-link PPP at 56 kbps per Channel	Internet	Two	**AT&F1&C1&D2 @B0=2**
Multi-link PPP at 64 kbps per Channel	Internet	Two	**AT&F1&C1&D2 @B0=2%A4=0**
AIMux at 56 kbps Per Channel	Internet and File Transfer	Two	**AT&F2&C1&D2**
AIMux at 64 kbps Per Channel	Internet and File Transfer	Two	**AT&F2&C1&D2 %A4=0**

For example, if you want to use multi-link PPP to access the Internet and your service provider accommodates 56 kbps per channel, the chart tells you to use the following AT command initialization string:

AT&F&C1&D2A2=95@B0=2

Type the command in all upper case, with no spaces or extra characters.

If you want to use multi-link PPP to access the Internet and your service provider accommodates 64 kbps per channel, the chart suggests a similar but slightly longer command:

AT&F&C1&D2%A2=95@B0=2%A4=0

Again, you should type the command in all upper case, with no spaces or extra characters.

☞ **Note**

The B-channels are capable of supporting up to 64 kbps, but some network B-channels may be limited to a bandwidth of 56 kbps. This should be so stated in the network specifications provided by your ISDN service provider. Due to this limitation, the BitSURFR Pro defaults to 56 kbps. Choose the initialization string based on the line speed your service provider supports.

☞ **Note**

You need to verify that your Internet software is set to use hardware flow control and PPP. This will allow your BitSURFR Pro and Internet software to connect to the Internet for those service providers requiring Synchronous PPP connections, common for ISDN access.

Also remember:

- Make sure your communications program's baud rate is set to **115.2 kbps** if your software (COM driver and communications program) supports it. Otherwise, set your baud rate to the highest rate supported.

- Make sure your communications program's flow control (or handshaking) is set to **RTS/CTS**. Some communications programs refer to the RTS/CTS setting as "hardware".

- Make any other entries required by your communications program, then follow its operating instructions to place and receive calls. Most programs automatically dial and answer data calls.

Placing a Data Call with a Communications Program

Most communications programs will automatically dial and answer data calls. To initiate a data call using a communications program, the number to be dialed should be stored in the appropriate dialing setup section for the communications program.

To place a **multi-link PPP** call, two telephone numbers separated by an ampersand (&) are required as in the following example:

ATD5551212&5551213

The telephone numbers are provided by the service to which you will connect. Typically, only one number is provided for multi-link PPP; in this case, simply enter the number twice, and make sure the numbers are separated by an ampersand as previously shown.

Using AT Commands Through a PC or Terminal

Use the following procedures if your PC is using a terminal emulation program:

1. Make sure you are in AT command mode. If you are not sure, type **AT** and press **Enter**. If your screen responds with OK, you are in AT command mode.

2. Use the AT dial command (**D**). For example, to dial the number 555-1212, you would enter the following from your PC or terminal: **ATD 555 1212**.

3. After you use the dial command, your system will place the call. If successful, a "Connect" message will be displayed on your screen and your BitSURFR Pro will transition to data mode.

Chapters 3 and 5 of this guide provide more information on AT commands and call placement.

Manual Answering

To answer a data call manually, use the AT answer command (**A**). A RING message will appear on your PC monitor or terminal screen letting you know that you have an incoming call. If the BitSURFR Pro

is set to answer automatically (Rings to Answer is not set to 0), then the call will be answered without any action on your part; otherwise, type **ATA** to accept the call and transition to the data mode.

PLACING AND RECEIVING A VOICE CALL

The voice feature permits you to place analog calls (telephone, fax, or analog modem) to a non-ISDN number or to an ISDN number that has the necessary phone, fax or modem.

☞ **Note**
You cannot connect a voice call to a BitSURFR Pro (or other terminal adapter or ISDN modem) unless the appropriate device--modem, telephone or fax--is connected at both ends. The analog equipment requirements are the same as if there was non-ISDN telephone service.

☞ **Note**
Use ISDN SURFR Setup or the ATI10 command to verify that the link layer status indicates ACTIVE on the desired voice port. This indicates that the desired BitSURFR Pro voice port is synchronized with the ISDN network.

From Your Telephone

To place a call, do what you're used to doing. Make the call as if you were using a standard phone line.

To answer a call, simply pick up the receiver. If your party hangs up, you will receive a dial tone within ten seconds.

If you have trouble placing a voice call—for example, your telephone has no dial tone or your ISDN modem will not send or receive—go to the link layer status indicator to verify that the voice port in question is active. If it is, the problem may lie with the device attached to that port. If the desired voice port is indicated as anything other than active, or you cannot otherwise get your BitSURFR Pro operating properly at this point, refer to the Troubleshooting section in this guide.

From Your Modem Or Fax Modem

Follow the instructions from your communications program user's guide for placing and receiving calls.

From Your Fax Machine

Send your fax as if you were using a standard telephone line.

From a Modem or Fax Modem Via a Communications Program

Follow the instructions given in your communications program documentation for configuring, placing, and receiving calls.

If you have trouble placing or receiving a voice call, refer to Chapter 14, Troubleshooting Guide in this guide.

RECEIVING CALLER ID INFORMATION

Another feature of the BitSURFR Pro is its ability to deliver Caller ID information when receiving a call to one of the voice ports. The BitSURFR Pro will deliver the date, time and calling party number from either voice port to an external Caller ID box.

☞ **Note**

Called ID information will not be delivered to a Caller ID box if a voice call is received while both channels ar in use by a Multilink PPP call.

It is recommended that the user set the date and time in the BitSURFR Pro before inserting a Caller ID box in the analog line path. The commands to do this are:

AT>D0 = to set the date, and...
AT>D1 = to set the time (24-hour format).

