DATASHEET

io by HFCL

Wi-Fi 6
Indoor 4x4/8x8
Wireless Access Point

ion12xi_h / ion12xi_h2

Highest Capacity Dual-Band Access Point

ion12xi_h / ion12xi_h2 is a centrally-managed Wi-Fi 6 certified Access Point that caters to the highest demands for super-fast speed and enhanced Wi-Fi capabilities thereby raising the bar for wireless efficiency to a whole new level. Eight spatial streams in the 5 GHz band, in conjunction with four spatial streams in the 2.4 GHz, results in up to 12 streams of Wi-Fi 6 connectivity, significantly boosting overall spectrum use. The Access Point maximizes coverage and optimizes per user throughput to the maximum extent using integrated high gain omni-directional antennas.

Overview

- Wi-Fi 6 (802.11ax) compliant with backward compatibility
- Up to 8x8 [5 GHz] + 4x4 [2.4 GHz] multi-user, multiple input, multiple output [MU-MIMO]
- 25dBm on 2.4 GHz; 28dBm on 5 GHz + Physical Antenna gain
- Supports -96 dBm or better receiver sensitivity
- 5.95 Gbps Aggregate data rate (4.8 Gbps in 5GHz; 1.15 Gbps in 2.4GHz)
- Built-in BLE Radio; USB 3.0 port (Type A)
- 32 SSIDs combined; 1024 concurrent client support

ion12xi_h / ion12xi_h2

UNMATCHED PERFORMANCE

Dual-Band Radio Offering Peak Data Rate up to 5.95 Gbps

The concurrent dual-band radio inside ion12xi_h / ion12xi_h2 offers a combined peak data rate of 5.95 Gbps with up to 4800 Mbps in the 5 GHz band and 1150 Mbps in the 2.4 GHz band. It becomes the most preferred option when it comes to serving very high-density data demands and for 4K /8K Video transmission

Bi-Directional, Multi-user, Multiple Input, Multiple Output (MU-MIMO)

The Access Point offers MU-MIMO and OFDMA for transmission that is more efficient to multiple clients. This is especially suited for environments with numerous varied devices, with each supporting latest or legacy Wi-Fi standards. MU-MIMO enables multiple clients to transmit and receive high bandwidth data simultaneously.

EasyMesh Networking

Eliminating the need for expensive cabling, Access Points automatically form a wireless mesh, and provides connectivity in every possible corner. With self-healing and self-optimization functionality, in case of a mesh node failure, the surrounding nodes automatically re-connect and resume service without downtime. Support for EasyMesh means that ion12xi_h / ion12xi_h2 is interoperable with third party Access Points and/or Routers and can quickly be deployed as standalone or converged with the existing network. This eliminates the need for locking-in with a single vendor, driving down the total cost of ownership of the network.

Fast Roaming; Fast Handover

802.11k/v/r protocols facilitate fast roaming and BSS Transition Management. Initial handshake with the new AP takes place before the client roams to the target AP. This eliminates the 4-way handshake during roaming, thus reducing the hand off time while ensuring security and QoS.

QoS 802.11e WMM (Wi-Fi Multi-Media)

QoS 802.11e WMM helps define the quality of service required for voice and multimedia applications and enhances network performance. It helps prioritize traffic – (Voice, Video, best effort, and background) to ensure mission-critical applications have a higher priority of network access. Policies can be implemented per network, per SSID, per user group, or per individual user for maximum flexibility and control.

Centralized control

Centralized management of the entire network on our highly intuitive, flexible, and scalable cloud network manager. It provides the flexibility to distribute the network, allocate varying bandwidths, manage, track, troubleshoot, configure, communicate, and enforce policies on all Access Points in the network. The controller has in-built analytics and reporting capabilities to gain insight into usage patterns

