# TP-LINK®

## **User Guide**

## TL-WN350G/TL-WN350GD 54M Wireless PCI Adapter



• 2.4GHz • 802.11g/b

Rev: 1.0.3 1910010352

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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.

Note: The manufacturer is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

#### 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".

#### **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.

#### **National Restrictions**

#### 2400.0-2483.5 MHz

Country	Restriction	Reason/remark	
Pulgorio		General authorization required for outdoor use and	
Bulgaria		public service	
	Outdoor use limited to 10	Military Radiolocation use. Refarming of the 2.4 GHz	
France	mW e.i.r.p. within the band	band has been ongoing in recent years to allow current	
	2454-2483.5 MHz	relaxed regulation. Full implementation planned 2012	
ltol.		If used outside of own premises, general authorization is	
Italy		required	
Luvembourg	Neg	General authorization required for network and service	
Luxembourg	None	supply(not for spectrum)	
Norwoy	Implemented	This subsection does not apply for the geographical area	
Norway	Implemented	within a radius of 20 km from the centre of Ny-Ålesund	
Russian Federation		Only for indoor applications	

Note: Please don't use the product outdoors in France.

#### **DECLARATION OF CONFORMITY**

For the following equipment:

Product Description: 54M Wireless PCI Adapter

Model No.: TL-WN350G/TL-WN350GD

Trademark: TP-LINK

We declare under our own responsibility that the above products satisfy all the technical regulations applicable to the product within the scope of Council Directives:

Directives 1999/5/EC

The above product is in conformity with the following standards or other normative documents: ETSI EN 300 328 V1.7.1: 2006 ETSI EN 301 489-1 V1.8.1:2008 & ETSI EN 301 489-17 V1.3.2:2008 EN60950-1:2006 EN62311:2008

Person is responsible for marking this declaration:

2N/3/

Yang Hongliang Product Manager of International Business

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#### **Package Contents**

The following items should be found in your package:

- > One TL-WN350G/TL-WN350GD 54M Wireless PCI Adapter
- > Quick Installation Guide
- > One Resource CD for TL-WN350G/TL-WN350GD, including:
  - TP-LINK Wireless Client Utility (TWCU) and Drivers
  - User Guide
  - Other Helpful Information

#### P 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.

#### **Conventions:**

The 'Adapter' and 'PCI Adapter' mentioned in this User Guide both stand for TL-WN350G/TL-WN350GD 54M Wireless PCI Adapter without any explanations.

#### **Chapter 1** Introduction

Thank you for choosing the TL-WN350G/TL-WN350GD 54M Wireless PCI Adapter !

#### 1.1 Overview of the product

The TP-LINK TL-WN350G/TL-WN350GD 54M Wireless PCI Adapter will provide you the flexibility to install your PC in the most convenient location available, without the cost of running network cables.

The Adapter's auto-sensing capability allows high packet transfer rate of up to 54Mbps for maximum throughput, or dynamic range shifting to lower speeds due to distance or operating limitations in an environment with a lot of electromagnetic interference. It can also interoperate with all 11Mbps wireless (802.11b) products. Your wireless communications are protected by up to 152-bit WEP and WPA encryption for high security.

#### 1.2 Features

- Complies with IEEE802.11g, IEEE802.11b standards
- Supports WPA/WPA2 data security, IEEE802.1x authentication, TKIP/AES encryption, 64/128/152-bit WEP encryption
- Supports 54/48/36/24/18/12/9/6Mbps or 11/5.5/2/1Mbps wireless LAN data transfer rates
- Provides 32-bit PCI interface
- Supports Ad-Hoc and Infrastructure modes
- > Supports roaming between access points when configured in Infrastructure mode
- > Ease to configure and provides monitoring information
- Supports Windows 2000, XP, Vista32, Vista64 and Windows 7
- > TL-WN350G adopts fixed antenna
- > TL-WN350GD adopts detachable antenna

#### 1.3 LED Status

LED	Status	Indication	
		The adapter is in an electricity saving status or	
Status Green	Intermittently	the adapter is already connected but is not	
		transmitting or receiving data.	
Status Green	On	The adapter is on wake up status.	
Status Green	Flashing	The adapter is transmitting and receiving data.	

#### Chapter 2 Installation Guide

#### 2.1 Hardware Installation

To install the Adapter, follow these steps listed below:

- 1. Turn off your desktop PC and disconnect the power.
- Open your PC case and locate an available PCI slot on the motherboard. Remove the metal slot cover on the back of the PC. Check with your computer manufacturer for instructions if needed.
- 3. Slide the PCI Adapter into the PCI slot. Make sure that all of its pins are touching the slot's contacts. Once the adapter is firmly in place, secure its fastening tab to your PC's chassis with a mounting screw. Then, close your PC case.
- 4. Reconnect your PC's power and turn on your desktop PC.

#### 2.2 Software Installation

The Adapter's Setup Wizard will guide you through the Installation procedure for Windows 2000, XP, Vista32, and Vista64. The Setup Wizard will install the TP-LINK Wireless Client Utility (TWCU) and drivers.

