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Datasheet



Omada AX3000 Ceiling Mount Wi-Fi 6 Access Point

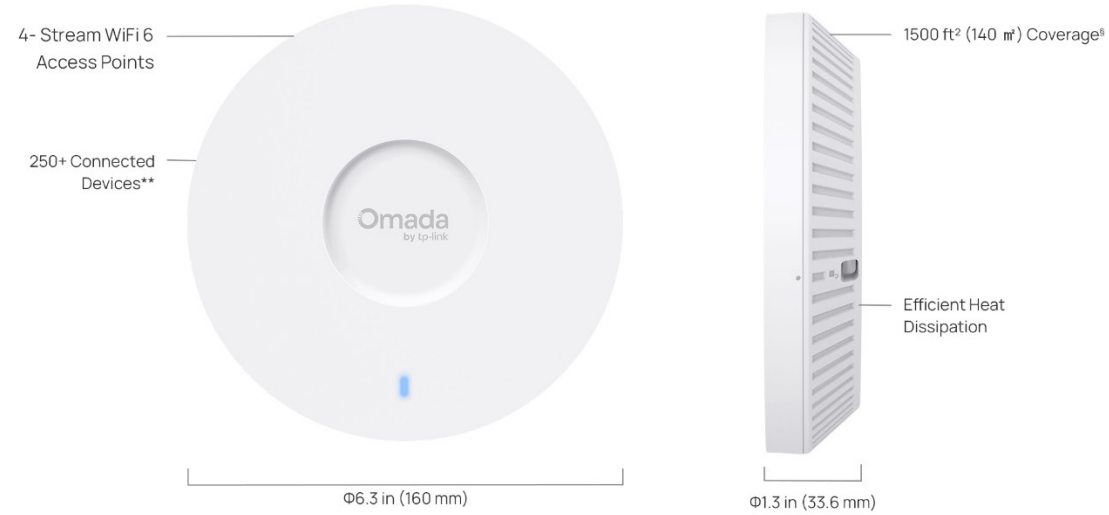
Model: EAP650

Product Overview

The Omada AX3000 Ceiling Mount Access Point EAP650 is the ideal choice for the Wi-Fi 6 Solution, delivering a high-speed, reliable, and secure dual-band Wi-Fi 6 experience.

- **Dual-Band Wi-Fi 6**: 2,402 Mbps on 5 GHz, and 574 Mbps on 2.4 GHz.†
- **1× Gigabit Port**: Ensures fast connectivity throughout the network.
- **Low Latency and Interference**: MU-MIMO, OFDMA, and 1024-QAM ensure high performance for your network.‡
- **Flexible Deployment and Easy Setup**: Supports both 802.3at PoE and DC Power supply for flexible installation. Omada SDN for one-click setup.
- **Advanced Features**: Supports centralized cloud management, mesh, and seamless roaming.△
- **More Connections and Wider Coverage**: Supports 250+ concurrent clients** and covers up to 1500 ft² (140 m²)* for reliable and extensive wireless connectivity.

Product Appearance





**The actual capacity depends on the wireless environment and client traffic and is generally less than the maximum number of client connections.
§Coverage value is calculated based on laboratory testing. Actual coverage is not guaranteed and will vary as a result of client limitations and environmental factors.

Feature Descriptions

Omada Wi-Fi 6 Technology

Wi-Fi 6 (802.11ax) supports up to 160 MHz Bandwidth, 8×8 UL/DL MU-MIMO, OFDMA, and 1024-QAM, making it an ideal choice for high-performance wireless networks. 160 MHz bandwidth delivers faster speeds and lower latency, enabling smoother streaming, gaming, and multitasking on multiple devices. OFDMA allows multiple devices to share channels efficiently, reducing latency and improving performance in dense environments. MU-MIMO supports more simultaneous device connections, enhancing overall network capacity. 1024-QAM increases data transmission rates, delivering 25% faster speeds compared to Wi-Fi 5.



