**RTL8187 USB Adapter User Manual**

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**1.0 Introduction**

Thank you for purchasing the RTL8187 USB Adapter. The RTL8187 USB Adapter is a cost-effective product with high performance standards. This solidly profiled wireless adapter will allow you to seamlessly submerse yourself in the wireless world with ease and efficiency.

**1.1 Compatibility**

The adapter supports all IEEE 802.11 b/g protocols that pass the Wi-Fi tests. It’s compatible with all Wi-Fi enabled products with a Wi-Fi logo. Use the adapter to connect to any broadcasting wireless network. The device also provides all data rates in IEE 802.11 b/g standards, with both short and long preambles to ensure its compatibility with both legacy and new wireless products. This saves end users the hassle of finding compatible products.

**1.2 Security**

We know the security of your network is important to you. This is why the RTL8187 provides you with full security coverage from 64/128bit WEP encryptions and second generation WPA-PSK encryptions to the most advanced WPA2-AES encryptions. WPA2 is the latest security standard approved by Wi-Fi standards.

**1.3 Features**

The RTL8187 USB Adapter offers many useful features. These features include, but are not limited to the following: Saving Mode, Adhoc Wireless Lan, and Wake on Lan (WOL). Please read this manual thoroughly to learn how to use all the features the RRTL8187 has to offer.

**1.4 Warnings and Disclaimer**

To comply with the FCC RF exposure compliance requirements, no changes to the antenna or the device by the user are permitted. Any changes to the antenna or device by the user many result in the device exceeding the RF exposure requirements and void the user’s authority to operate the device. This manual provides detailed user guidelines for the set-up and operation of the RTL8187 USB Adapter. Though every effort has been made to ensure this document is up-to-date and accurate, more information may have become available subsequent to the production of this guide. If you have any questions or concerns regarding this product that are not resolved by this manual please contact the seller for tech support.

**2.0 Specifications**

**2.1 Host System Connections**

|  |  |
| --- | --- |
| **Interface** | Fully complies with USB 2.0 or 1.1 |
| **USB Data Transfer Rate** | USB high speed (480 Mbps) and full speed (12Mbps) |

**2.2 Wireless LAN (WLAN) Environment Connections**

|  |  |
| --- | --- |
| **WLAN Interface** | Multimode features |
| Fully complies with IEEE 802.11 b/g specifications |
| **WLAN Transfer Rate** | 802.11 b:DQPSK with data scrambling capability to provide data rates of 1,2,5.5, and 11Mbps |
| 802.11 g: A high speed Fast Fourier |
| Transform(FFT)/ Inverse Fast Fourier Transform(IFFT) provides a data rate transfer of 6,9,12,18,24,36,48, and 54Mbps |
| **WLAN Frequency Band** | 2.4 ~ 2.497 GHz (Industrial Scientific Medical Band) |
| **Operation Channel** | Channel 1~11 |
| **Coverage Area** | Indoors: 100ft with straight path |
| **Compatibility** | Fully compatible to IEEE 802.11 b/g devices |
| **Security** | Hardware-based IEEE 802.11i encryption/decryption engine, including 64-bit/128-bit WEP, TKIP, and AES |
| **Antenna** | Detachable dipolar antenna |

**2.3 System Requirements**

The RTL8187 is compatible with the following Windows systems: Windows 98SE, Me, 2000, XP, Windows 7, and Windows 64 bit. It is also compatible with Mac OS and Linux. PCs must have a device driver installed that allows you to communicate with WLAN Mini USB adapter.

**2.4 Package Contents**

The following items should be included in your package: 1 RTL8187 USB Adapter, 1 Installation Software CD, and 1 USB Cable.

If an item is missing or damaged please contact the seller for a replacement.

**3.0 RTL8187 Installation and Removal**

***Warning:*** *Do not cover or block the airflow to the adapter; the adapter with reach a high temperature during use.*

**3.1 Installation**The instructions listed below are for Windows XP but procedures are similar for Windows 98SE/Me/2000/and 7. If you previously installed a WLAN driver and utility please uninstall the old version before installing the RTL8187. Once the aforementioned guidelines have been met follow the instructions listed below to install the device.

