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Printed in USA, December 2001

Pear Wireless Wall Access Point
December 2001

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Complete warranty information for all Pear Wireless products is available online at www.pearwireless.com.

REGULATORY INFORMATION

Federal Communications Commission (FCC)

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 of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Plug 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.

The user is cautioned that any changes or modifications not expressly Approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada (IC)

This class B digital Apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

Responsible Party

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MANDATORY SAFETY INSTRUCTIONS TO INSTALLERS & USERS

Antenna Minimum Safe Distance: 20cm (8").

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy, which is below the OSHA (Occupational Safety and Health Act) limits.

Antenna Mounting: The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the minimum safe distance of 20cm (8") to the antenna, to comply with current FCC RF Exposure limits.

WARNING: Maintain a separation distance from the antenna to a person(s) of at least 20cm (8").

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of general population exposure environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the properly installed radio/antenna unit.

pear wireless™

Series 100

Wall Access Point

User Manual

Version 1.1

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1. Introduction

Thank you for purchasing your Pear Wireless Wall Access Point. Since all PEAR Wireless products are IEEE 802.11b compliant, you are assured of interoperability with other wireless networking products adhering to the standard that has brought wireless networking to the mainstream of enterprise and home networking.

With Pear Wireless Network products, you can transparently transmit and receive data at rates up to 11 Mbps—all without the need for wired connections to your local LAN. Follow our easy-to-use installation and configuration steps. In no time, you'll be enjoying the freedom of wireless network access. This manual will assist you with the installation procedure and the operation of your new Pear Wireless product.

The package you have received should contain the following items.

- Pear Wireless Wall Access Point
- Power Adaptor
- User Manual (this document)
- CD ROM containing Pear WWAP Manager Software
- Quick Start Guide
- Warranty Card
- Registration Card

Note: If anything is missing, please contact the Pear Wireless Technical Support Center or your local vendor.

A Wireless LAN (WLAN) is normally used as an extension of your current wired Ethernet network. Wall Access Points are specifically mounted in places where area coverage is optimized. These Wall Access Points are connected to a wired network to communicate with each other and with servers and clients on that network.

The Wall Access Point can be connected to a 10/100 Mbps Ethernet network through a standard RJ45 (UTP) connector.

2. Wireless LAN Basics

Wireless LAN (Local Area Network) systems offer many advantages over a traditional, wired network. WLANs are more flexible, easier to setup and manage, and often more cost effective than their wired equivalent.

Using radio frequency (RF) technology, WLANs transmit and receive data over the air, minimizing the need for wired connections. Thus, WLANs combine data connectivity with user mobility and, through simplified configuration, enable movable LANs.

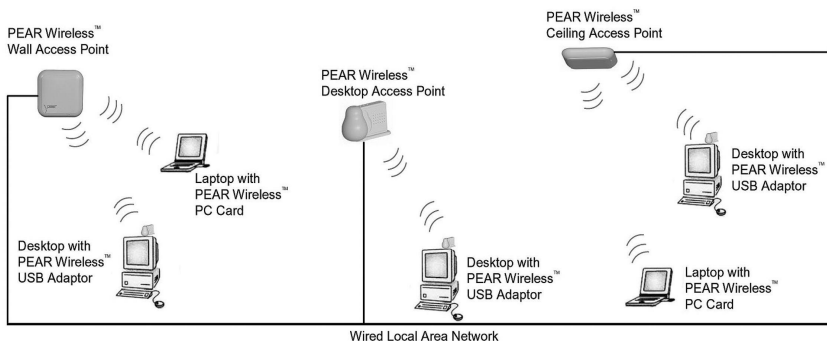


Figure 1. Wireless Local Area Network

With wireless LANs, users share information without looking for a place to plug in. Network managers can set up or augment networks without installing or moving wires. Wireless LANs offer the following productivity, convenience, and cost advantages over traditional wired networks.

- **Mobility** - Wireless LAN systems can provide LAN users with access to real-time information anywhere in the organization. This mobility supports productivity and service opportunities not possible with wired networks.
- **Installation Speed and Simplicity** - Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.

- **Installation Flexibility** - Wireless technology allows the network to go where wires cannot go.
- **Reduced Cost-of-Ownership** - While the initial investment required for wireless LAN hardware might be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs will be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, additions, and changes.
- **Scalability** - Wireless LAN systems can be configured in a variety of topologies to meet the needs of specific Applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allow roaming over a broad area.

3. Hardware Overview

Your Pear Wireless Wall Access Point offers elegant designing with effectiveness by combining a Wall antenna and an access point into one package.