Higher Efficiency with OFDMA



More Simultaneous Connections with MU-MIMO

Gigabit PoE Port for Optimized Wired Performance

Boost overall network efficiency with a high-performance Gigabit PoE port, delivering blazing-fast data speeds. Compatibility with 802.3at PoE is ideal for flexible deployment.

Easy Setup via the Omada app or Web Browser, Powered by SDN

The Omada SDN supports quick setup of EAP650 through automatic device identification and one-click adoption. Configure and manage on the go via the Omada app or web browser.

Boosted Network Security

EAP650 offers advanced security features, including a secure guest network with up to 16 SSIDs, SMS login for enhanced business authentication, WPA3 encryption for worry-free open public access, and rogue AP detection, ensuring safer and more reliable network experiences for both guests and business operations.

Cloud-Based Centralized Management

As part of Omada's unified SDN ecosystem, the EAP650 works harmoniously with Omada switches, gateways, and controllers. Businesses gain end-to-end visibility, automated optimization, zero-touch provisioning, and batch configuration— all managed from a single cloud interface.

Specifications

Hardware Specifications

Item	Description	
Wi-Fi Standards	5 GHz: IEEE 802.11a/n/ac/ax 2.4 GHz: IEEE 802.11b/g/n/ax	
802.11ax	Spatial Streams	• 2.4 GHz: 2×2 Uplink/Downlink MU-MIMO with 2 spatial streams • 5 GHz: 2×2 Uplink/Downlink MU-MIMO with 2 spatial streams
	Frequency Bands	2.400 to 2.4835 GHz ISM 5.150 to 5.250 GHz U-NII-1 5.250 to 5.350 GHz U-NII-2A 5.470 to 5.725 GHz U-NII-2C 5.725 to 5.850 GHz U-NII-3/ISM Note: Country-Specific Restriction Apply
	Bandwidth	2.4 GHz: 20 MHz/40 MHz 5GHz: 20 MHz/40 MHz/80MHz/160MHz Note: Country-Specific Restriction Apply
	Wireless Data Rate	• 2.4G+5G: 2976Mbps • 2.4GHz: 8.6 Mbps to 574 Mbps (MCS0—MCS11,NSS=1 to 2, HE20/40) • 5 GHz: 8.6 Mbps to 2402 Mbps (MCS0—MCS11,NSS=1 to 2, HE20/40/80/160) Note: Country-Specific Restriction Apply
	Radio Technology	Uplink/downlink OFDMA (Orthogonal Frequency-Division Multiple Access)
	Modulation Type	1024-QAM, 256-QAM. 64-QAM, 16-QAM, QPSK, BPSK
	Frame Aggregation	• A-MPDU (Aggregate MAC Protocol Data Unit) for Tx/Rx • A-MSDU (Aggregate MAC Service Data Unit) for Tx/Rx
	Others	• MRC (Maximal Ratio Combining) • TxBF (Transmit Beamforming) • WPA3 (Wi-Fi Protect Access 3) • DFS (Dynamic Frequency Selection) • CDD (Cycle Delay Diversity) • CSD (Cycle Shift Diversity) • STBC (Space-Time Block Coding) • LDPC (Low-Density Parity-Check)
802.11ac	Spatial Streams	• 5 GHz: 2×2 Downlink MU-MIMO with 2 spatial streams
	Frequency Bands	5.150 to 5.250 GHz U-NII-1 5.250 to 5.350 GHz U-NII-2A 5.470 to 5.725 GHz U-NII-2C 5.725 to 5.850 GHz U-NII-3/ISM Note: Country-Specific Restriction Apply
	Bandwidth	5 GHz: 20 MHz/40 MHz/80 MHz/160 MHz

