



**IGAP-610H+/W612H+**  
**IEEE 802.11 a/b/g/n Access Point**  
**User Manual**  
Version 1.1  
Jan, 2019

[www.oringnet.com](http://www.oringnet.com)

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# Getting Started

## 1.1 About the IGAP-610H+/W612H+

The IGAP-610H+/W612H+ is a IEEE 802.11 a/b/g/n WLAN access point with one port Giga Ethernet. It can be configured to operate in AP/Client/Repeater modes and is specifically designed for the toughest industrial environments. You can configure the device by Web interface via the LAN port or by WLAN interface. In addition, the series provides a P.D. port which is fully compliant with IEEE802.3af PoE standard to save the layout cost of power line. The series can be easily adopted in almost all kinds of applications and provides the most rugged solutions for managing your network.

## 1.2 Software Features

- High speed air connectivity with support up to 300Mbps
- Highly secure transmission with WEP/WPA-PSK(TKIP,AES)/WPA2-PSK(TKIP,AES)/802.1X authentication supported
- Supports AP/Client/Repeater modes
- Wireless connecting status monitoring
- Secured management by HTTPS
- Event warning via Syslog

## 1.3 Hardware Features

- Giga Ethernet ports in RJ45 connector type
- Support external N-Type antenna installation (IGAP-W612H+ only)
- IP-67 waterproof housing (IGAP-W612H+ only)
- High transmission power of 500mw
- Operating temperature: -10 to 70°C
- Storage temperature: -40 to 85oC
- Operating humidity: 5% to 95%, non-condensing
- Dimensions: 45 (W) x 95 (D) x 115 (H) mm (IGAP-610H+) / 220.42(W)x 127.42(D)x 75(H) mm (IGAP-W612H+)

# Hardware Overview

## 2.1 Front Panel

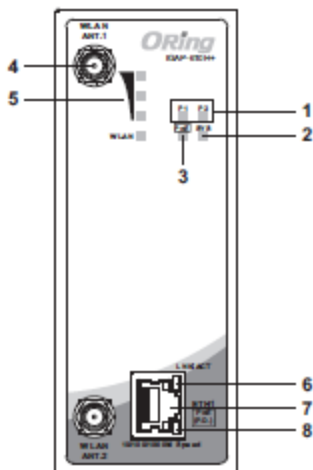
### 2.1.1 Ports and Connectors

#### 2.1.1-1 IGAP-610H+

The devices are equipped with the following ports and features on the bottom panel.

Port	Description
<b>Giga Ethernet port</b>	Giga ports supporting auto-negotiation. One with PoE support.
<b>Reset button</b>	To restore the device configurations back to the factory defaults, press the Reset button for a few seconds. Once the power indicator starts to flash, release the button. The device will then reboot and return to factory defaults.

**Front Panel**



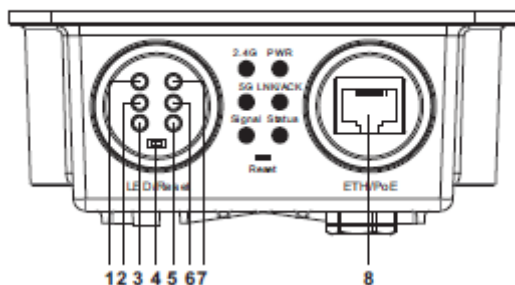
1. Power LED
2. System LED
3. PoE power status
4. WLAN Antenna
5. LED for wireless signal strength
6. LNK/ACT LED for Giga PoE LAN port
7. Giga PoE LAN port
8. Speed LED for Giga PoE LAN port

#### 2.1.1-2 IGAP-W612H+

The devices are equipped with the following ports and features on the bottom panel.

Port	Description
<b>Giga Ethernet port</b>	Giga ports supporting auto-negotiation. One with PoE support.
<b>Reset button</b>	To restore the device configurations back to the factory defaults, press the Reset button for a few seconds. Once the power indicator starts to flash, release the button. The device will then reboot and return to factory defaults.

### Bottom Panel



1. LED for 2.4G WLAN
2. LED for 5G WLAN
3. LED for WLAN signal strength
4. Reset button
5. LED for system status
6. LNK/ACT LED for Giga PoE LAN port
7. Power indicator
8. Giga PoE LAN port

## 2.1.2 Front Panel LEDs

### 2.1.2-1 IGAP-610H+

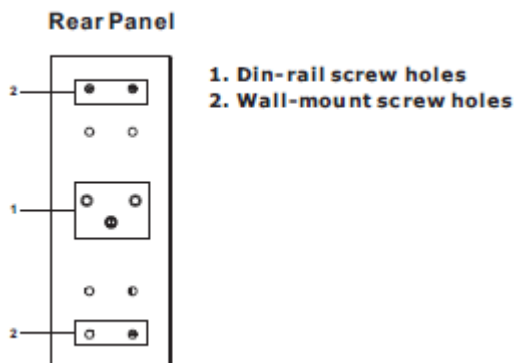
LED	Color	Status	Description
P.O.E	Green	On	PoE power on
P1/ P2	Green	On	DC power 1/2 is activated.
SYS	Green	On	System is ready
		Blinking	System is booting up
WLAN	Green	On	WLAN activated
		Blinking	Transmitting wireless data
WLAN Strength	Green	On	WLAN signal strength. 1<25%, 2<50%, 3<75%, 4<100%
<b>10/100/1000Base-T(X) Fast Ethernet ports</b>			
LNK/ACT	Green	On	Port is activated
Speed	Green	On	Port is linked and running at 1000Mbps.
	Amber	On	Port is linked and running at 100Mbps.
		Off	Port is linked and running at 10Mbps.

### 2.1.2-2 IGAP-W612H+

LED	Color	Status	Description
PWR	Green	On	PoE power is supplied over Ethernet cable
Status	Green	On	System is ready
		Blinking	System is booting up
<b>WLAN</b>			
2.4G	Green	On	2.4G WLAN activated
5G	Green	On	5G WLAN activated
Signal	Green	On	WLAN signal strength.> 75%
		Blink 2 sec/time	WLAN signal strength.=> 74% ~ 50%
		Blink 1 sec/time	WLAN signal strength.=> 49% ~ 25%
		Blink 500 msec/time	WLAN signal strength.=< 25%
<b>10/100/1000Base-T(X) Fast Ethernet ports</b>			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting Data

## 2.2 Rear Panel

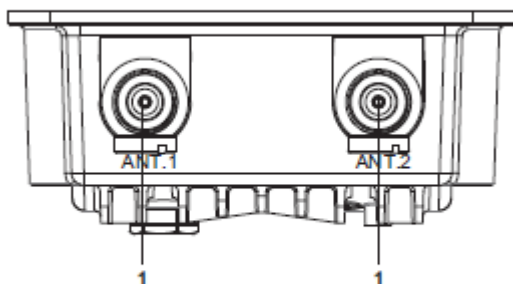
### 2.2-1 IGAP-610H+



### 2.2-2 IGAP-W612H+



**Top Panel**



**1. WLAN Antenna**

# Hardware Installation

The device can be fixed to a pole or the wall using the supplied mounting kits. Before installing the device, make sure you have all of the package contents available and a PC with Microsoft Internet Explorer 6.0 or later, for using web-based system management tools.



