# Alcatel-Lucent OmniAccess 500 Series Wireless Access Points

## Cost-effective Wi-Fi 6 (802.11ax) for medium-density indoor environments

These affordable Wi-Fi 6 access points provide high-performance connectivity for any organization experiencing growing numbers of mobile, IoT and mobility requirements. With a maximum aggregate data rate of 1.77 Gbps (1.774 Gbps), they deliver the speed and reliability needed for venues and workplaces such as schools, midsize offices and retailers.


### Incredible efficiency

The 500 Series APs are also designed to optimize user experience by maximizing Wi-Fi efficiency and dramatically reducing airtime contention between clients.

Features include Orthogonal frequency-division multiple access (OFDMA), bi-directional multi-user MIMO and cellular optimization. With up to 2 spatial streams (2SS) and 80 MHz channel bandwidth (HE80), the 500 Series provides groundbreaking wireless capabilities for budget-conscious deployments.

**Advantages of OFDMA**

This capability allows OmniAccess APs to handle multiple Wi-Fi 6 capable clients on each channel simultaneously, regardless of device or traffic type. Channel utilization is optimized

by handling each transaction via smaller sub-carriers or resource units (RUs), which means that clients are sharing a channel and not competing for airtime and bandwidth.

### Key features

- 1.77 Gbps of maximum throughput
- WPA3 and Enhanced Open security
- Built-in technology that resolves sticky client issues for Wi-Fi 6 and Wi-Fi 5 devices
- OFDMA and MU-MIMO for enhanced multi-user efficiency
- IoT-ready Bluetooth 5 and Zigbee support

### Multi-user MIMO (MU-MIMO)
The 500 Series AP supports downlink MU-MIMO just like Wi- Fi 5 (802.11ac Wave 2) APs. The added benefit is the ability to multiply the number of clients that can now send traffic, thus optimizing client-to-AP spatial stream diversity.

### Wi-Fi 6 and MU-MIMO aware client optimization
AI-powered ClientMatch technology eliminates sticky client issues by placing Wi-Fi 6 capable devices on the best available AP. Session metrics are used to steer mobile devices to the best AP based on available bandwidth, types of applications being used and traffic type – even as users roam.

### Advanced Cellular Coexistence (ACC)
This feature uses built-in filtering to automatically minimize the impact of interference from cellular networks, distributed antenna systems (DAS), and commercial small cell or femtocell equipment.

### Intelligent Power Monitoring (IPM)
OmniAccess APs continuously monitor and report hardware energy consumption. They can also be configured to enable or disable capabilities based on available PoE power – ideal when wired switches have exhausted their power budget.

### Green AP energy efficiency
Wi-Fi 6 APs utilize analytics from NetInsight to automatically transition in and out of a sleep mode based on client density.

## IoT platform capabilities
Like all OmniAccess Wi-Fi 6 APs, the 500 Series includes an integrated Bluetooth 5 and 802.15.4 radio (for Zigbee support) to simplify deploying and managing IoT-based location services, asset tracking services, security solutions and IoT sensors. This allows organizations to leverage the 500 Series as an IoT platform, which eliminates the need for an overlay infrastructure and additional IT resources.

### Target Wake Time (TWT)
Ideal for IoTs that communicate infrequently, TWT establishes a schedule for when clients need to communicate with an AP. This helps improve client power savings and reduces airtime contention with other clients.

## Secure infrastructure
The OmniAccess 500 Series includes components of 360 Secure Fabric to help protect user authentication and wireless traffic. Select capabilities include:

### WPA3 and Enhanced Open
Support for stronger encryption and authentication is provided via the latest version of WPA for enterprise protected networks.

Enhanced Open offers seamless new protection for users connecting to open networks where each session is automatically encrypted to protect user passwords and data on guest networks.

### WPA2-MPSK
MPSK enables simpler passkey management for WPA2 devices – should the Wi-Fi password on one device or device type change, no additional changes are needed for other devices. Requires ClearPass Policy Manager.

### VPN Tunnels

In Remote AP (RAP) and IAP-VPN deployments, the OmniAccess 500 Series can be used to establish a secure SSL/IPSec VPN tunnel to a Mobility Controller that is acting as a VPN concentrator.

