



USER MANUAL

WPCI-150A

Wireless adapter PCI Lite N / 150Mbps

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CE DECLARATION OF CONFORMITY

The product fulfils the following requirements according to EMC DIRECTIVE 92/31/EEC, EMC 2004/108/EC and LVD 2006/95/EC:

ETSI EN300328 V1.7.1

ETSI EN301489 V1.6.1

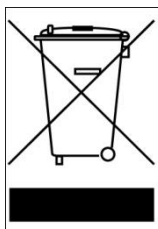
ETSI EN301489-17 V1.2.1

ETSI EN60950-1

SAFETY NOTICE

Do not use this product near water. Using the product during a thunderstorm should be avoided. Do not place heavy objects on the casing.

RECYCLING NOTICE



The symbol of the crossed-out wheeled bin on this product means that it is forbidden to place the equipment waste together with other waste (under penalty of fine). Detailed information about recycling of the product can be obtained at local authorities, local waste treatment plants or local distributors. Forwarding the equipment waste to recycling or recovery points helps to avoid the negative influence of the harmful components present in the equipment on the environment and human health; in this scope the primary role is played by each household.

PACKAGE CONTENTS:

The following elements should be found in the package

- 150Mbps Wireless PCI LAN Card (WPCI-150A)
- Quick Installation Guide
- CD

Note: If any of the elements is missing and/or damaged, please contact the retail shop, where you purchased WPCI-150A adapter.

Hint: The term 'adapter' used throughout this manual stands 150Mbps Wireless PCI LAN Card.

CONTENTS

CHAPTER I (Introduction)	4
1.1 General information	4
1.2 Characteristics	4
1.3 LEDs description	5
CHAPTER II (Installation)	6
2.1 Adapter installation	6
2.2 Drivers installation	6
CHAPTER III (Configuration)	9
3.1 Main features description	9
3.2 Connecting to the network using Configuration profile	14
3.3 Connecting to the network using WPS function	18
3.4 Importing, exporting and deleting profiles	22
CHAPTER IV (Features and specification)	26
GLOSSARY	27

CHAPTER I (Introduction)

1.1 General information:

Thank you for choosing our **150Mbps Wireless PCI LAN Card**. The adapter is a client device compliant with 802.11n (Lite N). It has been designed as a device enabling fast and efficient connecting your computer to wireless network.

The adapter is easy to install and configure. Quick Installation Wizard will guide you step by step through the installation process, and configuration application **Ralink Wireless Utility** will enable fast establishing of wireless connection without any troubles.

WPCI-150A adapter is designed to use in stationary computers. The adapter is compliant with 802.11n(Lite N)/g/b. Compliance with **802.11n (Lite N)** standard enables to achieve transfer speed of up to **150Mbps** – which is much more than in the case of traditional networks working in 802.11g standard. Many encryption standards are used, including the most secure – **WPA-AES (WPA2)**. The adapter contains an external antenna (detachable), which significantly increases working stability and network range.

1.2 Characteristics:

- Compliant with IEEE802.11n (lite N), IEEE802.11g and IEEE802.11b
- Supported encryption types: WPA/WPA2, authentication IEEE802.1x, encryption TKIP/AES, 64/128/152-bit WEP encryption
- High transfer speed, up to 150Mbps.
- 32-bit PCI interface.
- Supporting Ad-Hoc and Infrastructure modes.
- Easy to configure and constant monitoring of work.
- Works with operating systems Windows 2000, XP, Vista, Win7.
- External antenna (detachable) with RP-SMA connector.

1.3 LEDs description:

LED	Status	Meaning
Green – Link	Flashing	The adapter searches for available wireless networks.
Green – Act	alternately	
Green – Link	Flashing	The adapter is connected, but does not send or receive any data packets.
Green – Act	slowly	
Green – Link	Flashing	The adapter sends or receives data packets.
Green – Act	quickly	

CHAPTER II (Configuration)

2.1 Adapter installation:

To install the adapter into your computer, follow the instructions:

- 1) Turn off the computer and disconnect the AC power.
- 2) Open the casing cover.
- 3) Insert the adapter into the PCI slot on the main board.
- 4) Secure the adapter in the assembly slot with a screw.
- 5) Close the casing cover.
- 6) Connect the AC power and turn on the computer.

