Formosa Wireless Systems®

MIMO *WiTDM*® Series

KW50-O8400-I

User's Manual

2017/05/01 v1

Copyright

About this manual

The purpose to use this manual is for install the wireless Bridge. 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:

- This indicates an important Note.

Caution:

- This indicates a warning or caution

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

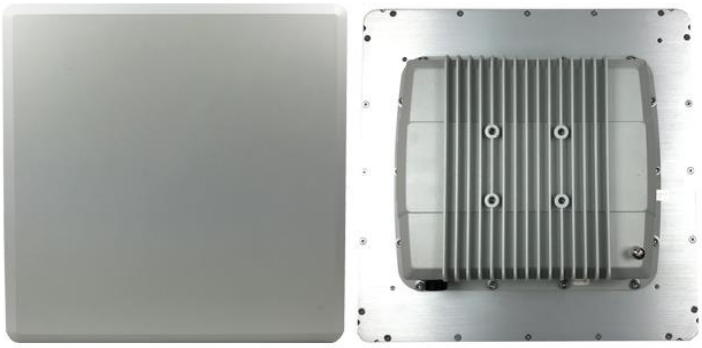
Index

Chapter 1 Introduction

Introduction

Thank you for choosing the Formosa's KW50-O8400-I Wireless Outdoor MIMO WiTDM Bridge. It is a PoE power supply, waterproof, and dust-proof wireless bridge that is specially designed for connecting among multiple network location. The KW50-O8400-I work on 5GHz, and it based on powerful TDMA technology that provides higher channel bandwidth for long distance connect.

Appearance of Product



KW50-O8400-I

- ## Features and Benefits

- Support Power over Ethernet (PoE)
- IP68 class of enclosure
- Support TDMA mechanism, to ensure quality for multi-media application
- Easy to install and friendly to user, just plug and play.
- Provides Web-based configuration utility.

Chapter 2 Hardware Installation

System Requirement

Installation of MIMO WiTDM® outdoor unit of KW50-O8400-I system requirement:

Two PCs with automatic speed control NIC support the transfer rate of 10/100/1000 Mbps 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

- KW50-O8400-I x 1
- Injector-GT2 (48V, 0.65A) x 1
- Mounting Kit x 1
- User's Manual CD x1

Hardware Installation

The following steps will help you while installing MIMO WiTDM®.

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 (3 LEDs)
RST		Push 5 seconds then release to reset device to default

LED Definition

Chapter 3 System Setup

Factory Default Settings

We'll elaborate the KW50-O8400-I factory default settings. You can re-acquire these parameters by default. If necessary, please refer to the "Restore Factory Default Settings".

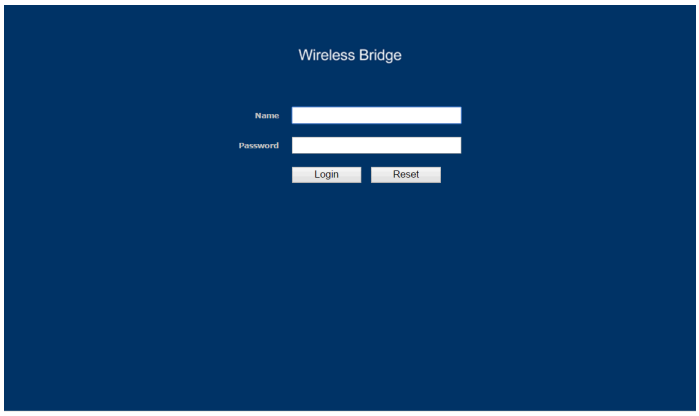
Item	Factory Default
Login Information	
User Name	admin
Password	password
Basic Settings	
Device Name	DEVICExxxxxx (xxxxxx Represent the last 6 digitals of the MAC address)
Ethernet Data Rate	Automatic
Spanning Tree Protocol	Enable
VLAN (802.1Q)	Disable
IP Settings	IP Type：Manual
	IP Address：192.168.1.1
	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: None
	Time Sever Port: 123
	Time Zone: (GMT-08:00)Pacific Time(US & Canada);Tijuana
Wireless Setup	
Radio Frequency (RF)	Enable
Operation Mode	Bridge (Point-to-Point) / CPE
Network ID	Wireless
RF Bandwidth	20MHz
Channel / Frequency	5060 MHz
Data Rate	SS BPSK 1/2 – SS 64QAM 5/6 , SS BPSK 1/2 – DS 64QAM 5/6
Distance	1Km
Output Power	Full

Default Settings

Using the Web Management

The KW50-O8400-I 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：



Login Interface

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

Caution：

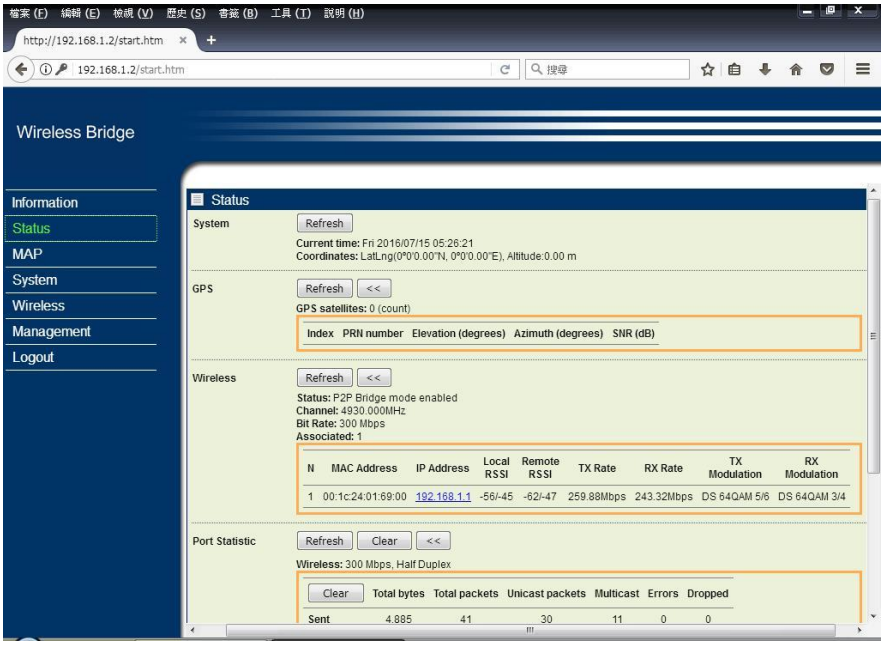
- IP address of your PC must be the same subnet of device

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

Device Information

Status

Select Status, you will get the information as below,



Status

System: This field identifies the current time and Coordinates.

