

# **KWA-O6900**

## **User Manual**

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## About this manual

The purpose to use this manual is for install the device. This manual is including disposing course and method and helping the customer to solve the unpredictable problem.

The following typographical conventions are used in this purpose:

### Notice:

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- This indicates an important Note.

### Caution:

---

- This indicates a warning or caution
- 

**Bold Type** : Indicates the function, important words, and so on.

# Index

<b>CHAPTER 1 INTRODUCTION</b> .....	<b>4</b>
INTRODUCTION.....	4
APPEARANCE OF PRODUCT.....	4
FEATURES AND BENEFITS .....	4
<b>CHAPTER 2 HARDWARE INSTALLATION</b> .....	<b>5</b>
SYSTEM REQUIREMENT.....	5
PRODUCE KIT .....	5
HARDWARE INSTALLATION.....	5
LED DESCRIPTIONS .....	5
<b>CHAPTER 3 BASIC SETTINGS</b> .....	<b>6</b>
FACTORY DEFAULT SETTINGS.....	6
USING THE WEB MANAGEMENT.....	7
BASIC SYSTEM SETUP .....	8
STATISTICS .....	10
<b>CHAPTER 4 WIRELESS SETTINGS</b> .....	<b>11</b>
BASIC WIRELESS SETTINGS.....	11
PEER-TO-PEER LINKS .....	16
SECURITY .....	17
ACCESS CONTROL .....	18
STATUS .....	19
THROUGHPUT.....	19
<b>CHAPTER 5 MANAGEMENT</b> .....	<b>20</b>
CHANGE PASSWORD.....	20
REMOTE MANAGEMENT .....	20
UPGRADE FIRMWARE .....	21
BACKUP/RESTORE.....	21
TIME SETTING .....	22
EVENT LOG .....	23
REBOOT.....	23

# Chapter 1 Introduction

## Introduction

Thank you for choosing the KWA-O6900. The KWA-O6900 work on 5GHz, and it based on powerful Wi-Fi technology that provides higher throughput.

## Appearance of Product



Figure 1 KWA-O6900

## Features and Benefits

- ◆ Easy to install and friendly to user, just plug and play.
- ◆ Provides Web-based configuration utility.

Support power over Ethernet

IP68 class of enclosure

## Chapter 2 Hardware Installation

### System Requirement

Two PCs with automatic speed control connector NIC supporting the transfer rate of 10/100Mbps data.

- ♦ The IP address of NIC should be the same subnet with the AP, the default IP address of AP is 192.168.1.1
- ♦ Microsoft Internet Explorer 6 or above.

### Produce Kit

1. KWA-O6900 x 1
2. Injector-GT2 x 1
3. PoE injector guide x 1
4. Power cord x 1
5. Mounting Kit x 1
6. Mounting guide x 1
7. Check list of components x 1
8. Grounding cable x 1
9. Water proof connector x 1
10. Disc for user manual x 1



### Hardware Installation

The following steps will help you while installing KWA-O6900.

### LED Descriptions

LED	Status	Description
Power	Blue	Power ON
STATUS	Blue	Power on Flash 1 Sec , then OFF
Remote RSSI	Blue	CPE : Go around while surveying ( not connect yet ), Represent strength of RSSI after connected. Low ( 1 LED ) → High ( 5 LEDs )
RST		Push 5 seconds then release to reset device to default

Figure 2 LED Definition

## Chapter 3 Basic Settings

### Factory Default Settings

We'll elaborate the KWA-O6900 factory default settings. You can re-acquire these parameters by default. If necessary, please refer to the [“Restore Factory Default Settings”](#).

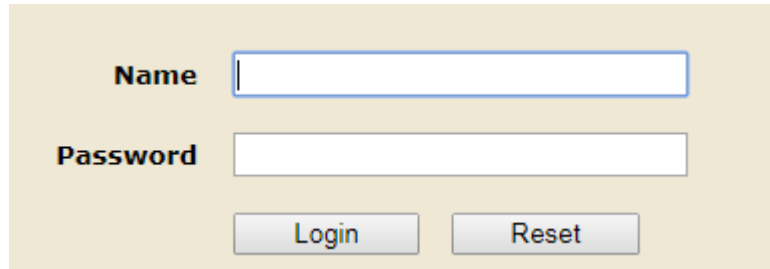
Item	Factory Default
<b>Login Information</b>	
User Name	admin
Password	password
<b>Basic Settings</b>	
Device Name	DEVICExxxxxx (xxxxxx Represent the last 6 digitals of the MAC address)
Ethernet Data Rate	Automatic
Spanning Tree Protocol	Enable
VLAN (802.1Q)	Disable
IP Settings	IP Type : Manual
	IP Address : 192.168.1.1
	IP Subnet Mask : 255.255.255.0
	Default Gateway : 0.0.0.0
	Primary DNS Server : 0.0.0.0
	Secondary DNS Server: 0.0.0.0
Time Settings	Time Server: [spare]
	Time Sever Port: 123
	Time Zone: (GMT-08:00)Pacific Time(US & Canada);Tijuana
<b>Wireless Setup</b>	
Radio Frequency (RF)	Enable
Network ID	Wireless
RF Bandwidth	20MHz
Channel / Frequency	5260MHz
Data Rate	BPSK 1/2 – 64QAM 3/4
Output Power	Full
Fragmentation length	2346