### Trusted Platform Module (TPM)

For enhanced device assurance, all OmniAccess APs have an installed TPM for secure storage of credentials and keys, and boot code.

## Simple and secure access

To simplify policy enforcement, the OmniAccess 500 Series uses OmniAccess policy enforcement firewall (PEF) feature to encapsulate all traffic from the AP to the Mobility Controller (or Gateway) for end-to-end encryption and inspection. Policies are applied based on user role, device type, applications, and location. This reduces the manual configuration of SSIDs, VLANs and ACLs.

## High-density connectivity

Each 500 Series AP provides connectivity for a maximum of 256 associated clients per radio (512 in total). In real-world scenarios, the maximum recommended client density is dependent on environmental conditions.

## Flexible operation and management

A unique feature of OmniAccess APs is the ability to operate in either controllerless (Instant) or controller-based mode.

### Controller-less (Instant) mode

In controllerless mode, one AP serves as a virtual controller for the entire network

### Mobility Controller mode

For optimized network performance, roaming and security, APs tunnel all traffic to a mobility controller for centrally managed traffic forwarding and segmentation, data encryption, and policy enforcement. Learn more in the…

## Additional Wi-Fi features

Each AP also includes the following standards-based technologies:

| Transmit beamforming (TxBF) | Increased signal reliability and range |
|---|---|
| Passpoint Wi-Fi (Release 2) (Hotspot 2.0) | Seamless cellular-to-Wi-Fi carryover for guests |
| Dynamic Frequency Selection (DFS) | Optimized use of available RF spectrum |
| Maximum Ratio Combining (MRC) | Improved receiver performance |
| Cyclic Delay/Shift Diversity (CDD/CSD) | Greater downlink RF performance |
| Space-Time Block Coding | Increased range and improved reception |
| Low-Density Parity Check (LDPC) | High-efficiency error correction for increased throughput |

# Technical specifications

### Models AP504 and AP505

- AP type
  - ¬ Indoor, dual radio, 5 GHz and 2.4 GHz 802.11ax 2x2 MIMO
- 5 GHz radio
  - ¬ Two spatial stream Single User (SU) MIMO for up to 1.2 Gbps wireless data rate with individual 2SS HE80 802.11ax client devices, or with two 1SS HE80 802.11ax MU-MIMO capable client devices simultaneously
- 2.4 GHz radio
  - ¬ Two spatial stream Single User (SU) MIMO for up to 574 Mbps wireless data rate with individual 2SS HE40 802.11ax client devices or with two 1SS HE40 802.11ax MU-MIMO capable client devices simultaneously
- Maximum number of associated client devices
  - ¬ Up to 256 associated client devices per radio
- Maximum number of BSSIDs
  - ¬ 16 BSSIDs per radio
- Supported frequency bands (country-specific restrictions apply)
  - ¬ 2.400 to 2.4835 GHz
  - ¬ 5.150 to 5.250 GHz
  - ¬ 5.250 to 5.350 GHz
  - ¬ 5.470 to 5.725 GHz
  - ¬ 5.725 to 5.850 GHz
- Available channels
  - ¬ Dependent on configured regulatory domain
- Supported radio technologies
  - ¬ 802.11b: Direct-sequence spread-spectrum (DSSS)
  - ¬ 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
  - ¬ 802.11ax: Orthogonal frequency-division multiple access (OFDMA) with up to 8 resource units
- Supported modulation types
  - ¬ 802.11b: BPSK, QPSK, CCK
  - ¬ 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM (proprietary extension)
  - ¬ 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM (proprietary extension)
  - ¬ 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
- 802.11n high-throughput (HT) support
  - ¬ HT20/40
- 802.11ac very high throughput (VHT) support
  - ¬ VHT20/40/80
- 802.11ax high efficiency (HE) support
  - ¬ HE20/40/80
- Supported data rates (Mbps)
  - ¬ 802.11b: 1, 2, 5.5, 11
  - ¬ 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - ¬ 802.11n: 6.5 to 300 (MCS0 to MCS15, HT20 to HT40), 400 with 256-QAM
  - ¬ 802.11ac: 6.5 to 867 (MCS0 to MCS9, NSS = 1 to 2, VHT20 to VHT80), 1,083 with 1024-QAM
  - ¬ 802.11ax (2.4GHz): 3.6 to 574 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE40)
  - ¬ 802.11ax (5GHz): 3.6 to 1,201 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE80)
- 802.11n/ac packet aggregation
  - ¬ A-MPDU, A-MSDU
- Transmit power
  - ¬ Configurable in increments of 0.5 dBm
- Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements)
  - ¬ 2.4 GHz band: +21 dBm (18 dBm per chain)
  - ¬ 5 GHz band: +21 dBm (18 dBm per chain)

Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.

