Dual Radio 2.4GHz/5GHz Access Point

P-720

User’s Guide v1.0

Within the 5.15 to 5.25 GHz band (5GHz radio channels 34 to 48) the U-NII devices are restricted to indoor operations to reduce any potential harmful interference to MSS operations.

FCC Warning

FCC Interference 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 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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

If this device is going to be operated in 5.15 ~ 5.25GHz frequency range, then it is restricted in indoor environment only.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

P-720 is limited in CH1~CH11 for 2.4GHz by specified firmware controlled in U.S.A

Contents

FCC Warning 1
CONTENTS 2
ABOUT THIS GUIDE 4
Purpose 4
Prerequisite Skills and Knowledge 4
Conventions Used in this Document 4
CHAPTER 1 – INTRODUCTION 5
Product Overview 5
Features Highlight 6
CHAPTER 2 - INSTALLATION 8
The Product Package 8
Hardware Introduction 8
General Overview 8
Bottom Cover 9
LEDs 9
Connectors 10
Connect to the Power Source and Local Network 11
Software Installation 12
Initialization 12
CHAPTER 3 – APPLICATION MODE 14
AP + AP Mode 14
AP + Bridge Mode 14
CHAPTER 4 – REFERENCE MANUAL 16
Web Interface 16
Status 17
Status | Device Status 17
Status | Wireless Status 17
Network 18
Network | Interface 18
Network | RADIUS Server 20
Network | DHCP Settings 21
Wireless 26
Wireless | Basic 26
Wireless | Advance 30
Wireless | WEP 35
Wireless | MAC ACL 36
System 39
System | Security 39
System | SNMP 39
System | Telnet 41
System | Configuration 41
System | Reset 43
System | Upgrade 43
APPENDIX 45
A) Specification 45
B) Factory Defaults for the P-720 46

C) Regulatory Channels/Power 46
D) Location ID and ISO Country Codes 48

About this Guide

Purpose

This document provides information and procedures on hardware installation, setup, configuration, and management of the high performance Dual Radio 2.4GHz/5GHz AP P-720.

Prerequisite Skills and Knowledge

To use this document effectively, you should have a working knowledge of Local Area Networking (LAN) concepts and wireless Internet access infrastructures. In addition, you should be familiar with the following:

- Hardware installers should have a working knowledge of basic electronics and mechanical assembly, and should understand related local building codes.
- Network administrators should have a solid understanding of software installation procedures for network operating systems under Microsoft Windows 95, 98, Millennium, 2000, NT, and Windows XP and general networking operations and troubleshooting knowledge.

Conventions Used in this Document

The following typographic conventions and symbols are used throughout this document:

!!!	Very important information. Failure to observe this may result in damage.
!	Important information that should be observed.
i	Additional information that may be helpful but which is not required.
bold	Menu commands, buttons and input fields are displayed in bold
`code`	File names, directory names, form names, and system-generated output such as error messages are displayed in constant-width type
`<value>`	Placeholder for certain values, e.g. user inputs
[value]	Input field format, limitations, and/or restrictions.

Chapter 1 – Introduction

Thank you for choosing the Dual Radio Access Point P-720.

The P-720 operates simultaneously in the 5-GHz and 2.4-GHz frequency bands and is fully compliant to 802.11b/g and 802.11a standard with its high performance and enhanced security.
The two Dual-Band radio (a/g + a/g) that this product provides supplies the furthest in flexibility and makes sure low interference and large coverage. The a+g operation mode and Multiple BSSID that this product provides differentiates it from traditional indoor AP product.

Product Overview

Flexibility and high performance

The P-720 is a high performance indoor AP for multiple service. The two dual-band radios and AP/Bridge working mode supply the furthest flexibility for wireless applications:

- Simultaneously supports 802.11a/b/g in one platform
- Dual AP configuration for high client density environment
- Dual AP configuration for supporting all kinds of client (11a/b/g) simultaneously
- Dual Bridge configuration for wireless repeating and wireless bridging areas

Secure and reliable wireless networking

The P-720 supplies multiple methods to protect the wireless network:

- Supports VLAN, up to 16 VLAN tagging
- IEEE 802.1x/EAP with certificates and SIM card (EAP/TLS, EAP/PEAP, EAP/SIM and EAP/TTLS)
- 64bits/128bits static and dynamic WEP key
- WPA(TKIP and AES)
- WPA2
- Layer 2 Isolation for preventing snooping on the same BSS
- MAC ACL for preventing illegal attacking from Internet

Multiple BSSID

Supports up to16 BSSID, each BSSID can be configured independently, such as Multiple SSID, security policy, authentication method, RADIUS server and VLAN tag. With this, P-720 can supply multiple services, including multiple VLAN partition and multiple security policy.

Simple Installation

Support IEEE 802.3af Power-over-Ethernet as well as external power supply by power adaptor. This reduces the cost and the effort of installation and maintenance dramatically.

Easy remote management and maintenance

The P-720 can be remote managed by HTTPs, CLISH and SNMP.

- Web-based user interface based on HTTPs and CLISH configuration based on SSHv2 supplies secure remote management
- NMS product supplies the system management solution
- DHCP Server/DHCP Relay service supplies flexibility for different network setup
- Remote software upgrading via HTTPs

Management Option

You can use the Access Point management systems through the following interfaces:

- Web-browser interface with HTTPS
- Command Line interface (CLI) with optional SSH
- Simple Network Management Protocol

P-720 management system pages are organized the same way for the web-browser interface and the CLI. This user manual provides detailed description of each management option.

Features Highlight

Super AP

Multiple BSSID (up to 16)

- SSID per BSSID
- Enabled or Disabled Hidden SSID per BSSID
- VLAN ID per BSSID
- AAA way per BSSID, 802.1x and web login
- Co-existence of 802.1x and web login
- Security policy per BSSID
- WPA pass-through
- RADIUS server per BSSID

AAA

- RADIUS client supporting
- 802.1x supporting(EAP/TLS,EAP/TTLS, EAP/PEAP and EAP/SIM)

Security

- Static 64/128bits WEP, Dynamic 64/128bits WEP
- WPA/TKIP and WPA/AES support
- MAC ACL
- Access Control (accept rule and deny rule) based on MAC address
- Layer 2 Isolation
- Hidden SSID

Management

- Secure management via HTTPS, CLISH, SNMP
- Standard MIB
- Remote firmware update via WEB UI
- Backup/Restore configuration file

- DHCP Server

Super Brige

- 802.11a/b/g compliant
- 108Mbps raw data rate supporting
- Up to 8 bridge links supporting
- Special radio for Bridge
- WPA/PSK over Bridge link

Chapter 2 - Installation

This chapter provides installation instructions for the hardware and software components of the Access Point P-720. It also includes the procedures for the following tasks:

- Hardware Introduction (LEDs, Connectors)
- Connecting the Access Point
- First Configuration

The Product Package

The product comes with the following:

- Dual Radio Access Point (model: P-720)
- Screw Bag for Mounting Kit
- Antenna (Dual-band Dipole Antennas with TNC plug connector, 2 units)
- Ethernet patch cable (Cat5 UTP, 1.8m length, 1 unit)
- External power supply (Input:100-230VAC, 50-60Hz, Output: 12VDC, 1 unit)
- Installation CD containing:
  - P-720 User Guide in PDF format
  - Product Firmware
  - Release Notes
  - Adobe Acrobat Readers
  - Readme
- Printed Release Note

Hardware Introduction

General Overview

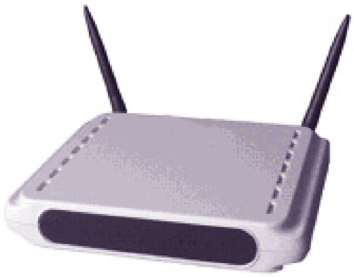


Figure 1 – P-720 General View

The front panel of P-720 contains:

- There are 4 indicator lights (**LEDs**) that help to describe the state of various networking and connection operations.

The Bottom cover of P-720 contains:

- **Connectors** which enable you to make different network connections for the device
- **Reset** button enables you to reboot or reset the device configuration to the factory defaults

Press the **Reset** button for **less** than **5** seconds to **reboot** the device.

Press the **Reset** button for **more** than **5** seconds to **set** the device **to factory**

defaults.

Bottom Cover

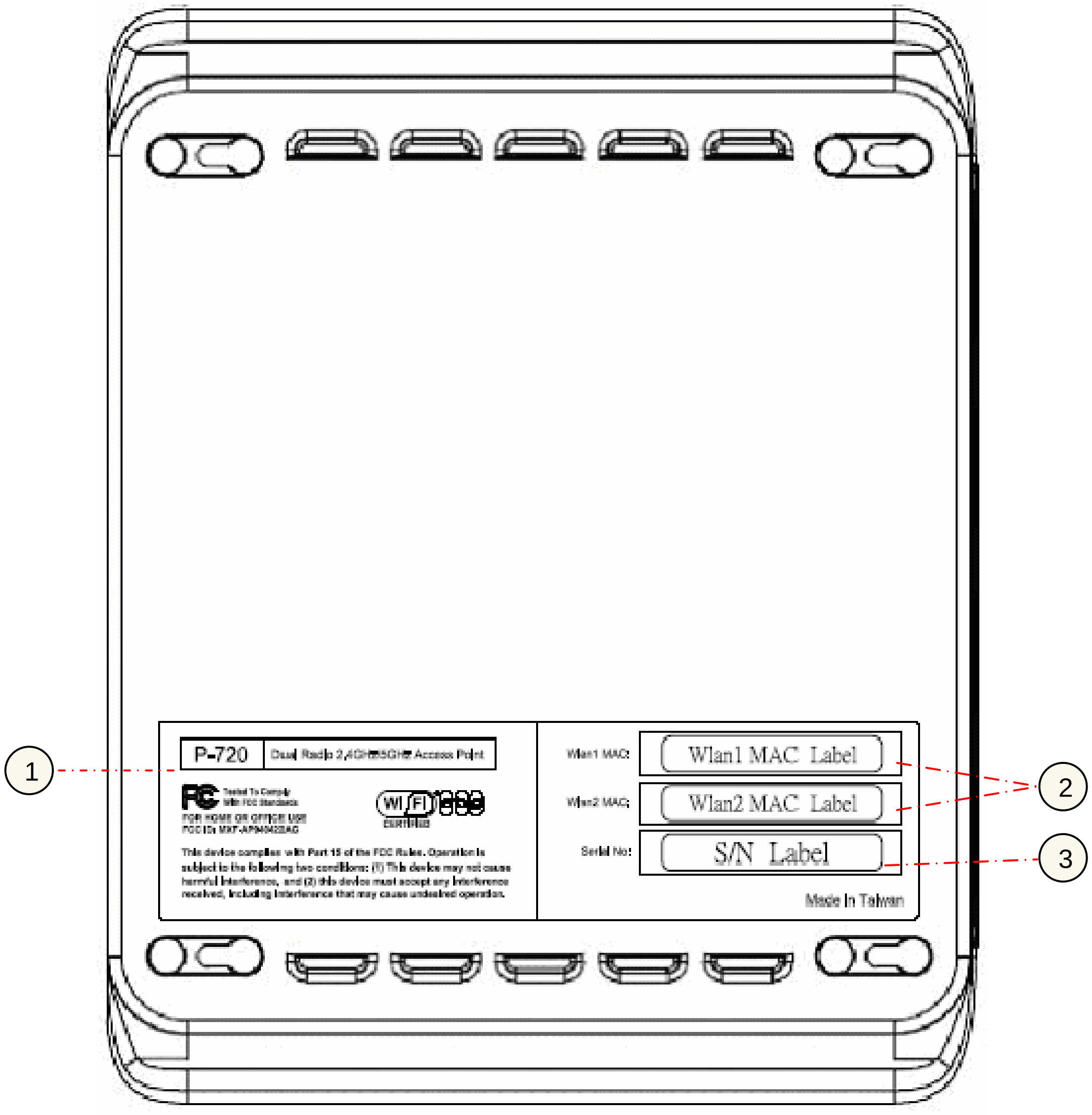

P-720
Dual Radio 2.4GHz/5GHz Access Point
Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE
FCC ID: MXF-AP9400ZAC
WI FI
CERTIFIED
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Wlan1 MAC:
Wlan1 MAC Label
Wlan2 MAC:
Wlan2 MAC Label
Serial No:
S/N Label
Made In Taiwan
1
2
3

Figure 2 –Bottom Cover of the P-720

The Bottom Cover of the P-720 contains:

1. **Back Label** with Model and Device name. The official device name is **Dual Radio 2.4GHz/5GHz Access Point**, model **P-720**.
2. **MAC address labels** of the device. The two labels show the **WLAN1** and **WLAN2** interface MAC address of the device.
3. **Serial Number label** of the device.

LEDs

The P-720 Access Point has 3 LEDs located on the front panel:

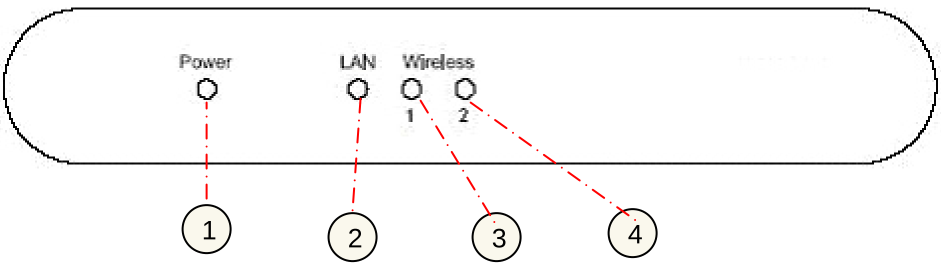


Figure 3 – LEDs of the P-720

The various states of the LEDs indicate different networking and connection operations as follows:

Item	LED	Color	Status	Indication
1	Power	Green	On	P-720 is active/working
			Blink	P-720 is booting
2	LAN	Green	On	P-720 Ethernet Port Link Active
			Blink	P-720 Ethernet Port is Transmitting and Receiving data
3	Wireless1	Green (802.11g module is functional)	On	P-720 WLAN1 RF card Active
			Blink	P-720 WLAN1 RF card is Transmitting and Receiving data
		Amber (802.11a module is functional)	On	P-720 WLAN1 RF card Active
			Blink	P-720 WLAN1 RF card is Transmitting and Receiving data
4	Wireless2	Green (802.11g module is functional)	On	P-720 WLAN2 RF card Active
			Blink	P-720 WLAN2 RF card is Transmitting and Receiving data
		Amber (802.11a module is functional)	On	P-720 WLAN2 RF card Active
			Blink	P-720 WLAN2 RF card is Transmitting and Receiving data

Connectors

The P-720 has several connectors on the rear panel:

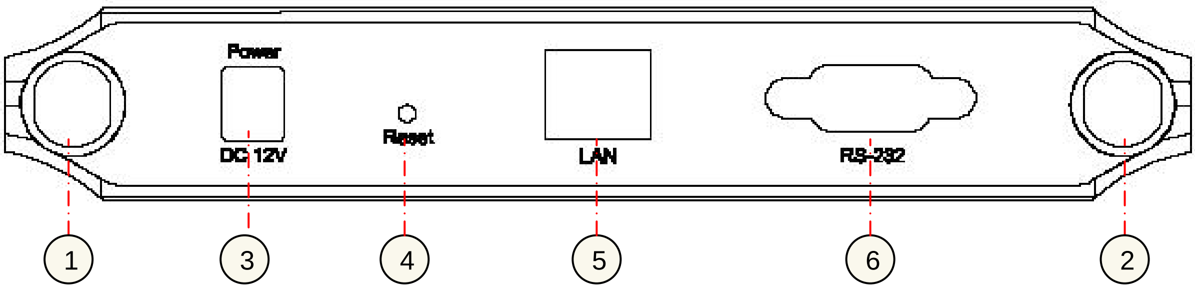


Figure 4 –RF Connectors

Descriptions of the connectors are given in the following table:

Item	Connector	Description
1	WLAN1	For WLAN1 RF card connecting to Antenna
2	WLAN2	For WLAN2 RF card connecting to Antenna
3	Power	For power supply
4	Reset	Reboot or reset to factory defaults. Press the reset button for **less** than **5** seconds to **reboot** the Access Point. Press the reset button for **more** than **5** seconds to set the Access Point to **factory defaults**.
5	LAN	To your company LAN
6	Console	For console connection

Connect to the Power Source and Local Network

There are two power supply methods can be used by P-720:

- ♦ Power-over-Ethernet equipment
- ♦ External Power Supply

Case 1 **Use the Power-over-Ethernet Equipment:**

Use the enclosed power cord or any IEEE802.3af Compliant POE Power Source Devices to supply your P-720 Access Point.

Step 1 Place the Access Point on a flat work surface or hang on the wall.

Use the enclosed 4 screws to put the rear side of the Access Point hanging on the wall.

Step 2 Connect the Ethernet cable from the P-720 route to an IEEE802.3-2003 compliant Power source Equipment.

Step 3 If you use a POE HUB, please connect the P-720 LAN port to the **PWR-LAN OUT** port of the POE HUB and connect the **LAN-IN** port of the POE HUB to the Switch or hub in the local network.

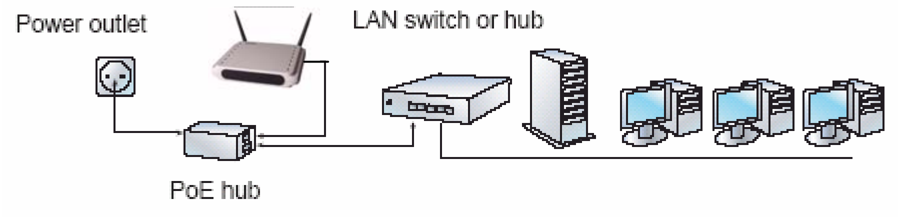


Figure 5 – Connecting P-720 to Power source and network by PoE HUB

Case 2 **Use External Power Supply**

Step 1 Place the Access Point on a flat work surface or hang on the wall.

Step 2 Use the enclosed Ethernet patch cable to connect the LAN port of the Access Point to the Switch or hub in the local network.

Step 3 Connect the power supply to the Access Point.

Software Installation

Initialization

For the first web browser connection to your P-720, please use your **Web browser**

The default network settings for your new access point are:

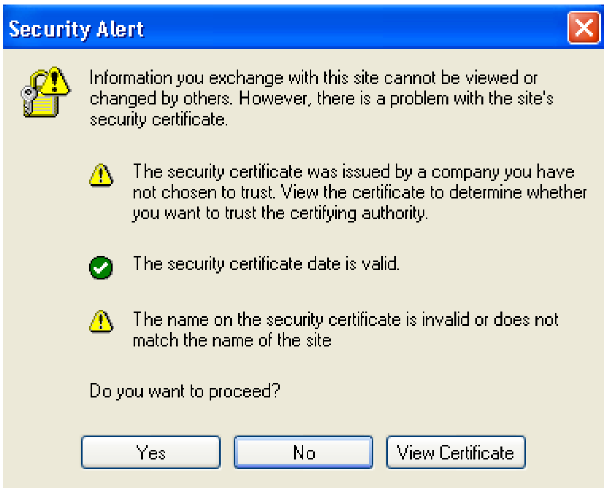
```
LAN port:            IP 192.168.2.2        subnet 255.255.255.0
```

Step 1 Configure your PC with a static IP address on the 192.168.2.0 subnet with mask 255.255.255.0. Connect the P-720 in to the same physical network as your PC. Open the Web browser and type the default IP address of the P-720:

```
https://192.168.2.2
```

Step 2 Enter the P-720 administrator login details to access the Web management.