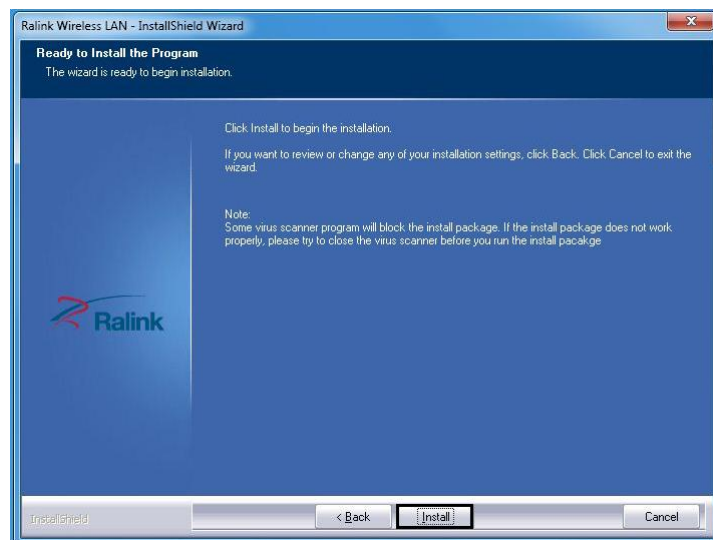
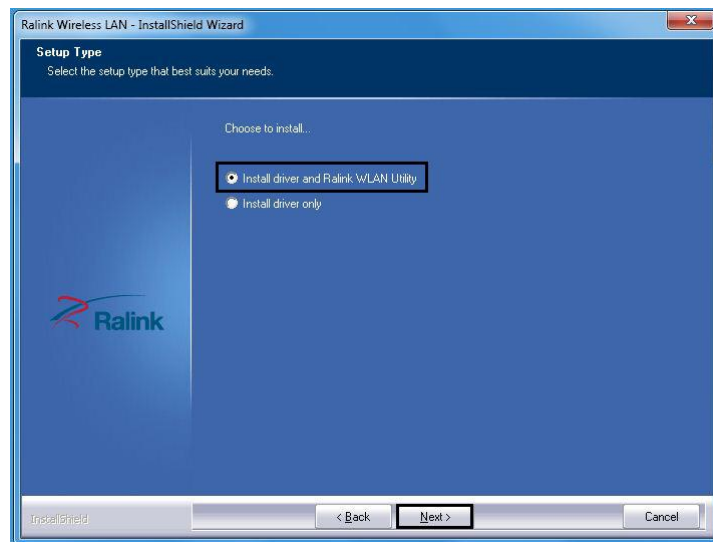
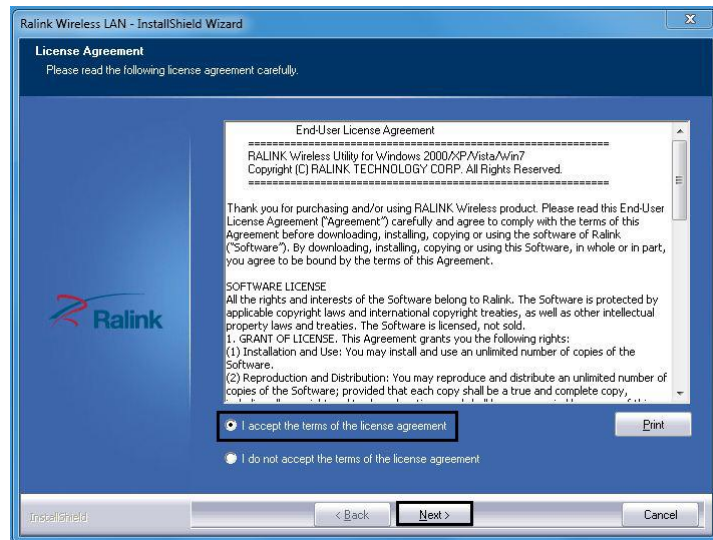
2.2 Drivers installation (Windows 2000, XP, VISTA, 7):

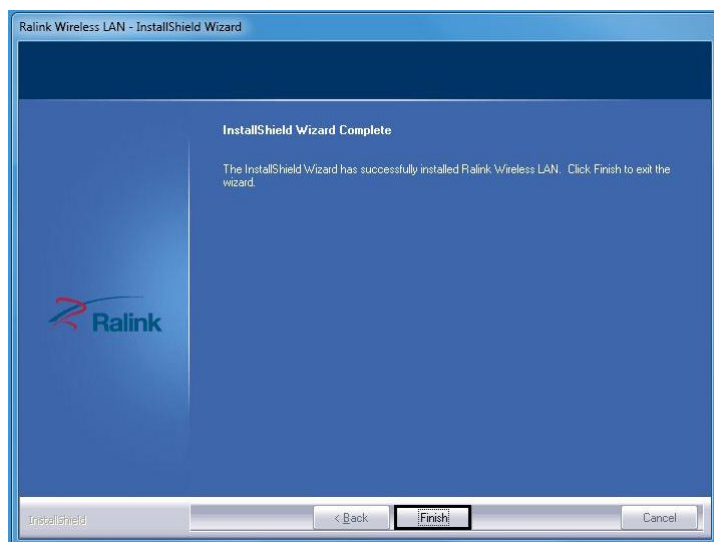
Adapter installation wizard will help you to install the device in the operating system Windows 2000 / XP / Vista / 7. The wizard will install the application **Ralink Wireless Utility** and the drivers of the device.

After installing the device, before software installation, the system will display the message "Found new device". Click **Cancel** and run the Installation Wizard from the CD-ROM.

