

# ADSL Router User Manual

## NOTICE

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## 1 Overview

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Thank you for choosing our product. The product is a Wireless ADSL router combining an ADSL modem, an 802.11n wireless router and a 4-port switch in one unit, bringing high-speed wireless Internet connection to a home or an office.

### 1.1 Features

#### 1.1.1 Data rate

- Downstream data rate up to 24Mbps,
- Upstream data rate up to 1Mbps

#### 1.1.2 ADSL Compliant

- ITU G.992.1 (G.DMT)
- ITU G.992.2 (G.Lite)
- ITU G.994.1 (G.hs)
- ITU G.992.3 (G.DMT.BIS)
- ITU G.992.4 (G.lite.bis)
- ITU G.992.5
- Compatible with all T1.413 issue 2 (full rate DMT over analog POTS), and CO DSLAM equipment

#### 1.1.3 Wireless

- Fully IEEE 802.11b & IEEE 802.11g compatible.
- IEEE 802.11n draft compatible
- Wireless data rate up to 300Mbps
- Operating in the unlicensed 2.4 GHz ISM band
- Multi-SSID
- Supports 64/128 bits WEP security and user authentication

#### 1.1.4 Network Protocol & Features

- Ethernet to ADSL Self-Learning Transparent Bridging

- Internet Control Message Protocol (ICMP)
- IP Static Routing
- Routing Information Protocol (RIP, RIPv2)
- Network Address Translation (NAT)
- Virtual Server, Port Forwarding
- Dynamic Host Configuration Protocol (DHCP)
- DNS Relay, DDNS
- IGMP Proxy
- Simple Network Time Protocol (SNTP)
- VPN pass-through (IPSec/PPTP/L2TP)
- Parent control

#### **1.1.5 ATM Capabilities**

- RFC 1483 Multi-protocol over ATM “Bridged Ethernet” compliant
- RFC 2364 PPP over ATM compliant
- RFC 2516 PPP over Ethernet compliant
- ATM Forum UNI3.1/4.0 PVC - Up to 16 PVCs
- VPI Range: 0-255
- VCI Range: 32-65535
- UNI 3.0 & 3.1 Signaling
- ATM AAL5 (Adaption Layer type 5)
- OAM F4/F5

#### **1.1.6 FIREWALL**

- Built-in NAT
- MAC Filtering
- Packet Filtering

- Stateful Packet Inspection (SPI)
- Denial of Service Prevention (DoS)
- DMZ

#### **1.1.7 Management Support**

- Web Based GUI
- Upgrade or update via FTP/HTTP
- Command Line Interface via Telnet
- Diagnostic Test
- Firmware upgradeable for future feature enhancement

#### **1.1.8 Operating System Support**

- WINDOWS 98
- WINDOWS 98 SE
- WINDOWS ME
- WINDOWS 2000
- WINDOWS XP
- WINDOWS VISTA
- Macintosh
- LINUX

#### **1.1.9 Environmental**

- Operating humidity: 10%-90% non-condensing
- Non-operating storage humidity: 5%-95% non-condensing

### **1.2 Packet Contents**

The packet contents are as the following:

- ADSL ROUTER x 1
- Antenna x 2
- Base x 1

- External Splitter x 1
- Power Adapter x 1
- Telephone Line x 1
- Ethernet Cable x 1
- CD x 1

### 1.3 System Requirements

Before using this ROUTER, verify that you meet the following requirements:

- Subscription for ADSL service. Your ADSL service provider should provide you with at least one valid IP address (static assignment or dynamic assignment via dial-up connection).
- One or more computers, each contains an Ethernet 10/100M Base-T network interface card (NIC).
- A hub or switch, if you are connecting the device to more than one computer.
- For system configuration using the supplied web-based program: A web browser such as Internet Explorer v5.0 or later, or Netscape v4.7 or later.

### 1.4 Factory Defaults

The device is configured with the following factory defaults:

- IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0
- SSID: WLAN
- Encapsulation: RFC 2516 LLC
- VPI/VCI: According to local information

### 1.5 Warnings and Cautions

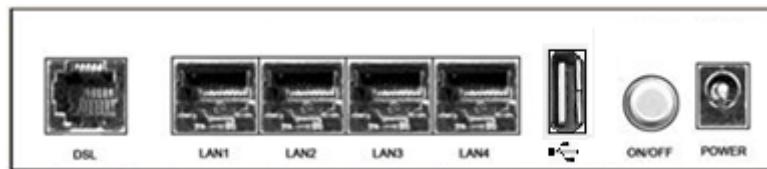
- Never install telephone wiring during storm. Avoid using a telephone during an electrical storm. There might be a risk of electric shock from lightening.
- Do not install telephone jacks in wet locations and never use the product near water.

- To prevent dangerous overloading of the power circuit, be careful about the designed maximum power load ratings. Not to follow the rating guideline could result in a dangerous situation.
- Please note that telephone line on modem must adopt the primary line that directly outputs from junction box. Do not connect Router to extension phone. In addition, if your house developer divides a telephone line to multi sockets inside the wall of house, please only use the telephone that has connected with the splitter of ADSL Router when you access the Internet.