The default administrator log on settings for all access point interfaces are:
User Name: **admin**
Password: **admin01**



Security Alert

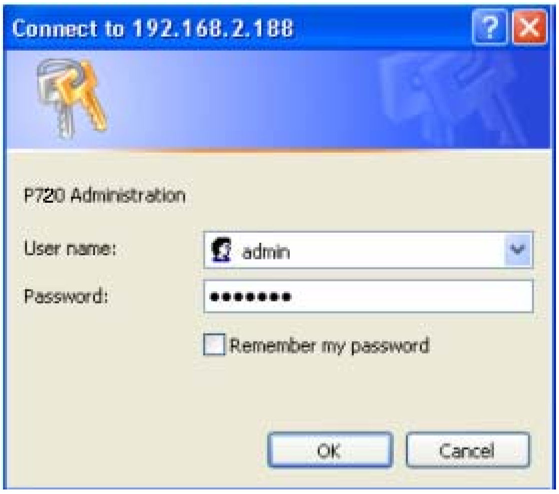
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.

⚠ The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.

✓ The security certificate date is valid.

⚠ The name on the security certificate is invalid or does not match the name of the site

Do you want to proceed?



Connect to 192.168.2.188

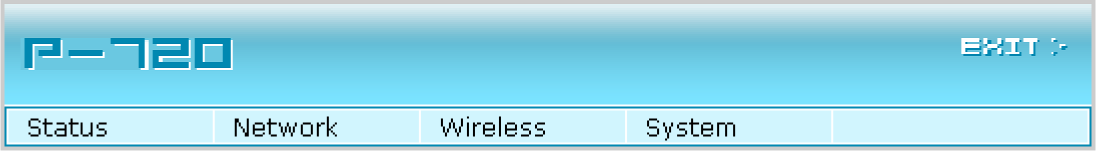
P720 Administration

User name: admin

Password: ●●●●●●●

□ Remember my password

Step 3 After successful administrator log on you will see the main page of the P-720's **Web interface**:



Now you are enabled to perform your configuration.

Chapter 3 – Application Mode

The two Dual-Band chips (a/g + a/g) that this product provides supplies the furthest flexible application. Three application modes are supplied by P-720:

- AP + AP mode
- AP + Bridge mode

AP + AP Mode

AP + AP configuration can be for client density environment.

The typical usage is: 11g AP + 11a AP.

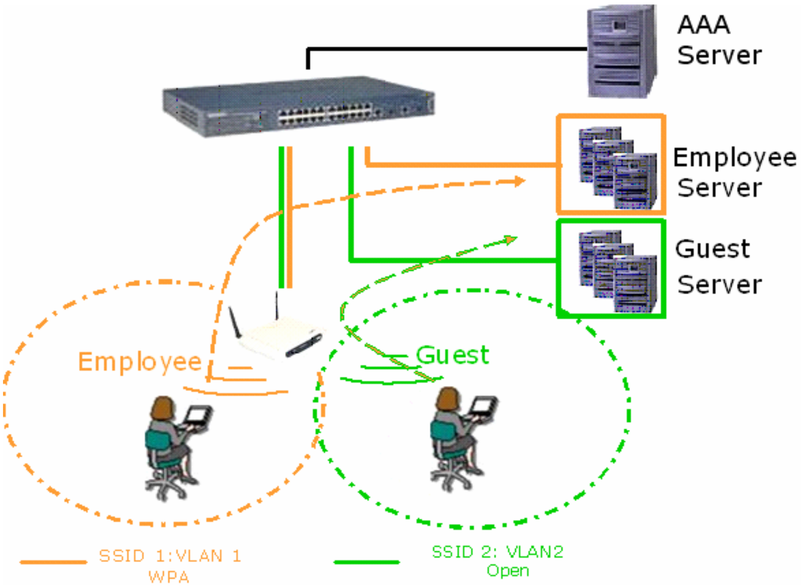


Figure 6 – AP +AP application mode

AP + Bridge Mode

AP + Bridge configuration is for environment with last mile issue.

The typical usage is: 11g AP + 11a Bridge.

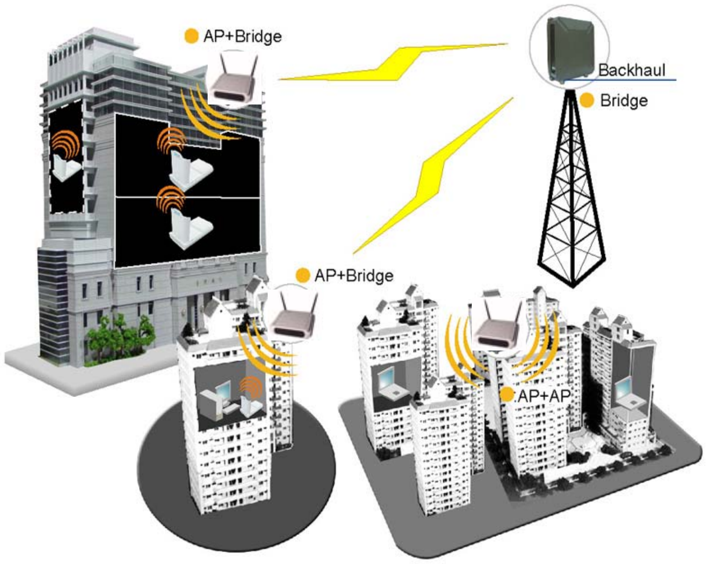


Figure 7 – AP +Bridge application mode

Chapter 4 – Reference Manual

This chapter contains web management reference information.

The **web management** main menu consists of the following sub menus:

- **Status** – device status showing
- **Network** – device settings affecting networking
- **Wireless** – device settings related to the wireless part of the P-720
- **System** – device system settings directly applicable to the P-720
- **Exit** – click exit and leave the web management then close your web-browser window.

Web Interface

The main **web management** menu is displayed at the top of the page after successfully logging into the system (see the figure below). From this menu all essential configuration pages are accessed.

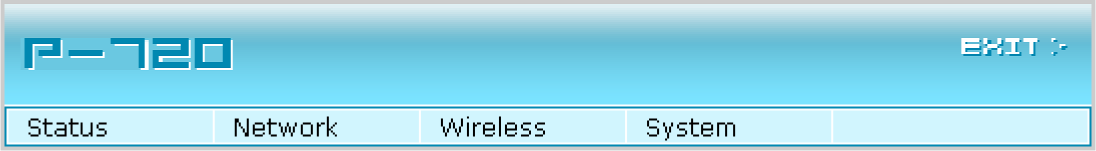


Figure 8 – Main Configuration Management Menu

The **web management** menu has the following structure:

Status

Device Status – show the status related with the whole device

Wireless Status – show the status of the two radios

Network

Interface – TCP/IP settings of P-720 LAN (Bridge) port

RADIUS Server – specify the settings of RADIUS server which is used by 802.1x or WPA

DHCP Settings– specify the settings of DHCP server or DHCP relay service

Wireless

Basic – specify the basic settings related with wireless part

Advance – specify the settings of multiple BSSID or Bridge

WEP – specify the WEP settings related with static WEP encryption

MAC ACL – MAC ACL settings for P-720

System

Security – set access permission to your P-720

SNMP – SNMP service

Telnet – Telnet/SSH service

Configuration – system configuration utilities, including Backup/Upload configuration

Reset – reboot device and restore systems to factory default

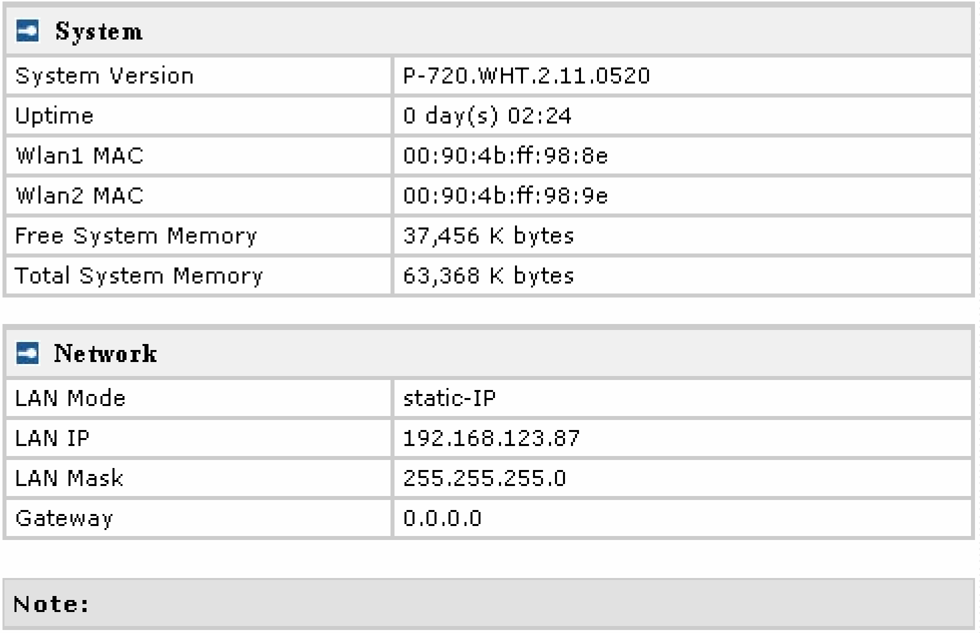
Upgrade – Upgrade the firmware remotely

In the following sections, short references for all menu items are presented.

Status

Status | Device Status

The device status page shows important information for the P-720, its system status and network configuration.



System	
System Version	P-720.WHT.2.11.0520
Uptime	0 day(s) 02:24
Wlan1 MAC	00:90:4b:ff:98:8e
Wlan2 MAC	00:90:4b:ff:98:9e
Free System Memory	37,456 K bytes
Total System Memory	63,368 K bytes

Network	
LAN Mode	static-IP
LAN IP	192.168.123.87
LAN Mask	255.255.255.0
Gateway	0.0.0.0

Note:

Figure 9 – Device Status

System Version display the current version of the firmware loaded to the AP

This is important information for support requests and for preparing firmware upgrading

Uptime indicates the time, expressed in days, hours and minutes since the system was last rebooted.

Wlan1 MAC / Wlan 2 MAC shows the MAC addresses of the two wireless interfaces of the P-720

Free System Memory indicates the memory currently available in the P-720

Total System Memory indicates the total memory in the P-720

LAN Mode indicate static IP or DHCP client is used for P-720 LAN IP address

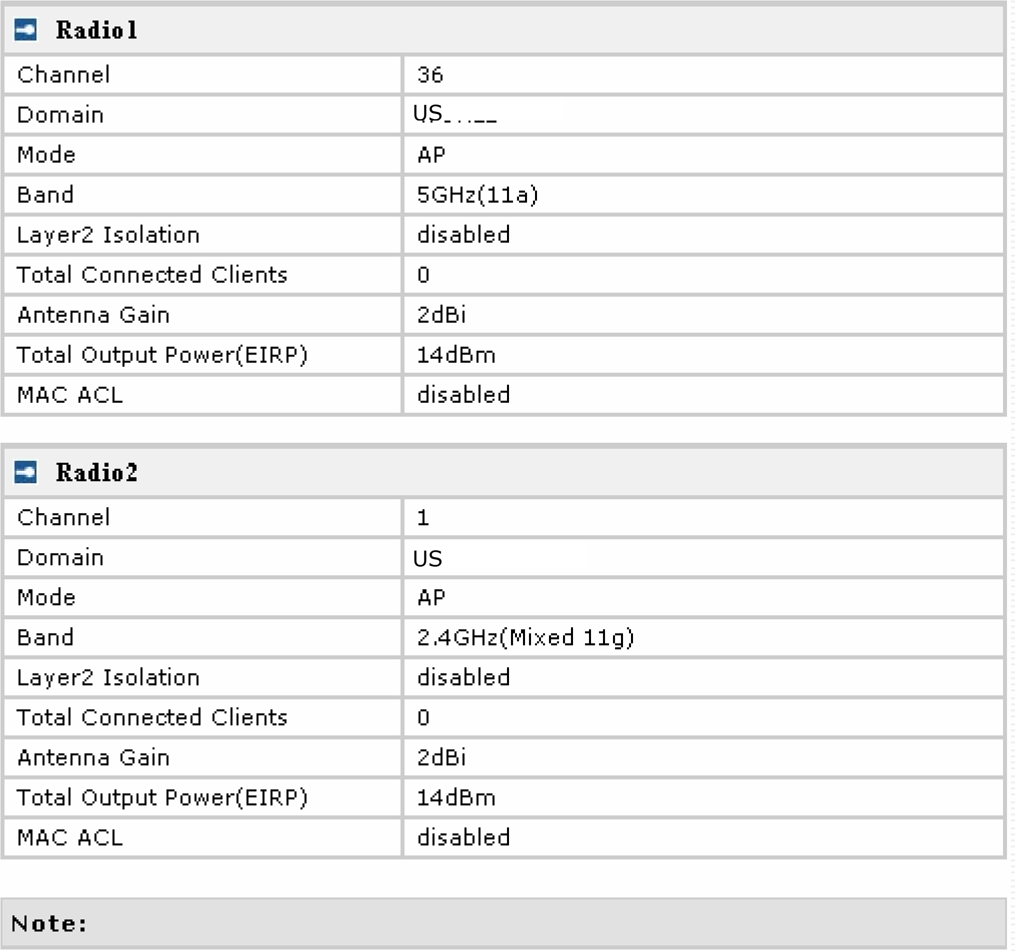
LAN IP shows the LAN IP address of P-720

LAN Mask shows the LAN Network Mask of P-720

Gateway shows the default gateway of P-720

Status | Wireless Status

The wireless status shows the information related with P-720 two wireless interfaces.



Radio1	
Channel	36
Domain	US_..__
Mode	AP
Band	5GHz(11a)
Layer2 Isolation	disabled
Total Connected Clients	0
Antenna Gain	2dBi
Total Output Power(EIRP)	14dBm
MAC ACL	disabled

Radio2	
Channel	1
Domain	US
Mode	AP
Band	2.4GHz(Mixed 11g)
Layer2 Isolation	disabled
Total Connected Clients	0
Antenna Gain	2dBi
Total Output Power(EIRP)	14dBm
MAC ACL	disabled

Note:

Figure 10 – Wireless Status

Radio1 / Radio2 relates with two wireless interfaces

Channel indicates which channel is in use.

Mode AP or Bridge mode is be used for this wireless interface

Band specify which band is in use for wireless interface

Layer2 Isolation specify the status of Layer2 Isolation service on this wireless interface

Total Connected Clients indicates number of the currently connected clients to your P-720

Antenna Gain indicates antenna Gain value.

Total Output Power (EIRP) indicates EIRP value set to the P-720

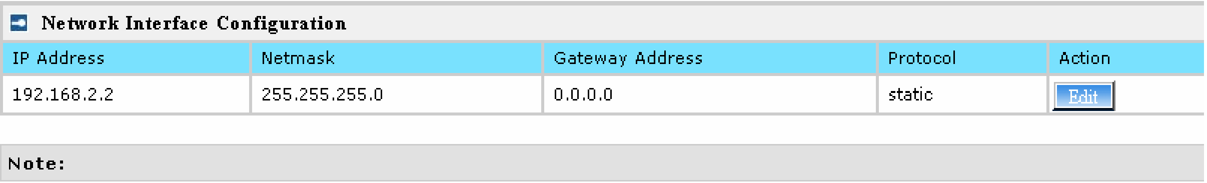
MAC ACL indicates the status of MAC ACL feature on P-720

Network

Network | Interface

The interface configured is bridge device therefore only one interface is displayed here for configuration.

Bridge interface and its settings are listed in the **Interface** page.



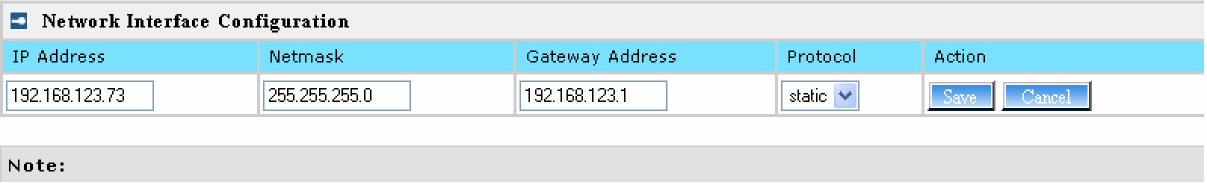
Network Interface Configuration

IP Address	Netmask	Gateway Address	Protocol	Action
192.168.2.2	255.255.255.0	0.0.0.0	static	Edit

Note:

Figure 11 – Interface Configuration Table

To change network interface (bridge) configuration properties click the **Edit** button in the **Action** column. The **status** can be changed now:



Network Interface Configuration

IP Address	Netmask	Gateway Address	Protocol	Action
192.168.123.73	255.255.255.0	192.168.123.1	static	Save Cancel

Note:

Figure 12 – Edit Interface Configuration Settings

IP Address - specify new interface IP address [in digits and dots notation, e.g. 192.168.123.70].

Netmask – specify the subnet mask [[0-255].[0-255].[0-255].[0-255]].These numbers are a binary mask of the IP address, which defines IP address order and the number of IP addresses in the subnet.

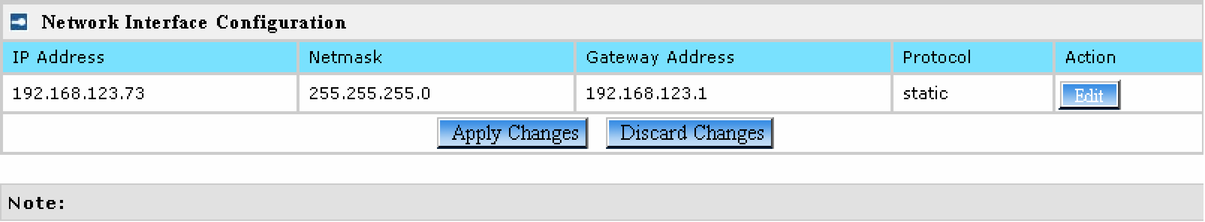
Gateway Address – interface gateway. For Bridge type interfaces, the gateway is always the gateway router.

Protocol – specify **static** for setting IP address manually and **dhcp** for getting IP address dynamically acting as DHCP client.

Save – save the entered values.

Cancel – restore all previous values.

Change status or leave in the default state if no editing is necessary and click the **Save** button.



