

Altai AX500-X Outdoor 2x2 802.11ac Wave 2 AP

Quick Setup Guide

Version 1.0

Introduction

Thank you for purchasing the Altai AX500 Series product. This guide provides instructions to install the product and set it up as AP with minimal effort.

Package Contents



AX500-X
Main Unit



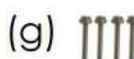
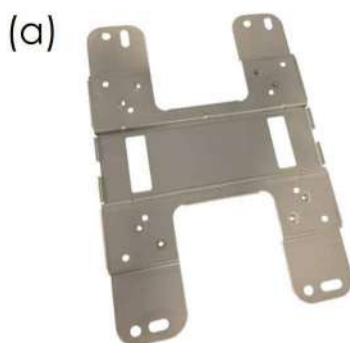
Cable Gland x 3



PoE Injector
(Optional Item)



Quick Setup
Guide



Mounting Kit

(a) Back Mounting Plate	x 1
(b) M4*8 Round Head Screw with Flat and Spring Washers	x 8
(c) Anchor with Flat Washer and Nut	x 4
(d) Pole Mount Bracket	x 1
(e) Hose Clamp	x 1
(f) Mounting Screw	x 4
(g) P3.5*32 Screw	x 4
(h) Flat and Spring Washers	x 4

Hardware Overview

LED Panel

2.4G/5G WiFi Radios

(AP/Repeater/Bridge Modes)

- Solid Green
 1. AP Mode on but with no Clients Associated
 2. Repeater Mode on but not connected to Remote AP
 3. Bridge Mode on but not connected to Remote Peer

☀ Flashing Green: Data Transmitting/Receiving

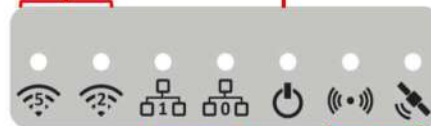
○ Off: Radio Disabled

Power

○ Off: No Power

☀ (1) Flashing Yellow: AP Booting Up
(2) Flashing Green: AP Discovering/Connecting to AltaiCare/AltaiGate/Access Controller

- (1) Solid Yellow: AP Boot Up Finished and Running in Standalone Mode
(2) Solid Green: AP Boot Up Finished and Running in Thin AP Mode



LAN (Ethernet 0/1)

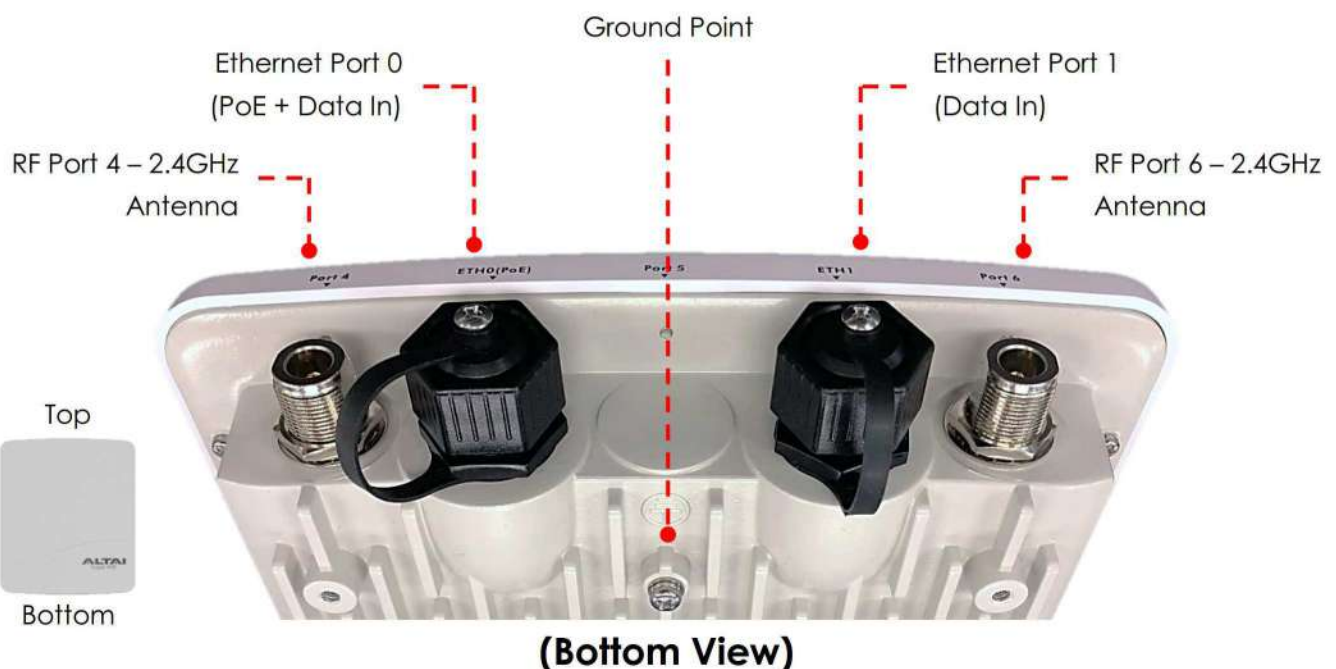
● Solid Blue/Green: LAN Connected with 1Gbps/100Mbps of Ethernet Speed

