

# GPL-2000S4

## G.hn 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](mailto:support@nexuslinkusa.com)

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

## Important Safety Instructions

With reference to unpacking, installation, use, and maintenance of your electronic device, the following basic guidelines are recommended:

- Do not use or install this product near water, to avoid fire or shock hazard. For example, near a bathtub, kitchen sink or laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g. a wet basement).
- To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are not blocked.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening. Also, do not use the telephone to report a gas leak in the vicinity of the leak.



### WARNING

- Disconnect the PLC from the power source before servicing
- For indoor user only
- Do NOT open the casing
- Do NOT use near water

Power Specifications:

I/P : 100-240VAC, 50/60Hz, 0.2A

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<b>NOTE:</b> This document is subject to change without notice.
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## 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 PLC 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.**

## Table of Contents




<b>CHAPTER 1 PRODUCT INFORMATION .....</b>	<b>4</b>
1.1 FRONT PANEL AND LED INDICATORS.....	4
1.2 SIDE PANEL.....	5
1.3 BOTTOM PANEL .....	5
1.4 QUICK INSTALL GUIDE.....	6
1.5 HOW TO UNDERSTAND THE COVERAGE LED COLORS .....	10
<b>CHAPTER 2 G.HN/POWERLINE SETUP .....</b>	<b>11</b>
2.1 IP CONFIGURATION .....	11
2.2 LOGGING IN .....	13
<b>CHAPTER 3 G.HN INTERFACE.....</b>	<b>14</b>
3.1 BASIC CONFIGURATION.....	14
3.2 NDIM CONFIGURATION.....	15
3.3 ENCRYPTION CONFIGURATION VIA WEB UI .....	15
<b>CHAPTER 4 IP INTERFACE .....</b>	<b>16</b>
4.1 IP CONFIG .....	16
<b>CHAPTER 5 ETHERNET INTERFACE.....</b>	<b>18</b>
<b>CHAPTER 6 DEVICE INTERFACE .....</b>	<b>19</b>
6.1 HARDWARE INFORMATION .....	19
6.2 SOFTWARE INFORMATION.....	19
6.3 SECURITY .....	19
6.4 SW UPDATE.....	19
6.5 HTTP SW UPDATE .....	20
<b>CHAPTER 7 MULTICAST INTERFACE .....</b>	<b>21</b>
7.1 MCAST CONFIGURATION.....	21
<b>CHAPTER 8 QOS MENU .....</b>	<b>23</b>
8.1 QoS CONFIGURATION .....	23
<b>CHAPTER 9 VLAN INTERFACE .....</b>	<b>25</b>
9.1 VLAN CONFIGURATION .....	25
<b>CHAPTER 10 G.HN SPECTRUM INTERFACE .....</b>	<b>27</b>
10.1 NOTCHES .....	27
<b>CHAPTER 11 LOG FILE INTERFACE.....</b>	<b>28</b>
11.1 LOG FILE.....	28
<b>CHAPTER 12 ADVANCED INTERFACE.....</b>	<b>29</b>
<b>CHAPTER 13 SPECIFICATIONS .....</b>	<b>30</b>

The setup images used in this manual are for reference only. The contents of these images may vary according to firmware version. The official image contents are based on the newest firmware version.

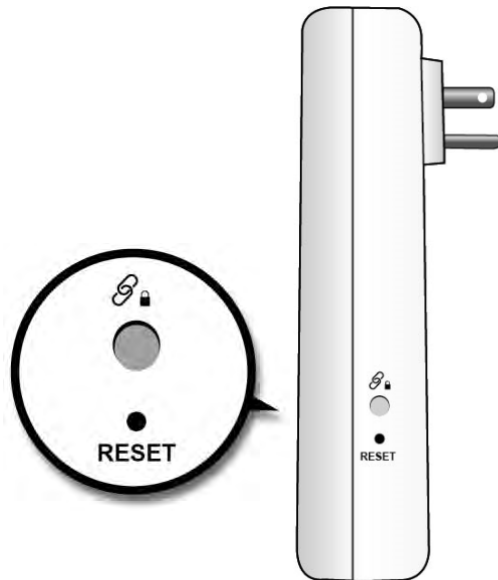
## Chapter 1 Product Information


### 1.1 Front Panel and LED indicators



LED	Color	Mode	Description
Power LED 	Green	On	The Adapter is powered on.
	Off	Off	The Adapter is powered off.
G.hn Link LED 	Green	On	The current connection (line rate) is more than 40Mbps.
	Orange	On	The current connection (line rate) is between 5Mbps and 40Mbps.
	Red	On	The current connection (line rate) is 5Mbps or less.
	Off	Off	No G.hn detected.
Security LED 	Green	On	The Adapter is secure (it has received or generated network keys).
		Blink	The Adapter is in the process of being secure.
	Off	Off	The Adapter is not secure.

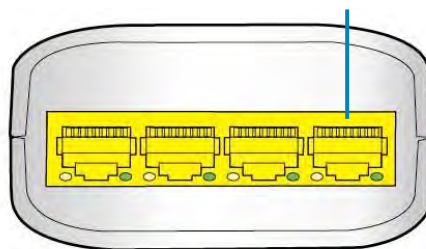
## 1.2 Side Panel



Item Name	Description
Security 	Push the button for more than 2 seconds to pair the devices and get a random domain name and password.
Reset	Press more than 10 seconds (until all three LED's are OFF) and release: a factory reset is performed.