GPS: GPS Satellites Information (Only for GPS Model)

Wireless:

MAC Address: MAC of Remote MIMO WiTDM Bridge.

IP Address: IP of Remote MIMO WiTDM Bridge.

Local RSSI: RSSI of Local Bridge.

Remote RSSI: RSSI of Remote Bridge.

Tx/Rx Rate: Current Data Rate of Tx/Rx.

Tx/Rx Modulation: Current Modulation of Tx/Rx.

How to Setup MIMO WiTDM Bridge

Get Position, Longitude and Latitude

Get Direction and Azimuth

Signal Status, In Status page, it can show remote bridge Signal Strength for local bridge (Local RSSI) and local bridge Signal Strength for remote bridge (Remote RSSI). We can decide the best direction of antenna from following steps:

1. We check the Local RSSI only in one side. (We call it local side.)
2. Fix remote side antenna, and adjust local side antenna. In local side, check the “Local RSSI” first, to find a best Local RSSI and then fix the local antenna.

3. Adjust the Remote antenna, to find the Best Remote RSSI, and then fix the remote antenna.
4. If "Local RSSI" is changed, and worse than before, adjust local antenna again to get a best one and fix local antenna.
5. If "Remote RSSI" is changed and worse, adjust remote antenna again.
6. Follow the same ways to get a better Local RSSI and Remote RSSI value. And Fix both side antennas.

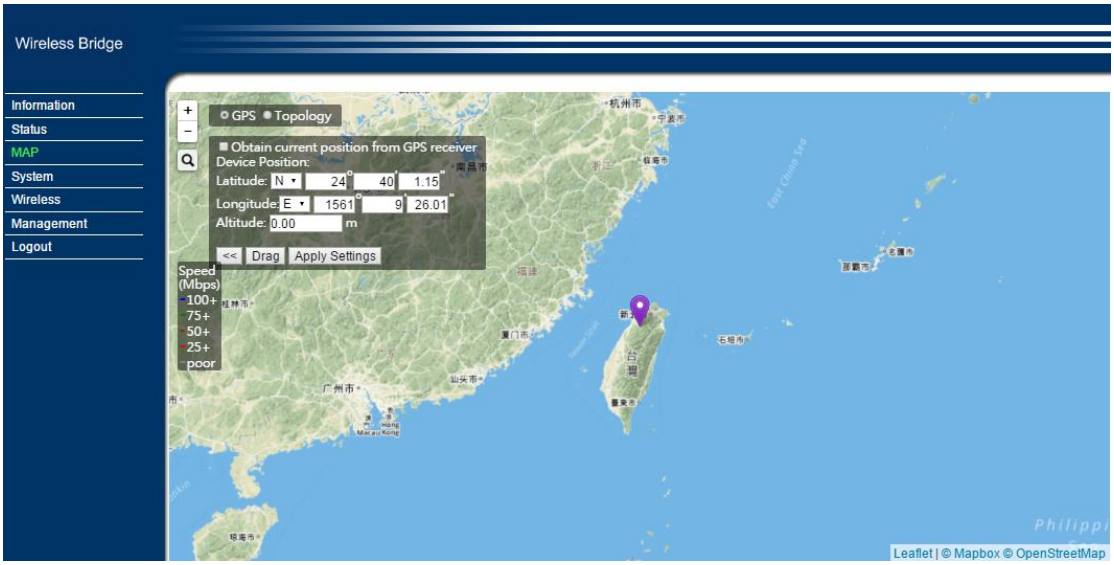
Port Statistic:

Display Wireless and Ethernet statistics of packets including transmitted and received packets, Unicast, Broadcast, Multicast and total Packets. Click "Refresh" can get instant information.

MAP

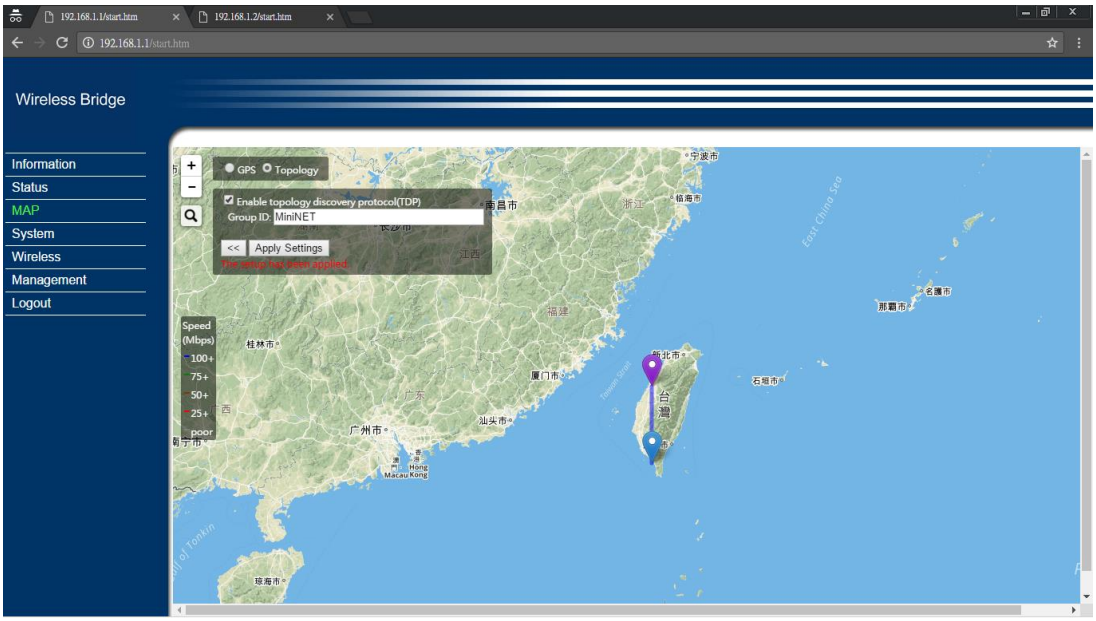
Global Positioning System, GPS (Only for GPS Model)

Select GPS, Can obtain current position from GPS receiver.