Network Interface Configuration

IP Address	Netmask	Gateway Address	Protocol	Action
192.168.123.73	255.255.255.0	192.168.123.1	static	Edit

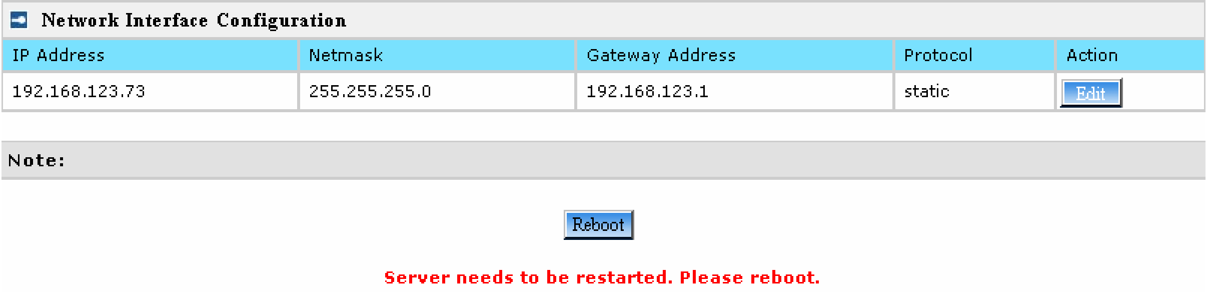
Note:

Figure 13 – Apply or Discard Interface Configuration Changes

Apply Changes – to save all changes in the **interface** table at once.

Discard Changes – restore all previous values.

For such each change of settings, the P-720 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:



Network Interface Configuration

IP Address	Netmask	Gateway Address	Protocol	Action
192.168.123.73	255.255.255.0	192.168.123.1	static	Edit

Note:

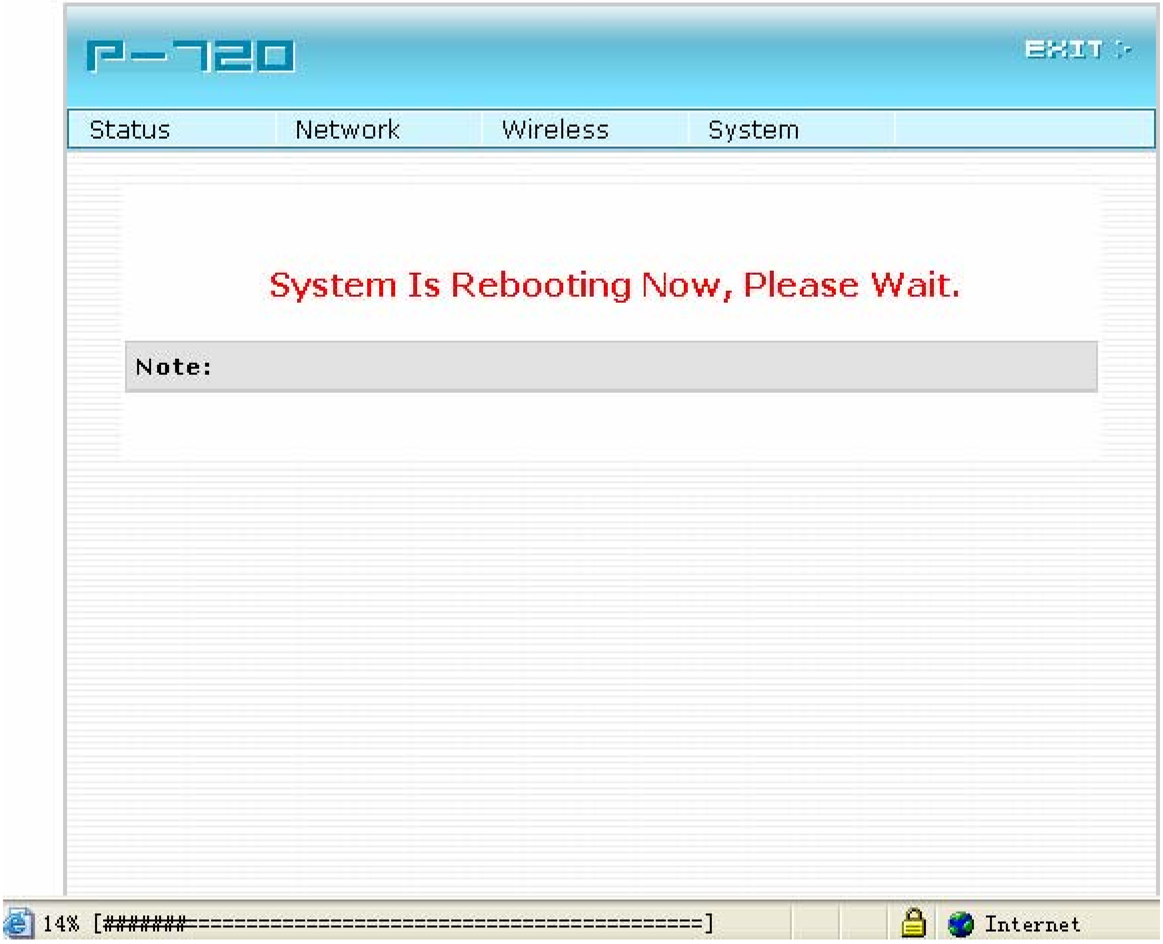
Server needs to be restarted. Please reboot.

Figure 14 – Reboot Server

Reboot – Click the button to restart the server and apply the changes.

If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

To reboot at once, click **Reboot** button and then it is necessary to wait a moment. And the message of reboot appears just like bellows:



System Is Rebooting Now, Please Wait.

Note:

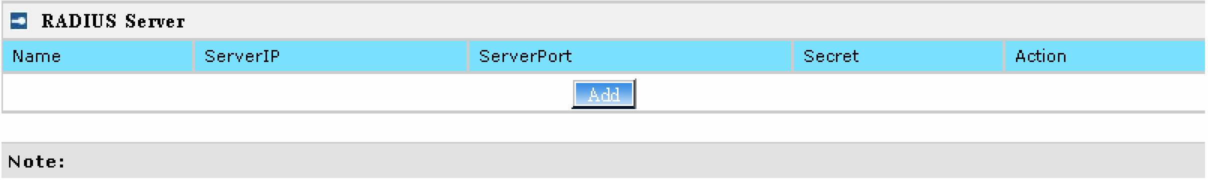
14% [#######==]

Figure 15 – Reboot Information

Network | RADIUS Server

Up to **32** different RADIUS servers can be configured under the **RADIUS servers** menu.

By default, one **RADIUS** server is specified for the system:


RADIUS Server

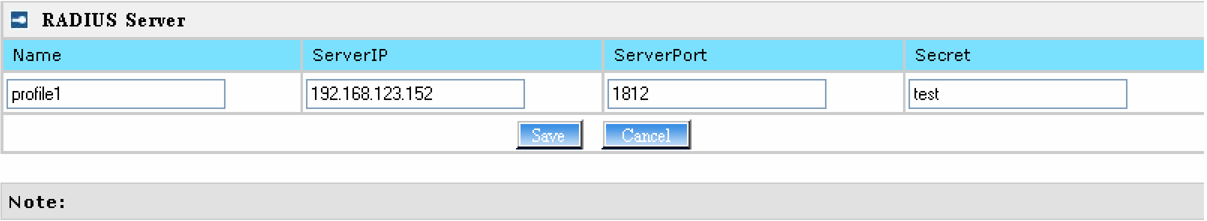
Name	ServerIP	ServerPort	Secret	Action

Note:

Figure 16 – RADIUS Servers Settings

Add – add new RADIUS server.

Click **Add** to configure RADIUS server settings.



RADIUS Server

Name	ServerIP	ServerPort	Secret
profile1	192.168.123.152	1812	test

Note:

Figure 17 – RADIUS Server's Details

Name – specify the new RADIUS server name which is used for selecting RADIUS server.

Server IP – authentication RADIUS server IP address [dots and digits].

Server Port – specify the network port used to communicate with RADIUS [1-65535].

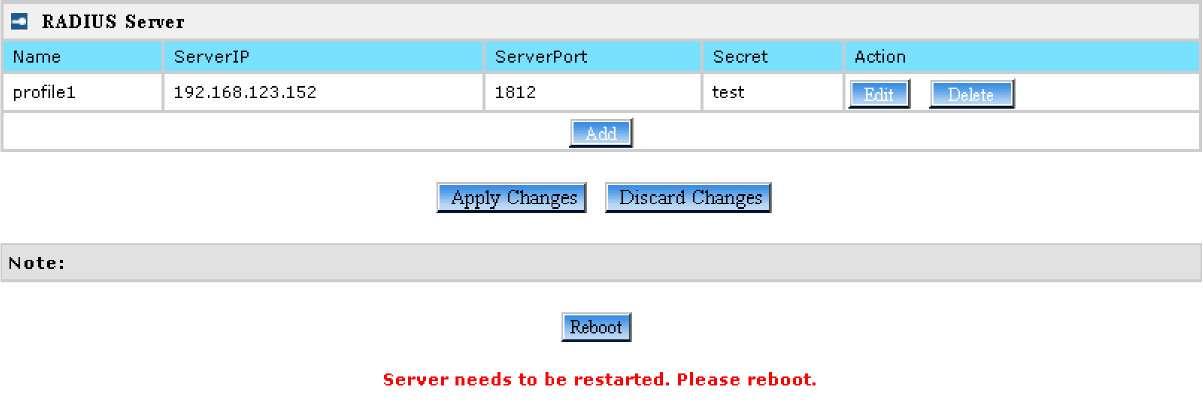
The port default value of 1812 is based on RFC 2138 "Remote Authentication Dial-in User Service (RADIUS)".

Secret – shared secret string that is used to make sure the integrity of data frames used for authentication server.

Save – add new specified RADIUS server.

Cancel – restore all previous values.

After adding a new RADIUS server or editing an existing one, the following control appears:



RADIUS Server

Name	ServerIP	ServerPort	Secret	Action
profile1	192.168.123.152	1812	test	Edit Delete

Note:

Server needs to be restarted. Please reboot.

Edit – edit an existing RADIUS server settings

Delete – delete an existing RADIUS server settings

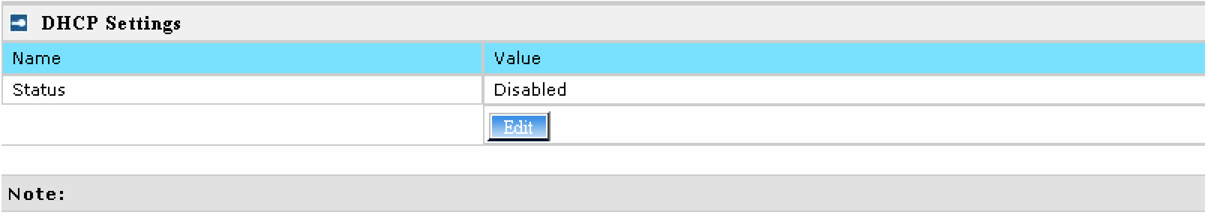
Reboot – restart the controller to make applied changes work.

If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

Network | DHCP Settings

P-720 can act as DHCP server or DHCP relay. The DHCP (Dynamic Host Configuration Protocol) service is supported on physical interfaces.

DHCP server and DHCP relay is disabled by default.



DHCP Settings

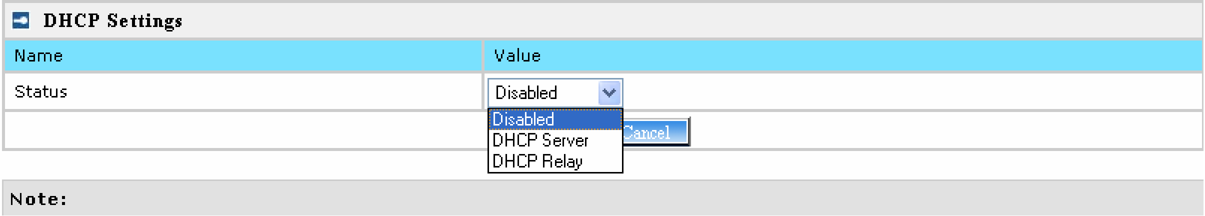
Name	Value
Status	Disabled
	Edit

Note:

Figure 18 –DHCP Settings

Edit – edit the wireless basic settings

To change DHCP setting properties click the **Edit** button, the DHCP server or DHCP relay service should be configured:



DHCP Settings

Name	Value
Status	Disabled
	Cancel

Note:

Figure 19 –DHCP Settings

Status – Select status from the drop-down menu.

Disabled – Disable the DHCP server service.

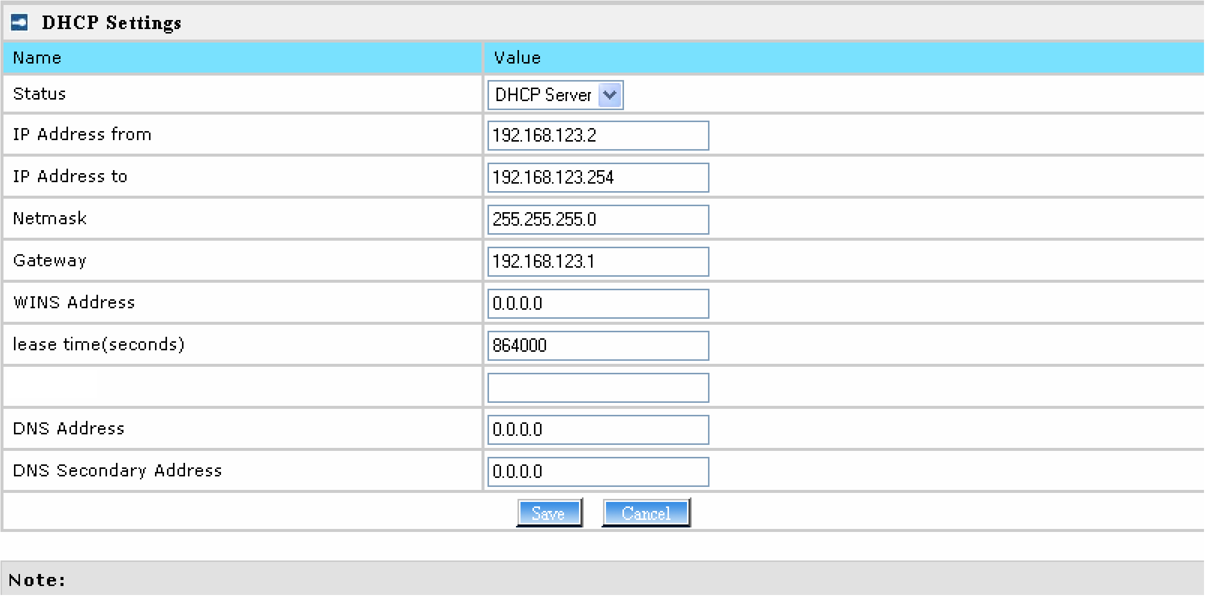
DHCP Server – Enable the DHCP server service.

DHCP Relay – Enable the DHCP Relay service.

Choose DHCP Server to enable DHCP server service. Choose DHCP Relay to enable DHCP relay service.

DHCP Server

This DHCP server service enables clients on the LAN to request configuration information, such as IP address, from a server. Settings of the DHCP service can be viewed just like the follow page.



DHCP Settings

Name	Value
Status	DHCP Server
IP Address from	192.168.123.2
IP Address to	192.168.123.254
Netmask	255.255.255.0
Gateway	192.168.123.1
WINS Address	0.0.0.0
lease time(seconds)	864000
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0
	Save Cancel

Note:

Figure 20 –DHCP server Settings

By default, DHCP server is disabled for P-720.

IP Address from / IP Address to – specify the IP address range to be dynamically allocated by the DHCP server.

Netmask – enter the netmask for IP pool range.

Gateway – enter the gateway IP for wireless clients.

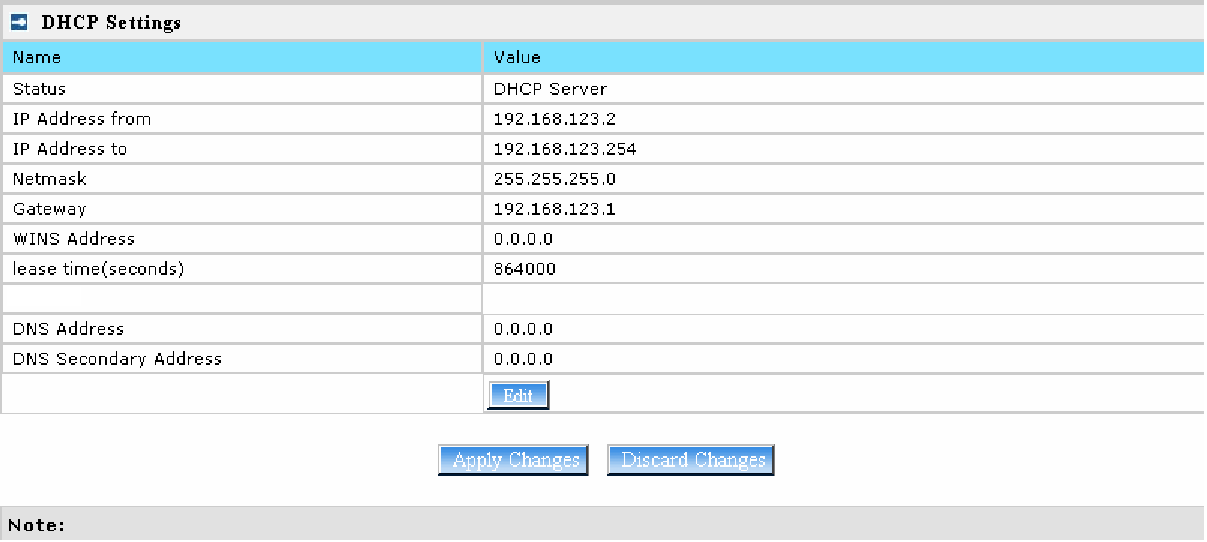
WINS Address (Windows Internet Naming Service) – specify server IP address if it is available on the network [dots and digits].

Lease Time – specify the IP address lease interval in seconds [1-1000000].

DNS address – specify the DNS server's IP address [in digits and dots notation].

DNS secondary address – specify the secondary DNS server's IP address [in digits and dots notation].

Change status or leave in the default state if no editing is necessary and click the **Save** button.



DHCP Settings

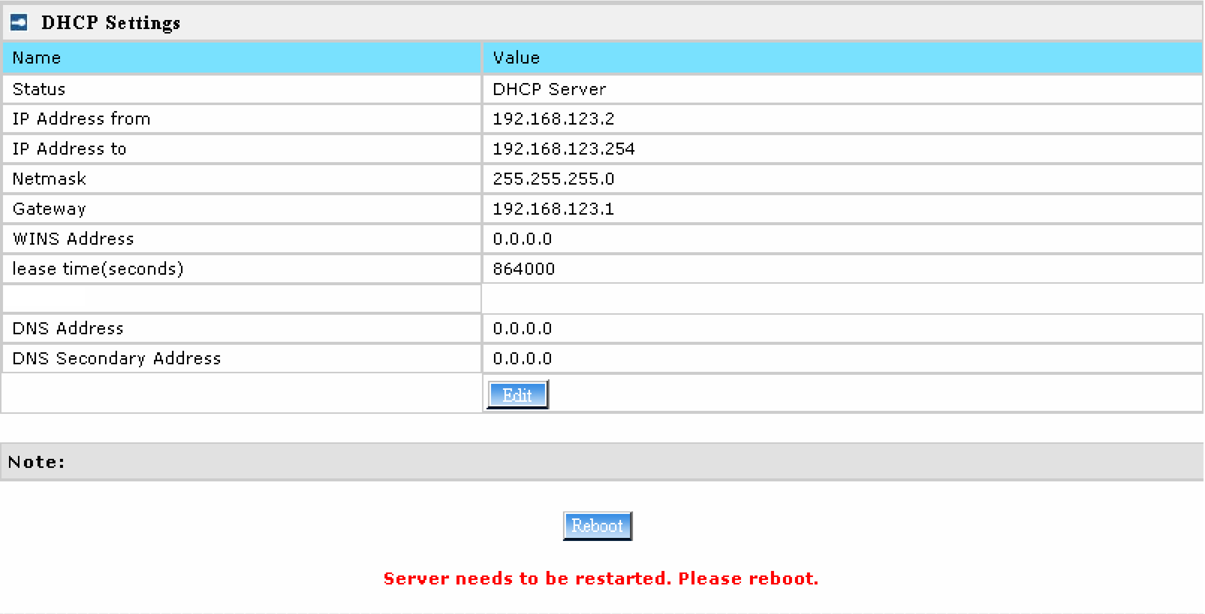
Name	Value
Status	DHCP Server
IP Address from	192.168.123.2
IP Address to	192.168.123.254
Netmask	255.255.255.0
Gateway	192.168.123.1
WINS Address	0.0.0.0
lease time(seconds)	864000
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0
	Edit

Figure 21 –Apply or Discard DHCP server Settings

The DHCP server settings will be automatically adjusted to match the network interface settings.