Item	Description	
	Wireless Data Rate	• 5 GHz: 6.5 Mbps to 1732 Mbps (MCS0-MCS9, NSS=1 to 2, VHT20/40/80/160)
	Radio Technology	OFDM (Orthogonal Frequency-Division Multiplexing)
	Modulation Type	256-QAM. 64-QAM, 16-QAM, QPSK, BPSK
	Frame Aggregation	• A-MPDU (Aggregate MAC Protocol Data Unit) for Tx/Rx • A-MSDU (Aggregate MAC Service Data Unit) for Tx/Rx
	Others	• MRC (Maximal Ratio Combining) • TxBF (Transmit Beamforming) • WPA3 (Wi-Fi Protect Access 3) • DFS (Dynamic Frequency Selection) • CDD (Cycle Delay Diversity) • CSD (Cycle Shift Diversity) • STBC (Space-Time Block Coding) • LDPC (Low-Density Parity-Check)
802.11n	Spatial Streams	• 2.4 GHz: 2×2 MIMO with 2 spatial streams • 5 GHz: 2×2 MIMO with 2 spatial streams
	Frequency Bands	2.400 to 2.4835 GHz ISM 5.150 to 5.250 GHz U-NII-1 5.250 to 5.350 GHz U-NII-2A 5.470 to 5.725 GHz U-NII-2C 5.725 to 5.850 GHz U-NII-3/ISM Note: Country-Specific Restriction Apply
	Bandwidth	20 MHz/40 MHz
	Wireless Data Rate	• 2.4 GHz: 6.5Mbps to 300 Mbps (MCS0-MCS7, NSS=1 to 2, HT20/40) • 5 GHz: 6.5Mbps to 300 Mbps (MCS0-MCS7, NSS=1 to 2, HT20/40)
	Radio Technology	OFDM (Orthogonal Frequency-Division Multiplexing)
	Modulation Type	64-QAM, 16-QAM, QPSK, BPSK
	Frame Aggregation	• A-MPDU (Aggregate MAC Protocol Data Unit) for Tx/Rx • A-MSDU (Aggregate MAC Service Data Unit) for Tx/Rx
	Others	• MRC (Maximal Ratio Combining) • TxBF (Transmit Beamforming) • WPA3 (Wi-Fi Protect Access 3) • DFS (Dynamic Frequency Selection) • CDD (Cycle Delay Diversity) • CSD (Cycle Shift Diversity) • STBC (Space-Time Block Coding) • LDPC (Low-Density Parity-Check)

Item	Description	
Antenna	Wi-Fi	• 2.4 GHz: 2 × 4 dBi (peak gain), internal omnidirectional antennas • 5 GHz: 2 × 5 dBi (peak gain), internal omnidirectional antennas • The down tilt angle for maximum gain: 2.4G:45°; 5G:30° to 45° Note: The gains above are the single-antenna peak gains.
Interfaces	• 1 x 10M/100M/1000M Multigigabit Ethernet Port (RJ45); PoE in • 1 x DC power interface: 12VDC	
IoT	• BLE5.2,1Mbps	
Memory	• Flash: 1Gbit • DRAM: 4Gbit	
Button	1 × Reset button: Press the button for longer than 5 seconds to make the device restore to factory settings.	
Indicator	1 × single-color system LED indicates on the front: • Power-on status • Firmware initialization or upgrade status • Uplink service status • Error status	
Reliability	MTBF (Mean Time between Failure)	EU: 363844 hours at the operating temperature of 25℃ (77℉) ; US: 326205 hours at the operating temperature of 25℃ (77℉)
Power Supply	Input	• 48V Passive POE or 802.3at POE • DC: 12V/1A(EU), 12V/1.5A(US)
	Output	/
Power Consumption	• 802.3at (PoE+): EU: 13.7W, 2.4GHz radio 2×2, 5GHz radio 2×2. US: 15.5W, 2.4GHz radio 2×2, 5GHz radio 2×2. • DC: EU: 11.4W, 2.4GHz radio 2×2, 5GHz radio 2×2. US: 13.2W, 2.4GHz radio 2×2, 5GHz radio 2×2. • Idle mode: 6.16W(PoE) or 4.95W(DC) Note: Actual power consumption may vary depending on the AP usage.	
Surge/Lightning Protection	Ethernet Ports: ±4 kV	
ESD/EMP Protection	• Air discharge: ±8 kV • Contact discharge: ±4 kV Note: ESD/EMP Protection means Electrostatic Discharge/Electromagnetic Pulse Protection independently.	
Tx Power	Maximum transmit power	CE (EIRP) • 2.4GHz: 20 dBm • 5GHz: 22 dBm in U-NII-1, 22 dBm in U-NII-2A, 27 dBm in U-NII-2C FCC (conducted power) • 2.4GHz: 26dBm • 5GHz: 24 dBm in U-NII-1, 25 dBm in U-NII-2A, 25 dBm in U-NII-2C, 25 dBm in U-NII-3 Note: MIMO combined power, excluding antenna gains. The actual transmit power depends on local laws and regulations.