When installed outdoors, make sure the LAN ports are covered by RJ-45 rubber seals provided with the package.



Do not remove the water-proof casing, and avoid touching or moving the device when the antennas are transmitting or receiving.



When installing the device, make sure to keep the radiating at a minimum distance of 20 cm (7.9 inches) from all persons to minimize the potential for human contact during normal operation.



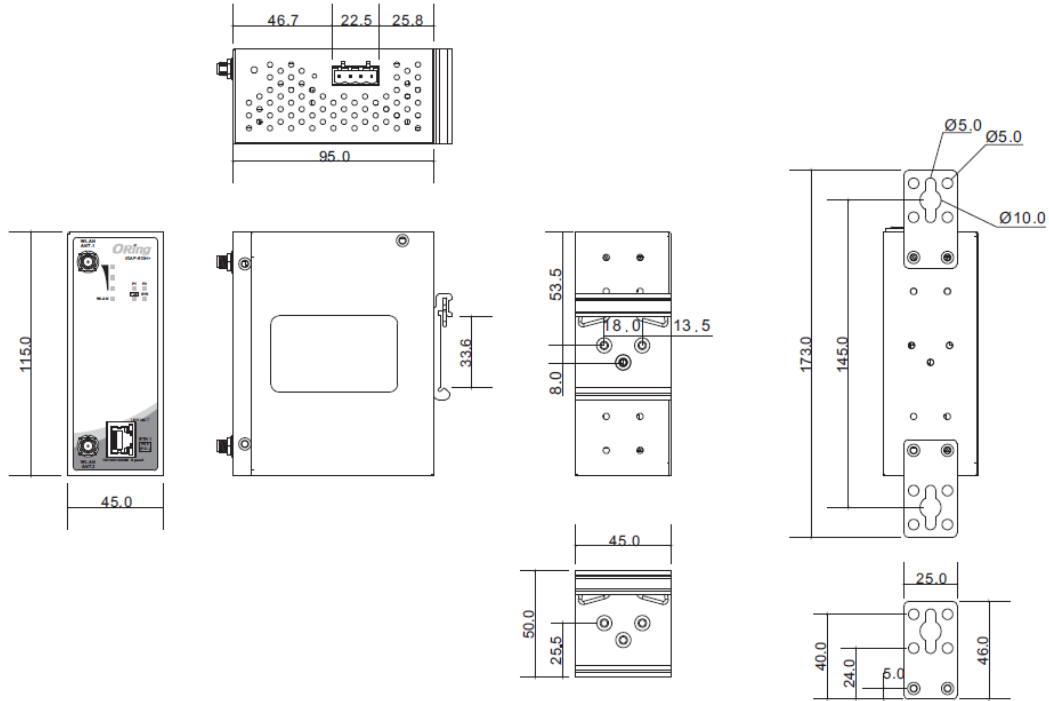
Do not operate the device near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

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### 3.1 Wall Mounting

#### 3.1-1 IGAP-610H+

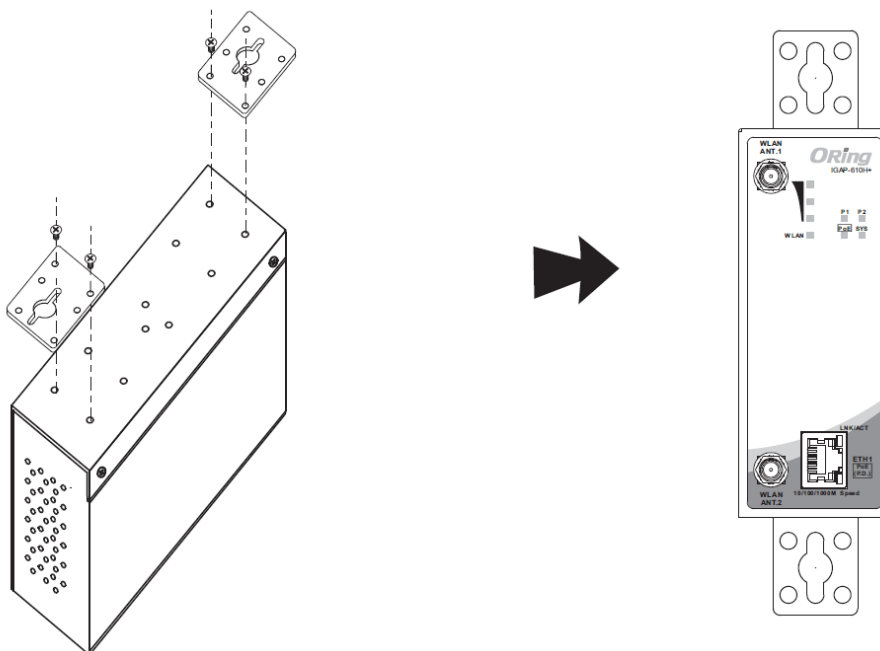
Unit =mm (Tolerance  $\pm 0.5$ mm)



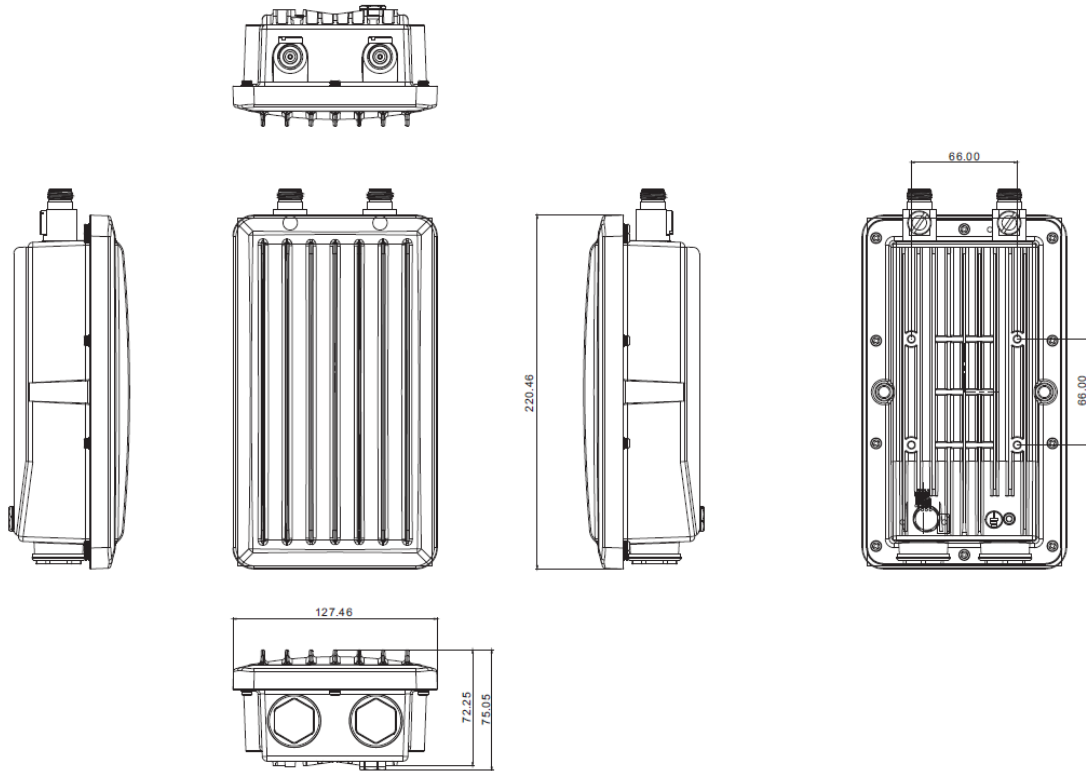
**IGAP-610+ Wall-mounting Measurements (Unit = mm)**