When you install the hardware before installing the software, the system will prompt "Found New Hardware Wizard", click **Cancel**, and run the Setup Wizard program on the CD-ROM.

#### 2.2.1 For Windows XP&2000

The Setup steps for Windows 2000 and XP are very similar. The following setup steps are for Windows XP.

 Insert the Resource CD into your CD-ROM drive, and the screen as shown below will display. To continue, select TL-WN350G/TL-WN350GD. There will be a menu including Driver (Vista), Driver (Win2000\_XP) and User Guide.



Figure 2-1

2. Click Driver (Win2000\_XP) to load the following screen.

TP-LINK Wireless Client Utility - InstallShield W 🔳 🗖 🗙
Preparing Setup Please wait while the InstallShield Wizard prepares the setup.
TP-LINK Wireless Client Utility Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShieldCancel

Figure 2-2

3. You can click **Cancel** to end the installation in the screen above. Otherwise, the installation will continue, and then Figure 2-3 will display, click **Next** to continue.

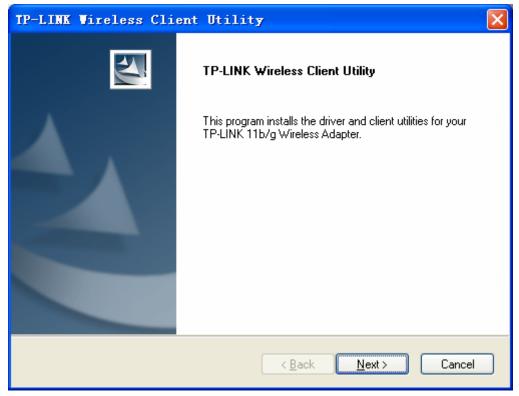


Figure 2-3

4. Choose a Setup type in Figure 2-4. It is recommended to select **Install Client Utilities and Driver**. Click **Next** to continue.

TP-LINK Wireless Client Utility	N 100 100 100 100 100 100 100 100 100 10
Setup Type Select the setup type that best suits your needs.	
Click the type of setup you prefer.	
Install Client Utilities and Driver Install Driver Only Make Driver Installation Diskette(s)	Description Choose this option to install the driver and client utilities. This is the recommended option.
InstallShield	k <u>N</u> ext > Cancel

Figure 2-4

5. Click **Browse** to change the destination location for the software in Figure 2-5. After that, click **Next** to continue.

TP-LINK Wireless Client Utility	×
Choose Destination Location Select the folder where the installation program will install the files.	N
The installation program will install the client utilities in the following location:	
Destination Folder	
C:\\TP-LINK 54M Wireless Client Utility Brows	e
	Cancel



6. Create a new folder name or select one from the **Existing Folders** list in Figure 2-6. It is recommended to keep the default setting. Click **Next** to continue.

TP-LINK Wireless Client Utility	×
Select Program Folder Select a program folder.	
The installation program will add program icons to the Program Folder listed below. You may enter a new folder name or select one from the Existing Folders list.	
Program Folder:	
TP-LINK\TWCU	
Existing Folders:	-
Aztech	
IxChariot	
Microsoft Office Realtek	
TP-LINK	
WinBAR	ע א
Wileiess	
InstallShield	
< <u>B</u> ack <u>N</u> ext > Cancel	



7. Please read the information carefully in Figure 2-7, and click "Next" to continue

TP-LINK Wireless Client Utility		
TP-LINK Wireless Client Utility		
IMPORTANT: Please Read!		
On Windows XP, you can configure your TP-LINK 11b/g Wireless Adapter through the TP- LINK Wireless Client Utility (TWCU) or a third-party supplicant. Because third-party tools may not provide all of the functionality available in the TWCU, TP-LINK recommends that you use the TWCU. (Please note that a patch from Microsoft might be required to use the Microsoft tool with WPA security.)		
On the next screen, select whether you want to use the TWCU or a third-party tool to configure your client adapter.		
NOTE: If you select a third-party tool, some of the TWCU features will not be available. To activate those features, you must install the TWCU.		
InstallShield		
< <u>B</u> ack <u>N</u> ext > Cancel		

Figure 2-7

8. Choose **TP-LINK Wireless Client Utility (TWCU) and Supplicant** as a tool to configure the client adapter on the screen as below, and click **Next** to continue.

TP-LINK Wireless Client Utility	
Choose Configuration Tool	
Which tool will you use to configure your client adapter?	
TP-LINK Wireless Client Utility (TWCU) and Supplicant.	
O Third-Party Supplicant	
InstallShield	Cancel

Figure 2-8

#### Note:

In Windows 2000, Figure 2-7 and Figure 2-8 won't display, and it will go to Figure 2-8 directly.

9. Choose "Do Not Install Single Sign On Feature Set" In Figure 2-9, and the system won't

reboot after the installation. If you choose "Install Single Sign On feature set", the system will reboot later. Click **Next** to continue.

