ADSL 2/2+ Ethernet/USB Combo Router

WL-AM602

User Manual

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Package contents

- WL-AM602 Combo Router
- AC power adapter
- USB cable
- RJ-11 telephone cable
- RJ-45 Ethernet cable
- Splitter
- User Manual
- Quick Start Guide

Safety information

- Place your router on a flat surface close to the cables in a well-ventilated area.
- To prevent overheating, do not block the ventilation openings of the router.
- Plug this equipment into a surge protector to reduce the risk of damage from power surges and lightning strikes.
- Operate this equipment only from an electrical outlet with the correct power source as indicated on the adapter.
- Do not open the cover of this equipment. Opening the cover will void any warranties on the equipment.
- Unplug the equipment first before cleaning. A damp cloth can be used to clean the equipment. Do not use liquid / aerosol cleaners or magnetic / static cleaning devices.

Hardware overview

Front panel

The WL-AM602 Combo Router front panel contains LED indicators which show the status of the router.

LED	Mode	Description
POWER	Solid	The router is ON.
	No light	The router is OFF.
STATUS	Solid	Connection is established. The router is able to communicate with your ISP via ADSL.
	Flashing	The router is trying to connect to your ISP.
ACT	Flashing	Data is being sent or received.
LAN	Solid	A successful connection is established between the router and PC through an Ethernet cable.
	Flashing	Data is being sent or received.
USB	Solid	A successful connection is established between the router and PC through a USB cable.
	Flashing	Data is being sent or received.

Back panel

Label	Description
LINE	RJ-11 cable connects to the splitter provided.
USB	USB cable connects to the PC.
LAN	RJ-45 cable connects to an Ethernet device such as a PC or a switch.
RESET	Press to restore the router to its default settings.
CONSOLE	NOTE: To be used by maintenance professionals only for diagnostic purposes.
POWER	Connects to an AC power adapter.
ON / OFF	Press to turn the router on and off.

Hardware connections

ADSL connection

Use the ADSL splitter supplied in the package to split the ADSL signal and telephone service. Connect your ASUS WL-AM602 Combo Router to the DSL port of the splitter with the telephone cable supplied in the package. Use another telephone cable to connect your telephone to the Phone port of the ADSL splitter.

Ethernet connection

You can use either the Ethernet cable or the USB cable supplied in the package for Ethernet connection. The WL-AM602 Combo Router has an integrated auto-crossover function. You can use either a straight-through or a crossover cable for Ethernet connection.

To establish a connection using an Ethernet cable, plug one end of the Ethernet cable to the LAN port on the router rear panel and the other end to the Ethernet port on your PC.

To establish a connection using a USB cable, plug one end of the USB cable to the USB port on the router rear panel and the other end to a free USB port on your PC. The **Found New Hardware** window appears. Refer to **USB driver installation** for details.

If your LAN has more than one PC, you can connect one end of an Ethernet cable to a hub or switch and the other end to the LAN port on the router rear panel.

Power connection

To power on the router:

1. Connect the AC power cord to the AC adapter.
2. Connect the DC output plug on the AC adapter to the POWER port on the rear panel of your router.
3. Plug the AC power cord into a power outlet.

Mounting the router

The router can be mounted on the wall with two screws. Mounting can be done on wall material including concrete, wood, or drywall. Select an appropriate location free from obstructions or any possible interference. Ensure that the cables can be easily attached to the router without strain. The illustration below shows how to mount the router horizontally on a wall.

USB driver installation

The following instructions guide you through the installation of the USB driver.

1. Connect one end of the USB cable to the USB port on the router rear panel and the other end to a free USB port on your PC.
2. Turn on the router. The system is detecting the new hardware device.

3. A **Found New Hardware Wizard** window appears.

4. Click **Next**. A **Digital Signature Not Found** window appears.

5. Click **Yes** to continue.
6. An **Insert Disk** window appears and prompts you to insert the Support CD that contains the USB driver.
7. Insert the Support CD that contains the USB driver. Click **OK**.