1. ***Do not*** plug the wireless LAN USB adapter into your computer’s USB port before installing the software program.
2. Insert the provided installation disk into your computer. An auto installation window will appear. When the following screen appears click **Driver Installation**.
3. Choose a setup language from the menu then click **Next** to proceed.
4. The system with start the software installation for the WLAN USB adapter.
5. If the windows logo software installation screen appears click **Continue Anyway** to proceed. This message will not appear for all drivers.
6. Click **Finish** to complete the installation.
7. After clicking **Finish** to complete the installation the dialog box will disappear. Go to your **Start** menu and click on **All Programs**, if “REALTEK Wireless” is an option the program installed correctly.
8. Insert the wireless LAN USB adapter into your computer’s USB port; the computer will detect and activate the adapter automatically.

**3.2 Uninstalling the Device**

There are two options for removing the device software from your computer. Take the following steps to remove the device software from your computer.

1. Go to Control Panel > Add or Remove Program > select Change or Remove Programs on left panel > select REALTEK RTL8187 wireless LAN Card > click on Remove button > follow prompts to remove program.
2. Go to Start > All Programs > REALTEK Wireless > Uninstall > Click on when it prompts you to “Confirm Uninstall” > click Finish to complete the removal process

**Appendix 1: How to use the RT8187 for Windows XP and Windows 7**

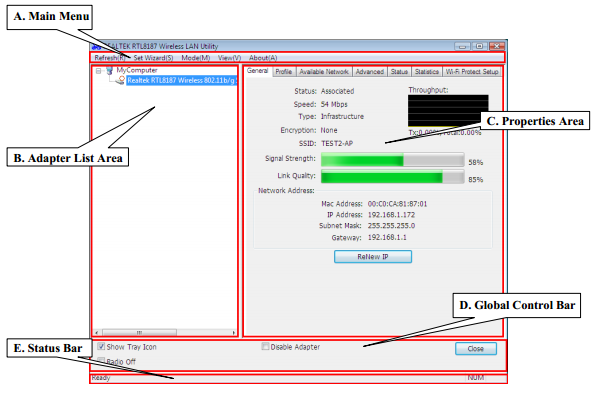
1. **RT WLAN: Wireless LAN Management GUI**

*Note: All information in this section applies to both Windows XP and Windows 7 unless otherwise specified.*

* 1. **Introduction to Main Window**

The main window (shown in figure 1.1 below) includes 5 parts: the Main Menu, Adapter List Area, Properties Area, Global Control Bar, and the Status Bar. The following sections describe each part in detail.

Figure 1.1A Main Window



1.1-5 Status Bar

*(XP only)*

1.1-4 Global Control Bar

1.1-2 Adapter List Area

1.1-3 Properties Area

1.1-1 Main Menu

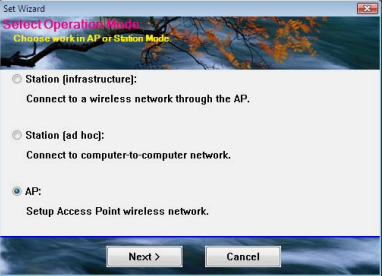
* + 1. **Main Menu**

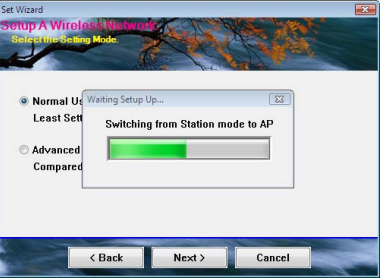
The main menu includes 5 submenus: Refresh (R), Set Wizard(S*) (XP Only),* Mode (M) *(XP Only)*, View (V) *(XP Only)*, and About (A). Each sumbmenu is described in detail below.

① Refresh (R): By Clicking the refresh menu you can update and re-enumerate the contents of the adapter list area.

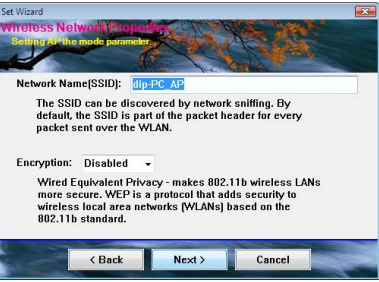
② Set Wizard (S) *(For XP Only)*

1. Click Set Wizard (S) on the main menu to enter the operation wizard.
2. Click “AP: Setup a wireless network” to configure Access Point Parameters.
3. Click “Next” to continue or “Cancel” to leave the wizard.