## 1.3 Bottom Panel

Ethernet Ports

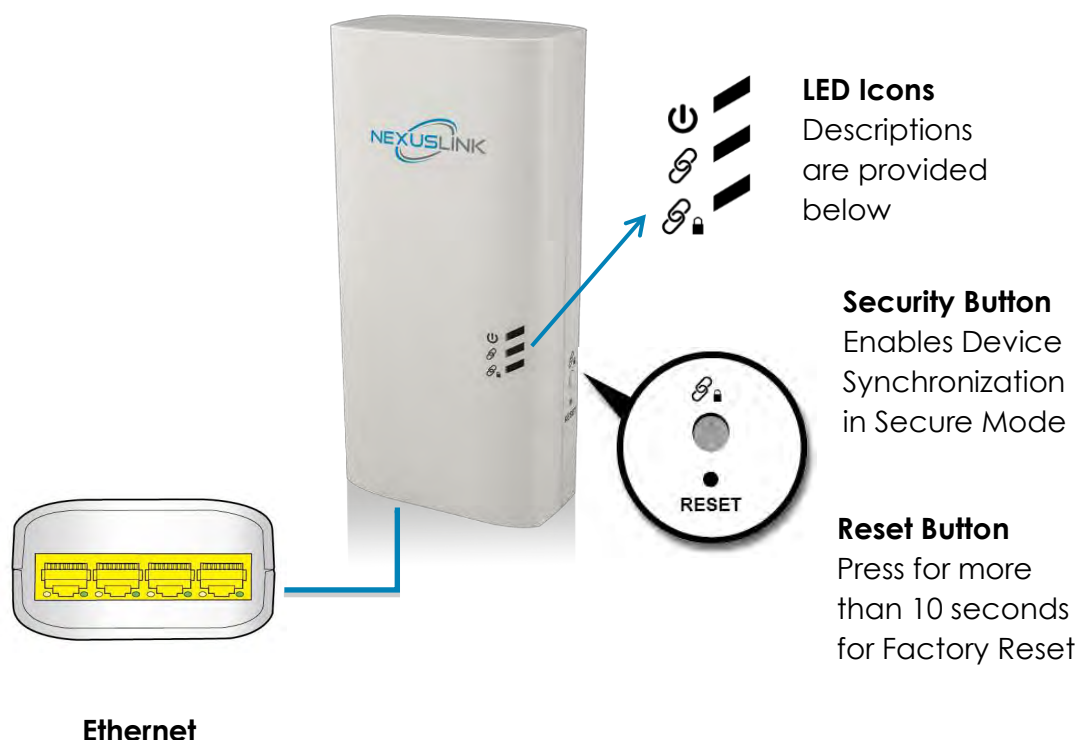


LED	Color	Mode	Description
Ethernet LED	Green	On	An Ethernet LAN connection is established @1000Mbps.
		Blink	Data over the Ethernet LAN connection is being transmitted @1000Mbps.
	Yellow	On	An Ethernet LAN connection is established @10/100Mbps.
		Blink	Data over the Ethernet LAN connection is being transmitted @10/100Mbps.
	Off	Off	An Ethernet LAN connection is not established.

## 1.4 Quick Install Guide



### Understanding Your Powerline Adapter



LED	Color	Mode	Description
<b>Power LED</b> 	Green	On	The Adapter is powered on.
	Off	Off	The Adapter is powered off or faulty.
<b>Connection LED</b> 	Green	On	The current connection (line rate) is more than 40Mbps.
	Orange	On	The current connection (line rate) is between 5Mbps and 40Mbps.
	Red	On	The current connection (line rate) is less than 5Mbps.
	Off	Off	An Adapter connection does not exist.
<b>Security LED</b> 	Green	On	The Adapter is secure (it has received or generated network keys).
		Blink	The Adapter is in the process of being secure.
	Off	Off	The Adapter is not secure.
<b>Ethernet LED</b>	Green	On	An Ethernet LAN connection is established @1000Mbps.
		Blink	Data over the Ethernet LAN connection is being transmitted @1000Mbps.
	Yellow	On	An Ethernet LAN connection is established @10/100Mbps.
		Blink	Data over the Ethernet LAN connection is being transmitted @10/100Mbps.
	Off	Off	An Ethernet LAN connection is not established.

## B

## Initial Powerline Adapter Setup


**NOTE:** A minimum of two G.hn Powerline Adapters are required.

→ If you are setting up a G.hn Powerline network for the first time, then follow the steps below.

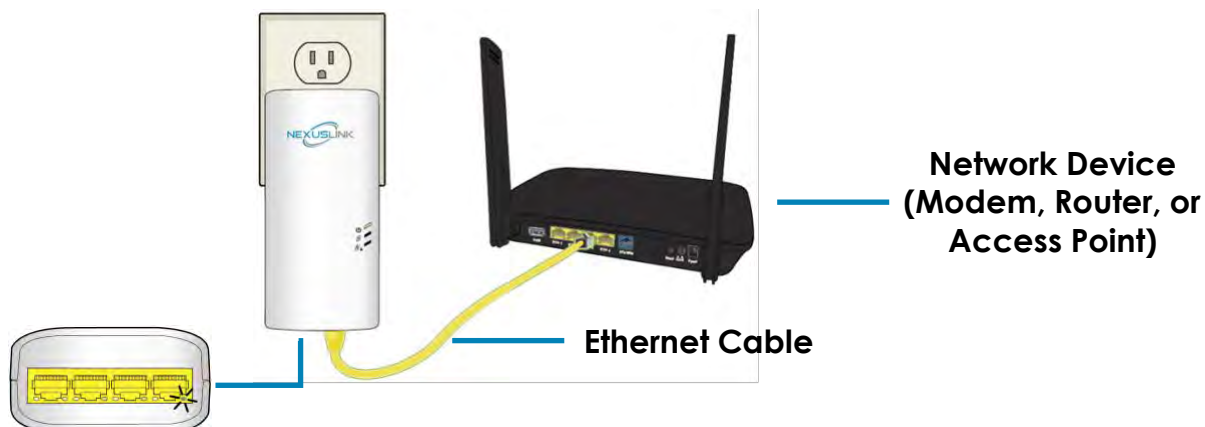
→ If you are adding to an existing G.hn Powerline network, then skip to Steps 3-5.

1. Plug one Powerline Adapter into a power outlet near your Network Device (Modem, Router, or Access Point).



 For maximum performance, please plug the Powerline Adapter directly into the wall outlet. Do not plug into a power strip or surge protector, as network performance could degrade significantly.


2. Connect the Powerline Adapter to your Network Device (Modem, Router, or Access Point) with an Ethernet (RJ-45) cable. Wait 10 seconds for the Ethernet LED to light up **GREEN**, which indicates a connection is established. A flashing **GREEN** light indicates that the device is sending data.

