

## Model No. FN3AH5X

### Wireless-N/A, 5Ghz, 500mW for Outdoor AP Bridge – PCBA



#### ■ High Lights

- IEEE 802.11n Draft 2.0 Compliance in 2Tx / 2Rx Design
- Transmit Power : 500mW , Receiving Sensitivity : -97dBm
- Support IEEE 802.11n and 802.11a
- Operates in the 5GHz ISM Band
- Enables Bandwidth of up to 300Mbps(Tx), 300Mbps(Rx) link rate
- Topology : Point to Point ; Point to Multi Point
- Operation Mode :
  - Access Point : It can be deployed as a traditional fixed wireless Access Point
  - Repeater: To expand wireless service by repeating prior AP
  - WDS : It can be used to expand Ethernet network via wireless WDS Link
  - AP+WDS: Not only to extend Ethernet network, but also provide wireless access to the expanded network
  - CPE (Customer Premises Equipment): It is a wireless gateway with NAT and DHCP Server functions to connects to Wireless Internet Service Provider's (WISP)
  - Client Bridge + Universal Repeater : It is a wireless repeater or bridge to connects to Wireless Internet Service Provider's (WISP)
  - CPE+AP: It is a wireless repeater or gateway with NAT and DHCP Server functions to connects to Wireless Internet Service Provider's (ISP)
- Security with 802.1X, WPA, and WPA2
- Support QoS & WMM
- Integrated Power over Ethernet (PoE)
- Multiple Virtual AP & Capability of Client Isolation
- Business-class WLAN Security and Client Authentications
- Provide Advanced Wireless Setting
- Support Web Management and SNMP MIB II)
- Client Isolation Through Layer 2 VLAN Technology



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- Two administrator accounts for manager authorities
- **WISP Centralized Management for per-subscriber rate limiting features (CPE Mode)**
- QoS(Quality of Service) for bandwidth management and traffic prioritization
- Provide Wizard that lead the installer through a series of well-defined steps
- Dual Ethernet Connectivity – provide a secondary ethernet port with software enable PoE output for IP device

FN2AH5X is the point of connection to Wireless Outdoor Network for service provider deploying last mile services to business or residential broadband subscribers.. Network administrators can create multiple subscriber service tier using **per-subscriber rate limiting features**, and manage centrally. FN2AH5X outdoor WISP bridge utilizes a 500mW high power with a Built-in 5 GHz 15dBi patch antennas . This outdoor AP may connect to the WiFi mesh or WDS infrastructure and provides the subscriber with an Ethernet connection for a local access .

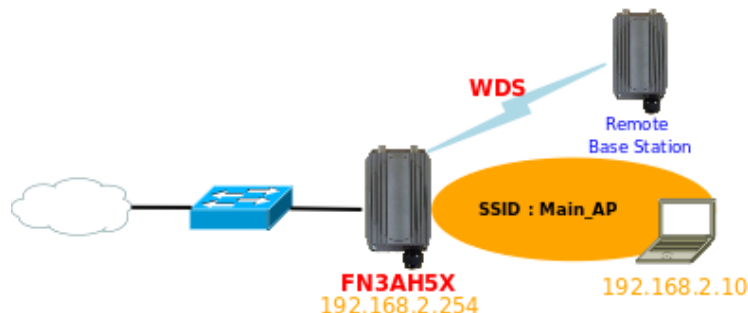
This outdoor AP outdoor high power Bridge can be used for seven different purposes in four different modes. In the AP mode, it can be deployed either as traditional fixed wireless Access Point(AP), or combination of AP and WDS(AP+WDS). In the WDS mode, it's only used to expand or bridge Ethernet networks and deployed as a main base, relay based or remote base station. In the CPE mode, it connects to Wireless Internet Service Provider's(WISP) outdoor network via wireless WAN gateway to access to Internet. In the Universal Repeater mode, it connects to Wireless Internet Service Provider's(WISP) outdoor network via wireless or wired bridge to access to Internet

