

# ***OMNI ADSL USB***

*ADSL USB Modem*

## ***User's Guide***

January 2004

**ZyXEL**  
*Unleash Networking Power*

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# Chapter 1

## Preface

Congratulations on your purchase from the ZyXEL OMNI ADSL USB modem.

Your USB-powered ZyXEL OMNI ADSL USB supports data rate of up to 8 Mbps and is compatible with all G.DMT compliant Central Office (CO) Digital Subscriber Line Access Multiplexer (DSLAM) equipment.

Your ZyXEL OMNI ADSL USB is easy to install and configure. All functions are configurable via the ZyXEL configuration wizard.

### 1.1 Related Documentation

- Quick Start Guide. The Quick Start Guide is designed to help you get up and running right away. It contains general connection and initial configuration instructions.
- Refer to the product page at [www.zyxel-europe.com](http://www.zyxel-europe.com) for information on product certifications.
- The ZyXEL download library at [www.zyxel-europe.com](http://www.zyxel-europe.com) contains additional support documentation.

### 1.2 About This User's Guide

A practical and comprehensive tool, this User's Guide provides information about modem installation and operation for computers running Windows 98/2000/Me/XP.

All graphics in this User's Guide show the Windows XP interface. They illustrate the setup procedure for the ZyXEL OMNI ADSL USB modem.

### 1.3 Syntax Conventions

- Select" or "Choose" means for you to select one from the predefined choices.
- Window and command choices are in **Bold Times New Roman** font.
- The "ZyXEL OMNI ADSL USB modem" is also referred to as the "modem" and the "OMNI" in this manual.

# Chapter 2

## About ADSL

### 2.1 ADSL Overview

Asynchronous Digital Subscriber Line (ADSL) technology provides high-speed data access across regular telephone or ISDN lines by making use of previously unused high-frequency bandwidth. ADSL is asymmetric in the sense that it provides a higher downstream data rate transfer (up to 8Mbps), than in the upstream transfer (up to 832 Kbps). Asymmetric operation is ideal for typical home and small office use where files and information are downloaded more frequently than uploaded.

### 2.2 Advantages of ADSL

- ADSL provides a private (unlike cable telephone and modem services where the line is shared), dedicated and secure channel of communications between you and your service provider.
- Because your line is dedicated (not shared), transmission speeds are not affected by other users. With cable modems, transmission speeds drop significantly as more users go on-line because the line is shared.
- ADSL is "always on" (connected). This means that there is no time wasted dialing up the service several times a day and waiting to be connected; ADSL is on standby, ready for use whenever you need it.

# Chapter 3

## About USB

### 3.1 USB Overview

USB (Universal Serial Bus) is a data communications standard that allows your computer to recognize (auto-detect) new devices. No technical expertise is required to install your device. You simply plug your USB cable in and follow a limited set of easy-to-understand, automatically generated instructions. Set-up and operation has never been easier.

### 3.2 Advantages of USB

- There is no need for numerous different types of ports and connectors on your computer. Modems, printers, joysticks, keyboards, mice, audio devices, CD-ROMs, digital cameras and other devices can all be connected through USB.
- With USB, installing adapter cards, changing dip switches and configuring IRQs (Interrupt Requests) does not require opening your computer.
- USB has data transfer rates of up to 12 Mbps.
- Multiple devices can be daisy-chained to a single port without restarting your computer.
- USB can power some devices - eliminating the need for batteries or power adaptors.

# Chapter 4

## Getting to know your modem

*This chapter covers the key features and main applications of your modem.*

### 4.1 Introducing the ZYXEL OMNI ADSL USB Modem

The ZyXEL OMNI ADSL USB combines the super-fast speed of state-of-the-art ADSL (Asynchronous Digital Subscriber Line) technology with the ease of setup and operation facilitated by a USB (Universal Serial Bus) interface.

The ZyXEL configuration wizard provides an easy-to-use interface to configure your ZyXEL OMNI ADSL USB.

### 4.2 Features

This section describes the router's key features.

- Compliant with Universal Serial Bus Specification Revision 1.1
- USB bus-powered; an external power supply is not required
- Compatible with all G.DMT compliant Central Office (CO) Digital Subscriber Line Access Multiplexer (DSLAM) equipment
- Software upgradeable
- Includes a user interface screen for checking the status of the connection
- An RJ-11/RJ45 port for ADSL connection
- Support for DSL downstream data rates of up to 8 Mbps
- Support for DSL upstream data rates of up to 1 Mbps

# Chapter 5 Hardware Installation

*This chapter introduces the ports and LED indicators.*

## 5.1 Hardware Overview

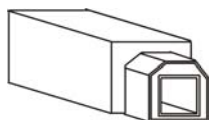
Have your system operating disk handy during the installation, in case a specific file can not be found on your computer. The back panel has two interfaces: a USB port and a DSL port as shown in the following figure.



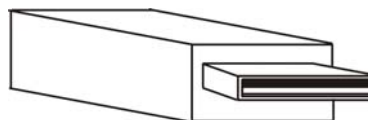
**Figure 5-1 Back Panel Connections**

### 5.1.1 USB Connectors

See the following figure for an explanation of USB connectors.



This cable end will plug into your modem's USB port.