Item	Description	
	Minimum transmit power	CE (EIRP) • 2.4GHz: 7 dBm • 5GHz: 6 dBm in U-NII-1, 6 dBm in U-NII-2A, 6 dBm in U-NII-2C FCC (conducted power) • 2.4GHz: 4 dBm • 5GHz: 4 dBm in U-NII-1, 4 dBm in U-NII-2A, 4 dBm in U-NII-2C, 4 dBm in U-NII-3 Note: MIMO combined power, excluding antenna gains. The actual transmit power depends on local laws and regulations.
	Adjustable power increment	1 dB
Environment	Temperature	• Operating: 0℃ to +40℃ (32℉ to +104℉) • Storage: -40℃ to +70℃ (-40℉ to +158℉)
	Humidity	• Operating: 10% to 90% (non-condensing) • Storage: 5% to 90% (non-condensing)
	Altitude	• Storage: up to + 2000 m (6561feet) • Operating: up to + 2000 m (6561feet)
Unit	Dimensions (W×D×H)	• Main Unit: 160 × 160 × 33.6 mm (6.3 × 6.3 × 1.3 in.) • Shipping Unit: 245 × 228 × 65 mm (9.7 × 9.0 × 2.6 in.)
	Weight	• Main Unit: 0.38 kg (0.838 lb) • Mounting Bracket: 0.054 kg (0.119 lb) • Shipping Unit: 0.85 kg (1.87 lb)
	Mounting	• Ceiling /Wall/Junction Box/T-Bar Mounting (Kits included)

Software Specifications

Item	Description	
Wireless Functions	Maximum number of BSSIDs	16 (8 on each band)
	Maximum number of associated STAs	250+
	Guest Network	Yes
	ACS (Automatic Channel Selection)	Yes
	Airtime Fairness	Yes
	Band Steering	Yes
	802.11 Rate Control	Yes
	Rogue AP Detection	Yes
	URL Filtering	Yes
	RF Scan	No
	WLAN Optimization	Yes
	WIDS/WIPS	No
	Lock to AP	Yes
	Rate Limit	• SSID Rate Limit • Client Rate Limit
	Load Balance	• Maximum Associated Clients • RSSI Threshold
	MLO	No
	Roaming	• 802.11 k • 802.11v • 802.11r • Non-Stick Roaming • Ping-Pong Roaming Suppression • AI Roaming *Note: Only support Layer 2 Roaming currently.
	Multicast/Broadcast Management	• Multicast-to-Unicast Conversion • ARP-to-Unicast Conversation • Multicast Filtering • Multicast/Broadcast Rate Limit
	QoS (Quality of Service)	• WMM (Wi-Fi Multimedia) • DSCP (Differentiated Services Code Point) • U-APSD (Unscheduled Automatic Power Save Delivery)
Security and Authentication	ACL	