To mount the device to the wall, simply insert a screw through the screw hole on the edge of the unit and tighten the screw for added stability.



**3.1-2 IGAP-W612H+**

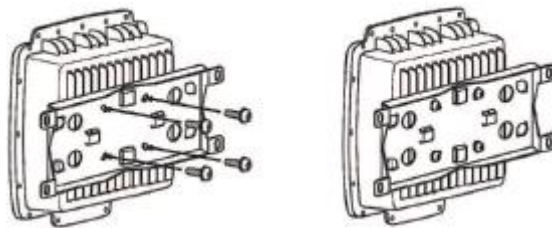


**IGAP-W612+ Wall-mounting Measurements (Unit = mm)**

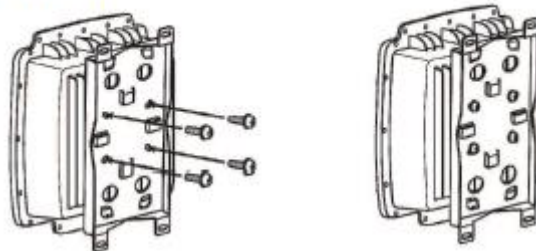


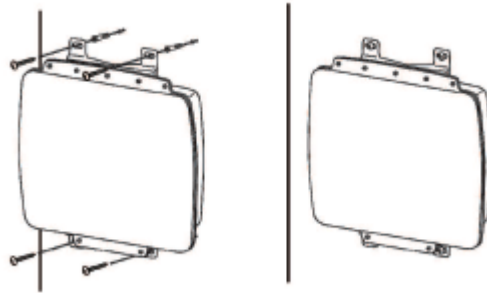
To mount the device to the wall, simply insert a screw through the screw hole on the edge of the unit and tighten the screw for added stability.

**Horizontal**



**Vertical**



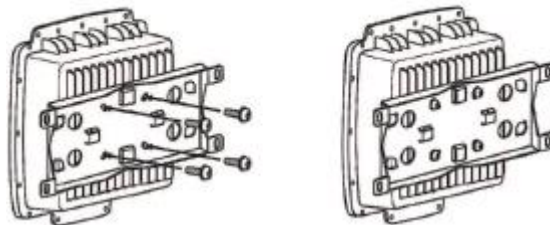


Instead of screwing the screws in all the way, it is advised to leave a space of about 2mm to allow room for sliding the device between the wall and the screws.

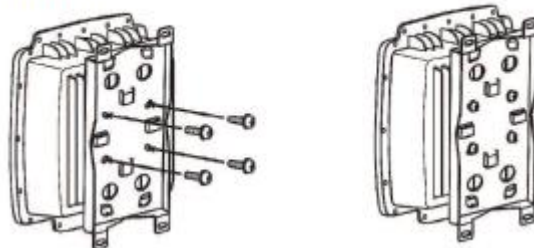
### 3.2 Pole Mounting

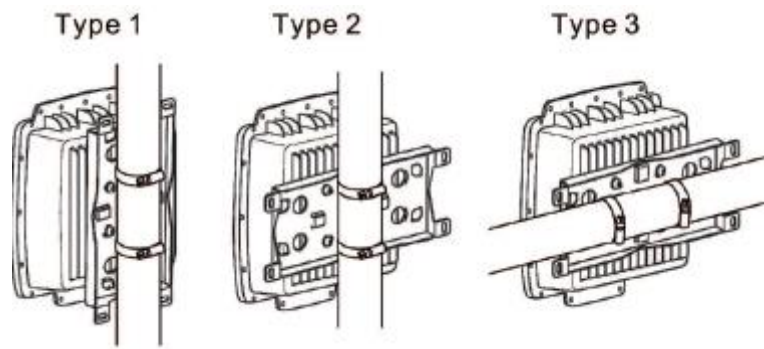
You can mount the device to a pole using the adjustable steel band straps included in the kit. Thread the two supplied metal mounting straps through the screw holes on the edge of the unit and then put the straps around the pole, as shown below. Put the washers and nuts through the straps and tighten the strap.

**Horizontal**



**Vertical**





**IGAP-W612+ Pole-mounting Measurements**

## 3.3 Wiring

For pin assignments of the power connector, please refer to the following tables.

### 3.3.1 Power Supply

The device is powered by an Ethernet cable via the PoE port. Make sure the PoE port is connected with an RJ-45 cable and check if the power LED lights up after connection.

### 3.3.2 Reset

For protection, the reset button is placed in the case covered by a screw head. If you need to reset the device, remove the screw and use a very small point object like a needle or a toothpick to poke the reset button. To reboot the device, press the Reset button for 5 seconds. To restore the device configurations back to the factory defaults, press the Reset button for 5 seconds.

# Cables and Antenna

## 4.1 Ethernet Pin Definition

The device provides 10/100/1000 Base-T(X) Ethernet ports in RJ45 connector type.