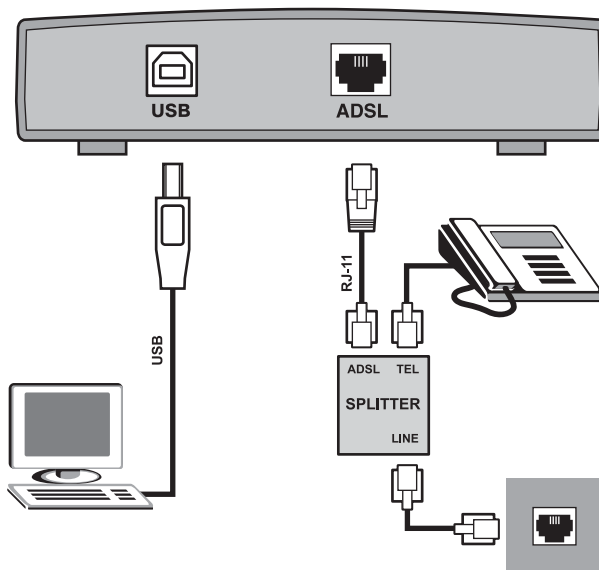


This cable end will plug into your computer's USB port.

**Figure 5-2 USB Cable Connectors**

## 5.2 Splitter and Microfilter

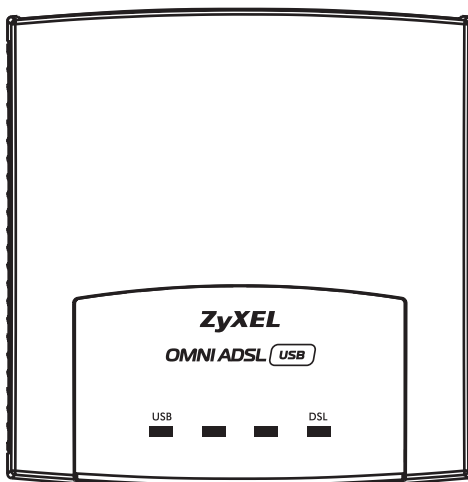
Use a splitter in order to plug a phone into the same ISDN or telephone line. You may opt to buy a telephone microfilter to install between the wall jack and your telephone(s). A microfilter acts as a low pass filter that screens out possible interference. See the following figure.



**Figure 5-3 Splitter connection**

### 5.3 Front Panel LEDs

The LEDs on the front panel of your modem indicate operational status. The table under the following figure describes the LED functions.



**Figure 5-4 Front Panel LEDs**

The following table describes the functions of the LEDs.

**Table 5-1 LED Descriptions**

LED	FUNCTION	DESCRIPTION
<b>USB</b>	USB Interface and Modem Power Connection	<p>This LED is off when the modem’s USB port is not connected or not receiving power.</p> <p>The LED is on when the USB is connected and receives power.</p> <p>This LED blinks during data transfer or whenever the DSL link is up.</p>
<b>DSL</b>	DSL Interface	<p>This LED is off when there is no DSL connection.</p> <p>This LED is on when the ADSL link is up.</p> <p>This LED blinks when the ADSL link is connecting, and the driver software is installed.</p>



# Chapter 6

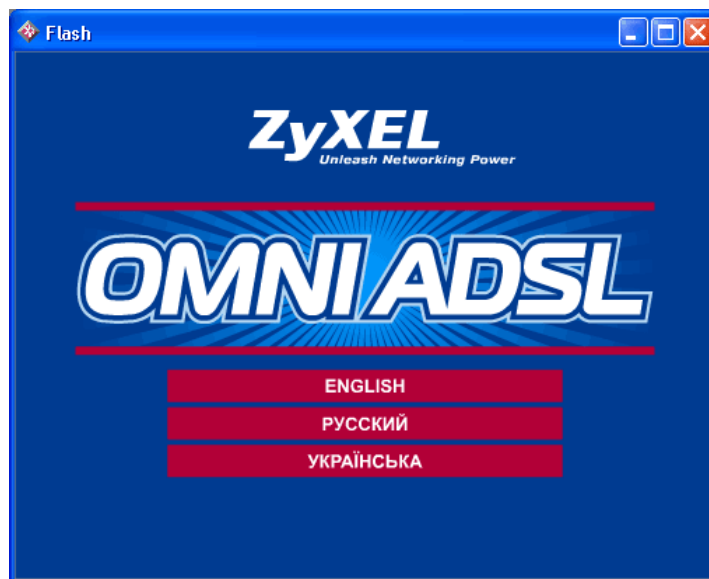
## Modem Setup

*This chapter shows you how to set up your modem for ADSL Internet access.*

### 6.1 Installing your modem via the ZyXEL Configuration Wizard

**DO NOT connect the modem to your computer at this time!**

- Step 1.** Close all Windows programs and applications.
- Step 2.** Insert the disk that came with your modem into your computer. It should automatically run the menu program. If the menu is not automatically run, you can open the CD on your computer and double click the menu.exe icon.



**Figure 6-1** Main menu

- Step 3.** Choose your preferred language.

**Step 4.** Select your modem from the list. Please note that there are two modem modifications: OMNI ADSL USB with ANNEX A support, and OMNI ADSL USB (ANNEX B) with ANNEX B support. Make sure which one you have and click on corresponding menu item.



Figure 6-2 Select modem list

**Step 5.** Choose installation scenario:



Figure 6-3 Select installation scenario

- **Easy installation.** This mode is recommended for most users. Select your Internet Service Provider from the list or use configuration file provided by your ISP. To use the ISP configuration file press “Have file” button. Click **Next** to proceed with installation.