Improved Battery Life

Unscheduled automatic power save delivery (U-APSD) and Target Wake Time (TWT) enable devices such as smartphones and laptops to determine when and how frequently they will communicate with the Access Point. The benefits of these features are multifold— an increased sleep time for the device, less consumption of battery and bandwidth, optimized spectral efficiency for IoT devices by a reduction in overlaps and conflicts

ion12xi_h / ion12xi_h2

TECHNICAL SPECIFICATIONS

Wireless

AP type	Indoor, dual radio, 5-GHz 802.11ax and 2.4-GHz 802.11ax
Standards	IEEE 802.11 a/b/g/n/ac/ax
MU-MIMO	Up to 8x8 [5 GHz] + 4x4 [2.4 GHz] Multi-User, Multiple Input, Multiple Output [MU-MIMO]
Radio Frequency Band	Supported frequency bands (country-specific restrictions apply): • 2.40 GHz to 2.4835 GHz • 5.150 GHz to 5.250 GHz • 5.250 GHz to 5.350 GHz • 5.470 GHz to 5.725 GHz • 5.725 GHz to 5.875 GHz
Modulation Schemes	Supports up to 1024 QAM
Data Rates (max)	• 5.95 Gbps combined (8x8 MU-MIMO; 80 MHz) • 5.95 Gbps combined (4x4 MU-MIMO; 160 MHz)
Roaming	Indoor AP supports 802.11r - Fast Roaming
Compatibility	Backward compatible with legacy 802.11 clients
	Dynamic frequency selection (DFS) optimizes the use of RF spectrum

Physical Characteristics

Dimensions	260 x 260 x 72 mm
Weight	2.6 kg
Mounting	Wall and ceiling mounting
Visual Indicators	3 blue color status LEDs for power, 2.4 GHz radio and 5 GHz radio
Operating Temperature	0º C to 45º C

High Level Features

• WAN Protocols: Static IPv4/v6, DHCP client v4/v6

• Band Steering, Load Balancing

• 802.11w- Protected Management Frames (PMF) support

• Non Wi-Fi interference detection

• Support for ATPC, coverage hole detection & correction

• Support for integration with Captive Portal and AAA servers

• Advanced AI-based analytics

• Channel Bonding

• EasyMesh support

• Management: Standalone (via GUI) or through on-premise based solution or cloud-based

• 32 SSIDs combined (16 per radio)

• QoS 802.11e WMM

• Fast Roaming

• Auto Channel Selection

• Rate limiting per SSID and per user

• Advanced Power Save (U-APSD)

• Load-balancing

• Radio Resource Management for power and channel

• VoIP Support

• Support for console login for troubleshooting APs

• Built-in BLE Radio

Radio Frequency

- Integrated high gain omni-directional antennas (6 dBi)

- 25dBm on 2.4 GHz; 28dBm on 5 GHz + Physical Antenna gain

- Spatial multiplexing & MRC

- Intelligent RF control plane for self-healing and self-optimization

- Supports RF management with 20/40/80/160 MHz channels with 802.11ax

- Supports -96 dBm or better Receiver Sensitivity

- Ability to simultaneously serve clients and monitor the RF environment

Interface

- 10/100/1000/2.5G/5G/10G - RJ45 Port

- 1G/10G - Optical SFP+ Port

- DC jack

- USB 3.0 port (Type A)

- USB 2.0 port (Type C) [Console Port]

Security

- 802.11i, 802.1x, WIPS, WPA-PSK, WPA-Enterprise, WPA2-PSK, WPA2-EAP, WPA2-PSK-Mixed, WPA2-Enterprise, WPA3-Personal and WPA3-Enterprise, WPA3-SAE, Enhanced Open, MAC, Radius based, EAP Type (EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAPMSCHAPv2, EAP-SIM), Protected Management Frames

- VPN pass-through

- Layer 2 Tunneling (EoGRE)

- IP/URL Filtering

- Client isolation support

- Captive portal and guest accounts

- Rogue access point detection and prevention (WIDS & WIPS)

- Hidden SSID in beacons

- MAC address authentication

- X.509 digital certificates

- Support for locally-significant certificates using Public Key Infrastructure (PKI)

Certifications

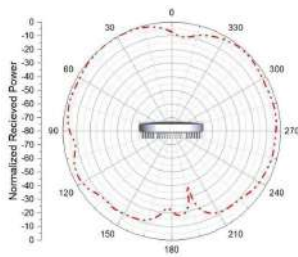| Certifications	• FCC Class B, CE
Wi-Fi Alliance Certifications	• Wi-Fi Certified - Wi-Fi 6 • Wi-Fi Certified Passpoint 3.0 • Wi-Fi Certified EasyMesh • Wi-Fi Certified WPA3 • Wi-Fi Certified Agile Multiband