TP-LINK Wireless Client Utility	×	
Single Sign On feature set install option.		
Please select an option "Install Single Sign On feature set" or "Do not install Single Sign On feature set".		
🔿 Install Single Sign On feature set.		
⊙ Do not Install Single Sign On feature set.		
Single Sign On feature set (SSO) is a mechanism whereby a single action of user authentication and authorization can permit a user to access all computers and systems where he has access permission, without the need to enter multiple passwords.		
Restriction of Use SSO:		
* Windows Graphical Login Screen is disabled.		
* Fast User Switch is disabled.		
* Require the user to have a password.		
InstallShield		
< <u>B</u> ack <u>N</u> ext > Cancel		

Figure 2-9

10. Click **OK** to continue the Installation in Figure 2-10.

TP-LIN	K Vireless Client Utility
⚠	The installation program installs the driver automatically when the client adapter is inserted. Insert the adapter now if it is not yet inserted, cancel the Found New Hardware Wizard if it appears, and proceed with the installation. Click OK to continue.

Figure 2-10

11. Wait for the installation program to run automatically.

TP-LINK Wireless Client Utility	
Setup Status	N.
TP-LINK Wireless Client Utility is configuring your new software installation.	
Installing the driver files	
InstallShield	Cancel

#### Figure 2-11

12. During the step, the Setup Wizard will notify you of how to proceed with the installation as shown below. Our drivers have been tested thoroughly, and are able to work with the operating system. Click **Continue Anyway** to continue the Installation.

Hardwar	e Installation
<u>.</u>	The software you are installing for this hardware: TP-LINK 11b/g Wireless Adapter has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

Figure 2-12

#### Solution Note:

In Windows 2000, the warning screen is shown below (Figure 2-13), and please select **Yes** to continue installation.



Figure 2-13

13. After all the steps above, you will see the screen below, click **Finish** to complete the installation.

TP-LINK Wireless Client Utility		
	InstallShield Wizard Complete The installation program has successfully performed the selected operations,Click Finish to exit the Wizard.	
	< <u>B</u> ack <b>Finish</b> Cancel	

Figure 2-14

#### 2.2.2 For Windows Vista

 Insert the Resource CD into your CD-ROM drive, and the screen as shown below will display. To continue, select TL-WN350G/TL-WN350GD. There will be a menu including Driver (Vista), Driver (Win2000\_XP) and User Guide.

TP-LINK The Reliable Choice		Setup Wizard Wireless G Adapter V1.0
TPADE //PAR		
TL-WN310G	TL-WN350G Driver (Vista) Driver (Win2000_XP) User Guide	TL-WN353G
TL-WN360G Note : Please select the model of your netw	TL-WN350GD	TL-WN353GD Your operating system.
Specifications are subject to change without notice. Mor is a registered trademark of TPI-LINK Technologies Co.		P-LINK 🕑 Browse CD 🚺 EXIT

Figure 2-15

2. Click **Driver (Vista)** to load the following screen.

TP-LINK Driver Installation Program - InstallShield Wizard	- • •
<b>Preparing Setup</b> Please wait while the InstallShield Wizard prepares the setup.	24
TP-LINK Driver Installation Program Setup is preparing the InstallShield Wiza you through the rest of the setup process. Please wait.	ard, which will guide
InstallShield	Cancel

Figure 2-16

3. Click **Next** in the screen below (shown in Figure 2-15) to continue, you can click **Cancel** to end the installation.

TP-LINK Driver Installation Program	m	X
	TP-LINK Driver Installation Program	
	This program installs the driver for your TP-LINK Wireless LAN Client Adapter.	8
	< Back Next > Cancel	

Figure 2-17

4. Click **OK** to continue the Installation in Figure 2-18

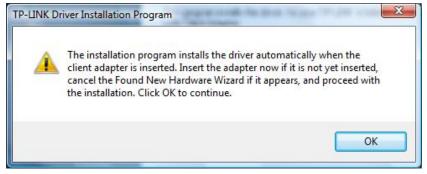


Figure 2-18

5. After that, the files will be copied as the next screen shown (shown in Figure 2-17).

TP-LINK Driver Installation Program	<b>×</b>
Setup Status	24
TP-LINK Driver Installation Program is configuring your new software installation	ι.
Installing the driver files	
InstallShield	
	Cancel

Figure 2-19

#### P Note:

During the installation, the system will warn about Windows Security testing, please click "**Install this driver software anyway**" to continue the installation.



Figure 2-20

6. Click the **Finish** button to complete.

TP-LINK Driver Installation Program		
	InstallShield Wizard Complete The installation program has successfully performed the selected operations. Click Finish to exit the Wizard.	
	< <u>B</u> ack Finish Cancel	

Figure 2-21

#### 2.2.3 For Windows 7

 Insert the Resource CD into your CD-ROM drive, and the screen as shown below will display. To continue, select TL-WN350G/TL-WN350GD. There will be a menu including Install Driver&Utility and User Guide.