The Gateway of DHCP server settings must be same with the Gateway of P-720

For each change of settings, the P-720 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:



DHCP Settings

Name	Value
Status	DHCP Server
IP Address from	192.168.123.2
IP Address to	192.168.123.254
Netmask	255.255.255.0
Gateway	192.168.123.1
WINS Address	0.0.0.0
lease time(seconds)	864000
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0

Note:

Server needs to be restarted. Please reboot.

Figure 22 – Reboot information

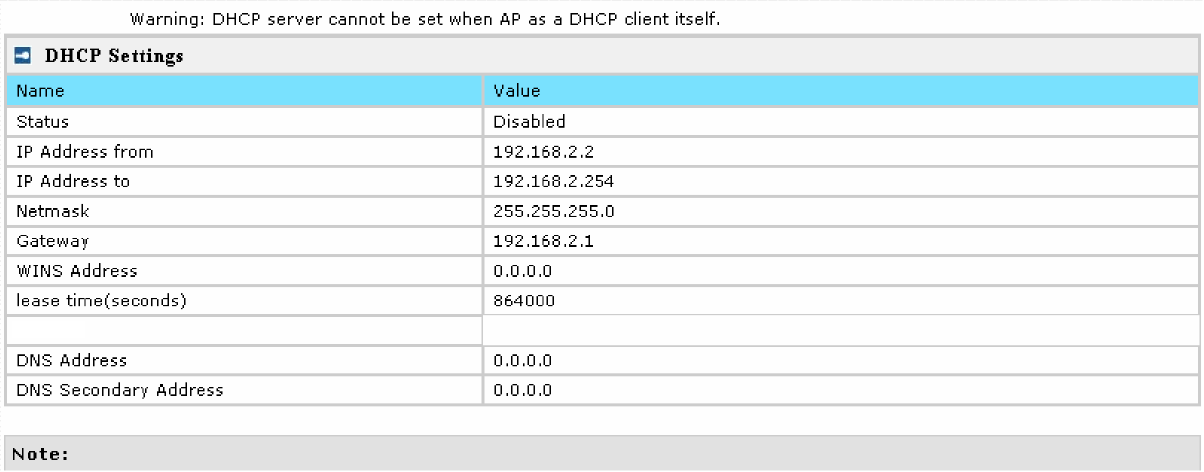
Reboot – Click the button to restart the server and apply the changes.

If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.

And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

When P-720 network Interface uses DHCP to get IP address dynamically, DHCP server service cannot be enabled.

When P-720 uses DHCP to get IP address, the similar WEB UI will be appears:



Warning: DHCP server cannot be set when AP as a DHCP client itself.

DHCP Settings

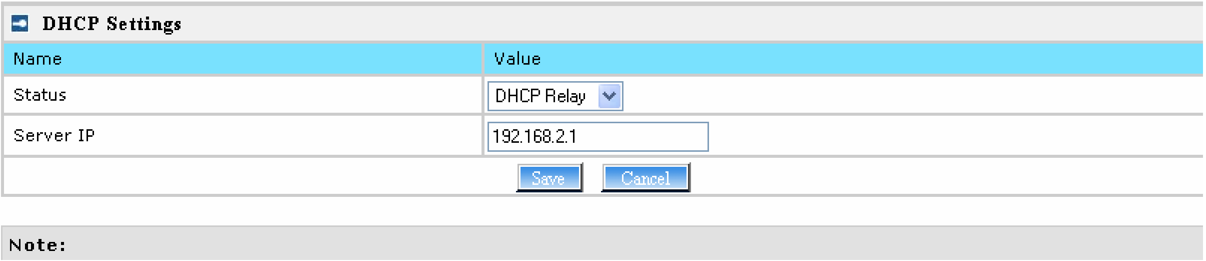
Name	Value
Status	Disabled
IP Address from	192.168.2.2
IP Address to	192.168.2.254
Netmask	255.255.255.0
Gateway	192.168.2.1
WINS Address	0.0.0.0
lease time(seconds)	864000
DNS Address	0.0.0.0
DNS Secondary Address	0.0.0.0

Note:

Figure 23 – Warning information

DHCP Relay

To route DHCP through the external server, enable the **DHCP Relay** service.



DHCP Settings

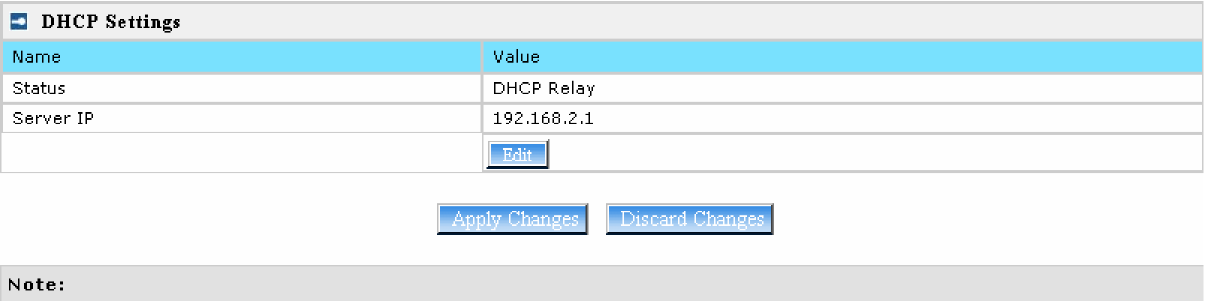
Name	Value
Status	DHCP Relay
Server IP	192.168.2.1

Note:

Figure 24 – DHCP Relay settings

Server IP: enter the IP address of the external DHCP server.

Change status or leave in the default state if no editing is necessary and click the **Save** button.



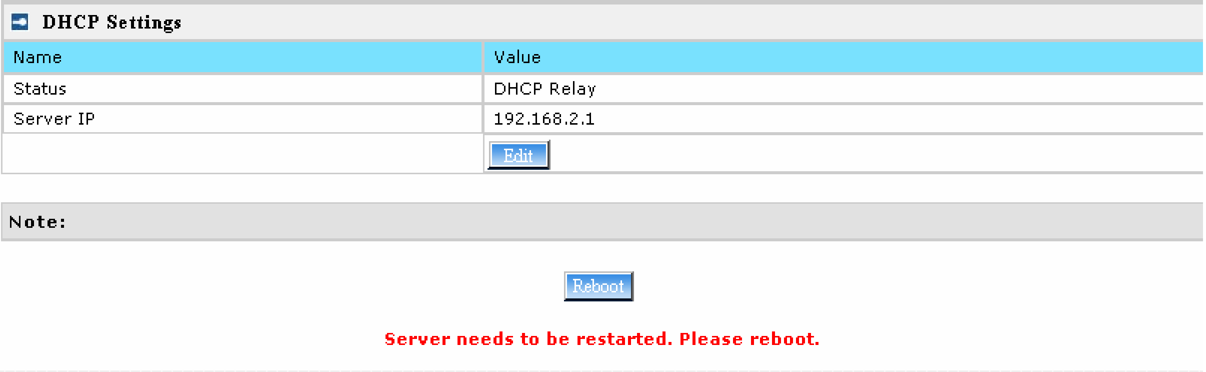
DHCP Settings

Name	Value
Status	DHCP Relay
Server IP	192.168.2.1

Note:

Figure 25 –Apply or Discard DHCP relay Settings

For each change of settings, the P-720 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:



DHCP Settings

Name	Value
Status	DHCP Relay
Server IP	192.168.2.1

Note:

Server needs to be restarted. Please reboot.

Figure 26 – Reboot information

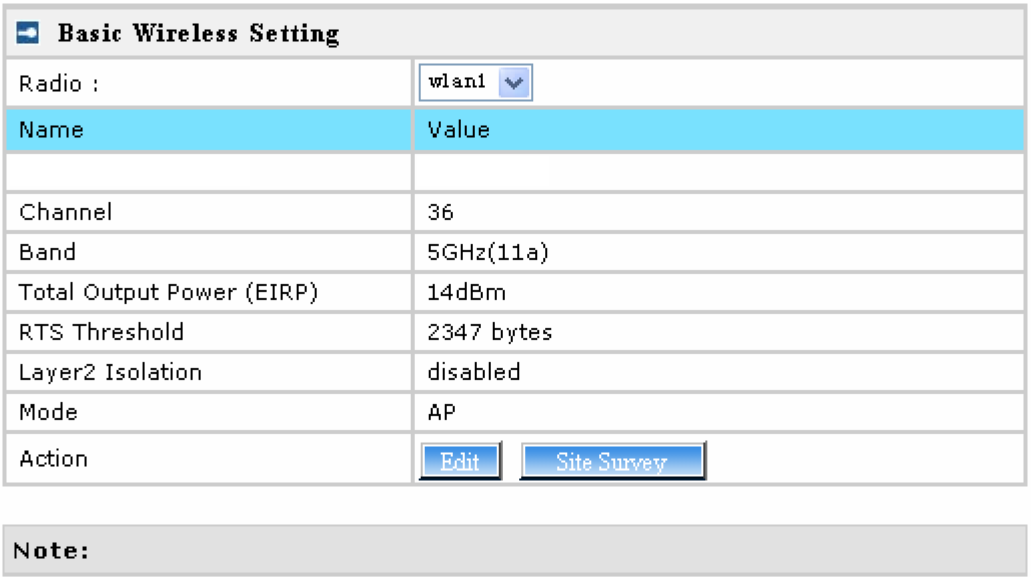
Reboot – Click the button to restart the server and apply the changes.

If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

Wireless

Wireless | Basic

Use the **wireless | Basic** menu to configure such wireless settings as regulatory channel, band, and power, layer2isolation. Click the edit button on the setting you need to change:



Basic Wireless Setting

Radio : wlan1

Name	Value
Channel	36
Band	5GHz(11a)
Total Output Power (EIRP)	14dBm
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	Edit Site Survey

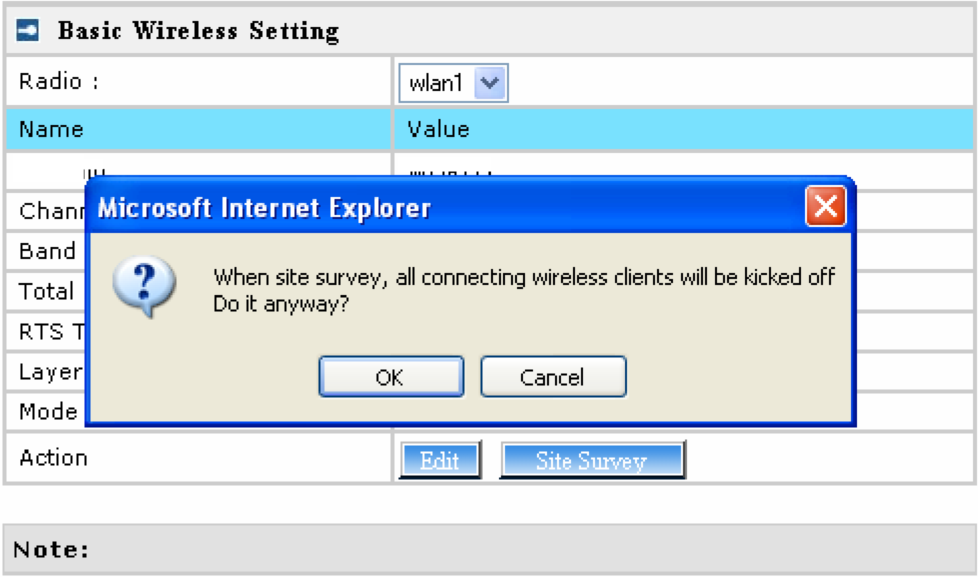
Note:

Figure 27 – Basic Wireless Settings

Site Survey –perform survey to show overview information for wireless networks in a local geography.

The site survey shows overview information for wireless networks in a local geographic area. Using this survey, administrator can scan for working access points, check their operating channels, and see RSSI levels. To start the scan, simply click the **Site Survey** menu.

After clicking **Site Survey**, you will get the follow warning:



Basic Wireless Setting

Radio : wlan1

Name	Value
Chann	
Band	
Total	
RTS T	
Layer	
Mode	
Action	Edit Site Survey

Microsoft Internet Explorer

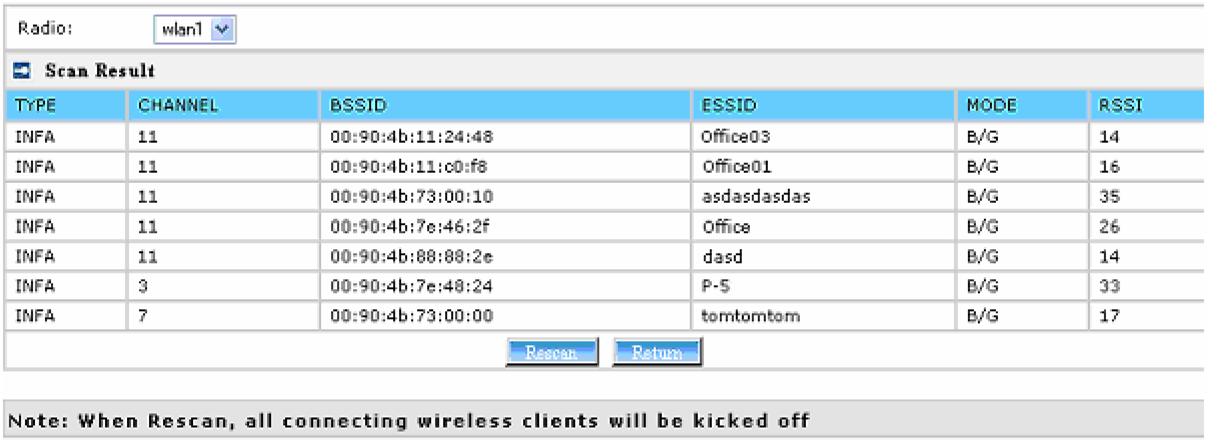
When site survey, all connecting wireless clients will be kicked off
Do it anyway?

OK Cancel

Note:

Figure 28 – Site Survey warning

Click OK to continue site survey and get the similar UI:



Radio: wlan1

Scan Result

TYPE	CHANNEL	BSSID	ESSID	MODE	RSSI
INFA	11	00:90:4b:11:24:48	Office03	B/G	14
INFA	11	00:90:4b:11:c0:f8	Office01	B/G	16
INFA	11	00:90:4b:73:00:10	asdasdasdas	B/G	35
INFA	11	00:90:4b:7e:46:2f	Office	B/G	26
INFA	11	00:90:4b:88:88:2e	dasd	B/G	14
INFA	3	00:90:4b:7e:48:24	P-5	B/G	33
INFA	7	00:90:4b:73:00:00	tomtomtom	B/G	17

Note: When Rescan, all connecting wireless clients will be kicked off

Figure 29 – Site Survey information

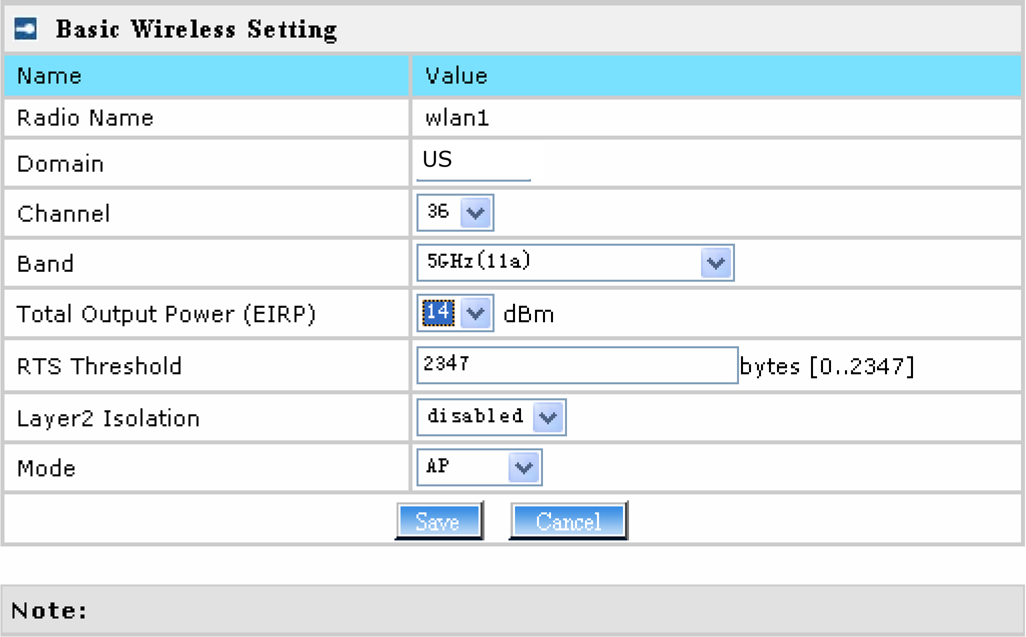
To refresh the statistics click the **Rescan** button.

During Site Survey, all wireless clients which are connecting with P-720 would be kicked off.

Site Survey takes some minutes to perform. Please wait and don’t power off AP during site survey.

