



# TP-LINK<sup>®</sup>

## User Guide

**TD-8616**

**ADSL2/2+ Ethernet Modem**



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## **FCC STATEMENT**



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **CE Mark Warning**



This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

## Package Contents

The following items should be found in your package:

- One TD-8616 ADSL2/2+ Ethernet Modem
- One AC power Adapter for TD-8616 ADSL2/2+ Ethernet Modem
- Quick Installation Guide
- One RJ45 cable
- Two RJ11 cables
- One ADSL splitter
- One Resource CD , including:
  - This User Guide
  - Other Helpful Information

 **Note:**

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact with your distributor.

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# Chapter 1. Introduction

Thank you for choosing the **TD-8616 ADSL2/2+ Ethernet Modem** .

## 1.1 Product Overview

The device is designed to provide a simple and cost-effective ADSL Internet connection for a private Ethernet network.

The Modem is easy to use. The TD-8616 connects to an Ethernet LAN or computers via standard Ethernet ports. The ADSL connection is made using ordinary telephone line with standard connectors. Multiple workstations can be networked and connected to the Internet using a single Wide Area Network (WAN) interface and single global IP address.

### ADSL

The TD-8616 supports full-rate ADSL2+ connectivity conforming to the ITU and ANSI specifications. In addition to the basic DMT physical layer functions, the ADSL2+ PHY supports dual latency ADSL2+ framing (fast and interleaved) and the I.432 ATM Physical Layer.

## 1.2 Main Features

- One 10/100M RJ-45 LAN ports (Auto MDI/MDIX), one RJ11 port
- Downstream data rates up to 24Mbps, upstream data rates up to 3.5Mbps (With Annex M enabled) .
- Supports long transfers, the max line length can reach to 6.5Km.
- Quick response semi-conductive surge protection circuit, provides reliable ESD and surge-protect function.
- High speed and asymmetrical data transmit mode, provides safe and exclusive bandwidth.
- Supports All ADSL industrial standards.
- Compatible with all mainstream DSLAM (CO).
- Real-time Configuration and device monitoring.
- Supports Multiple PVC (Permanent Virtual Circuit).
- Supports firmware upgrade and Web management.

## 1.3 Conventions

The Modem or device mentioned in this User Guide stands for TD-8616 without any explanations. Parameters provided in the pictures are just references for setting up the product, which may differ from the actual situation.

## Chapter 2. Hardware Installation

### 2.1 The Front Panel



Figure 2-1

The LEDs locate on the front panel, which indicate the device’s working status. For details, please refer to LED Explanation.

#### LED Explanation:

Name	Status	Indication
LAN	On	LAN port normal
	Off	Connection on LAN port abnormal
	Flash	Data transmitting or receiving on LAN port
ADSL	Slow flash	Connection to telecom network is abnormal
	Quick flash	Connecting to the telecom network
	On	Connection to telecom network is OK
Act	Flash	There is data transmitting or receiving on WAN port
	Off	No data transmitting or receiving on WAN port
Power	On	Power OK
	Off	Power fail

### 2.2 The Back Panel

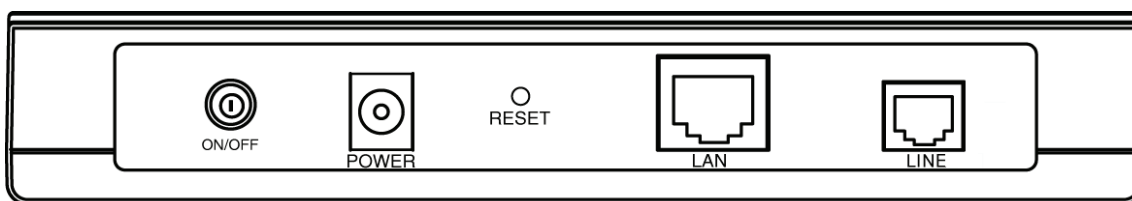


Figure 2-2

- ON/OFF: The switch for the power.
- POWER: The Power plug is where you will connect the power adapter.
- RESET: There are two ways to reset the Modem's factory defaults.

**Method one:** When the device is working, please press the reset button of the Modem, keep the reset button pressed down for more than five seconds and then wait for the modem to reboot.

**Method two:** Restore the default setting from “Maintenance-SysRestart” of the Modem's Web-based Utility.

- LAN: Through the port, you can connect the Modem to your PC or the other Ethernet network devices.
- LINE: Through the port, you can connect the Modem with the telephone.

## 2.3 Installation Environment

- The Product should not be located where it will be exposed to moisture or excessive heat.
- Place the Modem in a location where it can be connected to the various devices as well as to a power source.
- Make sure the cables and power cord are placed safely out of the way so they do not create a tripping hazard.
- The Modem can be placed on a shelf or desktop.

## 2.4 Connecting the Modem

Before installing the device, please make sure your broadband service provided by your ISP is available. If there is any problem, please contact your ISP. You need to connect the device to the phone jack, the power outlet, and your computer or network. Before cable connection, cut off the power supply and keep your hands dry. You can follow the steps below to install it.

### Step 1: Connect the ADSL Line.

**Method one:** Plug one end of the twisted-pair ADSL cable into the ADSL LINE port on the rear panel of TD-8616, and insert the other end into the wall socket.

**Method two:** You can use a separate splitter. External splitter can divide the data and voice, and then you can access the Internet and make calls at the same time. The external splitter has three ports:

- LINE: Connect to the wall jack
- PHONE: Connect to the phone sets
- MODEM: Connect to the ADSL LINE port of TD-8616

Plug one end of the twisted-pair ADSL cable into the ADSL LINE port on the rear panel of TD-8616. Connect the other end to the MODEM port of the external splitter.