8. A **Files Needed** window appears, asking you to specify the location of the file needed. Click **Browse** to locate the file.

9. Locate the file needed. Click **Open** to continue.

10. The USB driver installation is completed. Click **Finish** to exit the **Found New Hardware Wizard**.

Configuring your computer

Prior to accessing the router through the LAN/USB port, note the following necessary configurations :

- Your PC's TCP/IP address: **192.168.1.__**(the last number is any number between 2 and 254)
- The router's default IP address: **192.168.1.1**
- Subnet mask: **255.255.255.0**

Below are the procedures for configuring your computer. Follow the instructions for the operating system that you are using.

Windows® 2000

1. In the Windows taskbar, click **Start > Settings > Control Panel > Network and Dial-up Connections**.
2. Click **Local Area Connection**. From the **Local Area Connection Status** screen, click **Properties**.
3. The list for the installed network components is displayed. If the list includes **Internet Protocol (TCP/IP)**, then the protocol has already been enabled, and you can skip to Step 10.
4. If **Internet Protocol (TCP/IP)** does not appear as an installed component, then click **Install**.
5. In the **Select Network Component Type** window, click **Protocol** and then the **Add** button.
6. Select **Internet Protocol (TCP/IP)** from the list and then click **OK**.
7. If you are prompted to restart your computer with the new settings, click **OK**.
8. After your computer restarts, click the **Network and Dial-up Connections** icon again, and right click the **Local Area Connection** icon and then select **Properties**.
9. In the **Local Area Connection Properties** dialog box, select **Internet Protocol (TCP/IP)** and then click **Properties**.
10. In the **Internet Protocol (TCP/IP) Properties** dialog box, select **Use the following IP address** and key in **192.168.1.X** (where X is any number between 2 and 254) and **255.255.255.0** in the **IP address field and Subnet Mask** field.
11. Click **OK** to save your changes and then close the **Control Panel**.

Windows® XP

1. In the Windows taskbar, click **Start > Settings > Network Connections**.
2. In the **Network Connections window**, right click the **Local Area Connection** icon and click **Properties**.
3. The **Local Area Connection** screen displays the installed network components. Select I**nternet Protocol (TCP/IP)** and then click **Properties**.
4. In the **Internet Protocol (TCP/IP) Properties** dialog box, select **Use the following IP address** and key in **192.168.1.X** (where X is any number between 2 and 254) and **255.255.255.0** in the **IP address field and Subnet Mask** field.
5. Click **OK** to save your changes and then close the **Control Panel**.

Log into the router

To log into your router:

1. Key in http://192.168.1.1 (the router's default IP address) in the address box of the web browser and press **Enter**.
2. A login window appears. The default username is **admin**, and password is **admin** (lowercase).

Device Info

Access the system information by clicking the items in the **Device Info** menu.

Summary

Click **Summary** to display the version information of your router and the realtime status of the DSL connection.

WAN

Click **WAN** to display the information on the WAN connection.

Statistics

LAN Statistics

Click **LAN** to display the LAN statistics on the data received and transmitted.

WAN Statistics

Click **WAN** to display the WAN statistics.

ATM Statistics

Click **ATM** to display the ATM statistics.

ADSL Statistics

Click **ADSL** to display the ADSL statistics which are useful for troubleshooting and diagnosis of connection problems.

ADSL BER Test

ADSL BER Test (Bit Error Rate Test) is a test that reflects the ratio of error bits to the total number transmitted.

Click **ADSL BER Test** at the bottom of the ADSL Statistics page, then a pop-up screen appears allowing you to set the tested time and to start the test.

Below is the result screen of an ADSL BER Test.

Route

Click **Route** to display the information on the routing status.

ARP

Click **ARP** to display the information on the ARP status. The Address Resolution Protocol (ARP) converts the IP address to the physical address, labeled HW Address (the MAC address) and helps to identify computers on the LAN.

DHCP

Click **DHCP** to display the DHCP Leases page. It shows the list of computers that have automatically obtained their IP addresses from the DHCP server, and the time when the IP addresses will expire.

