ENH500-AX

EnGenius Station6 Series

Outdoor Long Range Wireless AP/CPE

Station6 2x2 Patch

The edge 802.11ax built-in high performance AP/CPE with OFDMA and MU-MIMO technology for high-density use on multiple applications.

EnGenius Wireless Long Range Customers Premise Equipment (CPE) solution is designed for deploying in outdoor condition. To meet today's requirement on varied net-working environment. This new generation of ENH500-AX built-in powerful CPU combines with the state-of-the-art 802.11ax which supports up to 1200 Mbps in 5GHz frequency band. Further more, this brand new ENH500-AX is designed with high-gain directional antennas which can reach longer distance to extend WiFi coverage. With robust IP55 certified casing, these access points is designed to withstand harsh environment conditions including serve and prolonged exposure to sunlight, extreme cold, frost, snow, rainfall, hail and humidity.

Features

- Engineered with powerful CPU 2x2 802.11ax Access Point features in multi-user MIMO (MU-MIMO) and able to enhance overall bandwidth and speed to bridge devices.
- Advanced 1024-QAM allows Access Points to carry more packets one time could work for delivering high speed rate than the legacy 11ac Access Points.
- Boost speed up to 1,200 Mbps air performance in 5GHz frequency band.
- Bi-Directional (Download/Upload) OFDMA utilizes air resource for Access Points and client devices efficiency.
- Built-in high gain directional antenna to deliver content to the long-range distance site.
- Reset the Access Point over 100 meters (328 feet) via PoE adapter.
- Robust housing with IP55 enclosure rated to deploy at extreme weather.
- Deliver high resolution content for multiple IP surveillance over wireless transmission
- In conjunction with 2.4GHz management interface helps device configuration and monitoring more easily on a smartphone or tablet.

Wireless Management solution is ideal for deployment in these venues:

- Airport Terminals
- Warehouse Operations
- College Campuses
- Corporate Campuses
- Hospital Buildings
- Construction Sites
- Building Sites
- Shopping Malls
- Resort Properties
- Parks & Campgrounds
- Stadiums & Arena
- Public Lightings

OFDMA: A foundation from 4G LTE for High Density Connectivity

Orthogonal frequency-division multiple access (OFDMA) allows a single transmission to be split by frequency within a channel. Compared to OFDM technology, OFDMA could scale air resource to carry different types of traffic for delivering to destination at the same time, such as documents and video streams. The optimal solution will help 11ax Access Points to allocate air resource efficiency and reduce the latency between AP and client devices.

Carry varied content over DL/UL MU-MIMO with OFDMA via Beamforming

Be a prior AX solution, EnGenius AP is not only built in powerful RF interfaces, but it also features advanced Multi-Users Multiple input Multiple output (MU-MIMO) on **both download side and upload side**, which enhances a dramatic break-through in the performance and flexible transmission between Access Points and wireless client devices.

MU-MIMO allows multiple spatial streams to be allocated to different clients simultaneously, increasing totally throughput, reduce latency, capacity of the WLAN system and increase spectral efficiency on download side. Compared to download side, MU-MIMO upload side will manage varied client devices to contest air resource within a channel under a pervasive environment. The MU-MIMO upload side coordinates with OFDMA upload side to arrange different types of traffic for using a proper bandwidth within a channel. The intelligent technology will carry multimedia content and web browsing data easily without consuming more time on round-trip between AP and client devices. The smoothly transmission will reduce collision times and enhance capacity of air resource, as well as optimize users experience.

Beamforming is a standard in 11ax which allows Access Points to focus energy of multiple antennas to transmit to a particular client device in that direction of that client. The innovative technology significantly enhances the higher signal-to-noise ratio and greater throughput of that client higher signal-to-noise ratio and greater throughput of that client.

Enhance Capacity and Efficiency

Compared to 11ac solution, 11ax solution could carry 4x symbol OFDM symbol which can be significantly enhanced efficiency and transmitting PHY rate, as well as extend coverage on both indoor and outdoor application easily. To carry more data at the same time, modulation has been expanded from 11ac 256-QAM to 1024-QAM which can be enhanced 25% capacity of bit and reduce error margin during delivering data. The other breakthrough innovation of 11ax is to introduced BSS coloring technology for marking different colors on each data which will allows client devices to stop receiving a frame and return to sleep mode as soon as they recognize these frames are not of interest to them. The benefit of BSS coloring also reduces channel interference and channel collision of an access point, as well as improve to transmit signal easily.