## 2 Hardware Description

### Front Panel

	LED	Color	Function
 	PWR	Green	Power on
			Power off
       	LAN1,2,3,4	Green	On: LAN link established and active via LAN port Blinking: DSL data activity occurs. Off: No LAN link via LAN port
 	WLAN	Green	On: The wireless module is ready and idle. Blinking: Data transmitting or receiving over WLAN Off: The wireless function is off
 	DSL	Green	On: DSL link established and active Quick Blinking: DSL is trying to establish a connection Slow Blinking: No DSL link
 	INET	Solid Green	IP connected
		Off	Modem power off, ADSL connection not present
		Flickering Green	IP connected and IP Traffic is passing thru the device

**Rear panel**

Port	Function
DSL	Connect the device to an ADSL telephone jack or splitter using a RJ-11 telephone cable
LAN1,2,3,4	Connect the device to your PC's Ethernet port, or to the uplink port on your hub/switch, using a RJ-45 cable
USB	Connect the device to a Printer
ON/OFF	Switch it on or off
POWER	Connect to the supplied power adapter

**Side panel**

WIFI button: Enable or disable wireless function.

Reset button: System reset or reset to factory defaults.

WPS button: A convenient way for WPS set.

### 3 Hardware Installation

This chapter shows you how to connect Router. Meanwhile, it introduces the appropriate environment for the Router and installation instructions.

1. Using a telephone line to connect the **DSL** port of **ROUTER** to the **MODEM** port of the splitter, and using a other telephone line connect your telephone to the **PHONE** port of the splitter, then connect the wall phone jack to the **LINE** port of the splitter.

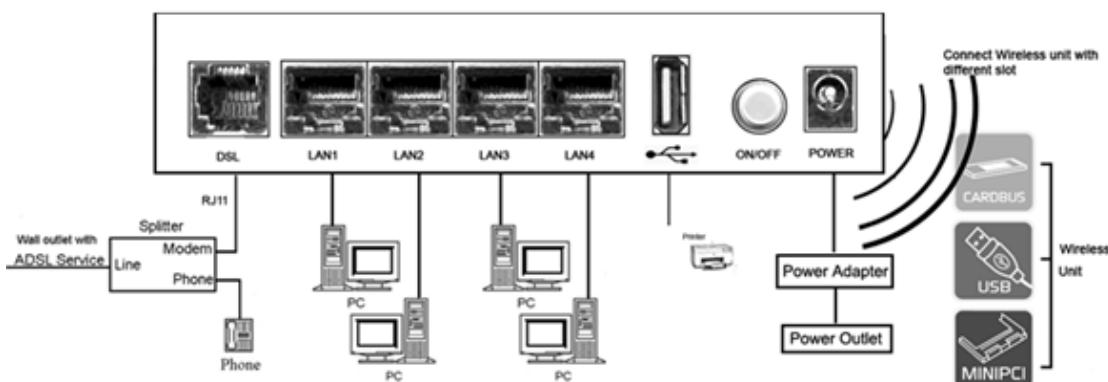
The splitter comes with three connectors as below:

**LINE**: Connects to a wall phone jack (RJ-11 jack)

**MODEM**: Connects to the DSL jack of **ROUTER**

**PHONE**: Connects to a telephone set

2. Using an Ethernet Cable to connect the **LAN** port of the **ROUTER** to your **LAN** or a **PC** with network card installed.
3. Connect the power cable to the **PWR** connector on **ROUTER**, then plug in the **AC power adapter** to the **AC power outlet**, and then press the **on-off** button.



**Notes:** Without the splitter and certain situation, transient noise from telephone can interfere with the operation of the Router, and the Router may introduce noise to the telephone line. To prevent this from happening, a small external splitter must be connected to each telephone.

## 4 PC Configuration Guide

---

### 4.1 Local PC Configuration in Windows 95, 98, ME, XP

1. In the Windows task bar, click the “Start” button, point to “Settings”, and then click “Control Panel”.
2. Double-click the “Network” icon.
3. On the “Configuration” tab, select the TCP/IP network associated with your network card and then click “Properties”.
4. In the “TCP/IP Properties” dialog box, click the “IP Address” tab. Set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.) like 192.168.1.2, and the subnet mask as 255.255.255.0.
5. On the “Gateway” tab, set a new gateway as 192.168.1.1, and then click “Add”.
6. Configure the “DNS” tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click “OK” twice to confirm and save your changes.
8. You will be prompted to restart Windows. Click “Yes”.