According to the link type, the AP use CAT 3, 4, 5, 5e, 6 UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable	Type	Max. Length	Connector
10Base-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	RJ45
100Base-T(X)	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	RJ45
1000Base-T(X)	Cat 5e, 6	UTP 100 m (328 ft)	RJ45

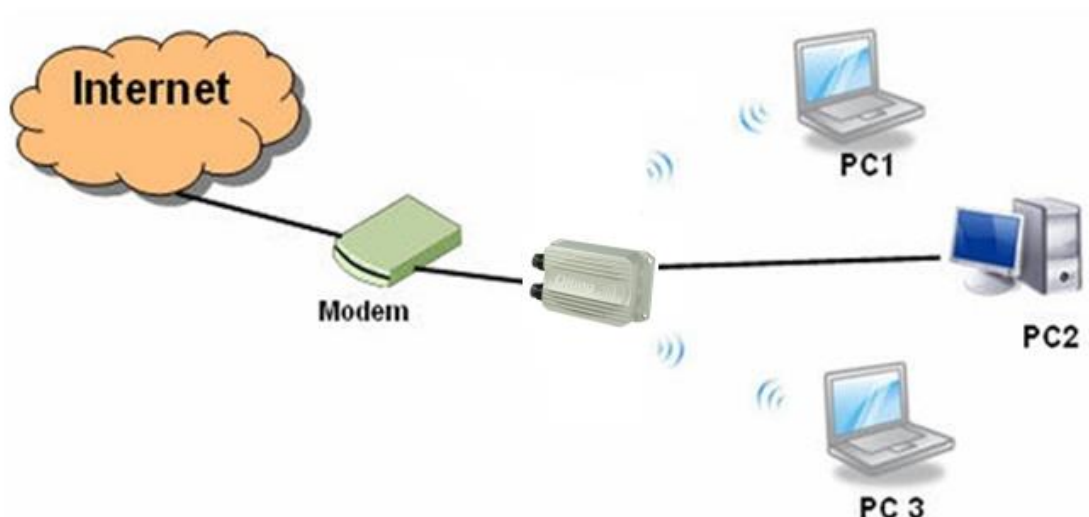
## 4.2 Wireless Antenna

The IGAP-W612H+ comes with two N-type WiFi antenna connectors. Attach the antenna to the connector by fastening the N-type male connector to the N-type female connector. Make sure both connectors are clean and dry.

# Management

## 5.1 Network Connection

Before installing the device, you need to be able to access the device via a computer equipped with an Ethernet card or wireless LAN interface. To simplify the connection, it is recommended to use an Ethernet card to connect to a LAN.



Follow the steps below to install and connect the device to PCs:

Connect a computer to the device. Use either a straight-through Ethernet cable or cross-over cable to connect the LAN port of the device to a computer. Once the LED of the LAN port lights up, which indicates the connection is established, the computer will initiate a DHCP request to retrieve an IP address from the AP.

## 5.2 Web Browser Management

An embedded HTML web site resides in the flash memory of the device. It contains advanced management features which you can manage from anywhere on the network through a standard web browser such as Microsoft Internet Explorer (Internet Explorer 5.0 or later versions). It is based on Java Applets which can reduce network bandwidth consumption, enhance access speed, and provide user-friendly viewing windows.

**Note:** By default, IE5.0 or later version does not allow Java Applets to open sockets. You need to explicitly modify browser settings in order to enable Java Applets to use network ports.

Open a web browser on your computer and type <http://192.168.10.2> (default gateway IP of



the device) in the address box to access the webpage. A login window will pop up where you can enter the default login name admin and password **admin**. For security reasons, we strongly recommend you to change the password. Click on **Administrator > Password** after logging in to change the password.

Sign in

http://192.168.10.2

Your connection to this site is not private

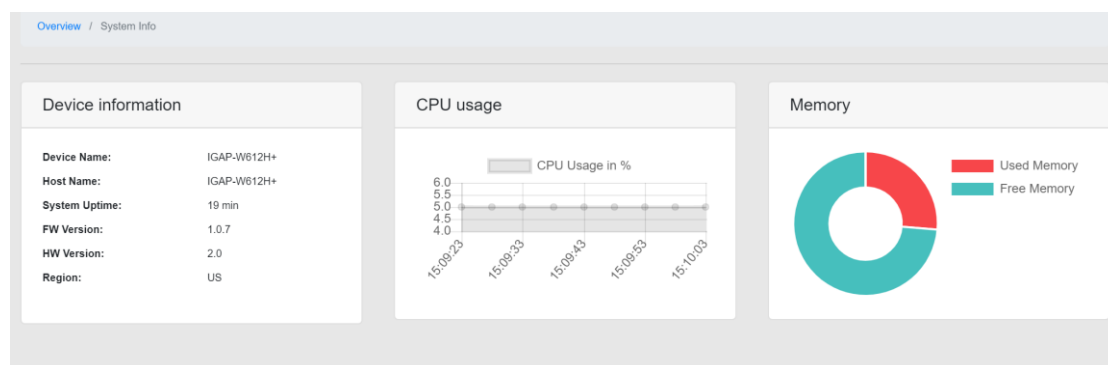
Username

Password

## 5.3 Status

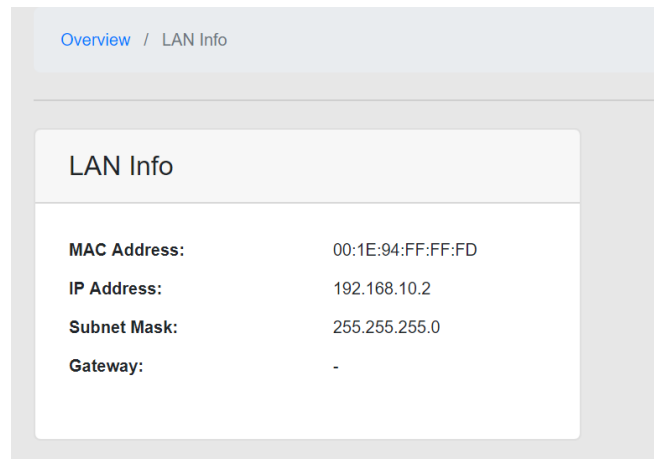
### 5.3.1 Overview

The overview screen will appear with general information of the device, including information regarding the Device information, Memory, CPU usage



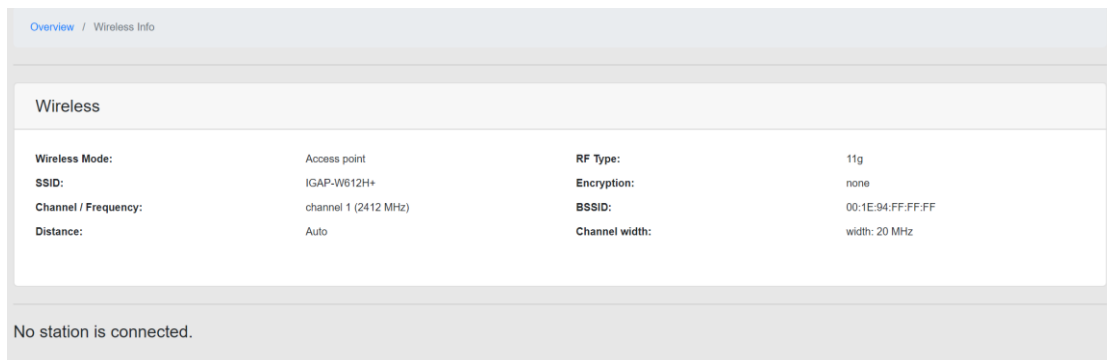
### 5.3.2 Lan info

This page displays the details Lan information including MAC address, IP address, Subnet mask and default Gateway.