Enterprise Robust Solution

The brand new ENH500-AX is easily to install anywhere and its internal electronics have been mounted in an IP55-rated enclosure, one of the better waterproof and dustproof rating available, designed to withstand harsh environment conditions including serve and prolonged exposure to sunlight, extreme cold, frost, snow, rainfall, hail and humidity .

Comprehensive Network Protection

With ENH500-AX Access Points, your network is protected from attacks at multiple level through advanced wireless encryption standards such as Wi-Fi Protected Access WPA2 and WPA3. WPA2 uses authentication database and IEEE 802.1X with Radius server. Built on the WPA2, **WPA3-Personal** use more resilient password-based authentication and leverages Simultaneous Authentication of Equals (SAE), a secure key establishment protocol between devices, to against password guessing attempts by third parties. **WPA3-Enterprise** providing additional protections for sensitive data transmitting via 192-bit cryptographic tool. This technology brings new capabilities to enhance Wi-Fi protections in personal and enterprise networks. WPA3 has backward compatibility with WPA2 devices.

EnGenius also offers the advanced encryption standard to encrypt traffic between Access Points and client devices. To isolate the internal client devices and guest devices, client isolation can avoid each client device to see each other under the same WLAN.

Securable Portals for different purpose

Administrators can also use **Virtual LAN (VLAN)** with **Guest Network*** to isolate each client for avoiding an unnecessary touch, leaking sensitive data, and enhancing Internet security and reliability for internal network.

With **VLAN per SSID**, the Integrate VLAN ID with a WLAN service set identifier (SSID) interface will deliver packets to the defined path. The built-in QoS mechanism could allow the specific VLAN SSID to get more bandwidth and deliver video streaming content to the destination first.

Restrain Wireless Traffic under a variety of Environments

To effective manage the usage of each client devices at a LAN topology, **Traffic Shaping** controls the bottle of bandwidth to offer the limited bandwidth for an individual **SSID** or **each client** per Access Point. This constraint offers the constant bandwidth to perform specific applications like VOIP and video streaming fluently and smoothly without air congestion on each client devices.

Scalable and Flexible Deployment for Outdoor Installation

With included mounting accessories, ENH500-AX provides reliable kits to fix this device on anywhere for delivering wireless signal under outdoor environment. To save the maintenance cost and labors fee on deploying Access Points, these products had been built in two Gigabit Ethernet ports with Power over Ethernet (PoE) functions for receiving power source from the included PoE adapter. With scalable extension over PoE mechanism, Access Points can receive power and signal source easily from 100 meters or 328 feet distance.

Meanwhile, EnGenius ENH500-AX was built in high-gain directional antennas for delivering the wireless signal to long-range distance.

Technical Specifications Wireless outdoor long-range CPE

Wireless Radio Specification

Access Point Type:
Outdoor, IP55, single 5GHz 802.11 ax 2x2 MIMO is backwards compatible with 802.11 ac/a/n mode

SU-MIMO:
Two(2) spatial stream Single User (SU) MIMO for up to 1,200 Mbps wireless data rate with VHT80 to a 2x2 wireless device under the 5GHz radio.

MU-MIMO
Two (2) Spatial Stream MU-MIMO up to 1,200 Mbps wireless data rate for transmitting to two (2) streams MU-MIMO capable wireless devices under 5GHz simultaneously.

Frequency Radios
2.4GHz: 2412MHz~2482MHz (Management radio)
5GHz: 5150MHz~5250MHz, 5250MHz~5350MHz, 5470~5725MHz, 5725MHz~5850MHz
Support radios and channels will be varied on the configured regulatory domain.