## Specifications

### Wireless Architecture Mode

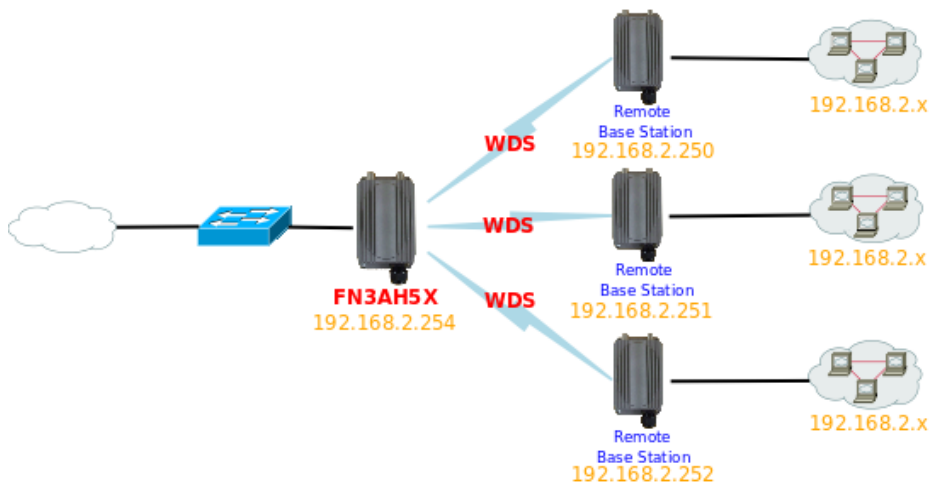
#### → Configuration in AP Mode (including Access Point + WDS)

An access point can be either a main, relay or remote base station. A main base station is typically connected to a wired network via the Ethernet port. A relay base station relays data between main base stations and relay stations or remote base stations with clients. A remote base station is the end point to accept connections from wireless clients and pass data upwards to a network wirelessly.



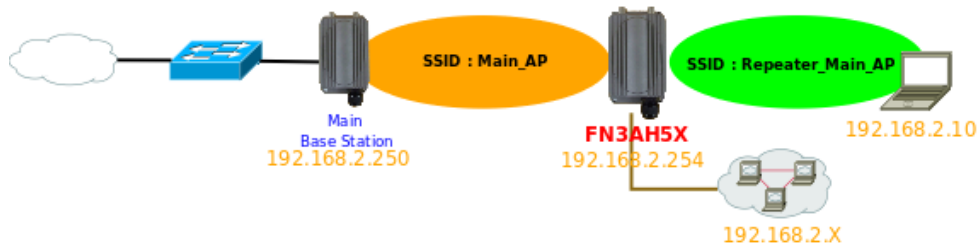
→ **WDS Mode (PtP, PtMP, Repeater)**

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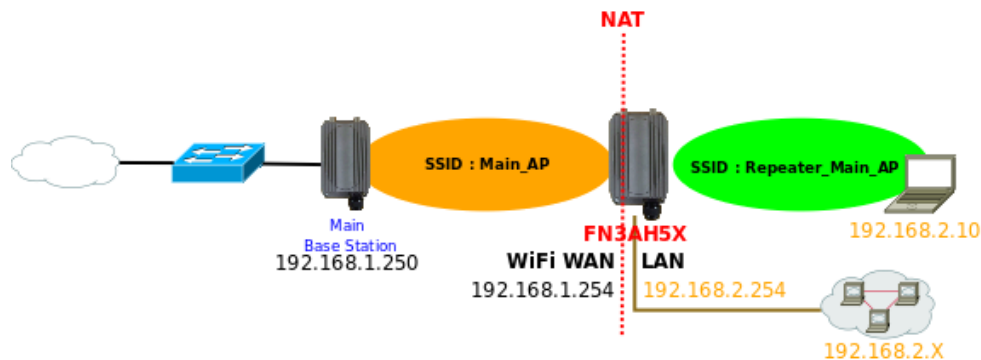
→ **Universal Repeater + Client Bridge Mode**

It can be used as an Universal Repeater to receive wireless signal over last mile applications, helping WISPs deliver wireless broadband Internet service to new residential and business customers. In this mode, the wired clients of FN2AH5X are in **the same** subnet from Main Base Station and it **accepts** wireless connections from client devices.