Quick Setup

This chapter explains how to quickly configure the router for connecting to the Internet. Click **Quick Setup** and then follow the instructions below to set up your router.

1. Select the **DSL Auto-connect** checkbox to enable the DSL Auto-connect process. The auto-connect process automatically detects the first usable PVC, PPPoE, PPPoA, and Bridge Protocol (with DHCP Server available). Click **Next** to continue.

If you do not select the **DSL Auto-connect** checkbox, then enter the VPI / VCI provided by your ISP to set up the ATM PVC. Click **Next** to continue.

2. Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use. Here is an example of PPPoE connection type. Click **Next** to continue.

3. Enter the PPP username and password provided by your ISP. Decide if you will be using any features such as Dial on demand, PPP IP extension, and Keep Alive, then click **Next**.

4. Select the **Enable NAT** checkbox. For the rest of the checkboxes and field, keep the default settings. Click **Next** to continue.

5. Configure the DSL Router IP address and Subnet Mask. If you want the DHCP server to automatically assign IP addresses, then select **Enable DHCP Server** and enter the range of IP addresses that the DHCP server can assign to your computers. Select **Disable DHCP Server** if you would like to manually assign IP addresses. Click **Next** to continue.

6. Check if the settings are correct. Click **Save/Reboot** to save your settings and restart your router.

Advanced Setup

This chapter helps you to set up some frequectly used router features such as Firewall, Port Mapping, QoS, and DNS.

WAN

To configure a new WAN interface:

1. Click **Add** to add a new connection for the WAN interface.

2. Configure an ATM PVC identifier (VPI and VCI) and select a service category.

Check with your ISP before you configure VPI, VCI, and the service category.

• **VPI:** Virtual Path Identifier. The valid range is 0 to 255.

• **VCI:** Virtual Channel Identifier. The valid range is 32 to 65535.

• **Service Category:** Five classes of traffic are listed below:

UBR Without PCR (Unspecified Bit Rate without Peak Cell Rate): UBR service is suitable for applications that can tolerate variable delays and some cell losses. Applications suitable for UBR service include text/data/image transfer, messaging, distribution, and retrieval and also for remote terminal applications such as telecommuting.

UBR With PCR (Unspecified Bit Rate with Peak Cell Rate): The amount of bandwidth is characterized by a Peak Cell Rate (PCR). UBR with PCR is connections that transport variable bit rate traffic for which there is no reliance on time synchronization between the traffic source and destination and under the Peak Cell Rate.

CBR (Constant Bit Rate): Used by applications that require a fixed data rate that is continuously available during the connection time. It is commonly used for uncompressed audio and video information such as video conferencing, interactive audio (telephony), audio/video distribution such as television, distance learning, and pay-per-view, and audio/video retrieval such as video-on-demand and audio library.

Non Realtime VBR (Non-Real-time Variable Bit Rate): Can be used for data transfers that have critical response-time requirements such as airline reservations, banking transactions, and process monitoring.

Realtime VBR (Realtime Variable Bit Rate): Used by time-sensitive applications such as real-time video. Rt-VBR service allows the network more flexibility than CBR.

3. Select your connection type and encapsulation mode. Click **Next**.

4. Disable the bridge service if desired.

5. Check if the settings are right. Click **Save** to save the new settings.
6. Click **Finish**.

A **DSL Router Reboot** screen appears. The router reboots to activate the new settings.

LAN

Configure the DSL Router IP address and Subnet Mask. If you want the DHCP server to automatically assign IP addresses, then select **Enable DHCP Server** and enter the range of IP addresses that the DHCP server can assign to your computers. Select **Disable DHCP Server** if you would like to manually assign IP addresses. Click **Next** to continue. The **Save** button only saves the LAN configuration data, but does not apply the configurations. Click **Save/Reboot** to save and activate the new settings.

NAT

Enable NAT (Network Address Translation) to configure the Virtual Server, Port Triggering, and DMZ Host.

