# ion6bi

Wi-Fi 7 Tri-band 2x2 Indoor Access Point

ion6bi is a Wi-Fi 7 Indoor Access Point designed to operate in 2.4GHz, 5GHz and 6GHz bands. Each radio supports the IEEE802.11be standard with 2x2 MIMO capability, to enable highly-efficient and scalable enterprise Wi-Fi connectivity. This Access Point is IoT-ready with a multi-protocol IoT module which supports BLE 6.0, ZigBee and Thread.

## Key Specifications

- **Tri Radio Wi-Fi 7**
  with 6 Spatial Streams
  (2x2:2 at 2.4 GHz,
  2x2:2 at 5 GHz,
  2x2:2 at 6 GHz)
- **Max. Data Rate**
  9.2 Gbps
- **Uplink Ports**
  10 GbE with PoE IN
  10G SFP+
- **IoT Module**
  BLE 6.0, ZigBee, Thread,
  IEEE 802.15.4, 6LoWPAN
- **Peak Transmit Power**
  23 dBm at 2.4 GHz
  23 dBm at 5 GHz
  22 dBm at 6 GHz
- **Max. Clients**
  128 per radio
- **Max. SSIDs**[1]
  16 per radio
- **Antenna**
  Integrated,
  Omni-directional

## Applications

- **Offices**
- **Educational Institutions**
- **Hospitals, Clinics**
- **Hotels, Resorts**
- **Mass Transit**

## Product Overview

### Tri-band 2x2 Radios Offering Data Rate up to 9.2 Gbps

The Wi-Fi radios in ion6bi support 2x2 MIMO with 4K-QAM* and up to 40 MHz (2.4 GHz), 160 MHz (5 GHz) and 320 MHz (6 GHz) bandwidths, delivering aggregate peak data rate of 9.2 Gbps. It becomes the most preferred option when it comes to high-density, high throughput scenarios such as offices, educational institutions, indoor venues

### Wi-Fi 7 Features

The AP supports advanced Wi-Fi 7 features, including Multi-link Operation, Preamble Puncturing and Multi-RU allocation.

### Robust Security

The AP supports WPA3-Personal, WPA3-Enterprise and Enhanced Open (OWE), as per the Wi-Fi 7 specifications.

### Dual Uplink

The AP supports dual uplink options, in the form of 10G Ethernet and 10G SFP+ ports. These can be used standalone or in failover/aggregation modes.

### Built-in IoT module

The ion6bi comes with an integrated IoT module which supports BLE 6.0, ZigBee, Thread, IEEE 802.15.4, 6LoWPAN, enabling location-based services, asset tracking, and other IoT applications. This feature enhances user experiences in smart environments by enabling proximity-based interactions and automation.

### OWF Compatible

The ion6bi supports the OpenWiFi software stack, enabling it to be managed via vendor-neutral OWF controller.

### Centralized Control

ion6bi is configured, managed and monitored with io Canvas, an AI-enabled centralized network management platform. io Canvas is available in the public cloud as a managed service. It can also be deployed on-premise.

Note: *The 2.4 GHz radio supports upto 1K-QAM.

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## Technical Specifications

| Wireless Capabilities | |
|---|---|
| **Wi-Fi Standards** | IEEE 802.11be (backward compatible with 802.11abgn/ac/ax) |
| **Supported Radio Bands*** | • 2.40 GHz to 2.4835 GHz<br>• 5.150 GHz to 5.250 GHz<br>• 5.250 GHz to 5.350 GHz<br>• 5.470 GHz to 5.725 GHz<br>• 5.725 GHz to 5.875 GHz<br>• 5.925 GHz to 6.425 GHz<br>• 6.425 GHz to 6.525 GHz<br>• 6.525 GHz to 6.875 GHz<br>• 6.875 GHz to 7.125 GHz |
| **Peak Data Rate** | 9.2 Gbps (5765 Mbps for 5 GHz, 2882 Mbps for 5 GHz and 573 Mbps for 2.4 GHz) |
| **MIMO Configuration** | • 2.4 GHz: 2x2 MIMO<br>• 5 GHz: 2x2 MIMO<br>• 6 GHz: 2x2 MIMO |
| **Channel Bandwidth** | • 20/40 MHz (2.4 GHz)<br>• 20/40/80/160 MHz (5 GHz)<br>• 20/40/80/160/320 MHz (6 GHz) |
| **Max. Concurrent Clients** | 128 per radio (384 combined) |
| **Max. SSIDs[1]** | 16 per radio (48 combined) |
| **Receiver Sensitivity** | -94 dBm |
| **Modulation Schemes** | Up to 4096 QAM on 5 GHz and 6 GHz (1024 QAM on 2.4 GHz) |
| **Advanced PHY Techniques** | Spatial Multiplexing and MRC (Maximal Ratio Combining) |
| **Advanced Wi-Fi 7 Features** | • Multi-link Operation<br>- Multi-link Single Radio (MLSR)<br>- Enhanced Multi-link Single Radio (eMLSR)<br>- Multi-link Multi Radio, Simultaneous Tx and Rx (MLMR-STR)<br>• Preamble Puncturing<br>• Multi-RU Allocation |
| **Peak Transmit Power** | • 23 dBm on 2.4 GHz at MCS 0<br>• 23 dBm on 5 GHz at MCS 0<br>• 22 dBm on 6 GHz at MCS 0 |
| **Antenna Type** | Integrated, Omni-directional |
| **Antenna Gain** | • 4 dBi on 2.4 GHz<br>• 5 dBi on 5 GHz<br>• 5 dBi on 6 GHz |
| **IoT Module** | Bluetooth® 6.0 Low Energy, Thread, Zigbee®, IEEE 802.15.4 |