Figure 2-22

2. Click **Install Driver&Utility** to load the following screen.

TP-LINK Client Installation Program - InstallShield Wizard
Preparing Setup Please wait while the InstallShield Wizard prepares the setup.
TP-LINK Client Installation Program Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel



3. Click **Next** in the screen below (shown in Figure 2-24) to continue, you can click **Cancel** to end the installation.

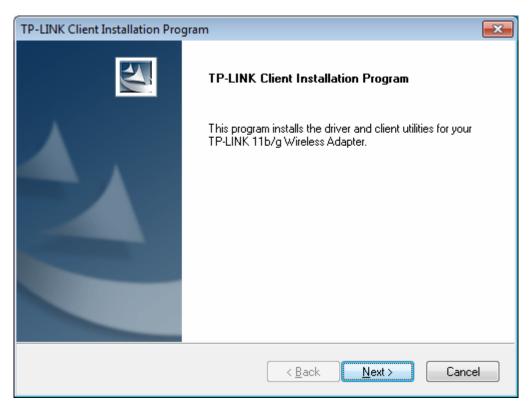


Figure 2-24

4. Click **YES** in the following figure to continue.

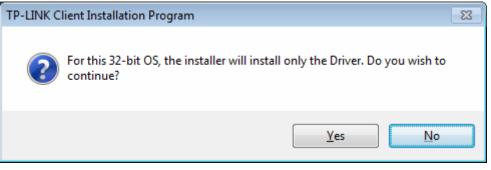


Figure 2-25

5. After that, the files will be copied as the next screen shown.

TP-LINK Client Installation Program	<b>—</b>
Setup Status	
TP-LINK Client Installation Program executing selected operations	
Installing	
C:\\{71BF8787-A67D-4CBC-9155-22927199F4BB}\ISSetup.dll	
InstallShield	
	Cancel

Figure 2-26

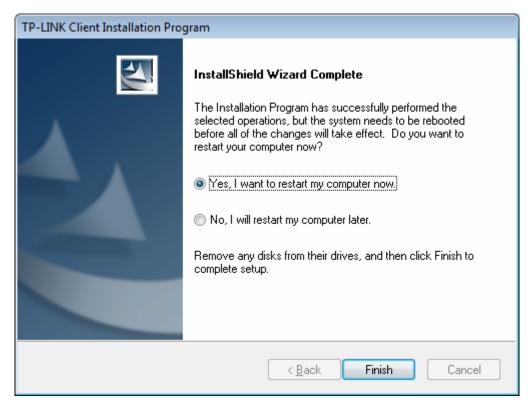
#### Solution Note:

During the installation, the system will warn about Windows Security testing, please click "**Install this driver software anyway**" to continue the installation.



Figure 2-27

6. Click the **Finish** button to complete.



#### Chapter 3 Configuration

#### 3.1 For Windows XP

TP-LINK Wireless PCI Adapter TL-WN350G/TL-WN350GD can be configured by TP-LINK Wireless Client Utility (TWCU). This chapter describes how to configure your TP-LINK Wireless PCI Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

After Installing the Adapter, the Adapter's tray icon **u** will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength using color and the received signal strength indication (RSSI).

If the icon is gray, there is no connection.

- $\mathbf{III}$  If the icon is red, there is poor signal strength and the RSSI is less than 5dB.
- If the icon is yellow, there is poor signal strength and the RSSI is between 5dB and 10dB.
- If the icon is green, there is good signal strength and the RSSI is between 10dB and 20dB.
- If the icon is green, there is excellent signal strength and the RSSI is more than 20dB.

Double-click the icon and the **TWCU** will run. You can also run the utility by clicking the **Start>Program>TP-LINK>TWCU>TP-LINK Wireless Client Utility.** The TWCU provides integrated and easy tools to:

- Display current status information
- Edit and add configuration profiles
- Display current diagnostics information

The section below introduces these above capabilities.

#### 3.1.1 Current Status

The Current Status tab contains general information about the program and its operations. The Current Status tab does not require any configurations.

📲 TP-LINK Wireless Clien	t Utility - Curren	t Profile: Default 🛛 ?	×
<u>A</u> ction <u>O</u> ptions <u>H</u> elp			
Current Status Profile Managem	nent Diagnostics		_
TP-LINK Profile Name: I	Default		
Link Status: A	Associated	Network Type: Infrastructure	
Wireless Mode: 2	2.4 GHz 54 Mbps	Current Channel: 6	
Server Based Authentication: B	None	Data Encryption: None	
IP Address: 1	192. 168. 1. 100		
Signal Strength:		Excellent	
		Adyanced	

Figure 3-1

The following table describes the items found on the Current Status screen.

- Profile Name This shows the name of current selected configuration profile. The configuration of Profile name will be described on the General tab of Profile Management.
- > Link Status This shows whether the station is associated to the wireless network.
- Wireless Mode Here displays the wireless mode. It will be configured on the Advanced tab of Profile Management.
- Network Type The type of network and the station currently connected are shown here. The options include:
  - Infrastructure (access point)
  - Ad Hoc

#### Note:

You can configure the network type on the Advanced tab of Profile Management.

