Chapter 11
BONDING Protocol

GENERAL

BONDING is a protocol standard from the Bandwidth ON Demand INteroperability Group for combining the bandwidth of several 56 kbps or 64 kbps channels.

☞ **Note**
BONDING is a synchronous protocol; you may not use it if your BitSURFR Pro is attached to a PC or asynchronous terminal (unless an add-in synchronous card is installed in your PC).

BONDING can "bond" from two to 31 channels at once. The high-speed data, which must be grouped in multiples of 56 kbps or 64 kbps, is split into the various channels after arrival at the DTE interface. On the opposite end, the data is recombined into the original data stream and sent to the DTE interface. Due to delays between different calls, the channels are delay-equalized to permit correct positioning of data for the interleaving.

☞ **Note**
Although the BONDING specification defines four modes, Mode 1 is the common mode of operation for all BONDING-compatible implementations, and is the only mode supported by the BitSURFR Pro.

BONDING ON THE BITSURFR PRO

Because the BitSURFR Pro supports one ISDN basic rate interface (2B+D), two simultaneous calls can be made for an effective bandwidth of 112 kbps (2 x 56 kbps) or 128 kbps (2 x 64 kbps).

CONFIGURATION USING AT COMMANDS

To configure the BitSURFR Pro for BONDING protocol, include the following commands in the initialization string:

- To select the BONDING protocol, enter:
  AT%A2=3&M1

- To configure the Rate Multiplier for two B-channels, enter:

AT@B0=2

PLACING A BONDING CALL

You can place a BONDING call by entering the AT command **ATD**. The answering party must be set to run BONDING or the call will disconnect shortly after connection.

☞ **Note**
To place an BONDING call, only one telephone number is required. If more than one channel is to be connected, the BONDING protocol automatically connects the second channel; you do not have to dial both numbers.

If you have specified a rate multiplier of 2 and the answering party indicates it will support 2 or more channels for BONDING, the answering side will pass the directory number for the second call in the negotiation. The second call is made automatically, and is indicated by the flashing DTE (data port call status) LED. If delay equalization between the channels is obtained, data mode is entered. The terminal screen will indicate the BONDING connection and the DTE speed (56 kbps, 64 kbps, 112 kbps, or 128 kbps), and the LS LED will be on.

☞ **Note**
When a rate multiple of 2 is negotiated, both B-channels are used and therefore a voice call is prevented from being made for the duration of the BONDING call. Likewise, a BONDING call with a rate multiplier of 2 is not possible when a voice call is established.

If the rate multiple is set to 1 on either the originator or answerer, the second call will not be made and data mode will be entered immediately after negotiation. The terminal screen will indicate the speed the call connected at on units so equipped.

If the BitSURFR Pro is answering a multi-channel call, the voice directory number will be used for the second call. If you are using a point-to-point line with only one directory number, then upon answering a BONDING call requesting two channels, this directory number will be

sent to the origination side (the same number as the first one dialed). This is because a point-to-point line can receive two calls using the same directory number. AT&T 5E5/5E6 can also be configured to receive two calls using the same directory number.

When a BONDING call is connected, the DTE status LED indicates the number of channels connected. The DTE status LED will flash fast when only one channel is connected and will be steady green when two channels are connected.

DISCONNECTING A BONDING CALL

Disconnecting a data call disconnects all BONDING channels. If either channel is disconnected by the switch, the entire call is disconnected by the BitSURFR Pro. The disconnection can be validated by the DTE LED being off.