### 4.2 Local PC Configuration in Windows 2000

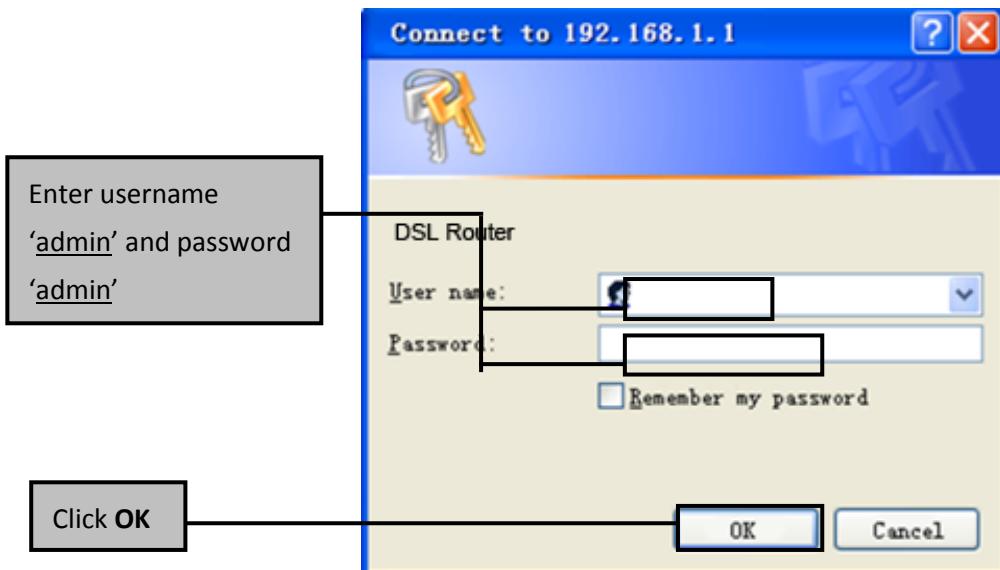
1. In the Windows task bar, click the “Start” button, point to “Settings”, and then click “Control Panel”.
2. Double-click the “Network and Dial-up Connections” icon.
3. In the “Network and Dial-up Connections” window, right-click the “Local Area Connection” icon, and then select “Properties”.
4. Highlight “Internet Protocol (TCP/IP)”, and then click “Properties”.
5. In the “Internet Protocol (TCP/IP) Properties” dialog box, set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.), and the subnet mask as 255.255.255.0 and the default gateway as 192.168.1.1. Then click “OK”.
6. Configure the “DNS” tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click “OK” twice to confirm and save your changes.

## 5 Web-based Management Guide

In order to use the web-based management software it will be necessary to use a computer that occupies the same subnet as the Router. The simplest way to do this for many users will be to use DHCP server that is enabled by default on the Router.

### 5.1 LAN setting page

Launch a web browser, such as Internet Explorer, and then use <http://192.168.1.1> to log on to the setting page.



### 5.2 Internet Access Configuration

#### 5.2.1 ADSL Mode Setup

From home page, you can find **Advanced Setup** option on the left router configuration page.

1. From **Layer2 Interface**, click **ATM Interface**. you can set it up according to the following steps. You can choose **Add**, or **Remove** to configure DSL ATM interfaces.

Interface	Vpi	Vci	DSL Latency	Category	Link Type	Connection Mode	QoS	Remove
					Add	Remove		

2. Click **Add** to configure PVC identifier, select DSL latency and select connection mode according to your local occasion. After the configuration, you need to click **Apply/Save**.

VPI: [0-255]	<input type="text" value="0"/>
VCI: [32-65535]	<input type="text" value="35"/>
Select DSL Link Type (EoA is for PPPoE, IPoE, and Bridge.)	
<input checked="" type="radio"/> EoA <input type="radio"/> PPPoA <input type="radio"/> IPoA	
Encapsulation Mode: <input type="text" value="LLC/SNAP-BRIDGING"/>	
Service Category: <input type="text" value="UBR Without PCR"/>	
<b>Select Connection Mode</b> <input checked="" type="radio"/> Default Mode - Single service over one connection <input type="radio"/> VLAN MUX Mode - Multiple Vlan service over one connection <input type="radio"/> MSC Mode - Multiple Service over one Connection	

3. Click **WAN Service** from the left menu.

Interface	Description	Type	Vlan8021p	VlanMuxId	ConnId	Igmp	NAT	Firewall	Remove
<input type="button" value="Add"/> <input type="button" value="Remove"/>									

4. Click **Add** to select a layer 2 interface for this service and then click **Next**.

<input type="text" value="atm0/ (0_0_35)"/>	<input type="button" value="Back"/> <input type="button" value="Next"/>
---	---

5. Choose WAN service type, just choose PPPoE for example here. You can enter your own service description here if you want and then click **Next**.

PPP over Ethernet (PPPoE)  
 IP over Ethernet  
 Bridging

Enter Service Description:

6. Input **PPP Username & PPP Password** and then click **Next**. The user interface allows a maximum of 256 characters in the user name and a maximum of 32 characters in the password.