Figure 3 Default Settings

## Using the Web Management

The KWA-O6900 provides you with user-friendly Web-based management tool.

Open IE and enter the default IP address (Default: 192.168.1.1) and Login as below :



The login interface consists of a light beige background. At the top, there is a label 'Name' followed by a white text input field with a blue border. Below this is a label 'Password' followed by a white password input field with a grey border. At the bottom, there are two buttons: 'Login' and 'Reset', both with a light grey background and a thin border.


Figure 4 Login Interface

Enter the username (Default: **admin**) and password (Default: **password**) and click “Login”

### Caution :

- IP address of your PC must be the same subnet of device

After login, you can check basic information of device, such as MAC address off device, Firmware version, etc.



The screenshot shows a web page titled 'About' with a dark red header. Below the header, there are two sections: 'Device Information' and 'Firmware'. Each section contains a table of key-value pairs.

Device Information	
Device Name	DEVICE400348
MAC Address	00:1c:24:40:03:48

Firmware	
Version	7.0.1
Checksum	9d5c42f2
Build Time	Mon Dec 2 07:33:22 2013

Figure 5 Device Information

## Basic System Setup

**Basic Setup**

Device Name: DEVICE400348

Ethernet Data Rate: Automatic

Spanning Tree Protocol (STP):  Enable  Disable

VLAN(802.1Q):  Enable  Disable

Management VLAN ID: 0

**IP Address**:  Manual  DHCP

IP Address: 192.168.1.1

IP Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

Primary DNS Server: 0.0.0.0

Secondary DNS Server: 0.0.0.0

Apply Cancel

Figure 6 Basic Settings

### Device Name

Specify the device name, which is composed of no more than 15 characters with (0-9), (A-Z), (a-z) or (-).

Due to support WINS, You can use “Device Name” instead of IP address to access device via WEB interface. For instance, device named as DEVICE400348, you can enter “DEVICE400348” in the IE, then click “ENTER” and WEB page; or use “ping” command to check settings is active or not, such as ping DEVEICE400348.

### Ethernet Data Rate

Specify the transmission rate of data, default is Automatic.

Automatic / T-base10Mbps / T-Base100Mbps

### Spanning Tree Protocol(STP):

Enabling spanning tree can prevent undesirable loops in the network, ensuring a smooth running network. By default, the function is enabled.

### VLAN(802.1Q)

Virtual local network can promote network security. By default, the function is disabled.

### Management VLAN ID

To be able to access the web page of the managed Base Station in the VLAN network, you have to assign the VLAN management ID for the managed Base Station. Note that the ID on the switch must be identical of the Base Station's VLAN ID. Check Enable VLAN(802.1Q) checkbox to activate it.

### **IP Address**

Manual is for specifying the IP Address manually.

DHCP is for allocating IP Address by DHCP server automatically.

### **IP Address**

This IP in your network must be unique, the default is 192.168.1.1.

### **IP Subnet Mask**

Use subnet mask to ensure two devices in the same network, default is 255.255.255.0

### **Default Gateway**

Default gateway and DNS server for your local area network which connects to LAN port.

### **Primary DNS Sever**

First choice of domain name server

### **Secondary DNS Sever**

Second choice of domain name server

## Statistics

Statistics		
<b>Ethernet Statistic</b>		
	Received	Transmitted
Packets	6507	5816
Bytes	608843	1425186
<b>Wireless Statistic</b>		
	Received	Transmitted
Unicast Packets	0	0
Broadcast Packets	0	151
Multicast Packets	0	726
Total Packets	0	877
Total Bytes	0	93040
<input type="button" value="Refresh"/>		

Figure 7 **Statistics**

Display wired and wireless statistics of packets including transmitted and received packets, Unicast, Broadcast, Multicast and total Packets. Click “Refresh” can get instant information.