Figure 2. PEAR Wireless Series 100 Wall Access Point

3.1 Internal Layout

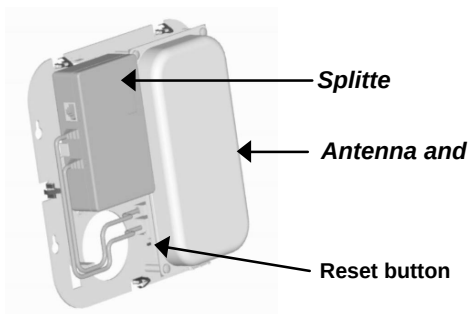


Figure 3. Wall Access Point Internal Layout

The internal layout features a splitter, antenna and radio, and the Reset button. See Section **???** for instructions on resetting a Wall Access Point.

3.2 LED Layout

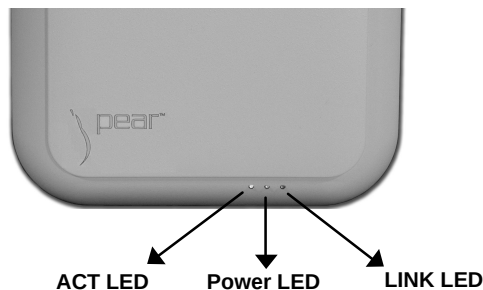


Figure 4. Wall Access Point LEDs

On the bottom of the Wall Access Point you will see three LEDs.

- **ACT** – the ACT LED indicates wireless activity
- **Power** – the Power LED indicates power is being supplied to the WWAP
- **LINK** – the LINK LED indicates activity on the wired network

3.3 Installation

Please refer to the installation manual.

4. Pear Wireless WMAP Management Software

The Pear Web Management Software and Quickstart application provide a consistent view of the wireless network. The system administrator can use it to control a large number of Access Points from a single location.

Supported features include:

- Configuring Access Points with Browser based web pages.
- Restricting access to the wireless network
- Managing data protection options such as IEEE 802.11b Wired Equivalent Privacy (WEP)
- Assigning radio channels for optimal cell management
- Forming multiple WLANs (containing one or more Access Points) with individual access control and security options
- Programming a Access Point with a specified IP address
- Setting the SNMP Write Community string
- Verifying the status of all Access Points in the network

4.1 Pear Wireless Quickstart Utility

To launch QuickStart, double click the QuickStart icon.

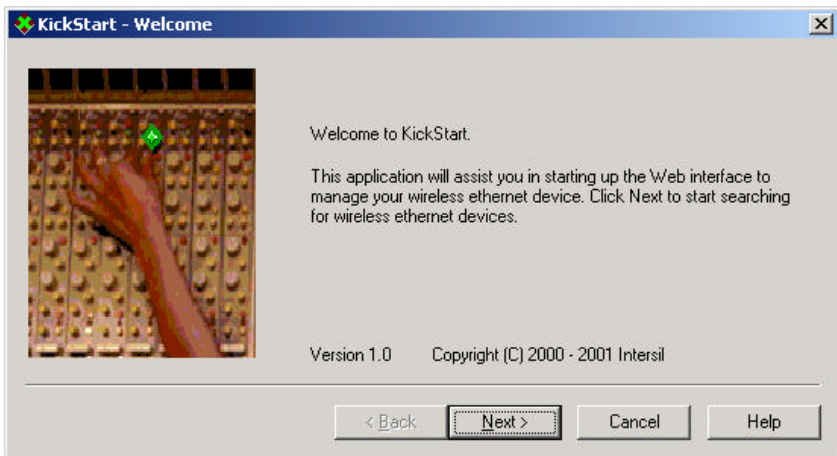


Figure 5. Quickstart Opening Window

When you click **Next**, QuickStart will search for all Access Points within range, whether they have been configured properly or not.

4.1.1 Select Wireless Ethernet Device

You can select the device you want to manage from the list as showed below.

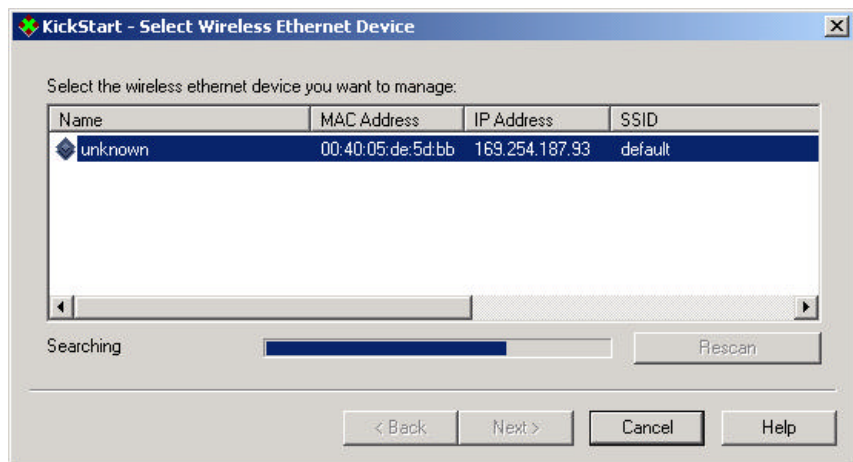


Figure 6. Select Wireless Ethernet Device Window

After that you can click on **Next** to continue to the next screen, or click on **Rescan** to rescan for a wireless device.