Edit – edit the wireless basic settings

To change basic wireless setting properties click the **Edit** button in the **Action** column. The **status** can be changed now:



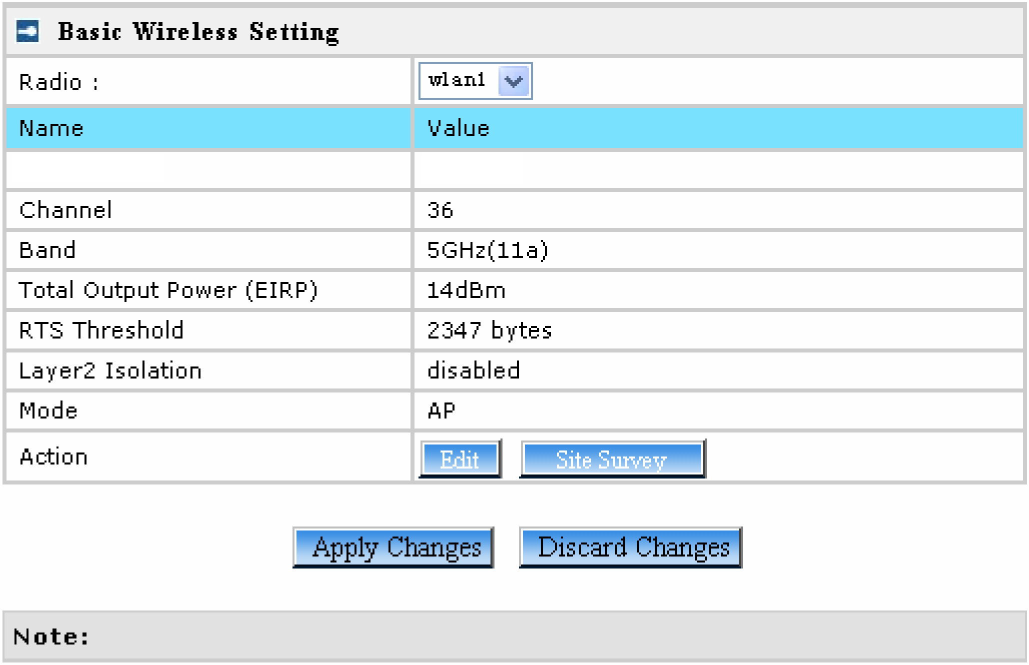
Basic Wireless Setting

Name	Value
Radio Name	wlan1
Domain	US
Channel	36
Band	5GHz(11a)
Total Output Power (EIRP)	14 dBm
RTS Threshold	2347 bytes [0..2347]
Layer2 Isolation	disabled
Mode	AP

Note:

Figure 30 – Edit Basic Wireless Settings

Change status or leave in the default state if no editing is necessary and click the **Save** button.



Basic Wireless Setting

Radio :	wlan1
Name	Value
Channel	36
Band	5GHz(11a)
Total Output Power (EIRP)	14dBm
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	Edit Site Survey

Figure 31 – Apply or Discard Basic Wireless Settings

Radio – specify which wireless interface of P-720 is shown

Channels – select the channel that the access point will use to transmit and receive information. If one channel is defined, it acts as default channel. Channels list will vary depending on selected regulatory selected band. Multiple frequency channels are used to avoid interference between two radios of this AP, and between nearby access points. If you wish to operate more than one access point in overlapping coverage areas, we recommend a distance of at least four channels between the chosen channels. For example, for three Access Points in close proximity choose channels 1, 6 and 11 for 11b/g or channels 36, 40 and 64 for 11a.

Band – working bands on which your radios are working.

Six bands are supplied: 5GHz(11a), 5GHz(Turbo Mode 11a), 2.4GHz(Mixed 11g), 2.4GHz(11g only), 2.4GHz(Mixed 11g WiFi) and 2.4GHz(11g only WiFi).

If 2.4GHz(Mixed 11g) or 2.4GHz(11g only) is selected, the radio will work on 2.4GHz for a better performance. 2.4GHz (11g only) mode only allows 11g client access. 2.4GHz(Mixed 11g) mode allows 11b/11g client access.

2.4GHz(Mixed 11g WiFi) or 2.4GHz(11g only WiFi) can make sure to compatible with Wi-Fi.

If 5GHz (11a) or 5GHz(Turbo Mode 11a) is selected, the radio will work on 5GHz 11A mode. 5GHz(Turbo Mode 11a) can supply 108 raw data rate.

Only under Bridge mode, Turbo Mode 11a can be set.

Total Output Power (EIRP) – the P-720 transmission output power (EIRP) in dBm. Seven levels are specified: 17dBm, 16dBm, 15dBm, 14dBm, 10dBm, 4dBm and 0dBm. Default is 14dBm.

Total Output Power (EIRP) = Antenna Gain + RF card output power

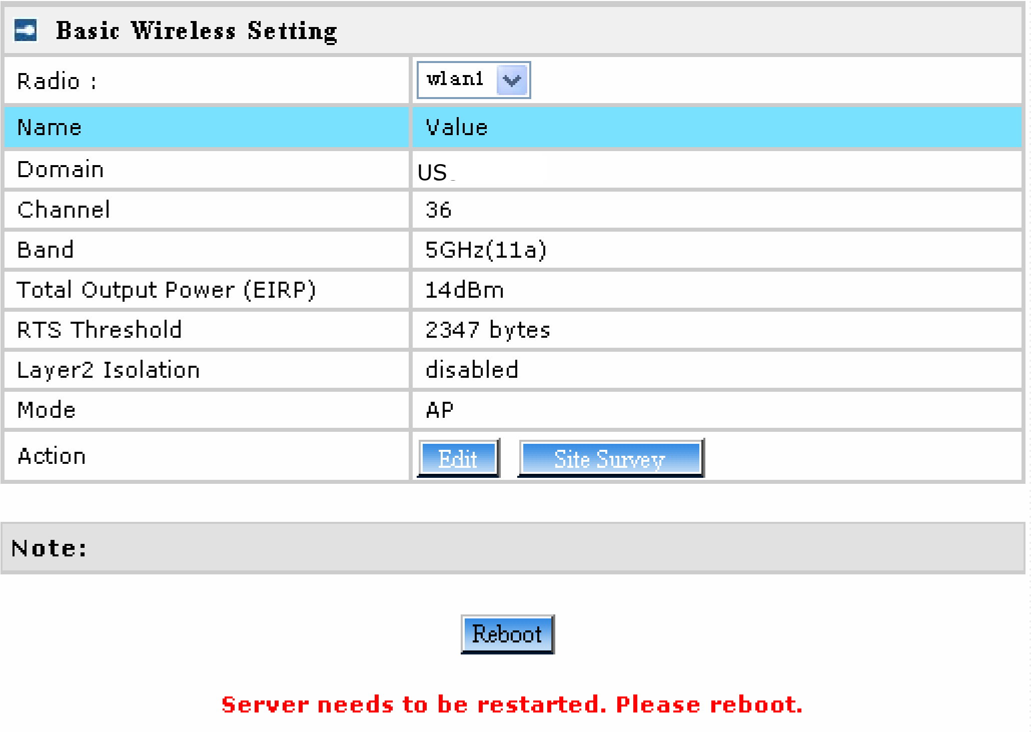
The range of the EIRP varies with channel.

RTS Threshold – when set, this settings specifies the maximum packet size beyond which RTS/CTS mechanism is be invokes. The value range of this is [0 …2347]. Default is 2347 which means that RTS is disabled.

Layer 2 Isolation – Layer2 wireless client separation. Connected clients with user isolation function enabled cannot access each other directly. The clients are isolated from each other using their MAC addresses [enabled/disabled].

Mode – two modes are supplied: AP mode and Bridge mode.

For such each change of settings, the P-720 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:



Basic Wireless Setting

Radio :	wlan1
Name	Value
Domain	US
Channel	36
Band	5GHz(11a)
Total Output Power (EIRP)	14dBm
RTS Threshold	2347 bytes
Layer2 Isolation	disabled
Mode	AP
Action	Edit Site Survey

Note:

Server needs to be restarted. Please reboot.

Figure 32 – Reboot Server

Reboot – Click the button to restart the server and apply the changes.

If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.
And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

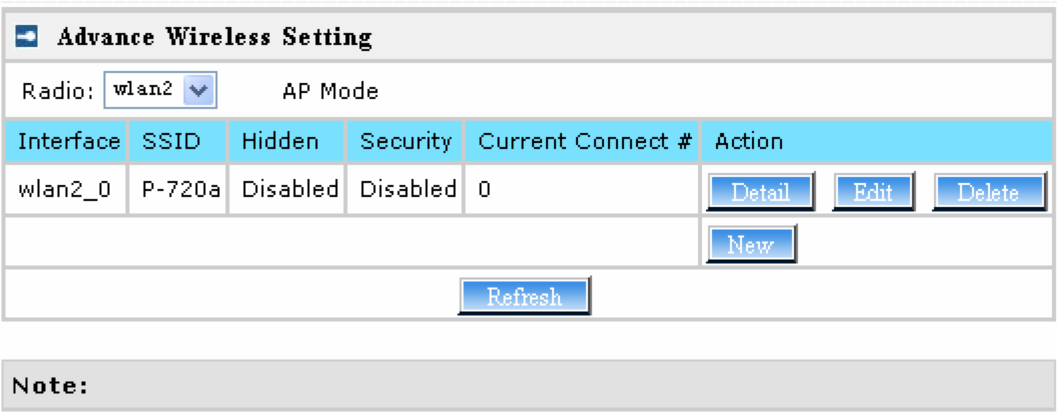
Wireless | Advance

P-720 supports **Multiple BSSID (MBSSID)** function. You can configure up to 16 BSSIDs per radio on P-720 and assign different configuration settings to each BSSID. For wireless users, they can think P-720 as single AP with multi service supporting, including different security policy, different VLAN ID, different authentication etc. All the BSSIDs are active at the same time that means client devices can associate to the access point for specific service. Use the **Wireless | Advance** menu to configure properties related to Multiple BSSID, including configure SSID, Hidden SSID, VLAN, and Security for each SSID.

Each BSSID can have its own SSID. In this case, Multiple BSSID is the same with Multiple ESSID. Wireless users can think P-720 as multiple virtual APs, each supporting different service, and connects one SSID for the special services.

Also, P-720 supports **Bridge** function, it can support up to 8 **Bridge links** per radio. Different bridge link can use different WEP key index.

AP Mode:



Advance Wireless Setting

Radio: wlan2 AP Mode

Interface	SSID	Hidden	Security	Current Connect #	Action
wlan2_0	P-720a	Disabled	Disabled	0	Detail Edit Delete
					New

Refresh

Note:

Figure 33 – Advanced Wireless Setting (AP Mode)

Radio – specify which RF card (wlan1 or wlan2) is needed to be configured since P-720 has two Dual-Band radios

Mode – specify the operation mode of P-720 (AP or Bridge)

Interface – Choose the specified **MBSSID** entry you want to configure. Each Interface maps to a BSSID

Hidden – Show the status of Hidden SSID feature

Security – Show which security policy is used for this **MBSSID** entry

Current Connect # – Show the number of current wireless clients who are connecting with this MBSSID

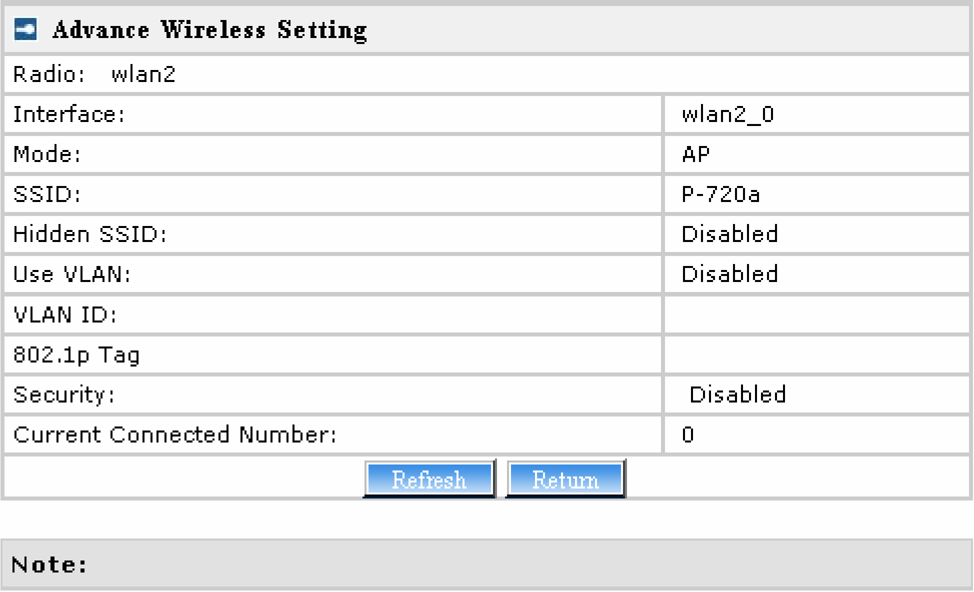
New – Create a new **MBSSID** entry

Detail – Show the detail information of this **MBSSID** entry

Edit – Edit the selected **MBSSID** entry you want to configure

Delete – Delete the selected **MBSSID** entry. When in AP mode, you can not delete the last entry

Clicking Detail, a similar page will be appears as below:



Advance Wireless Setting

Radio: wlan2

Interface:	wlan2_0
Mode:	AP
SSID:	P-720a
Hidden SSID:	Disabled
Use VLAN:	Disabled
VLAN ID:	
802.1p Tag	
Security:	Disabled
Current Connected Number:	0

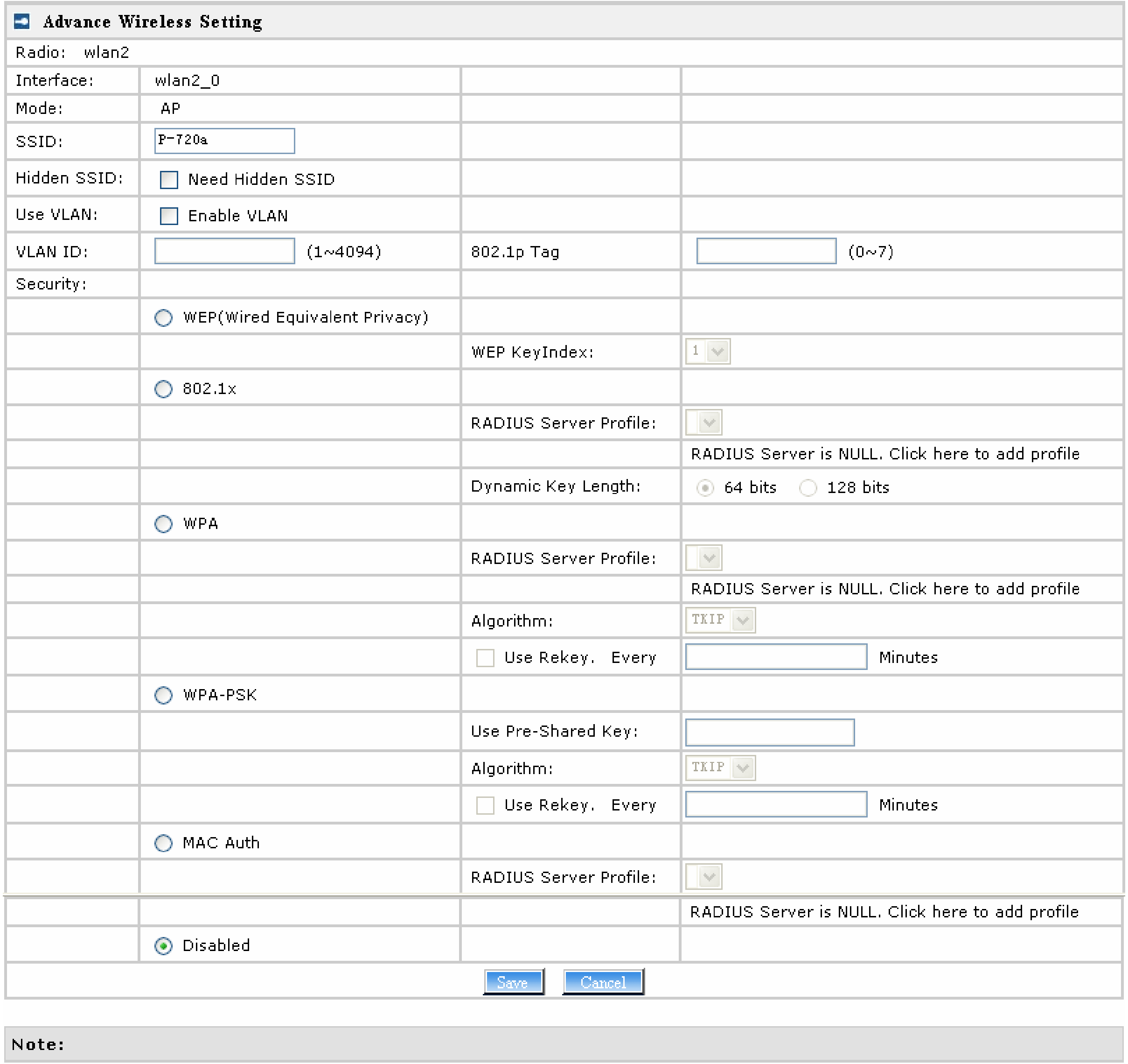
Note:

Figure 34 – Detail for MBSSID entry

Detail – Show the MAC address of current connected clients

Return – Return to the wireless advance settings page

Clicking **New** or **Edit** on AP mode, the settings of MBSSID entry appears:



Advance Wireless Setting

Radio: wlan2

Interface:	wlan2_0		
Mode:	AP		
SSID:	P-720a		
Hidden SSID:	□ Need Hidden SSID		
Use VLAN:	□ Enable VLAN		
VLAN ID:	(1~4094)	802.1p Tag	(0~7)
Security:			
	○ WEP(Wired Equivalent Privacy)		
		WEP KeyIndex:	1
	○ 802.1x		
		RADIUS Server Profile:	
			RADIUS Server is NULL. Click here to add profile
		Dynamic Key Length:	● 64 bits ○ 128 bits
	○ WPA		
		RADIUS Server Profile:	
			RADIUS Server is NULL. Click here to add profile
		Algorithm:	TKIP
		□ Use Rekey. Every	Minutes
	○ WPA-PSK		
		Use Pre-Shared Key:	
		Algorithm:	TKIP
		□ Use Rekey. Every	Minutes
	○ MAC Auth		
		RADIUS Server Profile:	
			RADIUS Server is NULL. Click here to add profile
	● Disabled		

Note:

Figure 35 – Multiple BSSID Setting

Radio – showing which RF card (wlan1 or wlan2) is being configured.

Mode – showing the current operation mode of P-720 (AP or Bridge).

Interface – showing the current **MBSSID | Bridge link** entry

SSID – a unique ID for your wireless network. It is case sensitive and must not exceed 32 characters. The default SSID is "P-720" but you should change this to a personal wireless network name. The SSID is important for clients when connecting to the access point. All client stations must have their client SSID settings configured and must use the same SSID.

Each MBSSID entry (BSSID) can has its own SSID. And SSID can be same for different BSSID

Hidden SSID – When enabled, the SSID of this Interface is invisible in the networks list while scanning the available networks for wireless client (SSID is not broadcasted with its Beacons). When disabled, the AP's SSID is visible in the available network list [enabled/disabled]. By default the Hidden SSID is disabled.

Use VLAN – When enabled, the outgoing packets from this SSID device will be tagged with VLAN ID and 802.1p tag (If have).

VLAN ID – Configure VLAN ID for each Multiple SSID devices. Valid numbers are from 1 to 4094.

802.1p Tag – Configure 802.1p Tag for remote APC's or Router's QoS uses. Valid numbers are from 0 to 7.

VLAN ID and 802.1p tag must cooperate with remote Router or APC.

Security – Specify the security policy.

WEP – When selected, the privacy of MSSID entry will be set to WEP (Wired Equivalent Privacy).

WEP Key Index – Select the default key Index to make it the Default key and encrypt the data before being transmitted. All stations, including this MSSID Entry, always transmit data encrypted using this Default Key. The key number (1,2,3,4) is also transmitted. The receiving station will use the key number to determine which key to use for decryption. If the key value does not match with the transmitting station, the decryption will fail. The key value is set in **Wireless | WEP** web page.

