

### Overview

## Aruba 510 Series Campus Access Points

### High performance 802.11ax Enterprise Access Points for Campus deployments

With an increasing number of mobile and Internet of Things (IoT) devices reliant on wireless access, networks must be capable of accommodating a diverse mixture of device types, applications and services. The Aruba 510 series campus access points with 802.11ax technology are designed to deliver high performance access for mobile and (IOT) devices in environments where density is an issue. The 510 series uses 802.11ax features to efficiently and simultaneously serve multiple clients and traffic types in dense environments, increasing data rates for both individual device and overall system.

The 510 series support all mandatory and several optional 802.11ax features, which includes up- and downlink OFDMA with up to 16 resource units, multi-user MIMO (MU-MIMO), 4x4 MIMO with up to four spatial streams in 5GHz and 2x2 with up to two special streams in 2.4GHz, channel bandwidths up to 160MHz (5GHz; 40MHz in 2.4GHz), and 1024-QAM modulation.

The 510 series supports maximum data rates of 4.8Gbps in the 5GHz band and 575Mbps in the 2.4GHz band (for an aggregate peak data rate of 5.4Gbps). Each AP supports up to 256 devices per radio, with the mid-range 802.11ax 510 series APs being ideal for high density environments, such as schools, retail branches, hotels and enterprise offices.

In addition to 802.11ax standard capabilities, the 510 Series supports unique features like Aruba ClientMatch radio management and additional radios for location services and IOT applications. This delivers an unsurpassed user experience in today's all-wireless digital work environment and offers up to 4x higher capacity in a cost-effective manner.



Aruba 510 Series Campus Access Points

### Overview

#### Key features

- High performance Dual Radio 802.11ax AP with OFDMA and Multi-User MIMO (MU-MIMO)
  - Support all mandatory and several optional 802.11ax features
  - Maximum data rates of 4.8Gbps in the 5GHz band and 575Mbps in the 2.4GHz band (for an aggregate peak data rate of 5.4Gbps).
  - Mid-range 802.11ax 510 series APs ideal for high density environments, such as schools, retail branches, hotels and enterprise offices.
  - Includes Bluetooth Low Energy (BLE) and Zigbee radios for location and IOT use-cases
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### Standard Features

#### Features and benefits

##### Efficiency Improvements

The Aruba 510 Series will efficiently and simultaneously serve multiple clients, increasing data rates for both individual devices and as an overall system. Two key features of 802.11ax are multi-user connectivity and enhanced efficiency using Orthogonal Frequency Division Multiple Access (OFDMA) and multi-user - multiple input multiple output (MU-MIMO).

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**Multi-user transmission with downlink and uplink OFDMA** - OFDMA increases user data rates and also reduces latency, especially for large numbers of devices with short frames or low data-rate requirements, such as voice and IoT devices. By providing multi-user capabilities, a channel can be divided in the frequency domain, and multiple transmissions can be carried simultaneously. OFDMA is particularly effective in raising network efficiency and capacity where there are many devices, short frames, or low data-rate streams.

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**Multi user capability with downlink multi-user MIMO** - MU MIMO is another multi-user capability, originally introduced in 802.11ac. This improves network capacity by allowing multiple devices to transmit simultaneously.

**Energy efficiency** - As higher performance 802.11ax access points will handle a greater number of devices and traffic, they will be driving the need for more power consumption. To offset these demands, Aruba NetInsight includes a feature called GreenAP which allows the 510 series access points to draw less power when it's not being used, such as evenings when the buildings are empty.

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##### Unsurpassed Performance

In addition to the standard 802.11ax capabilities, Aruba's ClientMatch technology will automatically detect and classify mobile devices with common characteristics, group these devices, and match them with the best AP's and radios to optimize performance of the network. For example, ClientMatch will automatically attempt to group 802.11ax capable devices onto available AP radios with equivalent capabilities, so that the performance benefits of Orthogonal Frequency Division Multiple Access (OFDMA) are maximized. This means increased network performance and a boost in network capacity.

The AP-510 series run on **ArubaOS 8**, which delivers always-on networking via features like LiveUpgrade, Controller Clustering and seamless fail-over. ArubaOS 8 also includes AirMatch, which provides machine learning technology to automatically optimize the performance of a wireless network by tuning the radio frequencies (RF) of the access points.