**Step 2:** Connect the Ethernet cable. Attach one end of a network cable to your computer's Ethernet port or a regular hub/switch port, and the other end to the LAN port on the TD-8616.

**Step 3:** Attach the power adapter. Connect the AC power adapter to the POWER connector on the rear of the device and plug in the adapter to a wall outlet or power extension.

**Step 4:** Turn on the TD-8616 and power on the computers and LAN devices.



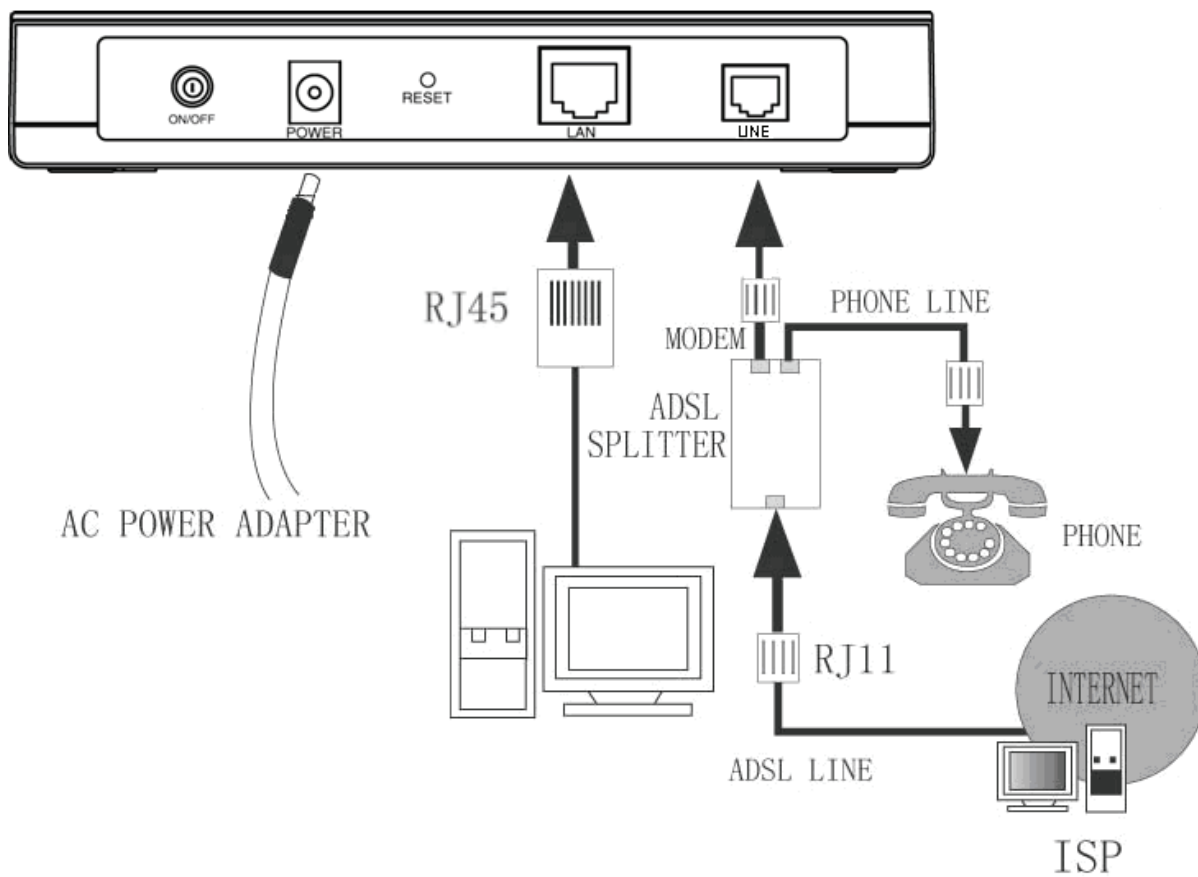


Figure 2-3

## Chapter 3. Quick Installation Guide

### 3.1 Configure PC

After you directly connect your PC to the TD-8616 or connect your adapter to a Hub/Switch which has connected to the Router, you need to configure your PC's IP address. Follow the steps below to configure it.

**Step 1:** Click the **Start** menu on your desktop, right click **My Network Places**, and then select **Properties** (shown in Figure 3-1).