- > IP Address This displays the computer's IP address.
- > Current Channel This shows the currently connected channel.
- Data Encryption Here displays the encryption type the driver is using. You can configure it on the Security tab of Profile Management.
- Server Based Authentication This shows whether the server based authentication is used.
- **Signal Strength -** This shows the strength of the signal.

Click **Advanced** on the screen above, you can see advanced information about the program and its operations. For more information, please refer to the help file of the utility.

#### 3.1.2 Profile Management

Click the Profile Management tab of the **TWCU** and the next screen will appear (shown in Figure 3-2). The Profile Management screen provides tools to:

- > Add a new profile
- > Modify a profile
- Remove a profile
- Switch to another Profile
- Import a Profile
- Export a Profile
- Scan Available Networks
- > Order profiles

🐨 TP-LINK Wireless Cl	ient Utility - Current	Profile:	Default	?×
<u>A</u> ction <u>O</u> ptions <u>H</u> elp				
Current Status Profile Man	agement Diagnostics			
🗽 Default			<u>N</u> ew	
			Modify	
			Remo <u>v</u> e	
			Ac <u>t</u> ivate	
Details				
Network Type:	Infrastructure		Import	
Security Mode:	Disabled			$\equiv$
Network Name 1 (SSID1)	: <empty></empty>		<u>E</u> xport	
Network Name 2 (SSID2)	: <empty></empty>		S <u>c</u> an	
Network Name 3 (SSID3)	: <empty></empty>		<u> </u>	
Auto Select Profiles			Order Profile	s
Disable WLAN if LAN is	Connected			

Figure 3-2

#### 3.1.2.1. Add or Modify a Configuration Profile

To add a new configuration profile, click **New** on the Profile Management tab. To modify a configuration profile, select the configuration profile from the Profile list and click **Modify**. Then you will see the Management dialog box (shown in Figure 3-3).

#### 1. Edit the General tab

- Profile Name Please enter the Profile name which identifies the configuration profile. This name must be unique. Note that the profile names are not case-sensitive.
- Client Name Please enter the Profile name which identifies the client machine.
- Network Names (SSIDs) Please enter the IEEE 802.11 wireless network name. This field has a maximum limit of 32 characters.

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Profile Management	?	×
General Security Adva	nced	
-Profile Settings		
Profile Name:	NewFrofile	
Client Name:	NewClient	
Network Names		
SSID1:	test	
SSID2:		
SSID3:		
	OK Cance	el



#### 2. Edit the Security tab

Select the Security tab in the screen above, then you can edit the fields to configure the profile. To define the security mode, select the radio button of the desired security mode as follows.

Profile Management			?×
General Security Advanced			
-Set Security Options			
O WPA/WPA2	WPA/WPA2 EAP Type:	LEAP 😒	
🔵 WPA/WPA2 Passphrase			
○ 802. 1x	802.1x EAP Type:	LEAP 🗸	
⊙Pre-Shared Key (Static W)	EP)		
🔘 None			
Configure	Allow Association to Mi Profile Locked	xed Cells	
	Limit Time for Finding	Domain Cont: O 👘 sec	
Group Policy Delay:	0 💠 sec		
		OK Ca	incel

Figure 3-4

- > WPA/WPA2- Wi-Fi Protected Access
- > WPA/WPA2 Passphrase- Wi-Fi Protected Access Passphrase
- > 802.1x- Enables 802.1x security.
- Pre-Shared Key (Static WEP)- Enables the use of shared keys that are defined on both the access point and the station. To define shared encryption keys, choose the Shared Key radio button and click Configure to fill in the Define Shared Keys window (shown in Figure 3-5).
- > **None-** No security (not recommended).

#### Note:

If the access point to which the Wireless PCI Adapter is associated has WEP set and the client has WEP enabled, make sure that **Allow Association to Mixed Cells** is checked on the Security Tab to allow association. To complete WEP encryption configuration, you must select the 802.11 Authentication Mode as appropriate on the **Advanced** tab of this **Profile Management** dialog.

To configure the Encryption Keys under the Pre-Shared keys (Static WEP) Security mode:

Configure Pre-Shared Keys (Static WEP)			? 🗙
Key Entry       Image: Second structure       Image: Second s	d characte	rs)	
Encryption Keys	WE	P Key S	iize:
Transmit Key	64	-	152
WEP Key 1: 💿 123456789A	•	$\circ$	0
WEP Key 2: O	•	0	0
WEP Key 3: O	•	0	0
WEP Key 4: O		0	0
	ОК	C	ancel

Figure 3-5

#### 3. Edit the Advanced tab

This screen below allows you to make advanced configuration for the profile.