- **Configuration on CPE + AP Mode (Router Client + Access Point)**

It can be used as an Outdoor Customer Premised Equipment(CPE) to receive wireless signal over the last mile, helping WISPs deliver wireless broadband Internet service to new residential and business customers. In this mode, the WCB1200H2PX is a gateway with NAT and DHCP Server functions. The wireless and wired clients of WCB1200H2PX are on the **different subnet** from Main Base Station and it **accepts** wireless connections from client devices.



## Networking

- ➔ Support Static IP, Dynamic IP(DHCP Client), PPPoE and PPTP on WiFi WAN Connection
- ➔ Support three reconnect mode on PPPoE and PPTP : Always On, On Demand and Manual \
- ➔ Support MPPE-64 and MPPE-128 Encryption on PPTP Connection
- ➔ Support IPsec/PPTP/L2TP/SIP Pass Through
- ➔ MAC Cloning
- ➔ DHCP Server ( for CPE Mode and Client Bridge Mode )
- ➔ 802.3 Bridging
- ➔ Masquerading (NAT) (for CPE Mode)
- ➔ Proxy DNS
- ➔ Dynamic DNS
- ➔ NTP Client
- ➔ Virtual DMZ
- ➔ Virtual Server (Port Forwarding)
- ➔ Support MAC Filter
- ➔ Support IP Filter
- ➔ Bandwidth traffic Shaping
- ➔ Spanning Tree Protocol (STP )

## Wireless Feature

- Transmission power control : 7 Level

- Channel selection : Manual or Auto
- No of associated clients per AP : 32
- Setting for max no associated clients : Yes
- No. of ESSID (Virtual AP ) : 8
- No. of Max. WDS setting : 4
- Preamble setting : Short/ Long
- Setting for 802.11a/n mix or 802.11a only
- Setting for transmission speed
- Dynamic Wireless re-transmission
- IEEE802.11f IAPP (Inter Access Point Protocol), hand over users to another AP
- IEEE 802.11i Preauth (PMKSA Cache )
- IEEE 802.11h - TPC(Transmission Power Control) and DFS(Dynamic Frequency Select)
- IEEE 802.11d -Multi country roaming
- Wireless Site Survey
- Channel Bandwidth setting : 20MHz or 20/40MHz
- Aggregation Frames and Size support
- RTS Threshold and Fragment Threshold support
- Slot time support
- ACK Time out Adjustment

### **Authentication/ Encryption (Wireless Security)**

- Layer 2 User Isolation
- Layer 2 AP Isolation
- Blocks client to client discovery within a specified VLAN
- WEP 64/ 128/ 152 Bits
- EAP-TLS + Dynamic WEP
- EAP-TTLS + Dynamic WEP
- PEAP/ MS-PEAP+Dynamic WEP
- WPA (PSK +TKIP)
- WPA (802.1x certification + TKIP)
- 802.11i WPA2 (PSK + CCMP/ AES)
- 802.11i WPA2 (802.1x certification + CCMP/ AES)
- Setting for TKIP/ CCMP/ AES key's refreshing period
- Hidden ESSID support
- Setting for "Deny ANY " connection request
- MAC Address filtering (MAC ACL)
- No. of registered RADIUS servers : 2
- VLAN assignment on ESSID



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- Support WEP data encryption over WDS link
- Support VLAN tag over WDS