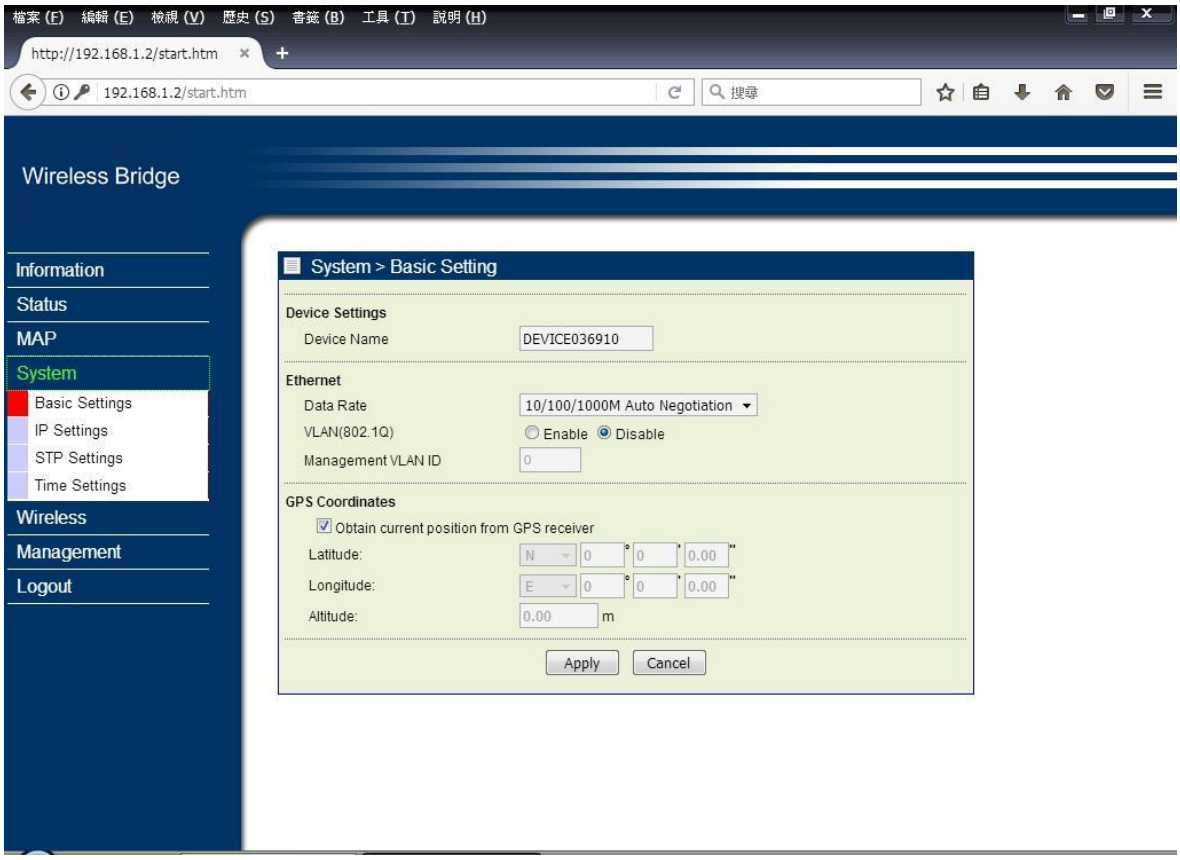


Topology

Select Topology, Can enable topology discovery protocol to establish the structure of connections.



System



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 DEVICE0000FF, you can enter “DEVICE0000FF” in the IE, then click “ENTER” and WEB page; or use “ping” command to check settings is active or not, such as ping DEVEICE0000FF.

Ethernet Data Rate

Specify the transmission rate of data, default is Automatic.

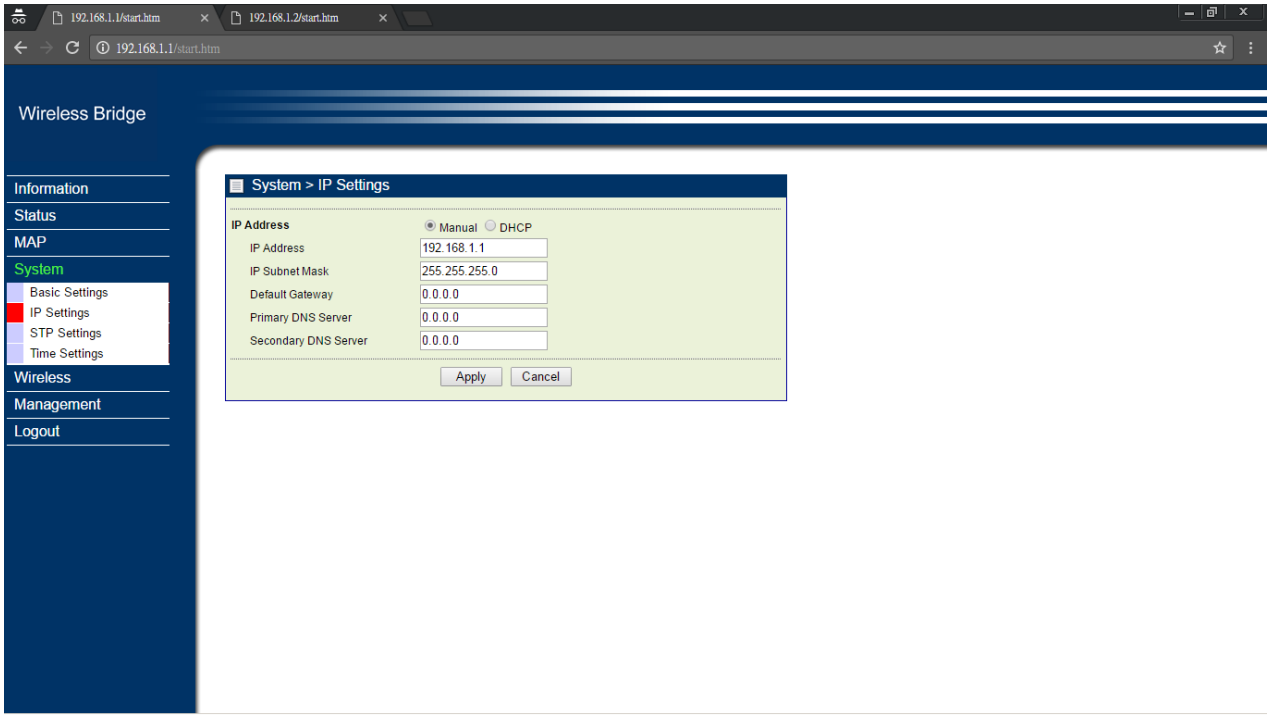
Automatic 10/100/1000Mbps / T-base10Mbps / T-Base100Mbps