## Wi-Fi antennas

### AP504

- Two (female) RP-SMA connectors for external dual band antennas (A0 and A1, corresponding with radio chains 0 and 1). Worst-case internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 0.7 dB in 2.4 GHz and 1.3 dB in 5 GHz.

### AP505

- Two integrated dual-band downtilt omni-directional antennas for 2x2 MIMO with peak antenna gain of 4.9 dBi in 2.4 GHz and 5.7 dBi in 5 GHz. Built-in antennas are optimized for horizontal ceiling mounted orientation of the AP. The downtilt angle for maximum gain is roughly 30 degrees.
  - ¬ Combining the patterns of each of the antennas of the MIMO radios, the peak gain of the combined, average pattern is 4.3 dBi in 2.4 GHz and 5.6 dBi in 5 GHz.

## Other interfaces

### Models AP504 and AP505

- E0: Ethernet wired network port (RJ-45)
  - ¬ Auto-sensing link speed (10/100/1000BASE-T) and MDI/MDX
  - ¬ POE-PD: 48Vdc (nominal) 802.3af/at POE (class 3 or 4)
  - ¬ 802.3az Energy Efficient Ethernet (EEE)
- DC power interface
  - ¬ 12 Vdc (nominal, ±5%), accepts 2.1 mm/5.5 mm center-positive circular plug with 9.5 mm length
- USB 2.0 host interface (Type A connector)
  - ¬ Capable of sourcing up to 1A/5W to an attached device
- Bluetooth Low Energy (BLE5.0) and Zigbee (802.15.4) radio
  - ¬ BLE: up to 7 dBm transmit power (class 1) and -93 dBm receive sensitivity (1 Mbps)
  - ¬ Zigbee: up to 6 dBm transmit power and -96 dBm receive sensitivity
  - ¬ Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 3.3 dBi
- Visual indictors (two multi-color LEDs)
  - ¬ For System and Radio status
- Reset button
  - ¬ Factory reset, LED mode control (normal/off)

- Serial console interface
  - ¬ Proprietary, micro-B USB physical jack
- Security slot
  - ¬ Kensington security slot

## Power sources and power consumption

- Power Sources: The AP supports direct DC power and Power over Ethernet
  - ¬ The AP supports direct DC power and Power over Ethernet
  - ¬ When both DC and POE power sources are available, DC power takes priority over POE
  - ¬ Power sources are sold separately; see the 500 Series Ordering Guide for details
  - ¬ When powered by DC or 802.3at (class 4) POE, the AP will operate without restrictions.
  - ¬ When powered by 802.3af (class 3) POE and with the IPM feature disabled, the AP will disable the USB port. In the same configuration but with IPM enabled, the AP will start up in unrestricted mode, but may dynamically apply restrictions depending on the POE budget and actual power. The feature restrictions and order can be programmed.
- Maximum (worst-case) power consumption (without/with a USB device attached)
  - ¬ DC powered: 8.9W / 14.2W.
  - ¬ POE powered (802.3at): 11.0W/ 16.5W.
  - ¬ POE powered (802.3af): 11.0W/ 13.5W.
  - ¬ This assumes that up to 5W is supplied to the attached USB device.
- Maximum (worst-case) power consumption in idle mode
  - ¬ 4.3W (DC) or 6.1W (POE)
- Maximum (worst-case) power consumption in deep-sleep mode
  - ¬ 1.7W (DC) or 3.3W (POE)

## Mechanical specifications

### Model AP505

- Dimensions/weight (AP505; unit, excluding mount bracket)
  - ¬ 160 mm (W) x 161 mm (D) x 37 mm (H)
  - ¬ 500 g
- Dimensions/weight (AP505; shipping)
  - ¬ 193 mm (W) x 183 mm (D) x 63 mm (H)
  - ¬ 645 g
- Mounting details
  - ¬ A mounting bracket has been pre-installed on the back of the AP. This bracket is used to secure the AP to any of the mount kits (sold separately); see the 500 Series Ordering Guide for details.