Supported Radio Technology
802.11ax: Orthogonal Frequency Division Multiple Access (OFDMA)
802.11b: Direct-sequence spread-spectrum (DSSS)
802.11ac/a/g/n: Orthogonal Frequency Division Multiple (OFDM)
802.11ax supports high efficiency(HE) — HE 20/40/80 MHz
802.11ac supports very high throughput (VHT) — VHT 20/40/80 MHz
802.11n supports high throughput (HT) — HT 20/40 MHz
802.11n supports very high throughput under the 2.4GHz radio –VHT40 MHz (256-QAM)
802.11n/ac/ax packet aggregation: A-MPDU, A-SPDU

Supported Modulation Type
802.11b: BPSK, QPSK, CCK
802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM

Transmit Power (Maximum Value)
26dBm
Maximum power is limited by regulatory domain

Tx Beamforming (TxBF)
Increasing signal reliability and transmitting distance.

Supported data rates (Mbps)
802.11a: 6, 9, 12, 18, 24, 36, 48, 54
802.11n: 6.5 to 300 (MCS0 to MCS15)
802.11ac: 6.5 to 1200 (MCS0 to MCS9, NSS=1 to 2)
802.11ax: 18 to 1200 (MCS0 to MCS11, NSS=1 to 4)

Power

Maximum Power Consumption
Maximum : 13W

Power Source
Proprietary 54V PoE (Power: 4, 5; Return: 7, 8)
EnGenius PoE Adaptor EPA5006GR

Antenna

Antenna Types
ENH500-AX: High-gain directional 16 dBi Antenna
Widely frequency supported from 5150MHz to 5925MHz

Interfaces

Networking Interface
Two (2) 10/100/1000 BASE-T RJ-45 Ethernet Ports
Main LAN : PoE input LAN Port
Second LAN: Data transmit LAN Port

LED Indicators
Display system and wireless transmission status

Reset Button
Convert Access Point to the Factory default or the Users Default via PoE adapter over 100 meter (328 feet) distance.

Mounting

Pole Mounting
Assemble a mounting bracket to fix this Access Point on a pole.

Wall Mounting
Mount this Access Point on a flat wall

Mechanical & Environment

Dimensions (Device only)
260mm (L) x 84mm (W) x 55mm (H) (10.24" x 3.31" x 2.17")

Weight
610g

Operating
Temperature: -20°C~60°C (-4°F~140°F)
Humidity: 0% ~ 90% typical

Storage
Temperature: -40°C~80°C (-22°F~176°F)
Humidity: 0% ~ 90% typical

Environment Protection Level
IP55

Surge Protection
Line to Line: 1.0KV
Line to Ground: 2.0KV

ESD Protection
Contact: 4KV
Air: 8KV

Compliance Regulatory

FCC
CE
IC
CB

Technical Specifications Wireless outdoor long-range CPE

Operating Mode

Access Point Mode (AP Mode)
Be an Access Point behaves like a central connection for station or clients that support IEEE 802.11 ac/a/n network.

Client Bridge Mode (CB Mode)
The Access Point essentially acts as a wireless adapter that connects to an access point to allow a system of wireless access to the network in the client bridge mode.

WDS Modes
WDS modes uses WDS technology to establish the wireless connection via filling MAC address in both Access Points to enlarge the wireless area.
WDS AP / WDS Station mode

Exquisite RF Management

Station Priority
Data transmission of client bridge / WDS station can be prioritized in High/ Middle/Low level.

ACK timeout (Distance Control)
Set the ACK timeout to assure the proper distance to deliver wireless signal properly.

Site Survey
Scan signal level of an environment to provide parameters for performing auto ransmit power and auto channel.

Auto Transmit Power
Automatically adjust power level

Auto Channel
Automatically assign a clearly channel to perform RF transmission under a pervasive environment.

RSSI Threshold
Kick client devices that the signal (RSSI) is above the set value from the AP for reducing the interference and optimize the connecting quality.

Optimize Performance

Quality of Service
Compliance with IEEE 802.11e standard
Prioritizes voice over data for both tagged and untagged traffic
Transmit video, voice and data at the same SSID

Power Save Mode
Support U-APSD

Pre-Authentication
Compliance with 802.11i &11x

PMK Caching
Compliance with 802.11i
If wireless client devices has authenticated to an access point, it does not perform a full authentication exchange when client devices roaming between access points.

Multicast to Unicast Conversion
Using the IGMP protocol, an access Point delivers high definition content to a large number of clients simultaneously.