Item	Description	
	MAC Filter	
	MAC-Based Authentication	
	• None • Enhanced Open • WPA/WPA2/WPA3-Personal • WPA/WPA2/WPA3-Enterprise	
	Radius Accounting	
	• PPSK without Radius • PPSK with Radius (Generic Radius with bound MAC/EKMS/Generic Radius with unbound MAC)	
	Captive Portal	• No Authentication • Simple Password • Hotspot (Voucher / Local User / SMS / RADIUS / Form Auth) • RADIUS Server • External LDAP Server • External Portal Server • Pre-Authentication Access • Authentication-Free Client
	EAP Types	• EAP-TLS • EAP-TTLS • EAP-PEAP • EAP-CHAP • EAP-SIM • EAP-AKA • EAP-GTC • EAP-FAST • EAP-PEAP • EAP-MD5 • EAP-MSCHAPv2 • PEAPv0 • PEAPv1
Management methods	Omada Controller	• Omada Local Controller V6.1 and above • Omada CBC V6.1 and above
	App	Omada App V5.0 and above
	Standalone Management	Yes
	Standalone Mesh	Yes
	SSH	Yes
	SNMP	v1, v2c, v3
Operating Modes	AP	Yes
	Mesh	Yes
System Feature	System Log	Yes

Item	Description	
	Reboot Schedule	Yes
	WLAN Schedule	Yes
	NTP (Network Time Protocol)	Yes
	Email Alerts	Yes
	Firmware Upgrade	Yes
	Restore & Backup	Yes
	LED Control	Yes
Network Features	VLAN	• SSID VLAN • Dynamic VLAN • Management VLAN
	Static IP / DHCP Client	Yes
	IPv4/IPv6	Yes
	LLDP (Link Layer Discovery Protocol)	Yes
	mDNS	Yes
	Tools	• Ping / Traceroute / DNSLookup • Packet Capture (Wired and Wireless) • Terminal

Standards Compliance and Certifications

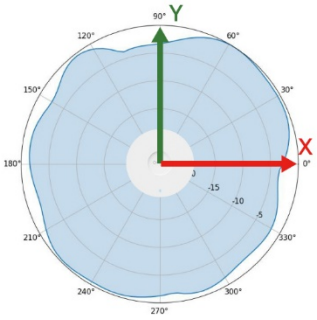
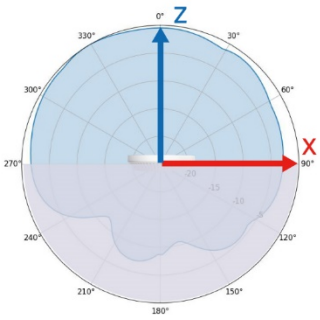
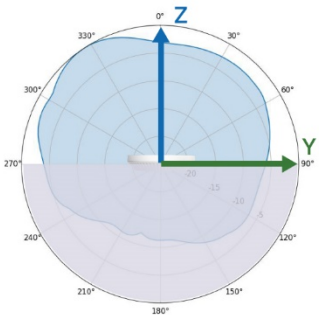
Item	Category	Description
Standards compliance	IEEE Standards	• IEEE 802.11a/b/g/n/ac/ax • IEEE 802.11e/i/k/v/r • IEEE 802.1x/q • IEEE 802.3at • IEEE 802.3ab • IEEE 802.3x
	Radio Standards	• ETSI EN 300 328 • ETSI EN 301 893 • FCC Part 15E • FCC Part15C • RSS-247 Issue 3, RSS-GEN Issue 5 • EN 62311 • EN 50665
	EMC standards	• EN 55032 • EN 55035 • EN 301489-1 • EN 301489-17 • EN 61000-3-3 • EN IEC 61000-3-2 • EN 60601-1-2:2015+A1:2021 • FCC Part 15B • ICES-003 Issue 7 • VCCI-CISPR 32:2016
	Safety Standards	• EN 62368-1 • IEC 62368-1
	Security Standards	/
	RoHS	• Directive 2011/65/EU, Directive (EU) 2015/863 • EN IEC 63000: 2018
	Others	• Equipment Radio Regulations: 2008 (including amendments)
Certifications	• FCC/CE/MIC,VCCI,ISED	