Device Information

The Scan Screen contains information about the wireless devices that were found.

Name:

The (optional) name of the AP

MAC address:

Every Ethernet device has a unique address that is permanently linked to that device. It cannot be changed.

IP address:

In order to access a TCP/IP network, a device must have an IP address.

SSID:

The SSID is also known as Service Set ID. This is the name of the wireless network that the AP belongs to.

Location: The (optional) physical location of the AP.

Contact: The (optional) name of a contact person who is responsible for this AP.

Scanning and rescanning for devices

If the device that you want to manage is in the list, select it, and click **Next**. If you click the **Rescan** button, QuickStart will search for Access Points again. Use this to find Access Points that have just been switched on or reset.

4.1.2 IP settings

In this screen you can select to either use dynamic (if DHCP is available) or static IP settings.

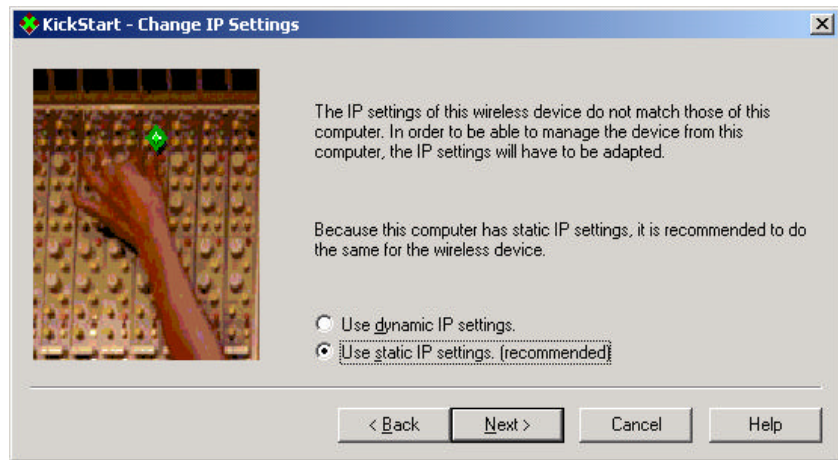


Figure 7. IP Settings Window

Select Dynamic IP settings when you install the Access Point in a network with a DHCP server or Auto IP. Select Static IP settings when you want to configure the IP settings manually. Click on the Next button to continue to the next screen.

- If you selected the option “Use dynamic IP settings” you will continue to the screen of Changing IP settings directly.
- If you selected the option “Use static IP settings” you will continue to the screen Set IP address of Wireless Device.

4.1.3 Static IP settings

When you have selected the option “Use static IP settings,” the screen below appears:

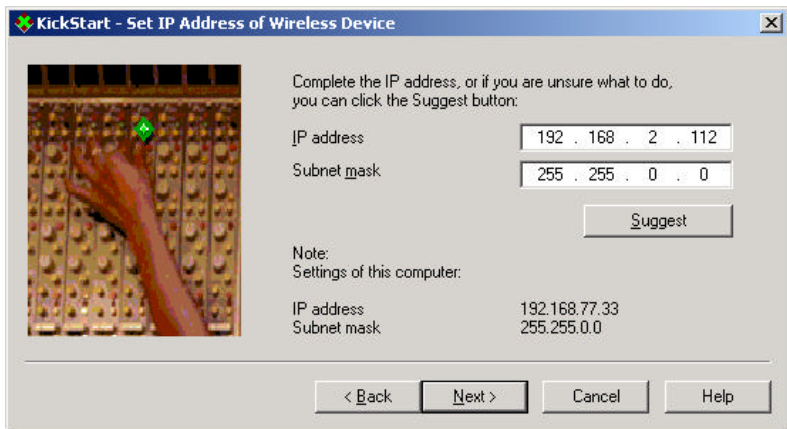


Figure 8. Static IP Settings Window

In this screen you can either manually insert the IP address and Subnet mask, or you can click on the button of “**Suggest**” to let the system find the IP settings. Click **Next** to continue to the next screen.

4.1.4 Gateway Settings

In this screen you can install the Gateway address of the wireless device. Click on Next to continue to the next screen.