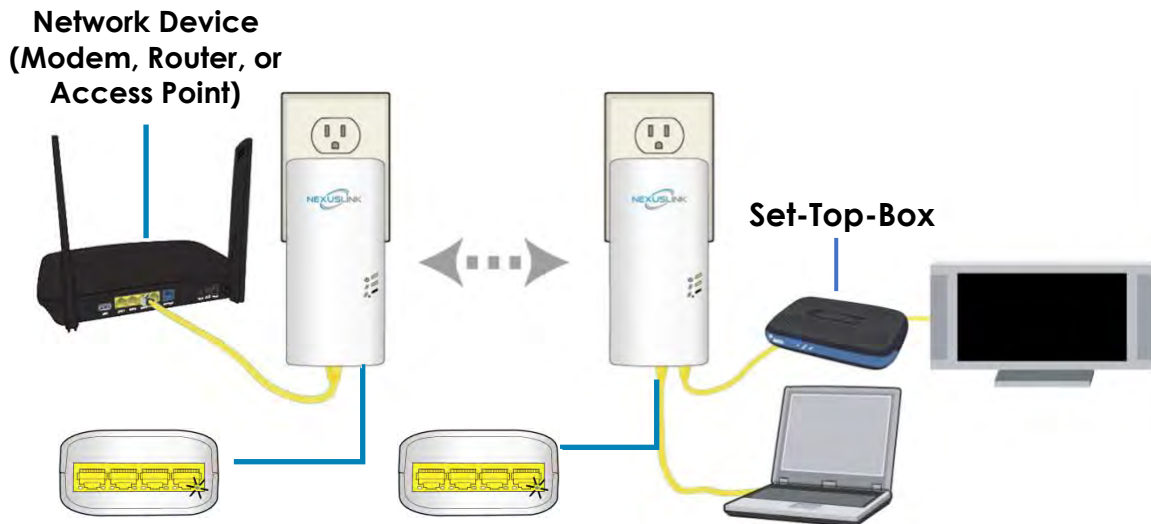




## C





### Device Connection





3. Plug the **additional Powerline Adapter** into a power outlet near the Internet-enabled device (ex. TV, PC, STB, DVR, etc.).
4. Connect this Powerline Adapter to the Internet-enabled device (ex. TV, PC, STB, DVR, etc.) with an Ethernet (RJ-45) cable. The **Connection LED**  and Ethernet LED on both of the Powerline Adapters should be **GREEN**, which represents a strong connection.



## D

### Pairing the Powerline Adapters

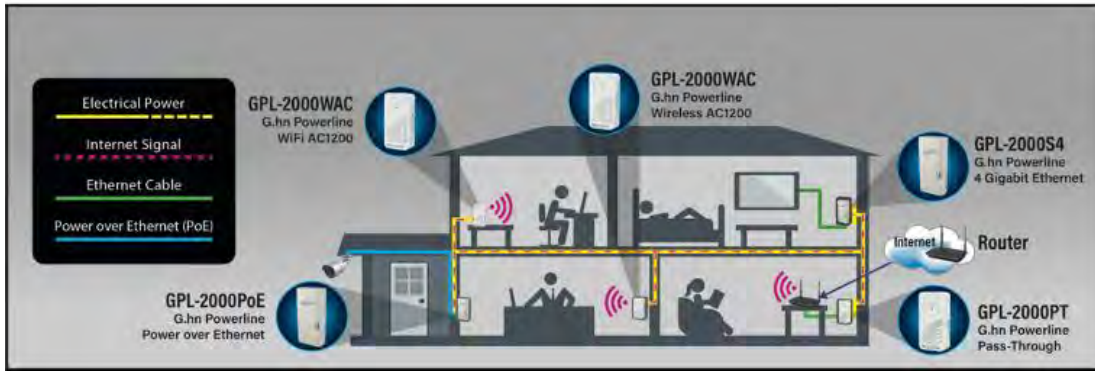
5. Press the **Security Button** on one Adapter until you see the **Security LED**  start blinking **GREEN**. Then press the **Security Button** on the second Adapter until you see the **Security LED**  start blinking **GREEN**. The **Security LED**  and the **Connection LED**  should be solid **GREEN** on both Adapters when they are successfully paired.

Note: If you are adding to an existing G.hn Powerline network, then press the **Security Button** on any Adapter in the existing G.hn Powerline network until you see the **Security LED**  start blinking **GREEN**. Then press the **Security Button** on the Powerline Adapter you are adding until you see the **Security LED**  start blinking **GREEN**.. The **Security LED**  and the **Connection LED**  will light up **GREEN** on all adapters within the G.hn Powerline network.

6. Repeat Steps 3 to 5 to add additional Powerline Adapters. Please note that up to 16 devices can be connected within a G.hn Powerline Network.

## E


**You Have Successfully Set Up Your G.hn Powerline Network!**




## F

### Troubleshooting

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

**Connection LED  is OFF:** The **Connection LED** shows that the Powerline Adapter is connected to the G.hn Network. If the indicator is off, then plug both Powerline Adapters that you are attempting to pair into power outlets that are located within the same room. The **Connection LED** should light up **GREEN**. If not, then press the **Reset Button** on each adapter for more than 10 seconds. Afterwards, you can plug the units back into their original location.

**Ethernet LED is OFF:** If the **Ethernet LED** fails to light up, check that the LAN port of the Powerline Adapter is connected firmly to the LAN port of the other device. To check the condition of the Ethernet cable, use another cable to test the same connection.

**Security LED  is OFF:** If the **Security LED** is off, then it means the Powerline Adapter is not securely paired. Press the **Security Button** on the Powerline Adapter for 2 seconds until you see the **Security LED** start flashing **GREEN**. Repeat this on the other Powerline Adapter. The **Security LED** and the **Connection LED** will light up **GREEN** on both adapters. This means the adapters are now securely paired and have a strong connection.

To join an existing G.hn Powerline network, press the **Security Button** on any Powerline Adapter in the existing G.hn Powerline network for 2 seconds until you see the **Security LED** start flashing **GREEN**. Then press the **Security Button** on the **additional** Powerline Adapter. The **Security LED** and the **Connection LED** will light up **GREEN** on both adapters.

\*If you have tried the above and are still experiencing problems, you can reset all devices to factory default by pushing the **Reset Button** for more than 10 seconds (until all the LEDs of the device blink).

## 1.5 How to understand the COVERAGE LED colors

The COVERAGE LED displays quality of the network and provides important information that will provide solutions to common questions, such as why a High Definition (HD) movie is not showing or shows with pixels. The COVERAGE LED indicator will vary its color depending on the estimated speed of the Powerline connection. The speed is measured in Megabits Per Second (Mbps).