## Environmental specifications

### Models AP504 and SP505

- Operating conditions
  - ¬ Temperature: 0 °C to +50 °C/+32 °F to +122 °F
  - ¬ Humidity: 5% to 93% non-condensing
  - ¬ AP is plenum rated for use in air-handling spaces
  - ¬ ETS 300 019 class 3.2 environments
- Storage and transportation conditions
  - ¬ Temperature: -40 °C to +70 °C/-40 °F to +158 °F
  - ¬ Humidity: 5% to 93% non-condensing
  - ¬ ETS 300 019 classes 1.2 and 2.3 environments

## Reliability

- Mean Time Between Failure (MTBF):
  - ¬ 1.3 Mhrs (148 yrs) at +25 °C operating temperature

## Regulatory and safety compliance

### Model OAW-AP504

- Regulatory model number
  - ¬ APIN0504

### Model OAW-AP505

- Regulatory model number
  - ¬ APIN0505

### Models AP504 and SP505

- Minimum AOS-W Release
  - ¬ AOS-W and InstantOS 8.6.0.0
- Regulatory compliance (For more country-specific regulatory information and approvals, please see your ALE representative.)
  - ¬ FCC/ISED
  - ¬ CE Marked
  - ¬ RED Directive 2014/53/EU
  - ¬ EMC Directive 2014/30/EU
  - ¬ Low Voltage Directive 2014/35/EU
  - ¬ UL/IEC/EN 60950
  - ¬ EN 60601-1-1, EN60601-1-2
- Certifications
  - ¬ UL2043 plenum rating
  - ¬ Wi-Fi Alliance
    - Wi-Fi CERTIFIED a, b, g, n, ac
    - Wi-Fi CERTIFIED 6 (ax)
    - WPA, WPA2 and WPA3 – Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE)
    - WMM, WMM-PS, Wi-Fi Vantage, W-Fi Agile Multiband
    - Wi-Fi Location
    - Passpoint (release 2)
  - ¬ Bluetooth SIG
  - ¬ Ethernet Alliance (POE, PD device, class 4)

**RF performance table**

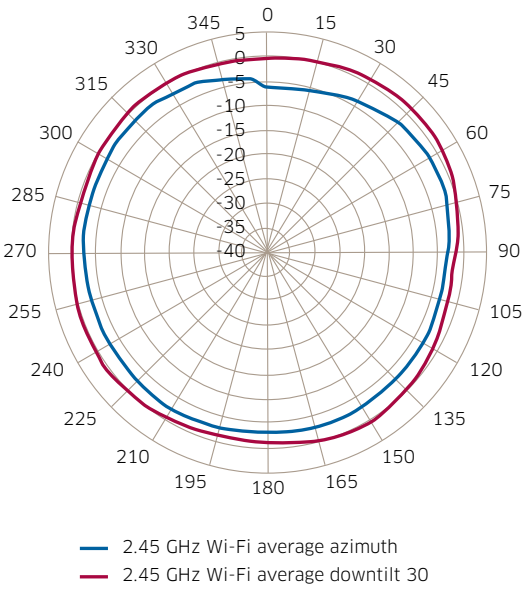
| Band, rate | Maximum transmit power (dBm) per transmit chain | Receiver sensitivity (dBm) per receive chain |
|---|---|---|
| **2.4 GHz, 802.11b** | | |
| 1 Mbps | 18 | -98 |
| 11 Mbps | 18 | -90 |
| **2.4 GHz, 802.11g** | | |
| 6 Mbps | 18 | -93 |
| 54 Mbps | 18 | -76 |
| **2.4 GHz, 802.11n HT20** | | |
| MCS0 | 18 | -93 |
| MCS7 | 16 | -75 |
| **2.4 GHz, 802.11ax HE20** | | |
| MCS0 | 18 | -93 |
| MCS11 | 14 | -62 |
| **5 GHz, 802.11a** | | |
| 6 Mbps | 18 | -92 |
| 54 Mbps | 18 | -75 |
| **5 GHz, 802.11n HT20** | | |
| MCS0 | 18 | -92 |
| MCS7 | 16 | -74 |
| **5 GHz, 802.11n HT40** | | |
| MCS0 | 18 | -90 |
| MCS7 | 16 | -71 |
| **5 GHz, 802.11ac VHT20** | | |
| MCS0 | 18 | -92 |
| MCS9 | 16 | -69 |
| **5 GHz, 802.11ac VHT40** | | |
| MCS0 | 18 | -90 |
| MCS9 | 16 | -65 |
| **5 GHz, 802.11ac VHT80** | | |
| MCS0 | 18 | -87 |
| MCS9 | 16 | -62 |
| **5 GHz, 802.11ax HE20** | | |
| MCS0 | 18 | -93 |
| MCS11 | 14 | -62 |
| **5 GHz, 802.11ax HE40** | | |
| MCS0 | 18 | -90 |
| MCS11 | 14 | -59 |
| **5 GHz, 802.11ax HE80** | | |
| MCS0 | 18 | -87 |
| MCS11 | 14 | -56 |