Profile Management	? 🗙
General Security Advanced	
Power Save Mode: Normal	
Network Type: Infrastructure	
802.11b Preamble: 💽 Short & Long	O Long Only
Wireless Mode	Wireless Mode When Starting Ad Hoc Network
<ul> <li>✓ 2.4 GHz 54 Mbps</li> <li>✓ 2.4 GHz 11 Mbps</li> </ul>	○ 2.4 GHz 11 Mbps ○ 2.4 GHz 54 Mbps Channel: Auto
	802.11 Authentication Mode
<b>₩</b> QoS	🔿 Automatic 💿 Open System 🔿 Shared Key
Roaming: Default 💙	Preferred APs
	OK Cancel

Figure 3-6

- > **Power Save Mode -** Please select the power save mode in the drop-down list.
  - Maximum Selects maximum mode to let the access point buffer incoming messages

for the Wireless PCI Adapter. The Adapter will detect the access point if any messages are waiting periodically.

- **Normal** Normal mode uses maximum when retrieving a large number of packets, then switches back to power save mode after retrieving the packets.
- **Off** Turns power saving off, thus powering up the Wireless PCI Adapter continuously for a short message response time.
- 802.11b Preamble- Selects the preamble setting in 802.11b. The default setting is Short & Long (access point mode), which allows both short and long headers in the 802.11b frames. The adapter can only use short radio headers if the access point supports and uses them. Set to Long Only to override short frames.
- Wireless Mode- Specifies 2.4 GHz 54 Mbps or 2.4 GHz 11 Mbps operation in an access point network. The Wireless PCI Adapter must match the wireless mode of the access point with which it associates.
- Wireless Mode when Starting an Ad Hoc Network- Specifies 2.4 GHz 54/11 Mbps to start an Ad Hoc network if no matching network name is found after scanning all available modes. This mode also allows the selection of the channel that the Wireless PCI Adapter uses. The channels available depend on the regulatory domain. If the adapter finds no other ad hoc adapters, the channel that the adapter starts the ad hoc network with will be selected automatically. The Wireless PCI Adapter must match the wireless mode and channel of the clients it associates.
- QoS- Select the option, the Adapter will provide the Quality of Service for the wireless connection.
- 802.11 Authentication Mode- Select which mode the Wireless PCI Adapter uses to authenticate to an access point:
  - **Automatic** causes the adapter to attempt authentication using shared, but switches it to open authentication if shared fails.
  - **Open System** enables an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
  - **Shared-key** only allows the adapter to associate with access points that have the same WEP key.
- Roaming- You can select the Default, Very Low, Low, Normal, High in the drop-down list. It is recommended to keep the default setting.

For infrastructure (access point) networks, click **Preferred APs...** to specify four access points at most to the client adapter that attempts to be associated to the access points. The four access points have different priorities; the frontal has the higher priority.

Preferred Access Points	? 🛛
Specified Access Point MAC Addresse	\$
Access Point 1:	
Access Point 2:	
Access Point 3:	
Access Point 4:	
	OK Cancel

Figure 3-7

#### 3.1.2.2. Remove a profile

- 1. Go to the Profile Management tab (shown in Figure 3-2).
- 2. Select the profile name in the Profiles List.
- 3. Click **Remove**.

#### Note:

The profile being used can't be removed.

#### 3.1.2.3. Switch another Profile

- 1. Go to the Profile Management screen (shown in Figure 3-2).
- 2. Select the profile name required in the Profiles List.
- 3. Click Activate.

#### 3.1.2.4. Export a Profile

- 1. From the Profile Management screen (shown in Figure 3-2), highlight the profile to export.
- 2. Click Export..., the Export Profile window will then appear below.
- 3. Browse the directory to export the profile to.
- 4. Click **Save**. The profile should then be exported to the specified location.

Export Pro	file	? 🗙
保存在(1):	🗀 TL-WN310G_350G_350GDv1.0_TL 🔽 🕓 🧊 📂 🖽	•
i Manual		
文件名(M):	default.prf Save	
保存类型(正):	Config files (*.prf)	<u>ار</u>

Figure 3-8

#### 3.1.2.5. Import a Profile

- 1. From the Profile Management screen (shown in Figure 3-2), click **Import...** Then the Import Profile will appear below.
- 2. Browse to the directory where the profile is located.
- 3. Highlight the profile name.
- 4. Click Open, the imported profile will then appear in the Profiles List.

Import Profi	ile			?	$\mathbf{X}$
查找范围(I): 🧕	🗅 TL-WN3106_3506_350GDv1.0_TL 💟	G	ø	• 📰 💙	
🍋 Manual 🍖 default. prf					
文件名 (2): 文件类型 (2):	*.prf Config files (*.prf)	~		Open Cancel	

Figure 3-9

#### 3.1.2.6. Scan Available Networks

- 1. Click **Scan** on the Profile Management screen (shown in Figure 3-2), the Available Infrastructure and Ad Hoc Networks window will appear below.
- 2. Click **Refresh** to refresh the list at any time.
- Highlight a network name and click Activate to connect to an available network. If no configuration profile exists for that network, the Profile Management window will open the General tab screen. Fill in the Profile name and click OK to create the configuration profile for that network.