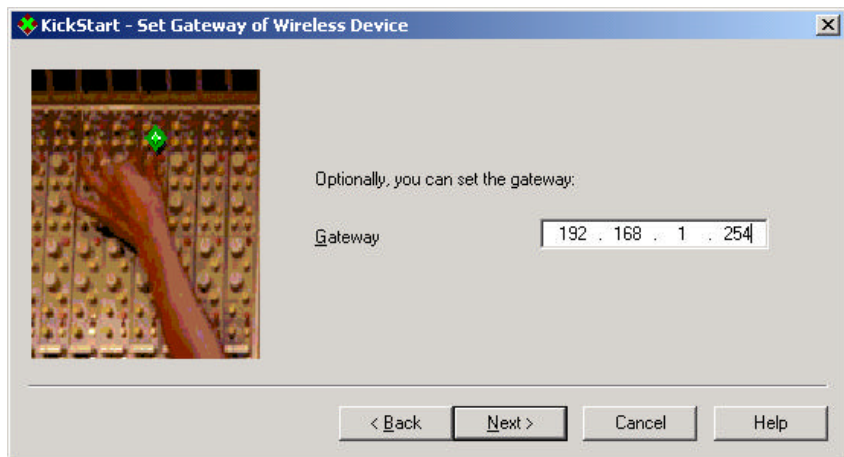


Figure 9. Gateway Settings Window

4.1.5 Ready to start the Web Interface

If you click Finish in this screen, QuickStart will launch a Web browser and open the Web management software page (Web interface) for the Access Point you have chosen. Then QuickStart quits.

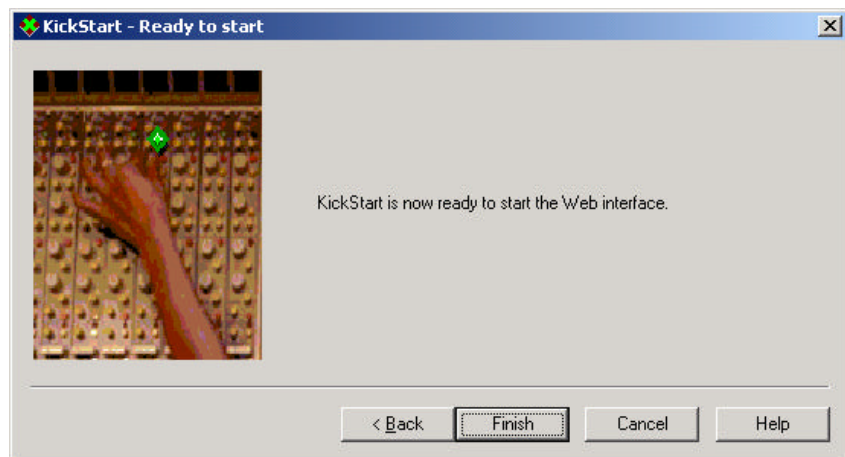


Figure 10. Quickstart End Window

Web Interface is launched

Once the QuickStart application has finished and the Access Point is available for configuration in the network, the Web Management Software is launched in a web browser. You can now edit the settings for the Access Point.

4.2 Contents of Web Interface

The Web Management Software contains the following subjects:

4.2.1 Settings Summary

On this page you will find an overview of the current settings.

The screenshot shows the 'PEAR Wireless™ Access Point Configuration Tool' interface. At the top is a green header bar with the 'pear' logo and 'Contact Information' on the left, and 'PEAR Wireless™ Access Point Configuration Tool' in the center. Below the header is a sidebar on the left with icons and links for 'Settings Summary', 'Wireless Settings', 'Security Against Unauthorized Network Access', and 'Security Against Eavesdropping'. The main content area is titled 'Settings Summary' and contains a table of current settings:

SSID (Service Set ID):	WebInterface
IP Address:	10.0.0.85
Access Control:	Unknown clients are accepted
Eavesdropping Mode:	WEP is turned on

Below the table, a paragraph states: 'This is a summary of your access point's settings. You cannot change the settings on this page. To change these settings or see more detail, use the shortcuts on the left or the following links:'. Below this text are four red underlined links: [SSID](#), [IP Address](#), [Access Control](#), and [Eavesdropping Mode](#).

Figure 11. Wireless Settings Summary Window

4.2.2 Wireless Settings:

The wireless settings such as SSID and channel are displayed and can be edited here.