## Figure 1. Antenna patterns

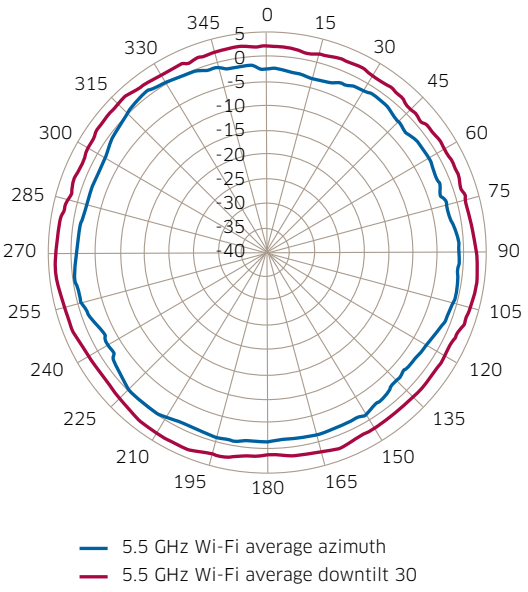
**Horizontal planes (top view)**

Showing azimuth (0 degrees) and 30 degrees downtilt patterns (averaged patterns for all applicable antennas)

**2.45 GHz Wi-Fi (antennas 1, 2)**



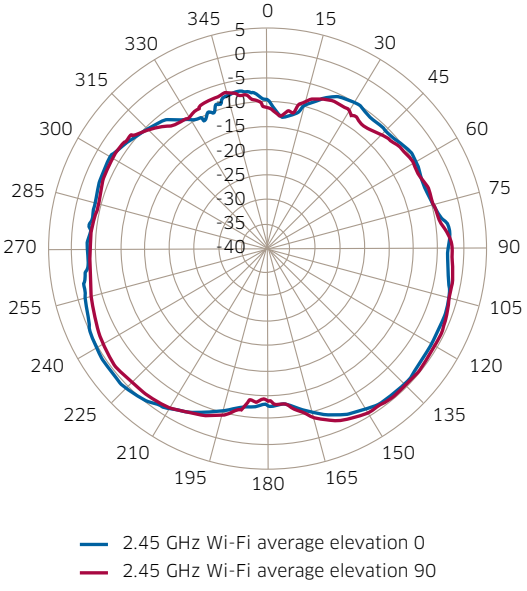

**5.5 GHz Wi-Fi (antennas 1, 2)**



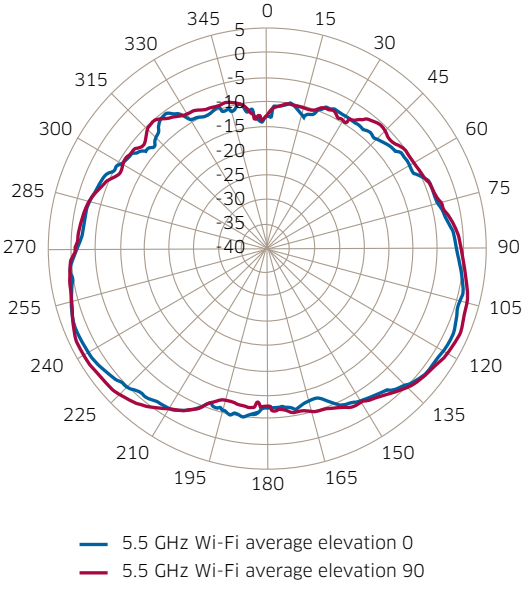

**Vertical (elevation) planes (side view, AP facing down)**

Showing side view with AP rotated 0 and 90 degrees (averaged patterns for all applicable antennas)