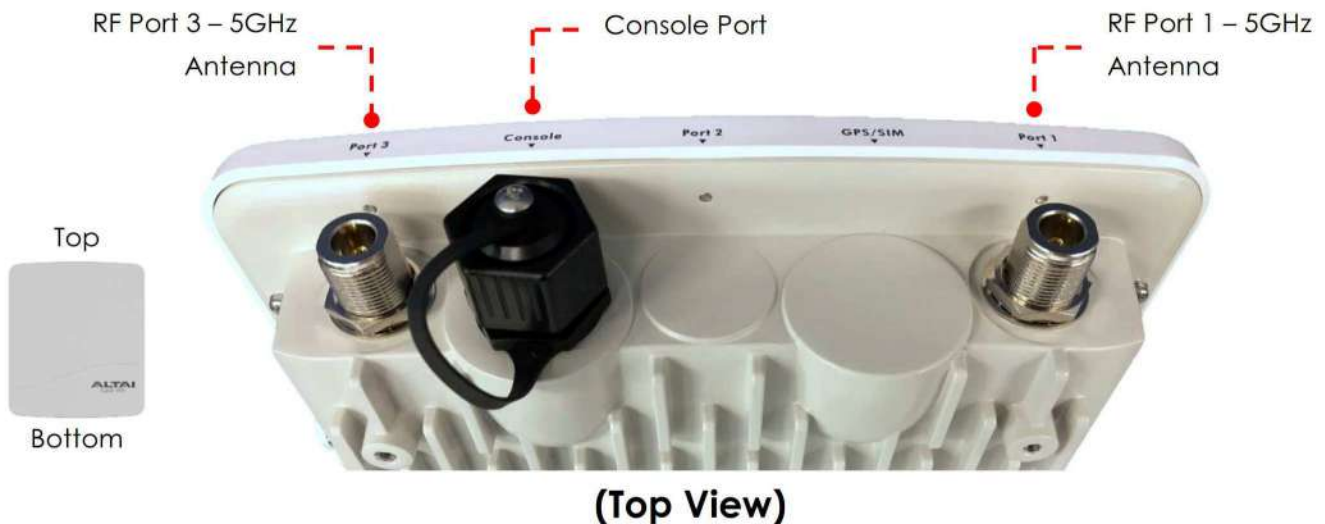
☀ Flashing Blue/Green: Data Transmitting/Receiving

○ Off: LAN Disconnected

Not Applicable for this AP Model

Ethernet Ports, Console Port, RF Ports and Ground Point





ETH0 (PoE):

It is used to connect to power source (see the Power Options in the later section) and provides 10/100/1000 Mbps network interface for LAN connection.

ETH1:

It provides 10/100/1000 Mbps network interface for LAN connection with peripherals.

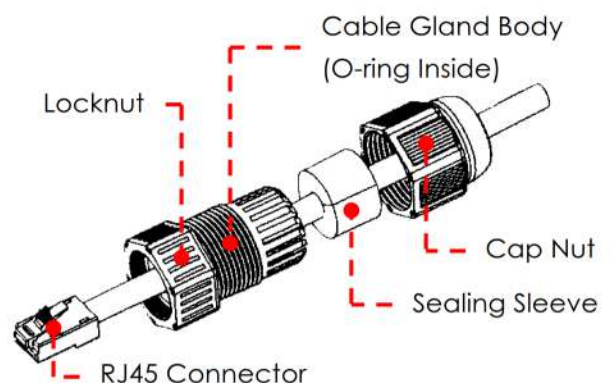
Console:

It is used to connect to the computer for local Command Line Interface (CLI) access using a standard DB9 to RJ45 console cable.

Ethernet/Console Cable Feed-Through

Seal the RJ45 cable Connector with the provided cable gland.

1. Feed the end of the cable through the cap nut, sealing sleeve and cable gland body as shown in the picture below.



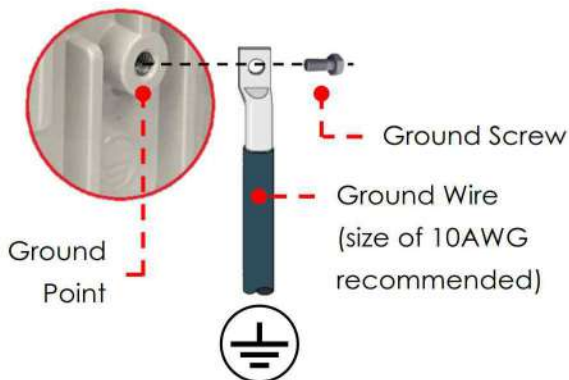
2. Connect the cable to the Ethernet/Console Port.
3. Tighten the locknut to fix the cable gland body to the AP chassis.
4. Tighten the cap nut.

Port 1 and Port 3:

It is used to attach 5G antennae (purchased separately) for 2x2 MIMO WiFi access coverage or bridge connection.

Port 4 and Port 6:

It is used to attach 2.4G antennae (purchased separately) for 2x2 MIMO WiFi access coverage.



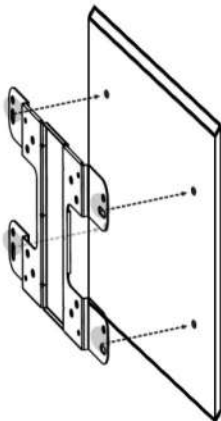
Ground Point:

It is for AP chassis grounding. Use size 10 AWG ground wire (not included) and attach it to the chassis using the provided ground screw. Connect the other end of ground wire to a reliable earth ground point at site.