# Chapter 4 Wireless Settings

## Basic Wireless Settings

Section	Parameter	Value
Radio Frequency (RF)	Radio Frequency (RF)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
	Operating Mode	Base Station
Operating Mode	Wireless Network Name (SSID)	Wireless
	Broadcast Wireless Network Name (SSID)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
	Beacon Interval (20-1000)	100 ms
	S/N Threshold for Association (0-90)	0 dB
	S/N Threshold for Kick Off (0-90)	0 dB
Basic Parameters	Modulation	OFDM
	RF Bandwidth	20MHz
	Channel / Frequency	5260.000MHz
	TX Rate Range	BPSK 1/2 - 64QAM 3/4
	TX Power	full
	Burst Mode	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
	Advanced Parameters	Distance (0-100000)
RTS Threshold (0-2346)		2346
Fragmentation Length (256-2346)		2346
Software Retry Limitation (0-15)		3
Hardware Retry Limitation (1-15)		4

Figure 8 Radio Settings

### Radio Frequency (RF)

RF-Wireless, default is enabled.

### Operating Mode

**Base Station** : Establishing a wireless coverage and receives connectivity from other wireless devices.

The default mode is Base Station.

**CPE** : Perform as a client station associated to other Bridges. In CPE Mode, CPE can only connect to a specified Base Station with Wireless Network Name(SSID).

**Peer-to-Peer**: It adopts the WDS protocol to make the connection. The device establishes wireless connectivity

with another by keying in remote MAC address.

**Ad-Hoc:** An ad-hoc network is a local area network (LAN) that is built spontaneously as devices connect. Instead of relying on a base station to coordinate the flow of messages to each node in the network, the individual network nodes forward packets to and from each other.

### **Wireless Network Name (SSID)**

The SSID is a unique ID used by Access Points and Stations to identify a wireless LAN. Wireless clients associating to any Access Point must have the same SSID. The default ESSID is “**Wireless**”. The ESSID can up to 32 characters

### **Broadcast Wireless Network Name (SSID)**

Enabled to broadcast wireless network name, disable to disabled it.

The Wireless Network Name broadcasting is used in the first place is to make it easy for CPE to see and connect to the network. Otherwise, they have to know the name beforehand and set up a manual connection to it. However, with the Wireless Network Name enabled, not only do your neighbors see your network any time they browse for nearby wireless, it makes it easier for potential hackers to see that you have a wireless network within range.

### **Beacon Interval Time (20~1000)**

Specify the frequency interval to broadcast packets. Default is 100ms.

## **Basic Parameters**

### **Modulation**

Specify the modulation of connection. Options are OFDM and DSSS.

### **RF Bandwidth**

Decide bandwidth of Radio Frequency. Including 5 / 10 / 20 / 40 MHz, default is 20MHz.

### **Channel / Frequency**

Using different frequency to be applied.

### **TX Rate Range**

Specify the TX rate range of operating. There are 64QAM 3/4, 64QAM 2/3, 16QAM 3/4, 16QAM 1/2, QPSK 3/4, QPSK 1/2, BPSK 3/4 and BPSK 1/2.

### **TX Power**

Setting power of TX, default is full.

Half: -3 dB

Quarter: -6 dB

Eighth: -9 dB

Min: -12 dB

### **Robust Mode**

It helps the wireless stability when working on the complicated wireless environment. The default is disable

## **Advanced Parameters**

### **Distance**

Specify the distance between both wireless devices. The default is 10000m.

### **RTS Threshold**

The device sends RTS (Request to Send) frames to certain receiving station and negotiates the sending of a data frame. After receiving an RTS, that STA responds with a CTS (Clear to Send) frame to acknowledge the right to start transmission. The setting range is 0 to 2346 in byte. Setting it too low may result in poor network performance. Leave it at its default of 2346 is recommended.

### **Fragmentation Length**

Specify the length of the maximum fragmentation packet. When packet is large than setting, it would divide to smaller segment package. By default, it will divide the length of segment packet automatically.

## Operating Mode - CPE

### Radio Settings

The setup has been applied.