The following steps of the installation are very similar for operating systems Windows 2000 / XP / Vista / 7. The installation process has been described on the example of Windows XP.

- 1) Insert the CD with software into CD-ROM drive, and then open the catalogue: **x:\driver\WPCI-150A** (where x is the letter of the drive) and choose the catalogue with drivers for your operating system.
- 2) Click the installation file setup.exe  to start the installation process.
- 3) Follow the instructions of the installation application:





Select **FINISH** to complete the installation.

CHAPTER III (Configuration)

Wireless 8level **WPCI-150A** adapter cards can be configured using **Ralink Wireless Utility**. This Chapter presents the method of wireless adapter card configuration for wireless connection with WLAN network and functions connected with data encryption.

After installing the adapter, an icon will appear in the system tray . It can be found in the bottom of the screen and shows the signal strength and indicator of receiving signal strength using colours.



grey icon means no connection.



red icon means low connection strength (below 5dB).



yellow icon means low connection strength (5dB to 10dB).



green icon means good connection strength (10dB to 20dB).



whole green icon means excellent connection strength (above 20dB).

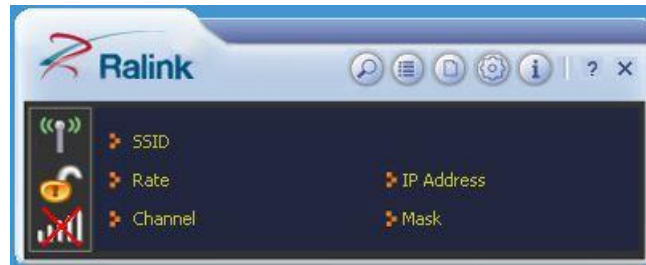
3.1 Main features description:

Run the pre-installed application **Ralink Wireless Utility** using the “Start” menu or double-click the application icon in the system tray.



Ralink Wireless Utility enables:

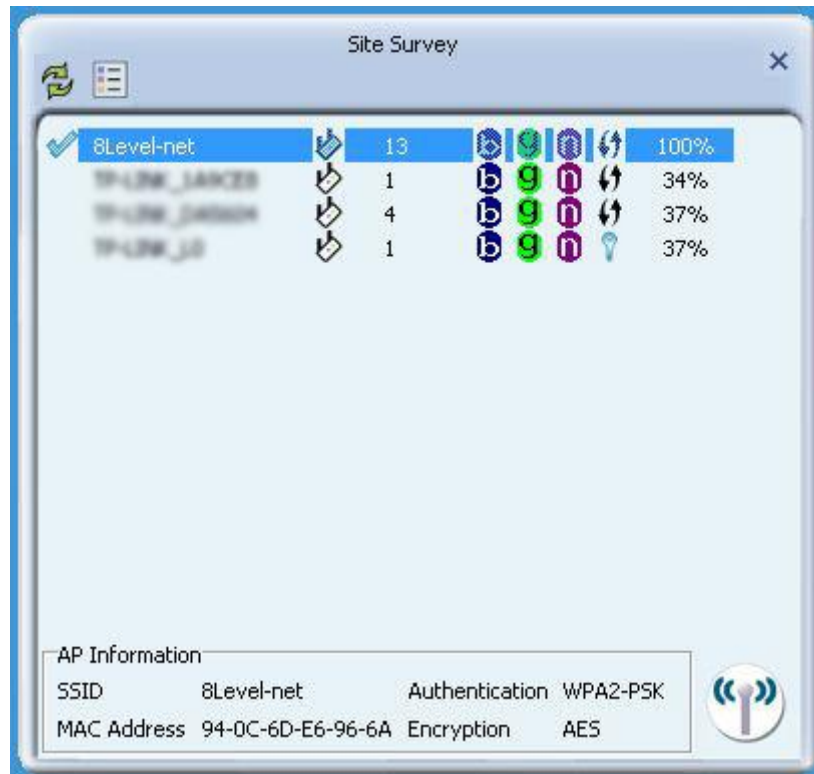
- Displaying current diagnostic messages.
- Displaying current status messages.
- Adding and editing configuration profiles.



- | | | |
|---|------------------|--|
|  | Site Survey | – scanning available networks |
|  | Link Information | – information about active connection
(signal strength, encryption type, working mode, sent/received packets, etc.) |
|  | Profile | – connection configuration
(enables adding, deleting, editing, importing and exporting profiles. Additionally, WPS settings access is possible) |
|  | Advanced | – advanced settings
(among others changing radio channels) |
|  | About | – information about the adapter drivers |