Mounting Options

Option 1: Wall Mount

1

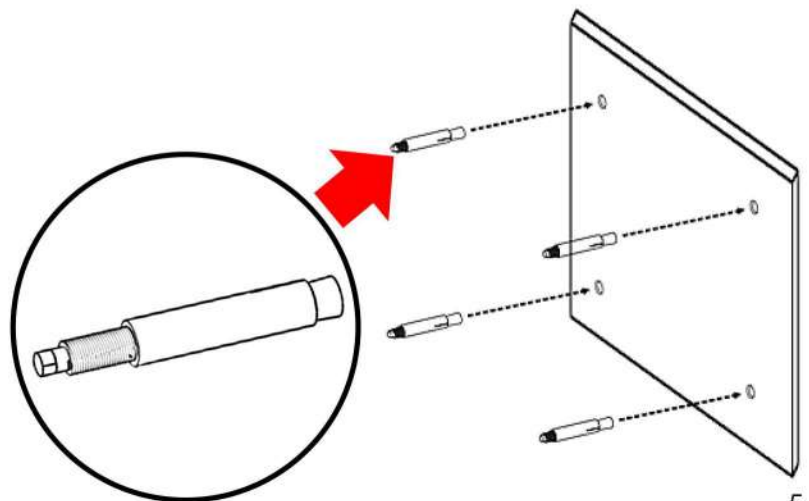


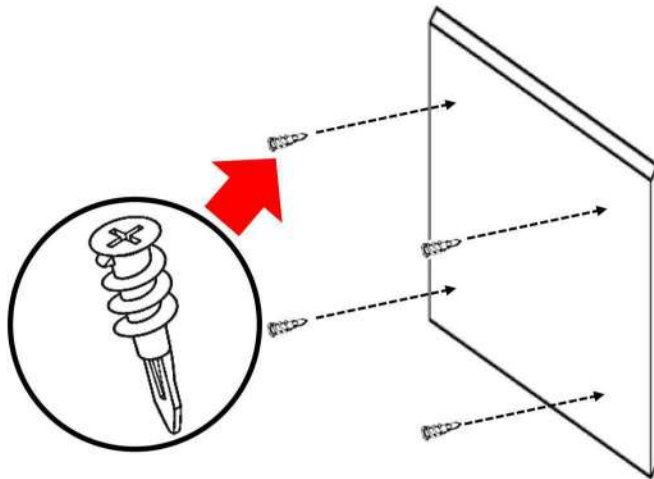
Determine where the AP is to be placed and mark location on the wall surface for the four mounting holes.

2

Concrete Wall Mount:

Use the appropriate drill bit to drill four holes of 8mm diameter and 37mm depth on the markings and hammer the bolts into the openings.

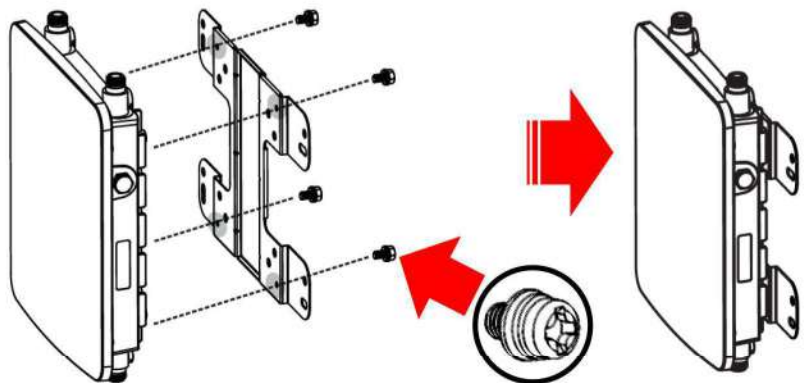




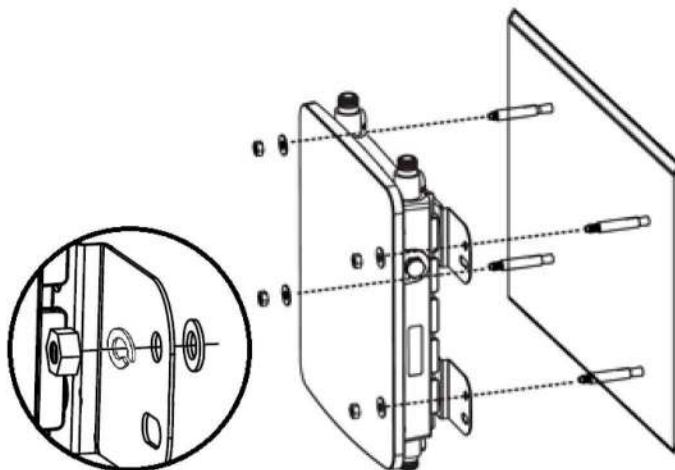
Drywall Mount:

Drive the mounting screws into the wall on the markings.

- 3** Place the spring and flat washers on the M4 round head screws and drive the screws to attach the mounting plate to the back of the Access Point.



4

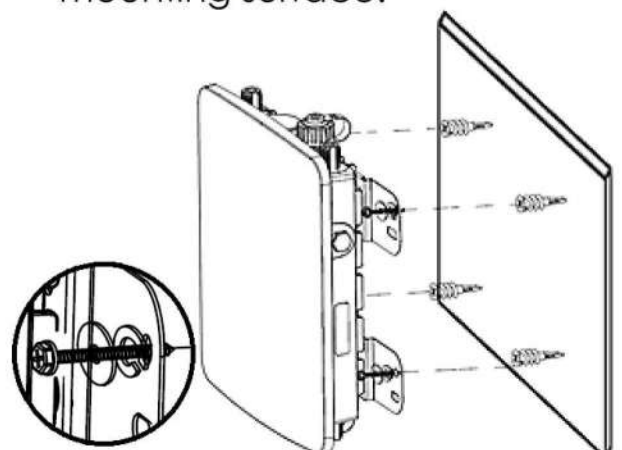


Concrete Wall Mount:

Attach the device onto the wall by tightening the bolt's nuts with flat and spring washers to secure the mounting plate to the mounting surface.

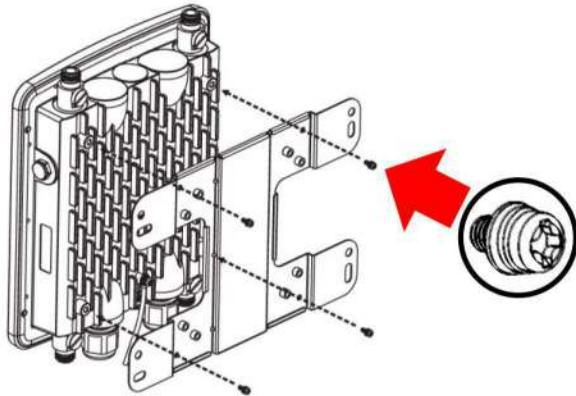
Drywall Mount:

Insert the screws through the flat and spring washers. Then attach the device onto the wall by tightening the screws to secure the mounting plate to the mounting surface.