**Radio Frequency (RF)**  Enable  Disable

**Operating Mode** CPE ▾

Wireless Network Name (SSID) Wireless

Only Base Station 00:00:00:00:00:00

CPE Upload Limitation (1-1687) 1687 ×64Kbps

**Basic Parameters**

Modulation OFDM ▾

RF Bandwidth 20MHz ▾

Channel / Frequency 5260.000MHz ▾

TX Rate Range BPSK 1/2 ▾ - 64QAM 3/4 ▾

TX Power full ▾

Burst Mode  Enable  Disable

**Advanced Parameters**

Distance (0-100000) 10000 meter

RTS Threshold (0-2346) 2346

Fragmentation Length (256-2346) 2346

Software Retry Limitation (0-15) 3

Hardware Retry Limitation (1-15) 4

Apply Cancel

### Wireless Network Name (SSID)

Specify the SSID for the CPE to be connected. The default SSID is “Wireless” and the “SSID” characters are up to 32.

### Only Base Station

Specify the dedicated base station to avoid connecting another BS with same SSID.

### CPE Upload Limitation

Limiting the CPE’s upload capability, the default is 1687 and unlimited.

- **Basic Parameters and Advanced Parameters description can be found at page 12&13**

## Operating Mode – Peer-to-Peer

### Radio Settings

The setup has been applied.

---

Radio Frequency (RF)  Enable  Disable

---

Operating Mode Peer-to-Peer ▼

---

**Basic Parameters**

Modulation OFDM ▼

RF Bandwidth 20MHz ▼

Channel / Frequency 5260.000MHz ▼

TX Rate Range BPSK 1/2 ▼ - 64QAM 3/4 ▼

TX Power full ▼

Burst Mode  Enable  Disable

---

**Advanced Parameters**

Distance (0-100000) 10000 meter

RTS Threshold (0-2346) 2346

Fragmentation Length (256-2346) 2346

Software Retry Limitation (0-15) 3

Hardware Retry Limitation (1-15) 4

---

Apply Cancel

- Basic Parameters and Advanced Parameters description can be found at page 12&13.
- Peer-to-Peer Link settings are at page 16.

## Peer-to-Peer Links

**Peer-to-Peer Links**

**Wireless Point-to-Point Bridge**

Local MAC Address: 00:1c:24:40:03:48

Remote MAC Address: [ ] 1687 x64Kbps (Tx)

**Wireless Point to Multi-Point Bridge**

Local MAC Address: 00:1c:24:40:03:48

Remote MAC Address:  Manual  Automatic

Remote MAC Address 1: [ ] 1687 x64Kbps (Tx)

Remote MAC Address 2: [ ] 1687 x64Kbps (Tx)

Remote MAC Address 3: [ ] 1687 x64Kbps (Tx)

Remote MAC Address 4: [ ] 1687 x64Kbps (Tx)

Apply Cancel

- **Operation Mode set to Peer-to-Peer**
- **Selecting Wireless Point-to-Point Bridge or Wireless Point to Multi-Point Bridge**

### 1. **Wireless Point-to-Point Bridge**

- (1) Filling in the remote mac address at the field.
- (2) Apply to active it

### 2. **Wireless Point to Multi-Point Bridge**

#### **Remote MAC Address**

Select Manual for manually input the mac address or Automatic for accepting the remote connect automatically.

- (1) Filling in the remote mac address 1~4 at the field, it can support max. 4 bridge connections at the same time.
- (2) Apply to active it

## Security



**Security Settings for Base Station**

Network Authentication: Open System ▼

Data Encryption: None ▼

Isolate Connected CPEs:  Enable  Disable

Apply Cancel

Figure 9 Security Settings

### Network Authentication

There are Open System/ Shared Key/ WPA PSK/ WPA2 PSK to set, default is Open System.

#### Open System

It allows any device to join the network without performing any security check.

#### Shared Key

Data encryption and key are required for wireless authentication

**WPA PSK:** Wi-Fi Protected Access Pre-Shared Key (WPA-PSK) is a security mechanism used to authenticate and validate users on a wireless LAN (WLAN) or Wi-Fi connection. It is a variation of the WPA security protocol. The key should be 8-63 characters.

#### WPA2 PSK

As a new version of WPA, only all the clients support WPA2 PSK to be connected. Once selected, the data encryption can only be AES and the Pre-shared key is required.

### Data Encryption

If data encryption is enabled, the key is required and only sharing the same key with other wireless devices can the communication be established.

**None:** Available only when the authentication type is open system.

**64 bits WEP:** It is made up of 10 hexadecimal numbers.

**128 bits WEP:** It is made up of 26 hexadecimal numbers.

**152 bits WEP:** It is made up of 32 hexadecimal numbers.

**TKIP:** Temporal Key Integrity Protocol, which is a kind of dynamic encryption, is co-used with WPA-PSK, etc.

**AES:** Advanced Encryption Standard, it is usually co-used with WPA2-PSK.

### Isolate Connected CPEs

Enable to active “isolate connected CPEs”, or to disable it.