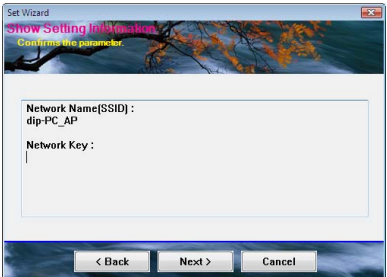




1. The user will define a wireless network name [SSID] (less than 32 characters). The user can skip wireless security if they choose, but it is strongly recommended that the user sets up security to avoid invalid users.
2. Click “Back” to go to the previous screen, “Next” to continue, or “Cancel” to close the wizard.



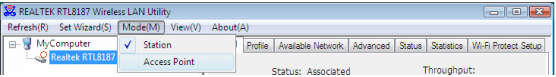
1. If you clicked “Next” the next page will show the SSID and Security settings
2. Click “Back” to go to the previous screen, “Next” to continue, or “Cancel” to close the wizard.



1. If you clicked “Next” all settings will be shown under AP mode.
2. Click “Finish” to complete the Wizard.



③ Mode (M*) (XP Only):* In the Mode menu you can quickly switch the wireless configuration between Station or AP (Access Point). See section 1.2 for more information on Station Mode or section 1.3 for more information on AP Mode.

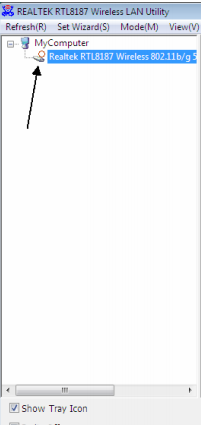


④ View (V) *(XP Only):* Choose to show or hide the Status Bar. If you do not check the Status Bar option the bar will be hidden.

⑤ About (A): Click “About” to show the application version and license information.

* + 1. **Adapter List Area**

All connected adapters on this system with the multiple adapter installations are displayed in this area. It is easy for users to change the selected adapter by one click. The contents of the properties are dependent on the wireless configuration that the selected adapter is set to. If only one adapter is installed on the system that adapter will always be selected automatically.



* + 1. **Properties Area**

The contents of this area are dependent on the current wireless configuration. The current configuration is determined in the Mode menu (see 1.1-1③ for more information). The six tabs in the properties area shown below in figure 1.1-3 are explained in greater detail in section 1.2 and 1.3.

Figure 1.1-3 Properties Tabs



* + 1. **Global Control Bar**



Each control item shown in the figure above affects the adapter or management GUI directly. Each option is described in detail below.

① Show Tray Icon

When you check “Show Tray Icon” and click the “Close” button the management GUI will be minimized and stay on the system tray located at the bottom right corner of your screen on your task bar as shown below.





② Radio Off

Turn off the radio to save power. While the radio is off the links with other wireless network nodes will be disconnected. User should be aware that while the wireless configuration is in AP mode if the radio is off the subnetwork belonging to the AP will be disconnected with the internet/intranet.

③ Disable Adapter

Check “Disable Adapter” to stop the wireless USB device.

* + 1. **Status Bar (XP Only)**

The hints or status of the management GUI are displayed on the status bar shown below.



* 1. **Station Mode**

*(Station Mode and AP Mode are only available options in XP, but the information in section 1.2-1 through 1.2-7 applies to both XP and Windows 7.)*

If you check “Station” in the mode menu the following property areas will be available: General, Profile, Available Network, Advanced, Status, Statistics, and Wi-Fi Protect Setup. Each property area listed above is explained in the following section.



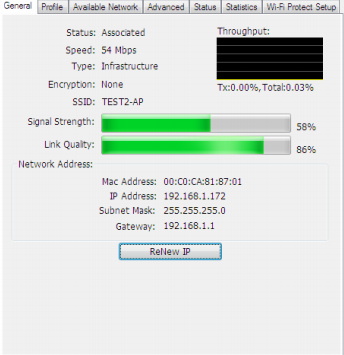
**1.2-1 Infrastructure and Ad-Hoc**

With both Infrastructure and Ad-Hoc types the properties should look like figure 1.1A above. Six property pages present different information about the current wireless network’s status. Please read the following explanations before reviewing these pages to help you understand the wireless environment surrounding the system. It is easy to switch between property pages by clicking the tabs at the top of the screen. The following six sections describe the detailed information found on each page.

**1.2-2 General Page**

This page as shown in Figure 1.2-2 below shows the general information of the current adapter.

Figure 1.2-2 General Information Page

\

*Figure 1.2-2 Description of Fields:*

① Status: the status of the station connection to the AP.

② Speed: the current transition speed in MBPS (Mega-Bits-Per-Second).

③ Type: current wireless LAN configuration type.