Both command variables must be entered as six-digit numbers. For example:

AT>D0 = 061996 will set the date to June 19, 1996, and...
AT>D1 = 153900 will set the time to 3:39 p.m.

These parameters may also be set in LocalMenu.

☞ **Note**

ISDN SURFR Setup will set the time and date for you based on your PC's system clock if you enable the applicable checkbox within ISDN SURFR Setup.

WINDOWS 95 DIAL-UP NETWORKING

Use the following procedures to configure Windows 95 Dial-Up Networking for Internet access using your BitSURFR Pro. Dial-Up Networking uses PPP as a transmission protocol and can be configured to access the growing number of Internet Service Providers who utilize PPP as the remote dial-in connection protocol.

Network Protocol Installation

Networking components must be installed in Windows 95 before Dial-Up Networking can be used for Internet Access. These components are installed under the "Network" folder found in the Control Panel. Ensure that "Dial-Up Adapter" and "TCP/IP" are installed before proceeding.

Dial-Up Networking Configuration

Follow the steps below to configure a Windows 95 Dial-Up Networking interface for Internet or Remote LAN access.

1. Open the *My Computer* folder.

2. Open the *Dial-Up Networking* folder.

3. Select the *Connections* menu item and then select "Make New Connection".

4. Enter a name for the connection and chose the BitSURFR Pro device in the *Select a Modem* field.

5. Select the *Configure* button to set properties for the BitSURFR Pro.

6. Under the *General* tab, select the proper COM port you are using and set the *Maximum Speed* to 115200.

7. Select the *Connection* tab. No changes are required for the Connection and Call preferences.

8. Select *Port Settings* and ensure that the FIFO buffer option is checked and then click the OK button.

9. Select *Advanced* and ensure that "Use Flow Control" is checked and that the flow control method is set for Hardware (RTS/CTS).

10. Enter the appropriate commands in the *Extra Settings* field depending on the protocol to be used. Refer to the extra settings chart below for appropriate field entries.

Table 2-2. Protocol Extra Settings Entry

Protocol	Extra Settings Entry
56K V.120	**&F&C1&D2**
64K V.120	**&F&C1&D2%A4=0**
56K PPP	**&F1&C1&D2**
64K PPP	**&F1&C1&D2%A4=0**
112K MLPPP	**&F1&C1&D2@B0=2**
128K MLPPP	**&F1&C1&D2@B0=2%A4=0**
64K AIMux	&F2&C1&D2
56K AIMux	&F2&C1&D2%A4=1

11. Select OK to accept the *Advanced Connection Settings*.

12. Select the *Options* tab. No changes will be required unless a manual login procedure is required by the host device. This will not be required if using point-to-point protocol (PPP) or multi-link point-to-point protocol (MLPPP); however, if the BitSURFR Pro is required to use V.120 protocol, then the *Connection Control* will likely have to be checked for "Bring up terminal window after dialing". This will allow a manual login after the BitSURFR Pro has connected using V.120. Check with the host administrator to see if manual login is required.

13. Select OK to accept the settings displayed in BitSURFR Pro Properties.

14. Select *Next>* and enter the telephone number to be dialed.

15. Select *Next>* and *Finish*.

A new connection interface is now added to the Dial-Up Networking folder.

Additional configuration may be required to ensure proper protocol negotiation to the ISP or remote LAN. Use the following steps for final configuration:

1. Highlight the file created in the *Dial-Up Networking* folder.

2. Select *File* and *Properties* from the menu bar.

3. No changes are required for the telephone number entry unless MLPPP protocol is used. When using MLPPP, a second phone number is required in the Telephone Number field. The second number is the number of the second B-channel to be connected and likely will be the same as the first number. An example of the format is:

    5551212&5551212

    The minimum requirement for the second number is to repeat the last digit of the first number or enter the least significant uncommon digits. Therefore, to dial 5551212 twice the entry can be abbreviated to "5551212&2"; and then to dial 5551234 and 5556789, the entry would be "5551234&6789". If using this dial method, the "Use country code and area code" option must be unchecked. If left checked, Windows 95 will not retain the ampersand (&) character in the dial string when dialing unless it is manually inserted before each and every dial attempt. Remember to add the area code and dialing prefix if required.

4. Select the *Server Type* option.

5. Configure *Server Type* options as required for your application. For Internet access applications the server type will be "PPP, Windows 95, Windows NT 3.5, Internet", all "Advanced options" unchecked, and "Allowed Network Protocols:" set for TCP/IP only.

6. Select the "TCP/IP Settings". Use default settings unless otherwise instructed by your service provider.

7. Select OK.

8. Select OK at the *Server Type* window.

9. Select OK at the main configuration window.

Configuration for Dial-Up Networking is now complete.

Dialing

From the *Dial-Up Networking* folder, double-click the file created for Internet or remote LAN access. The *Connect To* window will appear. Enter the assigned user name and password for your account and then select Connect. The BitSURFR Pro will dial and connect to the host device and start PPP negotiation automatically. If this fails, see Chapter 14, Troubleshooting Guide for possible solutions.

Resetting Your BitSURFR Pro

Your BitSURFR Pro should be in AT command mode when you receive it. However, if you enter an AT command but receive no response from the BitSURFR Pro (i.e., you do not get an OK or error message), or if you are using ISDN SURFR Setup and it reports that the terminal adapter is not responding, you are probably not in AT command mode. If this happens, you need to reset your BitSURFR Pro card.

To reset your BitSURFR Pro, locate the four-position switch on the rear panel, place switch position 4 in the ON position, and then remove and reapply power to the unit.