Virtual Servers

A virtual server allows you to direct incoming traffic from the WAN side to a specific IP address on the LAN side.

To set up a virtual server:

1. Click **Add** to add a virtual server in your LAN.

2. Select a service name from the dropdown list and enter the server IP address. Click **Save/Apply**.

3. Click **Add** to add another virtual server or **Remove** to remove an existing virtual server.

Port Triggering

To set up port triggering:

1. Click **Add**.

2. Select the application that you want to configure the port settings for. Click **Save/Apply**.

3. Click **Add** to add another application that you want to configure the port settings for or **Remove** to remove an application selected.

DMZ Host

Enter the IP address of the DMZ host and click **Save/Apply** to activate the settings.

Firewall

IP Filtering-Outgoing

The outgoing filter blocks the LAN traffic from entering the WAN side.

To creat an outgoing filter:

1. Click **Add**.

2. Enter the filter name, source information (the LAN side), and destination information (the WAN side). Click **Save/Apply**.

IP Filtering-Incoming

The incoming IP filter blocks the WAN traffic from entering the LAN side.

To creat an incoming filter:

1. Click **Add**.

2. Enter the filter name, source information (the WAN side), and destination information (the LAN side). Select the WAN interface, then Click **Save/Apply**.

MAC Filtering

MAC filtering forwards or blocks traffic by MAC address. Change the policy or add filtering rules to the MAC filtering table in the **MAC Filtering Setup** screen.

Click **Change Policy** to change the MAC Filtering Global Policy. A confirmation dialog box appears asking you to verify the changes made.

Click **Add** to create a MAC filter. Click **Save/Apply** to save and activate the settings.

Parental Control

The **Parental Control** function allows you to restrict the day of the week when a LAN device can access the router.

Click **Add** to set up the Time of Day Restriction.

The **Browser's MAC Address** field automatically displays the MAC address of the LAN device where the browser is running. To restrict another LAN device, click **Other MAC Address** and enter the MAC address of another LAN device. Select the day of the week when the LAN device can access the router. Click **Save/Apply** to save and activate the settings.

Quality of Service

Configure the Quality of Service to apply different priorities to traffic on the router.

To add a network traffic class rule:

1. Click **Add**.

2. Give a name to this traffic class.
3. Assign a priority level (low, medium, and high) to this traffic class.
3. Select an IP precedence from the 0-7 range.
4. Enter an IP Type of Service from the following options:
   - Normal Service
   - Minimize Cost
   - Maximize Reliability
   - Maximize Throughput
   - Minimize Delay
5. Enter the traffic conditions for the class such as the protocol (TCP/UDP, TCP, UDP, or ICMP) to be used. Click **Save/Apply** to save and activate the settings.

Routing

Default Gateway

Select the **Enable Automatic Assigned Default Gateway** checkbox. Click **Save/Apply** to save and activate the settings.

Deselect the **Enable Automatic Assigned Default Gateway** checkbox If you do not want to use the automatically assigned default gateway. Select **Use Default Gateway IP Address** to use the default gateway IP address. If you decide to change the automatically assigned default gateway IP address, then reboot the router for a new default gateway IP address. Select the WAN interface that you will be using. Click **Save/Apply** to save and activate the settings.

Static Route

Click **Add** to add an entry to the routing table.

Enter the destination network address, subnet mask, gateway or available WAN interface. Click **Add/Apply** to save and activate the settings.

RIP

If RIP is enabled, the router operation can be configured as active or passive.

DNS

DNS Server

The **DNS Server** page allows you to request automatic assignment of a DNS server or specify a primary DNS server and a secondary DNS server.

Select the **Enable Automatic Assigned DNS** checkbox to obtain an automatically assigned DNS server.

If you deselect the **Enable Automatic Assigned DNS** checkbox, another two fields appear: primary DNS server and secondary DNS server. Enter the primary/secondary DNS server IP addresses manually.

Dynamic DNS

Dynamic DNS allows an Internet domain name to be assigned to a dynamic IP address, which makes it possible for other sites on the Internet to establish connections to you without the need to track the IP address themselves. Click **Add**.