### 5.3.3 Wireless info

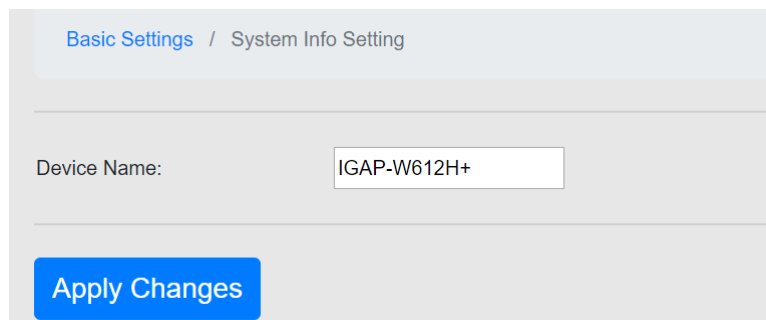
This page displays the details Wireless information including Wireless mode, SSID, Channel, RF type, Encryption



## 5.4 Basic setting

### 5.4.1 System Info Setting

This tab allows you to do general settings for the device host name



### 5.4.2 LAN

This page allows you to set up LAN IP address, user can create four Lan interface, and assign IP address and VLAN to each.

Label	Description
Interface	Support Lan, Lan1, Lan2, Lan3
Protocol	Support Static, DHCP
VLAN	Enable/Disable Vlan setting
VLAN ID	Assign VLAN number
IP Address	Interface IP address
Subnet Mask	Interface subnet mask
Default Gateway	Interface default gateway
IGMP Snooping	Enable/Disable IGMP Snooping support

## 5.5 Wireless Setting

### 5.5.1 WIRELESS SETTING

#### AP mode

This mode provides Access Point services for other wireless clients

Wireless Mode settings

Wireless Mode: Access Point ▼

Radio settings

Band: 802.11G(2.4GHz) ▼

HT Mode: 20MHz ▼

Channel: Channel 1 : 2412 MHz ▼

Access point settings

SSID: IGAP-W612H+

Network: LAN ▼

Encryption: No Encryption ▼

WMM: Enable ▼

Preamble: Short ▼

Isolate: Disable ▼

Hidden SSID: Disable ▼

Label	Description
<b>Band</b>	Support 802.11b, 802.11g(2.4G), 802.11a(5G).
<b>HT Mode</b>	Allows the network to use both 20 MHz and 40 MHz bands. Required on AP side primarily to support co-existence. The station can also send intolerant bit status to AP to signal use of 20 MHz channel. The station will follow the AP's channel bonding and channel switching HT 20/40 mechanism. Disabling this setting forces the use of 40 MHz bandwidth/channel bonding, and results in high data rate.
<b>Channel</b>	Chooses the frequency channel. For an AP, it would select the channel with the least interference from other APs. For a station, it would automatically select the same channel as its AP. The frequency channel may also be manually selected. An AP and its station must have the same channel in order to communicate.
<b>SSID</b>	Fill in the interface SSID. This will display the name of the wireless network that this access point (AP) is offering.

<b>Network</b>	Assign to LAN interface
<b>Encryption</b>	<p>Chose an encryption method among the following options: <b>Open, WEP Open System, WEP Shared Key, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK Mixed Mode</b>. Wired Equivalent Privacy (WEP) is the oldest and least secure encryption algorithm. Stronger encryption using WPA or WPA2 should be used where possible. For the WEP Open System and WEP Shared Key encryptions, you can specify up to 4 keys and only 1 would be used at a time.</p> <p>Wifi protected access (WPA) is a stronger encryption than WEP. Furthermore, WPA2 was developed to strengthen the security of WPA and is stronger than WPA and WEP.</p>
<b>WMM</b>	<p>Provides Quality of Service (QoS) features, checked by default. Wireless multimedia enables the classification of the network traffic into 4 main types, voice, video, best effort, and background, in decreasing order of priority. Higher priority traffic has a higher transmission opportunity and would have to wait less time to transmit. As a result, an existing video stream would not be interrupted by additional background processes.</p>
<b>Isolate</b>	Isolate Enable/Disable
<b>Hidden SSID</b>	<p>Hides the network name (ESSID) from being broadcast publicly. (This option is for a device operating as an AP.)</p>

## Client

This is a client mode that can be connected to the Access Point mode. It is used to bridge the wireless connection to an Access Point. It forwards all the traffic to and from network devices to the Ethernet interface.

Wireless Settings / Wireless settings

---

Wireless Mode settings

Wireless Mode:

---

Client settings

SSID:  [Site Survey](#)

Network:

Encryption:

WMM:

Roaming:

Label	Description
<b>SSID</b>	Peer wireless SSID name
<b>Site Survey</b>	Scan environment useable AP SSID
<b>Network</b>	Assign to LAN interface
<b>Encryption</b>	Wireless security option need to same with AP side
<b>WMM</b>	Enable/Disable WMM feature
<b>Roaming</b>	X-Roaming support

### Multiple access point

Wireless Settings / Wireless settings

---

**Wireless Mode settings**

Wireless Mode:

Multiple Access point:

---

**Radio settings**

Band:

HT Mode:

Channel:

---

**Multiple Access point 1 settings**

SSID:

Network:

Encryption:

WMM:

Preamble:

Isolate:

Hidden SSID:

Label	Description
<b>Multiple access point</b>	Support 4 virtual SSID
<b>Band</b>	Support 802.11b, 802.11g(2.4G), 802.11a(5G).
<b>HT Mode</b>	Allows the network to use both 20 MHz and 40 MHz bands. Required on AP side primarily to support co-existence. The station can also send intolerant bit status to AP to signal use of 20 MHz channel. The station will follow the AP's channel bonding and channel switching HT 20/40 mechanism. Disabling this setting forces the use of 40 MHz bandwidth/channel bonding, and results in high data rate.
<b>Channel</b>	Chooses the frequency channel. For an AP, it would select the channel with the least interference from other APs. For a station, it would automatically select the same channel as its AP. The frequency channel may also be manually selected. An AP and its station must have the same channel in order to communicate.
<b>SSID</b>	Fill in the interface SSID. This will display the name of the wireless network that this access point (AP) is offering.
<b>Network</b>	Assign to LAN interface

<p><b>Encryption</b></p>	<p>Chose an encryption method among the following options: <b>Open, WEP Open System, WEP Shared Key, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK Mixed Mode.</b> Wired Equivalent Privacy (WEP) is the oldest and least secure encryption algorithm. Stronger encryption using WPA or WPA2 should be used where possible. For the WEP Open System and WEP Shared Key encryptions, you can specify up to 4 keys and only 1 would be used at a time.</p> <p>Wifi protected access (WPA) is a stronger encryption than WEP. Furthermore, WPA2 was developed to strengthen the security of WPA and is stronger than WPA and WEP.</p>
<p><b>WMM</b></p>	<p>Provides Quality of Service (QoS) features, checked by default. Wireless multimedia enables the classification of the network traffic into 4 main types, voice, video, best effort, and background, in decreasing order of priority. Higher priority traffic has a higher transmission opportunity and would have to wait less time to transmit. As a result, an existing video stream would not be interrupted by additional background processes.</p>
<p><b>Isolate</b></p>	<p>Isolate Enable/Disable</p>
<p><b>Hidden SSID</b></p>	<p>Hides the network name (ESSID) from being broadcast publicly. (This option is for a device operating as an AP.)</p>

### Repeater

A wireless repeater takes an existing signal from a wireless access point and rebroadcasts it to create a second network.

