GPL-1200WAC

G.hn+11ac Wi-Fi Powerline Adapter

User Manual

Preface

This manual provides information related to the installation and operation of this device. The individual reading this manual is presumed to have a basic understanding of telecommunications terminology and concepts.

If you find the product to be inoperable or malfunctioning, please contact technical support for immediate service by email at support@nexuslinkusa.com

For product update, new product release, manual revision, or software upgrades, please visit our website at https://www.nexuslinkusa.com

Important Safety Instructions

In order to keep the safety of users and your properties, please follow these safety instructions:

1. This power line access point is designed for indoor use only; DO NOT place this power line access point outdoor.

2. DO NOT put this power line access point at or near hot or humid places, like a kitchen or bathroom. Also, do not leave this power line access point in the car under direct sunlight.

3. DO NOT pull any connected cable with force; disconnect it from the power line access point first.

4. If you want to place this power line access point at high places, please make sure the power line access point is firmly secured. Falling from high places would damage the power line access point and its accessories, and warranty will be void.

5. There's no user-serviceable part inside the access point. If you found that the power line access point is not working properly, please contact your dealer of purchase and ask for help. DO NOT disassemble the access point, warranty will be void.

6. If the power line access point falls into water when it's powered, DO NOT use your hand to pick it up. Switch the electrical power off before you do anything, or contact an experienced electrical technician for help.

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NOTE: This document is subject to change without notice.

Protect Our Environment

This symbol indicates that when the equipment has reached the end Of its useful life, it must be taken to a recycling centre and processed Separate from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this device can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local government.

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Chapter 1 Introduction

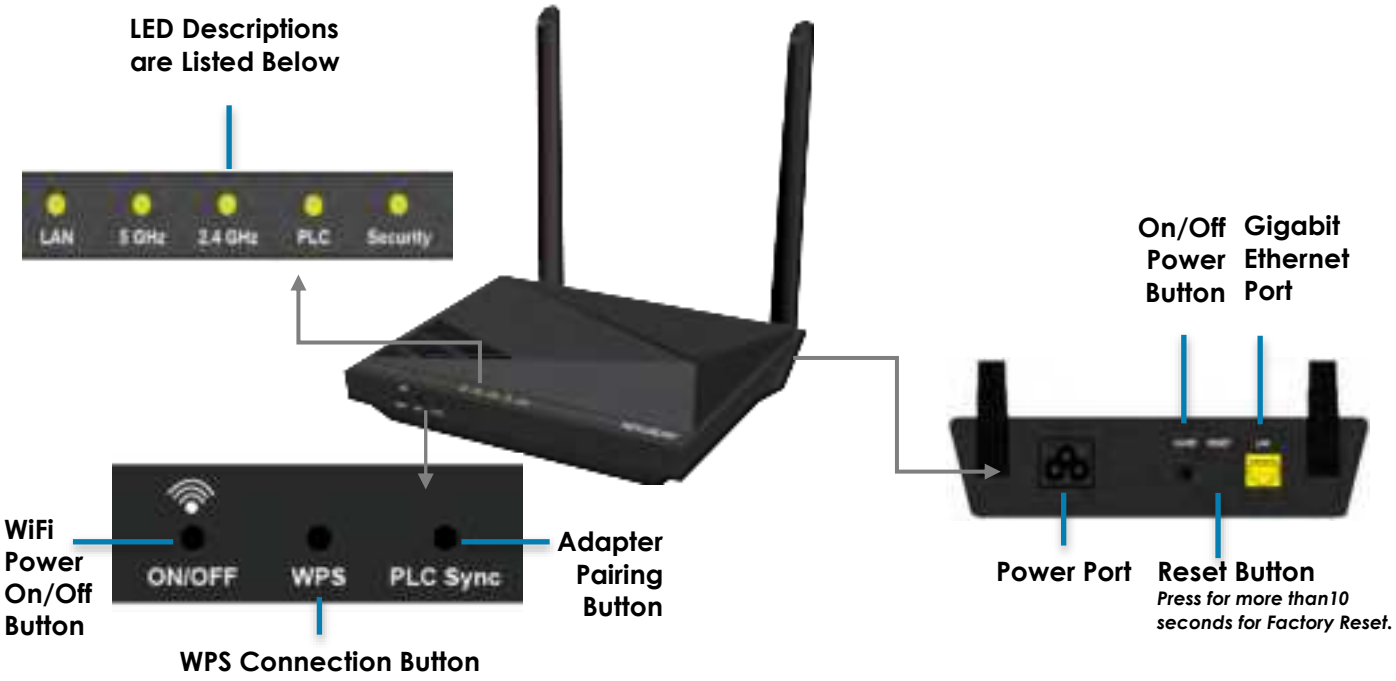
NexusLink's GPL-1200WAC is designed to meet the growing demand for perfect connectivity and coverage across multiple devices connected concurrently throughout the home. The G.hn Powerline Wi-Fi extender allows users to take Wi-Fi with them anywhere throughout the home or backyard and enjoy a seamless wireless experience.

1.1 System Requirements

- Computer or network devices with wired or wireless network interface card
- Any connected devices must feature a network port
- Web browser (Microsoft Internet Explorer 4.0 or above, Google Chrome web browser, Opera web browser, or Safari web browser)
- An available AC power socket (100 – 240 V, 50/60Hz)

Chapter 2 How to Install GPL-1200WAC

(A) Understanding the AC1200 G.hn Powerline Adapter



How to Create a Basic (2 unit) G.hn Powerline Network – Recommended Setup

Purpose	Recommended Primary Adapter	Second Adapter
• **Connecting a single dedicated Internet Device**	GPL-1200**	GPL-1200**
• **Bringing wireless to a remote location**	GPL-1200**	GPL-1200WAC
• **Connecting a PoE Enabled Device**	GPL-1200**	GPL-1200PoE

A G.hn Powerline Network can consist of a minimum of 2 and up to 16 devices total.

**The GPL-1200 can be replaced by another G.hn Powerline Adapter.

NOTE: The following steps show how to create or add onto a G.hn Powerline Network using a GPL-1200WAC.

(A minimum of two G.hn Powerline Adapters are required to create a proper connection.)

→ If this is the first time you are setting up a G.hn Powerline Network please continue to Section B.

→ If you already have an established G.hn Powerline Network and are adding an additional adapter, please skip to Section C.

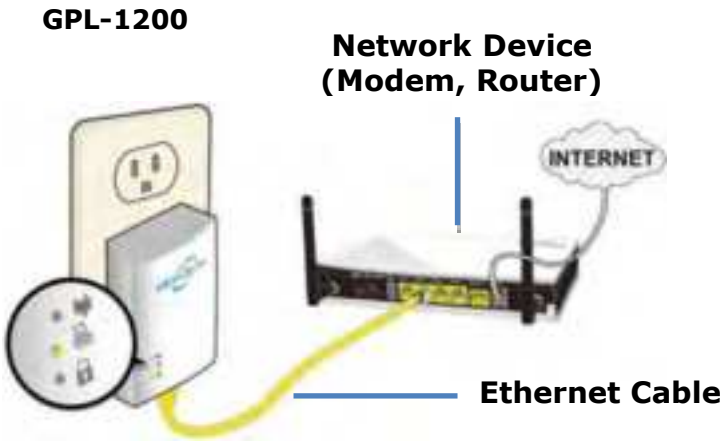
(B) Creating a New G.hn Network

1. Plug a GPL-1200* unit into the power outlet closest to the Network Device (Modem, Router). Do not plug the adapter into a power strip or surge protector, as network performance could degrade significantly.

***NOTE:** It is suggested that you use the GPL-1200 as the primary connection to the Network Device, however the GPL-1200 can be replaced by another G.hn Powerline Adapter.

GPL-1200

2. Connect the GPL-1200 to a Network Device with an Ethernet (RJ-45) cable. (Wait 10 seconds for the **Network Indicator** to light up **GREEN**, which indicates a good connection. A flashing **GREEN** light indicates that the device has a good connection and is also sending data).



(C) Adding to an Existing G.hn Network

3. Plug the GPL-1200WAC into the power outlet closest to the location you want to add wireless and/or near an Internet-Enabled Device you would like to directly connect to the adapter. The **PLC Indicator** PLC should light up.

4. Optionally, to add an Internet-Enabled Device, directly connect the GPL-1200WAC to the Internet-Enabled Device with an Ethernet cable. (The **Network Indicator** on the GPL-1200 and the **LAN Indicator** LAN of the GPL-1200WAC should both be **GREEN** representing a strong connection).

(D) Security Setup

NOTE: G.hn Adapters will automatically "pair" in "non-secure" mode. It is highly recommended to follow Step 5 to create a secure connection.

5. Press the "Config" Button of a GPL-1200 in the existing network for 2 seconds. You will see the **Security Indicator** start flashing **GREEN**. Within two minutes, press the "PLC Sync" Button on the GPL-1200WAC for 2 seconds until you see the **Security Indicator** Security start flashing **GREEN**. (When the adapters are successfully paired and secured with a strong connection the GPL-1200's **Connection Indicator** and **Security Indicator** will be solid **GREEN** and the GPL-1200WAC's **PLC Indicator** PLC and **Security Indicator** Security will be solid **GREEN**.)

6. Repeat Steps 3 to 5 to add additional adapters/devices.

(E) Connecting Your WiFi Devices to the New GPL-1200WAC Access Point

7. For some devices (E.g. laptops, cameras, set-top-boxes, etc.) wireless connectivity can be done via WPS (Wireless Protected Setup). WPS allows you to simply connect devices to the new Access Point without entering a username/password manually. To do this, please follow the instructions in Section F below.

8. You have created a new Internet Access Point and it is now active and ready to use! To connect your WiFi devices to your new GPL-1200WAC WiFi Access Point, select the GPL-1200WAC Access Point using your WiFi device's standard network list. The Network Name (SSID) and Password (WiFi Key) can be found on the bottom of the GPL-1200WAC.

9. Go to Section G.

(F) Setup of Wireless Devices via WPS (WiFi Protected Setup)

10. Press and hold the "WPS" Button for more than 2 seconds on the GPL-1200WAC to activate its WPS. The GPL-1200WAC's **WiFi Indicators** should flash to indicate a WPS connection is in progress.

11. Within two minutes, press the "WPS" Button (often the WPS/Reset Button) on your remote Internet-Enabled Devices to activate WPS.

12. The devices will establish a secure connection.

(G) You Have Successfully Installed Your G.hn Powerline Adapter with WiFi!

(H) Troubleshooting

The following information should help you diagnose basic setup or installation problems.

Security	**SECURITY**
LAN	**LAN**
5 GHz 2.4 GHz	**WiFi**
PLC	**PLC**

1) SECURITY Indicator is OFF: The **SECURITY Indicator** is off when the Powerline Adapter is paired in "non-secure" mode to the G.hn Network. It is optional to pair the device in "secure mode." To pair the device in "secure mode," please refer to Section D, Step 5.

