Chapter 14
Troubleshooting Guide

GENERAL

This chapter discusses basic troubleshooting and also provides information on where to find further help, if necessary. In nearly all cases where you have a problem with the BitSURFR Pro, the problem is not that the BitSURFR Pro is broken or not functioning properly; rather, there is a loose connection or an error has been made in configuring your BitSURFR Pro or your ISDN line. This chapter deals with the most common problems that you might encounter during installation, configuration, and operating the BitSURFR Pro.

⚠ Caution

Do not attempt to repair the BitSURFR Pro yourself. Both FCC and IC regulations prohibit user servicing.

Because a data communications system typically involves a number of components (the PC, the BitSURFR Pro, the cables, the telephone line, the remote TA and the remote PC), there are many factors that can contribute to a communications problem. The first step is to identify where in the system the problem lies.

Before you begin troubleshooting, consider the following:

- Has the problem always been there, or did it start recently?
- If the problem started recently, what has changed since the BitSURFR Pro last worked? Was the BitSURFR Pro's configuration changed? Was the PC's configuration or software changed? Are you trying to communicate with a different remote device, or has the remote device's configuration changed?
- Is the problem intermittent, or can you duplicate it at will?
- Does the BitSURFR Pro work with other remote devices or with other PCs?
- Check the BitSURFR Pro's configuration. Make sure that the BitSURFR Pro's switch options match those provided by your service provider.
- Does the problem occur when placing data calls, and does it affect voice operation as well?

The answers to these questions may help you identify the source of the problem. If you don't know where the problem lies, or if the problem seems to be in the BitSURFR Pro, the following section may help you pinpoint and correct the problem. Each describes a problem symptom, and explains the possible causes and solutions. If the problem persists even after following the troubleshooting procedures, contact Motorola for assistance. See the *Service and Support* section at the end of this guide for information on how to contact Motorola.

If you are using a communications software package on your PC, see if it provides a terminal emulation mode so that you can communicate directly with the BitSURFR Pro. This will allow you to enter AT commands directly to the BitSURFR Pro, and see the responses on the screen.

Problem #1: When power is turned on, nothing happens.

Possible Cause: The BitSURFR Pro may not be getting power.

Possible Solution: Check to be sure the power adapter is plugged in to a live outlet.

Problem #2: The BitSURFR Pro will not communicate or establish a link to the network switch (The LS LED will not turn green after I configure the BitSURFR Pro and connect the ISDN line). Or, I get a NO DIALTONE message when attempting to place a data call, or there is no dial tone when I pick up the phone.

Possible Solutions:

- Ensure the ISDN cable is connected.

- Try performing a network restart. (**AT>Z**)

- Verify that the switch type and version settings are for the correct switch.

- Verify that the DNs, SPIDs, and TEI values match those agreed to at subscription time with the network provider. Also check that the switch options have been saved into the stored profile and the network link has been restarted. (**AT>W>Z**)

- Verify that the network switch supports Northern Telecom ISDN Basic Rate Access on the user-network interface and functional mode operation in the layer 3 user network signaling, or AT&T

ISDN Basic Rate Access 5ESS generic program 5E4.2 or above for a TYPE A terminal, or National ISDN-1 Basic Rate Access for a basic (non-EKTS) terminal.

- Verify that for Northern Telecom and National ISDN-1, EKTS and CACH are turned off at the switch and there are no supplementary data services turned on. (EKTS may be turned on at PacBell DMS100 NI-1 switches.)

Problem #3: The BitSURFR Pro appears to power up correctly, but does not respond to AT commands sent from the PC.

Possible Cause: The TD LED indicates if the BitSURFR Pro is receiving any data from the PC. If the TD LED does not blink when the PC sends an AT command, the problem may be in the PC or the cable.

Possible Solutions:

- Check your PC, terminal, or other DTE. Make sure it is configured properly and is set up to communicate using the correct port.

- Check the DTE cable. Is it connected properly?

- You may need a different type of DTE cable. If your DTE port is set up as a DCE, then you may need a crossover (null modem) cable, which reverses the receive and transmit lines. Try to find out the function of the pins on your equipment's serial interface port, and compare them with the BitSURFR Pro's pin functions listed in Appendix E "Interfaces". For example, the PC's receive pin should be connected to the BitSURFR Pro's transmit pin, and vice versa.

- Some PCs or other DTEs expect a CD and CTS signal from the BitSURFR Pro in order to transmit. In the BitSURFR Pro's default configuration, both CD and CTS are forced (always on).