④ Encryption: current encryption mode used.

⑤ SSID: name of wireless network.

⑥ Signal Strength: the average signal quality of the packets received from wireless networks. It is recommended that you connect to an AP with over 70% signal strength.

⑦ Throughput Diagram: current throughput, including transmission (Tx) and total traffic (Total).

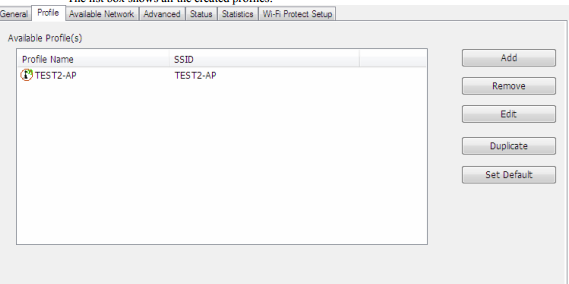
⑧ Network Address:

* MAC Address: six two-digit numbers of this wireless LAN USB adapter.
* IP Address: assigned network addresses by DHCP server or self-definition in four three-digit number formats.
  + Subnet Mask: the only valid value is 2555.255.255.0.
  + Gateway: it comes from the connected AP. Your system cannot connect to the internet with this field empty.

**1.2-3 Profile Page**

This page allows you to manage your profiles. Available profiles are shown in the list box and you can add, remove, edit, and duplicate profiles by selecting the profile and pressing the respective button.

Figure 1.2-3 Profile Page



*Figure 1.2-3 Description of Fields:*

① Add: add new profiles for the AP or IBSS (Ad-Hoc mode).

② Remove: remove the selected profile.

③ Edit: edit contents of the selected profile.

④ Duplicate: make a copy of the selected profile.

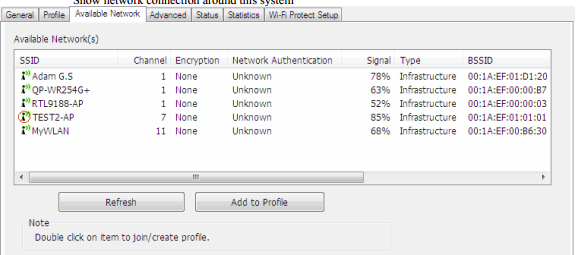
⑤ Set Default: set the selected profile as the default selection.

⑥ Available Network Page: This page presents all BSS, including AP and IBSS, around the system. You can pick any one of these network connections.

**1.2-4 Available Network(s)**

This page shows the available network connections surrounding the system.

Figure 1.2-Available Network Page



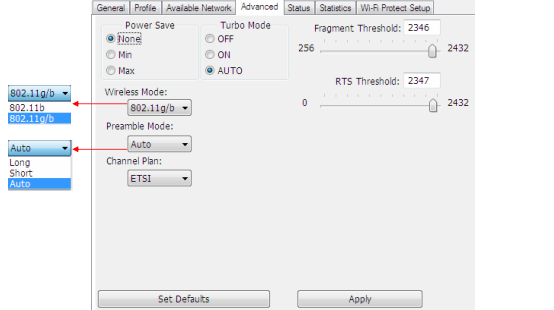
*Figure 1.2-4 Description of Fields:*

① Refresh: rescans to find network connections surrounding the system.

② Add to Profile: create a profile for the selected network connection and add it to the profile list.

**1.2-5 Advanced Page**

Figure 1.2-5 Advanced Page



*Figure 1.2-5 Description of Fields:*

① Power Save: there are three options for power save mode.

* None: without power save mode.
* Min: wake up more frequently to receive packets.
* Max: wake up less frequently to receive packets.

② Wireless Mode: 802.11b or 802.11 g/b.

③ 802.11b Preamble Mode: there are three options for this mode.

* Long: higher quality but with lower performance than preamble short mode.
* Short: normal quality with higher performance than preamble long mode.
* Auto: use the preamble mode of the current connection.

④ Fragment Threshold: the threshold of the fragment length. Higher thresholds increase data transition performance with good signal quality. However, in a poor signal quality environment, data throughput might be worse on a high fragment threshold than a low fragment threshold.

⑤ RTS Threshold: the threshold of Request to Send mechanism. The RTS frame will not send out until the packet size is over the threshold.