The screenshot shows the 'Wireless Settings' page. Under 'Wireless Mode settings', the 'Wireless Mode' dropdown is set to 'Repeater'. Below this, the 'Repeater Settings' section includes:
 

- SSID: IGAP-W612H+ (with a 'Site Survey' button)
- Network: LAN
- Encryption: No Encryption
- WMM: Enable
- Roaming: Disable



Label	Description
<b>SSID</b>	Peer wireless SSID name
<b>Site Survey</b>	Scan environment useable AP SSID
<b>Network</b>	Assign to LAN interface
<b>Encryption</b>	Wireless security option need to same with AP side
<b>WMM</b>	Enable/Disable WMM feature
<b>Roaming</b>	X-Roaming support

### 5.5.2 WIRELESS OPTION

[Wireless Settings](#) / [Wireless Options](#)

#### Wireless Options

Wireless performance tuning.

**DTIM Interval:**

**Fragmentation Threshold:**

**RTS Threshold:**

**Distance:**

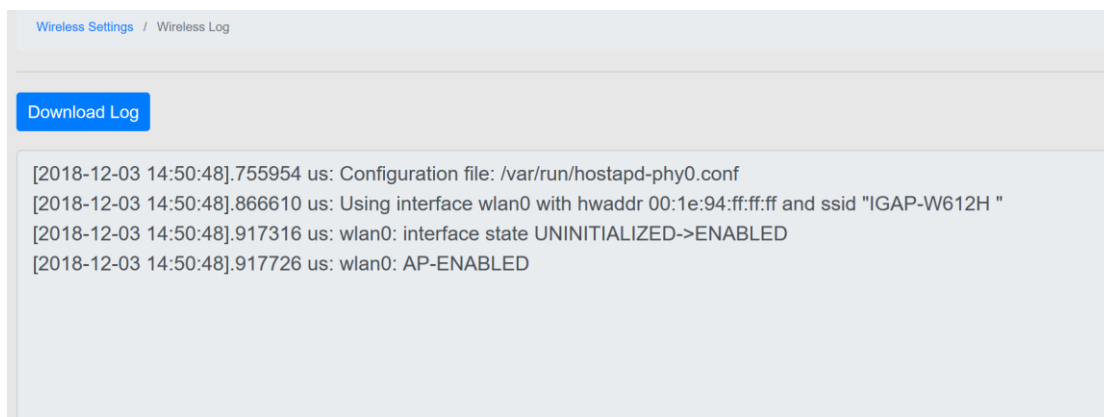
**Transmission Power:**

Label	Description
<b>DTIM Interval</b>	The value is an integer that ranges from 1 to 255, in Beacons. The DTIM interval specifies how many Beacon frames are sent before the Beacon frame that contains the DITM. A long DTIM interval lengthens the dormancy time of the STA and saves power, but degrades the transmission capability of the STA. A short interval helps transmitting data in a timely manner, but the STA is waken up frequently, causing high power consumption
<b>Fragmentation Threshold</b>	Specifies the maximum size for a packet before data is fragmented into multiple packets. The range is 256-2346 bytes, or "off". Setting the Fragmentation Threshold too low may result in poor network

	<p>performance. The use of fragmentation can increase the reliability of frame transmissions. Because smaller frames are sent, collisions are much less likely to occur. However lower values of the Fragmentation Threshold will result lower throughput as well. Little or no modification of the Fragmentation Threshold value is recommended as the default setting of 2346 is optimum for most wireless networks.</p>
<b>RTS Threshold</b>	<p>Determines the packet size of a transmission and, through the use of an access point, helps control traffic flow. The range is 0-2347bytes, or "off". The default value is 2347, which means that RTS is disabled. RTS/CTS (Request to Send / Clear to Send) is the mechanism used by the 802.11 wireless networking protocol to reduce frame collisions introduced by the hidden AP25N01 User Manual 85terminal problem. RTS/CTS packet size threshold is 0-2347 bytes. If the packet size the node wants to transmit is larger than the threshold, the RTS/CTS handshake gets triggered. If the packet size is equal to or less than threshold the data frame gets sent immediately. System uses Request to Send/Clear to Send frames for the handshake which provide collision reduction for access point with hidden stations. The stations are sending an RTS frame first while data is sent only after handshake with an AP is completed. Stations respond with the CTS frame to the RTS, which provides clear media for the requesting station to send the data. CTS collision control management has time interval defined during which all the other stations hold off the transmission and wait until the requesting station will finish transmission.</p>
<b>Transmission Power</b>	<p>Chooses the transmit power of the radio. This is the total power supplied to the antennas of the radio. The maximum power also depends on the frequency channel used</p>