Color	Information
RED	The current connection has low quality, basic Internet activities ex. 5Mbps are possible but the Powerline is unable to transmit either a Standard Movie or High Definition (HD) Movie.
ORANGE	The current connection has good quality and Internet activities ex. greater than 5Mbps and less than 40Mbps to transmit Standard Movie and HD Movie.
GREEN	The current connection has excellent quality and Internet activities ex. greater than 40Mbps to transmit multiple Standard Movies and HD Movies.

## Chapter 2 G.hn/Powerline Setup

### 2.1 IP Configuration

#### DHCP MODE

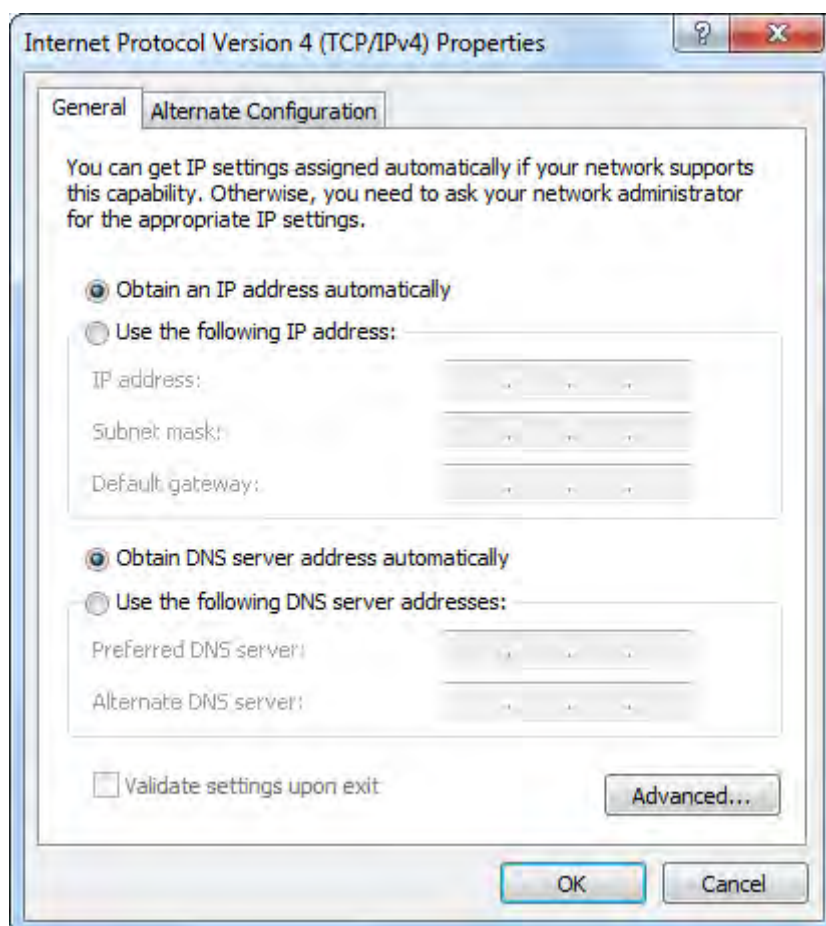
GPL-2000S4 supports two kinds of management IP simultaneously.  
To obtain an IP address from the DHCP server, follow the steps provided below.

**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:** Select Obtain an IP address automatically as shown below.



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

If you experience difficulty with DHCP mode, you can try static IP mode instead.

## STATIC IP MODE

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

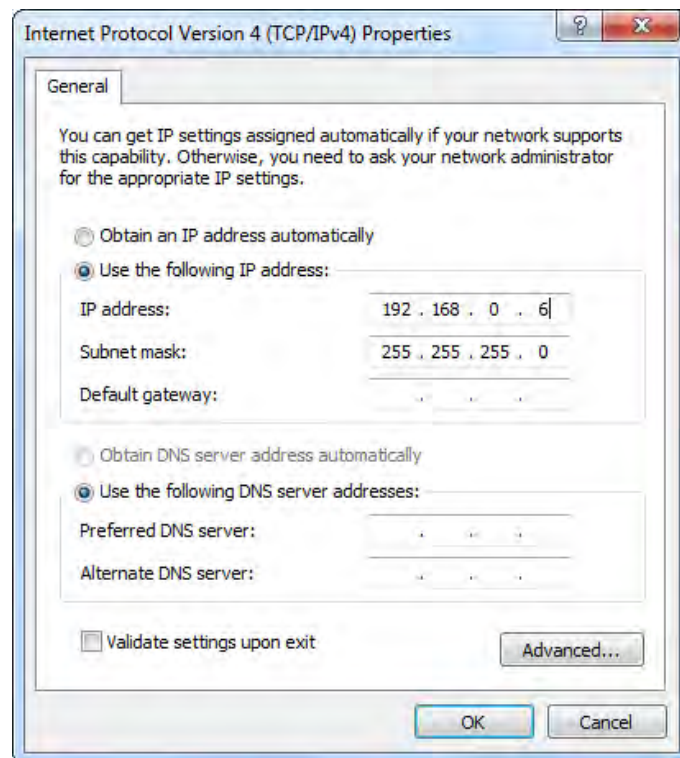
Follow these steps to configure your PC IP address to use subnet 192.168.0.x.

**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 192.168.0.x ( $5 < x < 255$ ) subnet with subnet mask of 255.255.255.0. The screen should now display as shown below.



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

## 2.2 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 192.168.0.5, type <http://192.168.0.5>

**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**



## Chapter 3 G.hn Interface



**GPL-2000S4 Web Configuration**
Log Out

[G.hn](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Multicast](#)  
[QoS](#)  
[VLAN](#)  
[G.hn spectrum](#)  
[Log file](#)  
[Advanced](#)

**Basic settings**

•MAC address

c8:d1:2a:ee:08:67

•Device ID

1

•Domain Name

IPXI0J0AX5yOPgeLqk304pFey38w883

•Force node Type

AUTOMATIC

•Node type\*

DOMAIN\_MASTER

\* Node type change can take some time, please refresh page to update state

Ok Cancel

•G.hn profile

PLC 100 MHz with MIMO

Ok Cancel

**Neighboring Domain Interference Mitigation (NDIM)**

•NDIM mode

AUTOMATIC

•Domain ID (DOD)

7

Ok Cancel

**Encryption Configuration**

•Encryption is ENABLED

•Pairing password

\*\*\*\*

Change Cancel

•Automatic configuration\*:

PAIR UNPAIR

\* Pairing can take some time, please refresh page to update state

**Available Connections**

Device ID	MAC Address	Phy Tx (Mbps)	Phy Rx (Mbps)
Empty list			

### 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)
- **Node Type**  
Shows the current status of the device.
- **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).