PPP Username:	<input type="text"/>
PPP Password:	<input type="text"/>
PPPoE Service Name:	<input type="text"/>
Authentication Method:	<input style="width: 100px; border: 1px solid #ccc; border-radius: 5px; padding: 2px 5px;" type="text" value="AUTO"/> <input type="button" value="▼"/>

Enable Fullcone NAT  
 Dial on demand (with idle timeout timer)

PPP IP extension  
 Use Static IPv4 Address

Enable PPP Debug Mode  
 Bridge PPPoE Frames Between WAN and Local Ports

#### Multicast Proxy

Enable IGMP Multicast Proxy

**PPPoE service name** can be blank unless your Internet Service Provider gives you a value to enter.

**Authentication method** is default to **Auto**. It is recommended that you leave the **Authentication method** in **Auto**, however, you may select **PAP** or **CHAP** if necessary. The default value for MTU (Maximum Transmission Unit) is **1500** for PPPoA and **1492** for PPPoE. Do not change these values unless your ISP asks you to.

The gateway can be configured to disconnect if there is no activity for a specific period of time by selecting the **Dial on demand** check box and entering the **Inactivity timeout**. The entered value must be between 1 minute and 4320 minutes.

The **PPP IP Extension** is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it. If you need to select it, the PPP IP Extension supports the following conditions:

- It allows only one computer on the LAN.
- The public IP address assigned by the remote using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the computer's LAN interface through DHCP. Only one system on the LAN can be connected to the remote, since the DHCP server within the ADSL gateway has only a single IP address to assign to a LAN device.
- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The ADSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

7. Select a preferred wan interface as the system default gateway.

Selected WAN Interface

8. Get DNS server information from the selected WAN interface or enter static DNS server IP addresses. If only a single PVC with IPoA or static MER protocol is configured, you must enter static DNS server IP addresses.

Obtain DNS info from a WAN interface:

WAN Interface selected:

Use the following Static DNS IP address:

Primary DNS server:

Secondary DNS server:

9. Make sure that the settings below match the settings provided by your ISP.

Click on the **Apply/Save** button to save your configurations.

<b>PORT / VPI / VCI:</b>	0 / 0 / 35
<b>Connection Type:</b>	PPPoE
<b>Service Name:</b>	pppoe_0_0_35
<b>Service Category:</b>	UBR
<b>IP Address:</b>	Automatically Assigned
<b>Service State:</b>	Enabled
<b>NAT:</b>	Enabled
<b>Full Cone NAT:</b>	Disabled
<b>Firewall:</b>	Enabled
<b>IGMP Multicast:</b>	Disabled
<b>Quality Of Service:</b>	Disabled

### 5.2.2 Router Mode Setup

1. From **Advanced Setup**, click **LAN Ports** to enable virtual LAN ports feature. Tick **ENET(1-4)** as below and click **Apply/Save** to save the setting.

Use this page to enable/disable the Virtual LAN Ports feature.

**ENET(1-4)**

**Apply/Save**

LAN Port
ENET1
ENET2
ENET3
ENET4
wlan0

2. From **Advanced Setup**, click **Layer2 Interface** and select **ETH Interface**.

Before you configure ETH WAN interface, you'd better remove all PVC settings from **ATM interface**.

Interface/(Name)	Connection Mode	Remove

**Add** **Remove**

3. Click **Add** and you'll see the following screen.

**ETH WAN Configuration**  
This screen allows you to configure a ETH port .

Select a ETH port:

eth0/ENET(1-4) **▼**

**Select Connection Mode**

- Default Mode - Single service over one connection
- VLAN MUX Mode - Multiple Vlan service over one connection
- MSC Mode - Multiple Service over one Connection

**Back** **Apply/Save**

4. Select a ETH port as you will. You can select ENET1, ENET2, ENET3 or ENET4 port as the WAN interface and MSC mode as connection mode.

#### ETH WAN Configuration

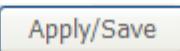
This screen allows you to configure a ETH port .

Select a ETH port:

eth0.2/ENET1 

#### Select Connection Mode

- Default Mode - Single service over one connection
- VLAN MUX Mode - Multiple Vlan service over one connection
- MSC Mode - Multiple Service over one Connection

5. Click **Apply/Save** and you'll see the following screen.

#### ETH WAN Interface Configuration

Choose Add, or Remove to configure ETH WAN interfaces.

Allow one ETH as layer 2 wan interface.

Interface/(Name)	Connection Mode	Remove
eth0.2/ENET1	MultipleServiceMode	<input type="checkbox"/>



6. From **Advanced Setup**, click **WAN Service** to configure a WAN service over the interface you selected.

#### Wide Area Network (WAN) Service Setup

Choose Add, or Remove to configure a WAN service over a selected interface.

ETH and PTM/ATM service can not coexist.