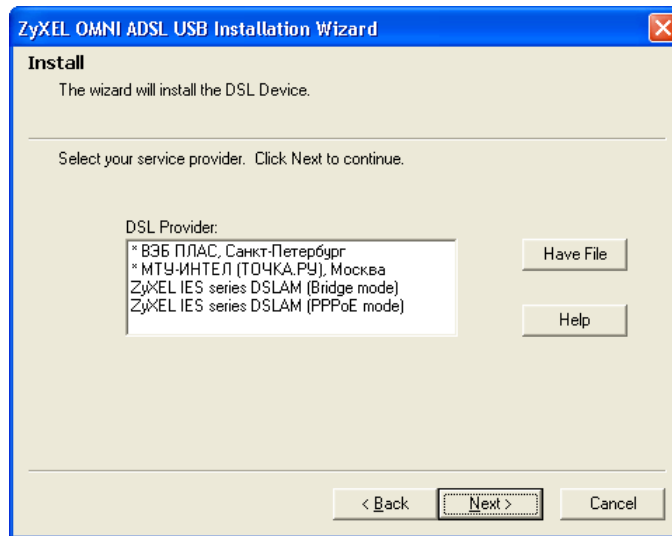


Figure 6-4 Easy installation

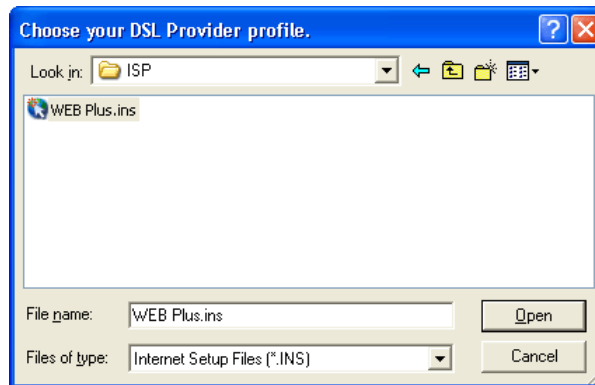


Figure 6-5 Choose provider profile dialog

- **Custom installation.** This mode requires significant technical background and recommended for advanced users only. You are to configure all settings manually. You should have an Internet account already set up and have been given the information in following table. Click **Next** to proceed with installation.

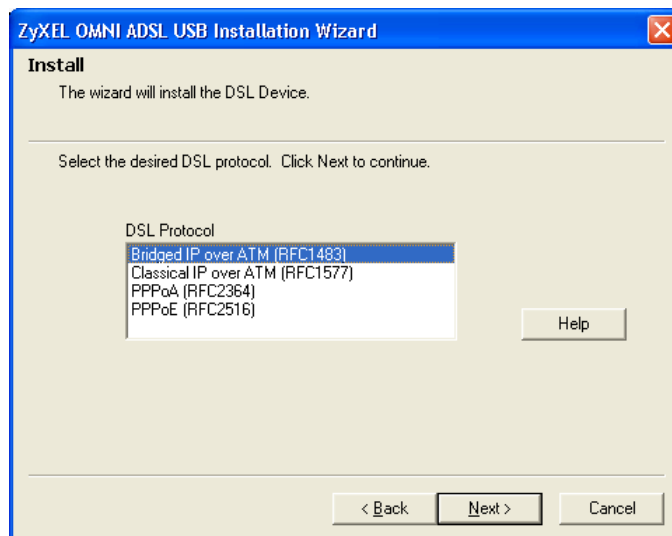
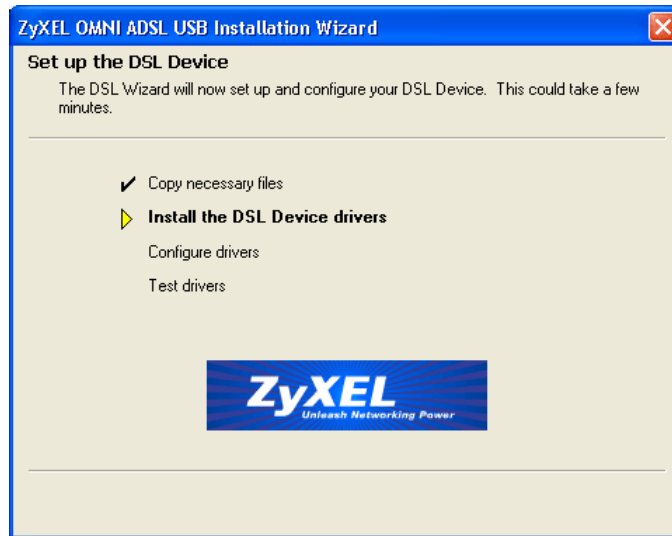


Figure 6-6 Custom installation

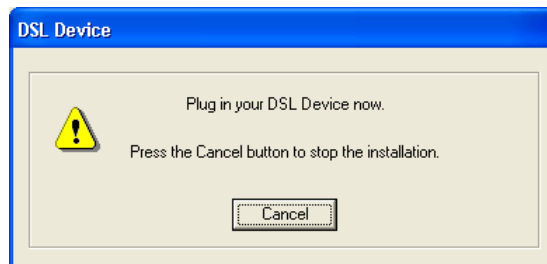
**Table 6-1 Required information for custom installation**