Possible Cause: If the TD LED blinks when the BitSURFR Pro receives an AT command, but the RD LED does not blink (indicating that the BitSURFR Pro does not respond to the command), then the problem may be in either your PC's configuration or the BitSURFR Pro's configuration.

Possible Solutions:

- Make sure the BitSURFR Pro is set to the proper communications mode. The BitSURFR Pro will only respond to AT commands if it is in the command mode.

- Make sure the BitSURFR Pro's AT command interpreter is enabled. Try unplugging then re-plugging the power supply to cause the BitSURFR Pro to reset. If you still cannot send AT commands or otherwise configure the BitSURFR Pro, locate the 4-position switch on the rear panel, place switch position 4 in the ON position, and restart by unplugging then re-plugging the power cord.

⚠ **Caution**

Unplug the power cord from the wall or power strip; do not unplug it from the BitSURFR Pro.

- Be sure that your PC or other DTE either provides a DTR signal, or that the BitSURFR Pro is set to force DTR On (DTR Option 0, **AT&D**).

Problem #4: AT commands echoed from the BitSURFR Pro are not displayed correctly at the PC (but response messages are).

Possible Solution: Check the DTE echo option. If the PC displays duplicate characters (i.e. **AATT**), DTE echo should be disabled (**ATE**). If the PC does not display AT at all, be sure DTE echo is enabled (**ATE1**).

Problem #5: AT response messages are not being displayed properly at the PC (but AT commands are).

Possible Solutions:

- First, be sure that the BitSURFR Pro's AT command interpreter is enabled and that AT messages are enabled. Both these settings are the default.
- If numbers are being returned from the BitSURFR Pro when you enter commands, the BitSURFR Pro is probably set to return message codes instead of messages. Change to the message code option (**ATV1**).
- Some terminals automatically display what is typed, rather than waiting for the BitSURFR Pro to echo the characters (half-duplex mode). It is possible that the AT commands aren't really getting to the BitSURFR Pro at all, but are being displayed on the terminal anyway. If the AT commands are getting to the BitSURFR Pro, it's TD LED will blink.

Problem #6: Data calls do not automatically answer.

Possible Solution: Check that the rings to answer command **S0** is set to a nonzero value. Also, if the ring count is set too high, the calling device may time out and terminate the call.

Problem #7: Data calls connect but automatically terminate within about 5 seconds.

Possible Solutions:

- Check that the remote device is running the same rate adaption protocol.
- Make sure you are calling the correct device.

Problem #8: Calls to the BitSURFR Pro are rejected by the BitSURFR Pro or calls from the BitSURFR Pro are not accepted by the switch.

Possible Solutions:

- Verify that the switch type and version settings are for the correct switch.
- Verify that the SPID and DN match the number agreed to at subscription time with the local telephone company. Also check that the switch options have been saved in the stored profile and that the network link has been restarted (**AT>W>Z**).
- Verify that the line is configured at the switch to accept the type of call desired. Data calls need circuit-switched data capability, and voice calls need circuit-switched voice capability.

Problem #9: When the BitSURFR Pro tries to dial or answer data calls, it aborts for no apparent reason.

Possible Cause: This can occur if the PC sends any characters to the BitSURFR Pro while it is dialing, answering, or connecting. The BitSURFR Pro has a feature called any key abort that aborts the call if any characters are received from the PC before the call is connected.

Possible Solution: If this problem occurs in the answer mode on the first ring, the problem may be that the PC is echoing the RING message back to the BitSURFR Pro, causing it to abort. In this case, you can disable response messages using the **ATQ** command.

Problem #10: After a data call connects, your PC receives bad or garbled data.

Possible Cause: This usually indicates a rate adaption problem.

Possible Solutions:

- Verify that both the BitSURFR Pro and the remote device are set for the same rate adaption protocol (e.g., V.120).

- The remote device may be trying to establish a synchronous protocol, unaware that the BitSURFR Pro is set for asynchronous mode. Suspect this problem if the garbled data consists of long streams of one or two characters. To correct the problem find out which mode and protocol the remote device is attempting, and set your BitSURFR Pro and PC accordingly.

Problem #11: After a data call connects, the BitSURFR Pro seems to intermittently lose data, especially when transferring large amounts of data.

Possible Cause: This usually indicates a flow control problem.

Possible Solutions:

- Be sure that the BitSURFR Pro and PC flow control methods match. Flow control must be configured in both. Refer to the section TERMINAL INTERFACE AND PIN OPTIONS, and Flow Control in Chapter 4.