Network Name (S	SID) 👘 🕅 SID)	Super   XR	Si	gnal Strength	Channe	l 🔰 Wirel 🗠
1			ող	10 dB	10	2.4 G
1			ող	58 dB	6	2.4 G
i.	19		ող	36 dB	6	2.4 G
🕻 APPROX		٢	ոլ	25 dB	6	2.4 G
🕻 BAVO			<b>1</b> ]]	4 dB	11	2.4 G
& BOCSOFT			<b>1</b> ]]	4 dB	1	2.4 G
i ccc		٢	ıl	23 dB	6	2.4 G
👗 default			վ	14 dB	1	2.4 G
👗 hf		۵	]]]	2 dB	8	2.4 G 👷
1 10500.			-1]	n un o	11	240

Figure 3-10

#### 3.1.2.7. Auto Profile Selection Management

The auto selection feature allows the Wireless PCI Adapter to automatically select a profile from the list of profiles and use it to connect to the network. To add a new profile into the Auto Selected Profiles list, please follow these steps.

- 1. On the Profile Management screen (shown in Figure 3-2), click Order Profiles....
- 2. The Auto Profiles Selection management window will appear (shown in Figure 3-11) with a list of all created profiles in the Available Profiles.

Auto Profile Selection Management	? 🛛
Available Profiles:	Add
Auto Selected Profiles:	
	Move up
	Move down
	Remove
	Cancel

Figure 3-11

- 3. Highlight the profiles to add to auto profile selection, and click **Add**. The profile will appear in the Auto Selected Profiles box.
- 4. Highlight a profile in the Auto Selected Profiles box.

#### 5. Click Move Up or Move Down as appropriate.

#### Note:

The first profile in the Auto Selected Profiles box has highest priority, and the last profile has the lowest priority.

- 6. Click OK.
- 7. Check the **Auto Select Profiles** checkbox on the **Profile Management** tab (shown in Figure 3-2).

#### P Note:

When auto profile selection is enabled by checking **Auto Select Profiles** on the **Profile Management** tab, the client adapter will scan for an available network. The profile with the highest priority and the same SSID as one of the found networks will be used to connect to the network. If the connection fails, the client adapter will try the next highest priority profile that matches the SSID until an available network is found.

#### 3.1.3 Diagnostics

The **Diagnostics** tab of the TP-LINK Wireless Client Utility (TWCU) provides buttons used to retrieve receiving and transmitting statistics. The Diagnostics tab does not require any configuration.

The Diagnostics tab lists the following receiving and transmitting diagnostics for frames received or transmitted by the wireless network adapter:

- > Multicast frames transmitted and received
- > Broadcast frames transmitted and received
- Unicast frames transmitted and received
- Total bytes transmitted and received

🐨 TP-LINK Vireless	Client Utility - C	urrent Profile:	Default ?X
<u>A</u> ction <u>O</u> ptions <u>H</u> elp			
Current Status Profile	Management Diagnostics		
T			
Multicast Packets:	0	Ad	lapter <u>I</u> nformation
Broadcast Packets:	13	Ad	lvanced Statistics
Unicast Packets:	3		
Total Bytes:	756		Troubleshooting
Receive			
Multicast Packets:	0		
Broadcast Packets:	0		
Unicast Packets:	0		
Total Bytes:	0		

Figure 3-12

#### 3.1.3.1. Check Driver Information

Click the **Adapter Information** button in the screen above, you will see the adapter information, and it contains general information about the wireless network adapter and the Network Driver Interface Specification (NDIS) driver. Access the adapter information from the Diagnostics tab.

- > **Card Name -** The name of the wireless network adapter.
- > MAC Address The MAC address of the wireless network adapter.
- > **Driver -** The driver name and path of the wireless network adapter driver.
- > Driver Version The version of the wireless network adapter driver.
- > Driver Date The creation date of the wireless network adapter driver.
- > Client Name The name of the client computer.

#### 3.1.3.2. Check Receive and Transmit Statistical Information

The **Advanced Statistics** show receiving and transmitting statistical information for the following receiving and transmitting diagnostics for frames received by or transmitted to the wireless network adapter.

Transmit			
Frames Transmitted OK:	83	RTS Frames:	34
Frames Retried:	33	CTS Frames:	16
Frames Dropped:	1	No CTS Frames:	18
No ACK Frames:	130	Retried RTS Frames:	18
ACK Frames:	83	Retried Data Frames:	33
Receive			
Beacons Received:	349	Authentication Time-Out:	0
Frames Received OK:	3	Authentication Rejects:	0
Frames Received with Errors:	2222	Association Time-Out:	0
CRC Errors:	3810	Association Rejects:	0
Encryption Errors:	0	Standard MIC OK:	0
Duplicate Frames:	0	Standard MIC Errors:	0
AP Mismatches:	0	CKIP MIC OK:	0
Data Rate Mismatches:	0	CKIP MIC Errors:	0

Figure 3-13

#### 3.2 For Windows Vista

After the Adapter's driver has been installed, Windows Vista will display a wireless Network Connection message like this one.