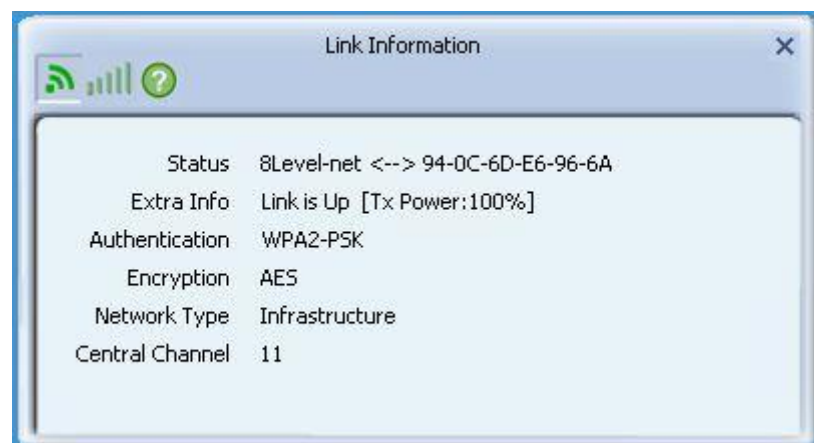
Tab SITE SURVEY:

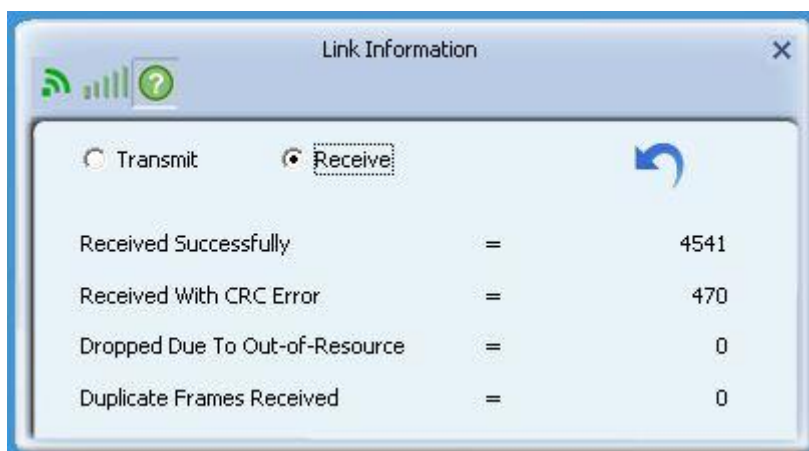
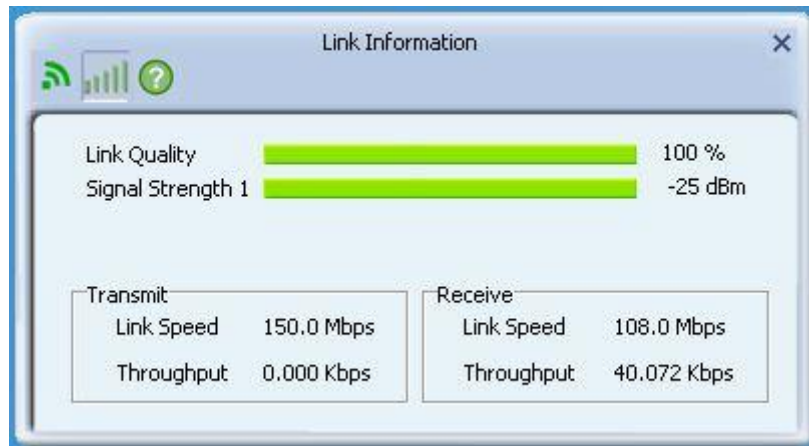
Contains information about networks in the range (network name, type of transmitter, transmitting channel, working mode, signal strength, encryption type). Using the Connect button, you can connect to the chosen network and save profile with network settings.



Tab LINK INFORMATION:

Contains information about active connection (network name, transmitting channel, working mode, encryption type, signal strength, quality of connection, sent/received packets).





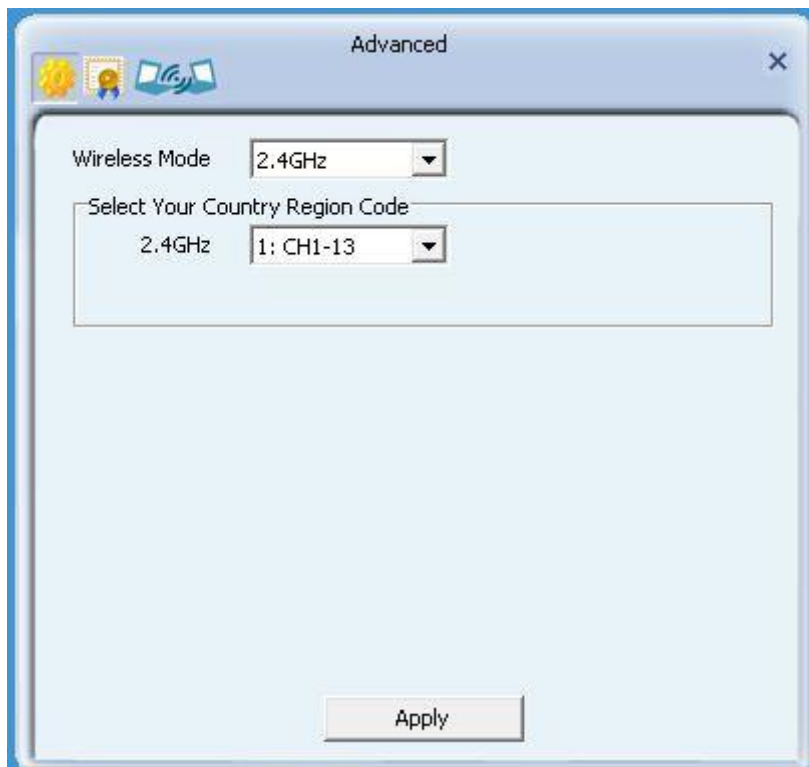
Tab PROFILE:

Enables connection configuration through adding, deleting, editing, importing and exporting profiles. Additionally, enables to establish a connection by following a few simple steps through WPS function.



Tab ADVANCED:

Enables changing wireless connection advanced settings - changing radio working mode and transmitting channel.



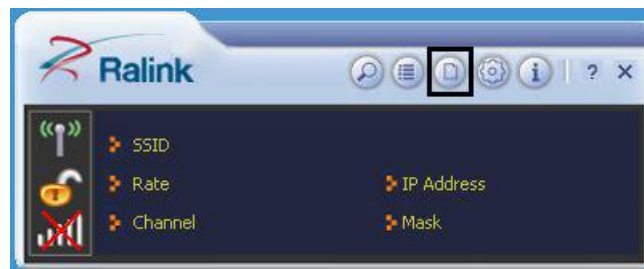
Tab ABOUT:

Contains information about the adapter driver, pre-installed firmware and displays MAC address of the network adapter card.



3.2 Connecting to the network using Configuration profile:

- 1) In the appearing window, from the taskbar choose **Profile**.



- 2) Then choose **Add**, to add a network.



- 3) Enter the profile name and choose the name of the network, which you want to connect to (SSID) and the working mode (Infrastructure or Ad Hoc). Then click the right arrow to continue.



- **Profile Name** - enter the name of new profile.
- **SSID** - choose the network, which you want to connect to.
- **Network type** – choose the adapter working mode (Infrastructure, to connect to e.g. router, Ad Hoc to connect to other computer – local network).

- 4) Choose encryption type (network protections). Then click the right arrow to continue.



- **Authentication/Encryption** – authentication/encryption type: 64/128 bit WEP, WPA/WPA2, WPA-PSK / WPA2-PSK (TKIP/AES).

- 5) Enter security key (the same as the one set in the transmitting device, e.g. router). Then click the right arrow to continue.



- 6) Click the right arrow to continue.



- 7) The network has been saved and added to the list. Highlight the chosen network and then click **Active** to establish the connection.



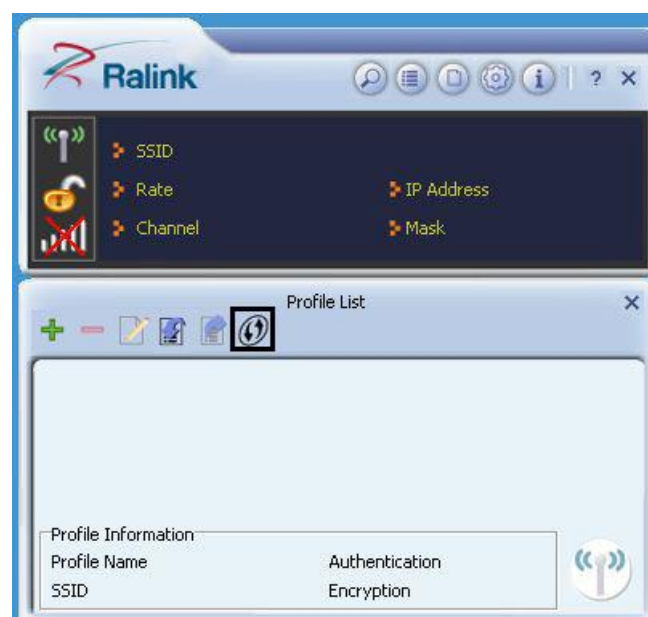
- 8) Connection has been established successfully, if all the connection parameters are displayed.

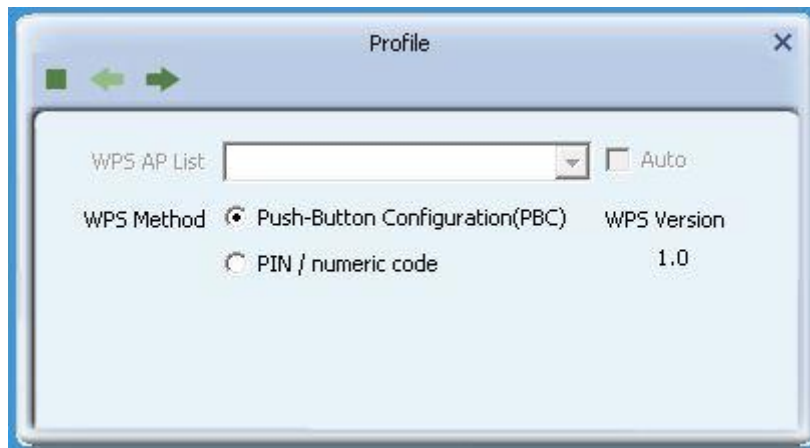


NOTE: The adapter supports the **WPS function**, which enables to establish a connection by following a few simple steps (**WPS function** should be turned on in the adapter software, and then press the **WPS button** on the transmitting device, e.g. router).