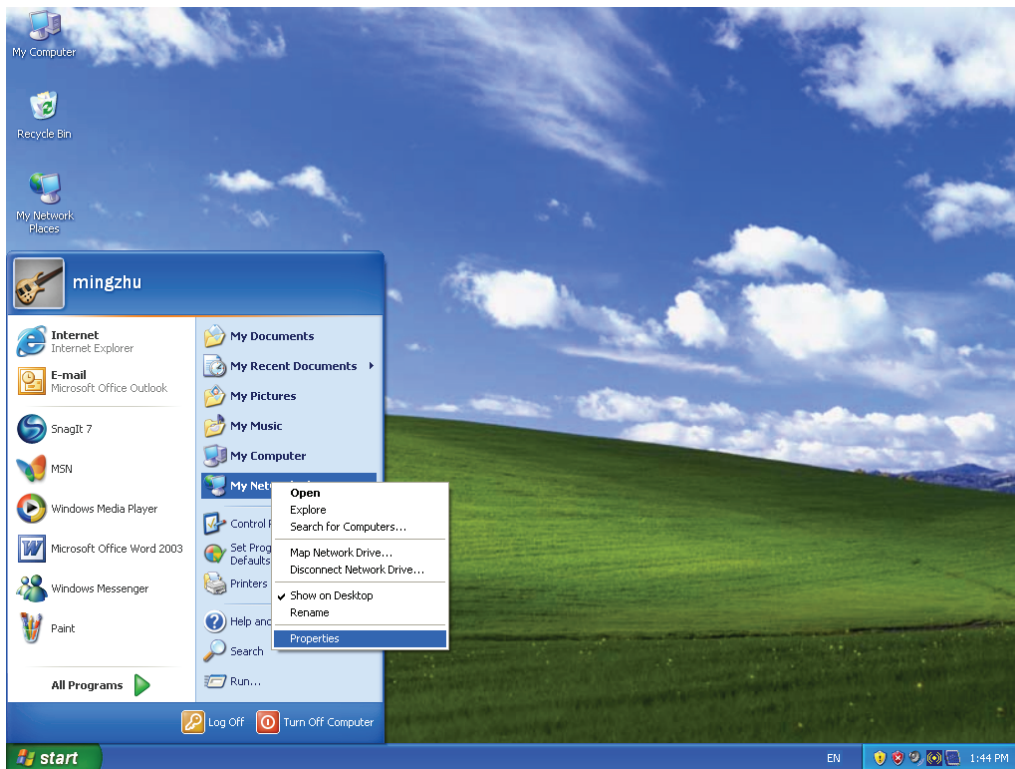


Figure 3-1

**Step 2:** Right click **Local Area Connection (LAN)**, and then select **Properties**.

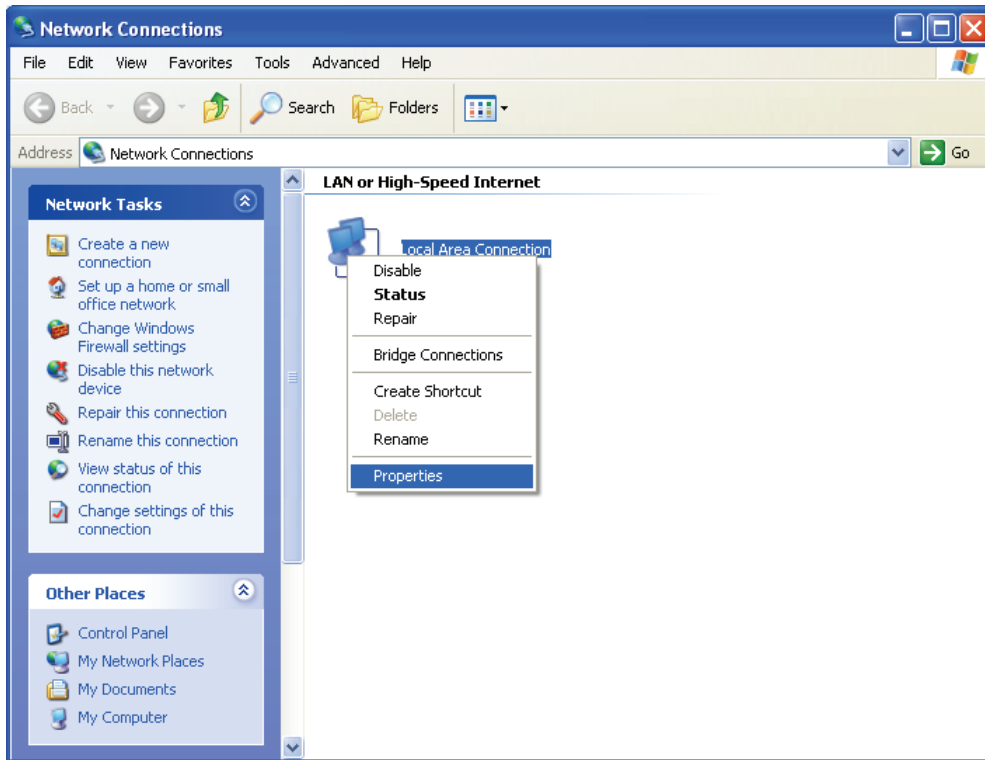


Figure 3-2

**Step 3:** Select **General** tab, highlight Internet Protocol (TCP/IP), and then click the **Properties** button.

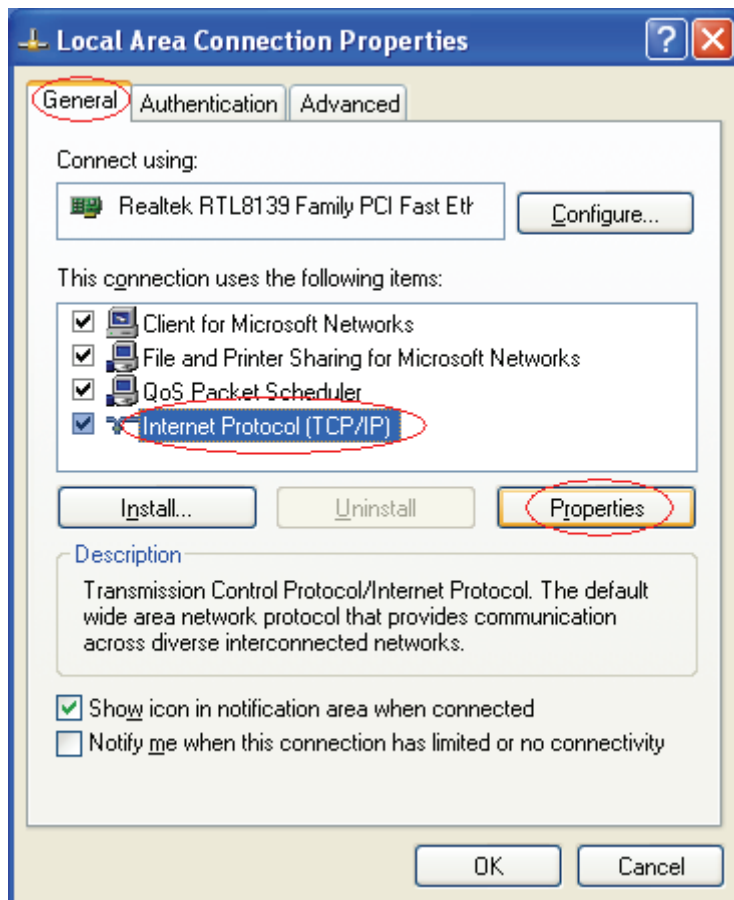


Figure 3-3

**Step 4:** Configure the IP address (Figure 3-4): Enter the IP address as 192.168.1.\* (\* is any value between 2 to 254, Subnet mask is 255.255.255.0). After that, click **OK**.

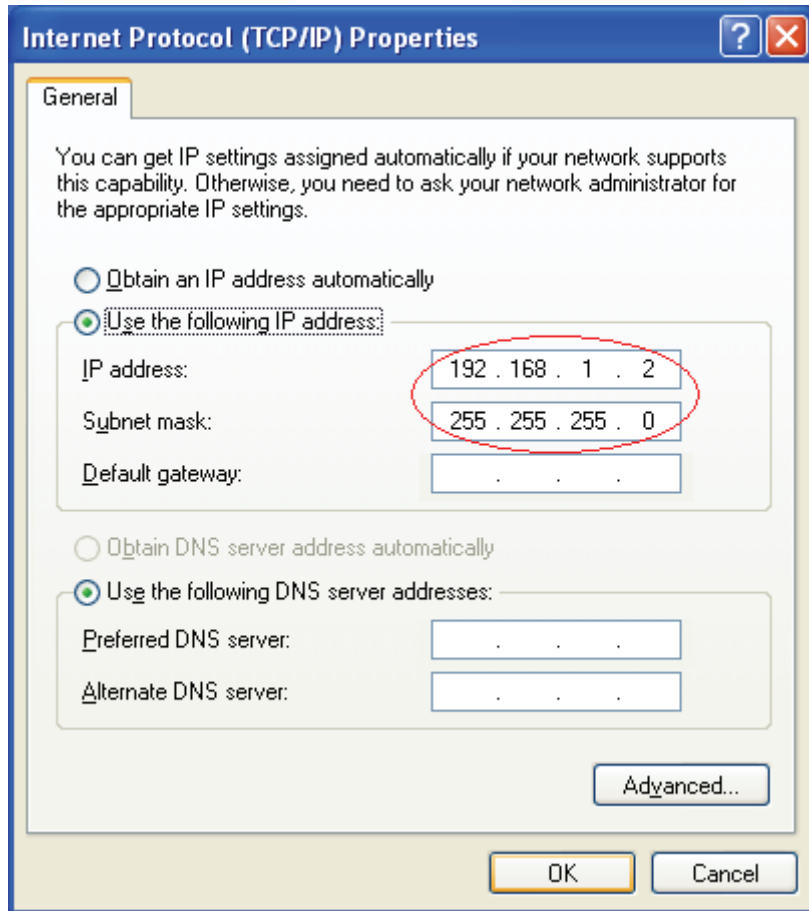


Figure 3-4

**Note:**

- 1) The users of Windows 98 can open **TCP/IP Properties** according to the following: Right-press (Mouse) **Network Neighbor** -> Choose **Properties** -> Double-press **TCP/IP. PCI Fast Ethernet Adapter**.
- 2) The words in fact maybe are different with this guide.

Now, you can run the Ping command in the command prompt to verify the network connection. Please click the **Start** menu on your desktop, select **run** tab, type **cmd** in the field and press **Enter**. To continue, please type *ping 192.168.1.1* on the following appeared command prompt screen and then press **Enter**.

If the result displayed is similar to the screen below, the connection between your PC and the Modem has been established.

```

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

```

Figure 3-5

If the result displayed is similar to the screen shown below, it means that your PC has not connected to the Modem.

```

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

```

Figure 3-6

You can check it follow the steps below:

**1) Is the connection between your PC and the Modem correct?**

The LEDs of LAN port which you link to the device and the LEDs on your PC's adapter should be lit.

**2) Is the TCP/IP configuration for your PC correct?**

If the Modem's IP address is 192.168.1.1, your PC's IP address must be within the range of 192.168.1.2 ~ 192.168.1.254.

## 3.2 Login

Once your host PC is properly configured, please proceed as follows to use the Web-based Utility: Start your web browser and type the private IP address of the Modem in the URL field:

**192.168.1.1.**

After that, you will see the screen shown below, enter the default User Name **admin** and the default Password **admin**, and then click **OK**.



Figure 3-7

After that you will see the page as follow when ADSL connection is OK.