2) LAN Indicator is OFF: The **LAN Indicator** is off when the Powerline Adapter does not have a device directly connected to its Ethernet Port. If there is a device connected and if the **LAN Indicator** is off, please check that the Ethernet port of the Powerline Adapter is connected firmly to the Ethernet port of the device. You can also check the condition of the Ethernet cable by using another Ethernet cable to test if the indicator turns on.

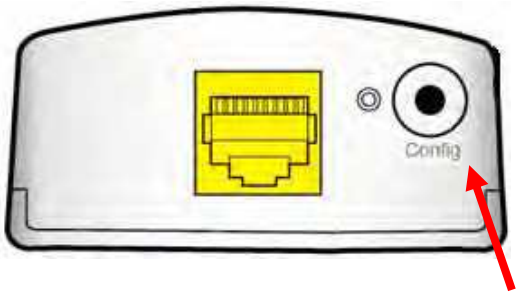
3) WiFi Indicators are OFF: The **WiFi Indicators** are off when the WiFi is not enabled. You can turn on both indicators, (i.e. enable WiFi) by pressing the "WiFi" Button on the front of the device. You can also login to the GPL-1200WAC Web Interface and enable WiFi (5GHz only). Please refer to section 6.5 of the User Manual for additional details.

4) PLC Indicator is OFF: The **PLC Indicator** is off when the Powerline Adapter is not paired to the G.hn Network. If this indicator is off, then plug both Powerline Adapters that you are attempting to pair into power outlets that are located within the same room. All of the indicators of the device should blink (approx. 10 seconds), and the **PLC Indicator** should light up. If the **PLC Indicator** does not light up, it may indicate the existing G.hn network is secure and you have to pair the GPL-1200WAC to it in "secure mode." To do so, press the "Config" Button on the GPL-1200 for 2 seconds (Holding for more than 4 seconds will clear the security key and require a re-pairing). Within 2 minutes, press the "PLC Sync" Button on the GPL-1200WAC for 2 seconds. The **PLC Indicator** will then light up **GREEN**. Afterwards, you can plug the units back into their original location.

* If you have tried all of the above and are still experiencing problems, you can reset all devices to factory default by pushing the "Reset" Button on the GPL-1200WAC for more than 10 seconds AND the "Config" Button on the GPL-1200 for 10 seconds.

GPL-1200WAC

GPL-1200



FOR MORE HELP: For instructions on advanced features, FAQ, etc., please visit the GPL-1200WAC online Product Webpage on our website.

Chapter 3 LED Indications

LED	COLOR	MODE	DESCRIPTION
● PLC	Green	On	The current connection (line rate) is more than 40 Mbps
		Blink	System rebooting
	Orange	On	The current connection (line rate) is more than 20 Mbps and less than 40 Mbps
	Red	On	(1). The current connection (line rate) is between 1 and 20 Mbps per second) (2). The PLC is in unsecure mode* and connected to other PLCs
		Off	No PLC connection exists
● 2.4 GHz	Green	Off	2.4GHz WLAN is disabled
		On	2.4GHz WLAN is on or activity occurring (tx/rx data and message)
		Blink	(1). Fast Blinking: 1.WPS SSID/Key sync copy failed (2). Slow Blinking: 1. Normal WPS sync activity 2. WPS SSID/Key sync activity 3. System in Factory Reset process
● 5 GHz	Blue	Off	5GHz WLAN is disabled
		On	5GHz WLAN is on or activity occurring (tx/rx data and message)
		Blink	(1). Fast Blinking: 1.WPS SSID/Key sync copy failed (2). Slow Blinking: 1. Normal WPS sync activity 2. WPS SSID/Key sync activity 3. System in Factory Reset process
● LAN	Green	Off	LAN Interface down
		On	LAN Interface up 10/100/1000
	Orange	Blink	(1). Fast Blinking: 1. WPS SSID/Key sync copy failed (2). Slow Blinking: 1. WPS SSID/Key sync activity 2. System in Factory Reset process
● SECURITY	Green	Off	Node is not secure, it has neither received nor generated network key parameters (domain name and encryption key)
		On	Node is secure (it has either received or generated network keys)
		Blink	Node is in configuration mode (able to exchange network keys)

Chapter 4 Button Functions

BUTTON	WORDING ON ENCLOSURE	BUTTON FUNCTION	SECONDS TO PUSH BUTTON	DESCRIPTION
1	**On/Off**	Power the device On and Off	N/A	Press the power button once to turn the GPL-1200WAC On. Press the power button once to turn the GPL-1200WAC Off.
2	**PLC Sync**	PLC pairing	+2sec	Press more than 2 seconds (PLC LED starts slow blinking), and configuration period is open
3	**WPS**	WPS	2-5 sec	1. Press for 2-5 seconds, and both 2.4 GHz & 5 GHz LEDs blink slowly. 2. Then release the button, the AP WPS is in process.
		WiFi SSID/PW copy	+5 sec	Press for +5 seconds, 2.4 GHz & 5 GHz, LAN, Security and the LEDs blink slowly, the WLAN is in sync with main gateway for SSID and Key on 2.4GHz
4	**RESET**	Factory reset	+10 sec	Press more than 10 seconds: a factory reset of the system (both G.hn & WiFi) is performed
5	**WiFi ON/OFF**	Switch off/on 2.4GHz/5GHz WiFi interfaces	+2 sec	Disable/enable both 2.4G/5GHz WLAN interfaces by pushing the button for +2s
2&3	**N/A**	Switch off/on all LED's	+2 sec	Turn on/off all LED's by pushing both PLC Sync and WPS buttons simultaneously for +2s

Chapter 5 wireless System and Network Setup

5.1 Connect to power line access point by web browser

GPL-1200WAC supports two kinds of management IP.

(1) DHCP client, which gets a dynamic IP address from the Modem/Broadband Router/Home Gateway that it is connected to by default.

(2) Static IP, 192.168.0.5 by default, which can be configurable in the web UI.

Before you can connect to the power line access point and start configuration procedures, your computer must be able to get an IP address automatically (dynamic IP address). GPL-1200WAC gets a dynamic IP address from Modem/Broadband Router/Home Gateway that it is connected to by default. However, the current IP info of GPL-1200WAC would be displayed at the Modem/Broadcom Router/Home Gateway.

Also, the static IP of GPL-1200WAC can be accessed by the default static IP address of 192.168.0.5, subnet mask 255.255.255.0. Change your PC's static IP address to 192.168.0.100, subnet mask 255.255.255.0 for accessing web UI management.

5.2 Connecting to Web Management Interface

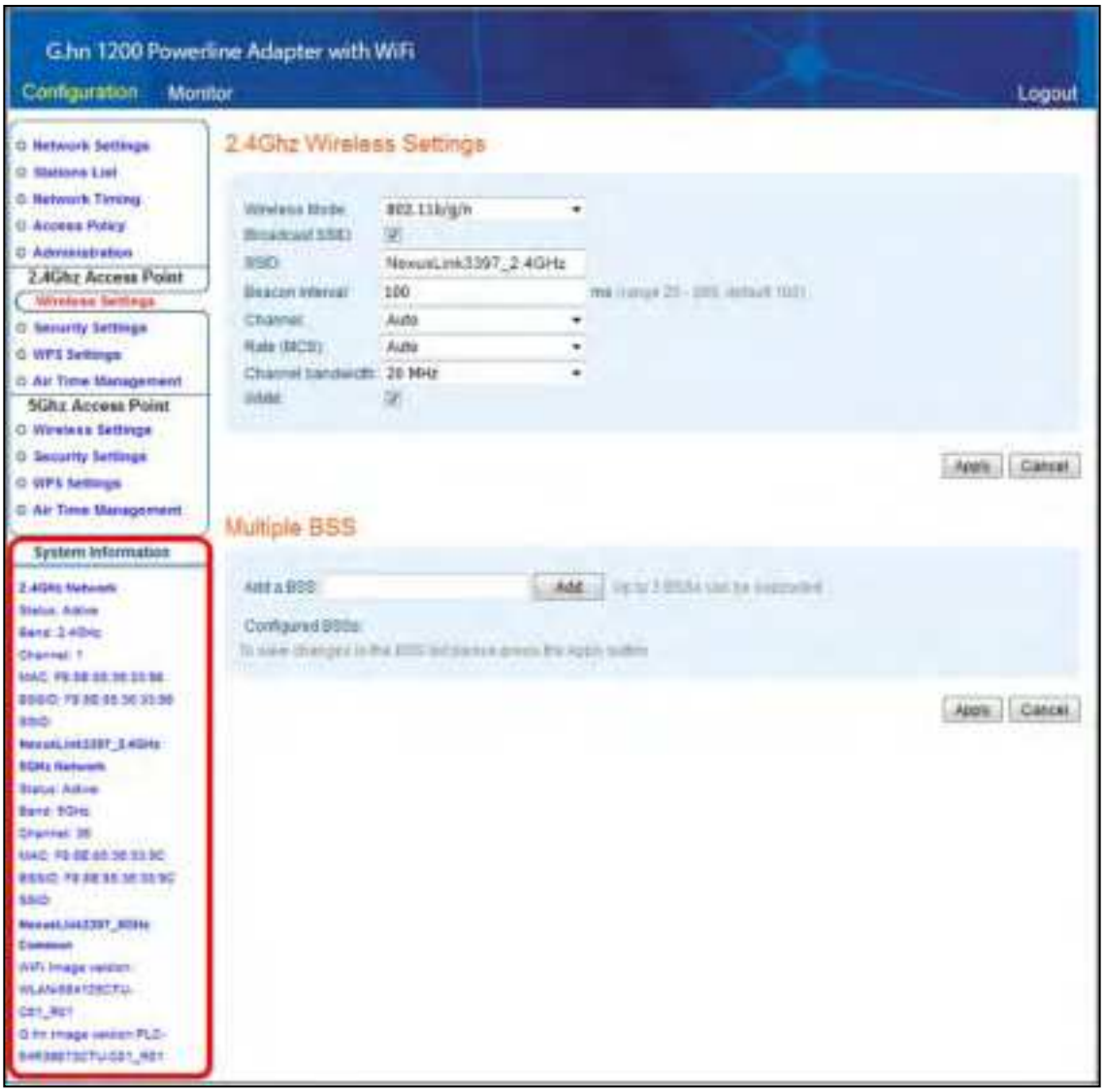
All functions and settings for the Wi-Fi AP of GPL-1200WAC must be configured via the web management interface. Please start your web browser, and input '192.168.0.5'in the address bar, then press the 'Enter' key. The following will be displayed:

Please input user name and password in their respective fields, default user name is '**root**', and default password is '**12345**', then press the **Login** button, to view the web management interface of this access point.