## 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 0.

## 3.3 Encryption Configuration via WEB UI

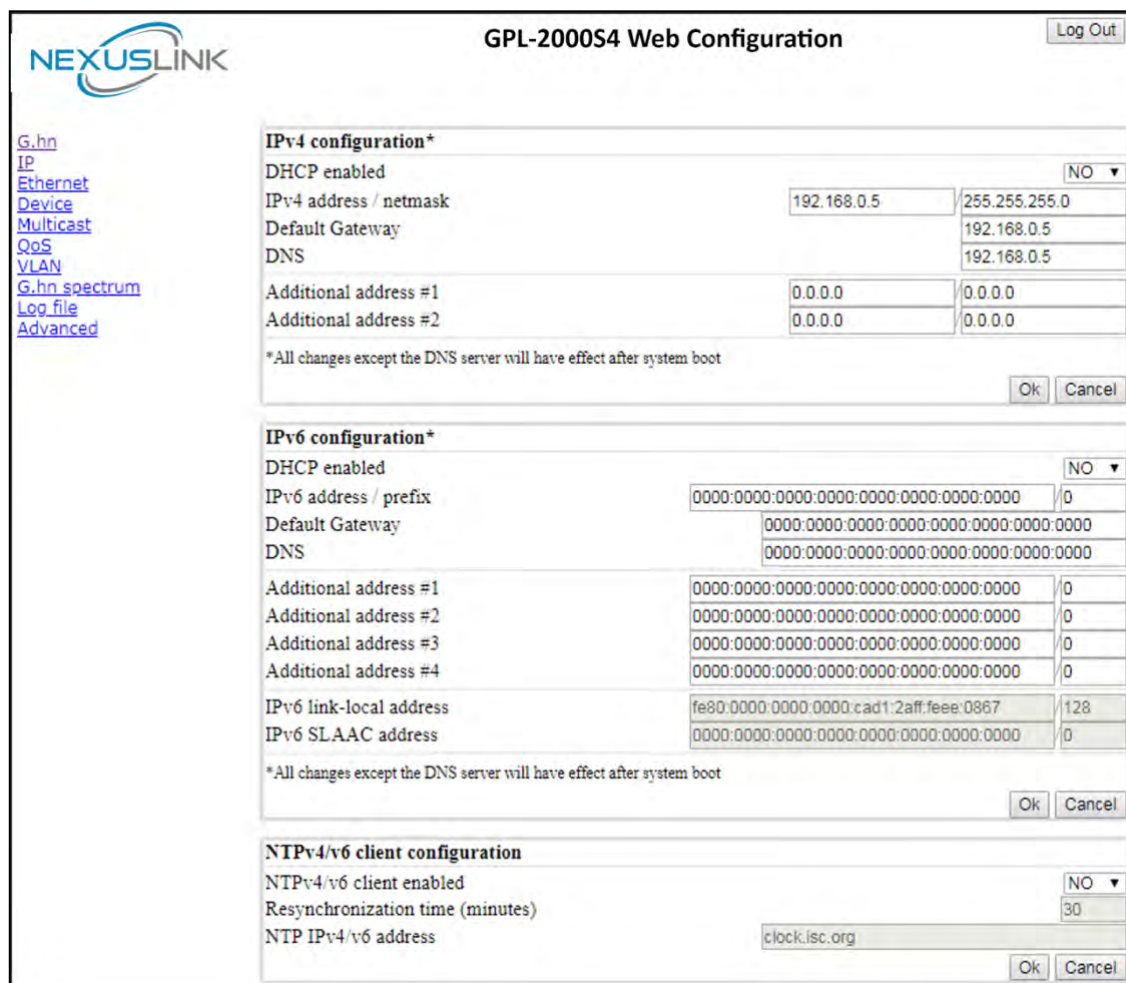
- **Pairing Password** used for authentication. Write a custom password to manually create a secure domain.

### 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.



## Chapter 4 IP Interface



**GPL-2000S4 Web Configuration** Log Out

**IPv4 configuration\***

DHCP enabled NO ▾

IPv4 address / netmask

Default Gateway

DNS

Additional address #1

Additional address #2

\*All changes except the DNS server will have effect after system boot

OK Cancel

**IPv6 configuration\***

DHCP enabled NO ▾

IPv6 address / prefix

Default Gateway

DNS

Additional address #1

Additional address #2

Additional address #3

Additional address #4

IPv6 link-local address

IPv6 SLAAC address

\*All changes except the DNS server will have effect after system boot

OK Cancel

**NTPv4/v6 client configuration**

NTPv4/v6 client enabled NO ▾

Resynchronization time (minutes)

NTP IPv4/v6 address

OK Cancel

### 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.

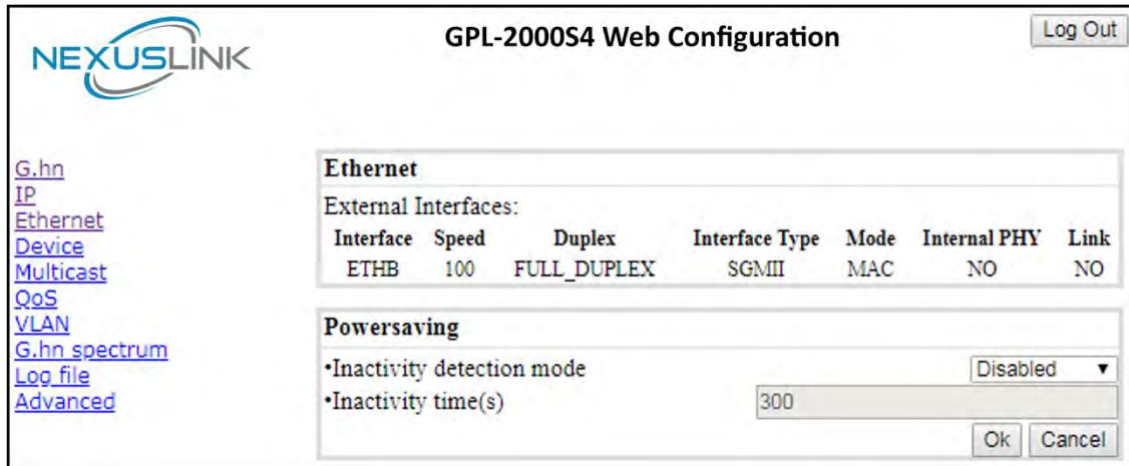
#### IPv6 subsection:

- **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.