PARAMETER	SETTING
DSL Protocol and Multiplexing type	<input type="checkbox"/> PPP over ATM VCMUX (RFC2364) <input type="checkbox"/> PPP over ATM LLC (RFC2364) <input type="checkbox"/> Bridged IP over ATM LLCSNAP (RFC1483) <input type="checkbox"/> Routed IP over ATM LLCSNAP (RFC1483) <input type="checkbox"/> Bridged IP over ATM VCMUX (RFC1483) <input type="checkbox"/> Routed IP over ATM VCMUX (RFC1483) <input type="checkbox"/> Classical IP over ATM (RFC1577) <input type="checkbox"/> PPP over Ethernet VCMUX (RFC2516) <input type="checkbox"/> PPP over Ethernet LLCSNAP (RFC2516)
Modulation	<input type="checkbox"/> G.Dmt <input type="checkbox"/> G.Lite <input type="checkbox"/> ANSI T1.413
Peak Cell Rate	<input type="checkbox"/> Line rate <input type="checkbox"/> _____ Kbps
Virtual Path Identifier (VPI)	
Virtual Channel Identifier (VCI)	
IP Address and Subnet mask	<input type="checkbox"/> Automatically set by ISP <input type="checkbox"/> Assigned manually Address: Subnet mask:
DNS Address	<input type="checkbox"/> Automatically set by ISP <input type="checkbox"/> Use the following Preferred DNS Server: Alternative DNS Server:
Default gateway address	
User name and Password for PPP connections	Username: Password:

**Step 6.** Screens pop up to report the progress of the installation. You do not need to click anything until you are prompted to plug in your modem. Connect your modem to the computer.

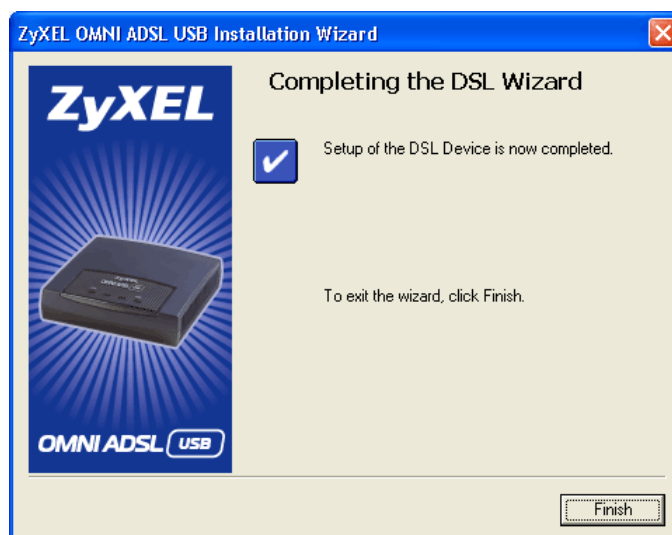


**Figure 6-7 Installation progress**



**Figure 6-8 Modem Plug in Prompt**

**Step 7.** When the installation has successfully completed, click Finish to close the wizard.

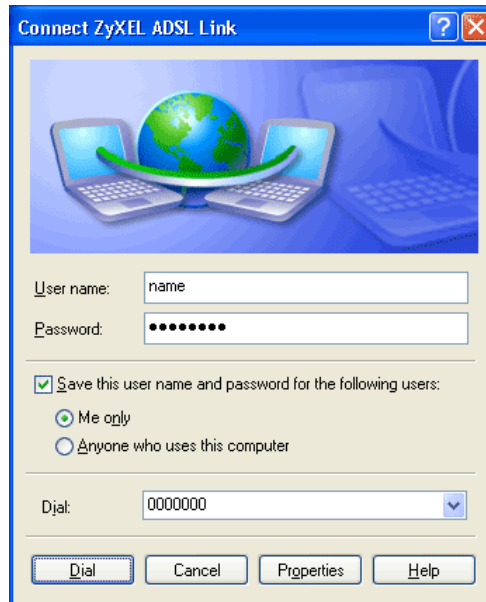


**Figure 6-9 Completing DSL wizard screen**

**Step 8.** If your connection is using PPPoE or PPPoA protocol, the ZyXEL ADSL Link icon will appear on your desktop. Double click on the icon to activate connection to your ISP.



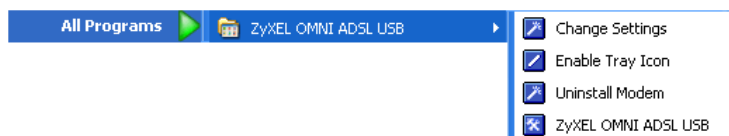
**Figure 6-10 ZyXEL ADSL Link Icon**



**Figure 6-11 PPP connection screen**

**Step 9.** Installation Wizard creates ZyXEL OMNI ADSL program group under Start/Programs folder. This group contains following important utilities:

- **Change settings** – Runs Installation Wizard again to update modem configuration.
- **Enable Tray Icon** – Enables Tray Icon if it was previously disabled.
- **Uninstall Modem** – Removes modem driver from computer.
- **ZyXEL OMNI ADSL USB** – Starts ZyXEL OMNI ADSL USB control panel. For further instructions refer to the control panel help. Press F1 or Help button.



**Figure 6-12 ZyXEL OMNI ADSL USB program group**

You are done installing your modem.

# Chapter 7

## ZyXEL OMNI ADSL USB Control Panel

*This chapter shows you how to view modem information and change modem settings.*

### 7.1 ZyXEL OMNI ADSL USB control panel in General Information mode

Click the **ZyXEL OMNI ADSL USB** link to open the control panel window.