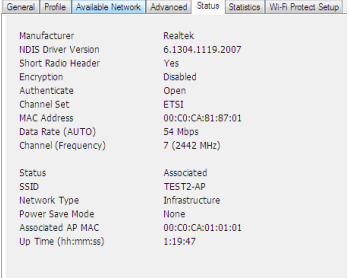
⑥ WOL (Wake on LAN): the wake-on-LAN is applied for remote control purposes. You can wake up a system through network packets. For wireless LAN USB Adapters, only the same adapter or another system can wake it up. Input MAC Address: the six two-digit numbers of the Wireless LAN USB Adapter on the target system. Click on the “Wake Up” button to wake it up.

⑦ Set Defaults: reset the default value to the current settings.

⑧ Apply: Apply the current settings to the GUI.

**1.2-6 Status Page**

Figure 1.2-6 Status Page



*Figure 1.2-6 Description of Fields:*

① NDIS Driver Version: driver version.

② Short Radio Header: Yes.

③ Encryption: Current encryption mode.

④ Authenticate: authentication state.

⑤ Channel Set: currently selected channel plan.

⑥ MAC Address: MAC Address for this adapter.

⑦ Data Rate (Auto): Wireless LAN transition speed.

⑧ Channel (Frequency): Current channel number.

⑨ Status: Wireless network status.

⑩ SSID: name of connecting AP.

⑪ Network Type: indicates current network configuration type.

⑫ Power and Save Mode: indicates current power and save mode settings.

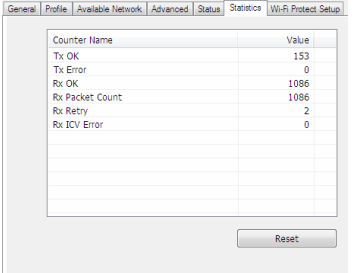
⑬ Associated AP MAC: MAC address of connecting AP.

⑭ UP Time: total connection time.

**1.2-7 Statistics Page**

This page (figure 1.2-7 below) shows a statistical analysis of packet transition and allows you to watch the Tx/Rx status of the current wireless connection.

Figure 1.2-7 Statistics Page



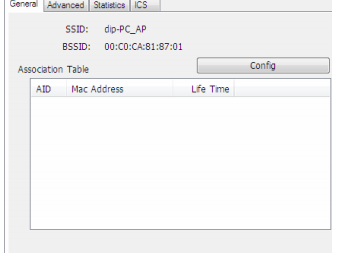
**1.3 AP Mode (XP Only)**

If you check “AP Mode” in the main menu four properties areas will become available; they are as follows: General, Advanced, Statistic s, and ICS Page. Each property page is described below in detail.

**1.3-1 General Page**

This page provides general information for this AP, including: name, MAC Address, and list of joined stations.

Figure 1.3-1A General Page



*Figure 1.3-1A description of fields:*

① SSID: the name of this AP.

② BSSID: Six two-digit numbers of the MAC address of this AP.

③ Association Table: the list of stations that are joined to this AP.

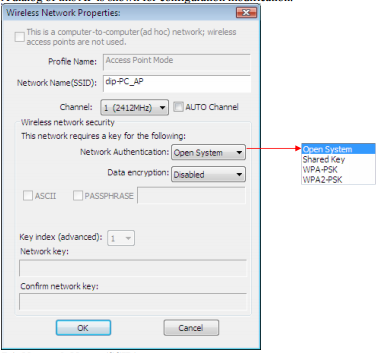
④ AID (Association ID): The AID field is a value assigned by an AP during association that represents the 16-bit ID of a station. It is a unique value assigned by the AP.

⑤ MAC Address: the six two-digit numbers that assemble the MAC address of the respective joined station.

⑥ Life Time: the timer that counts down from 10 minutes whenever the AP connects to the station successfully. If an STA associated to an SW AP does not have any interaction with the AP in 10 minutes, it will be associated from the Infra-structure BSS.

⑦ Config: The dialog box shown below in figure 1.3-1B will appear for configuration modification.