When disabled it, the CPEs could be connected and transmitted the packets each other. Default is enabled.

### Access Control

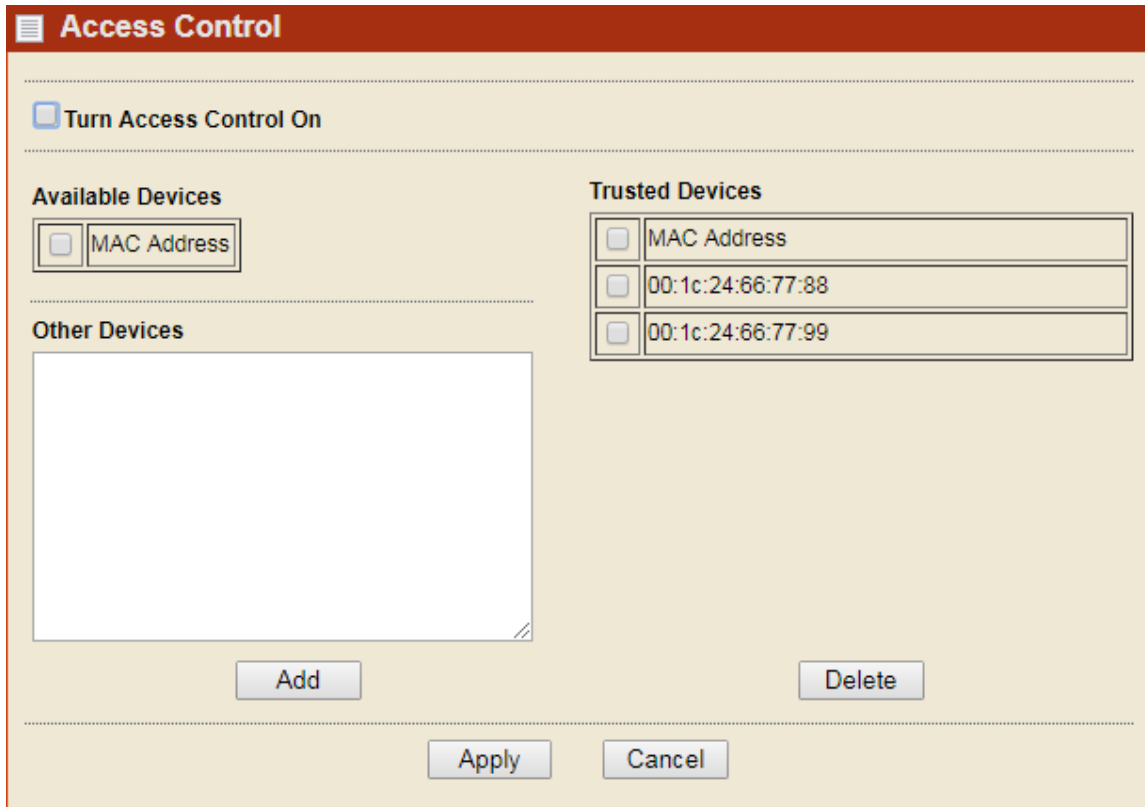


Figure 10 Security Settings

The optional Access Control window lets you permit the network to access privilege of the specified stations through the BS. This provides an additional layer of security.

Input the MAC address in the field of Other Devices, then to click Add button and Apply it next.

Those trusted devices MAC are listed. Turn Access Control on to enable the function.

## Status

In connection status, you can have those information which includes CPE MAC address, IP address, Modulation/Data rate, RSSI(dBm) and Status.

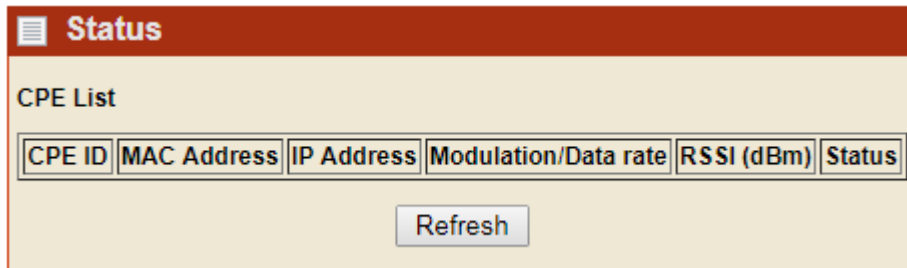


Figure 11 Status

## Throughput

Wireless Throughput shows graphs which continuously represents the current data traffic on the Wireless interface. The chart scale and throughput dimension (Bps, Kbps, Mbps) changes dynamically according to the throughput value. Throughput statistics is updated automatically.