#### 7.1.1 Viewing general information

The **General** tab appears first as shown below. It provides an overview of the ADSL connection status.



**Figure 7-1 Control Panel: General**

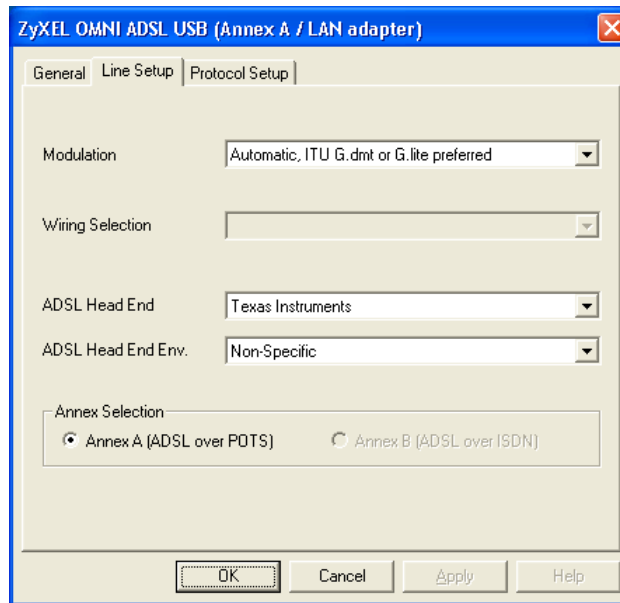
The following table describes the labels in this window.

**Table 7-1 Control Panel: General**

LABEL	DESCRIPTION
ADSL Line Information	This shows the current status of the ADSL connection.
ADSL Connection Information	
Bytes Received	This shows the total number of bytes received by the modem.
Bytes Transmitted	This shows the total number of bytes transmitted by the modem.
Receive Rate	This shows the rate of received data transmission in kbps.
Transmit Rate	This shows the rate of sent data transmission in kbps.
Driver S/W Version:	This shows the software version number.
Clear	Click this button to clear the <b>Bytes Received</b> and <b>Bytes Transmitted</b> fields.
Help	Click this button to see help descriptions for each field.

### 7.1.2 Line Setup information

Click on the **Line Setup** tab to configure the ADSL line information.



**Figure 7-2 Control Panel: Line Setup**

The following table describes the labels in this window.

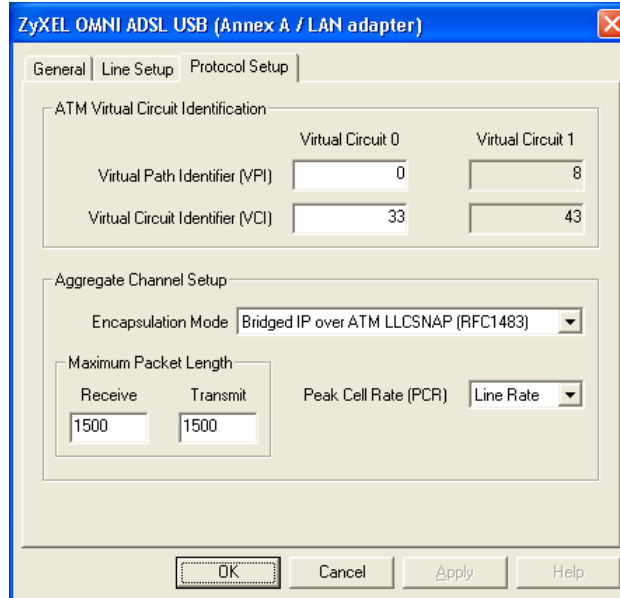
**Table 7-2 Control Panel: Line Setup**

LABEL	DESCRIPTION
Modulation	This is the ADSL modulation type used to establish physical communications with the DSL provider. Select the modulation type used by your ISP.
Wiring Selection	Select the kind of wiring selection for your line. The default is <b>Line Tip/Ring</b> .
ADSL Head End	Select your ISP vendor. If your vendor is not in this list, select <b>Unknown Vendor</b> (default). You don't need to configure this field.
ADSL Head End Env.	Select the head end environment given ( <b>Non-Specific</b> or <b>no Line Driver (BNA)</b> ). You don't need to configure this field.
Annex Selection	
Annex A (ADSL over POTS)	<b>Annex A (ADSL over POTS)</b> if your ADSL service is being provided over your usual telephone line. You don't need to configure this field.
Annex B (ADSL over ISDN)	<b>Annex B (ADSL over ISDN)</b> if your ADSL service is being provided over an existing ISDN line. You don't need to configure this field.
Apply	Click this button to apply any changes made to the setup.



### 7.1.3 Protocol Setup information

Click on the **Protocol Setup** tab to configure parameters for Internet access. Be sure to use the correct Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers given. The valid range for the VPI is 0 to 255 and for the VCI is 32 to 65535 (1 to 32 is reserved for local management of ATM traffic).



**Figure 7-3 Control Panel: Protocol Setup**

The following table describes the labels in this window.