Safety & Other Compliances

- RoHS 3.0
- Safety standard as per IEC 60950 & IEC 60215
- Electrostatic Discharge Immunity as per IEC 61000-4-2, Contact L2 and Air Discharge, L3 Level
- DC Surge Immunity as per IEC 61000-4-5, Level 2 (power port + signal port)
- Electrical Fast Transient/Burst Immunity as per IEC 61000-4-4, Level 2
- Radiated susceptibility as per IEC 61000-4-3 Level 2
- Conducted Susceptibility as per IEC 61000-4-6, Level 2
- Bump and vibration as per QM333
- Radiated Emission as per CISPR 32 Class B
- Conducted Emission as per CISPR 22 Class B (power port + signal port)
- Voltage Variation: AC - as per IEC 61000-4-11 and DC - as per IEC 61000-4-29

Antenna Radiation Pattern

- **2.4 GHz Antenna Radiation Pattern**

Radiation Pattern (Vertical)   Radiation Pattern (Horizontal)
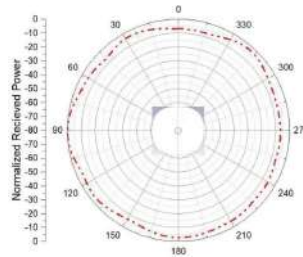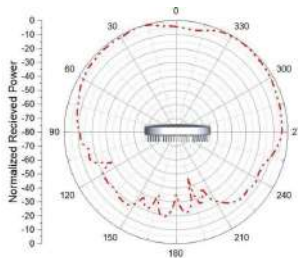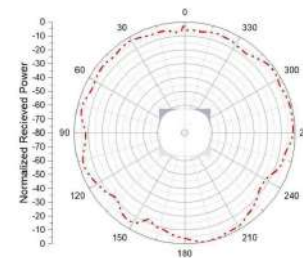

- **5 GHz Antenna Radiation Pattern**

Radiation Pattern (Vertical)   Radiation Pattern (Horizontal)

Power

- DC Powered (via 12V 4A power adaptor) or PoE Power (via 48V active PoE++ adaptor)
- Max Power Consumption -< 35 W

Note-
1. PoE Power is via a separate SKU. Please see ordering details at the end of datasheet for more details.
2. Only use active PoE++ adaptor/injector for powering the device. Powering the device using passive PoE++ adaptor/injector will result in hardware damage

Power Source	2.4 GHz Radio Configuration			5 GHz Radio Configuration			BLE Support	USB Support
	MIMO Mode	Channel Bandwidth	Transmit Power	MIMO Mode	Channel Bandwidth	Transmit Power		
802.3 af (<15W)	2x2	20 MHz	3 dBm	2x2	20 MHz	3 dBm	No	No
802.3 at (<25W)	2x2	40 MHz	24 dBm	4x4	80 MHz	24 dBm	Yes	No
802.3 at (<25W)	4x4	40 MHz	24 dBm	4x4	80 MHz	24 dBm	Yes	No
802.3 at (<25W)	4x4	40 MHz	24 dBm	8x8	80 MHz	24 dBm	No	No
802.3 bt (<35W)	4x4	40 MHz	24 dBm	8x8 or 4x4	80 MHz or 160 MHz	24 dBm	Yes	Yes
DC Power (<35W)	4x4	40 MHz	24 dBm	8x8 or 4x4	80 MHz or 160 MHz	24 dBm	Yes	Yes

Ordering Information

HARDWARE

Model No.	Description
ion12xi_h	IO Wi-Fi 6 Dual Band 8x8:8 Indoor Access Point with Integrated Antenna (6 dBi) [DC Powered]
ion12xi_h2	IO Wi-Fi 6 Dual Band 8x8:8 Indoor Access Point with Integrated Antenna (6 dBi) [DC & PoE powered]

SOFTWARE LICENSES

License Type	License Description
Base License	Activate 2x2, 40 MHz in 2.4 GHz and 4x4, 80 MHz in 5 GHz (default loaded in above Hardware)
12xi_h_2.4_4to8	License to Upgrade 2.4 GHz from 2x2, 40 MHz to 4x4, 40 MHz
12xi_h_5.0_8to16	License to Upgrade 5 GHz from 4x4, 80 MHz to 8x8, 80 MHz / 4x4, 160 MHz

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