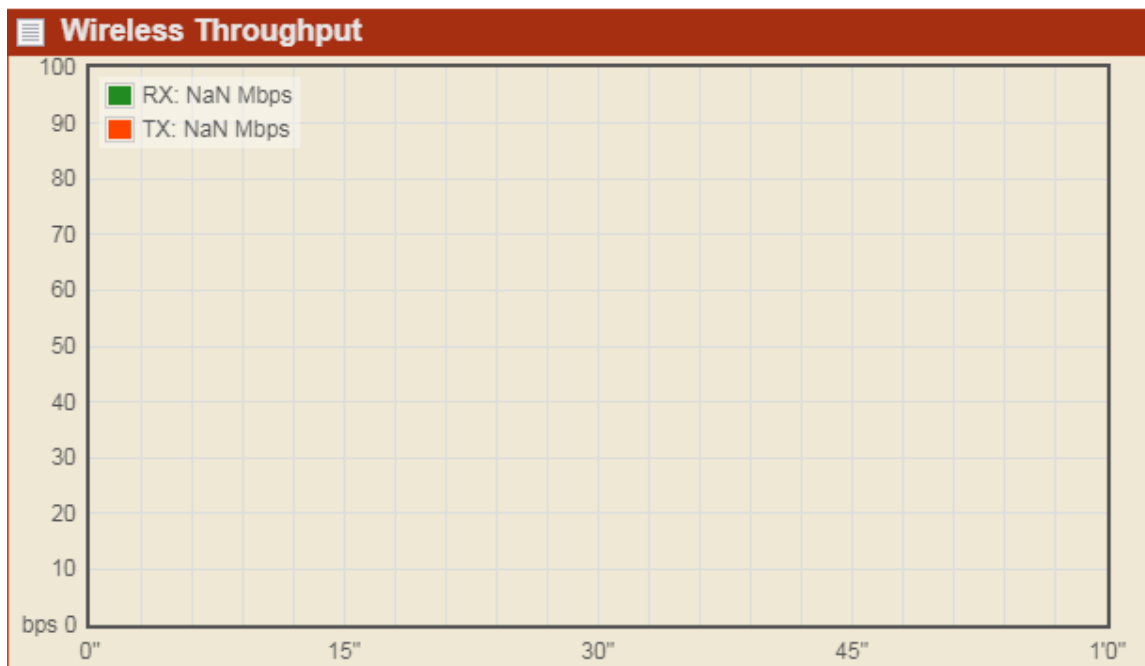
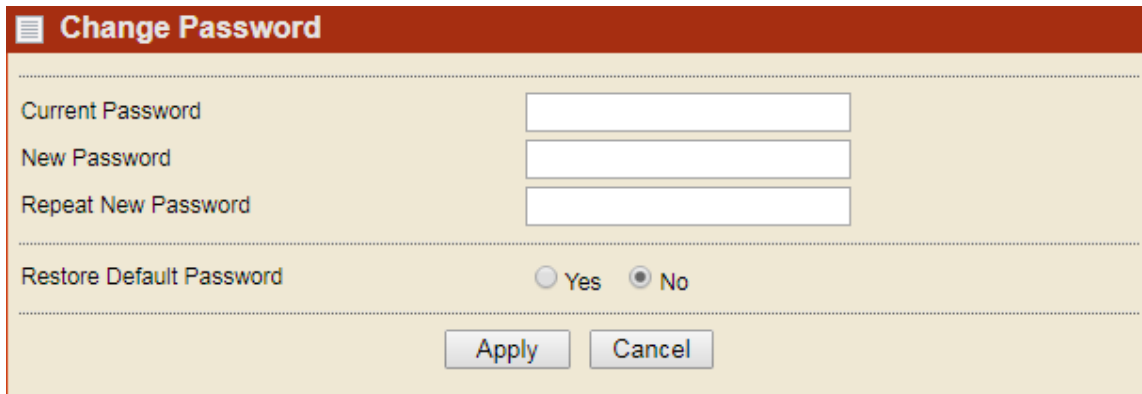


Figure 12 Wireless Throughput

## Chapter 5 Management

### Change Password



The screenshot shows a web interface titled "Change Password". It features three input fields for "Current Password", "New Password", and "Repeat New Password". Below these fields is a "Restore Default Password" section with radio buttons for "Yes" and "No", where "No" is selected. At the bottom are "Apply" and "Cancel" buttons.