NOTE: If you can't see the web management interface, and you're being prompted to input user name and password again, it means you didn't input username and password correctly.

5.3 View System Information

The system information is on the left-side of the web page as shown below.

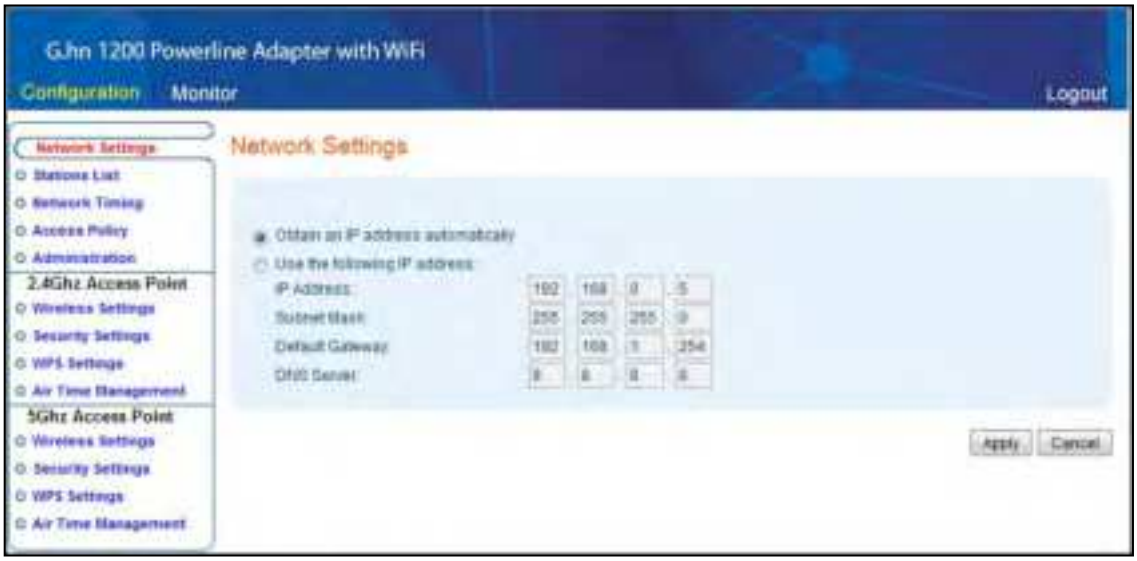


Here are descriptions of every item:

Heading	Description
2.4GHz Network	Displays 2.4GHz AP status, Channel, MAC, BSSID and SSID string.
5GHz Network	Displays 5GHz AP status, Channel, MAC, BSSID and SSID string.
Common	WiFi and G.hn Image version information. WiFi Image version: GPL-1200WAC-WLAN-684125CTU-C01_R01 G.hn Image version: GPL-1200WAC-PLC-64R39873CTU-C01_R01

5.4 Network Settings

This page allows you to set the IP address for the web UI. Click the **Apply** button to reboot the system and implement your changes.



5.5 Stations List

This is page shows the information of wireless Stations that are connected to GPL-1200WAC.

Here are descriptions of every item:

Heading	Description
MAC address	This option will list the Wireless stations connected to the GPL-1200WAC at the 2.4G or 5GHz Interface.
Rate (MCS)	MCS# on the wireless interface with the station.
Bandwidth	Bandwidth, 20/40MHz for 2.4GHz, 20/40/80MHz for 5GHz

5.6 Network Timing

This page allows you to set the local time zone for TR069 management.

Heading	Description
Enable NTP	You can decide to set up NTP client by clicking checkbox.
Primary NTP Server	Input the Primary NTP Server, for example: us.pool.ntp.org, etc.
Secondary NTP Server	Input the Secondary NTP Server, for example: wwv.nist.gov
Local Time Zone	You can select your Time Zone from the drop-down menu.

5.7 Access Policy

This page allows you to set the Access Policy for a specific MAC address.

Here are descriptions of every item:

Heading	Description
Policy:	This option will allow/reject the list of wireless stations.
Add a station MAC	MAC format is XX:XX:XX:XX:XX:XX

A maximum of 32 entries can be configured.

To save changes in the MAC addresses list press the **Apply** button.

5.8 Administration

This page allows you to upgrade the software, view the components versions, change the password, download log files, restore defaults or reboot the system.

Here are descriptions of every setup item:

Heading	Description
Software Upgrade	Select the firmware file for the GPL-1200WAC from the local driver of your laptop.
Components Versions	Wi-Fi Image version: GPL-1200WAC-WLAN-684125CTU-C01_R01 G.hn Image version: GPL-1200WAC-PLC-64R39873CTU-C01_R01
Change Password	Click this button to change the password (Only for "admin" account)
Download Log Files	Reserved for debugging purpose
Restore Defaults	Click this button to reset all the settings of GPL-1200WAC to their factory defaults (Wi-Fi & G.hn PLC)
System Reboot	Click this button to restart the GPL-1200WAC

5.9 Monitor

This page shows the statistics on LAN, 2.4G & 5G interfaces.

5.10 Logout

Log out from the web management.

Chapter 6 Wireless Configurations

6.1 2.4G Wireless Settings

This page allows you to configure the basic settings for the 2.4GHz interface of the access point.

Here are descriptions of every setup item:

Heading	Description
Wireless Mode	802.11b/g legacy: auto selection of 802.11b/g. 802.11b/g/n: auto selection of 802.11b/g/n
Broadcast SSID	Decide if the wireless power line access point will broadcast its own SSID or not. You can hide the SSID of your wireless power line access point (set the option to 'Disable'), so only those who know the SSID of your wireless power line access point can get connected.
SSID	Please input the SSID (the name used to identify this wireless access point) here. You can input up to 32 alphanumerical characters. **PLEASE NOTE THAT THE SSID IS CASE SENSITIVE.**
Beacon Interval	The default is 100 ms and the acceptable range is 20 – 999(ms). It's safe to keep the default and it's not necessary to change unless you know the effect.
Channel	Select Auto, Or manually select a channel.
Rate(MCS)	Modulation and Coding Scheme. It's safe to select Auto and it's not necessary to change unless you know the effect.
Channel Bandwidth	Select the wireless channel width by drop-down menus(bandwidth taken by wireless signals of this access point).

	20MHz : lower performance but less interference. 40MHz : Auto 40/20MHz(automatically select based on interference level)
WMM	WMM (Wi-Fi Multimedia) technology, can improve the performance of certain network applications, like audio/video streaming, network telephony (VoIP), and others. When you enable the WMM function, the power line access point will define the priority of different kinds of data, to give higher priority to applications which require an instant response. Therefore you can improve the performance of such network applications.

6.1.1Multiple BSS

A BSS, Basic Service Set consists of all the devices associated with an IEEE 802.11 wireless local area network (WLAN).
This section allows you to add up to 3 additional BSSIDs (Basic Service Set Identifiers) for the 2.4GHz interface of the access point.

To save changes in the BSS list click the **Apply** button.

6.2 2.4G Security Settings

This page allows you to configure the Security Settings for 2.4Ghz interface of the access point.

Click the **Apply** button to save your settings.

Here are descriptions of every setup item:

Heading	Description
Wireless Interface	Select the interface that you want to configure from the SSID or the BSSs you have added.
Security Mode	Select the encryption supported over wireless access. The encryption method can be Disabled/None, WPA-PSK, WPA2-PSK or WPA-PSK+WPA2-PSK.
Encryption Type	There are three types of Cipher: TKIP, AES, TKIP+AES
Pass Phrase	8 to 63 alphanumerical characters

6.3 2.4G WPS Settings

This page allows you to configure the WPS Settings for 2.4Ghz interface of the access point.
Wi-Fi Protected Setup allows that each time you want to set up a connection, there is no need to select the encryption mode and enter the encryption password.

Heading	Description
WPS	Select to Enable/Disable WPS from the drop-down menu. Then click the **Apply** button to implement your selection.
Configure Enrollee	Select between via PBC (Push Button Control) and via PIN (Personal Identification Number)
WPS Status	Shows the current WPS status

Click the **Activating WPS** button to confirm your choice.

6.4 2.4G Air Time Management

This page allows you to configure the setting for Air Time Management of the 2.4GHz Access Point.

6.4.1 2.4Ghz Air Time Management

This part shows the Statistics of BSS, Station or throughput.

Heading	Description
Per BSS Statistics	Displays each BSS's statistics
Per Station Statistics	Displays each Station's statistics
Throughput Statistics	Displays all statistics

6.4.2 Configuration

This part allows you to set up the Air Time Management, select the Scheduler Algorithm and whether show throughput statistics or not.

Heading	Description
Air Time Management	Select to Enable/Disable Air Time Management from the drop-down menu.
Scheduler Algorithm	Select to No Fairness(Round Robin)/Fairness/Weighted Fairness Scheduler Algorithm from the drop-down menu, No Fairness(Round Robin) : The order will decide the transmission, so the longer the device is connected, the longer the wait time. Fairness: Each device occupies the same transmission time. Weighted Fairness : According to the Weight you give will decide the priority of transmission.
Show Throughput Statistics	Select to YES/NO to Show Throughput Statistics.

Click the **Apply** button to implement your changes.

6.4.3 Per BSS Weights

This part allows you to configure each BSS's Weight from 0 to 100, the higher the Weight you give, the more priority it has.

To save changes in the list click the **Apply** button.

6.4.4 Per Station Weights

This part allows you to configure each WiFi station's Weight from 0 to 100, the higher the Weight you give, the more priority it has.

Heading	Description
MAC	Input the MAC address from the device which you want to add on.
Name	Input an ID for the station (Reserved)
Weight	Set the Weights for the Station from 0 to 100 by scrolling the scroll or Input number.

Click the **Add** button to create the new entry. Click the **Delete** button to remove an entry. To save changes in the list, click the **Apply** button.

6.5 5G Wireless Settings

This page is to configure basic settings for the 5GHz interface of the access point.