VLAN

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

GPS Coordinates (Only for GPS Model)

Obtain current position from GPS receiver.



IP Settings

IP Address

This IP in your network must be unique ,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

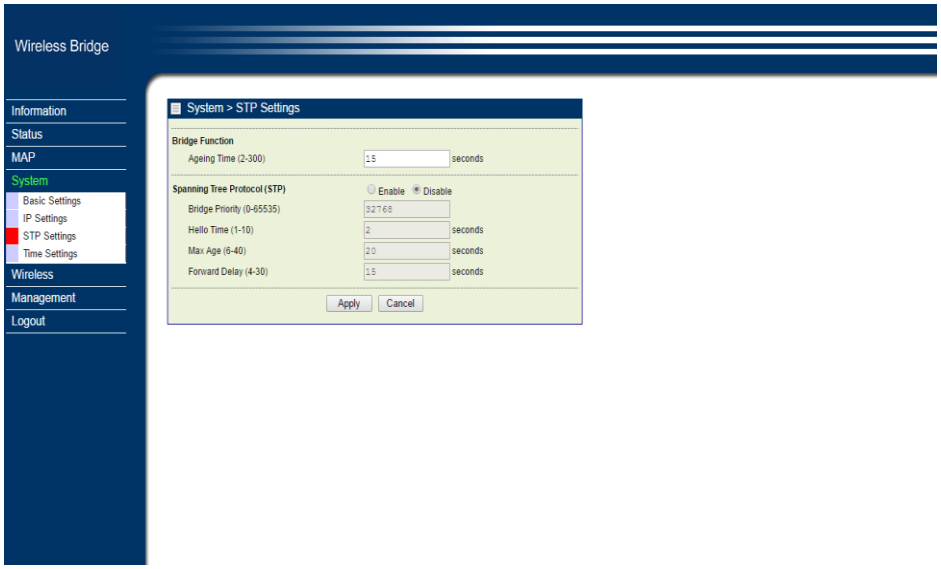
First choice of domain name server

Secondary DNS Sever

Second choice of domain name server

STP Settings

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



STP Settings

Bridge priority : 0 – 65535

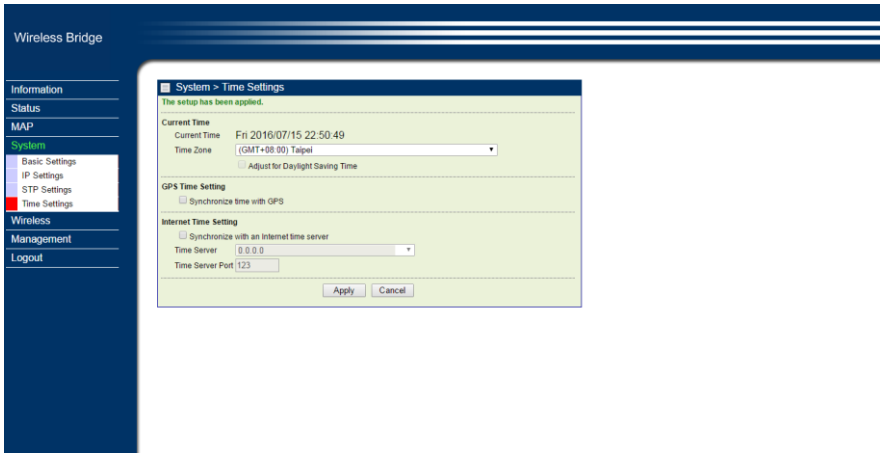
Hello Time : 0 – 10 seconds

Max Age : 6 – 40 seconds

Forward Delay : 4 – 30 seconds

Wireless Node Aging : 2– 300 seconds

Time Settings



Time Settings

Current Time

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

Time Zone

Select the time zone location for your setting.

GPS Time Setting (Only for GPS Model)

Synchronize time with GPS

Internet Time Setting

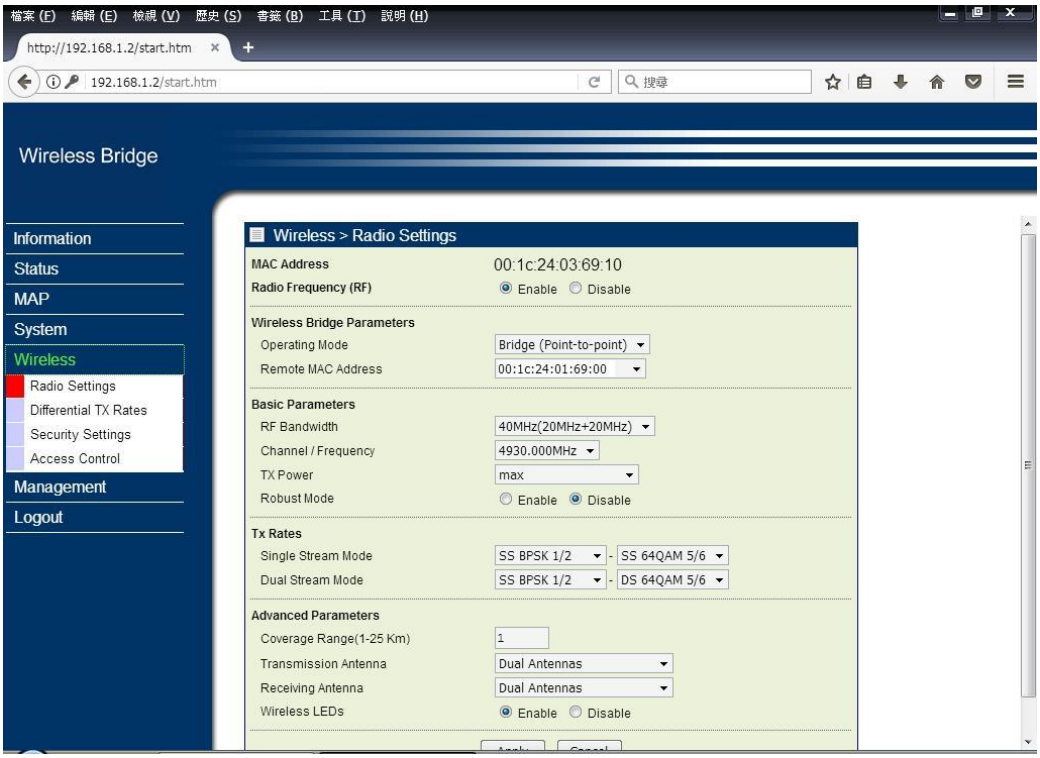
Synchronize time with an Internet Time Server