**2.45 GHz Wi-Fi (antennas 1, 2)**




**5.5 GHz Wi-Fi (antennas 1, 2)**



## Ordering information

| Part number | Description |
|---|---|
| **OmniAccess 500 Series Unified Access Points** | |
| OAW-AP504-EG | OmniAccess AP504 (EG) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP |
| OAW-AP504-IS | OmniAccess AP504 (IS) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP |
| OAW-AP504-JP | OmniAccess AP504 (JP) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP |
| OAW-AP504-RW | OmniAccess AP504 (RW) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP |
| OAW-AP504-US | OmniAccess AP504 (US) Dual Radio 2x2:2 802.11ax External Antennas Unified Campus AP |
| OAW-AP505-EG | OmniAccess AP505 (EG) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP |
| OAW-AP505-IS | OmniAccess AP505 (IS) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP |
| OAW-AP505-JP | OmniAccess AP505 (JP) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP |
| OAW-AP505-RW | OmniAccess AP505 (RW) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP |
| OAW-AP505-US | OmniAccess AP505 (US) Dual Radio 2x2:2 802.11ax Internal Antennas Unified Campus AP |
| **Mounting Kits** | |
| AP-MNT-MP10-A | OmniAccess AP-MNT-MP10-A Campus AP mount bracket kit (10-pack) type A: suspended ceiling rail, flat 9/16 |
| AP-MNT-MP10-B | OmniAccess AP-MNT-MP10-B Campus AP mount bracket kit (10-pack) type B: suspended ceiling rail, flat 15/16 |
| AP-MNT-MP10-C | OmniAccess AP-MNT-MP10-C Campus AP mount bracket kit (10-pack) type C: suspended ceiling rail, profile 9/16 |
| AP-MNT-MP10-D | OmniAccess AP-MNT-MP10-D Campus AP mount bracket kit (10-pack) type D: solid surface |
| AP-MNT-MP10-E | OmniAccess AP-MNT-MP10-E Campus AP mount bracket kit (10-pack) type E: wall-box |
| AP-MNT-A | OmniAccess AP-MNT-A Campus AP mount bracket kit (individual) type A: suspended ceiling rail, flat 9/16 |
| AP-MNT-B | OmniAccess AP-MNT-B Campus AP mount bracket kit (individual) type B: suspended ceiling rail, flat 15/16 |
| AP-MNT-C | OmniAccess AP-MNT-C Campus AP mount bracket kit (individual) type C: suspended ceiling rail, profile 9/16 |
| AP-MNT-D | OmniAccess AP-MNT-D Campus AP mount bracket kit (individual) type D: solid surface |
| AP-MNT-E | OmniAccess AP-MNT-E Campus AP mount bracket kit (individual) type E: wall-box |
| **Cosmetic Covers** | |
| AP-505-CVR-20 | OmniAccess AP-505-CVR-20 20-pack Snap-on Covers |
| **Power Accessories** | |
| AP-AC-12V30B | OmniAccess 12V/30W AC-to-DC Desktop Style Power Adapter with Type B DC plug 2.1/5.5/9.5mm circular, 90-degree angled. (Note does not include country specific AC power cord PWR-CORD-xx). |
| PD-3501G/AC | 1-Port IEEE 802.3af PoE Midspan. Port speed 10/100/1000M PoE power 15.4W. No power cord included. Please order PWR-CORD-XX for country specific power cord. |
| PD-9001GR/AT/AC | 1-Port IEEE 802.3at PoE Midspan. Port speed 10/100/1000M PoE power 30W. No power cord included. Please order PWR-CORD-XX for country specific power cord. |
| **Other Accessories** | |
| AP-CBL-SERU | OmniAccess Micro-USB TTL3.3V to USB2.0 AP Console Adapter Cable |



Alcatel·Lucent Enterprise