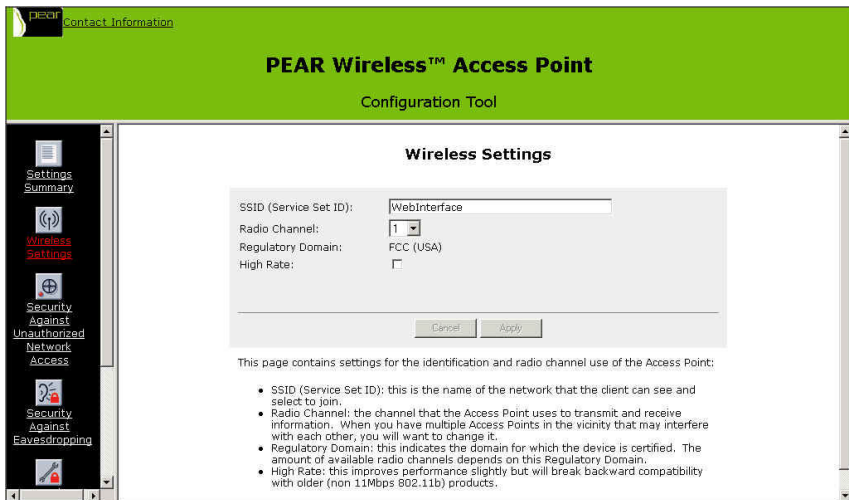


Figure 12. Wireless Settings Window

SSID : This is the Service Set ID. Only Access Points and clients that share the same SSID are able to communicate with each other.

Radio Channel: This is the channel that the Access Point uses to transmit and receive information. The channel that you select here is restricted to the channels that can be used within your Regulatory domain.

Regulatory Domain: The Regulatory domain is displayed here. Every country has a Regulatory Domain concerning radio channels that can be used to transmit and receive signals. This setting is a factory default that cannot be changed.

4.2.3 Security Against Unauthorized Network Access:

On this page you can allow or deny access to the Access Point on a client by client basis. To protect your network against unauthorized network access you can create an Access Control List (ACL).

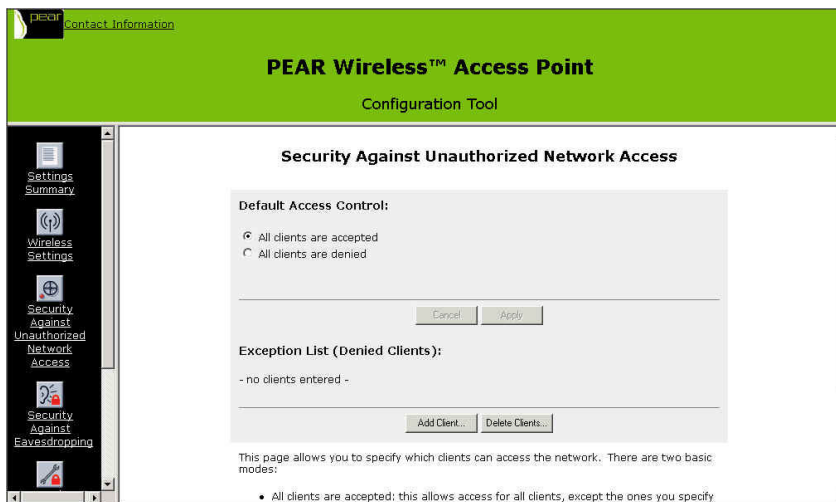


Figure 13. Security Against Unauthorized Network Access Window

You can choose to allow access to all clients or deny access to all clients, and create a list of exceptions for both options.

All clients are accepted: When you select this option, you allow access to all PC Cards, except for ones that you specify in the Exception list. This option can be useful if you do not want to keep track of all PC Cards but you do know some PC Cards that need to be denied access because they were stolen or some other reasons.

All clients are denied: When you select this option, you deny access to all PC Cards except the ones you specify in the Exception List.

Select the option and press the **“Apply”** button, then add the Exception List.

If you selected “Allow access to all clients,” you can add the MAC address of the client that you want to deny access to in the MAC Address field.

If you selected “Deny access to all clients,” you can add the MAC address of the client that you want to allow access to in the MAC Address field.

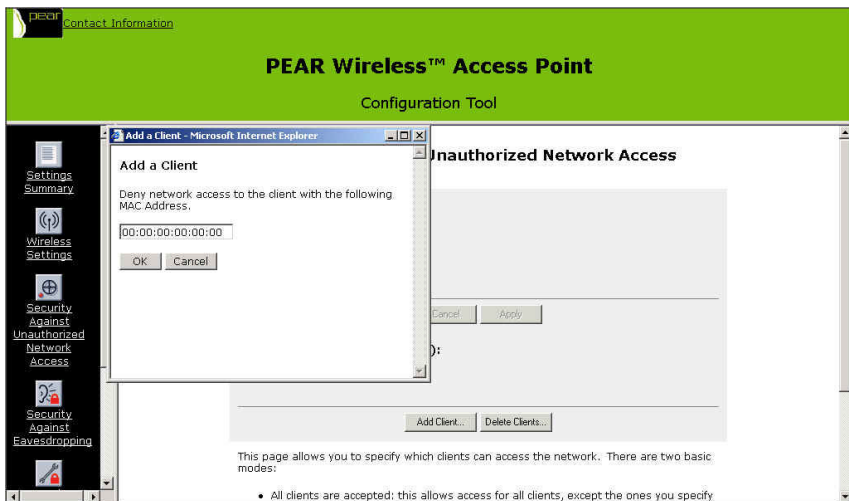


Figure 14. Add A Client Window

Then click on the **OK** button. The client is now added to the exception list.