Time Server Port

This field identifies the time server port like 123.

Chapter 4 Wireless Settings

Basic Wireless Settings



Radio Settings

Radio Frequency (RF)

RF-Wireless, default is enable.

Operating Mode

Bridge Point-to-Point / CPE

Remote MAC Address

Input the MAC address of Remote Bridge.

RF Bandwidth

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

Channel / Frequency

Using different frequency

TX Power

Setting power of TX, default is max.

TX Rate Range

Normally choice transmission rate as “Best”, system will adapt best rate for real environment.

Including

Single Stream Model, SS 64QAM 5/6, SS 64QAM 3/4, SS 64QAM 2/3, SS 16QAM 3/4, SS 16QAM 1/2, SS QPSK 3/4, SS QPSK 1/2, SS BPSK 1/2

Dual Stream Model, DS 64QAM 5/6, DS 64QAM 3/4, DS 64QAM 2/3, DS 16QAM 3/4, DS 16QAM 1/2, DS QPSK 3/4, DS QPSK 1/2, DS BPSK 1/2

Advanced Parameters

Coverage Range: Based on Channel Bandwidth, default is 1Km

40MHz, 1-25Km

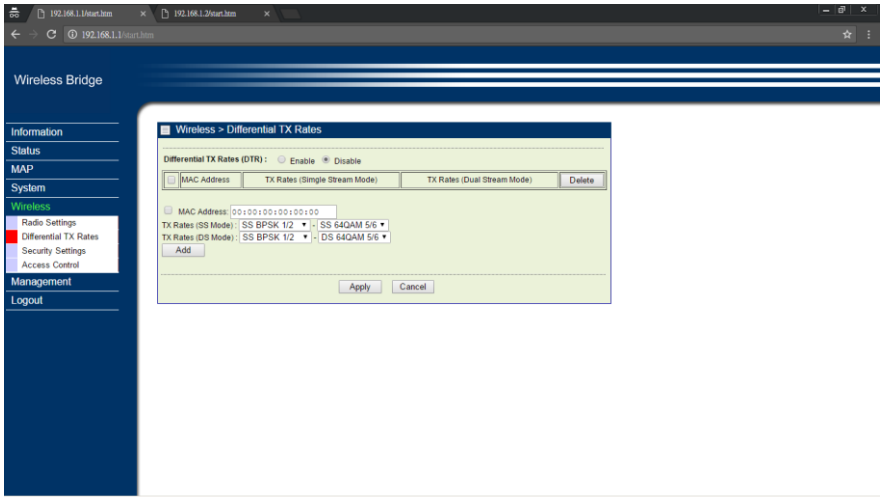
20MHz, 1-55Km

10MHz, 1-110Km

5MHz, 1-230Km

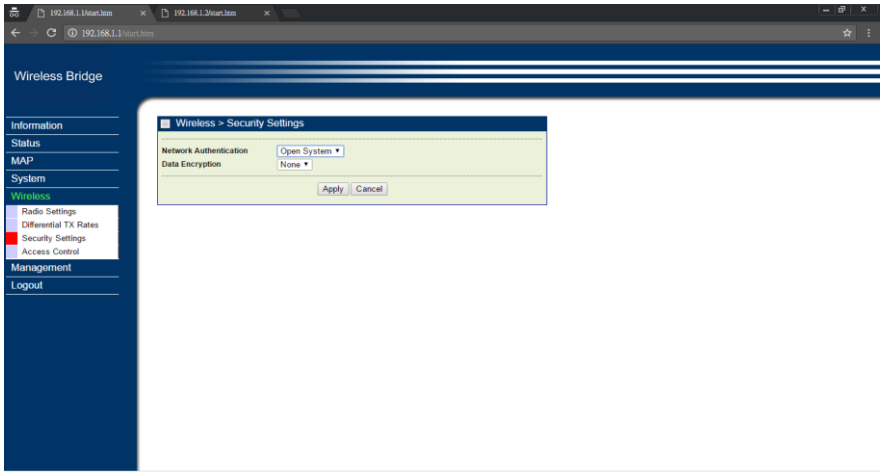
Differential Tx Rates

Setup different Tx modulation for different Clients.