3.3 Connecting to the network using WPS function:

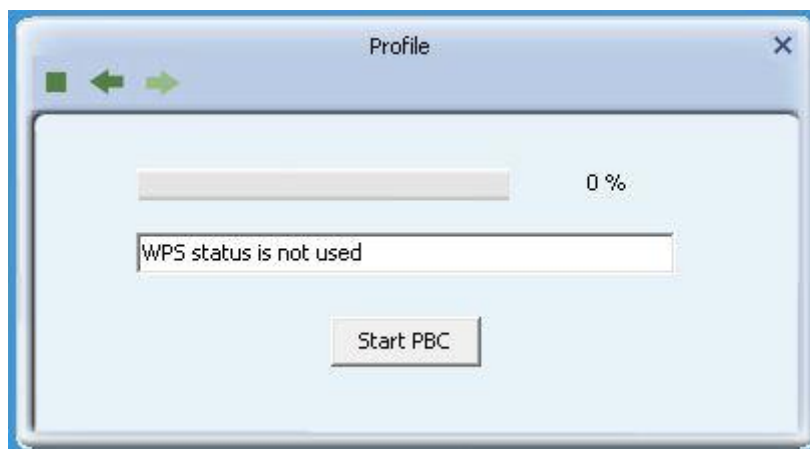
In the Profile tab click the **WPS button**



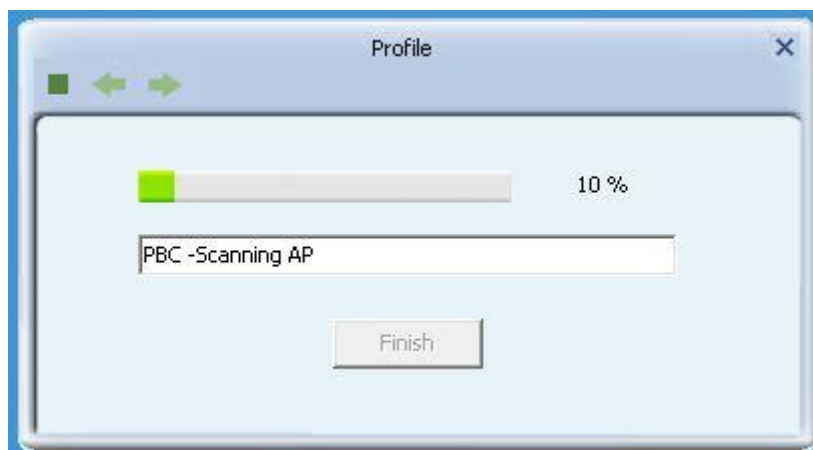


- **WPS Method** – choose the method of establishing connection using WPS function (through WPS Button or through PIN code).

METHOD I: Establishing connection using WPS button on the transmitting device (e.g. router):



- 1) Press **Start PBC** button to begin scanning.
- 2) Press and hold the WPS button (2-3 seconds) on the transmitting device, e.g. router.



- 3) After the scanning process is finished, the list with the added network profile will be displayed.

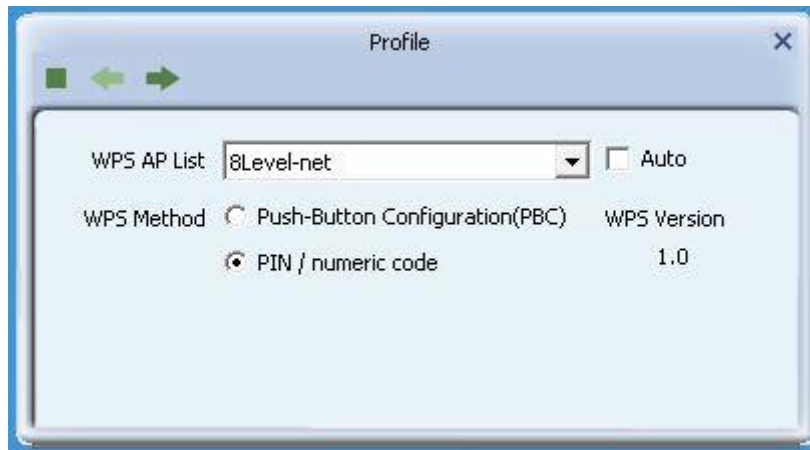


- 4) Press the **Connect** button to connect to the added network.