RF Performance

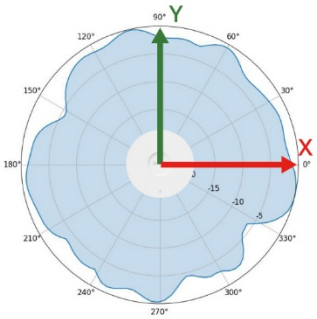
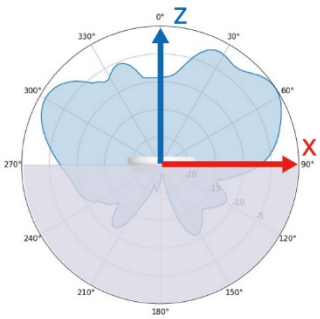
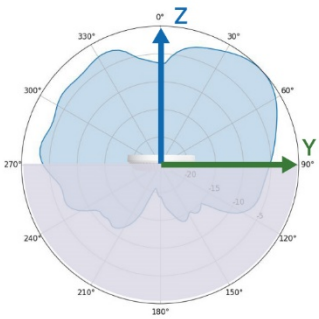
Frequency Band	Wi-Fi Protocol & Bandwidth	MCS Index / Data Rate	EU/US Maximum Transmit Power (dBm) per transmit chain	Receiver Sensitivity (dBm) per receive chain
2.4 GHz	802.11n, HT20	MCS0	14/22	-95
		MCS7	14/20	-76.5
	802.11n, HT40	MCS0	14/20	-92.5
		MCS7	14/20	-74
	802.11ax, HE20	MCS0	14/22	-96
		MCS11	14/18	-66.5
	802.11ax, HE40	MCS0	14/20	-93.5
		MCS11	14/18	-63.5
5 GHz	802.11n, HT20	MCS0	22/22	-95
		MCS7	20/20	-76.5
	802.11n, HT40	MCS0	22/22	-92.5
		MCS7	20/20	-73.5
	802.11ac, HT20	MCS0	22/22	-96
		MCS8	19.5/19.5	-74.5
	802.11ac, HT40	MCS0	22/22	-92.5
		MCS9	19/19	-70.5
	802.11ac, HT80	MCS0	22/22	-89.5
		MCS9	19/19	-67
	802.11ac, HT160	MCS0	22/19	-87
		MCS9	19/19	-63
	802.11ax, HE20	MCS0	22/22	-96
		MCS11	18/18	-66
	802.11ax, HE40	MCS0	22/22	-93
		MCS11	18/18	-63
	802.11ax, HE80	MCS0	22/22	-90.5
		MCS11	18/18	-61
	802.11ax, HE160	MCS0	22/19	-86
		MCS11	18/18	-58.5

Antenna Radiation Patterns

2.4 GHz

XY Plane	XZ Plane	YZ Plane
		

5 GHz

XY Plane	XZ Plane	YZ Plane
		

Package Contents

Item	Quantity
EAP650	1
Installation Guide	1
Power Adapter	1
Mounting Kit	1



*The accessories may vary by country/region. Please refer to the actual product.

Support Services

We are committed to providing you with comprehensive and reliable support services to ensure seamless experience with Omada products.

- Contact Support: https://support.omadanetworks.com/#contact-us
- Warranty Services: https://www.omadanetworks.com/support/replacement-warranty/

Revision History

Version	Date	Description
V1.0	2026-03-25	Initial release.

†Maximum wireless signal rates are the physical rates derived from IEEE Standard 802.11 specifications. Actual wireless data throughput, wireless coverage, and connected devices are not guaranteed and will vary as a result of internet service provider factors, network conditions, client limitations, and environmental factors, including building materials, obstacles, volume and density of traffic, and client location.

‡Use of Wi-Fi 6 (802.11ax), and features including 160 MHz Bandwidth, OFDMA, MU-MIMO, and 1024-QAM requires clients to also support the corresponding features. The 160 MHz bandwidth is only available on 5 GHz band and may be unavailable in some regions/countries due to regulatory restrictions.

*Coverage value is calculated based on laboratory testing. Actual coverage is not guaranteed and will vary as a result of client limitations and environmental factors.

**The actual capacity depends on the wireless environment and client traffic and is generally less than the maximum number of client connections.

△These features require the use of an Omada controller.

Some models featured in this guide may be unavailable in your country or region. Visit TP-Link website for local sales information: **https://www.omadanetworks.com**. Specifications are subject to change without notice.

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