## Chapter 5 Ethernet Interface



The screenshot shows the 'GPL-2000S4 Web Configuration' page. On the left is a navigation menu with links: [G.hn](#), [IP](#), [Ethernet](#), [Device](#), [Multicast](#), [QoS](#), [VLAN](#), [G.hn spectrum](#), [Log file](#), and [Advanced](#). The main content area has a 'Log Out' button in the top right. Below the navigation menu, there are two sections: 'Ethernet' and 'Powersaving'.

**Ethernet**

External Interfaces:

Interface	Speed	Duplex	Interface Type	Mode	Internal PHY	Link
ETHB	100	FULL_DUPLEX	SGMII	MAC	NO	NO

**Powersaving**

- Inactivity detection mode: Disabled (dropdown menu)
- Inactivity time(s): 300 (input field)

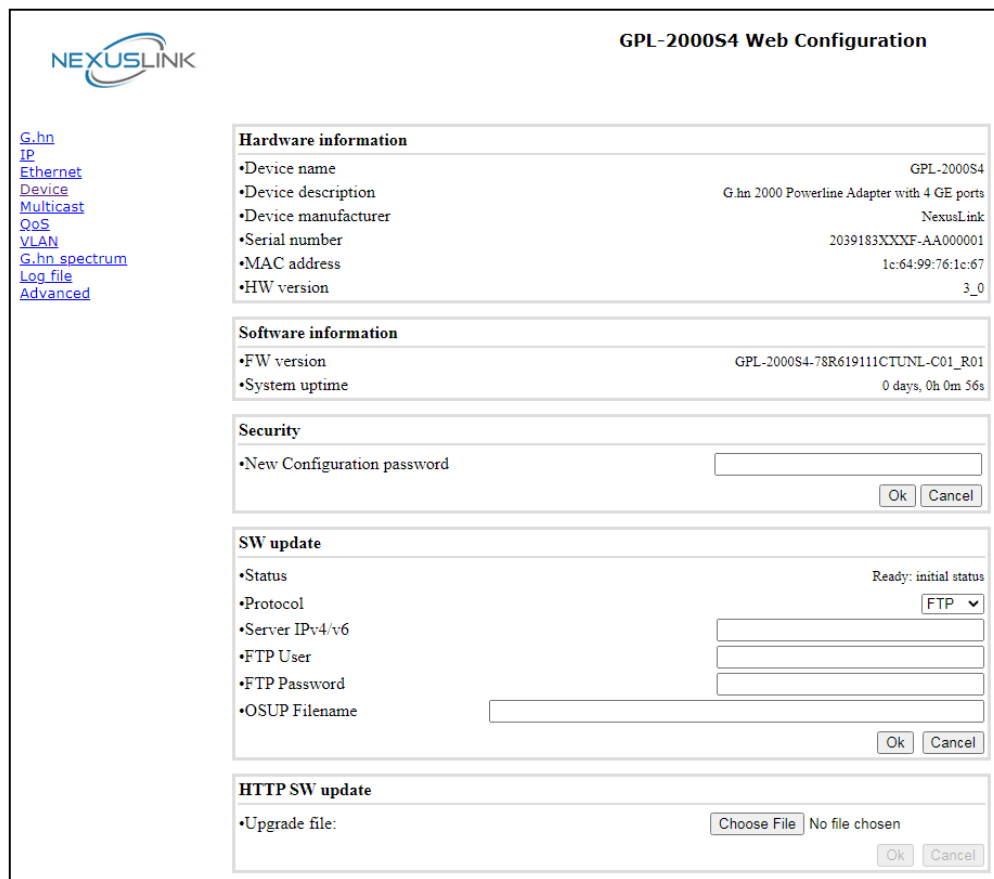
Buttons: Ok, Cancel

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

### Powersaving

Ethernet powersaving can be disabled, enabled by Ethernet link or enabled by Ethernet activity; idle timer can be configured as well.

# Chapter 6 Device Interface



**NEXUSLINK** **GPL-2000S4 Web Configuration**

[G.hn](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Multicast](#)  
[QoS](#)  
[VLAN](#)  
[G.hn spectrum](#)  
[Log file](#)  
[Advanced](#)

**Hardware information**

- Device name: GPL-2000S4
- Device description: G.hn 2000 Powerline Adapter with 4 GE ports
- Device manufacturer: NexusLink
- Serial number: 2039183XXX-AA000001
- MAC address: 1c:64:99:76:1c:67
- HW version: 3\_0

**Software information**

- FW version: GPL-2000S4-78R619111CTUNL-C01\_R01
- System uptime: 0 days, 0h 0m 56s

**Security**

- New Configuration password:

**SW update**

- Status: Ready: initial status
- Protocol:
- Server IPv4/v6:
- FTP User:
- FTP Password:
- OSUP Filename:

**HTTP SW update**

- Upgrade file:  No file chosen

## 6.1 Hardware information

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

## 6.2 Software information

Shows the FW version and system uptime.

## 6.3 Security

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

## 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.

## 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.

**NOTE1:** 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.

**NOTE2:** The Power LED indicates the status of firmware update progress. Please **DO NOT** power off the device when Power LED is flashing or the device will be damaged.