Differential Tx Rates

Security Settings



Security Settings

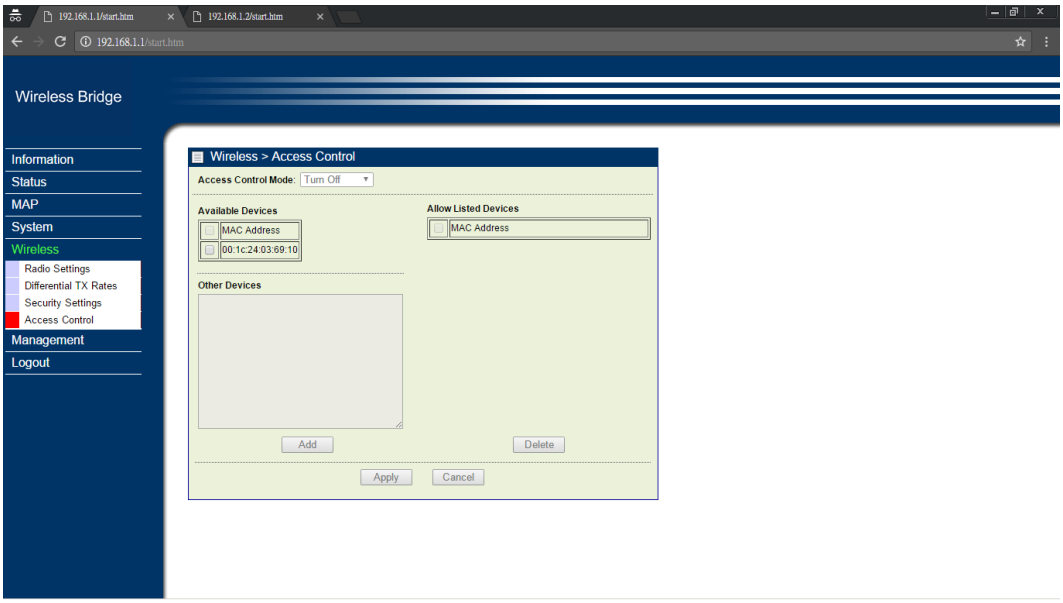
Network Authentication

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

Data Encryption

None/ AES.

Access Control



Access Control

Access Control Mode

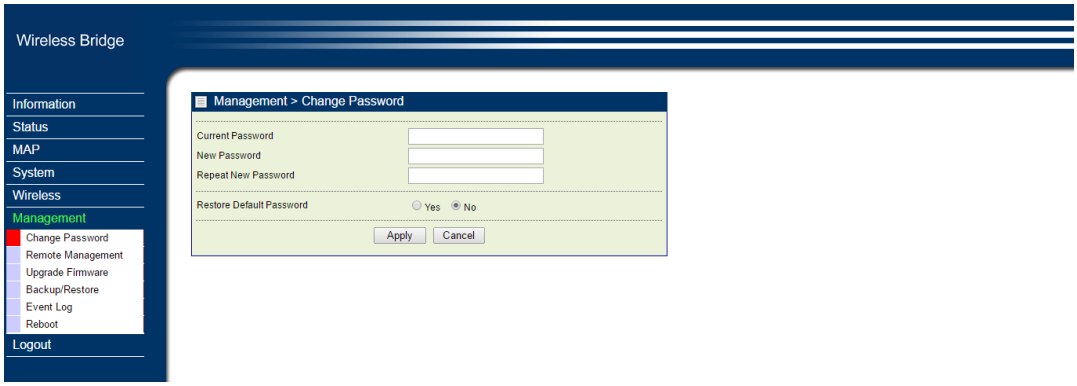
Turn off/Allow/Deny

Select “Allow”, the listing clients are allowed to access the base station. Other clients are blocked.

Select “Deny”, the listing clients are blocked to access the base station. Other clients are allowed.

Chapter 5 Management

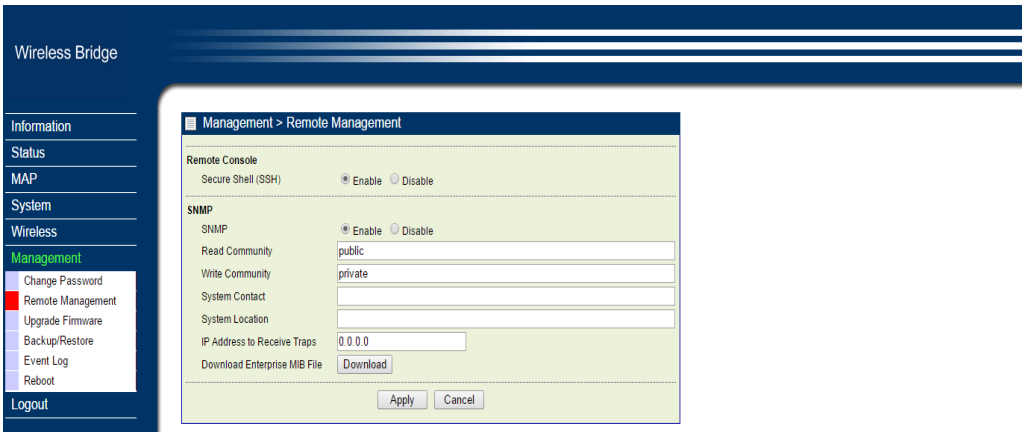
Change Password



Change Password

You can use the Change Password page to change the Bridge administrator's password for accessing the Settings pages.
To change the password, Type the old password. The default password for the Bridge 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



Remote Management

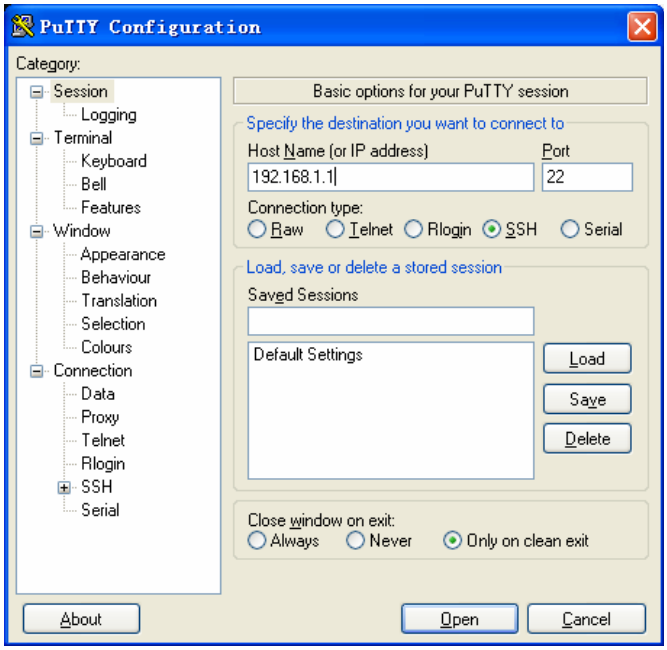
Bridge supports SNMP. If you use SNMP to control bridge. At first you should set SNMP settings

The KW50-O8400-I supports CLI too , which could be accessed by Secure Shell (SSH). It is recommended PuTTY be used to login.