To delete a client from the exception list

Click on the button of “**Delete clients.**,” A separate window opens in to display the Exception list.

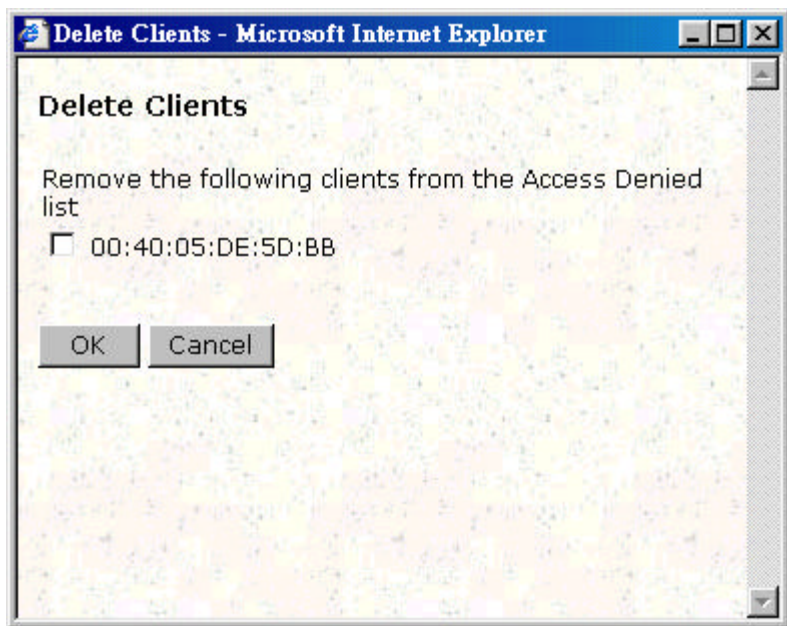


Figure 15. Delete A Client Window

Select the MAC Address(es) of the client(s) that you want to remove from the list. Then click on the **OK** button to update the exception list.

4.2.4 Security Against Eavesdropping:

On this page you can install security methods to prevent eavesdropping on the connection to the Access Point.

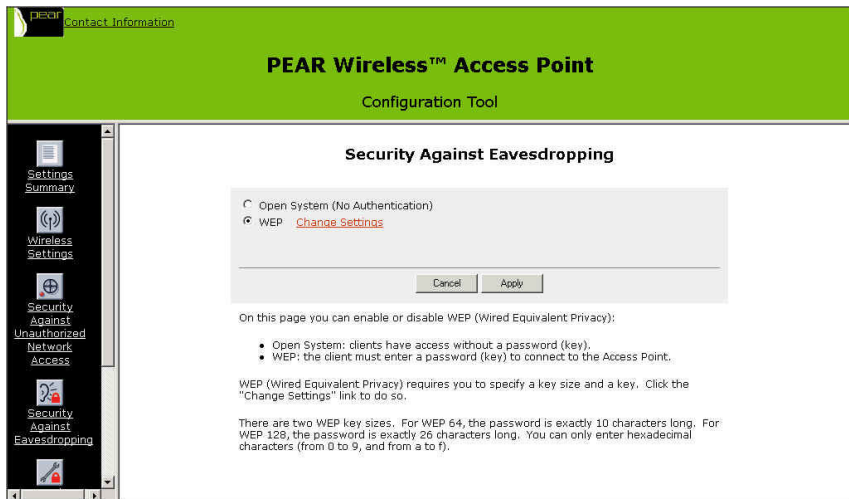


Figure 16. Security Against Eavesdropping Window

Open System

When you select this option, clients have access without a password (key).

WEP

When you select this option, you can activate the WEP security method. Click "Change Settings" to configure the WEP mode and key.

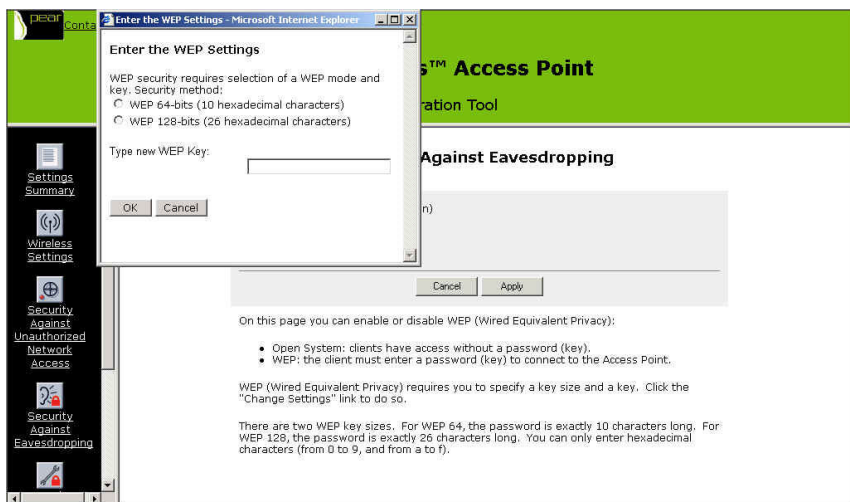


Figure 17. WEP Settings Window

Select the type of WEP you want to use - 64 bit or 128 bit. Then enter a password (key).