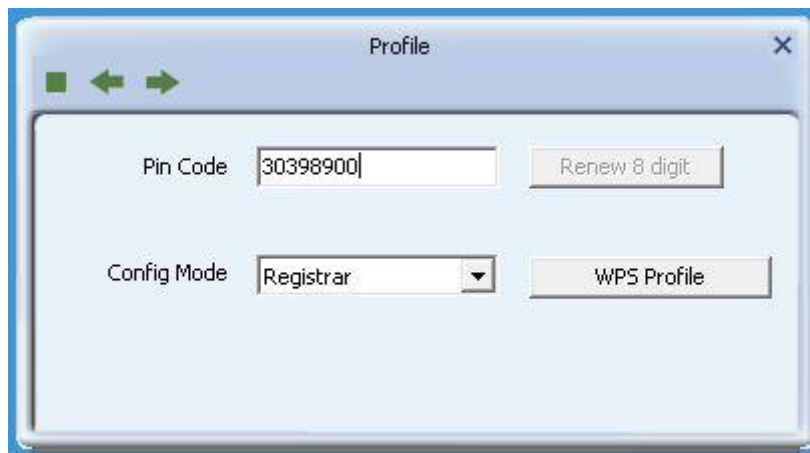
METODA II: Establishing connection using PIN code:

In the manual we present the **Registrar** method of establishing connection using PIN code, that is entering PIN code found on the casing of transmitting device supporting WPS function.

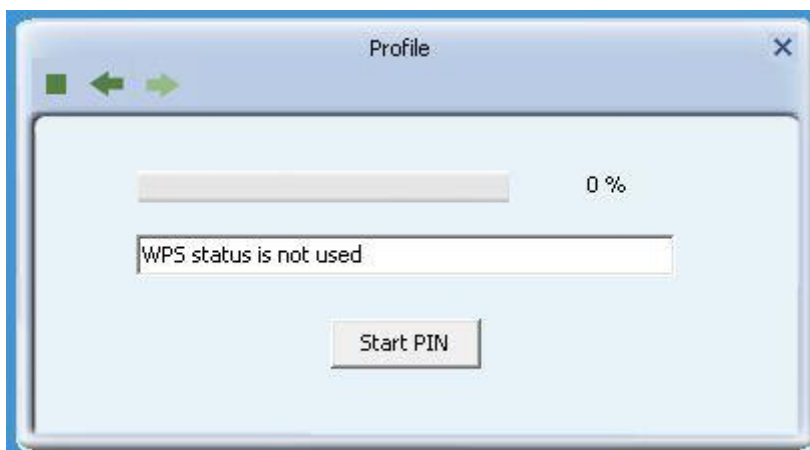
- 1) From the list, choose the network you want to connect to.
- 2) Set the method of establishing connection using WPS to **PIN/numeric code**. Then click „left arrow” to continue.



- 3) Enter **PIN code** provided on the transmitting device, e.g. router.
- 4) Set **Config Mode** option to **Registrar**. Then click „left arrow” to continue.



- 5) Click **Start PIN** button to begin scanning.



- 6) After the scanning process is finished, the list with the added network profile will be displayed.



3.4 Importing, exporting and deleting profiles:

DELETING PROFILE:

- 1) Go to **Profile** tab.
- 2) From the list, choose the profile you want to delete and highlight it.
- 3) Click **Remove**.



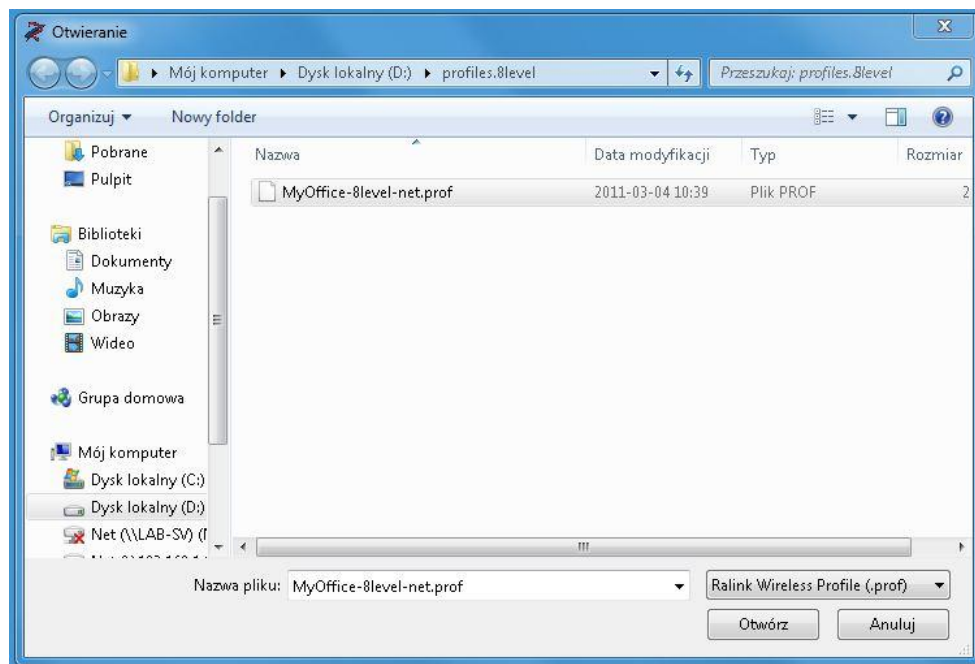
EDITING PROFILE:

- 1) Go to **Profile** tab.
- 2) From the list, choose the profile you want to edit and highlight it.
- 3) Click **Edit** to begin editing profile.