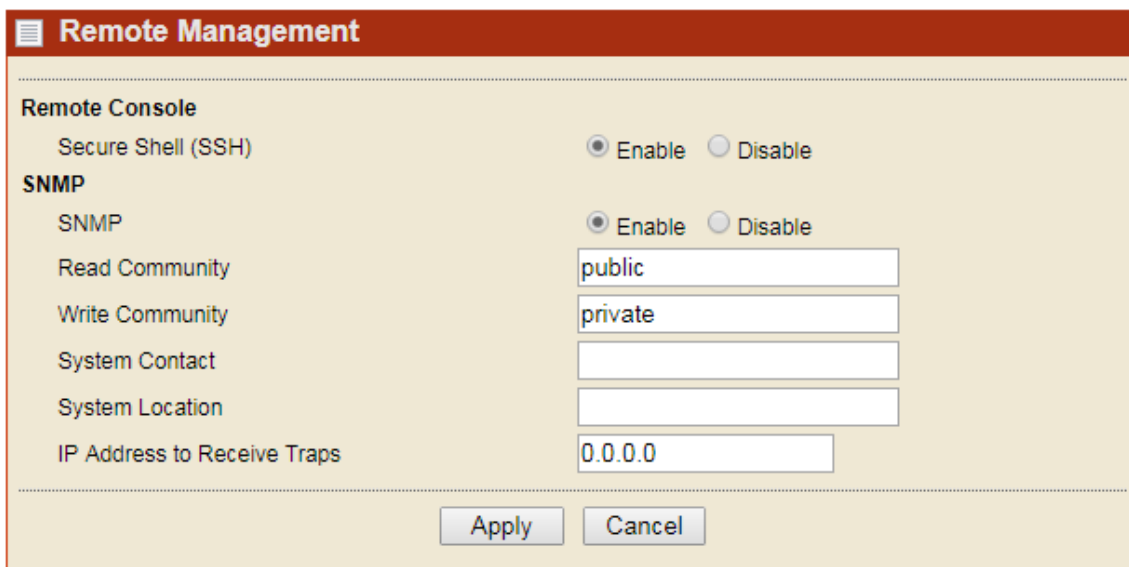
Figure 13 Change Password

You can use the Change Password page to change the Access Point administrator's password to access the Settings pages.

To change the password, Type the old password. The default password is “password”. Type a new password and type it again in the Repeat New Password box to confirm it.

Click Apply to have the password changed or click Cancel to keep the current password.

### Remote Management



The screenshot shows a web interface titled "Remote Management". It has two sections: "Remote Console" with a radio button for "Secure Shell (SSH)" set to "Enable"; and "SNMP" with a radio button set to "Enable". Below the SNMP section are input fields for "Read Community" (containing "public"), "Write Community" (containing "private"), "System Contact", "System Location", and "IP Address to Receive Traps" (containing "0.0.0.0"). "Apply" and "Cancel" buttons are at the bottom.

Figure 14 Remote Management

Bridge supports SNMP. If you use SNMP to control bridge. At first you should set SNMP settings Active SNMP, and control bridge by SNMP network system.

- Set Read Community password ; Default is public

- Set Write Community password ; Default is private
- Setting Trap Sever IP address

When bridge is under abnormal condition like bridge power failure or reset is usual. Administrator can easy control device by exception log in Trap Server.

## Upgrade Firmware

Via WEB interface to upgrade firmware :

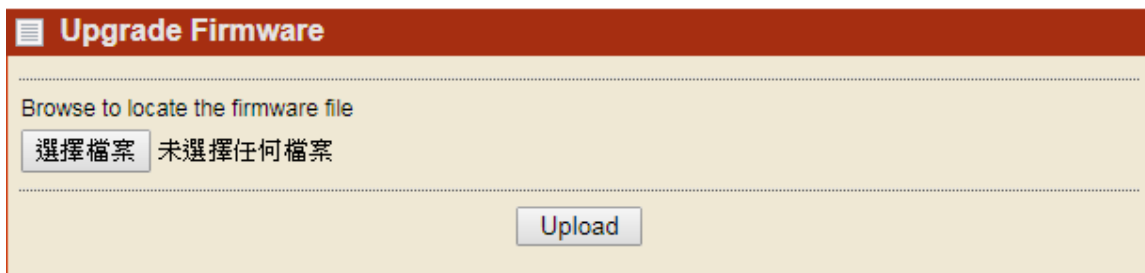


Figure 15 Upgrade Firmware

1. Open Upgrade Firmware page
2. Click browser button and select the firmware file in local hard disk.
3. Click Upload button.
4. After upgrade, login again and check the software version.