- Remember that if you are using the clear channel protocol, there is normally no flow control between the two devices. You may want to use V.120, if possible, since it supports this feature.

- You must have a 16550 UART for maximum performance. In addition, multimedia PCs require enough processing power to service the serial port in a timely manner. A 486/100MHz PC is the minimum system required for multimedia and high-speed serial operation.

Problem #12: The BitSURFR Pro hangs up in the middle of a data call.

Possible Cause: V.120 frame size is incompatible.

Possible Solutions:

- Some ISDN modems can only accommodate 126 byte V.120 transmit frame sizes. If your call hangs up when using V.120 protocol, set V.120 maximum transmit frame size to 126 (**AT%E0=126**).

- If your BitSURFR Pro appears to be initiating the disconnect, refer to the Call Termination section in Chapter 5, Call Placement for a list of the possible reasons for call termination.

Problem #13: After a data call is made, the BitSURFR Pro intermittently stops sending or receiving data.

Possible Solution:

Check to see if software flow control (such as XON/XOFF) is enabled in the BitSURFR Pro or in the PC. If so, you can only transfer ASCII (text) data. Binary files may contain embedded XON or XOFF characters, which can be misinterpreted as flow control signals. If you need to send binary data, use hardware flow control methods. Refer to the sections TERMINAL INTERFACE AND PIN OPTIONS, and Flow Control Options \Q, in Chapter 4, Option Configuration.

Problem #14: The BitSURFR Pro seems to take an excessive amount of time to establish an ISDN connection (the LS LED or SURFR Setup status display have excessive delays before indicating that the line is ACTIVE).

Possible Cause: The BitSURFR Pro has a random timer that may delay ISDN connection for up to two minutes. This timer is designed to prevent overloading the central office switch in case it fails then comes back on line.

Possible Solution:

Wait until the ISDN connection is made (not more than two minutes), or, if you have a telephone attached, bring the connection up immediately by picking up the handset then hanging up. If the connection is not made within two minutes, refer to Problem #2 in this chapter.

Problem #15: All my ISDN parameters are correct and the BitSURFR Pro does not connect with the remote ISDN modem I am calling.

P*ossible Solutions:*

- You are using the wrong B-channel rate adaptation protocol. V.120 is the common protocol to use for asynchronous applications such as when calling an ISDN BBS. Some Internet Service Providers (ISPs) may use V.120 depending on their equipment. Select the V.120 protocol with **AT%A2=2**.

- You are using the wrong B-channel rate adaptation protocol. Async-to-Sync PPP protocol is the common protocol used for Internet access. Many ISPs require ISDN users to use sync PPP as the access method to their equipment. Select Async-to-Sync PPP protocol with **AT%A2=95**.The BitSURFR Pro seems to take an excessive amount of time to establish an ISDN connection (the LS LED has excessive delays before indicating that the line is ACTIVE).

- You have entered the wrong phone number when dialing. Check the dialed number for correctness.

- Your ISDN line channel speed is set to 64 kbps, but your telephone company does not provide 64 kbps. Change the settings in your BitSURFR Pro to match the ISDN line speed supported by your phone company. Use the **AT%A4=1** command to select 56K and the **AT%A4=0** command to restore to 64K.

- You may not have long distance services available on your ISDN line. Contact your ISDN service provider.

BEFORE YOU CONTACT MOTOROLA

Our Technical Support staff will be glad to help you. In order to make your call to them as clear and helpful as possible, please complete this worksheet in its entirety *before* you contact Motorola.

1. Make sure you have gone through the troubleshooting procedures.

2. Write down the name of your product: _____

3. Write down the serial number found on the bottom of the BitSURFR Pro: _____

4. Write down the document number found on the bottom right corner of the *User's Guide* title page: _____

5. Enter the command **ATI3** and the write down the result (code revision level): _____

6. Have the following information available:

    • How your BitSURFR Pro is configured, what you are using it for (Internet access, LAN connection, etc.), and what peripheral devices are connected to it;

    • What software you are using (System Software, Internet Valet, MicroPhone LT, etc.);

    • What type of PC, terminal or other DTE you are using, and its characteristics (CPU speed, RAM, etc.);

    • What tests, if any, you have run and what the results were (loopback test, for example);

    • What the LED status indicators have indicated, if anything.

7. Be seated at the PC to which you have connected your BitSURFR Pro, and have the equipment running (as your problem permits).

Contact Technical Support at (800) 221-4380. For a complete list of available resources, please refer to the *Service and Support* section at the end of this manual.