| Radio Resource Management | |
|---|---|
| **RF Optimizations** | • Automatic Transmit Power Control (ATPC)<br>• Auto Channel Selection (ACS)<br>• Coverage Hole Detection and Correction |
| **Radio Resource Control** | • Airtime Fairness (ATF)<br>• Max. client limit per radio and SSID<br>• Unicast and Multicast Rate Control<br>• Legacy Protocol Disabling |
| **Connection Management** | • Band Steering<br>• Load Balancing<br>• Association Control |
| **QoS** | • 802.11e WMM<br>• Per-user and Per-SSID Rate Limit |
| **Roaming** | • Fast Roaming (802.11k/v/r)<br>• Hotspot 2.0 |

Note:
*Subject to country-specific restrictions.
[1]For optimal performance in the field, it is recommended to deploy up to 12 SSIDs per radio.

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## Wireless Security & Authentication

| | | |
|---|---|---|
| **Wireless Encryption** | • WPA3-Enterprise<br>• WPA3-Enterprise Transition Mode<br>• WPA3-Enterprise SuiteB (192-bit)<br>• WPA3 Personal<br>• WPA3-Personal Transition Mode<br>• Enhanced Open (OWE) | • WPA2-Enterprise<br>• WPA2-Personal (PSK)<br>• WPA2-Personal Mixed Mode<br>• Dynamic Multi-PSK<br>• Static Multi-PSK |
| **Wireless Authentication** | • 802.1X Authentication<br>• EAP<br>  • TLS (RFC 5216)<br>  • TTLS/MSCHAPv2 (RFC 5281)<br>  • Protected EAP (PEAP)<br>  • PEAPv1<br>  • PEAPv0/MSCHAPv2<br>  • SIM (RFC 4186)<br>  • AKA (RFC 4187)<br>  • PSK (RFC 4764)<br>  • IKEv2 (RFC 5106)<br>  • EKE (RFC 6124) | • MAC Address Authentication<br>• Captive Portal and AAA Server Integration<br>• Third Party NAC Integration |

## Networking Capabilities

| | |
|---|---|
| **DHCP** | • DHCP v4/v6<br>• Options 16 & 17<br>• Options 43 & 60<br>• Option 82 |
| **Tunneling** | Layer 2 Tunneling: EoGRE |
| **L3 Network Services** | • Link Aggregation (LACP)<br>• SNMP v2c/v3<br>• Topology Discovery (LLDP) |
| **WAN Protocols** | Static IPv4/v6, DHCP Client v4/v6 |

## Advanced Features

| | | |
|---|---|---|
| **Access Control** | • Dynamic Multi-PSK, Static Multi-PSK<br>• Local MAC ACL | • RADIUS-based MAC ACL<br>• Client Isolation |
| **Firmware Integrity** | Secure Boot | |
| **Time Synchronization** | Real Time Clock (RTC) | |

## Monitoring & Diagnostics

| | |
|---|---|
| **Device Monitoring** | • SNMP v2c, v3<br>• Syslog<br>• Alarms |
| **Device Management** | IO Canvas - AI-enabled Centralized Network Management Platform |
| **Console Access** | RS-232 |

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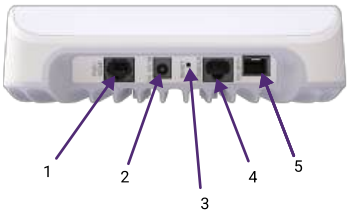
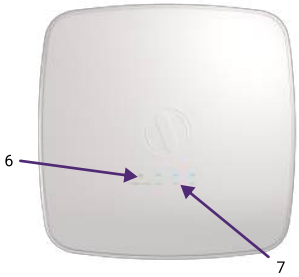
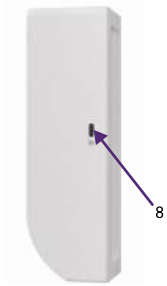
## Power Management

| | |
|---|---|
| **Power** | DC Powered (via 12V 2.5A power adaptor) or PoE Power (via 48V active IEEE 802.3at PoE+ adaptor)* |
| **Max. Power Consumption** | 25 W |