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##### IoT Ready

The 802.11ax technology also provides unique benefits for IoT devices ranging from dedicated channels in OFDMA to simultaneous allow transmission of IoT connections with low latency, to power saving options with Target Wake Time (TWT) to save battery life.

In addition, the 510 series support an integrated Bluetooth Low-Energy (BLE) and Zigbee radio, as well as a USB port for maximum flexibility, providing secure and reliable connectivity for IOT devices and for implementing location services.

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#### Additional Features

- Unified AP support: flexibility to deploy in either controller-based (ArubaOS) or controller-less (InstantOS) networks.
  - Dual Radio 802.11ax access point with OFDMA and Multi-User MIMO (MU-MIMO)
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### Standard Features

- Supports up to 4.8Gbps in the 5GHz band (with 4SS/HE160 clients) and up to 575Mbps in the 2.4GHz band (with 2SS/ HE40 clients).
  - Up to 16 OFDMA resource units and up to 256 simultaneous clients per radio
  - Antenna polarization diversity for optimized RF performance
  - HPE SmartRate uplink Ethernet port (E0)
    - Supports up to 2.5Gbps with NBase-T and IEEE 802.3bz Ethernet compatibility
    - Backwards compatible with 100/1000Base-T
  - Built-in Bluetooth Low-Energy (BLE) and Zigbee radio
    - Enables a wide range of IOT use-cases - asset tracking, mobile engagement
  - Advanced Cellular Coexistence (ACC)
    - Minimizes interference from 3G/4G cellular networks, distributed antenna systems and commercial small cell/femtocell equipment
  - Quality of service for unified communications applications
    - Supports priority handling and policy enforcement for unified communication apps, including Skype for Business with encrypted videoconferencing, voice, chat and desktop sharing
  - Aruba AppRF technology leverages deep packet inspection to classify and block, prioritize, or limit bandwidth for thousands of applications in a range of categories
  - Best-in-class RF Management
    - Integrated AirMatch technology manages the 2.4GHz and 5GHz radio bands and actively optimizes the RF environment including channel width, channel selection and transmit power
    - Adaptive Radio Management (ARM) technology provides airtime fairness and ensures that APs stay clear of all sources of RF interference to deliver reliable, high- performance WLANs
  - Spectrum analysis
    - Capable of part-time or dedicated air monitoring, the spectrum analyzer remotely scans the 2.4GHz and 5GHz radio bands to identify sources of RF interference from 20MHz through 160MHz operation
  - Aruba Secure Core
    - Device assurance: Use of Trusted Platform Module (TPM) for secure storage of credentials and keys as well as secure boot
    - Integrated wireless intrusion protection offers threat protection and mitigation, and eliminates the need for separate RF sensors and security appliances
    - IP reputation and security services identify, classify, and block malicious files, URLs and IPs, providing comprehensive protection against advanced online threats
    - SecureJack-capable for secure tunneling of wired Ethernet traffic
  - Intelligent Power Monitoring (IPM)
    - Enables the AP to continuously monitor and report its actual power consumption and optionally make autonomous decisions to disable certain capabilities based on the amount of power available to the unit
    - Software configurable to disable capabilities in specified order of priority.
    - For the 510 Series Access Points, the IPM feature applies when the unit is powered by an 802.3af POE source
  - Green AP system feature (using Aruba NetInsight)
    - The 510 Series Access Points support a custom deep-sleep mode to deliver significant power and cost savings when used in conjunction with the Green AP feature.
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### Standard Features

#### Deployment Options

The Aruba 510 Series APs offer a choice of deployment and operating modes to meet your unique management and deployment requirements:

- **Controller-based mode** - When deployed in conjunction with an Aruba Mobility Controller, Aruba 510 Series APs offer centralized configuration, data encryption, policy enforcement and network services, as well as distributed and centralized traffic forwarding.
- **Controller-less (Instant) mode** - The controller function is virtualized in a cluster of APs in Instant mode. As the network grows and/or requirements change, Instant deployments can easily migrate to controller-based mode.
- **Remote AP (RAP) mode** for branch deployments.
- **Air monitor (AM)** for wireless IDS, rogue detection and containment.
- **Spectrum analyzer (SA)**, dedicated or hybrid, for identifying sources of RF interference
- **Secure enterprise mesh portal or point.**

For large installations across multiple sites, the Aruba Activate service significantly reduces deployment time by automating device provisioning, firmware upgrades, and inventory management. With Aruba Activate, the APs can be factory-shipped to any site and configure themselves when powered up.