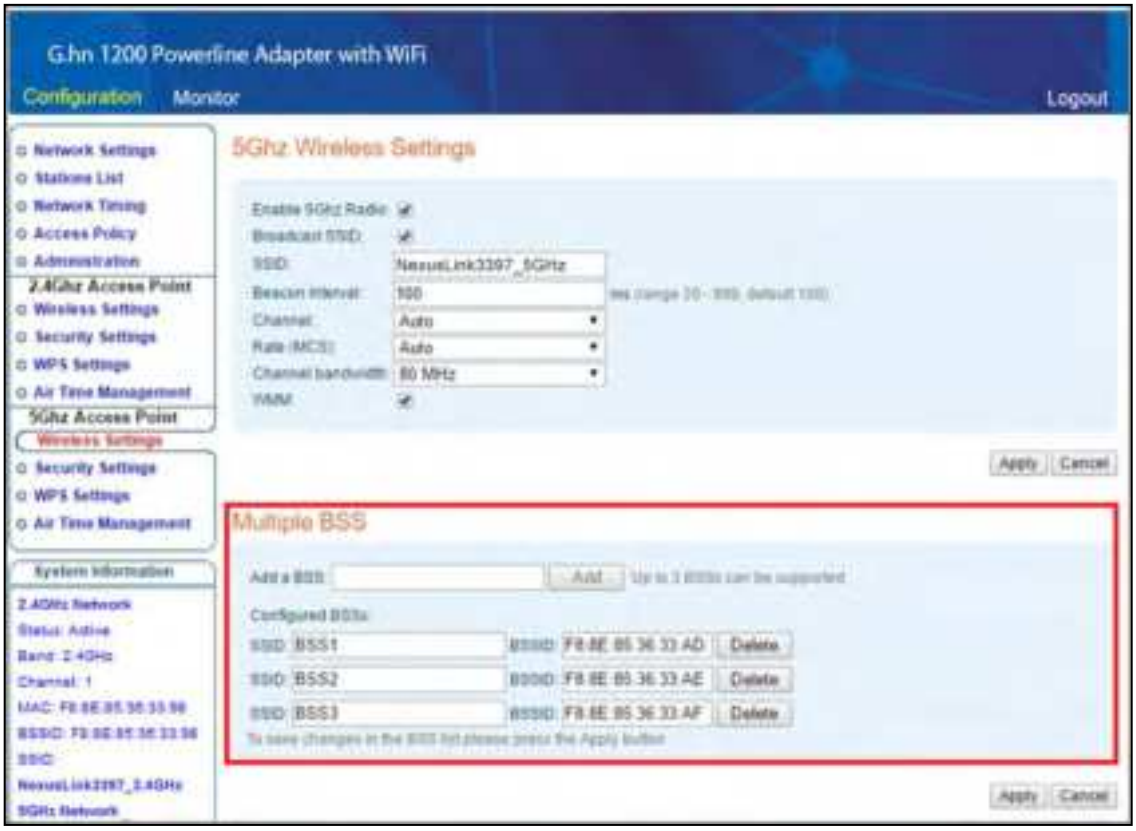
Here are descriptions of every setup item:

Heading	Description
Enable 5Ghz Radio	Tick to enable 5GHz radio.
Broadcast SSID	Decide if the wireless power line access point will broadcast its own SSID or not. You can hide the SSID of your wireless power line access point (set the option to 'Disable'), so only those who know the SSID of your wireless power line access point can get connected.
SSID	Please input the SSID (the name used to identify this wireless access point) here. You can input up to 32 alphanumerical characters. **PLEASE NOTE THAT THE SSID IS CASE SENSITIVE.**
Beacon Interval	The default is 100 ms and the acceptable range is 20 – 999(ms). It's safe to keep in default and it's not necessary to change unless you know the effect.
Channel	Select Auto, Or manually select a channel.
Rate(MCS)	Modulation and Coding Scheme. It's safe to select Auto and it's not necessary to change unless you know the effect.
Channel Bandwidth	Select wireless channel width from the drop-down menu(bandwidth taken by wireless signals of this access point). 20MHz : lower performance but less interference. 40MHz : Auto 40/20MHz 80MHz : Auto 80/40/20MHz (automatically select based on interference level)
WMM	WMM (Wi-Fi Multimedia) technology, can improve the

	performance of certain network applications, like audio/video streaming, network telephony (VoIP), and others. When you enable the WMM function, the power line access point will define the priority of different kinds of data, to give higher priority to applications which require an instant response. Therefore you can improve the performance of such network applications.

6.5.1 Multiple BSS

A BSS, Basic Service Set consists of all the devices associated with an IEEE 802.11 wireless local area network (WLAN).
This section allows you to add up to 3 additional BSSIDs (Basic Service Set Identifiers) for the 5GHz interface of the access point.



To save changes in the BSS list click the **Apply** button.

6.6 5G Security Settings

This page allows you to configure the Security Settings for the 5Ghz interface of the access point.

Here are descriptions of every setup item:

Heading	Description
Wireless Interface	Select the interface that you want to configure from the SSID or the BSSs you have added.
Security Mode	Select the encryption supported over wireless access. The encryption method can be Disabled/None, WPA-PSK, WPA2-PSK or WPA-PSK+WPA2-PSK.
Encryption Type	There are three types of Cipher: TKIP, AES, TKIP+AES
Pass Phrase	8 to 63 alphanumerical characters.

6.7 5G WPS Settings

This page allows you to configure the WPS Settings for the 5Ghz interface of the access point.
Wi-Fi Protected Setup means that each time you want to set up a connection, there is no need to select the encryption mode and enter the encryption password.

Heading	Description
WPS	Select to Enable/Disable WPS from the drop-down menu.
Configure Enrollee	Select between via PBC (Push Button Control) and via PIN (Personal Identification Number)
WPS Status	Shows the current WPS status

Click the **Activating WPS** button to confirm your choice.

6.8 5G Air Time Management

This page allows you to configure the setting for Air Time Management of 5GHz Access Point.

6.8.1 5Ghz Air Time Management

This part shows the Statistics of BSS, Station or throughput.

Heading	Description
Per BSS Statistics	Displays each BSS's statistics
Per Station Statistics	Displays each Station's statistics
Throughput Statistics	Display all statistics

6.8.2 Configuration

This part allows you to set up the Air Time Management, select the Scheduler Algorithm and whether to show throughput statistics or not.

Heading	Description
Air Time Management	Select to Enable/Disable Air Time Management from the drop-down menu.
Scheduler Algorithm	Select to No Fairness(Round Robin)/Fairness/Weighted Fairness Scheduler Algorithm from the drop-down menu, No Fairness(Round Robin) : The order will decide the transmission, so the longer the device is connected, the longer the wait time. Fairness: Each device occupies the same transmission time. Weighted Fairness : According to the Weight you give will decide the priority of transmission.
Show Throughput Statistics	Select to YES/NO to Show Throughput Statistics.

Click the **Apply** button to implement your changes.

6.8.3 Per BSS Weights

To save changes in the list click the **Apply** button.

6.8.4 Per Station Weights

This part allows you to configure each WiFi Station's Weight from 0 to 100, the higher the Weight you give, the more priority it has.

Heading	Description
MAC	Input the MAC address from the device which you want to add on.
Name	Input an ID for the station (Reserved)
Weight	Set the Weights for Station from 0 to 100 by scrolling the scroll or Input number.

Click the **Add** button to create the new entry. Click the **Delete** button to remove an entry.

Chapter 7 G.hn/Powerline Setup

7.1 Configure STATIC IP MODE

In static IP mode, you assign IP settings to your PC manually.

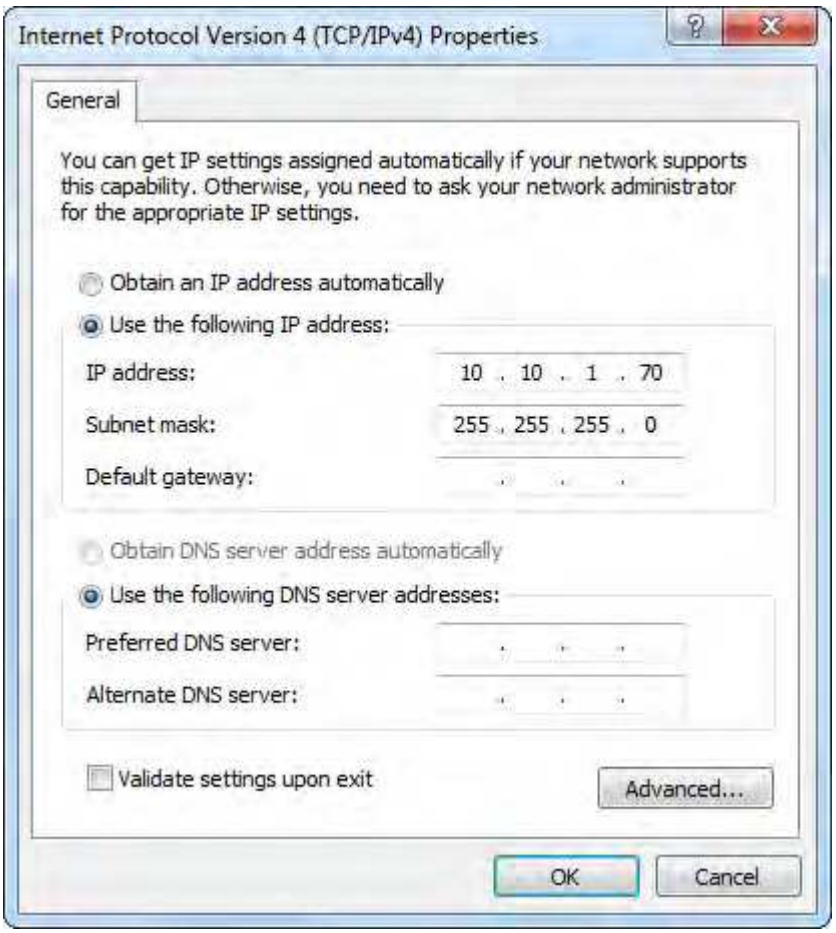
Follow these steps to configure your PC IP address to use subnet 10.10.1.x.

NOTE:	The following procedure assumes you are running Windows. However, the general steps involved are similar for most operating systems (OS). Check your OS support documentation for further details.

STEP 1: From the Network Connections window, open Local Area Connection (*You may also access this screen by double-clicking the Local Area Connection icon on your taskbar*). Click the **Properties** button.

STEP 2: Select Internet Protocol (TCP/IP) and click the Properties button.

STEP 3: Change the IP address to the domain of 10.10.1.x (70<x<255) with subnet mask of 255.255.255.0. The screen should now display as below.



STEP 4: Click **OK** to submit these settings.

7.2 Logging In

Perform the following steps to login to the web user interface.