ADSL2/2+ Ethernet Modem

Statistics																	
Basic Setup Maintenance Statistics																	
Device Information Traffic Statistics																	
<b>Device Information</b>	Firmware Version : 1.0.1 Build 071112 Rel.32720 MAC Address : 00:0a:eb:00:00:43																
<b>LAN</b>	IP Address : 192.168.1.1 Subnet Mask : 255.255.255.0																
<b>WAN</b>	Virtual Circuit : PVC0 Status : Connected																
<b>ADSL</b>	ADSL Firmware Version : FwVer:3.9.0.0_A_TC3085 HwVer:T14.F7_3.0 Line State : Showtime Modulation : G.DMT Annex Mode : ANNEX_A																
	<table border="1"> <thead> <tr> <th></th> <th>Downstream</th> <th>Upstream</th> <th></th> </tr> </thead> <tbody> <tr> <td>SNR Margin :</td> <td>32.5</td> <td>24.0</td> <td>db</td> </tr> <tr> <td>Line Attenuation :</td> <td>8.5</td> <td>4.0</td> <td>db</td> </tr> <tr> <td>Data Rate :</td> <td>2048</td> <td>512</td> <td>kbps</td> </tr> </tbody> </table>		Downstream	Upstream		SNR Margin :	32.5	24.0	db	Line Attenuation :	8.5	4.0	db	Data Rate :	2048	512	kbps
	Downstream	Upstream															
SNR Margin :	32.5	24.0	db														
Line Attenuation :	8.5	4.0	db														
Data Rate :	2048	512	kbps														

Figure 3-8

## Chapter 4. Software Configuration

This User Guide recommends using the “Quick Installation Guide” for first-time installation. For advanced users, if you want to know more about this device and make use of its functions adequately, maybe you will get help from this chapter to configure the advanced settings through the Web-based Utility.

After your successful login, you can configure and manage the device. There are main menus on the top of the Web-based Utility, submenus will be available after you click one of the main menus. On the center of the Web-based Utility, there are the detailed configurations or status information. To apply any settings you have altered on the page, please click the **SAVE** button.

### 4.1 Statistics

Choose “**Statistics**”, you can see the next submenus: **Device Information** and **Traffic Statistics**. Click any of them, and you will be able to configure the corresponding function.



Figure 4-1

Choose “**Statistics**→**Device Information**” menu, and you will be able to view the device information, including LAN, WAN and ADSL. The information will vary depending on the settings of the Modem configured on the Basic Setup screen.

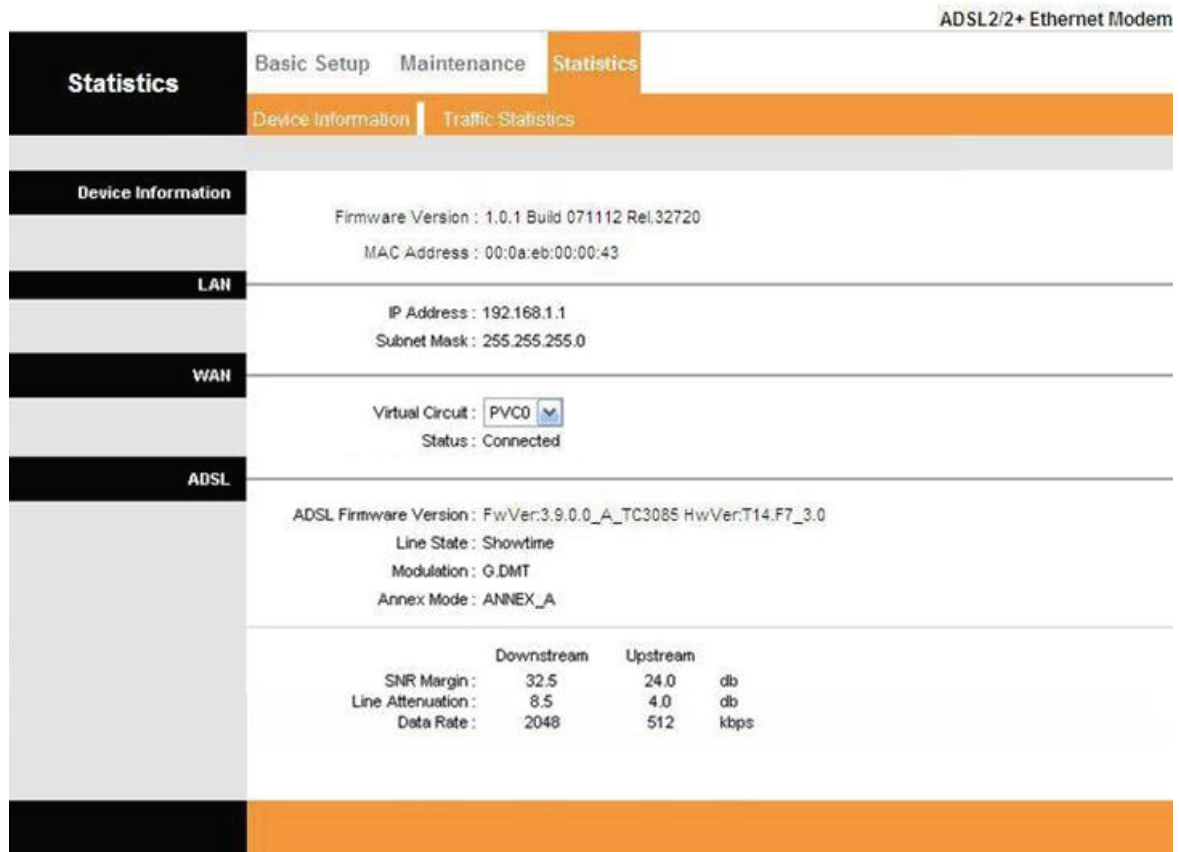


Figure 4-2

Choose “**Statistics**→**Traffic Statistics**” menu, and you will be able to view the traffic statistics about the Modem.