You can apply for DDNS service from DynDNS.org or TZO. Enter the hostname and the interface that you are using. Also enter the username and password assigned by the DDNS service. Click **Save/Apply** to save and activate the settings.

ADSL

The ADSL page contains two sections: modulation and capability which are specified by your ISP. Check with your ISP to do the correct settings. Click **Save/Apply** to save and activate the new settings or click **Advanced Settings** if you want to configure more advanced settings.

DSL Advanced Settings

Select the test mode: normal, reverb, medley, no retrain, or L3. Click **Apply** to save and activate the settings.

Tone Settings

The frequency band of ADSL is split up into 256 separate tones, each spaced 4.3125KHz apart, and with each tone carrying separate data. The technique operates as if 256 separate modems were running in parallel. The tone range is from 0 to 31 for upstream and from 32 to 255 for downstream. Do not change these settings unless directed by your ISP.

Port Mapping *(Function not available for 1-port ADSL Router)*

Port mapping allows you to open ports to allow certain Internet applications on the WAN side to pass through the firewall and enter your LAN. To use this feature, mapping groups should be created. Click **Add** to create a new mapping group.

Follow the onscreen instructions to create a new mapping group.

Diagnostics

The **Diagnostics** screen allows you to run diagnostic tests to check your DSL connection. The tests check three kinds of connections:

- Connection to your local network
- Connection to your DSL service provider
- Connection to your Internet service provider

Management

The **Management** menu gives you access to certain setups including backing up settings, viewing system log, maintaining access control, and updating the software.

Settings

Backup Settings

Click **Backup Settings** to save the configurations that you have made on your router to a file on your PC.

Save the file to your PC.

Restore User Settings

To load a previously saved configuration file onto your router, click **Browse** and then locate the file on your PC. Click **Update Settings**.

The router then reboots to activate the settings.

Restore Default

Click **Restore Default Settings** to delete all current settings and restore the router to its factory default settings.

Click **OK** when a window appears querying **Are you sure you want to restore factory default settings**.

System Log

Click **View System Log** to check the system log.

Click **Configure System Log** to configure the System Log options. Select **Enable** to enable the log mode. The system logs all the events above or equal to the selected log level, and displays only the logged events above or equal to the selected display level.

If you select **Remote** in the **Mode** field, events will be sent to the specified IP address and UDP port of a remote system log server. If you select **Local**, events will be recorded in the local memory. If you select **Both**, events will be sent to the specified IP address and UDP port of a remote system log server, and saved in the local memory. Click **Save/Apply** to save and activate the settings.

Internet Time

The **Internet Time** page allows you to automatically synchronize your time with a time server on the Internet.

Select the **Automatically synchronize with Internet time servers** checkbox to automatically synchronize your time with an Internet time server, and then additional fields appear.

Select a time server from the list of Network Time Protocol (NTP) time server and the time zone that you are in. Click **Save/Apply** to save and activate your time settings.

Access Control

Services

Enables or disables some services of your router on the LAN or WAN. If no WAN connection is defined, then only the LAN side can be configured.

Services that can be enabled/disabled on the LAN/WAN are FTP, HTTP, ICMP, SSH, TELNET, and TFTP.

IP Addresses

Enable the IP Address Access Control mode to limit access to the local management services which are enabled on the Service Control List. Click **Add** to add to the Access Control List the IP addresses of the management stations allowed to access those local management services.

Enter the IP address of the management station allowed to access the local management services. Click **Save/Apply** to save and activate the settings.

Passwords

To change your password:

1. Select a username from the dropdown list of **Username**.
2. Enter your old password.
3. Enter your new password.
4. Confirm your new password.
5. Click **Save/Apply** to save and activate the new password.

Update Software

Follow these steps to update your software:

1. Obtain an updated software image file from ASUS.
2. Enter the path to the image file location or click **Browse** to locate the image file.
3. Click **Update Software** to update your software.

Reboot Router

Click **Save/Reboot** to save the new settings and reboot your router.