## Chapter 7 Multicast Interface

The screenshot shows the 'Multicast Configuration\*' section with the following settings:

- IGMP Snooping: YES
- MLD snooping: NO
- IGMP/MLD broadcast report: NO
- IGMP/MLD broadcast report mode: 0
- Filter unknown multicast traffic: YES
- IGMP Multicast ranges:
 

Minimum IP address			Maximum IP address		
224	0	.0.0	239	254	.255.255
0	0	.0.0	0	0	.255.255
0	0	.0.0	0	0	.255.255
0	0	.0.0	0	0	.255.255

Below this, the 'Broadcast suppression' section shows:

- Broadcast xput limit (Mbps): 2

### 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/MLD broadcast report mode:** Report broadcast forwarding behavior when the MCAST.GENERAL.REPORT\_BROADCAST\_ALLOWED is enabled.
    - If 0 then broadcast reports only when the video source is unknown.
    - If 1 then broadcast reports always.
    - If 2 then broadcast reports always if IGMPv3 and only when video source is unknown in others.

The term 'video source' refers to the node whose Ethernet port is connected directly to the Home Gateway.
  - **Filter unknown multicast traffic:** Enables the Multicast Filtering feature. If enabled, all the unsolicited multicast traffic will be blocked. In IPv4 multicast traffic, only the traffic between the IP ranges defined in the MCAST.GENERAL.IGMP\_IP\_RANGES\_DEF and the packets are unsolicited, these packets will be dropped.
- Warning:** This feature implies a higher CPU load, so it is advisable to enable it only in


the Video Source.

Only 100 Kbps of broadcast traffic could be managed in this mode.

**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.

**Broadcast Suppression:** Maximum throughput allowed without suppressing broadcast traffic. The accuracy of this parameter depends on size of packets (big packets -> more accuracy). Value 0 deactivates this functionality.

## Chapter 8 QoS Menu



**GPL-2000S4 Web Configuration**
Log Out

[G.hn](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Multicast](#)  
[QoS](#)  
[VLAN](#)  
[G.hn spectrum](#)  
[Log file](#)  
[Advanced](#)

**QoS Configuration**

QoS criterion

DSCP

Type of frame

Ethernet frame

Packet detection 1

None

Offset

0

Bitmask

0x0000

Pattern

0x0000

Packet detection 2

None

Offset

0

Bitmask

0x0000

Pattern

0x0000

**Packet classification**

•Default prio 0

•TCP Ack Class in IPv4 0 NO

•TCP Ack Class in IPv6 0 NO

•ARP Class 0 NO

DSCP Class

0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7

PC	Offset	Bitmask	Pattern	Priority
Rule 1	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>
Rule 2	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">1</span>
Rule 3	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">2</span>
Rule 4	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">3</span>
Rule 5	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">4</span>
Rule 6	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">5</span>
Rule 7	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">6</span>
Rule 8	<span style="border: 1px solid #ccc; padding: 2px 10px;">0</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">0x0000</span>	<span style="border: 1px solid #ccc; padding: 2px 10px;">7</span>

Ok
Cancel

### 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.
- **TCP Ack Class in IPv4:** Mapping TCP ACK (IPv4) to a Class Value.
- **TCP Ack Class in IPv6:** Mapping TCP ACK (IPv6) to a Class Value.
- **ARP Class:** Mapping ARP to a Class Value.
- **DSCP Class:** Mapping of each DSCP value to a Class Value.


As shown above, if QoS criterion: DSCP, 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)

# Chapter 9 VLAN Interface



**GPL-2000S4 Web Configuration**

[Log Out](#)

[G.hn](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Multicast](#)  
[QoS](#)  
[VLAN](#)  
[G.hn spectrum](#)  
[Log file](#)  
[Advanced](#)

**VLAN Configuration**  
VLAN feature Enabled: NO  

[Disable VLAN](#)

**Configure port type and tag**  

ETHA VLAN PVID:

0

ETHA Port configuration

NONE ▼

ETHB VLAN PVID:

0

ETHB Port configuration

NONE ▼

FW VLAN PVID:

0

MGMT Port configuration

NONE ▼

SDIO VLAN PVID:

0

SDIO Port configuration

NONE ▼

**Ingress/Egress Filtering**  
Enable VLAN Filtering NO ▼  

Allowed TAGS in ETHA:

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Allowed TAGS in ETHB:

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Allowed TAGS in FW:

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Allowed TAGS in SDIO:

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

[Submit and Enable VLAN](#)
[Cancel](#)

## 9.1 VLAN Configuration

VLAN configuration has been improved allowing the definition of access, trunk and hybrid VLAN ports.

- **VLAN Feature Enabled:** To activate/deactivate VLAN (IEEE 802.1Q) tagging/untagging traffic.


- **ETHA VLAN PVID:** VLAN identifier for Ethernet A port (if it is set to 0, tagging is deactivated).
- **ETHA Port configuration:** Port Configuration for Ethernet A port (ACCESS, TRUNK, NONE).
- **ETHB VLAN PVID:** VLAN identifier for Ethernet B port (if it is set to 0, tagging is deactivated).
- **ETHB Port configuration:** Port Configuration for Ethernet B port (ACCESS, TRUNK, NONE).
- **FW VLAN PVID:** VLAN identifier for Ethernet A port (if it is set to 0, tagging is deactivated).
- **MGMT Port configuration:** Port Configuration for management port (ACCESS, TRUNK, NONE).
- **SDIO VLAN PVID:** VLAN identifier for SDIO port (if it is set to 0, tagging is deactivated).
- **SDIO Port configuration:** Port Configuration for SDIO port (ACCESS, TRUNK, NONE).

### Ingress/Egress Filtering

A tag value (from 2 to 4094) per interface can be added in this section. Set value to 0 for no tagging.

- **Enable VLAN Filtering:** To enable/disable VLAN ingress and egress filtering.
- **Allowed TAGS in ETHA:** Tags allowed on Ethernet A interface.
- **Allowed TAGS in ETHB:** Tags allowed on Ethernet B interface.
- **Allowed TAGS in FW:** Tags allowed on firmware interface.
- **Allowed TAGS in SDIO:** Tags allowed on SDIO interface.