Easy to Management

Multiple SSIDs
BSSID support
Support 1 SSID for client to configure AP
Support 8 SSIDs for client connection

Guest Network
Isolate each client for avoiding an unnecessary touch, leaking sensitive data, and enhancing Internet security and reliability.

VLAN Tag
Independent VLAN setting can be enable or disable. Any packets that enter the Device without a VLAN tag will have a VLAN tag inserted with a PVID (Ethernet Port VID).

VLAN Pass-through
Broadcast VLAN-tag packets to find the destination and deliver packets over the defined path. The functions allows network topology scalable and flexible.

VLAN Per SSID
Integrate VLAN ID with a SSID interface to forward packets over the defined path. The functions isolate client devices to get more security.

Management VLAN
Feature is enabled with specified VLAN ID, the device will only allow management access with the same specified VLAN ID from remotely location by using protocols such as telnet, SSH, snmp, syslog etc.

Traffic Shaping
Controls the bottle of bandwidth to offer the limited bandwidth for an individual **SSID** or **each client** per Access Point.

MAC Address Filtering
Filter up to 32 sets MAC addresses per SSID

E-Mail Alert
Provides a network monitoring tool for administrators to stay informed the configuration change.

Save Configuration as Users Default
Save the customized configuration as default value for different customer demands.

Wi-Fi Scheduler
Perform a regular reboot on access point at assigned schedule
Perform it to enable or disable 5GHz interface from a period time.

SNMP &MIB&CLI
v1/v2c/v3 support
MIB I/II, Private MIB
CLI Supported

RADIUS Accounting
Help operators to offload 3G to Wi-Fi seamlessly

Wireless Clients list
Provide the list to display real status of wireless client devices on this Access Point.

Comprehensive Protection

Wireless Encryption Standard
WPA3/WPA2 Personal
WPA3/WPA2 Enterprise

Hide SSID in beacons

Client Isolation
Block/Isolate the communication between the associated clients under the same WLAN.

HTTPS
A secure communication protocol can be enabled to allow secure management web access over a computer network.

SSH Tunnel
A secure communication protocol can be enabled to allow secure remote shell access or command execution.

RF Performance Specification(ENH500-AX)

Wireless outdoor long-range CPE

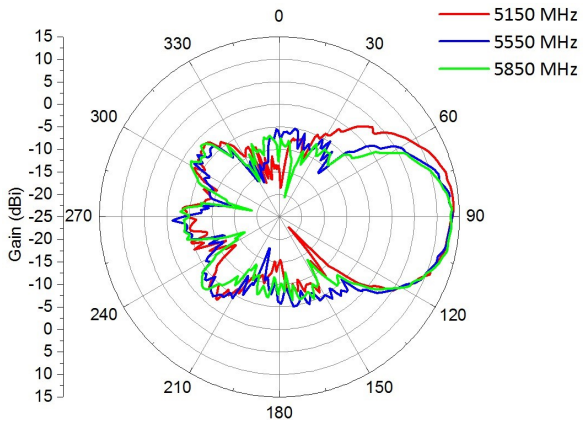
Channel	Data Rate	Transmit Power (Aggregated, dBm)	Receive Sensitivity (Aggregated, dBm)
802.11a 5 GHz	6 Mbps	26	-93
	54 Mbps	25	-76
802.11n HT20 5GHz	MCS 0 / 8	26	-93
	MCS 7 / 15	23	-73
802.11n HT40 5GHz	MCS 0 / 8	26	-90
	MCS 7 / 15	23	-71
802.11ac VHT20 5GHz	MCS0	26	-93
	MCS8	23	-69
802.11ac VHT40 5GHz	MCS0	26	-90
	MCS9	22	-65
802.11ac VHT80 5GHz	MCS0	26	-86
	MCS9	22	-61
802.11ax HE20 5GHz	MCS0	25	-90
	MCS11	19	-60
802.11ax HE40 5GHz	MCS0	24	-82
	MCS11	19	-57
802.11ax HE80 5GHz	MCS0	24	-76
	MCS11	19	-46

*Maximum RF performance of the hardware provided. Maximum transmit power is limited by local regulatory.
*The supported frequency bands are restricted by local regulatory requirements.
*Transmit power is configured in 1.0dBm increments.