Once the program is downloaded, open up by double-clicking. Note that before using PuTTY, be sure you are able to connect to the MIMO WiTDM bridge.

1. Active Secure Shell(SSH). By SSH instruction setting the bridge.

- Double-clicking Putty.
- SSH. Enter IP Address of devices, check Protocol as SSH type



PuTTY Configuration

- From “Connection” in the lift menu bar, click “SSH”, select”2”as “Preferred SSH protocol version”, make “3DES” the top position in “Encryption cipher selection policy”.

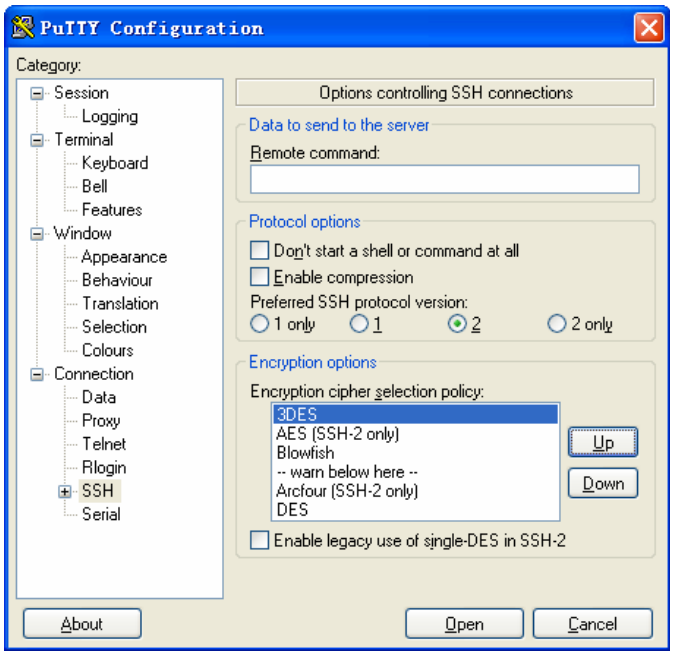
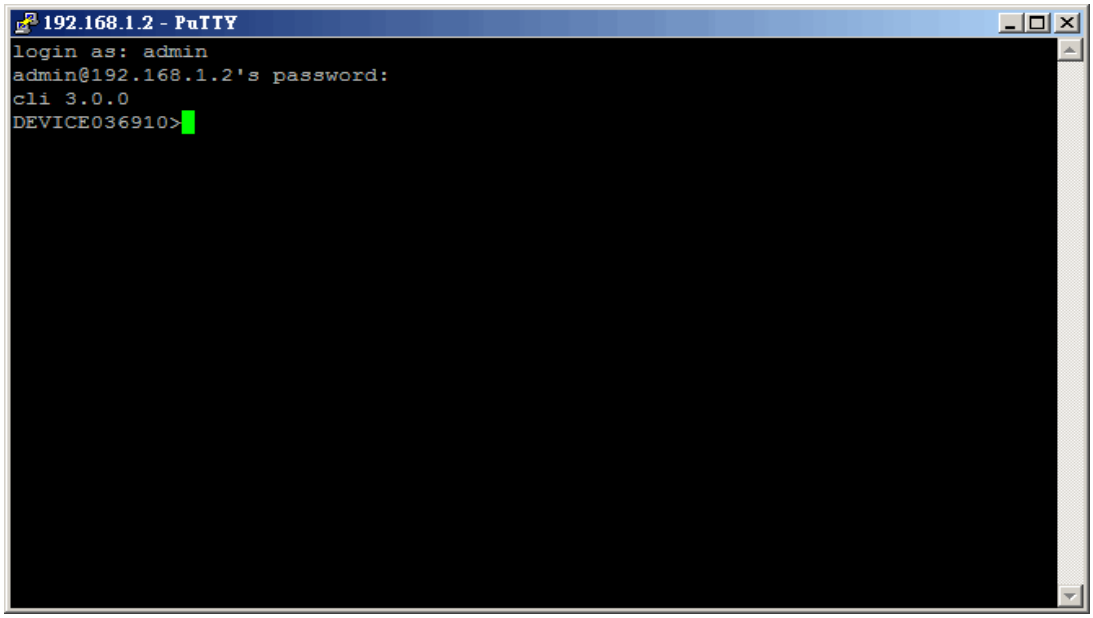


Figure 16 **PuTTY Configuration 2**

Click “**Open**”, a window as below will popup:



SSH

2.Active SNMP, and control bridge by SNMP network system.

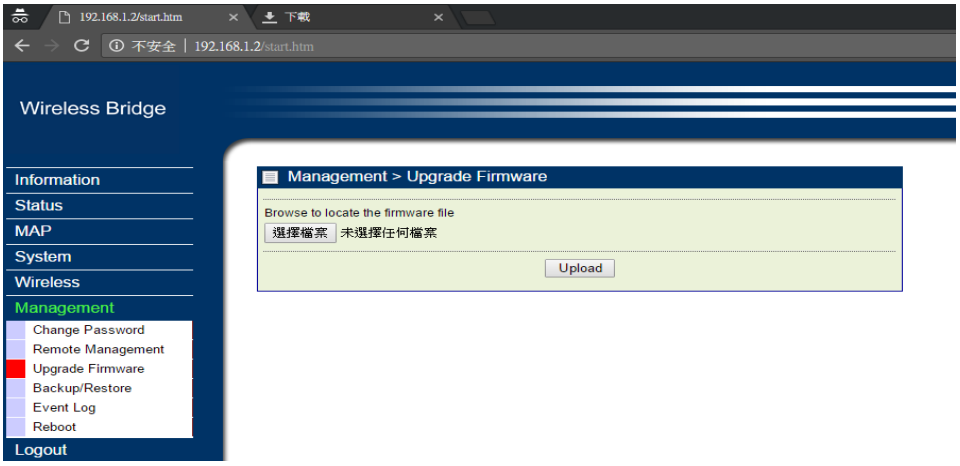
- Set Read Community password；Default is public
- Set Write Community password；Default is private
- Setting Trap Sever IP address

When bridge under abnormal condition, like bridge power failure or reset is usual.