## Chapter 10 G.hn spectrum Interface



**GPL-2000S4 Web Configuration**
Log Out

[G.hn](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Multicast](#)  
[QoS](#)  
[VLAN](#)  
[G.hn spectrum](#)  
[Log file](#)  
[Advanced](#)

**Notches Configuration**

Notch index	Start freq (KHz)	Stop freq (KHz)	Depth (dB)	Type
0	1800	2000	100	Regulation
1	3500	4000	100	Regulation
2	7000	7300	100	Regulation
3	10100	10150	100	Regulation
4	14000	14350	100	Regulation
5	18068	18168	100	Regulation
6	21000	21450	100	Regulation
7	24890	24990	100	Regulation
8	28000	29700	100	Regulation
9	50000	54000	100	Regulation
10	0	1807	100	Regulation
11	80000	100000	100	Regulation
12	28000	30000	30	Regulation

**Add new user notch**

•Index (0..9)

•Start frequency (KHz)

•Stop frequency (KHz)

•Depth (0..40dB, 100 removes notch)

**Remove user notch**

•Index (0..9)

### 10.1 Notches

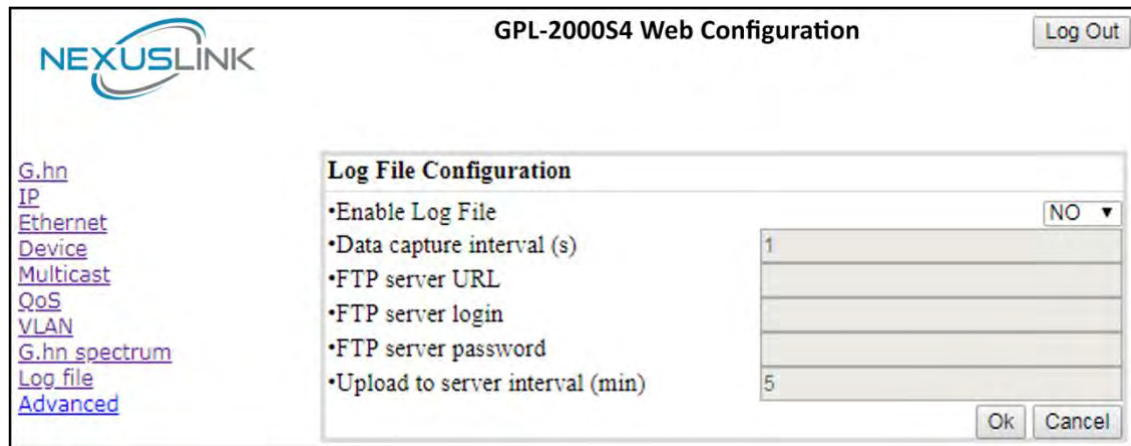
In this tab a table with all configured **Notches** of selected node will be shown. The table is composed of next columns for every notch: Notch Number, Type of notch, Start Frequency (KHz), Stop Frequency (KHz), Depth (in dB).

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.

# Chapter 11 Log file Interface

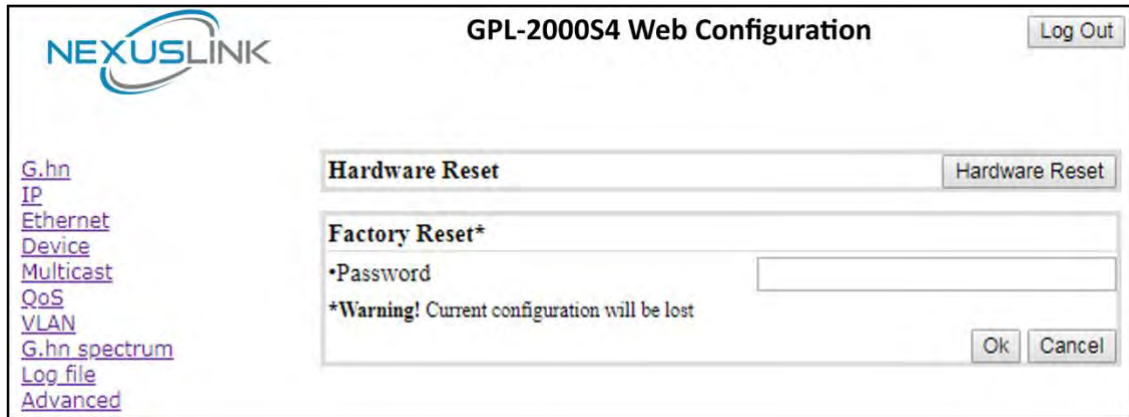


## 11.1 Log File

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.

## Chapter 12 Advanced Interface



The screenshot shows the 'GPL-2000S4 Web Configuration' interface. On the left is a navigation menu with links: [G.hn](#), [IP](#), [Ethernet](#), [Device](#), [Multicast](#), [QoS](#), [VLAN](#), [G.hn spectrum](#), [Log file](#), and [Advanced](#). The main content area has a title bar with the NEXUSLINK logo and 'GPL-2000S4 Web Configuration', and a 'Log Out' button. Below the title bar, there are two sections: 'Hardware Reset' with a 'Hardware Reset' button, and 'Factory Reset\*' which includes a 'Password' input field, a warning message '\*Warning! Current configuration will be lost', and 'Ok' and 'Cancel' buttons.

**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.

## Chapter 13 Specifications

### Interface

- RJ-45 x 4,
- AC power plug
- LED Indicators: G.hn, PWR, Security, Ethernet x 8 (LEDx2/ETH connector)
- Buttons: G.hn pairing, RESET

### Ethernet

- Standard IEEE 802.3
- 10/100/1000 Mbps BaseT auto-sense
- Auto rate and duplex negotiation
- MDI/MDX support

### G.hn

- MaxLinear 88LX5152 + 88LX2720
- ITU-T G.9960 & G.9961 compliant
- G.hn 100MHz MIMO
- Up to 2000 Mbps at Phy rate
- NDIM support

### Modulations

- OFDM, FEC; Flexible frequency configuration

### Management

- HTTP Web-based (optional)

### Security

- AES 128 bits encryption ensures total data security

### Networking Protocols

- 802.1D Ethernet Bridge
- 802.1Q VLAN
- Quality of Service (QoS)
- IGMP(IPv4) Snooping & MLD(IPv6) Snooping

### AC Power

- 100-240 VAC, 50Hz/60Hz

### Environment Condition

- Operating temperature: 0 ~ 40 degrees Celsius
- Relative humidity: 8 ~ 95% (non-condensing)

### Dimensions

- 146mm (H) x 72mm (W) x 39mm (D)

### Certifications

- FCC, CE, ITU-T G.hn Standard

Note: Specifications are subject to change without notice