Figure 1.3-1B Wireless Network Properties Box



*Figure 1.3-1B Description of Fields:*

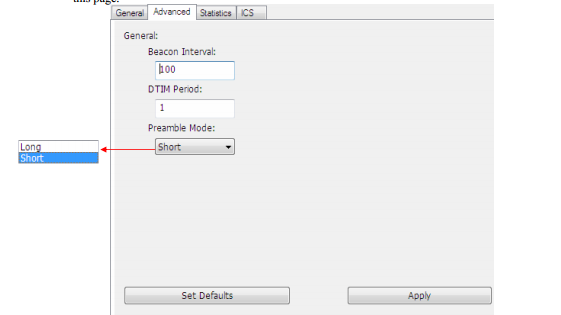
* 1. Network Name (SSID): name of the AP searchable by other wireless nodes. The length of the SSID should be shorter than 32 characters.
  2. Channel: Select the wireless channel within the current channel plan.
  3. Network Authentication & Data Encryption: There are three types of authentication.
     + Open System: combined with data encryption type and can be WEP or disabled.
       - Encryption disabled: you decided to open this AP to everyone without network authentication.
       - Encryption WEP: you decide to setup the basic data encryption with a defined network key.
       - Shared Key +WEP: you decide to apply both authentication and data encryption to prevent unauthorized login.
       - WPA-PSK + TKIP & WPA2-PSK + TKIP: the most advanced authentication and data encryption that provide the best security protection.

1. ACII/ PASSPHRASE: the most advanced authentication and data encryption that provides the best security protection.
2. ASCII: you should provide either 5 or 13 ASCII characters in the network key edit box.
3. PASSPHRASE: you can input words on the network key edit box.
   1. 64 bits: the generated pass key is 64-bit to be complied with data packets
   2. 128 bits: the generated pass key is 128-bit to be complied with data packets
4. Hexadecimal: while both ASCII and PASSPHRASE are not checked, you should input hexadecimal number in the network key box. For example: 10 digit hex number for 64-bit WEP or 26 digit hex number for 128-bit WEP.
5. Key Index (1~ 4) : At most four key indexes represent the opposite network key.

**1.3-2 Advanced Page**

Users can setup the advanced characteristics of network packets for transmission on this page shown below in figure 1.3-2.

Figure 1.3-2 Advanced Page



*Figure 1.3-2 Description of Fields:*

① Beacon Interval: this field indicated the interval between each beacon that this AP sends out in units of TU (1024 micro-seconds).

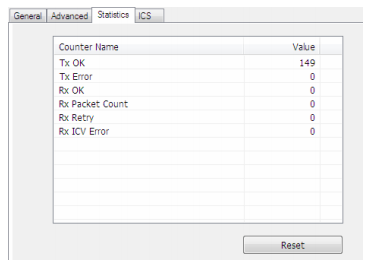
② DTIM Period: indicates the number of Beacon intervals between successive DTIMs.

③ Preamble Mode: there are 3 preamble mode types.

1. Long: higher quality but lower performance that preamble short mode.
2. Short: normal quality but with higher performance than preamble long mode.
3. Auto: select the proper preamble mode by current signal frame information.

**1.3-3 Statistics Page**

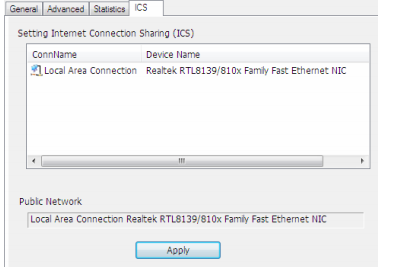
The Tx/Rx status of the current wireless connection is shown here. A statistical analysis of the packet transition is listed as shown in the figure below.



**1.3-4 ICS Page**

A description of the ICS page shown below in figure 1.3-4 follows.

Figure 1.3-4 ICS Page



*Figure 1.3-4 Description of Fields:*

① Conn Name: lists all networks connected to this system. You can pick on from the listed items whose network domain you wish to connect to.

② Select: make the desired network connection to a public network.

③ ICS: stands for “Internet Connection Sharing”. It enables this AP to create the domain to share this internet/intranet network connection.

④ Firewall: any number of security schemes that prevent unauthorized users form gaining access to a computer network, or that monitor and transfer information to and from the network.

⑤ Apply: execute the current settings.

**Appendix 2: How to Operate the RTL8187 on Linux and MAC**

**1.0 Operating the RTL8187on Linux**

The driver should automatically install when using a Linux system.

**2.0 Operating the RTL8187 on MAC**

To install the RTL8187 on a MAC follow he steps listed below:

1. To install the RTL8187 on a MAC you first need set your security settings for "Allow applications downloaded from:" to "Anywhere."
2. Then insert the driver CD in to your computer and open the RTL8187 folder.
3. Inside the Mac folder you will see a file that ends in .dmg. Double click on this file and open "USBWireless-Install.pkg".
4. Follow the instructions on the screen.
5. When you are done all you need to do is restart the computer and you drivers will be installed.