802.1x – When selected, the MSSID entry will be configured as an 802.1x authenticator. It supports multiple authentication types based on EAP (Extensible Authentication Protocol) like EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-SIM. The privacy will be configured as dynamic WEP.

RADIUS Server Profile – Select the default radius server name. If not, please configure Network | RADIUS Servers Web page first.

Dynamic Key Length – Select the dynamic 64-bits / 128-bits encryption.

WPA – Wi-Fi Protected Access, When selected, the encrypt method will be WPA with RADIUS Sever.

RADIUS Server Profile – The same as **802.1x**.

Algorithm – Choose WPA algorithm (TKIP, AES).

Use ReKey – If not selected, indicates that Group Key will not be rekeyed. If selected, must specify the time in minutes, after which the group key will be updated.

Every … minutes – Specify amount of minutes and WPA automatically will generate a new Group Key.

WPA-PSK – When selected, the encrypt method will be WPA without RADIUS Server.

Use Pre-Shared Key – Specify more than 8 characters and less than 64 characters for WPA with pre-shared key encryption.

Algorithm – The same as **WPA**.

Use Rekey – The same as **WPA**.

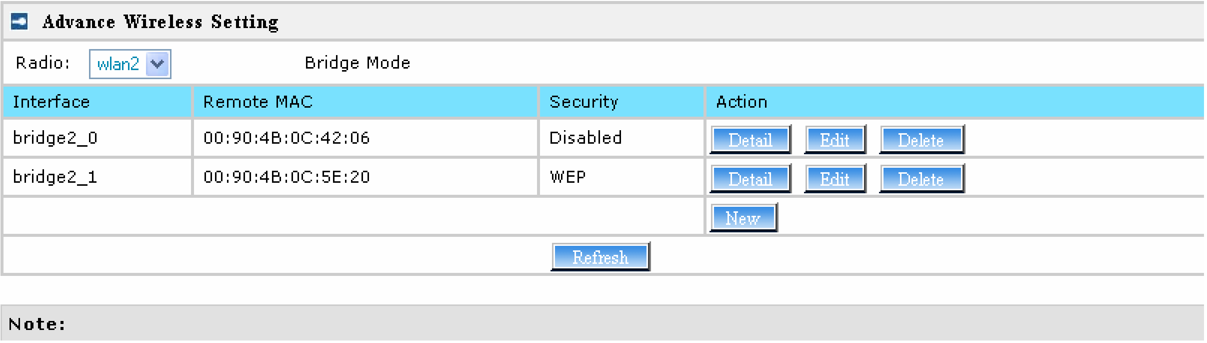
Every … minutes – The same as **WPA**.

MAC Auth – MAC authentication. When selected, the MAC address of username and password will be passed to RADIUS server for PAP authentication when wireless client connects with P-720.

RADIUS Server Profile – The same as **802.1x**.

Disabled – When selected, you don't select any security policy.

Bridge Mode



Radio: wlan2 Bridge Mode

Interface	Remote MAC	Security	Action
bridge2_0	00:90:4B:0C:42:06	Disabled	Detail Edit Delete
bridge2_1	00:90:4B:0C:5E:20	WEP	Detail Edit Delete
			New

Figure 36 – Advanced Wireless Setting (Bridge Mode)

Radio – specify which RF card (wlan1 or wlan2) is needed to be configured since P-720 has two Dual-Band radios

Mode – specify the operation mode of P-720 (AP or Bridge)

Interface – Choose the specified **Bridge link** entry you want to configure.

Remote MAC – Specify the remote peer's MAC address of this Bridge

Security – Specify which security policy is used

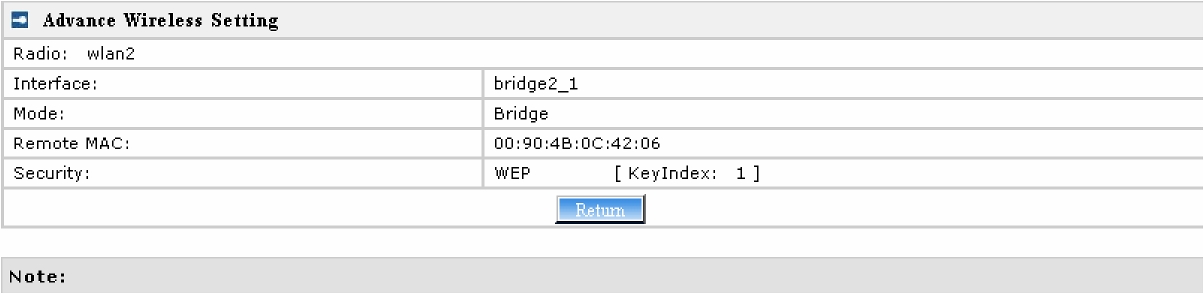
New – Create a new **Bridge link** entry

Detail – Show the detail information of this **Bridge link** entry

Edit – Edit the selected **Bridge link** entry you want to configure

Delete – Delete the selected **Bridge link** entry.

Clicking **Detail**, the similar page will be appears:

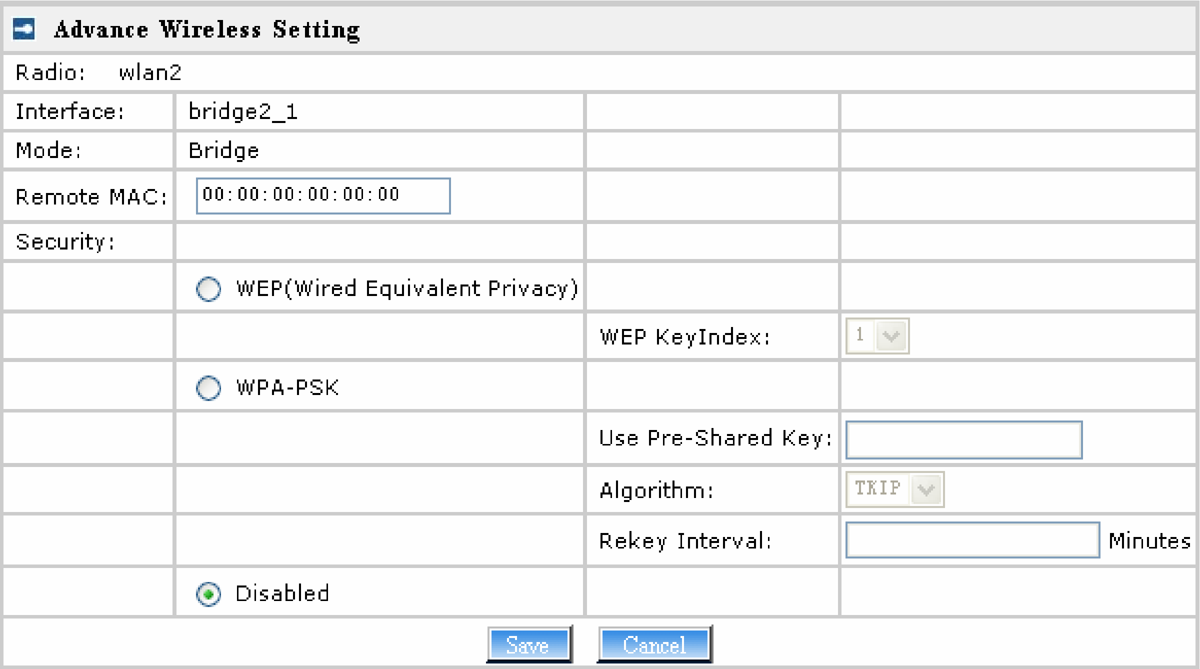


Radio: wlan2

Interface:	bridge2_1
Mode:	Bridge
Remote MAC:	00:90:4B:0C:42:06
Security:	WEP [KeyIndex: 1]

Figure 37 – Detail of one bridge entry

Clicking **Edit** for editing an existed bridge link or **New** for adding a new bridge link**,** you can see the figure like this.



Advance Wireless Setting

Radio: wlan2

Interface:	bridge2_1		
Mode:	Bridge		
Remote MAC:	00:00:00:00:00:00		
Security:			
	○ WEP(Wired Equivalent Privacy)		
		WEP KeyIndex:	1
	○ WPA-PSK		
		Use Pre-Shared Key:	
		Algorithm:	TKIP
		Rekey Interval:	Minutes
	● Disabled		

Save Cancel

Figure 38 – Bridge Link Setting

Remote MAC – Add the remote peer's MAC address you want to configure as a bridge link

Security – Specify WEP or WPA-PSK (TKIP or AES) is used for security policy. WPA-PSK or static WEP can be used for encrypt each bridge link

Each Bridge link can have its own WEP key/keyIndex for encryption.

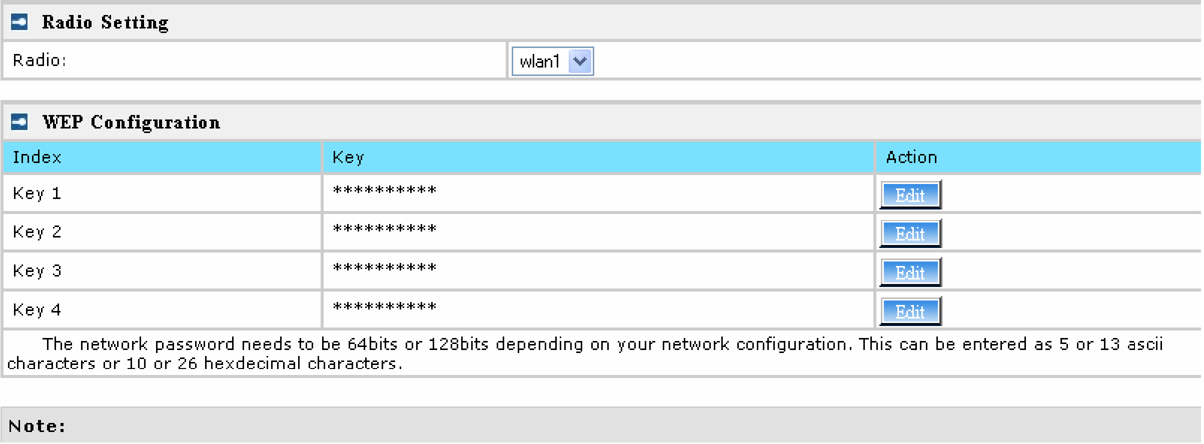
Only WEP can be used as security policy for Bridge links now. More enhanced security policy is in developing.

By default, four WEP keys are all set to "aaaaa". They can be modified in **Wireless | WEP**.

Wireless | WEP

Use the **Wireless | WEP** menu to configure static WEP settings.

This menu only set static WEP key value related with 4 key indexes for each RF card (wlan1 or wlan2). Enable or Disable static WEP is in the **Wireless | Advance** menu.



Radio Setting

Radio: wlan1

WEP Configuration

Index	Key	Action
Key 1	**********	Edit
Key 2	**********	Edit
Key 3	**********	Edit
Key 4	**********	Edit

The network password needs to be 64bits or 128bits depending on your network configuration. This can be entered as 5 or 13 ascii characters or 10 or 26 hexdecimal characters.

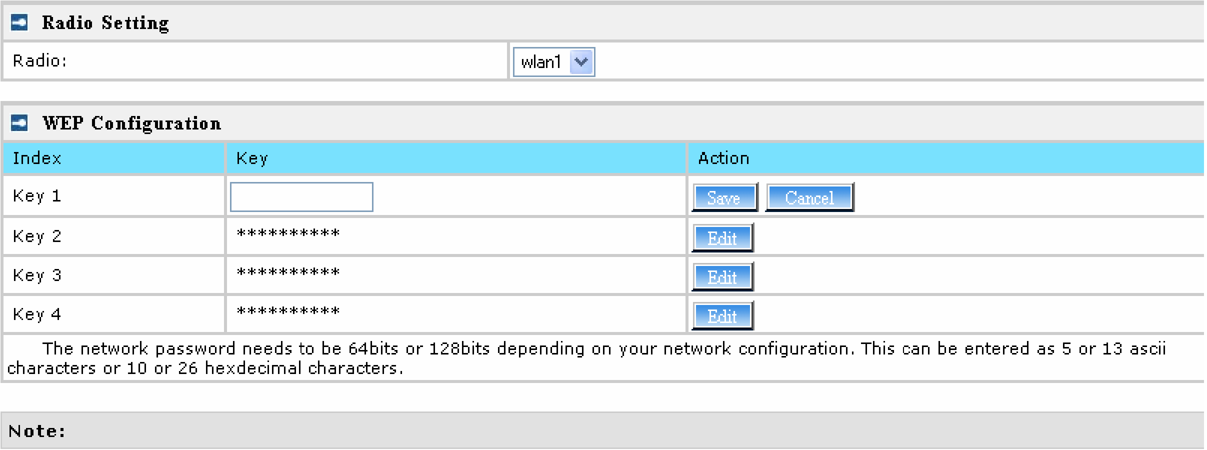
Note:

Figure 39 – WEP Settings

Radio – specify which RF card (wlan1 or wlan2) is needed to be set.

Click **Edit** to edit the existing **wepkey1** to **wepkey4**.

By default, four WEP keys are all set to "aaaaa". They can be modified according to real need.



Radio Setting

Radio:	wlan1

WEP Configuration

Index	Key	Action
Key 1		Save Cancel
Key 2	**********	Edit
Key 3	**********	Edit
Key 4	**********	Edit

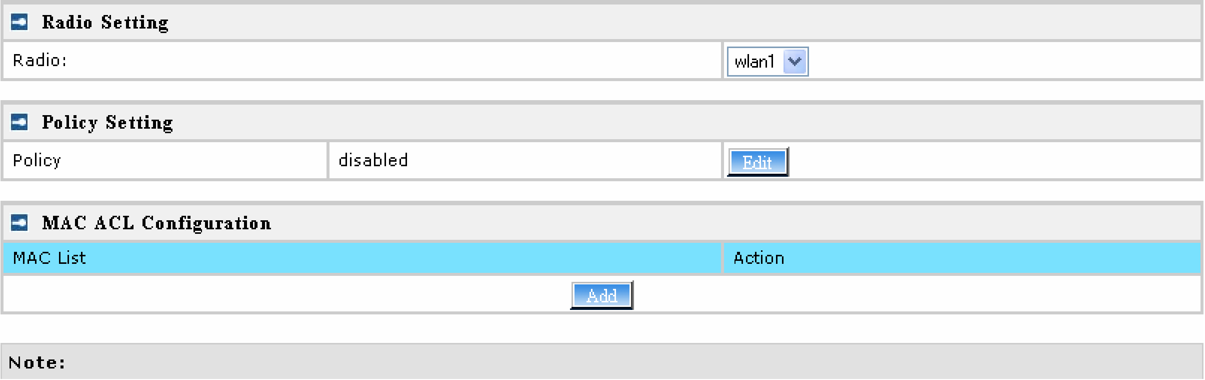
The network password needs to be 64bits or 128bits depending on your network configuration. This can be entered as 5 or 13 ascii characters or 10 or 26 hexdecimal characters.

Note:

Figure 40 – Edit WEP Key

Wireless | MAC ACL

Use the **MAC ACL** service to control the default access to the wireless interface of the P-720 or define special access rules for mobile clients. Configure the ACL using the Wireless | MAC ACL menu:



Radio Setting

Radio:	wlan1

Policy Setting

Policy	disabled	Edit

MAC ACL Configuration

MAC List	Action
Add	

Note:

Figure 41 – MAC ACL Service

Radio – Two wireless interfaces wlan1 and wlan2 can be selected for each radio's MAC ACL rules.

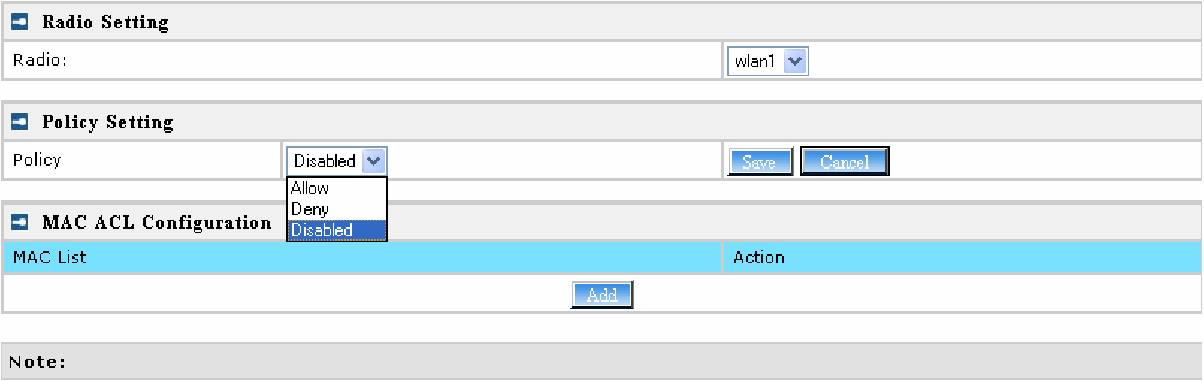
Only AP mode has the MAC ACL service. The wireless interface whose mode is Bridge hasn't MAC ACL settings.

Policy Setting – click the **edit** button to choose Allow, Deny or disable the access control service on device. By default the ACL service is disabled and all wireless clients connecting to the P-720 are allowed (no ACL rules are applied to the wireless clients).

Select **Allow** means only the wireless clients whose MAC are listed in the **MAC List** would be permitted to access this AP. Other wireless client cannot access this AP.

Select **Deny** means only the wireless clients whose MAC are listed in the **MAC List** would be prevented from accessing. Other wireless clients can access this AP.

Select **Disabled** means no ACL service.