## Quality of Service

- Download and Upload traffic control
- Packet classifications via DSCP (Differentiated Services Code Point)
- Control Policy by IP/IP Ranges/ MAC Group/ Service
- Layer-7 Protocol Support
- Traffic Analysis and Statistics
- No. of Max. Policy setting : 10
- DiffServ/ TOS
- IEEE802.1p/ COS
- Automatic mapping of WMM priority to 802.1p and IP DSCP
- IEEE 802.1Q Tag VLAN priority control
- IEEE802.11e WMM

## System Administration

- Intuitive Web Management Interface
- Password Protected Access
- Firmware upgrade via Web
- Reset to Factory Defaults
- Profiles Configuration Backup and Restore
- One-button-click to reset factory default
- Two administrator accounts
- Remote Link Test – Display connect statistics
- Full Statistics and Status Reporting
- NTP Time Synchronization
- Even Log
- Support SNMP v1, v2c, v3
- SNMP Traps to a list of IP Address
- Support MIB II
- CLI access via Telnet and SSH
- Administrative Access : HTTP and HTTPS
- UPnP (Universal Plug and Play)
  - Easy Installation Wizard
- Ping Watch Dog



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**Hardware Specification**

Base Platform	AR7240 + AR9280 (5G RF)
CPU Clock Speed	400 MHz
Wireless Radio	IEEE 802.11a/n
Serial Port	1 * Console (Internal)
Reset Switch Built-in	Push-button momentary contact switch ( Internal )
Standards Conformance	IEEE 802.3 / IEEE 802.3u
Ethernet Ports	<ul style="list-style-type: none"> <li>● 2 x 10/100Mbps Ethernet ports</li> <li>● IEEE 802.3, 802.3u compliant</li> <li>● CSMA/CD 10/100 auto sense</li> <li>● Power over Ethernet (PoE) and PoE Pass Through</li> </ul>
Flash	On board : 8MB
SDRAM	On board : 32MB
Built-In LED Indicators	1 x Power, 1 x LAN, 1 x WLAN

**Wireless Specification**

Network Standards Conformance	IEEE 802.11 a/n compliant
Data Transfer Rate	IEEE802.11a :6/ 9/ 12/ 18/ 24/ 36/ 48/ 54Mbps (auto sensing) IEEE801.11n(draft 2.0) : 300Mbps (Tx), 300Mbps (Rx)
Frequency Range	IEEE802.11a : 5.150 – 5.350 & 5.725 – 5.825 GHz(USA) 4.900 – 5.250 GHz(Japan) 5.150 – 5.350 & 5.470 – 5.725GHz (Europe ETSI) IEEE802.11n : 5.150 – 5.350 & 5.725 – 5.825 GHz(USA) 4.900 – 5.250 GHz(Japan) 5.150 – 5.350 & 5.470 – 5.725GHz (Europe ETSI)
Channel Spacing	IEEE802.11a : 20MHz IEEE802.11n : 20/40MHz
Media Access Protocol	CSMA/ CA with ACK
Modulation Method	IEEE 802.11a : OFDM with BPSK, QPSK, QAM and 64QAM IEEE 802.11n : BPSK, QPSK, 16-QAM, 64-QAM



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Operating Channels	<p>IEEE 802.11a :</p> <p>US : 12 (CH: 36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165)</p> <p>Japan : 4 (CH: 34, 38, 42, 46)</p> <p>ETSI : 19 (CH: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140)</p> <p>IEEE 802.11n @ 5GHz :</p> <p>US : 12 (CH: 36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161)</p> <p>Japan : 4 (CH: 34, 38, 42, 46)</p> <p>ETSI : 18 (CH: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136)</p>
RF Output Power	500mW
Transmit Power Variation	27 dBm
Frequency Response Flatness	±1dB over operating range
Receive Sensitivity	-97dBm

<b>Environmental &amp; Mechanical Characteristics</b>	
Operating Temperature	-20 °C ~ 60 °C
Storage Temperature	-20 °C ~ 85 °C
Operating Humidity	100% Non-Condensing
Storage Humidity	100% Non-Condensing
RF Connector	IPEX -Type * 2
Power Consumption	9W
Input Power	18- 24 VDC