Administrator can easy control device by exception log in Trap Server.

Upgrade Firmware

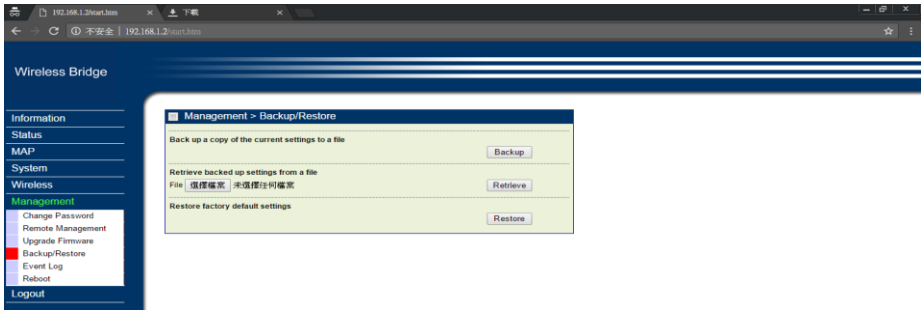
Via WEB interface to upgrade firmware：



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

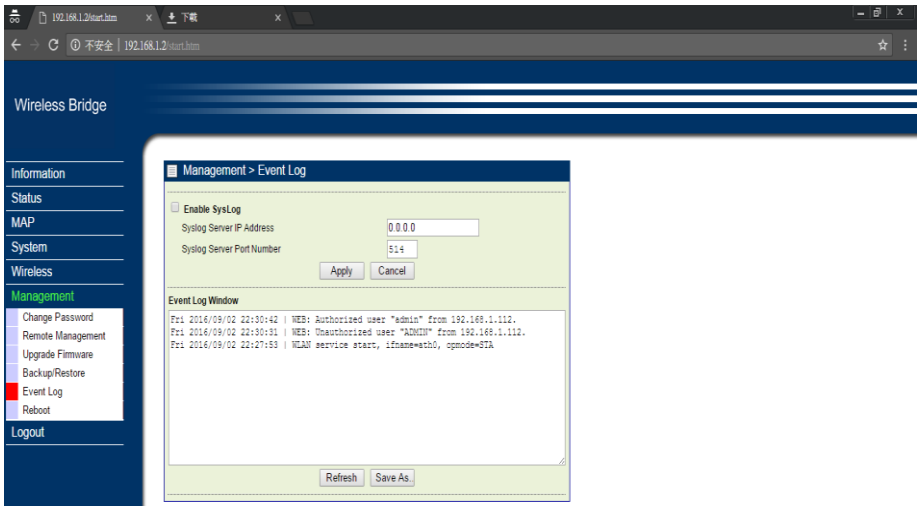


Backup / Restore

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.

Event Log



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 is514

SysLog Server IP address

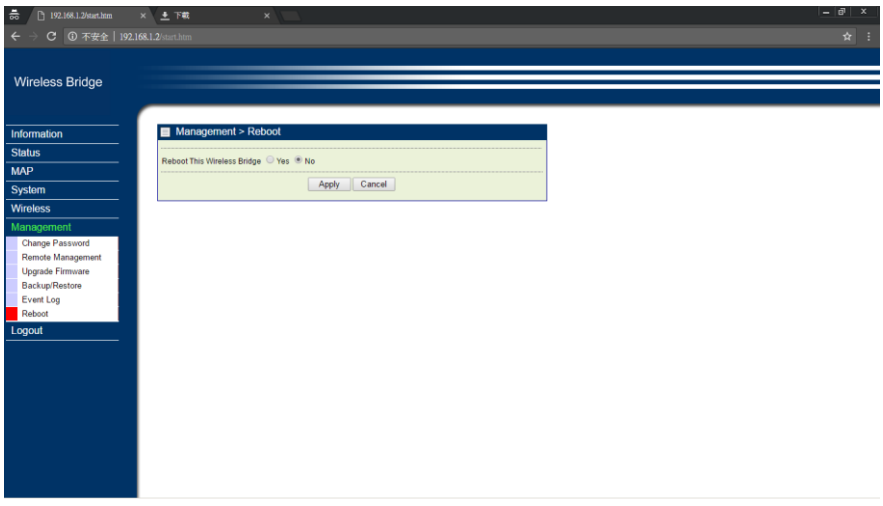
The Bridge will send all the SysLog to the specified IP address if SysLog option is enabled. Default: 0.0.0.0

Port

The port number configured in the SysLog server on your network. By default, it is514

Reboot

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



Reboot

Chapter 6 Troubleshooting

FAQ

Q1：How to know the MAC address of the Bridge?

• The MAC address is written in a label which is in the bottom of Bridge.

• From the General page of WEB configuration, you also can get the MAC address of the Bridge.

Q2：Why two Bridges can not build connection after setting?

1. Check “Operating Mode”, both of bridges are Bridge.
2. Check “Channel / Frequency” whether is same.
3. Check “Date Encryption” and “Key” whether is same.

Q3：How to adjust output power?

In the Wireless Settings page, you can do it.

Q4：The wireless becomes unstable such as ping timed out and lose pack after a period of well work?

This situation may the wireless network is disturbed by something, what you can so is following steps:

1. Check whether every joint point of network is well (such as Ethernet port, antenna connection.)
2. Change the channel if the Link Test value is not high, excluding other wireless equipment disturb the Bridge.
3. Restart the Bridge.
4. Default the Bridge and restore last settings.
5. Check the wireless port and Ethernet port environment and virus exist or not.
6. Please call the sales if can not solve problem after all.

Q5：Why can not open WEB page of remote wireless device in local network?

- Because this kind of settings will slow the response of remote AP WEB Server, just waiting for several minutes or restarting remote wireless bridge is a way to solve problem. We suggest you set the Bridge in local wired Ethernet network.

Service Support

You can download the latest firmware version from web site if you need. If you have any questions, please contact us.

Website：http://www.tw-wireless.com/

Support：service@tw-wireless.com