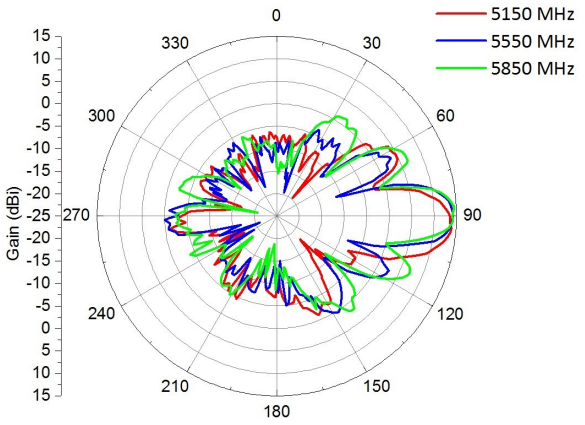
Antennas Patterns Wireless outdoor long-range CPE

ENH500-AX

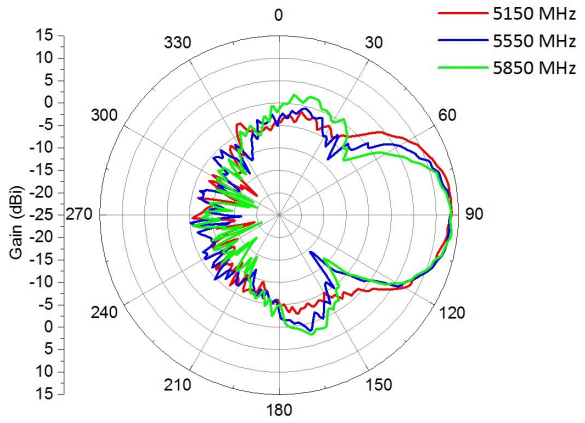
Port1: H-Plane



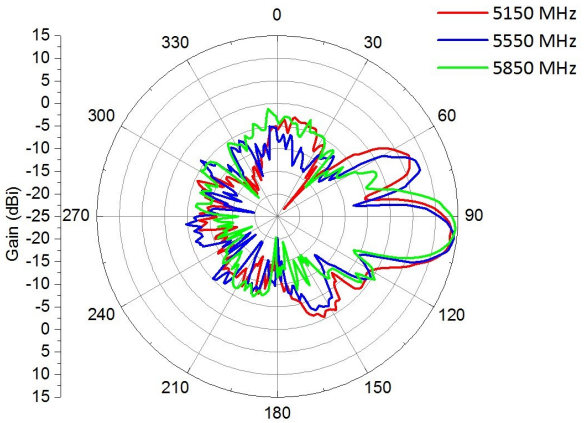
Port1: E-Plane



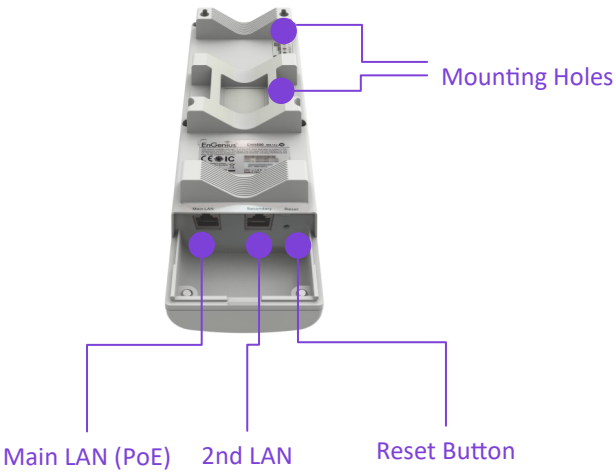
Port2: H-Plane



Port2: E-Plane



Physical Interfaces



	ENH500-AX
	
Standards	802.11 ax/ac wave 2/a/n 802.11 b/g/n*
Frequency	2412~2482MHz* 5150~5850MHz**
Tx Power	26 dBm**
Data Rates	1,200 Mbps
Antennas	Directional 16dBi
Physical Interface	1 x Gigabit 54V PoE Input LAN Port 1 x Gigabit Data LAN Port
Radio Chains/Streams	2x2: 2

* 2.4GHz radio interface is only for mobile App configuration via mobile device.

* * The supported frequency and maximum Tx power will be varied by the local regulatory.

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