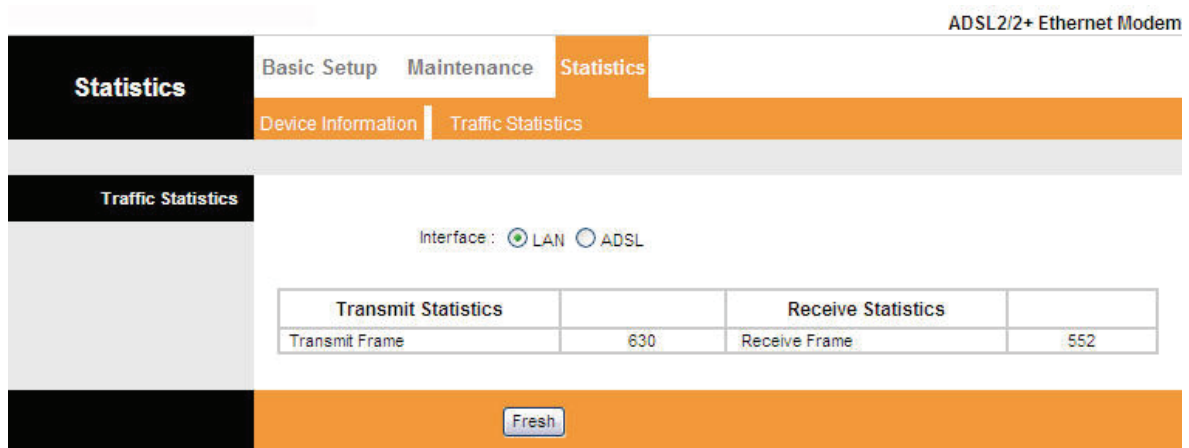


Figure 4-3

## 4.2 Basic Setup

Choose “**Basic Setup**”, you can see the next submenus: **WAN Setting**, **LAN Setting** and **ADSL**.



Figure 4-4



Click any of them, and you will be able to configure the corresponding function.

### 4.2.1 WAN Setting

Choose “**Basic Setup**→**WAN Setting**” menu, you can configure the parameters for WAN ports in the next screen (shown in Figure 4-5).

The screenshot shows the WAN Setting configuration page. The navigation bar includes 'Basic Setup', 'Maintenance', and 'Statistics'. Under 'Basic Setup', there are sub-menus for 'WAN Setting', 'LAN Setting', and 'ADSL'. The 'WAN Setting' section is active and shows the following configuration options:

- Virtual Circuit: PVC0 (with a 'PVC Summary' button)
- Status:  Activated  Deactivated
- VPI: 0 (Range: 0~255)
- VCI: 35 (Range: 1~65535)
- Encapsulation: 2884 Bridged IP LLC
- Save button

Figure 4-5

- **WAN Setting:** WAN settings are used to connect to your ISP. Your ISP provides VPI (Virtual Path Identifier), VCI (Virtual Channel Identifier) settings to you. In this Device, you can totally setup 2 VCs on different encapsulations, if you apply 2 different virtual circuits from your ISP. You need to activate the VC to take effect. For PVCs management, you can use ATM QoS to setup each PVC traffic line's priority.
  - **Virtual Circuit:** Select the VC number you want to setup, PVC0~PVC1.
  - **Status:** If you want to use a designed VC, you should activate it.
  - **VPI:** Identifies the virtual path between endpoints in an ATM network. The valid range is from 0 to 255. Please input the value provided by your ISP.
  - **VCI:** Identifies the virtual channel endpoints in an ATM network. The valid range is from 32 to 65535 (1 to 31 is reserved for well-known protocols). Please input the value provided by your ISP.
- **Encapsulation:** There are two connection types :LLC and VC-Mux. Please choose the appropriate type which ISP provide.

### 4.2.2 LAN Setting

Choose “**Basic Setup**→**LAN Setting**” menu, and you will see the LAN screen (shown in Figure 4-6). Please configure the parameters for LAN ports according to the descriptions below.

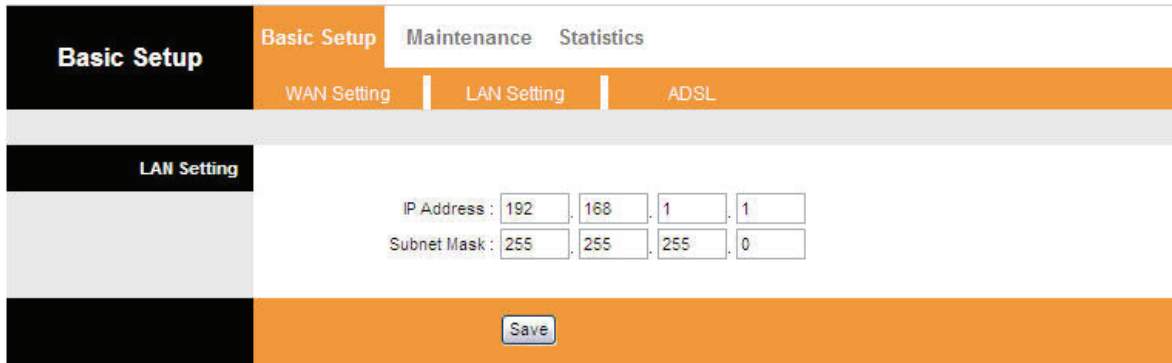
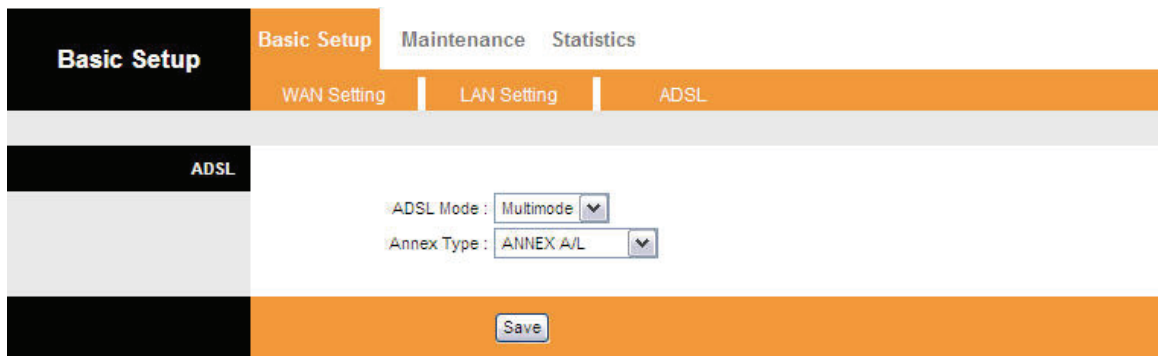