Interface	Description	Type	Vlan8021p	VlanMuxId	ConnId	Igmp	NAT	Firewall	IPv6	MLD	Remove
-----------	-------------	------	-----------	-----------	--------	------	-----	----------	------	-----	--------

7. Click **Add** and you'll see the following screen.

**WAN Service Interface Configuration**

Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId\_vpi\_vci)  
For PTM interface, the descriptor string is (portId\_high\_low)  
Where portId=0 --> DSL Latency PATH0  
portId=1 --> DSL Latency PATH1  
portId=4 --> DSL Latency PATH0&1  
low =0 --> Low PTM Priority not set  
low =1 --> Low PTM Priority set  
high =0 --> High PTM Priority not set  
high =1 --> High PTM Priority set

8. Click **Next** and you'll see the following screen. Select PPPoE as WAN service type for example. Click **Next**.

Select WAN service type:

PPP over Ethernet (PPPoE)  
 IP over Ethernet

Enter Service Description:

9. Enter the user name and password that your ISP has provided to you. Click **Next**.

PPP Username:	<input type="text"/>
PPP Password:	<input type="text"/>
PPPoE Service Name:	<input type="text"/>
Authentication Method:	AUTO 

Enable Fullcone NAT

Dial on demand (with idle timeout timer)

PPP IP extension

Use Static IPv4 Address

**PPPoE service name** can be blank unless your Internet Service Provider gives you a value to enter.

**Authentication method** is default to **Auto**. It is recommended that you leave the **Authentication method** in **Auto**, however, you may select **PAP** or **CHAP** if necessary. The default value for MTU (Maximum Transmission Unit) is **1500** for PPPoA and **1492** for PPPoE. Do not change these values unless your ISP asks you to.

The gateway can be configured to disconnect if there is no activity for a specific period of time by selecting the **Dial on demand** check box and entering the **Inactivity timeout**. The entered value must be between 1 minute and 4320 minutes.

The **PPP IP Extension** is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it. If you need to select it, the PPP IP Extension supports the following conditions:

- It allows only one computer on the LAN.
- The public IP address assigned by the remote using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the computer's LAN interface through DHCP. Only one system on the LAN can be connected to the remote, since the DHCP server within the ADSL gateway has only a single IP address to assign to a LAN device.

- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The ADSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

10. Select WAN interface as the system default gateway. Click **Next**.

Selected WAN Interface

11. Get DNS server information from the selected WAN interface or enter static DNS server IP addresses. Click **Next**.

Obtain DNS info from a WAN interface:

WAN Interface selected:

Use the following Static DNS IP address:

Primary DNS server:

Secondary DNS server:

12. Make sure that the settings below match the settings provided by your ISP.

Click on the **Apply/Save** button to save your configurations and reboot the ADSL router.

<b>PORT / VPI / VCI:</b>	0 / 0 / 35
<b>Connection Type:</b>	PPPoE
<b>Service Name:</b>	pppoe_eth0.2_1
<b>Service Category:</b>	UBR
<b>IP Address:</b>	Not Applicable
<b>Service State:</b>	Enabled
<b>NAT:</b>	Enabled
<b>Full Cone NAT:</b>	Disabled
<b>Firewall:</b>	Enabled
<b>IGMP Multicast:</b>	Disabled
<b>Quality Of Service:</b>	Disabled

### 5.2.3 LAN Settings

From **LAN**, Configure the DSL Router's IP Address and Subnet Mask for LAN interface. In this page, you can use DHCP (Dynamic Host Configuration Protocol) to control the assignment of IP addresses on your local network (LAN only).

Configure the DSL Router IP Address and Subnet Mask for LAN interface. GroupName **Default** 

IP Address:

Subnet Mask:

Enable IGMP Snooping

Enable LAN side firewall

Disable DHCP Server

Enable DHCP Server

Start IP Address:

End IP Address:

Leased Time (hour):

Static IP Lease List: (A maximum 32 entries can be configured)

MAC Address	IP Address	Remove
<input type="button" value="Add Entries"/>	<input type="button" value="Remove Entries"/>	

Enable DHCP Server Relay

DHCP Server IP Address:

Configure the second IP Address and Subnet Mask for LAN interface

IP Address:

Subnet Mask:

Item	Description
<b>IP address</b>	This is the IP address that other devices on your local network will use to connect to the modem.
<b>Subnet mask</b>	This defines the size of your network. The default is <b>255.255.255.0</b> .
<b>Enable IGMP</b>	IGMP Snooping is a method that actually “snoops” or inspects IGMP traffic on a switch. When enabled, the switch will watch for

<b>snooping</b>	IGMP messages passed between a host and a router, and will add the necessary ports to its multicast table, ensuring that only the ports that require a given multicast stream actually receive it.
<b>Disable / Enable DHCP server</b>	The DHCP server assigns an IP addresses from a pre-set pool of addresses upon request from DHCP client (e.g. your computer). Do not disable the DHCP server unless you wish to let another device handle IP address issuance on the local network.
<b>Start / end IP address</b>	This is the beginning and ending range for the DHCP server addresses.
<b>Leased time</b>	The amount of time before the IP address is refreshed by the DHCP server.
<b>Enable DHCP server relay</b>	If NAT is disabled and the PVC is the IPoA or static MER type, this item allows you to inform the router of another DHCP server on your LAN. To do this, disable the DHCP server on the gateway. Then input the IP address of the current DHCP server. Click <b>Apply</b> and restart the gateway.
<b>Configure the second IP address and...</b>	Use this feature to create a public network on your local LAN, accessible from the Internet. By assigning an address to this interface and then statically setting your LAN clients to the same network, the LAN clients are accessible from the public network (e.g. FTP or HTTP servers).