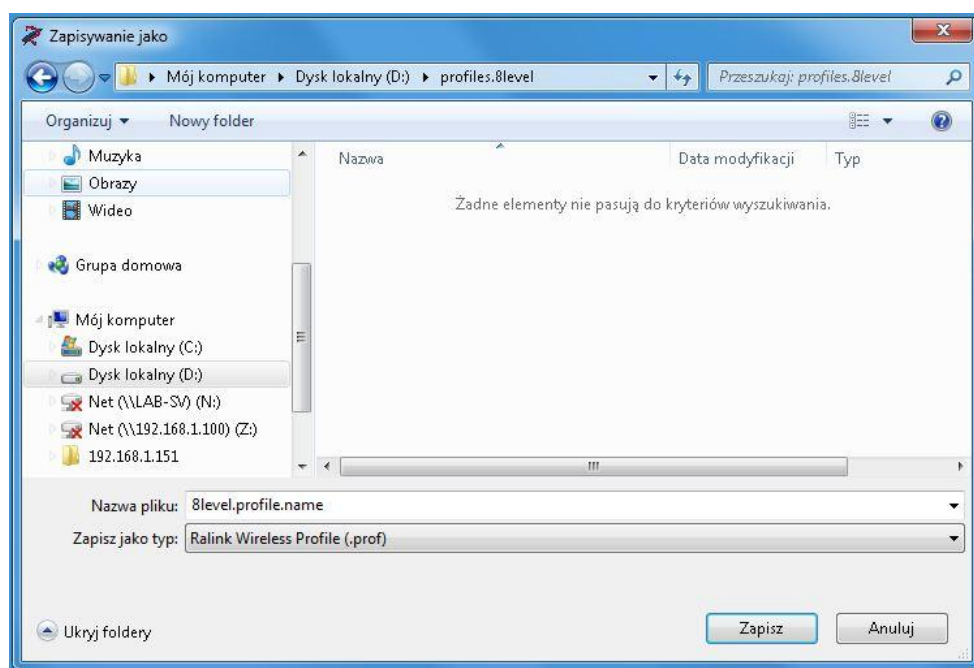
IMPORTING PROFILE:

- 1) Go to **Profile** tab.
- 2) From the list, choose the profile you want to import and highlight it.
- 3) Click **Import** (Windows explorer window will appear).
- 4) Find the location containing the chosen profile.
- 5) Highlight the name of the chosen profile.
- 6) Click **Open**. The imported profile will appear on the list of profiles.



EXPORTING PROFILE:

- 1) Go to Profile tab.
- 2) From the list, choose the profile you want to export and highlight it.
- 3) Click **Export** (Windows explorer window will appear).
- 4) Find the location where you want to save the chosen profile.
- 5) Click **Save**. The profile should be exported to the given location.



CHAPTER IV (Features and specification)

- Compliant with IEEE802.11 b/g/n (Lite N)
- Compliant with PCI ver. 2.2
- Ethernet controller for PCI bus
- Connection auto-negotiation function
- Data transfer speed up to 150Mbps
- Two working modes: Ad-Hoc / Infrastructure
- Supported encryption types: 64/128 bit WEP, WPA/WPA2, WPA-PSK / WPA2-PSK (TKIP/AES)

Specifications	
Standards	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Wireless Data Rates	802.11n (Lite N): up to 150Mbps 802.11g: up to 54Mbps 802.11b: up to 11Mbps
Frequency Range	2.4-2.4835GHz
Receiver Sensitivity	130M: -68dBm@10% 108M: -68dBm@10% 54M: -68dBm@10% 11M: -85dBm@8% 6M: -88dBm@10% 1M: -90dBm@8%
Working Mode	Ad-Hoc / Infrastructure
Security	64/128 bit WEP, WPA/WPA2, WPA-PSK / WPA2-PSK (TKIP/AES)
Power	15dBm(MAX EIRP)
Interfaces	PCI
Operating Temperature	0°C–40°C (32°F–104°F)
Operating Humidity	10%–90%

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.
- **802.11n** – 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input, multiple-output). MIMO uses multiple transmitter and 3receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **Infrastructure Network** – An infrastructure network is a group of computers or other devices, each with a Wireless 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.
- **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.

- **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. To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.
- **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.