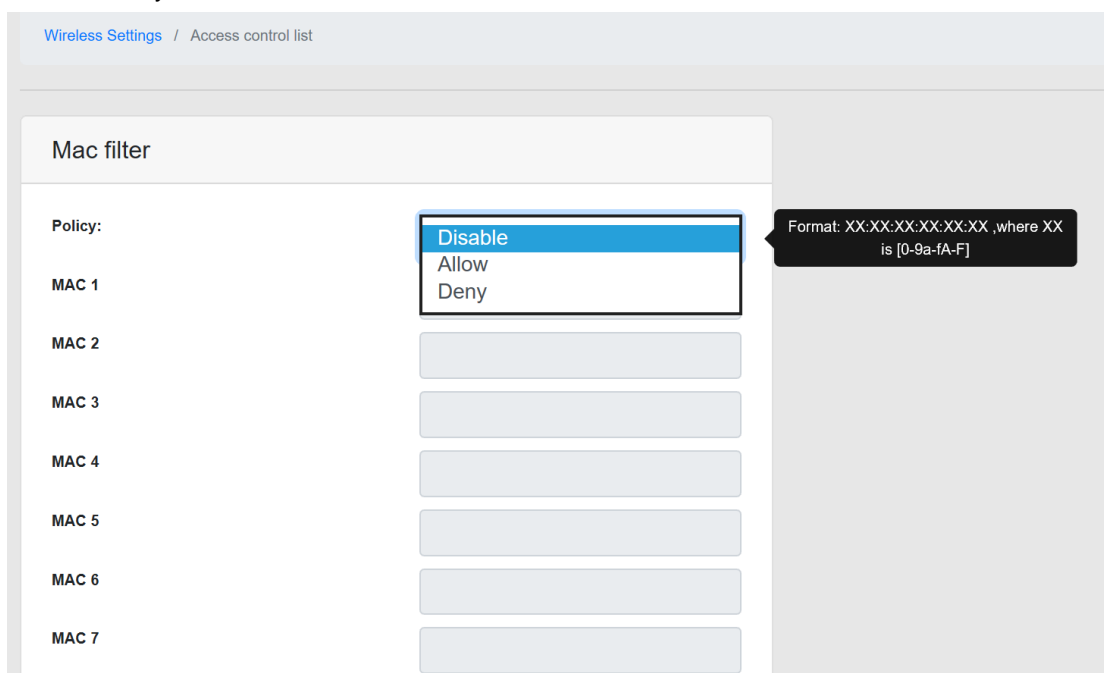
### 5.5.3 WIRELESS LOG

Download and view Wifi logs



### 5.5.4 MAC FILTER

Allow or deny STA connect to AP



Label	Description
<b>Policy</b>	Only allow or only deny list below
<b>MAC List Format</b>	XX:XX:XX:XX:XX:XX, XX is[0-9 a-f A-F]

## 5.6 System Tool

### 5.6.1 Time setting

System Settings / Time Setting

**Time settings**

**System date/time:** Mon Dec 3 16:13:52 UTC 2018

**Timezone:**  ▼

**Auto adjust time:**  ▼

**NTP Server 1:**

**NTP Server 2:**

**NTP Server 3:**

**NTP Server 4:**

Label	Description
<b>Time Zone</b>	Select the time zone manually
<b>NTP Server 1-4</b>	The initial choice about NTP Server.

### 5.6.2 SNMP

System Tools / SNMP

#### SNMP settings

<b>SNMP service:</b>	<input type="text" value="Disable"/>
<b>SNMP Agent Protocol:</b>	<input type="text" value="UDP"/>
<b>SNMP Agent Port:</b>	<input type="text" value="161"/>
<b>System Location:</b>	<input type="text"/>
<b>System Contact:</b>	<input type="text"/>
<b>System Name:</b>	<input type="text"/>
<b>Community:</b>	<input type="text" value="Private"/>
<b>Permissions:</b>	<input type="text" value="Read / Write"/>

Label	Description
<b>SNMP service</b>	SNMP (Simple Network Management Protocol) Agent is a service program that runs on the access point. The agent provides management information to the NMS by keeping track of various operational aspects of the AP system. Turn on to open this service and off to shutdown it.
<b>Community</b>	Community is essentially password to establish trust between managers and agents.
<b>System Location</b>	Specify system Location string.
<b>System Contact</b>	Specify system Contact string.
<b>System name</b>	Specify system name string

### 5.6.3 System Log

Support Local and Remote log server

System Tools / System Log

Remote log settings:

Enables remote logging:

External server IP:

External server Port:

[Apply Changes](#)

```
Mon Dec 3 14:50:31 2018 kern.notice kernel: [ 0.000000] Linux version 4.14.82 (angus@shawn) (gcc version 8.2.0 (OpenWrt GCC 8.2.0 r8629-f98fde2db4)) #0 Mon Dec 3 14:50:26 2018
Mon Dec 3 14:50:31 2018 kern.info kernel: [ 0.000000] bootconsole [early0] enabled
Mon Dec 3 14:50:31 2018 kern.info kernel: [ 0.000000] CPU0 revision is: 0001974c (MIPS 74Kc)
```

Label	Description
<b>Remote logging</b>	Enable/disable remote logging
<b>external Server IP</b>	Remote log server IP
<b>External server port</b>	Remote log server port

### 5.6.4 Ping

A simple ping of the server checks to see if it's responding. If there are serious server problems, a ping will either time out, or run very slowly. If you are able to find the server via DNS, but can't get a ping response from it, this would point to an error with either the physical server, or a fault in the network that connects the client and server

System Tools / Ping

### Ping

IP Address / Hostname:

Size:

Count:

**Ping**

### Ping Result

```
PING 192.168.10.100 (192.168.10.100) 56(84) bytes of data.
64 bytes from 192.168.10.100: icmp_req=1 ttl=128 time=0.612 ms
64 bytes from 192.168.10.100: icmp_req=2 ttl=128 time=0.291 ms
64 bytes from 192.168.10.100: icmp_req=3 ttl=128 time=0.260 ms
64 bytes from 192.168.10.100: icmp_req=4 ttl=128 time=0.273 ms
```

Label	Description
<b>IP Address/Hostname</b>	Fill in the ping IP or Hostname
<b>Size</b>	Ping packet size, value from 1 to 1975
<b>Count</b>	Ping count, value from 1 to 3000

### 5.6.5 Firmware upgrade

ORing launches new firmware constantly to enhance performance and functions. To upgrade firmware, download new firmware from ORing’s website to your PC and install it via Web upgrade. Make sure the firmware file matches the model of your device. It will take several minutes to upload and update the firmware. After upgrade completes successfully, reboot the device.

System Tools / Firmware Upgrade

---

**Firmware Upgrade**

Current Firmware Version: 1.0.7

Firmware location:

### 5.6.6 Configuration

Reset to factory default, download/restore configure file

System Tools / Configuration

---

**Reset to defaults**

---

**Backup configuration**

---

**Restore configuration**

Location:  No file chosen

### 5.6.7 Change Username/Password

Change system username and password



System Tool / Change User / Password

### HTTP settings

**New User Name:**

**New Password:**

**Confirm New Password:**

# Technical Specifications

ORing WLAN Access Point Model	IGAP-610H+
<b>Physical Ports</b>	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	1
Antenna Connector	2
PoE P.D Port	Present at ETH1 Fully compliant with IEEE 802.3af Power Device specification Over load & short circuit protection Isolation Voltage: 2000 VDC min. Isolation Resistance : 10 <sup>8</sup> ohms min
<b>WLAN interface</b>	
Operating Mode	AP/Client/Repeater
Antenna Connector	Reverse SMA Female
Modulation	IEEE802.11a: OFDM IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America/FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz ( 9 channels ) Europe CE/ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz ( 4 channels )
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 300Mbps
Transmit Power	802.11a: 24dBm ± 1.5dBm@6Mbps, 802.11a: 12dBm ± 1.5dBm@54Mbps 802.11b: 23dBm ± 1.5dBm@1Mbps, 802.11b: 17dBm ± 1.5dBm@11Mbps 802.11g: 16dBm ± 1.5dBm@54Mbps 802.11gn HT20: 15dBm ± 1.5dBm @MCS7, 802.11gn HT40: 14dBm ± 1.5dBm @MCS7 802.11an HT20: 12dBm ± 1.5dBm @MCS7, 802.11an HT40: 11dBm ± 1.5dBm @MCS7
Receiver Sensitivity	802.11a : -92dBm ± 2dBm@6Mbps, 802.11a : -76dBm ± 2dBm@54Mbps 802.11b : -98dBm ± 2dBm@1Mbps, 802.11b : -85dBm ± 2dBm@11Mbps 802.11g : -76dBm ± 2dBm@54Mbps 802.11gn HT20:-75dBm ± 2dBm@MCS7, 802.11gn HT40:-72dBm ± 2dBm@MCS7 802.11an HT20:-74dBm ± 2dBm@MCS7, 802.11an HT40:-71dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit ,128-bit key) WPA/WPA2 PSK :TKIP and AES encryption (802.11i) 802.1X/RADIUS Authentication supported
Wireless Security	SSID broadcast disable and enable
<b>Protocol Support</b>	
Protocol	ARP, BOOTP, DHCP, DNS, HTTP, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, STP, RSTP
<b>LED Indicators</b>	
Power Indicator	3 x LEDs, P1, P2, PoE: Green On : Power is on and functioning Normal
10/100/1000Base-T(X) RJ45 Port Indicator	2 x LEDs, LNK/ACT:Green for port Act. Speed: Green for port Link at 1000Mbps Amber for port Link at 100Mbps. Off for port Link at 10Mbps
WLAN LED	3 x LEDs signal quality 75%, 50% 25% 1 x Green for WLAN Link /Act
SYS	1 x LED, Blink for system booting, Solid for system ready.

Power	
Redundant Input Power	Dual DC inputs. 12~48VDC on 4-pin terminal block
Power Consumption (Typ.)	7W
Overload Current Protection	Present
Reverse Polarity Protection	Present on the terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	45 (W) x 95 (D) x 115 (H) mm
Weight (g)	375g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F) (TBD)
Operating Temperature	-10 to 70°C (14 to 158°F)
Operating Humidity	5% to 95% Non-condensing (TBD)
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN61000-4-8(PFMMF), IEC/EN 61000-4-11(DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
<b>MTBF</b>	<b>211477 hrs</b>
<b>Warranty</b>	<b>5 years</b>

ORing WLAN Access Point Model	IGAP-W612H+
Physical Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	<b>1 (with PoE)</b>
WLAN interface	
Operating Mode	AP/Client/Repeater
Antenna Connector	2 x External N-type antenna connector
Radio Frequency Type	OFDM
Modulation	IEEE802.11a: OFDM IEEE802.11b: CCK/DQPSK/DBPSK IEEE802.11g: OFDM IEEE802.11n: BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	America/FCC: 2.412~2.462 GHz (11 channels) 5.180~5.240 GHz & 5.745~5.825 GHz ( 9 channels ) Europe CE/ETSI: 2.412~2.472 GHz (13 channels) 5.180~5.240 GHz ( 4 channels )
Transmission Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 300Mbps
Transmit Power	802.11a: 23dBm ± 1.5dBm@6Mbps, 21dBm ± 1.5dBm@54Mbps 802.11b: 23dBm ± 1.5dBm@1Mbps, 23dBm ± 1.5dBm@11Mbps 802.11g: 23dBm ± 1.5dBm@6Mbps, 21dBm ± 1.5dBm@54Mbps 802.11gn HT20: 20dBm ± 1.5dBm@MCS7, 802.11gn HT40: 20dBm ± 1.5dBm @MCS7 802.11an HT20: 20dBm ± 1.5dBm@MCS7, 802.11an HT40: 20dBm ± 1.5dBm @MCS7

Receiver Sensitivity	802.11a : -93dBm ± 2dBm@6Mbps, -74dBm ± 2dBm@54Mbps 802.11b : -98dBm ± 2dBm@1Mbps, -90dBm ± 2dBm@11Mbps 802.11g : -90dBm ± 2dBm@6Mbps, -77dBm ± 2dBm@54Mbps 802.11gn HT20:-74dBm ± 2dBm@MCS7, 802.11gn HT40:-71dBm ± 2dBm@MCS7 802.11an HT20:-71dBm ± 2dBm@MCS7, 802.11an HT40:-68dBm ± 2dBm@MCS7
Encryption Security	WEP: (64-bit,128-bit key supported) WPA/WPA2 :802.11i(WEP and AES encryption) WPAPSK (256-bit key pre-shared key supported) 802.1X Authentication supported TKIP encryption
Wireless Security	SSID broadcast disable
<b>Protocol Support</b>	
Protocol	ARP, BOOTP, DHCP, DNS, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, SNMP, STP (IEEE 802.1D)
<b>LED indicators</b>	
Power indicator	1 x LED, Green On: Power(PoE) is on and functioning Normally.
10/100/1000 Base-T(X) RJ45 port indicator	1 x LED, Green On: Port Link / Act, Blinking: data transmission
WLAN LED	3 x LED, Green for 1 x 2.4G, 1 x 5G 1x WLAN Strength: Solid > 75% Blink 2 sec/time => 74%~50% Blink 1 sec/time => 49%~25% Blink 500 msec/time => <25%
System Status LED	Green On: System ready, Blinking: System booting
<b>Power</b>	
Input power	48VDC from P.o.E
Power consumption (Typ.)	7 W
<b>Physical Characteristic</b>	
Enclosure	IP-67
Dimension (W x D x H)	220.42(W)x 127.42(D)x 75(H) mm
Weight (g)	1148g
<b>Environmental</b>	
Storage Temperature	-30 to 85°C (-22 to 185°F)
Operating Temperature	-10 to 75°C (14to 158°F)
Operating Humidity	100% Non-condensing
<b>Regulatory approvals</b>	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN61000-4-8(PFMF), IEC/EN 61000-4-11(DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	250109 hours
<b>Warranty</b>	3 years

## Compliance

### FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF exposure warning: The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment. This device should be operated with minimum distance 20cm between the device and all persons.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

### Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Industry Canada - Class B This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

*Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.*

Operation is subject to the following two conditions: (1) this device may not cause interference,

and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

*L'opération est soumise aux deux conditions suivantes: (1) cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer fonctionnement du dispositif.*

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

*Afin de réduire les interférences radio potentielles pour les autres utilisateurs, le type d'antenne et son gain doivent être choisis que la puissance isotrope rayonnée équivalente (PIRE) est pas plus que celle promise pour une communication réussie*

RF exposure warning: The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

*Avertissement d'exposition RF: L'équipement est conforme aux limites d'exposition aux RF établies pour un incontrôlé environnement. L'antenne (s) utilisée pour ce transmetteur ne doit pas être co-localisés ou fonctionner en conjonction avec toute autre antenne ou transmetteur.*