**Table 7-3 Control Panel: Protocol Setup**

LABEL	DESCRIPTION
ATM Virtual Circuit Identification	
Virtual Path Identifier (VPI)	Enter the Virtual Path Identifier(s) (VPI) given.
Virtual Circuit Identifier (VCI)	Enter the Virtual Channel Identifier(s) (VCI) given.
Aggregate Channel Setup	
Encapsulation Mode	Select the method of encapsulation used by your ISP. The choices differ depending on the mode selected during the setup process.
Maximum Packet Length Receive/Transmit	Enter the maximum packet length for both received and transmitted packets.
Peak Cell Rate (PCR)	This is the maximum rate at which the sender can send cells. Select the PCR rate from the drop-down list box.
Apply	Click this button to apply any changes made to the setup.

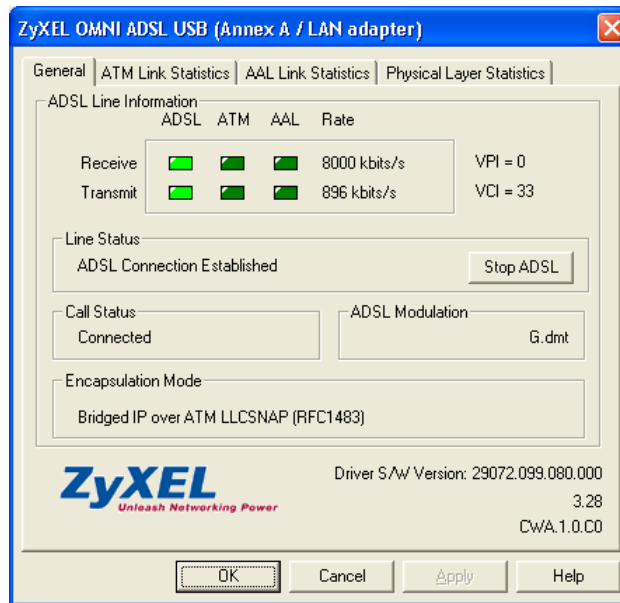
## 7.2 ZyXEL OMNI ADSL USB control panel in Advanced Statistics mode

The advanced control panel provides additional information on specific connection performance.

### 7.2.1 Viewing General Statistics

**Step 1.** Click the ZyXEL OMNI ADSL USB link to open the control panel window.

**Step 2.** Press the **ALT** and **A** keys simultaneously to bring up the following window. This is the General tab for the advanced control panel.



**Figure 7-4 Advanced Control Panel: General**

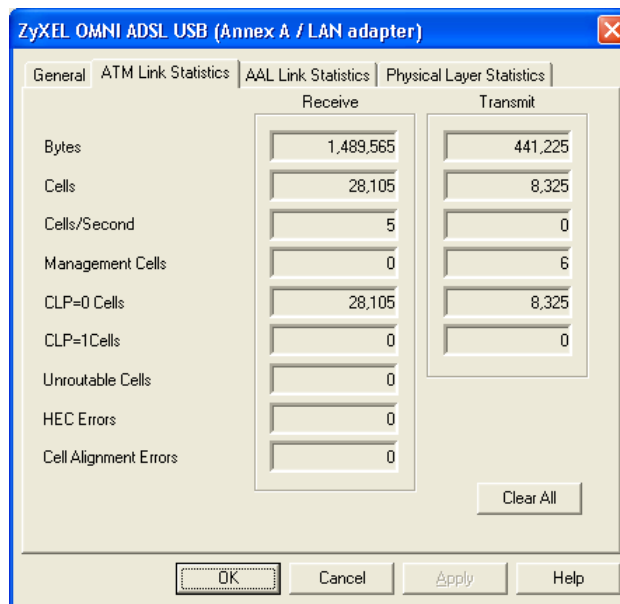
The following table describes the labels in this window.

**Table 7-4 Advanced Control Panel: General**

LABEL	DESCRIPTION
ADSL Line Information	These LEDs show the status of the links below. The LED descriptions are as follows: Red – Link Down; Green (Steady) – Link Up; Green (flashing) – Transmitting Data.
ADSL Receive/Transmit	This shows the status of the ADSL link.
ATM Receive/Transmit	This shows the status of the ATM link.
AAL Receive/Transmit	This shows the status of the AAL (ATM Adaption Layer) link.
Rate Receive/Transmit	These are the rates in kbps for data being received and transmitted.
VPI/VCI	These are the Virtual Path and Virtual Circuit Identifiers.
Line Status	This tells you the status of the ADSL line.
Start/Stop ADSL	Click this button to start or stop the ADSL connection.
Call Status	This shows the status of the ADSL line.
ADSL Modulation	This is the ADSL modulation type used to establish physical communications with the DSL provider.
Encapsulation Mode	This shows the mode of encapsulation chosen during modem installation.
Apply	Click this button to apply any changes made to the setup.

## 7.2.2 Viewing ATM Link Statistics

Click the **ATM Link Statistics** tab to view ATM-related statistics as seen in this window. These statistics refer to data collected on all active virtual channels.



**Figure 7-5 Advanced Control Panel: ATM Link Statistics**

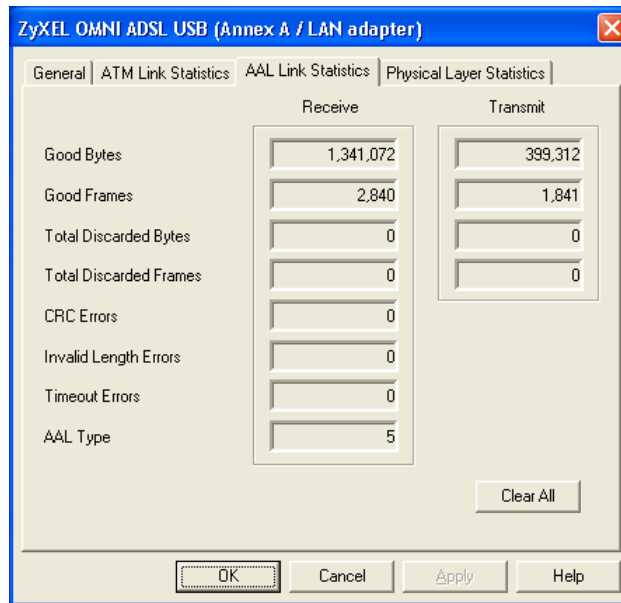
The following table describes the labels in this window.