Radio Setting

Radio: wlan1

Policy Setting

Policy: Disabled

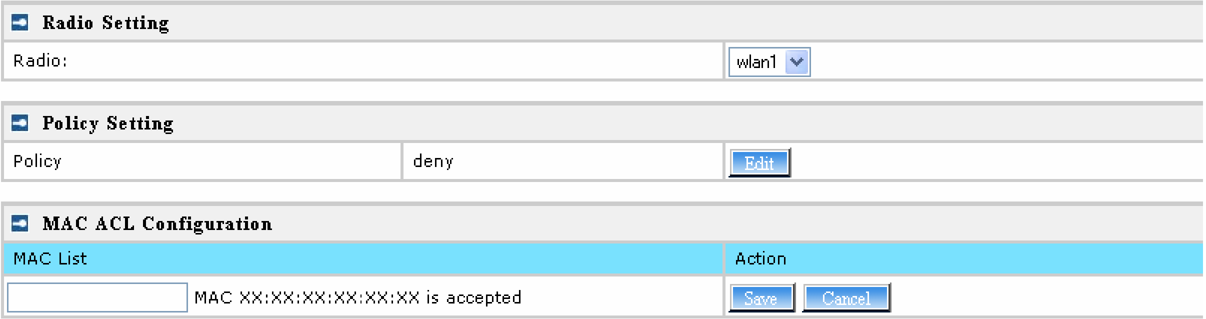
MAC ACL Configuration

MAC List	Action

Note:

Figure 42 – MAC ACL settings

You must create **MAC List** to work with **Policy** setting. The access control list is based on the network device's MAC address. In the MAC ACL Configuration table, you only need to specify the MAC address of wireless client. Click the Add button to create a new MAC entry:



Radio Setting

Radio: wlan1

Policy Setting

Policy: deny

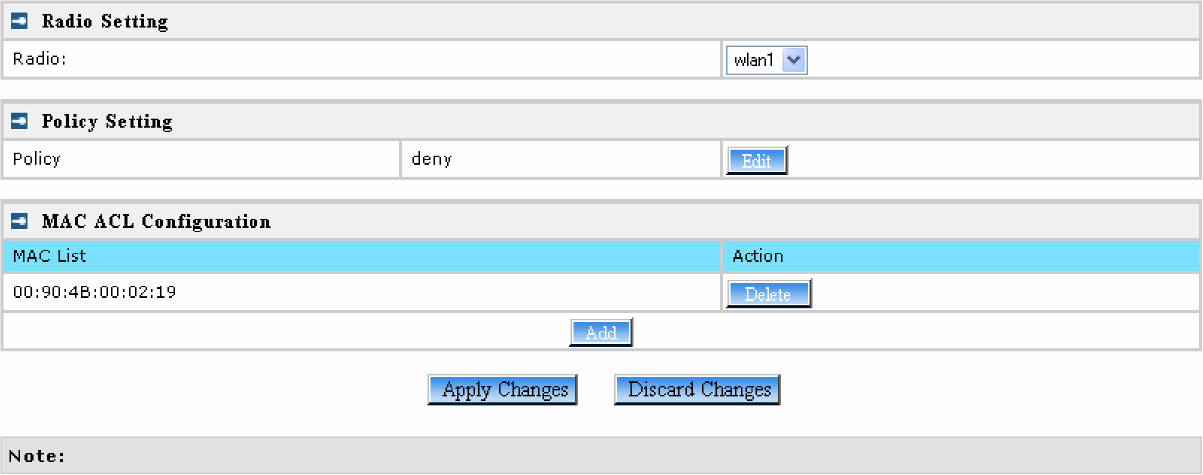
MAC ACL Configuration

MAC List	Action
MAC XX:XX:XX:XX:XX:XX is accepted	Save Cancel

Figure 43 – Add MAC entry

MAC Address – enter the physical address of the network device you need to (MAC address) The format is a list of colon separated hexadecimal numbers (for example: 00:AA:A2:5C:89:56).

Save – click the button to save the new MAC entry.



Radio Setting

Radio: wlan1

Policy Setting

Policy: deny

MAC ACL Configuration

MAC List	Action
00:90:4B:00:02:19	Delete

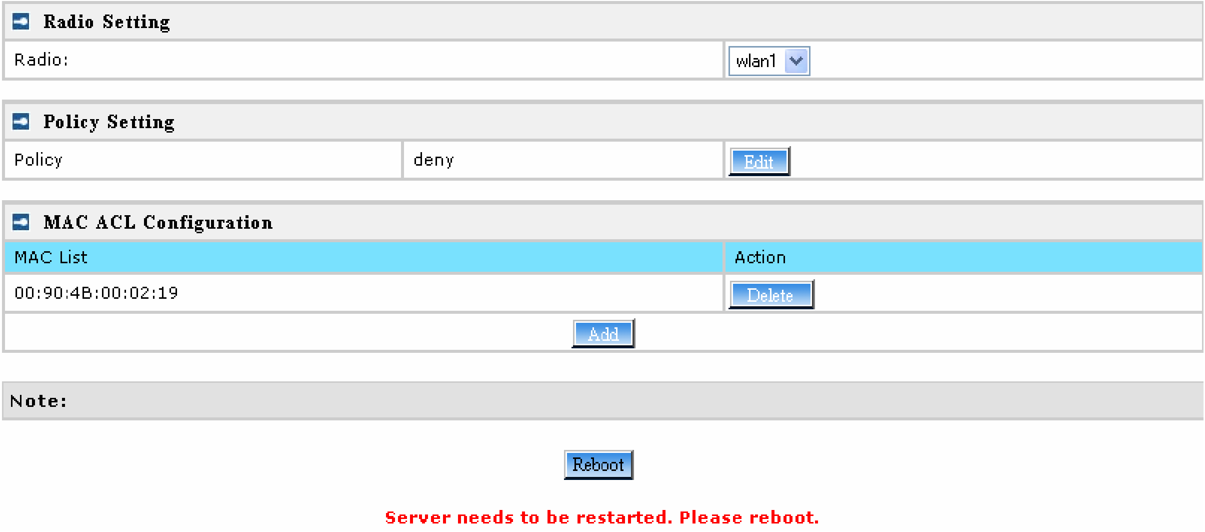
Note:

Figure 44 – Apply or Discard MAC ACL Configuration Changes

Apply Changes – to save all changes made in the **interface** table at once.

Discard Changes – restore all previous values.

For such each change of settings, the P-720 needs to be restarted to apply all settings changes when clicking **Apply Changes**. Request for reboot server appears:



Radio Setting

Radio:	wlan1

Policy Setting

Policy	deny	Edit

MAC ACL Configuration

MAC List	Action
00:90:4B:00:02:19	Delete

Note:

Server needs to be restarted. Please reboot.

Figure 45 – Reboot Server

Reboot – Click the button to restart the server and apply the changes.

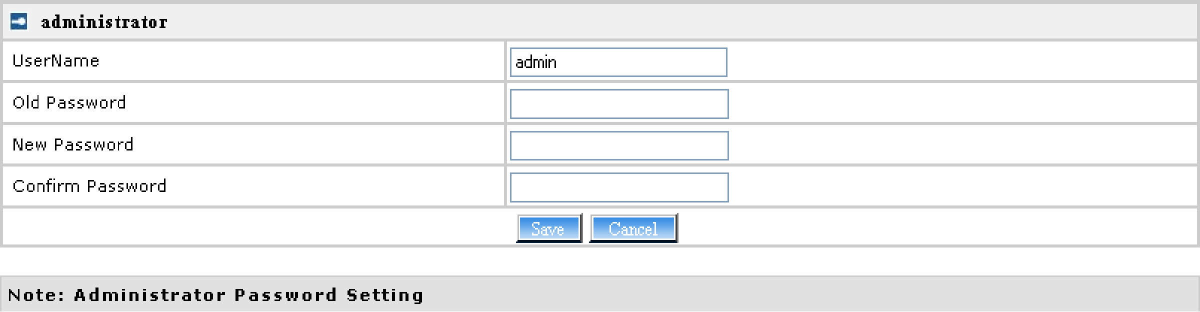
If there is no other setting needed to be modified, click the **Reboot** button for applying all modifications.

And if there are still other setting modifications needed, go ahead to finish all changes and then click **Reboot** button to restart and apply all settings together.

System

System | Security

Use the **System | Security** service to configure the name and password administrator:



administrator	
UserName	admin
Old Password	
New Password	
Confirm Password	

Note: Administrator Password Setting

Figure 46 – system security settings

User Name – administrator username for access to P-720 (e.g. web interface, CLI mode) [1-32 symbols, spaces not allowed].

Old Password – old password value.

New Password –new password value used for user authentication in the system [4-8 characters, spaces not allowed].

Confirm Password – re-enter the new password to verify its accuracy.

Save – click to save new administrator settings.

Default administrator logon settings are:

User Name: **admin**

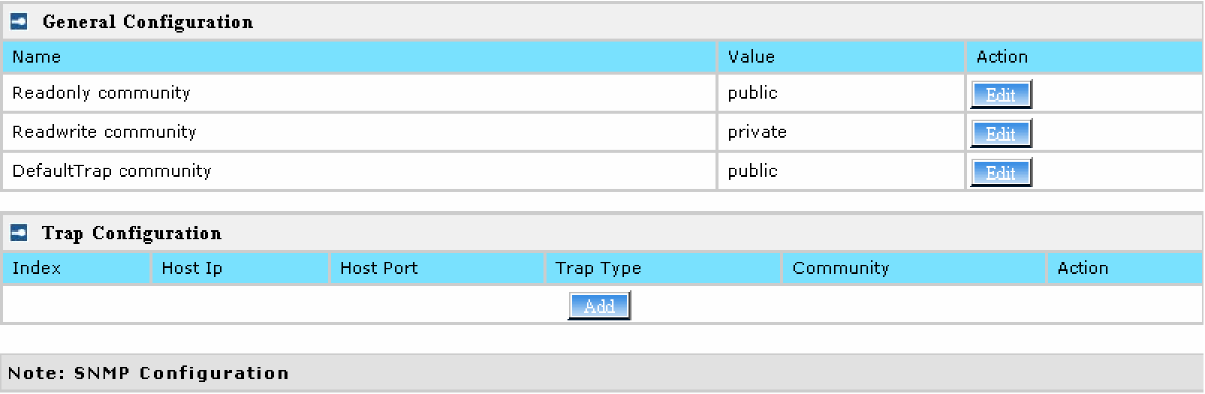
Password: **admin01**

Password length is from 4 to 8 characters.

System | SNMP

SNMP is the standard protocol that regulates network management over the Internet. To communicate with SNMP manager you must set up the same **SNMP** communities and identifiers on both ends: manager and agent.

Use the **System | SNMP** menu to change current SNMP configuration.



General Configuration

Name	Value	Action
Readonly community	public	Edit
Readwrite community	private	Edit
DefaultTrap community	public	Edit

Trap Configuration

Index	Host Ip	Host Port	Trap Type	Community	Action
			Add		

Note: SNMP Configuration

Figure 47 – SNMP settings

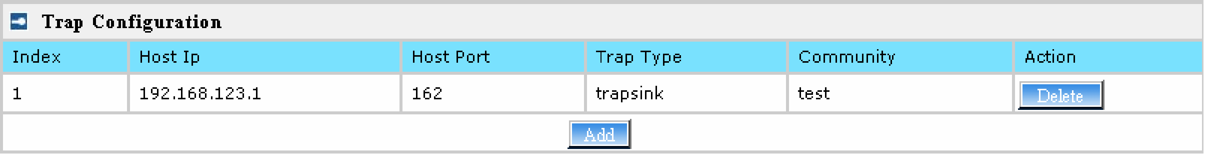
Readonly community – Community name is used in SNMP version 1 and version 2c. Read-only (public) community allows reading values, but denies any attempt to change values [1-32 all ASCII printable characters, no spaces].

Readwrite community – Community name is used in SNMP version 1 and version 2c. Read-write (private) community allows to read and (where possible) change values [1-32 all ASCII printable characters, no spaces].

Default Trap community – The default SNMP community name used for traps without specified communities. The default community by most systems is "public". The community string must match the community string used by the SNMP network management system (NMS) [1-32 all ASCII printable characters, no spaces].

Trap Configuration Table:

You can configure your SNMP agent to send **SNMP Traps** (and/or inform notifications) under the defined host (SNMP manager) and community name (optional).

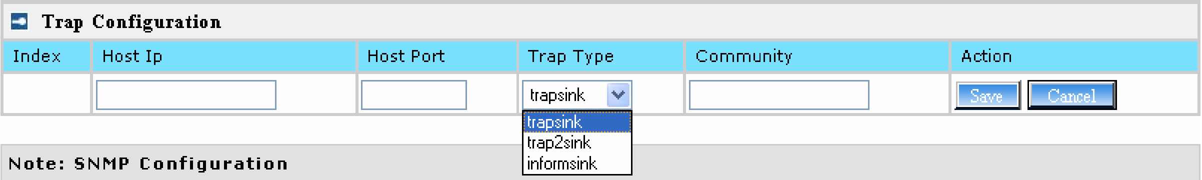


Trap Configuration

Index	Host Ip	Host Port	Trap Type	Community	Action
1	192.168.123.1	162	trapsink	test	Delete
			Add		

Figure 48 – SNMP Trap table settings

Click **Add** to add a new SNMP manager or **Delete** to delete a specific SNMP manager. Clicking **Add**:



Trap Configuration

Index	Host Ip	Host Port	Trap Type	Community	Action
			trapsink trapsink trap2sink informsink		Save Cancel

Note: SNMP Configuration

Figure 49 – Add SNMP Trap

Host IP – enter SNMP manager IP address [dots and digits].

Host Port – enter the port number the trap messages should be send through [number].

Trap Type – select trap message type [v1/v2/inform].

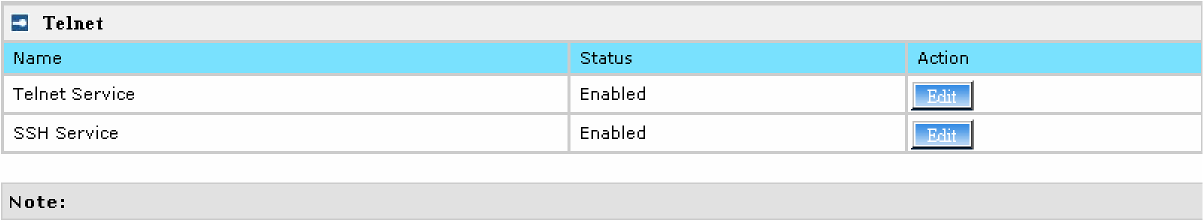
Community – specify the community name at a SNMP trap message. This community will be used in trap messages to authenticate the SNMP manager. If not defined, the default trap community name will be used (specified in the SNMP table) [1-32 all ASCII printable characters, no spaces].

Save – save all current settings

Cancel – restore the last settings

System | Telnet

Use **System | Telnet** menu to manage the telnet/SSH service of your P-720.



Telnet

Name	Status	Action
Telnet Service	Enabled	Edit
SSH Service	Enabled	Edit

Note:

Figure 50 – System Configuration settings

Telnet Service – Enable or disable telnet service of P-720

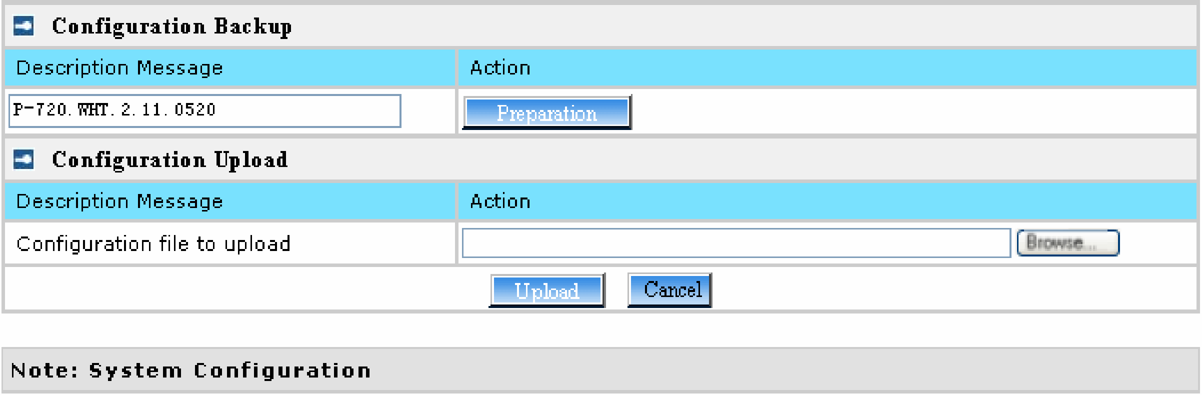
SSH Service – Enable or disable SSH service of P-720.

The default of these two services are all **Enabled**. The current IETF SSH (SSHv2) is supported for security of accessing P-720 via telnet/CLISH.

System | Configuration

Use the **System | Configuration** menu to configure such system utilities:

- **Backup** – download current working system configuration for backup
- **Upload/Restore** – upload system configuration for restore



Configuration Backup

Description Message	Action
P-720.WHT.2.11.0520	Preparation

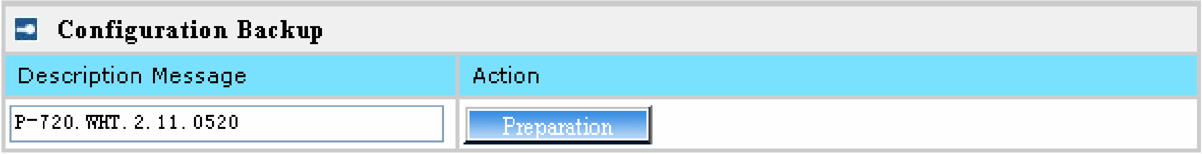
Configuration Upload

Description Message	Action
Configuration file to upload	Browse...

Note: System Configuration

Figure 51 – System Configuration settings

You can save your current device configuration file locally using the **Backup** menu under the **System | Configuration | Backup** menu:



Configuration Backup

Description Message	Action
P-720.WHT.2.11.0520	Preparation

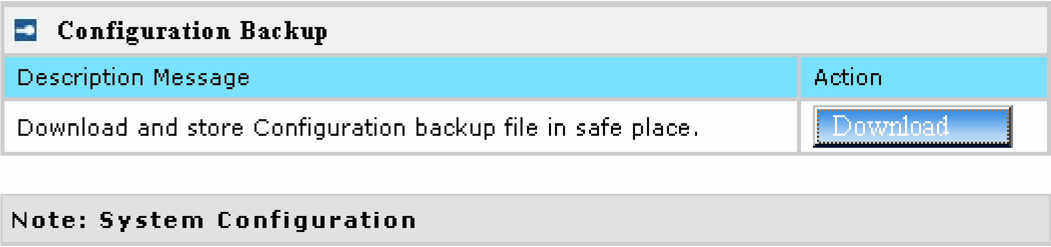
Figure 52 – Backup settings

Such device configuration is saved in the specific format file (.cfg).

Description Message shows the current version of firmware.

Click the **Preparation** button to start saving the configuration file.

Click the **Download** button to download current working configuration into your local PC.



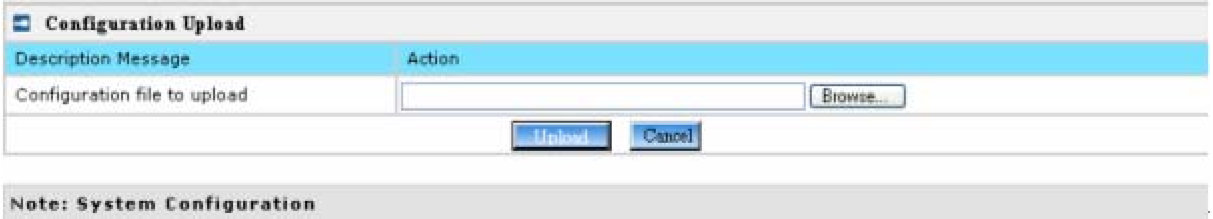
Configuration Backup

Description Message	Action
Download and store Configuration backup file in safe place.	Download

Note: System Configuration

Figure 53 – Download system configuration

You can upload saved configuration file any time you want to restore this configuration to the device by using the **Browse** button Select the configuration file and upload it on the device:



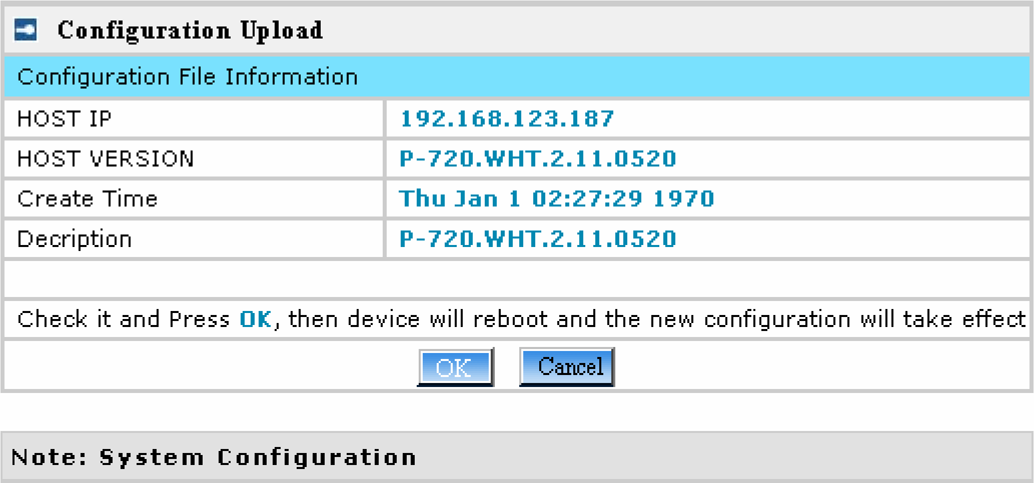
Configuration Upload

Description Message	Action
Configuration file to upload	Browse...