Option 2: Pole Mount (For 1.5 to 2.5 inches of pole diameter)

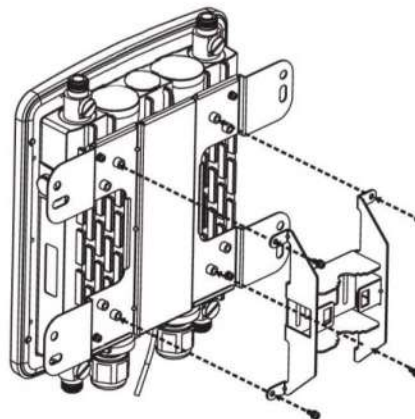
1



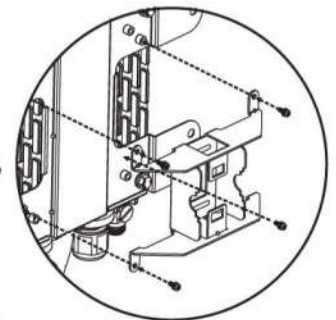
Place the spring and flat washer on the M4 round head screws and drive the screws to attach the mounting plate to the back of the Access Point.

2

Align the pole mount bracket with the mounting plate. Drive the four M4 round head screws to attach the bracket to the mounting plate.

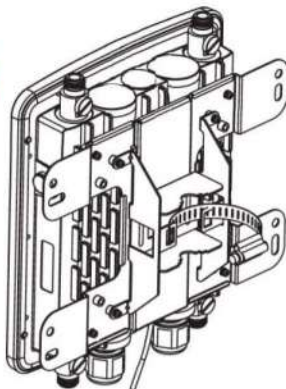


**Align Bracket for
Vertical Pole**

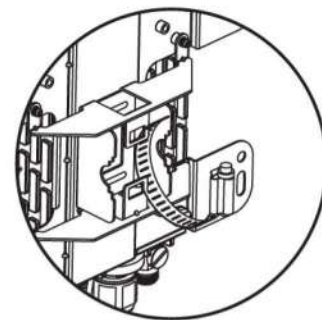


**Align Bracket for
Horizontal Pole**

3



For Vertical Pole

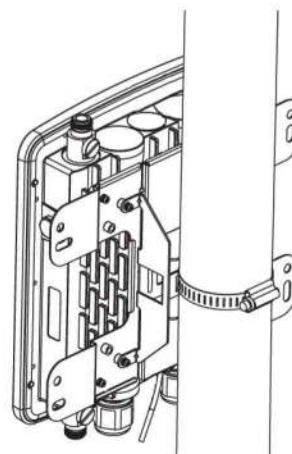


For Horizontal Pole

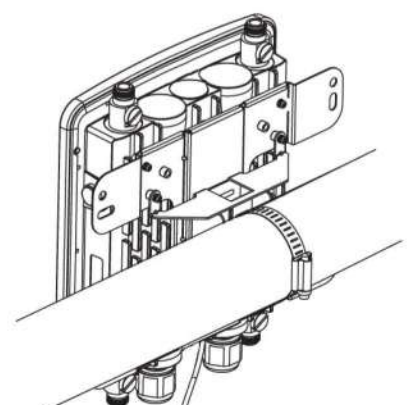
Thread the open end of the hose clamp through the two slots on the pole mount bracket.

4

Determine where the AP is to be placed. Lock and tighten pole strap to secure pole mount bracket to the pole.



For Vertical Pole



For Horizontal Pole

Setup Requirements and Preparation

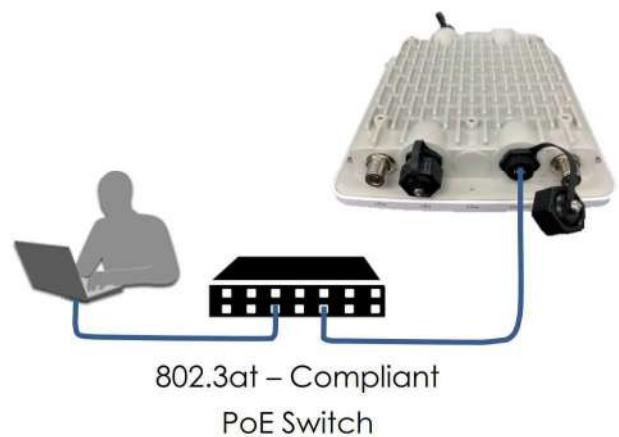
- A computer with Web Browser: Google Chrome, Mozilla Firefox, or Microsoft Internet Explorer 8 (or above)
- Two Cat 5e/6 Ethernet cables
- 2.4G and 5G external antennae
- AltaiCare account (Optional) for cloud AP management and user service

Power Options and Cable Connection Instructions

You can follow one of the options below for AX500-X configuration as described in the following sections.

Option 1: 802.3at-Compliant PoE switch

1. Connect AX500-X Eth0 (PoE) port to an 802.3at PoE Switch with an Ethernet Cable.
2. Connect a computer to the switch.
3. Make sure the Power LED light is yellow and the LAN LED light is blue.



Option 2: PoE Injector (Ordered separately)

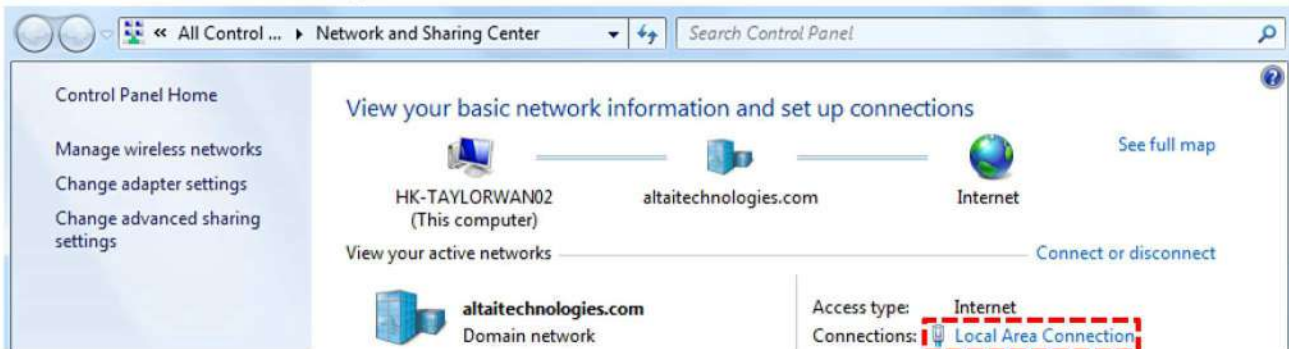
1. Connect AX500-X Ethernet port to a PoE Injector's "PoE" port with an Ethernet Cable.
2. Connect a computer to the PoE Injector's "LAN" port with another Ethernet Cable.
3. Connect the PoE Injector to AC power socket using a power cord (Not provided in the package).
4. Make sure the Power LED light is yellow and the LAN LED light is blue.