**Note: If you want to cancel all modification that you do on the Router, please select from “Management⇒Setting⇒Restore Default Settings” to restore factory default settings.**

## 5.3 Wireless setting

### 5.3.1 Basic

- Enable Wireless
- Hide Access Point
- Clients Isolation
- Disable WMM Advertise
- Enable Wireless Multicast Forwarding (WMF)

SSID:

BSSID:

Country:

Max Clients:

#### Wireless - Guest/Virtual Access Points:

Enabled	SSID	Hidden	Isolate Clients	Disable WMM Advertise	Enable WMF	Max Clients	BSSID
<input type="checkbox"/>	<input type="text" value="wl0_Guest1"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="16"/>	N/A
<input type="checkbox"/>	<input type="text" value="wl0_Guest2"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="16"/>	N/A
<input type="checkbox"/>	<input type="text" value="wl0_Guest3"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="16"/>	N/A

Option	Description
<b>Enable wireless</b>	A check box that enables or disables the wireless LAN interfaces. The default is to enable wireless communications.
<b>Hide Access Point</b>	Select Hide Access Point to protect the ADSL route access point from detection by wireless active scans. If you do not want the access point to be automatically detected by a wireless station, this checkbox should be deselected. The station will not discover this access point. To connect a station to the access point, the station must manually add this access point name in its wireless configuration. In Windows XP, go to the Network>Properties function to view all of the available access points. You can also use other software programs such as NetStumbler to view available access points.
<b>Clients</b>	Enable this item if you don't want your wireless clients to communicate with

<b>isolation</b>	each other.
<b>Network name (SSID)</b>	<p>Enter a name for user's wireless network here. SSID stands for Service Set Identifier. This name must be between 1 and 32 characters long. The default name is <b>WLAN</b>.</p> <p>All wireless clients must either detect the gateway or be configured with the correct SSID to access the Internet.</p>
<b>BSSID</b>	Displays the gateway's wireless MAC address. (User may need this address if user is using WDS or multiple gateways.) Click <b>Apply</b> to save changes.
<b>Country</b>	Drop-down menu that allows selection of specific channel.

### 5.3.2 Security

This page allows you to configure security features of the wireless LAN interface.

You may setup configuration manually or through WiFi Protected Setup(WPS)

1. Click **Security of Wireless** item and you'll see the following page.

#### WSC Setup

Enable WSC

Disabled

2. Set as follows.

Enable WSC

Enabled

Add Client (This feature is available only when WPA-PSK, WPA2 PSK or OPEN mode is configured)

Push-Button  PIN

[Help](#)

Set WSC AP Mode

Unconfigured

Setup AP (Configure all security settings with an external registrar)

Push-Button  PIN

Device PIN

16495265

[Help](#)

3. Click **Config AP** to generate a SSID and WPA pre-shared key.

**WSC Setup**

Enable WSC	Enabled <input type="button" value="▼"/>
Set WSC AP Mode	Unconfigured <input type="button" value="▼"/>
Setup AP (Configure all security settings with an external registrar)	
<input type="radio"/> Push-Button <input checked="" type="radio"/> PIN <input type="button" value="Config AP"/>	
Device PIN	44903558 <input type="button" value="Help"/>
WSC Add External Registrar	<input type="button" value="Start AddER"/>

4. Set WSC AP mode as **configured** and click **Save/Apply**.

Enable WSC	Enabled <input type="button" value="▼"/>
Add Client (This feature is available only when WPA-PSK, WPA2 PSK or OPEN mode is configured)	
<input type="radio"/> Push-Button <input checked="" type="radio"/> PIN <input type="button" value="Add Enrolee"/>	
<input type="button" value="Help"/>	
Set WSC AP Mode	Configured <input type="button" value="▼"/>
Device PIN	16495265 <input type="button" value="Help"/>
WSC Add External Registrar	<input type="button" value="Start AddER"/>

5. Your SSID and WPA pre-shared key is generated by KW5816 as follows.

Select SSID:	BrcmAP6562
Network Authentication:	WPA-PSK
WPA Pre-Shared Key:	••••••••••••• <a href="#">Click here to display</a>
WPA Group Rekey Interval:	0
WPA Encryption:	TKIP
WEP Encryption:	Disabled

6. Now you can use a wireless adaptor with WPS function and the WPS button to connect KW5812 to access the Internet.

7. To configure security features for the Wireless interface, please open Security item from Wireless menu. This web page offers nine authentication protocols for user to secure user's data while connecting to networks. There are four selections including Open, Shared, 802.1X, WPA, WPA-PSK, WPA2, WPA2-PSK, Mixed WPA-WPA2, Mixed WPA-WPA2-PSK. Different item leads different web page settings. Please read the following information carefully.

The wireless security page allows user to configure the security features of user's wireless network.