Figure 4-6

- **LAN Setting:** These are the IP settings of the LAN interface for the device. These settings may be referred to as Private settings. You may change the LAN IP address if needed. The LAN IP address is private to your internal network and cannot be seen on the Internet.
  - **IP Address:** Enter the Modem’s local IP Address, then you can access to the Web-based Utility via the IP Address, the default value is 192.168.1.1.
  - **IP Subnet Mask:** Enter the Modem’s Subnet Mask, the default value is 255.255.255.0.

### 4.2.3 ADSL

Choose “**Basic Setup**→**ADSL**”, you can select the ADSL Type and ADSL Mode in the next screen. The ADSL feature can be selected when you meet the physical connection problem. Please check the proper settings with your Internet service provider.



- **ADSL Mode:** Select the ADSL operation mode which your ADSL connection uses.
- **ADSL Type:** Select the ADSL operation type which your ADSL connection uses.

### 4.3 Maintenance

Choose “**Maintenance**”, you can see the next submenus:



Figure 4-7

Click any of them, and you will be able to configure the corresponding function.

### 4.3.1 Administration

Choose “Maintenance→Administrator”, you can set new password for admin in the screen (shown in Figure 4-8).

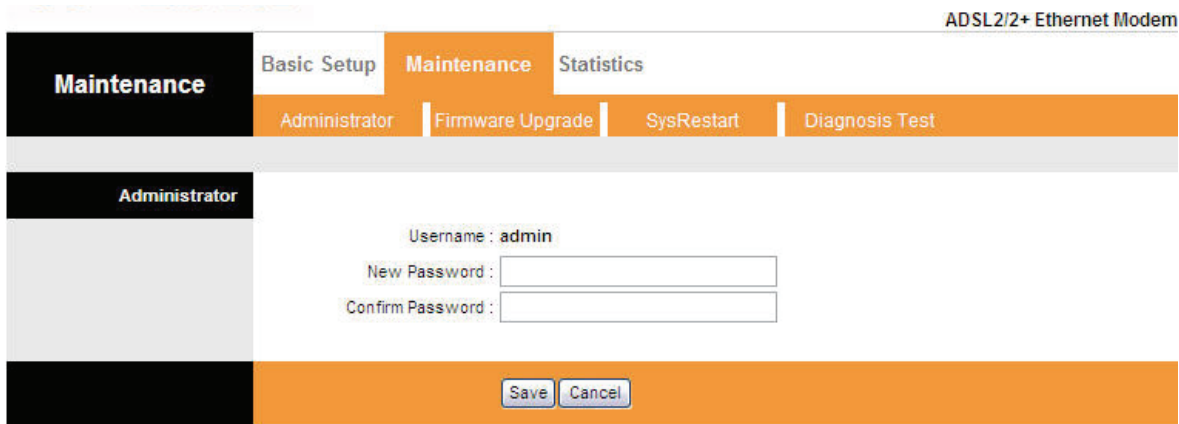


Figure 4-8

**Note:**

- 1) There is only one account that can access Web-Management interface. The default account is "admin", and the password is "admin". Admin has read/write access privilege.
- 2) When you change the password, you should enter the new password twice, and then click **SAVE** to make the new password take effect.

### 4.3.2 Firmware

Choose “Maintenance→Firmware”, you can upgrade the firmware of the Modem in the screen (shown in Figure 4-9). Make sure the firmware or romfile you want to use is on the local hard drive of the computer. Click **Browse** to find the local hard drive and locate the firmware or romfile to be used for upgrade.