STEP 1: Start the Internet browser and enter the default IP address for the device in the Web address field. For example, if the default IP address is 10.10.1.69, type http://10.10.1.69

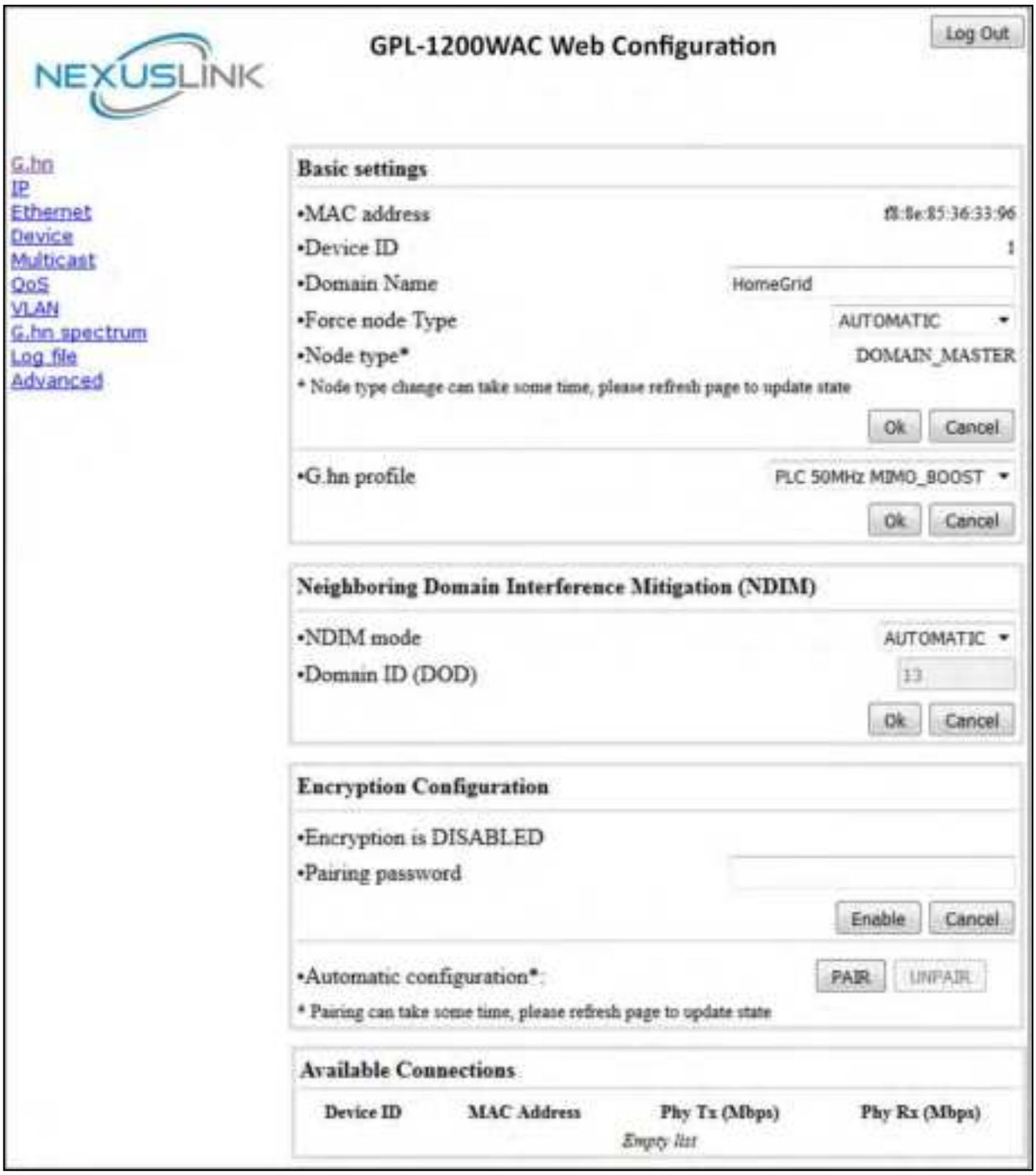
STEP 2: A dialog box will appear, such as the one below. Input the default Authentication Password.

Authentication Password: **admin**

Click **OK** to continue.

Note:
The Factory Reset password is: **betera**

7.3 G.hn Interface



7.3.1 Basic Configuration

- **MAC Address** Displays the MAC address of the device.
- **Device ID** Device ID of this node.
- **Domain Name** string of all nodes in the network.
- **Force node Type** force the modem to have a particular role (END POINT or DOMAIN MASTER)
- **G.hn profile** of all nodes in the network: selecting which G.hn profile must be applied to the network (PLC 50MHz, PLC 50MHz with MIMO, PLC 100MHz, COAX 100MHz and PHONE 100MHz).

7.3.2 NDIM Configuration

- **NDIM mode** set to Automatic for enabling automatic DOD selection functionality and set to Manual for manual configuration of DOD.
- **Domain ID (DOD)** manually set the DOD number from 1 to 15 to use a different preamble seed than the default 13.

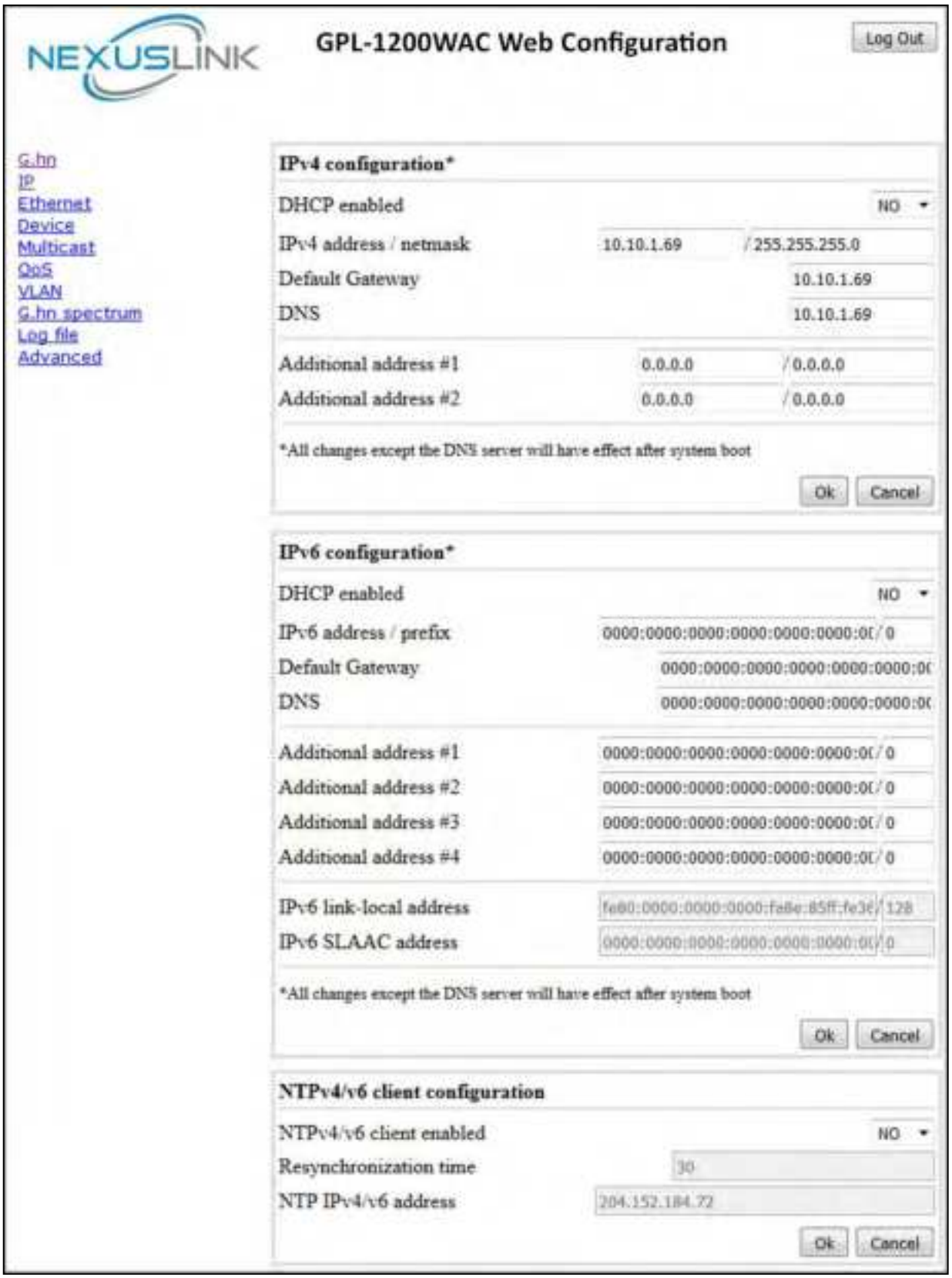
7.3.3 Encryption Configuration via WEB UI

- **Pairing Password** used for authentication. Write a custom password to manually create a secure domain.

Available Connections

- In this tab table, all the available **G.hn connections** are presented. Remote node DID and MAC address, transmission and reception physical speeds.

7.4 IP Interface



7.4.1 IP config

In the **IP configuration** tab of one G.hn node, the IPv4 and IPv6 settings can be read and changed.

IPv4 subsection:

- **DHCPv4 enabled**: in the case of choosing ”**NO**" IP configuration in the following parameters, the IPv4 Address, Subnet Mask, Default Gateway and DNS should be configured; fill these fields in. In the case of choosing “**YES**” they will be filled automatically when configuration is received from the DHCPv4 server.
- **IPv4 address/netmask:** IPv4 address / netmask of this device.
- **Default Gateway:** IPv4 gateway to connect the device to other LAN segments.
- **DNS:** Domain Name Server IP (IPV4).
- **Additional address #1/2**: additional fixed IPv4 addresses that will always be configured at boot time.

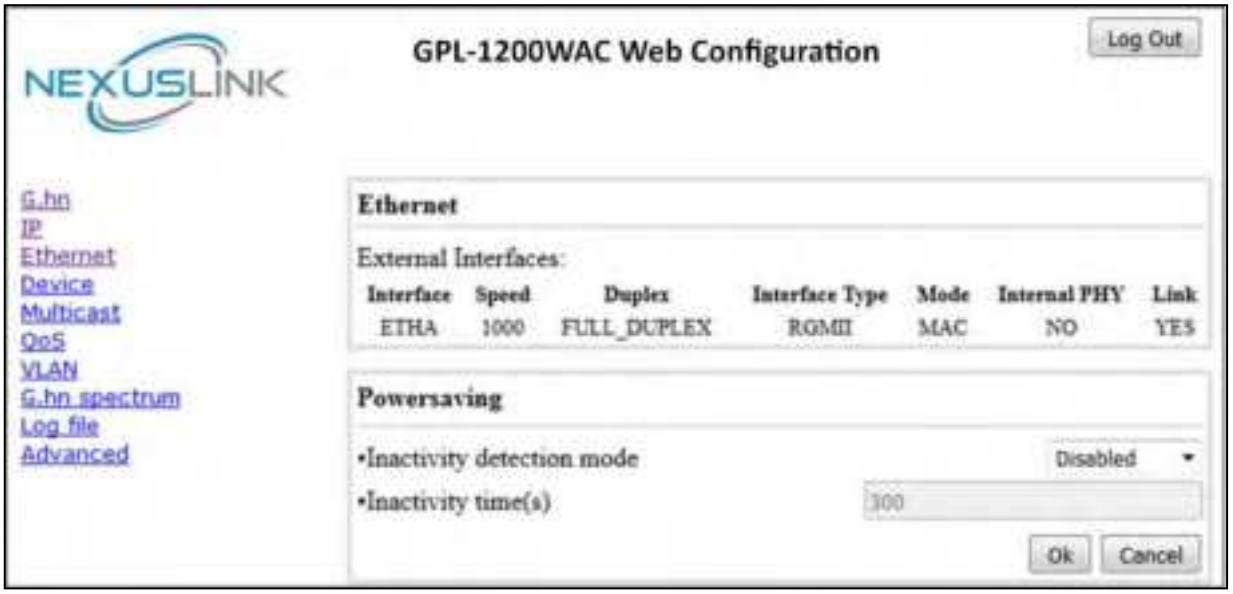
IPv6 subsection:

- **DCHPv6 enabled**: in the case of choosing ”**NO**" IP configuration in the following parameters, the IPv6 Address, prefix, Default Gateway and DNS should be configured; fill these fields in. In the case of choosing “**YES**” they will be filled automatically when configuration is received from the DHCPv6 server.
- **IPv6 Address / prefix**: IPv6 address / prefix of the device to read the node's DHCPv6 address in case the DHCPv6 is enabled**.**
- **Default Gateway:** IPv6 gateway to connect the node to other LAN segments.
- **DNS:** Domain Name Server IP (IPV6).
- **Additional address #1/2/3/4**: additional fixed IPv6 addresses that will always be configured at boot time.
- **IPv6 Link-Local Address**: to read the node's Link Local address.
- **IPv6 SLAAC address:** IPv6 address, automatically obtained by means of the SLAAC mechanism.

NTPv4/v6 subsection:

- **NTPv4/v6 client enabled**: Enable/disable NTP client.
- **Resynchronization time**: Configure re-synchronization interval time in minutes.
- **NTP IPv4/v6 address:** Hostname or IP (IPv4 or IPv6) of NTP server.

7.5 Ethernet Interface

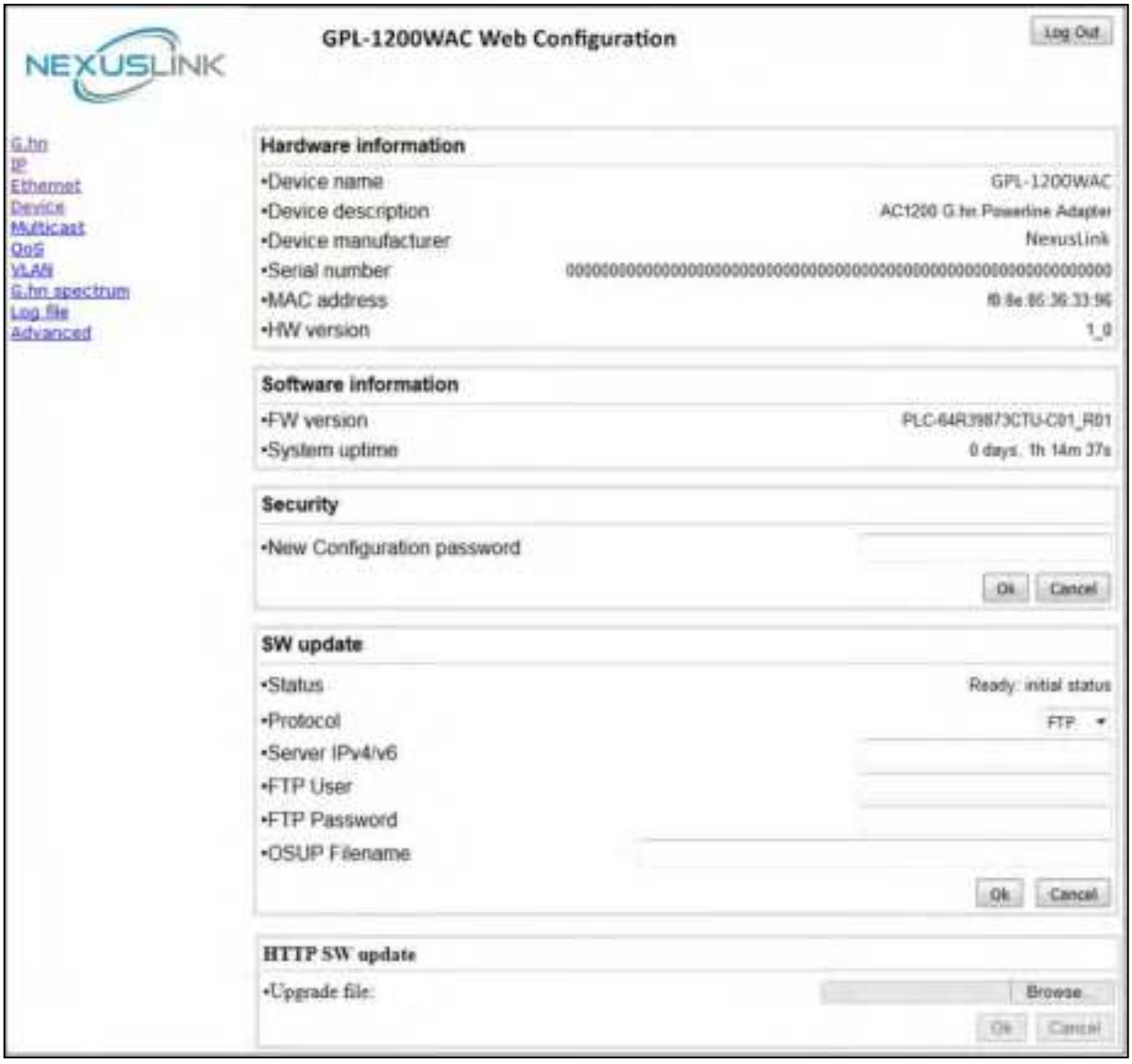


The Ethernet table shows the coverage & Info of the Ethernet interface; including Interface, Speed, Duplex, Interface Type, Mode, Internal PHY & Link.

Powersaving

This function is not supported in this firmware release.

7.6 Device Interface



7.6.1 Hardware information

In this tab, basic information such as MAC Address and Serial Number of the selected node is shown.

7.6.2 Software information

Shows the FW version and system uptime.

7.6.3 Security

The nodes in the network: to change the configuration password string from the default ("admin") to another; decided by the user.

7.6.4 SW update

Current loaded firmware version is shown. Any flash section can be upgraded; the first flash section should be selected and after clicking on the "**OK**" button the corresponding file should be chosen. Usually, a reboot should be performed afterwards to make sure the changes are effective.

The protocol is by FTP client or TFTP client. L2 is proprietary and is reserved for future use.

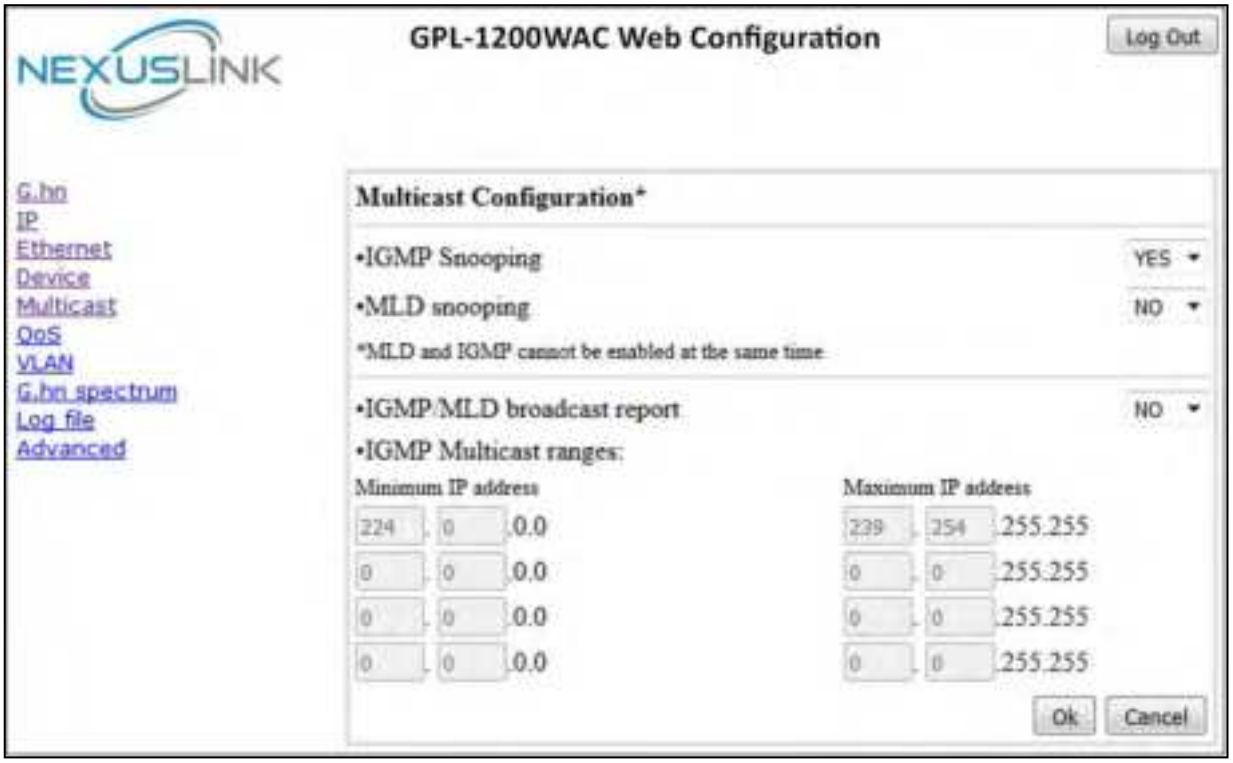
7.6.5 HTTP SW update

STEP 1: Enter the path and filename of the firmware image file in the **Software File Name** field or click the Browse button to locate the image file.

STEP 2: Click the **OK** button once to upload and install the file.

NOTE:	The update process will take about 2 minutes to complete. The device will reboot and the browser window will refresh to the default screen upon successful installation. It is recommended that you compare the **Software Version** on the Device Interface screen with the firmware version installed, to confirm the installation was successful.