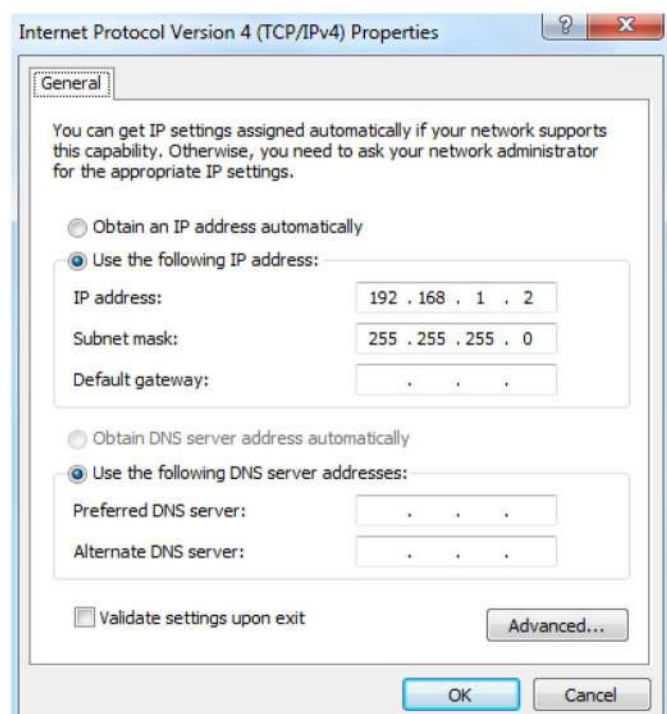
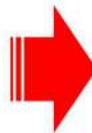
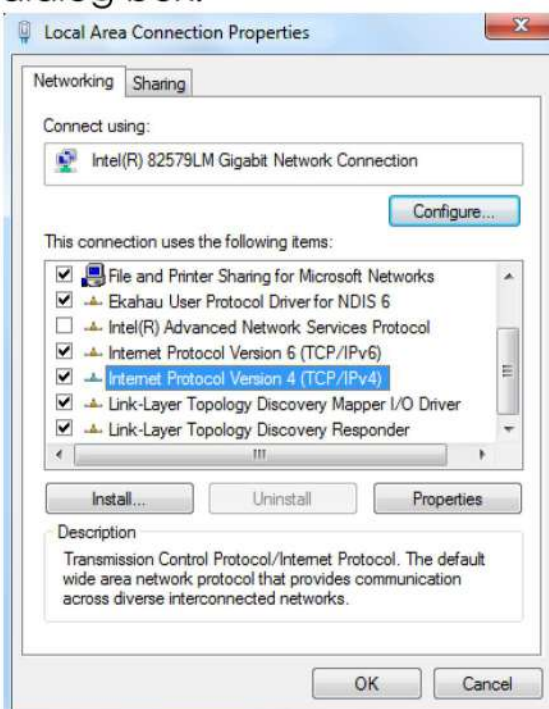
1. Change TCP/IP Setting on Your Computer

For Windows 7 users,

1. Go to **Control Panel**, click **Network and Sharing Center** and then choose the adapter that you want to connect to AX500-X unit. In this example, adapter "**Local Area Connection**" is in connection with AX500-X. Click it and then click **Properties**.



2. Under the **Networking** tab, click **Internet Protocol Version 4 (TCP/IPv4)** in the list box "This connection uses the following items", and then click **Properties**.
3. Type in the following IP address and Subnet mask:
 - IP address: 192.168.1.2
 - Subnet mask: 255.255.255.0
4. Click **OK** to close the **Internet Protocol Version 4 (TCP/IP) Properties** dialog box and click **OK** again to close the **Local Area Connection Properties** dialog box.