For WEP 64 bit mode, the password (key) must contain exactly 10 hexadecimal characters

For WEP 128 bit mode, the password must contain exactly 26 hexadecimal characters.

Note: Only hexadecimal characters are allowed in the password, which is 0 to 9, and "a" to "f".

Click on **OK**.

4.2.5 Security Against Unauthorized Configuration:

On this page you can manage the Write Community String for the Access Point and lock the management of the Access Point.

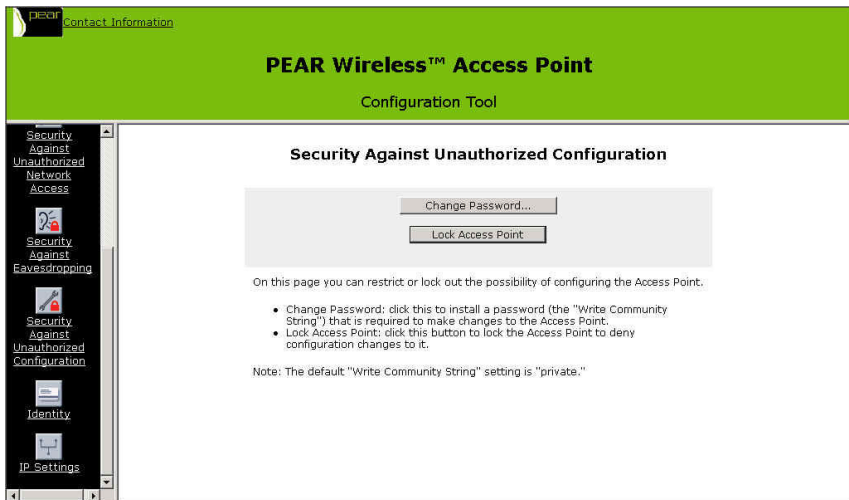


Figure 18. Security Against Unauthorized Configuration Window

On this page you can install a password, the “Write Community String,” that is required to make changes to the Access Point. You can also lock the Access Point.

Click on the button of “**Change password**”.

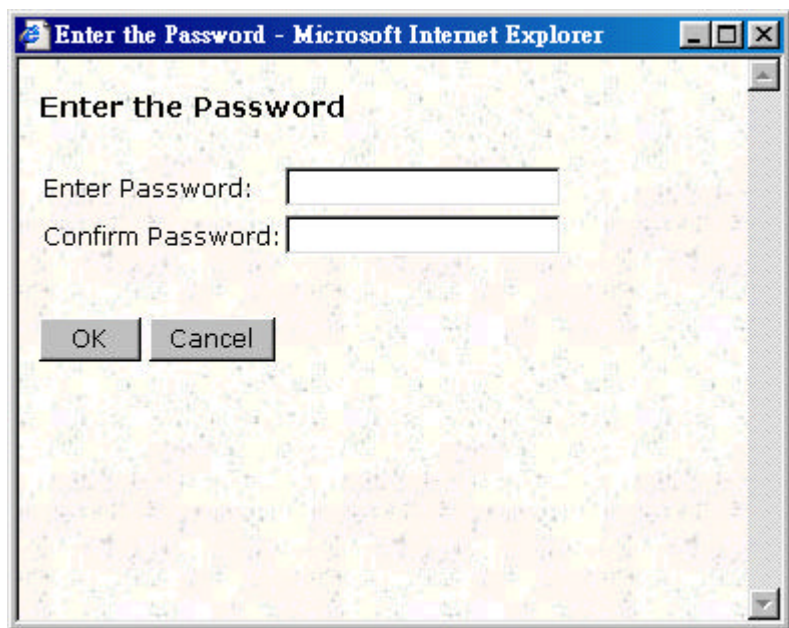


Figure 19. Password Window

You can enter a password that is required to edit the settings of the Access Point with the Web Interface.

Click **OK**

Lock Access Point: Click on the button Lock Access Point to lock it. A warning appears: "Are you sure to lock the Access Point? This will immediately prevent making configuration changes. You will still be able to view the current settings."

Click on **OK** to lock the Access Point. No more configuration changes to the Access Point are allowed.