**Table 7-5 Advanced Control Panel: ATM Link Statistics**

LABEL	DESCRIPTION
Bytes	This is the total number of bytes received and transmitted.
Cells	This is the total number of (53-byte octet) cells received and transmitted.
Cells/Second	This refers to the number of cells processed in a one-second period.
Management Cells	This refers to the number of management cells.
CLP=0 Cells	This refers to the number of cells processed with the CLP bit in the header set to zero.
CLP=1 Cells	This refers to the number of cells processed with the CLP bit in the header set to zero.
Unroutable Cells	This refers to the number of cells received that had no active Virtual Channel to which they could be routed.
HEC Errors	This shows the number of HEC (Header Error Control) errors.
Cell Alignment Errors	This shows the number of cell alignment errors.
Clear All	Click this button to reset all statistics to zero.

### 7.2.3 Viewing AAL Link Statistics

Click the **AAL Link Statistics** tab to view AAL (ATM Adaptation Layer)-related statistics as seen in this window.



**Figure 7-6 Advanced Control Panel: AAL Link Stats**

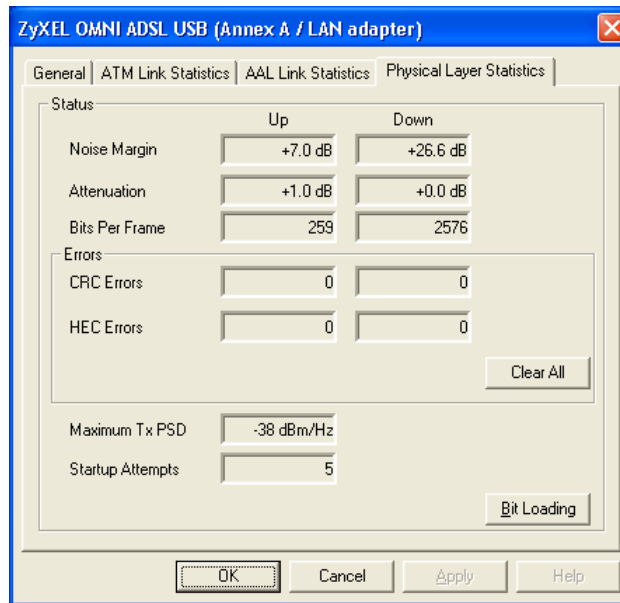
The following table describes the labels in this window.

**Table 7-6 Advanced Control Panel: AAL Link Stats**

LABEL	DESCRIPTION
Good Bytes	This is the total number of good bytes received and transmitted.
Good Frames	This is the total number of good frames received and transmitted.
Total Discarded Bytes	This is the total number of bytes discarded because of any error.
Total Discarded Frames	This is the total number of frames discarded because of any error.
CRC Errors	This is the total number of frames received with CRC errors.
Invalid Length Errors	This is the total number of frames received with an invalid length.
Timeout Errors	This is the total number of frames not reassembled within the time allowed.
AAL Type	This refers to the protocol that describes how the frames are to be built or reassembled.
Clear All	Click this button reset all statistics to zero.

### 7.2.4 Viewing Physical Layer Statistics

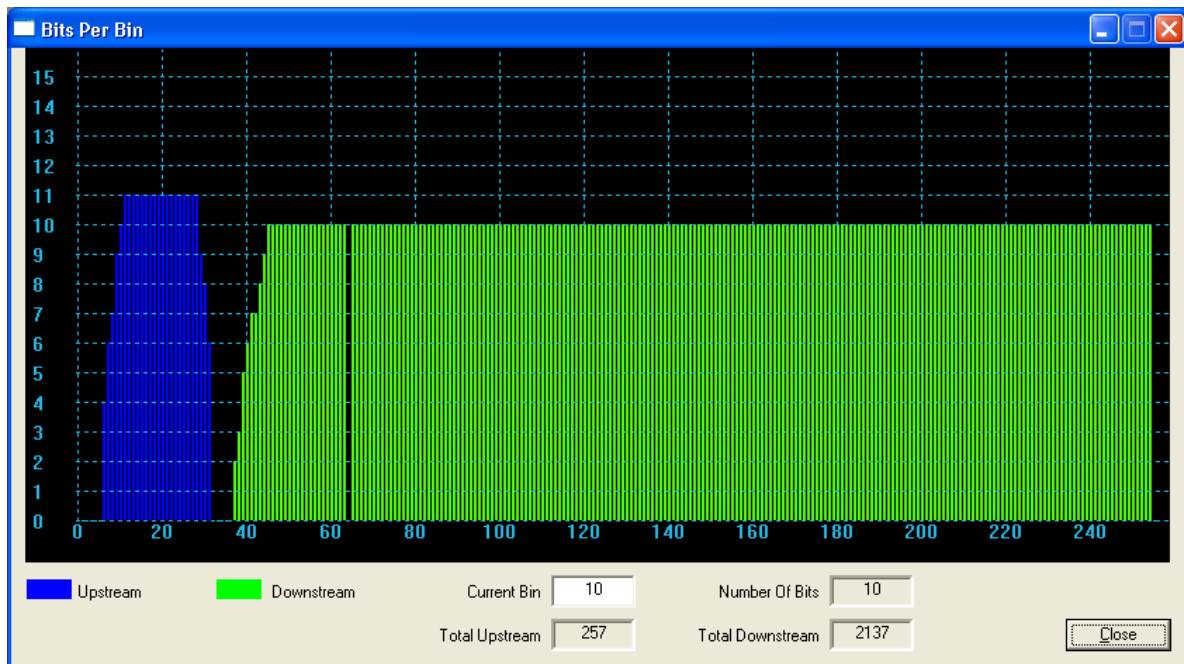
Click the **Physical Layer Statistics** tab to view statistics. This tab shows detailed statistics for physical layer of ADSL link. A sample of the tab for a ZyXEL OMNI ADSL USB Modem in LAN mode is as follows.