7.7 Multicast Interface



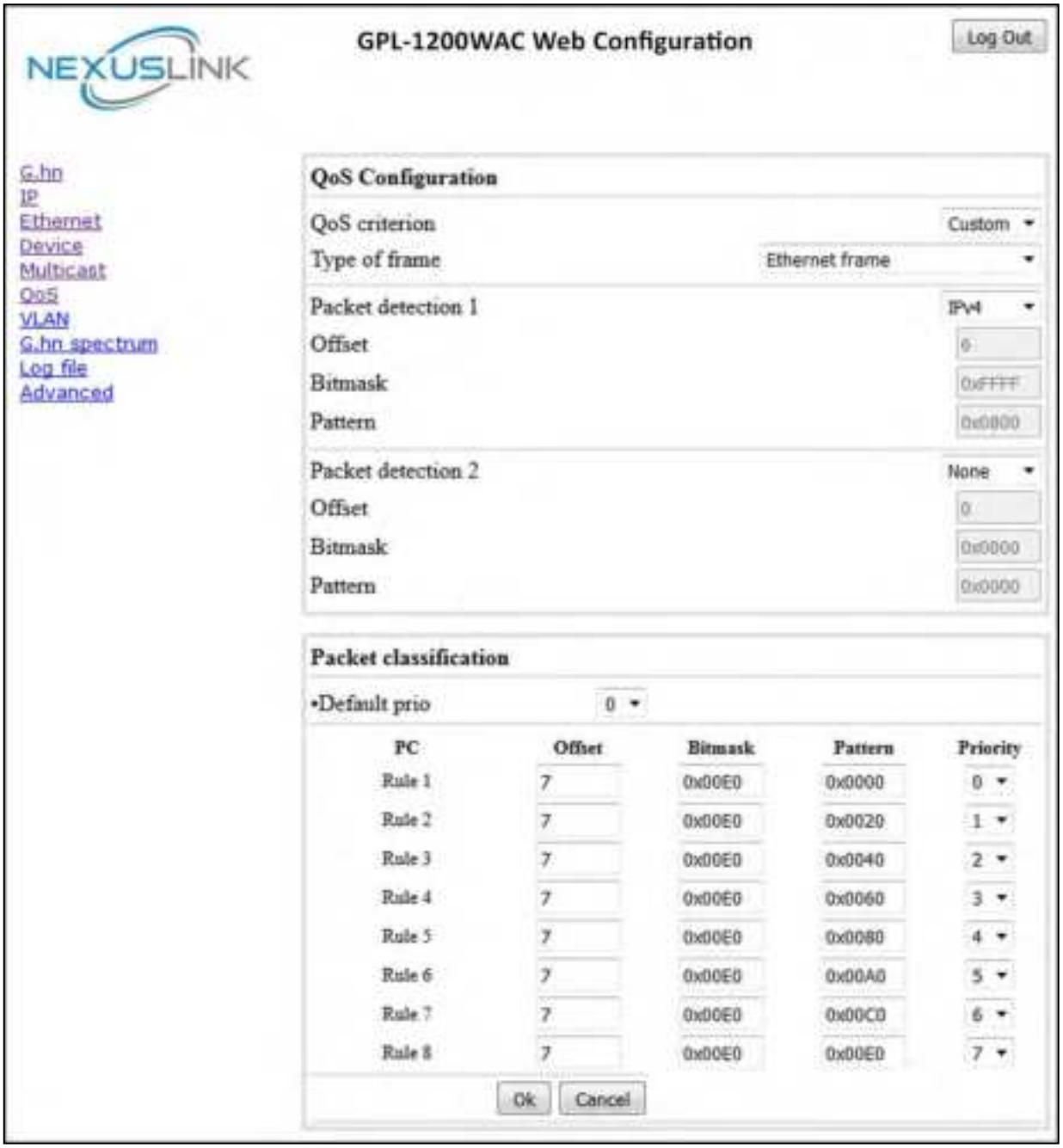
7.7.1 MCAST Configuration

In the **MCAST Configuration** tab of "My Network", **IGMP snooping and MLD** features can be enabled or disabled. Also, IGMP multicast IP addresses ranges which the G.hn PLC network will sniff; can be configured.

- **IGMP Snooping**: Enable or Disable.
- **MLD Snooping**: Enable or Disable.
- **IGMP/MLD broadcast report (allowed)**: set to NO for enabling reports dropping until the video source is detected, this is a recommended setting when IGMP/MLD is enabled. Set to YES for broadcasting reports until the video source is detected; this implies the multicast video stream is sent as broadcast and it is the recommended state when IGMP/MLD is disabled.

IGMP Multicast ranges configuration: 4 multicast IP address ranges can be configured defining the minimum and maximum IP addresses of each range. Only multicast traffic within these ranges will be processed.

7.8 QoS menu



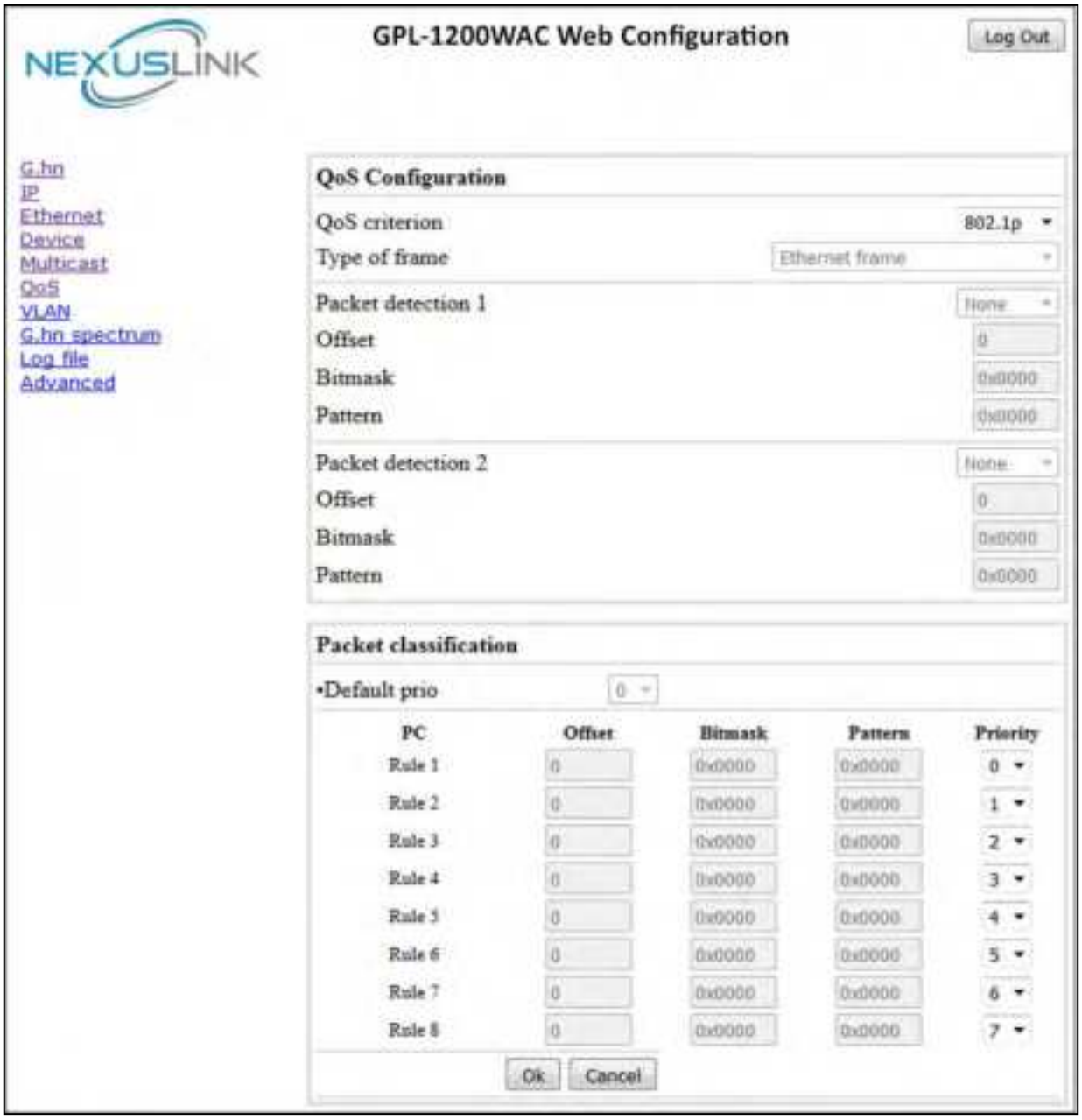
7.8.1 QoS Configuration

In the **QoS** configuration tab, the packet classifier can be managed to define a QoS rule for incoming Ethernet traffic, and assign a priority to be used in the G.hn network. Press the "**Ok**" button for loading the newly configured settings:

- **QoS CRITERION**: a general criterion can be chosen among "None" (no QoS), "Custom" and "802.1p".
- **Type of Frame**: with this parameter the type of Ethernet traffic being transmitted by the G.hn network should be selected. Based on this parameter, the internal offsets in the system are adjusted. In the QoS tab, Ethernet frame offsets should be set **counting number** as they appear in the sniffer SW (for instance, the same field will be in a different position if normal Ethernet frames or 802.1Q tagged frames exist).

- **Packet detection 1**: first packet detection rule can be configured (offset, bitmask and pattern). Packets which accomplish it will be sent to the classification module.
- **Packet detection 2**: if second packet detection is also enabled, both, first and second detection criteria must be accomplished to pass packets to the classification module.
- **Packet classification**: up to 8 classification rules can be defined in this section for packets which have previously been correctly detected. For 802.1p only priorities can be managed, offset, bitmask and pattern are predefined to sniff the PCP field.
- **Default priority**: select default priority; which will be applied to non classified incoming packets. Priority 7 is the highest. Priority 0 is the lowest.

Example



If QoS criterion: 802.1p, all other options are grayed out, and follow the QoS rules below. According to G.9960 specs, the priority mapping recommended by [IEEE 802.1D] subclause 7.7.3 is presented in Table III.1. for four priority queues.