## Backup/Restore



Figure 16 Backup / Restore

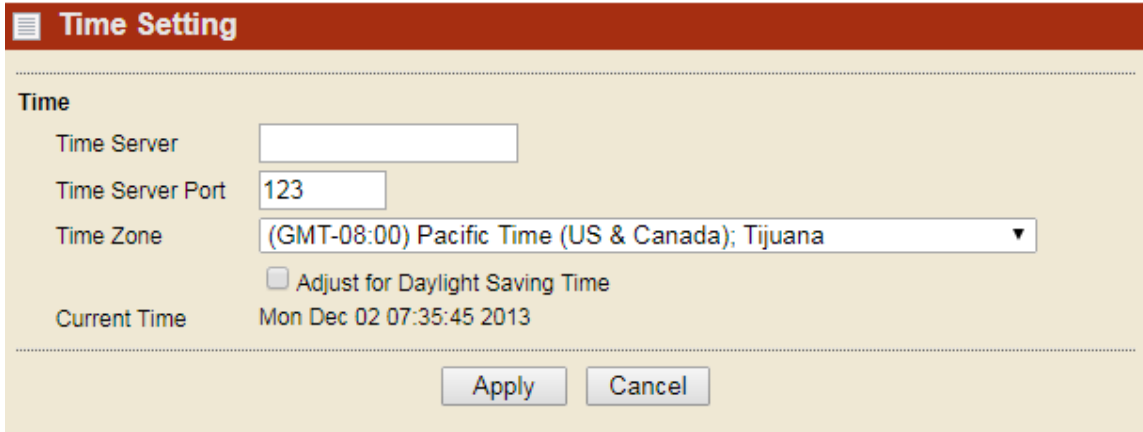
It would be better to backup settings of device after it work fine, so that you can recover settings quickly when something go wrong.

1. Open "Backup/Restore" page, click "**Backup**", it will pop up a dialog for input path and filename such as F:\device.cfg, and it will save "device.cfg" in the local disk after that.
2. Open "Backup/Restore" page, click "Browser", It will pop up a dialog to choice what file you want to restore, such as "F:\device.cfg", then click "**Retrieve**", the settings of the file will be restored back to device,

and it will active for the device after auto reboot.

3. Open “Backup/Restore” page, click “**Restore**”, It will pop up a dialog to do Restore factory default settings.  
After applying it, the all settings reset to default.

## Time Setting



**Time Setting**

**Time**

Time Server

Time Server Port

Time Zone

Adjust for Daylight Saving Time

Current Time Mon Dec 02 07:35:45 2013

Figure 17 Time Setting

### Time Server

Specify the time server’s IP

### Time Server Port

This field identifies the time server port like 123.

### Time Zone

Select the time zone location for your setting.

### Current Time

This field identifies the current time in your specific time zone.

## Event Log

Enable SysLog

Syslog Server IP Address: 0.0.0.0

Syslog Server Port Number: 514

Apply Cancel

**Event Log Window**

```
Mon Dec 02 07:36:10 2013 WLAN0: 00:1C:24:40:03:48 is ready in service.
Mon Dec 02 07:36:10 2013 WLAN0: 00:1C:24:40:03:48 stop service.
Mon Dec 02 07:33:25 2013 WLAN0: 00:1C:24:40:03:48 is ready in service.
Mon Dec 02 07:33:25 2013 WLAN0: 00:1C:24:40:03:48 stop service.
Mon Dec 02 07:33:19 2013 WLAN0: 00:1C:24:40:03:48 is ready in service.
Mon Dec 02 07:33:19 2013 WLAN0: 00:1C:24:40:03:48 stop service.
Mon Dec 02 07:33:19 2013 WLAN0: 00:1C:24:40:03:48 is ready in service.
```

Refresh Save As..

Figure 18 Event Log

Event log can show you the event of device, for example, connect, disconnect, reboot of Base station, or something change about settings. If you need long time observational notes, you can active Syslog. Enter Log Sever IP address, the port number configured in the SysLog server on your network. By default, it is 514

### SysLog Server IP address

The access point will send all the SysLog to the specified IP address if SysLog option is enabled.

Default: 0.0.0.0

### Port

The port number was configured in the SysLog server on your network. By default, it is 514

## Reboot

When you need to reboot the device, you can click the “yes” button and the click “Apply” it will reboot.

Yes  No

Apply Cancel

Figure 19 Reboot