**Figure 7-7 Advanced Control Panel: Physical Layer Statistics**

Pressing Clear All button will reset error statistics.

After connection was established Bit Loading button appears in lower right corner of this tab. Pressing this button opens Bits Per Bin graph that shows number of upstream and downstream channels used, their distribution across frequency range and number of bits transmitted on each channel.



**Figure 7-8 Advanced Control Panel: Physical Layer Statistics: Bit Loading**

# Chapter 8

## Uninstalling and Reinstalling Modem Driver

*This chapter tells how to uninstall and reinstall your modem's software driver.*

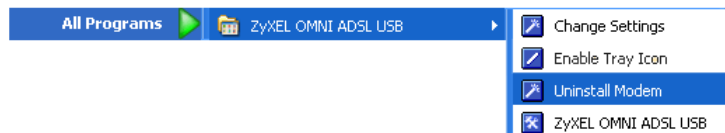
### 8.1 Uninstalling versus Reinstalling

Uninstall the modem driver if you are no longer using the ZyXEL OMNI ADSL USB. Reinstall the modem driver if you are having trouble with modem or your ISP has requested you to do so.

### 8.2 Uninstall Procedure

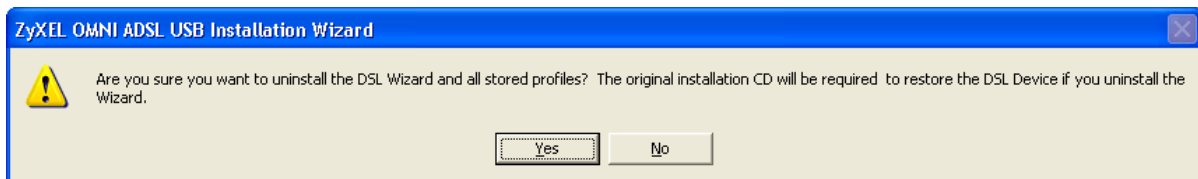
Follow these steps to completely uninstall your modem's software driver.

- Step 1.** Close all Windows programs and applications.
- Step 2.** Click on **Uninstall Modem** from ZyXEL OMNI ADSL USB program group.



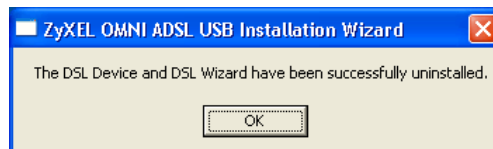
**Figure 8-1 Uninstall Modem Link**

- Step 3.** A warning message displays prompting you to confirm your selection. Click **Yes** to confirm.



**Figure 8-2 Uninstall Warning**

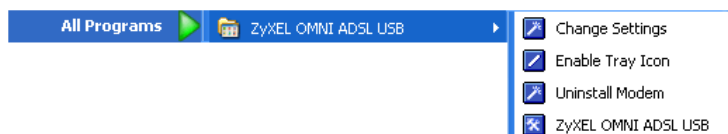
- Step 4.** After the driver has been successfully uninstalled the notification message displays. Click **OK** to confirm.



### 8.3 Reinstall Procedure

Follow these steps to reinstall your modem's software driver.

- Step 1.** Close all Windows programs and applications.
- Step 2.** Click on **Change Settings** from ZyXEL OMNI ADSL USB program group. This will take you back to the first step of Installation Wizard. Refer to Modem Setup chapter for instructions.



**Figure 8-3 Change settings application**

# Chapter 9

## Troubleshooting

*This chapter covers potential problems and the possible solutions.*

PROBLEM	CORRECTIVE ACTION
None of the LEDs are on when you turn on the OMNI ADSL USB	<p>Make sure your computer is turned on.</p> <p>Check the USB cable connections between the OMNI ADSL USB and your computer.</p> <p>Carefully follow the instructions in this guide to uninstall and reinstall the software driver.</p> <p>Contact technical support if these steps fail to solve the problem.</p>
I cannot connect to the Internet.	<p>Make sure the ADSL port is properly connected to the wall jack.</p> <p>Check the status of the line in the General tab of the Advanced Control Panel. Try to stop and start the ADSL connection under <b>Line Status</b>.</p> <p>Restart your computer.</p> <p>Contact your ISP if these steps fail to solve the problem.</p>