PCP	Priority	Acronym	Traffic Types
1	0 (Third)	BK	Background
0	1 (lowest)	BE	Best Effort
2	2 (lowest)	EE	Excellent Effort
3	3 (Third)	CA	Critical Applications
4	4 (second)	VI	Video, < 100 ms latency and jitter
5	5 (second)	VO	Voice, < 10 ms latency and jitter
6	6 (highest)	IC	Internetwork Control
7	7 (highest)	NC	Network Control

In summary, the sequence of priority queue, (7,6) > (5,4) > (3,0) > (2,1)

7.9 VLAN Interface

7.9.1 VLAN Configuration

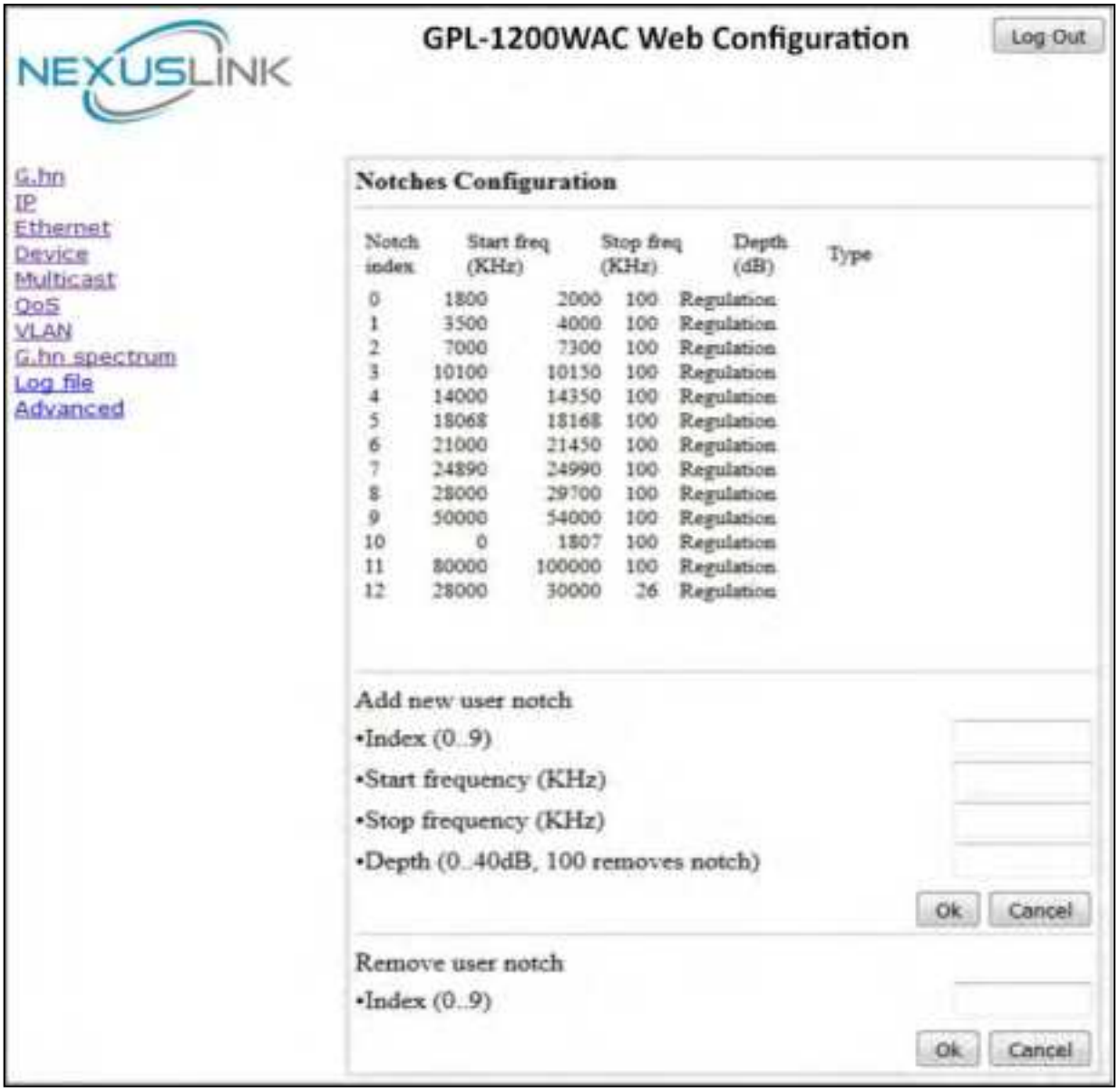
In the **VLAN Configuration** tab of one G.hn node, a VLAN tag can be added or removed per interface. Also, removing a tag at egress per interface can be also enabled or disabled:

- **Enable VLAN Configuration**: Select **No** from the drop down menu to disable completely the VLAN functionality, removing all tags.

- **Set Port as VLAN Trunk:** Select **Yes** from the drop down menu for the ports that you want to set as VLAN Trunk ports.

- **Ingress/Egress tag:** A tag value (from 1 to 4095) per interface can be added in this section. Set value to 0 for no tagging.

7.10 G.hn spectrum Interface



7.10.1 Notches

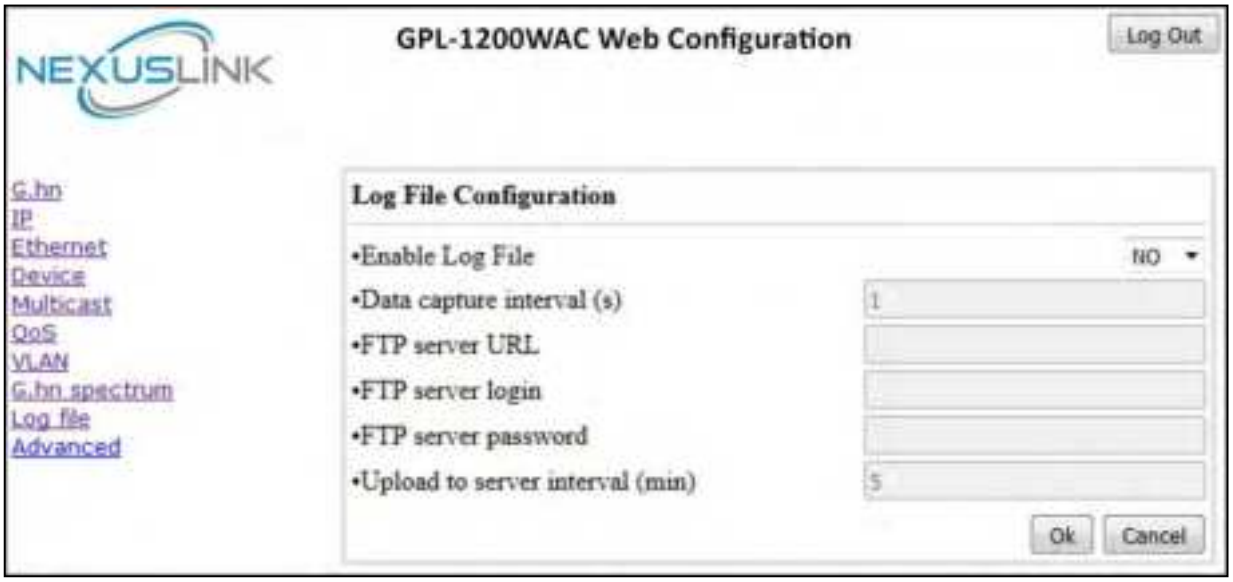
In this tab a table with all configured **Notches** of selected node will be shown. The table is composed of next columns for every notch: Notch Number, Type of notch, Start Frequency (KHz), Stop Frequency (KHz), Depth (in dB).

The first 13 notches (Regulation) are Read Only, **RO**, in the system and they can be neither removed nor modified. The next 40 notches (Vendor) are defined by the vendor using SDK and they are also RO. The last 10 notches (User) are R/W and they can be added/removed by user using this tool.

To add new notches the user should fill the "**Add a new User Notch**" fields, setting Start and Stop frequencies in KHz and depth in dB of notch and then press the "**Ok**" button. They will be added in first User free position from number 0 to 9. (If successful, you can see a record in the Type column)

To remove a User Notch, the "**Remove a User Notch**" section should be used, setting notch number to be removed from 0 to 9 and pressing the "**Ok**" button.

7.11 Log file Interface

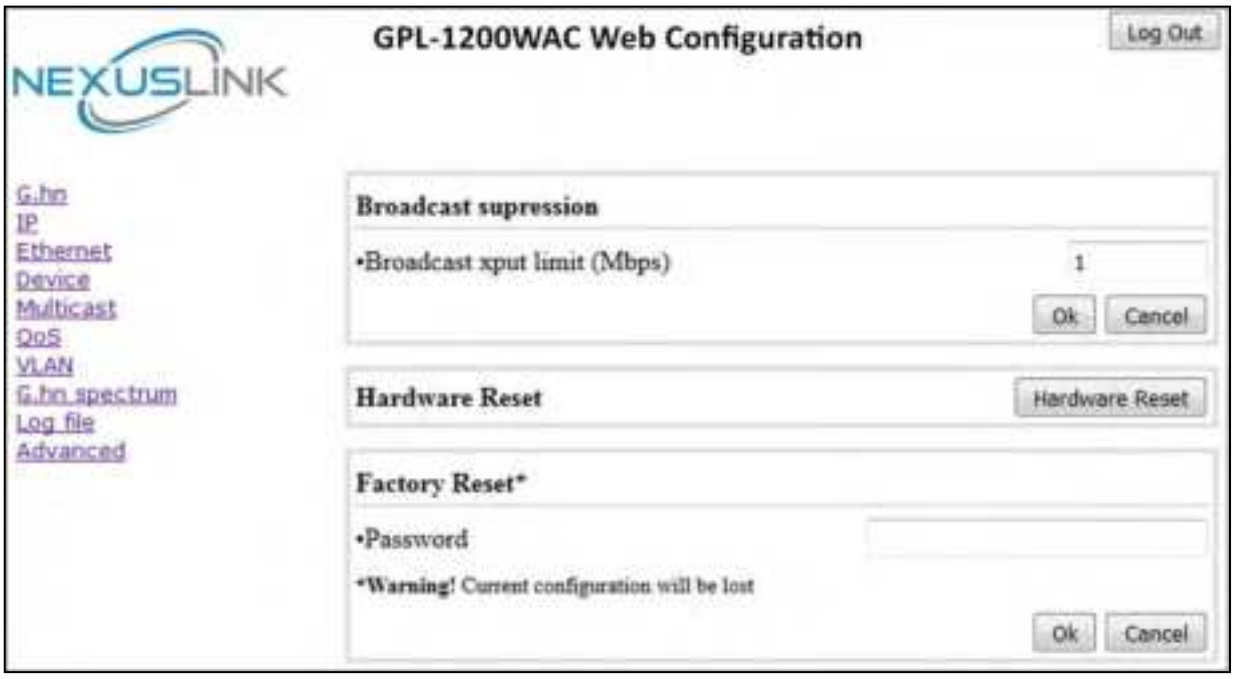


7.11.1 Log File

In the **Log File** configuration the following settings can be read, and changed by clicking on the corresponding "**OK**" button for the selected node:

- **Enable Log File** set to YES for enabling Log File functionality in the node and set to NO for disabling it.
- **Data Capture Interval** sets the interval of time in seconds to capture data.
- **FTP Server URL** configures the url for the remote FTP server where the files will be uploaded.
- **FTP Server Login** configures the user for the FTP server.
- **FTP Server Password** configures the password for the FTP server.
- **Upload to Server Interval** sets the interval of time in minutes to send the captured file to the remote server.

7.12 Advanced Interface



Broadcast suppression: In this tab the broadcast suppression feature can be managed. Broadcast traffic higher than the selected value will be dropped.

Hardware Reset: Click on this button to perform a reboot in the node.

Factory Reset: Input the password: **betera** and click the **OK** button to perform a factory reset. The current configuration will be lost.