## Physical Characteristics

| | |
|---|---|
| **Dimensions** | 200 x 200 x 55 mm or 7.87 × 7.87 × 2.17 in |
| **Weight** | 1.5 kg |
| **Mounting** | Wall and Ceiling Mounting |
| **Visual Indicators** | • **Status LED:** One dual-color LED that indicates WAN port power and network connectivity (green) and power status (blue).<br>• **Radio LEDs:** Three individual blue LEDs, one for each radio, indicating the operational status of the respective radio. |
| **Operating Temperature** | -5°C to 45°C |
| **Humidity** | 95% RH non-condensing |
| **Physical Security** | Kensington® Lock Slot, Secure Bracket |

## Interfaces

| View | Port | Description | Connector Type | Speed/Protocol |
|---|---|---|---|---|
| **Bottom View**<br>  <br> | PoE+ 10GbE Port (1) | Provides the network uplink and supplies power to the device through Power over Ethernet (PoE) | RJ-45 | 1/2.5/5/10 Gbps Base-T Ethernet |
| | DC 12V (2) | Provides an alternative power source for the access point | 2 mm Center Pin | - |
| | Reset Button (3) | Press and hold for 5 second to reboot/ Press and hold for 10 seconds to reset the device to factory settings | Pin Hole Push Button | - |
| | Console Port (4) | RS-232 Single Port Serial Console | RJ-45 | - |
| | 10G SFP+ Port (5) | Optical port supporting speeds up to 10 Gbps | Optical SFP+ Cage | 1/2.5/5/10 Gbps |
| **Top View**<br>  <br> | Power/WAN LED (6) | Single multi-color LED for WAN connectivity and power status | LED | - |
| | Status LEDs (7) | Individual blue color LEDs indicating the operational status of the 2.4 GHz, 5 GHz, and 6 GHz radios | LED | - |
| **Side View**<br>  <br> | Lock Slot (8) | Slot used to attach a Kensington cable lock to secure the device and prevent theft or unauthorized removal | Slot | - |

Note: *If both PoE and DC power are connected, PoE is used as the primary power source.

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## Receiver Sensitivity

| Radio | Bandwidth (MHz) | MCS | Sensitivity (dBm) |
|---|---|---|---|
| 2.4 GHz | 20 | 0 | -94 |
| | 20 | 11 | -62 |
| | 40 | 0 | -92 |
| | 40 | 11 | -61 |
| 5 GHz | 20 | 0 | -94 |
| | 20 | 13 | -56 |
| | 40 | 0 | -89 |
| | 40 | 13 | -54 |
| | 80 | 0 | -85 |
| | 80 | 13 | -52 |
| | 160 | 0 | -84 |
| | 160 | 13 | -51 |
| 6 GHz | 20 | 0 | -94 |
| | 20 | 13 | -58 |
| | 40 | 0 | -92 |
| | 40 | 13 | -57 |
| | 80 | 0 | -89 |
| | 80 | 13 | -55 |
| | 160 | 0 | -85 |
| | 160 | 13 | -52 |
| | 320 | 0 | -83 |
| | 320 | 13 | -51 |

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## Compliances

| Compliances | |
|---|---|
| **Regulatory** | FCC Part 15 Subpart B (Class B), C & E, CE, ETA (WPC), MTCTE/TEC |
| **Compliance & Environmental Standards** | • RoHS 3.0<br>• 6 GHz band regulatory compliance as per EN 303 687<br>• IEC 62368-1 Safety Standard<br>• IEC 61000-4-2 Electrostatic Discharge Immunity, Contact L2 and Air Discharge, L3 Level<br>• IEC 61000-4-5 DC Surge Immunity, Level 2 (power port + signal port)<br>• IEC 61000-4-4 Electrical Fast Transient/Burst Immunity, Level 2<br>• IEC 61000-4-3 Radiated Susceptibility, Level 2<br>• IEC 61000-4-6 Conducted Susceptibility, Level 2<br>• Radiated Emission as per EN 55032 (CISPR32)<br>• Conducted Emission as per EN 55032 (CISPR32)<br>• QM333 Bump and Vibration<br>• Health Test as per IEC62311<br>• Voltage Variations:<br>  • IEC 61000-4-11 AC<br>  • IEC 61000-4-29 DC<br>• UL-2043 (Plenum) Compliant |

## Ordering Information

| Model No. | Description |
|---|---|
| **ion6bi** | IO Wi-Fi 7 Tri-band 2x2:2 Indoor Access Point with Integrated Antenna and IoT Module |

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