To Unlock the Access Point

You can reset the Access Point's settings to factory defaults by pushing a paperclip into the reset button while the Access Point is on. Release the reset button when the LED has stopped burning..

4.2.6 Identity

Here the identity information about the Access Point is displayed and can be edited.

The screenshot shows the 'Identity' configuration window of the PEAR Wireless Access Point Configuration Tool. The window has a green header with the title 'PEAR Wireless™ Access Point Configuration Tool'. On the left is a sidebar with navigation links: 'Security Against Unauthorized Network Access', 'Security Against Eavesdropping', 'Security Against Unauthorized Configuration', 'Identity', and 'IP Settings'. The 'Identity' window contains the following fields:

Location:	Where access point is installed
Contact:	System admin for Access Point
MAC Address:	00:90:48:08:B4:8E
Access Point Type:	Access Point
Firmware Version:	3.2.31

Below the fields are 'Cancel' and 'Apply' buttons. A note states: 'This page gives information that will help you to identify the Access Point and its basic properties:' followed by two bullet points:

- Location: This field can be used to indicate the physical location of the device (for example: 2nd floor, room 3).
- Contact: This field can be used to indicate the person responsible for the device, this can be an email address (for example: someone@company.com).

At the bottom, it says: 'Both fields are optional and do not influence the behavior of the Access Point.'

Figure 20. Identity Window

Location

This is a text field in which you can enter where the Access Point is installed (e.g. 2nd floor, room 3). You can put any text into this field and it has no influence on how the Access Point works.

Contact

This is a text field in which you can enter the name of the systems administrator responsible for the Access Point ("admin@domain.com "). You can put any text into this field and it has no influence on how the Access Point works.

4.2.7 IP Settings

The IP, subnet and gateway addresses of the Access Point are displayed here.

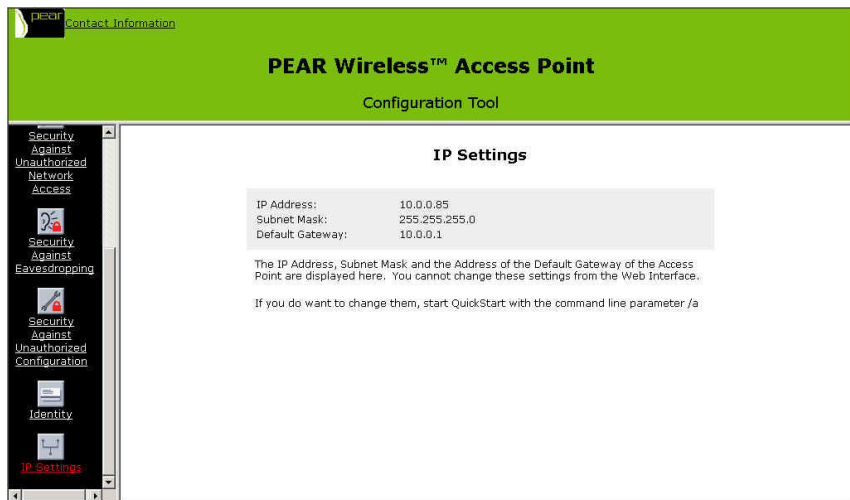


Figure 21. IP Settings Window

It is not possible to change these addresses from within the Web Interface. If you want to change the IP settings of an Access Point that has already had IP settings assigned to it, you need to change them manually from the QuickStart program.

5. Technical Specifications

Standards supported

- IEEE 802.11b standard for Wireless LAN
- All major networking standards (including IP, IPX)

Environmental

Operating temperature (ambient):

- -10 to 55°C

Humidity:

- Max. 95% Non-condensing

Power specifications

Power over Ethernet using splitter

- Input: 48V DC 50-60 Hz 1A
- Output: Data on RJ45, SVDC to radio board

Radio specifications

Range

- indoors approx. 40-175 meters per cell
- outdoors up to 150-400 meters per cell

Transmit power

- Nominally 14 dBm

Frequency range

- 2.4-2.4835 GHz (US), Direct Sequence Spread Spectrum (DSSS)

Number of Channels

- Most European countries: 13 (3 non-overlapping)
- US and Canada: 11 (3 non-overlapping)
- France: 4 (1 non-overlapping)
- Japan: 14 (3 non-overlapping)

Antenna system

- Dual antenna diversity system comprised of two internal inverted folded dipole antennas, +8.5dBi, +/- 0.5dBi

Specific features*Supported bit rates:*

- 11 Mbps: CCK
- 5.5 Mbps: CCK
- 2 Mbps: DQPSK
- 1 Mbps: DBSK

Data encryption

- 40-bit WEP Encryption

Utility Software

- Pear Wireless WAP Management Utility to manage wireless LAN, network connection, and client access control

Physical Dimensions

- 62 x 76 x 130 mm