2. Access to Web Interface

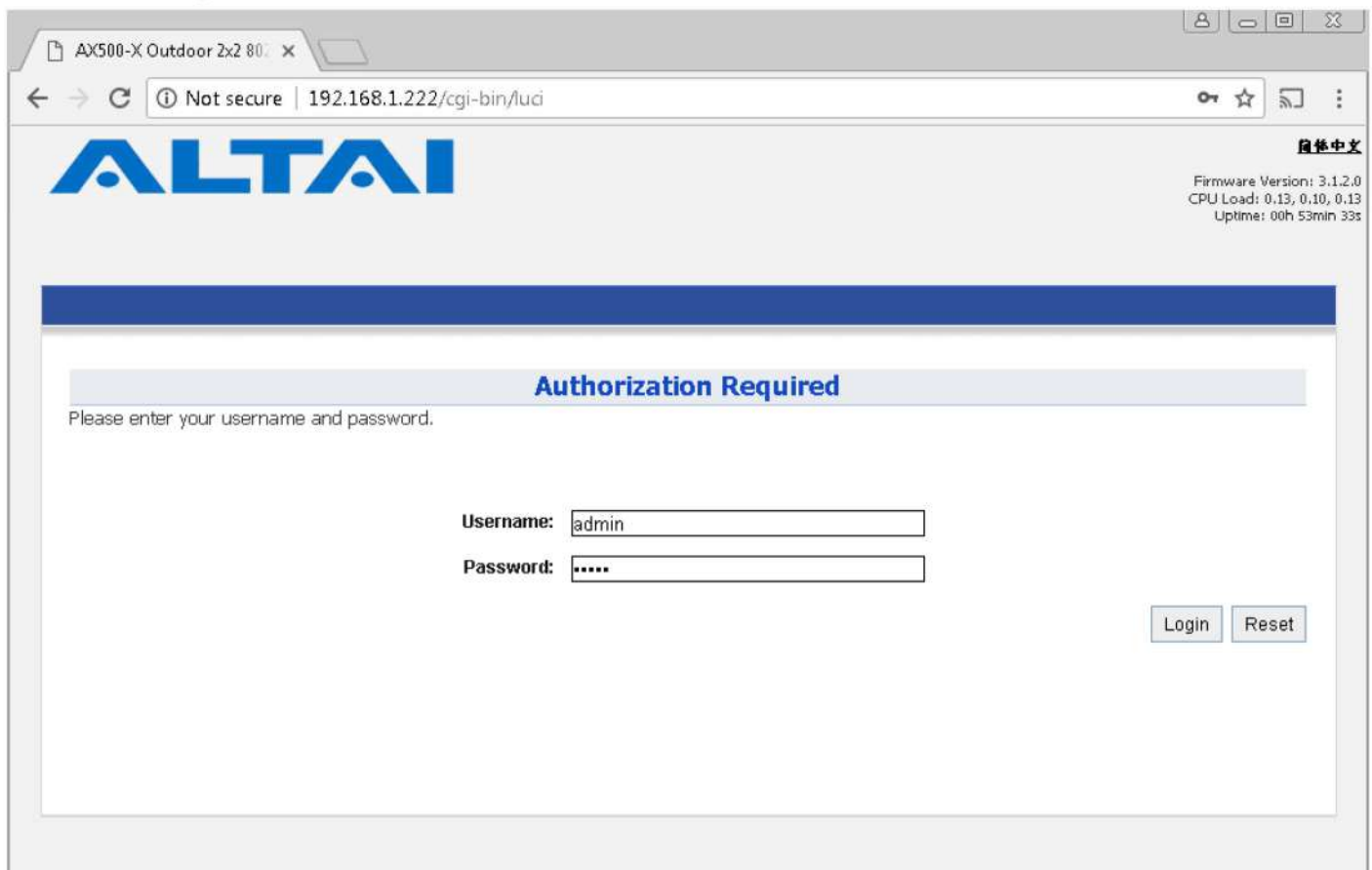
1. Open a web browser. Type **192.168.1.222** in the address bar and then hit **Enter**.



2. Login page will come up and you are required to enter username and password. By default, the credentials are:

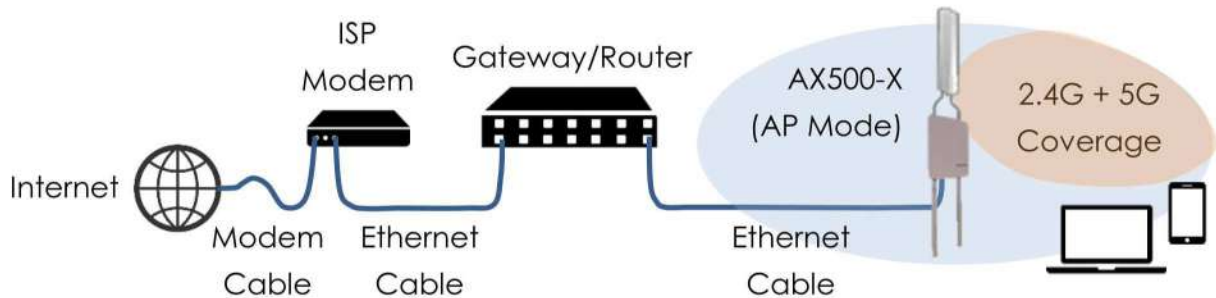
- **Username:** admin
- **Password:** admin

3. Click Login.



3. Configure AP Mode (2.4G/5G)

Network Scenario



Note: All antennas shown in the diagram are for illustration purpose only. Actual antenna type should be selected subject to coverage requirement.

Go to **Configuration > Wireless > Radio0(2.4G)/Radio1(5G) > General**. Below screenshots show an example for 2.4G radio configuration only. Same procedures can be applied to 5G radio configuration.

1. Make sure the box of **Enable Radio** is checked. Select **AP mode** for the field of **Radio Mode**. Then click **Submit**.

The screenshot shows the 'Radio0(2.4G) Setting' page. The 'General' tab is selected. The 'Enable Radio' checkbox is checked. The 'Radio Mode' dropdown is set to 'AP'. The 'Wireless Mode' dropdown is set to '2.4GHz 144Mbps(802.11n HT20)'. The 'Legacy 11b Data Rate Support' dropdown is set to '5.5/11M (Good compatibility/Good performance)'. The 'Channel' dropdown is set to '2412MHz(Channel 1)'. The 'Maximum Clients' field is set to '256'. The 'User Isolation in different WLAN (SSID)' checkbox is unchecked. The 'Band Steering Mode' dropdown is set to 'Disabled'. The 'Client OS Detection' checkbox is unchecked. A 'Submit' button is located at the top right.

2. Click **WLAN** and click **More...** in **Detail** of WLAN 0 to go to another page for SSID and security configuration.

The screenshot shows the 'WLAN Configuration' page. The 'WLAN' tab is selected. The 'WLAN Configuration' table is displayed. The 'Enable WLAN' checkbox is checked. The 'SSID' field is set to 'Superwifi Network'. The 'Max Clients' field is set to '256'. The 'Isolation' checkbox is checked. The 'Auth Mode' dropdown is set to 'open'. The 'Access Traffic Right' dropdown is set to 'Full Access'. The 'WLAN Uplink/Downlink Uplink/Downlink Control' dropdown is set to '0'. The 'Station Uplink/Downlink Uplink/Downlink Control' dropdown is set to '0'. The 'Detail' column has a 'More...' link highlighted with a red dashed box.