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Figure 3-14

Icon **ull** means the connection has been established. Icon **ull** means there is no connection. To establish a connection, please follow the steps below.

1. Right-click the icon in your system tray, then click **Connect to a network**.





2. The following screen will show you available wireless networks. Highlight the one you want to join, and then click **Connect**.

🌀 😰 Connect to a net	twork	- • •
Select a networ	k to connect to	
Show Wirele	ss 🔻	<b>4</b> 7
TP-LINK	Security-enabled network	🔒 litter
	BEN Unsecured network	lite.
💐 340G	Security-enabled network	llee-
		- T
Set up a connection Open Network and S		
		Connect Cancel

Figure 3-16

3. Input the Security key and click **Connect** to continue.

		- • ×
$\bigcirc$	👰 Connect to a network	
	Type the network security key or passphrase for TP-LINK The person who setup the network can give you the key or passphrase.	
	Security key or passphrase:	
	Display characters	
	If you have a <u>USB flash drive</u> with network settings for TP-LINK_DA2F7A, insert it now.	
	Connect	Cancel

Figure 3-17

4. If the connection is successful established, the following screen will appear, click **close** to finish the connection.

	- • ×
Connect to a network	
Successfully connected to <b>TP-LINK</b>	
Save this network	
Start this connection automatically	
	Close

Figure 3-18

#### 3.3 For Windows 7

TP-LINK Wireless Client Utility (TWCU) is not available for Windows 7. So after the Adapter's driver has been installed, we have to use Windows WLAN Autoconfig to establish a connection. Please follow the steps below.

1. Click the icon at the bottom of your screen in your system tray and then you will see the available wireless network list. Select the SSID of your Access Point and click **Connect**.

Not connected 😽	
Connections are available	ш
Wireless Network Connection	
TP-LINK	
TP-LINK_DA2F7A	
Connect automatically	
123321	
TP-LINK_1DA748	
y i\	
RT3052_AP	
TP-LINK 130919	Ŧ
Open Network and Sharing Center	

Figure 3-19

2. If your wireless network is secured, you will be required to enter the security key as shown in Figure 3-20. Enter the passphrase, take **1234567890** for example. And then click **OK**.

🙀 Connect to a Netw	work	×
Type the netwo	rk security key	
<u>S</u> ecurity key:	••••••••••••••••••••••••••••••••••••••	
		OK Cancel

Figure 3-20

3. If the key entered is correct, you will successfully connect to the network as shown in Figure 3-21.

Currently connected t TP-LINK_DA2 No Internet ac	F7A	•
Wireless Network Con	nection	
TP-LINK_DA2F7A	Connected	
123321	<b>S</b> ul	
TP-LINK	liter	
z	lite.	
WL-OEM-WIN7_Netw	ork	
TP-LINK_4B98BC	<b>3</b> 40	
123321	<b>3</b> ati	
s	Sal -	-
Open Network a	and Sharing Center	

Figure 3-21

### **Appendix A: Specifications**

Normal	
Interface	32 bit PCI Interface
Standards	IEEE802.11b; IEEE802.11g
Operating System	Windows 2000, Windows XP, Windows Vista, Windows 7
Transmission Distance	Indoor up to 100m, outdoor up to 300m (Standard transmission
	distance, it is limited to the environment).
Radio Data Rate	54/48/36/24/18/12/9/6Mbps or 11/5.5/2/1Mbps
	(Auto Rate Sensing)
Modulation	1M DBPSK; 2M DQPSK; 5.5M, 11M CCK; 6M, 9M, 12M, 18M,
	24M, 36M, 48M, 54M OFDM;
Media Access Protocol	CSMA/CA with ACK
Data Security	WPA/WPA2; 64/128/152-bit WEP; TKIP/AES
Frequency	2.4 ~ 2.4835GHz
Spread Spectrum	Direct Sequence Spread Spectrum (DSSS)
Power Consumption	Typically 500mA in full Transmit (TX), 250mA in full Receive
	(RX)
Safety & Emissions	FCC, CE

Environmental and Physical		
Operating Temp.	0°C~40°C (32°F~104°F)	
Storage Temp.	-40℃~ 70℃ (-40°F~158°F)	
Humidity	10% ~ 95% RH, Non-condensing	

#### **Appendix B: Glossary**

- 802.11b The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- 802.11g specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- Ad-hoc Network An ad-hoc network is a group of computers, each with a Wireless PCI Adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.
- DSSS (Direct-Sequence Spread Spectrum) DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need of retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).
- FHSS (Frequency Hopping Spread Spectrum) FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.
- Infrastructure Network An infrastructure network is a group of computers or other devices, each with a Wireless PCI Adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.
- Spread Spectrum Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

- SSID A Service Set Identification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name. See also Wireless Network Name and ESSID.
- WEP (Wired Equivalent Privacy) A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- Wi-Fi A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- WLAN (Wireless Local Area Network) A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.
- WPA (Wi-Fi Protected Access) A wireless security protocol use TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.