Select SSID:	WLAN
Network Authentication:	Shared
WEP Encryption:	Enabled
Encryption Strength:	128-bit
Current Network Key:	1
Network Key 1:	
Network Key 2:	
Network Key 3:	
Network Key 4:	

Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys  
Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys

There are several security methods to choose from, depending on user's needs and the capabilities of user's wireless machines.



- **WEP open and WEP shared** —WEP is an encryption scheme that is used to protect user's wireless data communications. WEP uses a combination of 64-bit keys or 128-bit keys to provide access control to user's network and encryption security for every data transmission. To decode a data transmission, each wireless client on the network must use an identical 64-bit or 128-bit key. WEP is an older wireless encryption method that is not as hard to break as the more-recent WPA.
- **802.1x** — In 802.1x (also known as RADIUS), a separate machine called an authentication server receives a user ID and password. It grants or denies access based on whether the ID and password match any entries in its account list. User can optionally enable WEP encryption with this option. Because it requires a separate machine acting as the authentication server, 802.1x is most often used in business environments.
- **WPA**— WPA is a more recent encryption method that addresses many of the weaknesses in WEP. Any client capable of WPA encryption should use it instead of WEP.
- **WPA (PSK)** — This is WPA encryption combined with a *pre-shared key* (PSK), which is a text string known only to the gateway and authorised wireless clients. The gateway rejects the login if the client's PSK does not match.
- **WPA2** — WPA2 is a more advanced encryption method than WPA. Because it is a more recent standard, some of user's wireless devices might not be able to use it.
- **WPA2 (PSK)** — this option uses WPA2 with a pre-shared key.

- **WPA2 and WPA**— This option supports WPA2/WPA encryption for devices capable of one or the other standard. The gateway automatically detects whether a particular device can use WPA2 or WPA.
- **WPA2 AND WPA (PSK)** — this has WPA2 or WPA encryption based on client abilities, as well as a pre-shared key.

After making changes, click **Apply** to save.

## 5.4 Printer Server Installations

1. Click “Advanced setup⇒Print Server” and then Check “**Enable on-board printer server**” and key in “**Printer name**”, “**Make and model**”

**Print Server settings**

This page allows you to enable / disable printer support.

Enable on-board print server.

Printer name

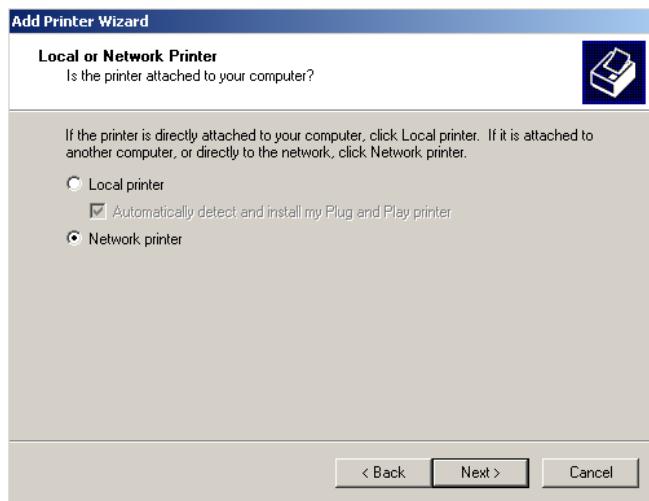
Make and model

**Save/Apply**

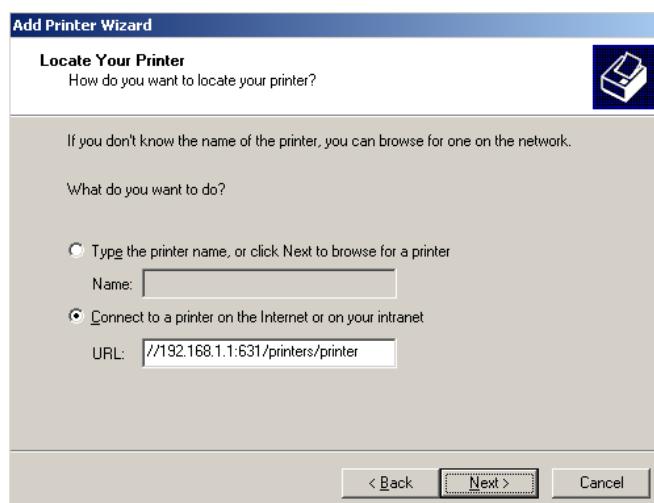
2. Click on Add a printer from **Control Panel** of the Windows computer and click “**Next**”.



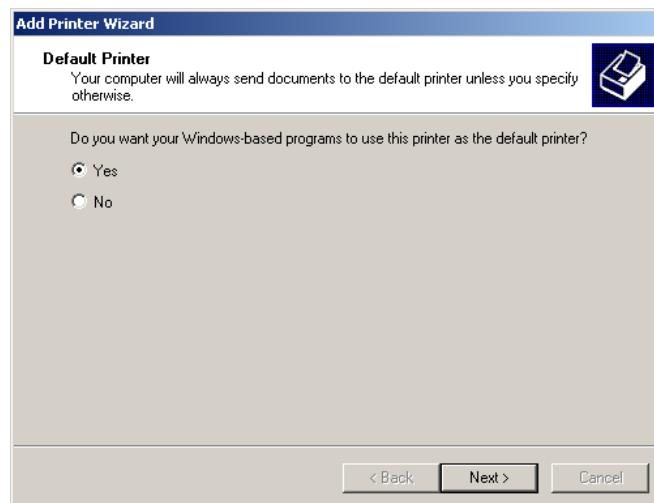
3. Select “Network Printer” and click “**Next**”.