Note: System Configuration

Figure 54 – Configuration Upload/Restore

Click **Upload** for upload the specified configuration and then the similar UI appears



Configuration Upload

Configuration File Information	
HOST IP	192.168.123.187
HOST VERSION	P-720.WHT.2.11.0520
Create Time	Thu Jan 1 02:27:29 1970
Decription	P-720.WHT.2.11.0520

Check it and Press OK, then device will reboot and the new configuration will take effect

Note: System Configuration

Figure 55 – configuration information

HOST IP – show the IP address in the configuration file that needs to upload.

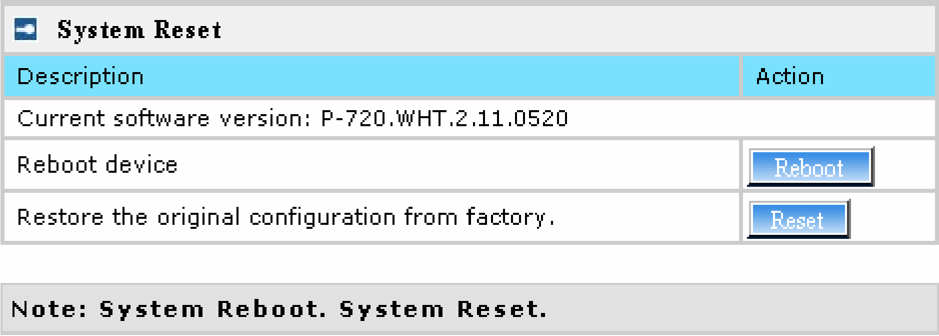
Please remember this IP address for accessing P-720 after the configuration file is uploaded.

HOST VERSION – show the firmware version in the configuration file that needs to upload.

OK – click the button to apply configuration setting to the device.

If everything is right, click **OK** button for upload/restore.

System | Reset



System Reset

Description	Action
Current software version: P-720.WHT.2.11.0520	
Reboot device	Reboot
Restore the original configuration from factory.	Reset

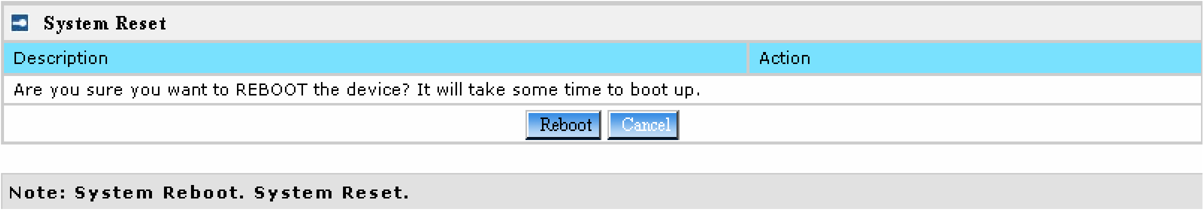
Note: System Reboot. System Reset.

Figure 56 – System Reset setting

Reboot – Reboot the device

Reset – Reset System to Factory Defaults

To reboot the device, click **Reboot** and then the below appears to make sure:



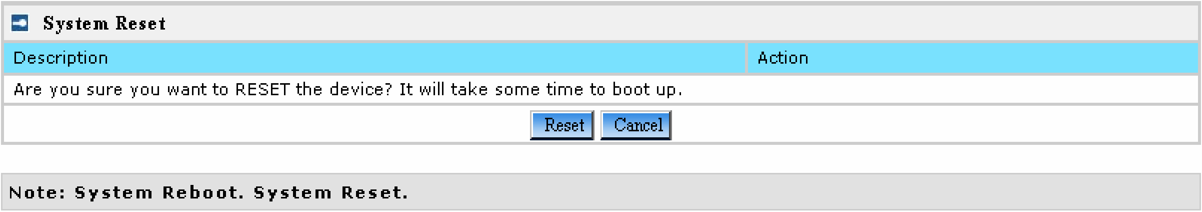
System Reset

Description	Action
Are you sure you want to REBOOT the device? It will take some time to boot up.	
Reboot Cancel	

Note: System Reboot. System Reset.

Figure 57 – Reboot the device

To reset device to factory defaults, click **Reset** on *Figure 56* and then the below appears to make sure:



System Reset

Description	Action
Are you sure you want to RESET the device? It will take some time to boot up.	
Reset Cancel	

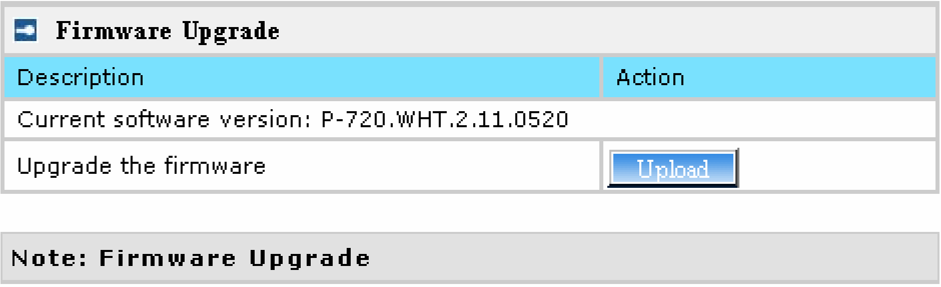
Note: System Reboot. System Reset.

Figure 58 – Reset the device

Please note that all settings including the administrator settings will be set back to the factory default when **Reset** is selected.

System | Upgrade

Upload – Update your device firmware.



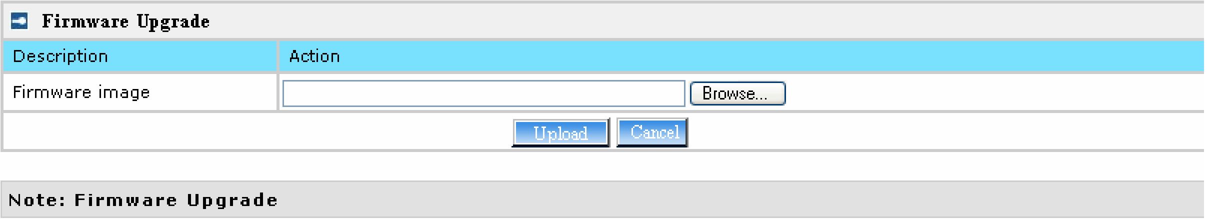
Firmware Upgrade

Description	Action
Current software version: P-720.WHT.2.11.0520	
Upgrade the firmware	Upload

Note: Firmware Upgrade

Figure 59 – Firmware Upgrade

Click the **Upload** and then the follow appears. Specify the full path to the new firmware image and click the **Upload** button:



Firmware Upgrade

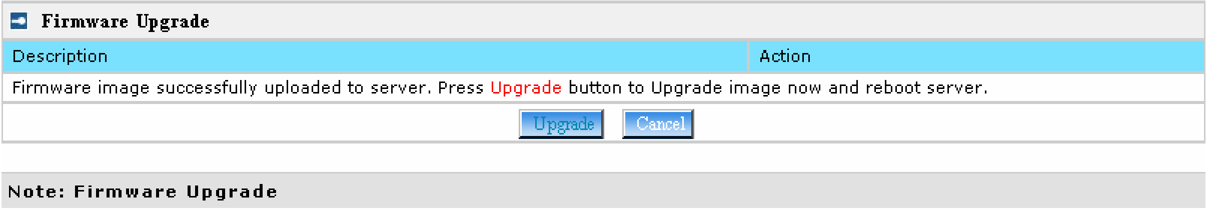
Description	Action
Firmware image	Browse...

Note: Firmware Upgrade

Figure 60 – Firmware Upgrade

To flash the uploaded firmware image to upgrade the firmware is done by click the **Upgrade** button.

Please make sure the firmware is correct for P-720. Otherwise the upgrade will be failed.



Firmware Upgrade

Description	Action
Firmware image successfully uploaded to server. Press Upgrade button to Upgrade image now and reboot server.	

Note: Firmware Upgrade

Figure 61 – Device Statistics

Do not switch off and do not disconnect the P-720 from the power supply during the firmware update process because the device could be damaged. It is best to use the Ethernet connection (not wireless) for the firmware update process.

▪

Appendix

A) Specification

Wireless

Standard	IEEE 802.11b(DSSS), IEEE 802.11g(OFDM) and IEEE 802.11a(OFDM)
Data Rate	802.11a: 54,48,36,24,18,12,9,6Mbps;802.11g: 54,48,36,24,12,9,6,11,5,5,2,1Mbps (auto fall back) Turbo 802.11a: 108Mbps
Transmit Power (adjustable RF power)	Max. 17 dBm ± 1.5dBm @6~24Mbps Max. 13 dBm ± 1.5dBm @54Mbps (Maximum power will vary by channel, rate)
Antennas	2 Dual-band Dipole Antennas with reverse: R-TNC plug connector
Encryption	WPA（TKIP and CCMP-AES）, Dynamic/static 64bits and 128bits WEP
Bridge	Up to 8 bridge links

Interface

LAN	10/100Mb Ethernet, auto sensing, RJ-45
Console	1×DB-9 Male (RS232) for serial configuration

Management

Interfaces	HTTPs, Secure Telnet(SSHv2), SNMP
Software Update	Remote software update via HTTPs
Restore default	H/W and S/W remote restore factory default

Physical Specification

Dimension	195 mm x 160 mm x 27 mm
Weight	500g

Environment Specification

	Temperature	Humidity
Operating	0 to 50°C	95%, non-condensing

Power Supply

POE	48V, IEEE802.3af-2003 compliance
Power adaptor	External power supply, input: 100-230 VAC, 50-60Hz and output: 12VDC

LEDs

4 LEDs	Power, LAN, WLAN1, WLAN2

Warranty

1 years

Package Contents

▪ P-720 Dual Radio 2.4GHz/5GHz Access Point	▪ CD-ROM with User Manuals (*.pdf)
▪ Printed Release note	▪ Ethernet patch cable (1.8m)
▪ International power supply	▪ Console
▪ Antenna	▪ Mount kit package

B) Factory Defaults for the P-720

General Configuration Settings	
Administrator Username	admin
Administrator Password	admin01
Get Community	Public
Set Community	Private
Network Configuration Settings	
IP address	(static IP) 192.168.2.2
Subnet mask	255.255.255.0
Gateway	0.0.0.0
Wireless Configuration Settings	
RF Card 1(WLAN1)	
Default Mode	11g Access Point
SSID	P-720
Default channel	11
RTS Threshold	2347 bytes
RF Output Power	14dBm
Authentication Type	Open System
Encryption	Off
RF Card 2(WLAN2)	
Default Mode	11a Access Point
SSID	P-720
Default channel	60
RTS Threshold	2347 bytes
RF Output Power	17dBm
Authentication Type	Open System
Encryption	Off

C) Regulatory Channels/Power

Channels and Maximum output power for the P-720 11g radio:

Channels Identifiers	Frequency in MHz	USA, Canada (FCC)	European Union (CE/ETSI)		Japan (TELEC)
1	2412	●	●		●
2	2417	●	●		●
3	2422	●	●		●
4	2427	●	●		●
5	2432	●	●		●
6	2437	●	●		●
7	2442	●	●		●
8	2447	●	●		●

9	2452	•	•		•
10	2457	•	•		•
11	2462	•	•		•
12	2467	—	•		•
13	2472	—	•		•
14	2484	—	—		—
Maximum output Power		18.5dBm	14dBm		14dBm

For channel 1 and channel 11, the maximum output power will be 18.5dBm in the case of the setting of FCC.

Channels and Maximum power for the P-720 11a radio:

Channels Identifiers	Frequency in MHz	USA, Canada (FCC)	European Union (CE/ETSI)		Japan (TELEC)
U-NII lower band (5150 – 5250 MHz)					
34	5170	—	—		•
36	5180	•	•		—
38	5190	—	—		•
40	5200	•	•		—
42	5210	—	—		•
44	5220	•	•		—
46	5230	—	—		•
48	5240	•	•		—
Maximum Output Power		**17dBm**	**17 dBm**		**15 dBm**
U-NII middle band (5250 – 5350 MHz)					
52	5260	•	•		—
56	5280	•	•		—
60	5300	•	•		—
64	5320	•	•		—
Maximum Output Power		**17 dBm**	**17 dBm**		—
U-NII upper band (5725 – 5875 MHz)					
149	5745	•	—		—
153	5765	•	—		—
157	5785	•	—		—
161	5805	•	—		—
165	5825	●	—		—
Maximum Output Power		**17** dBm	**17** dBm		—

D) Location ID and ISO Country Codes

This list states the **country names** (official short names in English) in alphabetical order as given in ISO 3166-1 **and** the corresponding **ISO 3166-1-alpha-2 code elements**.

It lists 239 official short names and code elements.

Location ID	Country	Location ID	Country
AF	Afghanistan	LI	Liechtenstein
AL	Albania	LT	Lithuania
DZ	Algeria	LU	Luxembourg
AS	American Samoa	MO	Macao
AD	Andorra	MK	Macedonia, the former Yugoslav republic of
AO	Angola	MG	Madagascar
AI	Anguilla	MW	Malawi
AQ	Antarctica	MY	Malaysia
AG	Antigua and Barbuda	MV	Maldives
AR	Argentina	ML	Mali
AM	Armenia	MT	Malta
AW	Aruba	MH	Marshall islands
AU	Australia	MQ	Martinique
AT	Austria	MR	Mauritania
AZ	Azerbaijan	MU	Mauritius
BS	Bahamas	YT	Mayotte
BH	Bahrain	MX	Mexico
BD	Bangladesh	FM	Micronesia, federated states of
BB	Barbados	MD	Moldova, republic of
BY	Belarus	MC	Monaco
BE	Belgium	MN	Mongolia
BZ	Belize	MS	Montserrat
BJ	Benin	MA	Morocco
BM	Bermuda	MZ	Mozambique
BT	Bhutan	MM	Myanmar
BO	Bolivia	NA	Namibia
BA	Bosnia and Herzegovina	NR	Nauru
BW	Botswana	NP	Nepal
BV	Bouvet island	NL	Netherlands
BR	Brazil	AN	Netherlands Antilles
IO	British Indian ocean territory	NC	New Caledonia
BN	Brunei Darussalam	NZ	New Zealand
BG	Bulgaria	NI	Nicaragua

BF	Burkina Faso	NE	Niger
BI	Burundi	NG	Nigeria
KH	Cambodia	NU	Niue
CM	Cameroon	NF	Norfolk island
CA	Canada	MP	Northern Mariana islands
CV	Cape Verde	NO	Norway
KY	Cayman islands	OM	Oman
CF	Central African republic	PK	Pakistan
TD	Chad	PW	Palau
CL	Chile	PS	Palestinian territory, occupied
CN	China	PA	Panama
CX	Christmas island	PG	Papua new guinea
CC	Cocos (keeling) islands	PY	Paraguay
CO	Colombia	PE	Peru
KM	Comoros	PH	Philippines
CG	Congo	PN	Pitcairn
CD	Congo, the democratic republic of the	PL	Poland
CK	Cook islands	PT	Portugal
CR	Costa Rica	PR	Puerto Rico
CI	Côte d'ivoire	QA	Qatar
HR	Croatia	RE	Réunion
CU	Cuba	RO	Romania
CY	Cyprus	RU	Russian federation
CZ	Czech republic	RW	Rwanda
DK	Denmark	SH	Saint Helena
DJ	Djibouti	KN	Saint Kitts and Nevis
DM	Dominica	LC	Saint Lucia
DO	Dominican republic	PM	Saint Pierre and Miquelon
EC	Ecuador	VC	Saint Vincent and the grenadines
EG	Egypt	WS	Samoa
SV	El Salvador	SM	San Marino
GQ	Equatorial guinea	ST	Sao tome and Principe
ER	Eritrea	SA	Saudi Arabia
EE	Estonia	SN	Senegal
ET	Ethiopia	SC	Seychelles
FK	Falkland islands (malvinas)	SL	Sierra Leone
FO	Faroe islands	SG	Singapore
FJ	Fiji	SK	Slovakia
FI	Finland	SI	Slovenia
FR	France	SB	Solomon islands
GF	French Guiana	SO	Somalia

PF	French Polynesia	ZA	South Africa
TF	French southern territories	GS	South Georgia and the south sandwich islands
GA	Gabon	ES	Spain
GM	Gambia	LK	Sri Lanka
GE	Georgia	SD	Sudan
DE	Germany	SR	Suriname
GH	Ghana	SJ	Svalbard and Jan Mayan
GI	Gibraltar	SZ	Swaziland
GR	Greece	SE	Sweden
GL	Greenland	CH	Switzerland
GD	Grenada	SY	Syrian Arab republic
GP	Guadeloupe	TW	Taiwan, province of china
GU	Guam	TJ	Tajikistan
GT	Guatemala	TZ	Tanzania, united republic of
GN	Guinea	TH	Thailand
GW	Guinea-Bissau	TL	Timor-leste
GY	Guyana	TG	Togo
HT	Haiti	TK	Tokelau
HM	Heard island and McDonald islands	TO	Tonga
VA	Holy see (Vatican city state)	TT	Trinidad and Tobago
HN	Honduras	TN	Tunisia
HK	Hong Kong	TR	Turkey
HU	Hungary	TM	Turkmenistan
IS	Iceland	TC	Turks and Caicos islands
IN	India	TV	Tuvalu
ID	Indonesia	UG	Uganda
IR	Iran, Islamic republic of	UA	Ukraine
IQ	Iraq	AE	United Arab emirates
IE	Ireland	GB	United kingdom
IL	Israel	US	United states
IT	Italy	UM	United states minor outlying islands
JM	Jamaica	UY	Uruguay
JP	Japan	UZ	Uzbekistan
JO	Jordan	VU	Vanuatu
KZ	Kazakhstan		Vatican city state see holy see
KE	Kenya	VE	Venezuela
KI	Kiribati	VN	Viet nam
KP	Korea, democratic people's republic of	VG	Virgin islands, British
KR	Korea, republic of	VI	Virgin islands, u.s.
KW	Kuwait	WF	Wallis and Futuna

KG	Kyrgyzstan	EH	Western Sahara
LA	Lao people's democratic republic	YE	Yemen
LV	Latvia	YU	Yugoslavia
LB	Lebanon		Zaire see Congo, the democratic republic of the
LS	Lesotho	ZM	Zambia
LR	Liberia	ZW	Zimbabwe
LY	Libyan Arab Jamahiriya		