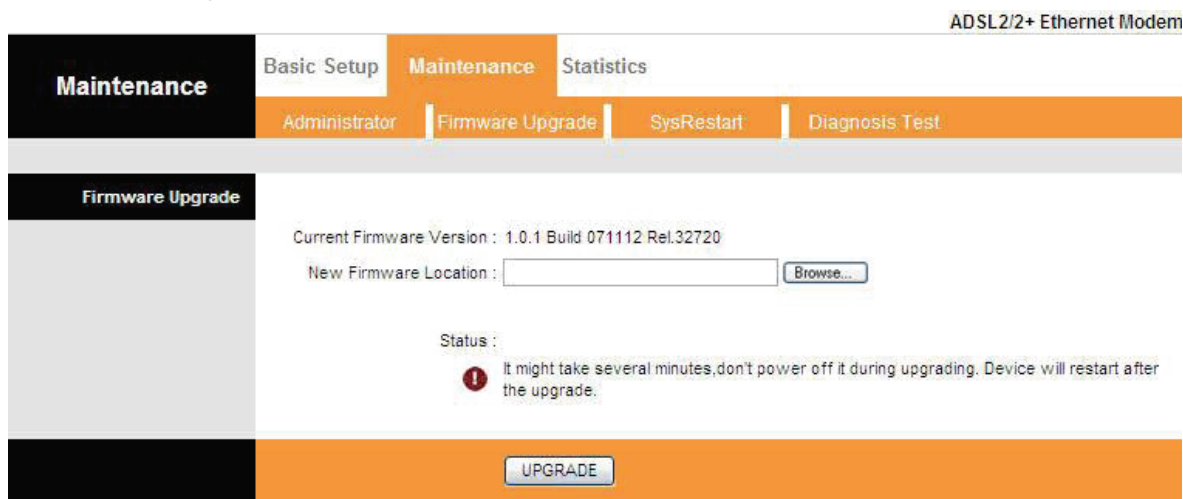


Figure 4-9

**To upgrade the modem's firmware, follow these instructions below:**

**Step 1:** Download a more recent firmware upgrade file from the TP-LINK website ([www.tp-link.com](http://www.tp-link.com)).

**Step 2:** Type the path and file name of the update file into the “New Firmware Location” field. Or click the **Browse** button to locate the update file.

**Step 3:** Click the **UPGRADE** button.

**Note:**

- 1) New firmware versions are posted at [www.tp-link.com](http://www.tp-link.com) and can be downloaded for free. If the modem is not experiencing difficulties, there is no need to download a more recent firmware version, unless the version has a new feature that you want to use.
- 2) When you upgrade the modem's firmware, you may lose its current configurations, so please back up the modem's current settings before you upgrade its firmware.
- 3) Do not turn off the modem or press the Reset button while the firmware is being upgraded.
- 4) The modem will reboot after the upgrading has been finished.

### 4.3.3 SysRestart

Choose “**Maintenance**→**SysRestart**”, you can select to restart the device with current settings or restore to factory default settings in the screen (shown in Figure 4-10).

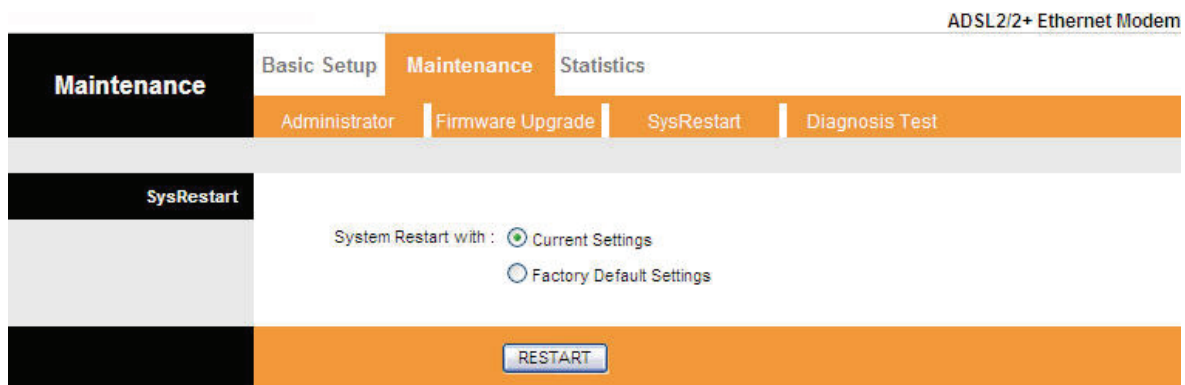


Figure 4-10

### 4.3.4 Diagnostic Test

Choose “**Maintenance**→**Diagnostic Test**”, you can view the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides in the screen (shown in Figure 4-11).

The screenshot displays the 'Maintenance' section of the modem's web interface. The 'Diagnosis Test' sub-section is active, showing a dropdown menu for 'Virtual Circuit' set to 'PVC-0'. Below this, a list of diagnostic tests is shown with their results:

Test Description	Result
>> Testing Ethernet LAN connection ...	PASS
>> Testing ADSL Synchronization .	PASS
>> Testing ATM OAM segment ping ...	PASS
>> Testing ATM OAM end to end ping ...	FAIL

A 'Submit' button is located at the bottom of the interface.

Figure 4-11

## Appendix A: Specification

General	
Standards and Protocols	ANSI T1.413, ITU G.992.1, ITU G.992.2, ITU G.992.3, G.992.4, ITU G.992.5, IEEE 802.3, IEEE 802.3u, TCP/IP, HTTP
Safety & Emission	FCC、CE
Ports	1 10/100M Auto-Negotiation RJ45 port (Auto MDI/MDIX) 1 RJ11 port
LEDs	LAN, ADSL Power, Act
Network Medium	10Base-T: UTP category 3, 4, 5 cable 100Base-TX: UTP category-5 Max line length: 6.5Km
Data Rates	Downstream: Up to 24Mbps Upstream: Up to 3.5Mbps (With Annex M enabled)
System Requirement	Internet Explorer 5.0 or later, Netscape Navigator 6.0 or later Win 9x/ME/2000/XP/Vista
Physical and Environment	
Working Temperature	0°C ~ 40°C
Working Humidity	10% ~ 90% RH (non-condensing)
Storage Temperature	-40°C ~ 70°C
Storage Humidity	5% ~ 90% RH (non-condensing)