4. Select Connect to a printer on the Internet, type "<http://192.168.1.1:631/printers/printer>" and click "Next". **The printer name "Printer" must be the same name entered in the ADSL router "print server setting" as in step 1.**



5. Select driver file directory on CD-ROM or in your hard disk and click "OK".
6. Choose "Yes" or "No" for default printer setting and click "Next".



7. Click "Finish".



## Appendix: Frequent Asked Questions

Q: None of the LEDs are on when you power on the ADSL router?

A: Please make sure what you use is the power adaptor attached with the ADSL router package and checks the connection between the AC power and ADSL router.

Q: DSL LED does not turn on after connect telephone line?

A: Please make sure what you use is the standard telephone line (as attached with the package), make sure the line is connected correctly and check whether there is poor contact at each interface. Wait for 30 seconds to allow the ADSL router establishes connection with you ADSL operator.

Q: DSL LED is in the circulation of slow-flashing and fast-flashing after connecting telephone line?

A: This situation means the ADSL router is in the status of failing to establish connection with Central Office. Please check carefully and confirm whether the ADSL router has been installed correctly.

Q: LAN LED does not turn on after connect Ethernet cable?

A: Please make sure Ethernet cable is connected hub/PC and ADSL router correctly. Then please make sure the PC/hub have been power on.

Please make sure that you use parallel network cable to connect UpLink port of hub, or use parallel network cable to connect PC. If connect normal port of hub (not UpLink port), you must use cross-cable. Please make sure that your network cables meet the networking requirements above.

Q: PC cannot access the Router?

A: Please make sure that all devices communicating with the device must use the same channel (and use the same SSID). Otherwise your PC will not find the wireless Router.

Q: PC cannot access the Internet?

A: First check whether PC can ping the interface Ethernet IP address of this product successfully (default value is 192.168.1.1) by using ping application. If ping application fails, please check the connection of Ethernet cable and check whether the states of LEDs are in gear.

If the PC uses private IP address that is set manually (non-registered legal IP address), please check:

1. Whether IP address of the PC gateway is legal IP address. Otherwise please use the right gateway, or set the PC to Obtain an IP address automatically.
2. Please confirm the validity of DNS server appointed to the PC with ADSL operator. Otherwise please use the right DNS, or set the PC to Obtain an IP address automatically.
3. Please make sure you have set the NAT rules and convert private IP address to legal IP address. IP address range of the PC that you specify should meet the setting range in NAT rules.
4. Central Office equipment may have problem.
5. The country or the wireless network type you selected is wrong.

Q: PC cannot browse Internet web page?

A: Please make sure DNS server appointed to the PC is correct. You can use ping application program to test whether the PC can connect to the DNS server of the ADSL operator.

Q: Initialization of the PVC connection failed?

A: Be sure that cable is connected properly from the DSL port to the wall jack. The DSL LED on the front panel of the ADSL router should be on. Check that your VPI, VCI, type of encapsulation and type of multiplexing setting are the same as what you collected from your service provider, Re-configure ADSL router and reboot it. If you still cannot work it out, you may need to verify these variables with the service provider.

***If the cause is not given above, please contact your local service provider!***

#### Customer Information

1. This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On bottom of this equipment is a label that contains, among other information, a product identifier of [US: XXXXXXXXX]. If requested, this number must be provided to the telephone company.
2. If this equipment [Product Name] causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
3. The telephone company may make changes in this facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modification to maintain uninterrupted service.
4. If you experience trouble with this equipment, you disconnect it from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.
5. Please follow instructions for repairing if any (e.g. battery replacement section); otherwise do not alternate or repair any parts of device except specified.
6. Connection to party line service is subject to state tariffs. Contact the state public utility commission public service commission or corporation commission for information.
7. If the telephone company requests information on what equipment is connected to their lines, inform them of:
  - a) The telephone number that this unit is connected to,
  - b) The ringer equivalence number [REN 值]
  - c) The USOC jack required [RJ11C], and
  - d) The FCC Registration Number [US: XXXXXXXXX]Items (b) and (d) are indicated on the label. The ringer equivalence number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

#### Service Requirements

In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to our Company or to one of our authorized agents. Service can be facilitated through our office at:

[U.S. Agent Company name]

[Address]

### **\*\*\* Caution \*\*\***

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

### **FCC statement**

Note: 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.

### **FCC RF Radiation Exposure Statement:**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter".

### **FCC Part 68 Statement**

This equipment complies with Part 68 of the FCC rules. This unit bears a label, which contains the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact our company. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.