Enable WLAN	SSID	Max Clients	Isolation	Auth Mode	Access Traffic Right	WLAN Uplink/Downlink Uplink/Downlink Control	Station Uplink/Downlink Uplink/Downlink Control	Detail
<input checked="" type="checkbox"/> 0	Superwifi Network <input type="checkbox"/> Hide SSID	256	<input checked="" type="checkbox"/>	open	Full Access	0	0	More...

- Make sure **WLAN** is enabled by checking the box. Type in **SSID** to name the wireless network you want to broadcast and then click **Submit**.

Radio0(2.4G) WLAN0 Setting

WLAN General | WLAN Security | Portal | Rogue Station List | QoS | Bandwidth Control | Passpoint | Submit

Enable WLAN: ☒

Hide SSID: ☐

SSID: Altai AX500

User Isolation: ☒

DHCP Trusted Port: ☐

Enable WiFi Syslog: ☐

Access Traffic Right: Full Access

Max Clients: 256 (1-256)

802.11r FT Roaming: ☐

Mobility Domain ID: 900 (1-65535)

802.11w PMF: ☐

Client SNR Threshold for Association: 0 (0-50 dB)

Back to WLAN List | Submit

- Click the tab **WLAN Security**. Select **WPA2-PSK** from the drop down menu of **Authentication Mode** and select **AES** for **Cipher Mode**. Type in a password within 8~64 characters or numbers in **Pass Phrase** and click **Submit**.

Radio0(2.4G) WLAN0 Setting

WLAN General | WLAN Security | Portal | Rogue Station List | QoS | Bandwidth Control | Passpoint | Submit

WLAN Security Setting

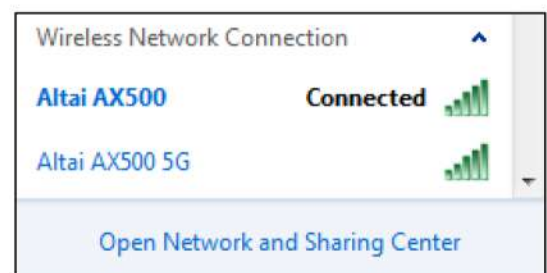
Authentication Mode: WPA2-PSK

Cipher Mode: AES

Group Key Update Interval: 86400 (s)

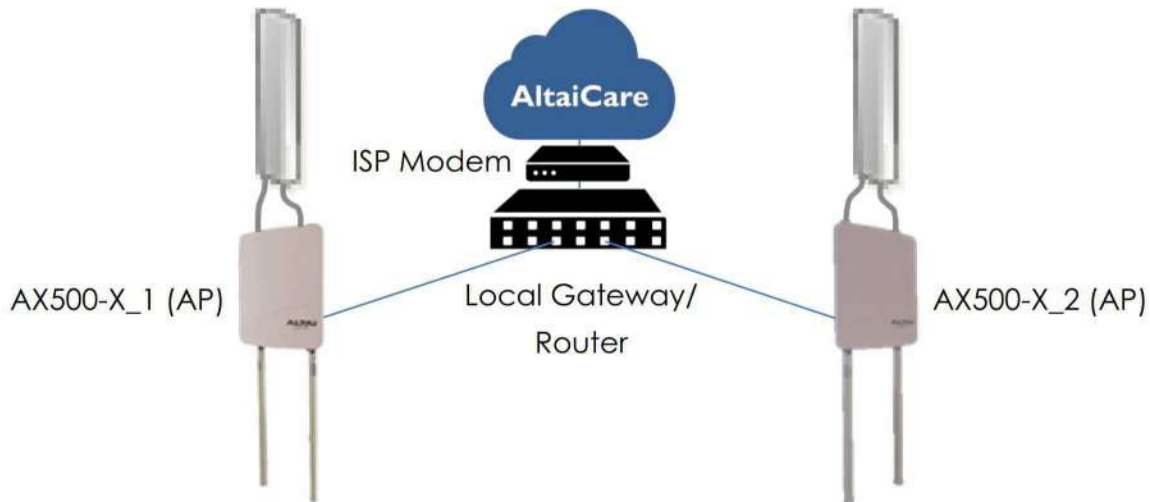
Pass Phrase: Show
Length: 8-63(ASCII Characters); Length: 64(HEX Characters)

- Click **Save & Apply** at the top right corner to have all changes take effect.
- Hook up the AX500-X as shown in Network Scenario. The SSID should now be broadcast from AX500-X and can be seen in the computer for wireless connection.



4. Connect with Cloud-Based Controller – AltaiCare

Network Scenario:



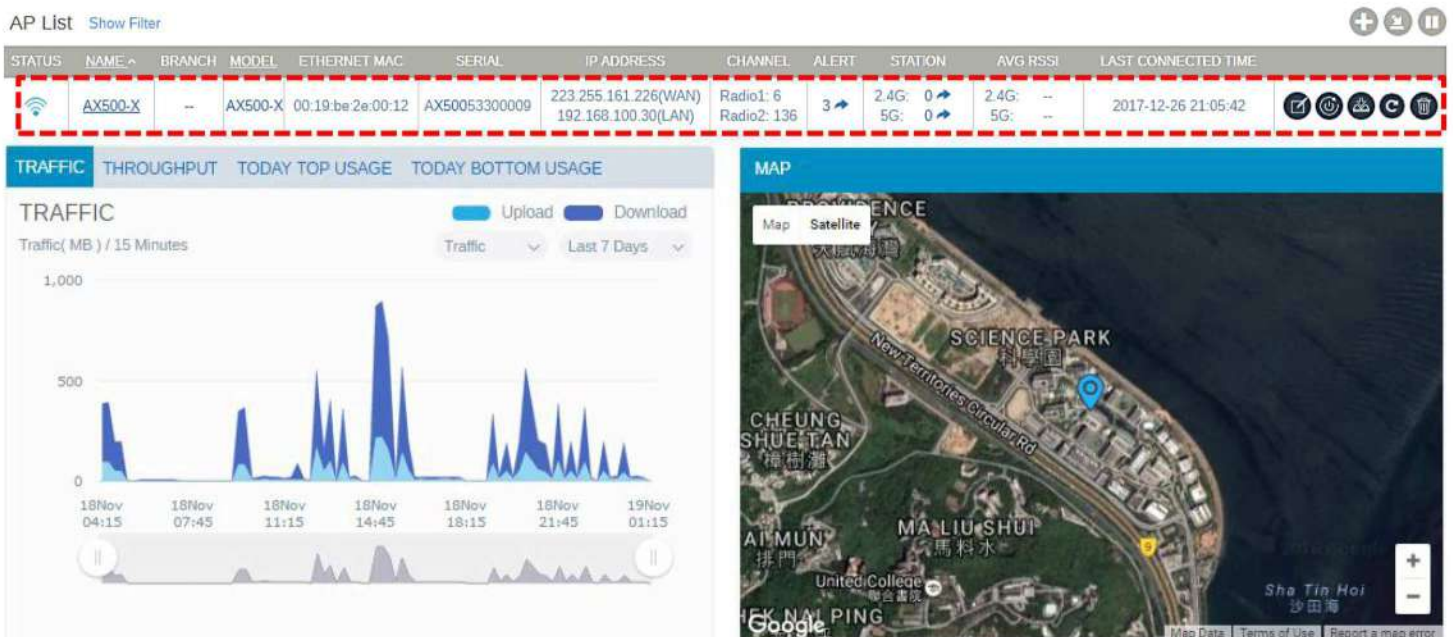
Note: All antennas shown in the diagram are for illustration purpose only. Actual antenna type should be selected subject to coverage requirement.

1. You can manage your AX500-X and set up hotspot service for the subscribers with AltaiCare, which is a cloud-based system.
2. Go to **Configuration > Network > General**. Select **Switch Mode** for **Network Setting** and make sure the AX500-X can reach Internet and communicate with AltaiCare by inputting valid IP settings either via DHCP or with Static IP configuration. Google Public DNS Server can be considered, e.g. 8.8.8.8 or 8.8.4.4 if you are not sure about the ISP DNS's Server IP.

The screenshot shows the 'General Network Setting' page in the AltaiCare web interface. The page has a navigation bar with tabs: Status, Configuration, Administration, Tools, and About. Under 'Configuration', there are sub-tabs: System, Network, Wireless, and Remote Mgmt. The 'Network' tab is selected, and the 'General' sub-tab is active. The page title is 'General Network Setting'. There are two main sections: 'Network Setting' and 'WAN/LAN Interface Assignment'. The 'Network Setting' section has a dropdown menu for 'Network Setting' set to 'Switch Mode' and an 'Enable IPv6' checkbox. The 'WAN Setting(IPv4)' section has a dropdown for 'Internet Connection Type' set to 'Static', and fields for 'IPv4 Address' (192.168.100.30), 'IPv4 Subnet Mask' (255.255.255.0), 'IPv4 Default Gateway' (192.168.100.1), and 'IPv4 DNS Server IP Address' (8.8.8.8). The 'LAN Setting(IPv4)' section has fields for 'LAN IP Address' and 'LAN IP Address Mask', both set to 'NA'. A 'Submit' button is located at the top right of the 'WAN/LAN Interface Assignment' section.

- Click **Remote Mgmt** and check the box of **Enable Remote Management**. Select AltaiCare as **Management Type** and Cloud as **Connection Type**.

- Select **Full Management** if the device is running in **AP Mode**. For **Station Mode**, **Bridge Mode** and **Repeater Mode**, select **Monitor Mode** instead.
- Click **Submit** and then **Save & Apply** at the top right corner to make all the changes take effect.
- Follow AltaiCare Quick Start Guide and register the AX500-X in the system for AP management and user service and admission control.
- AX500-X will appear as online in AltaiCare AP list if the connection is successful.



Federal Communication Commission Interference Statement (FCC) – USA

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Please install a lightning arrestor to protect the base station from lightning dissipation during rainstorms. Lightning arrestors are mounted outside the structure and must be grounded using a ground wire to the nearest ground rod or item that is grounded.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 36cm between the radiator & your body.

The antenna gain, antenna type, and output power that can be used for the device, that the info listed below are correct and represent the product in consideration under this filing.

Model	Type	Gain (dBi)		Connector	Limit of MAX. Output Power(mW)		
		2.4GHz Band	5GHz Band		2.4GHz	5GHz U-NII-1	5GHz U-NII-3
AX500-X	2.4GHz: Omni 5.0GHz: Sector	5	16	2.4GHz: N-male 5.0GHz: 2xN-male	451.193	2.982	93.181

AX500 transmit power setting

Product	2.4 GHz	5.150 – 5.250 GHz	5.725 – 5.850 GHz
AX500-X	11b Ch 1: 24dBm Ch6: 24dBm Ch11: 26dBm 11g Ch1: 21dBm Ch6: 26dBm Ch11: 21dBm 11n(HT20) Ch1: 20dBm Ch6: 26dBm Ch11: 21.62dBm 11n(HT40) Ch3: 18dBm Ch6: 22dBm Ch9: 19dBm	11a Ch36: 4dBm Ch40: 4dBm Ch48: 4dBm 11n(HT20) Ch36: 4dBm Ch40: 4dBm Ch48: 4dBm 11n(HT40) Ch38: 4dBm Ch46: 4dBm 11n(VHT80) Ch42: 4dBm	11a Ch149: 19dBm Ch157: 19dBm Ch165: 19dBm 11n(HT20) Ch149: 19dBm Ch157: 19dBm Ch165: 19dBm 11n(HT40) Ch151: 19dBm Ch159: 19dBm 11n(VHT80) Ch155: 19dBm

European Conformity (CE) – EU

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



Warning

AX500-X may require professional installation depending on the deployment scenario.

Only use the power adaptor supplied with AX500-X. Using a different power adaptor might damage the device.

Disclaimer

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