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### Configuration Information

#### Ordering Guide

##### 1. Select a model

Configuration notes	Description	SKU
<b>Internal antenna access points</b>		
Add mount kit	Aruba AP-515 (EG) Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H59A
Add mount kit	Aruba AP-515 (IL) Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H60A
Add mount kit	Aruba AP-515 (JP) Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H61A
Add mount kit	Aruba AP-515 (RW) Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H62A
Add mount kit	Aruba AP-515 (US) Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H63A
<b>External antenna access points</b>		
Add mount kit, antennas	Aruba AP-514 (EG) Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H54A
Add mount kit, antennas	Aruba AP-514 (IL) Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H55A
Add mount kit, antennas	Aruba AP-514 (JP) Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H56A
Add mount kit, antennas	Aruba AP-514 (RW) Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H57A
Add mount kit, antennas	Aruba AP-514 (US) Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H58A
<b>Internal antenna access points - TAA models</b>		
Add mount kit	Aruba AP-515 (EG) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H69A
Add mount kit	Aruba AP-515 (IL) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H70A
Add mount kit	Aruba AP-515 (JP) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H71A
Add mount kit	Aruba AP-515 (RW) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H72A
Add mount kit	Aruba AP-515 (US) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax Internal Antennas Unified Campus AP	Q9H73A
<b>External antenna access points - TAA models</b>		
Add mount kit, antennas	Aruba AP-514 (EG) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H64A
Add mount kit, antennas	Aruba AP-514 (IL) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H65A
Add mount kit, antennas	Aruba AP-514 (JP) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H66A
Add mount kit, antennas	Aruba AP-514 (RW) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP	Q9H67A

### Configuration Information

Add mount kit, antennas

Aruba AP-514 (US) TAA Dual Radio 4x4:4 + 2x2:2 802.11ax External Antennas Unified Campus AP

Q9H68A

### 2. Select mount kit

#### Mounting kits

##### Configuration notes

Kit contains mounts for 10 access points

##### Description

AP-MNT-MP10-A Campus AP mount bracket kit (10-pack) type A: suspended ceiling

Kit contains mounts for 10 access points

AP-MNT-MP10-B Campus AP mount bracket kit (10-pack) type B: suspended ceiling

Kit contains mounts for 10 access points

AP-MNT-MP10-C Campus AP mount bracket kit (10-pack) type C: suspended ceiling

Kit contains mounts for 10 access points

AP-MNT-MP10-D Campus AP mount bracket kit (10-pack) type D: solid surface

Kit contains mounts for 10 access points

AP-MNT-MP10-E Campus AP mount bracket kit (10-pack) type E: wall-box

AP-MNT-A Campus AP mount bracket kit (individual) type A: suspended ceiling rail, f

AP-MNT-B Campus AP mount bracket kit (individual) type B: suspended ceiling rail, f

AP-MNT-C Campus AP mount bracket kit (individual) type C: suspended ceiling rail, f

AP-MNT-D Campus AP mount bracket kit (individual) type D: solid surface

AP-MNT-E Campus AP mount bracket kit (individual) type E: wall-box

### 3. Select antennas (AP-514 only)

Indoor antennas (AP-514 antenna interface: 4x RP-SMA female, concurrent dual-band)

#### Mounting notes

Direct-mount

Qty

#### Description

4 AP-ANT-1W 2.4-2.5GHz (4dBi)/4.9-5.875GHz (6dBi) Hi Gain Dual-band Omnidirectional Antenna

Direct, using pigtailed

4

AP-ANT-13B 2.4-2.5GHz (2.3dBi)/4.9-5.9GHz (4.0dBi) Downtilt Smallest Omnidirectional Antenna

Direct, using pigtailed

4

AP-ANT-19 2.4/5G Dual Band Omni-Dir 3dBi/6dBi Indr/Otdr RPSMA Cnctr Cable

Direct-mount

4

AP-ANT-20W 2.4-2.5GHz (2dBi)/4.9-5.875GHz (2dBi) Compact Omni-Dir Omnidirectional Antenna

Direct, using pigtailed

1

AP-ANT-40 Dual Band Downtilt Omni 4dBi 4 Elmt MIMO Ceiling Mount 4xRPSMA Pigtail Antenna

Direct, using pigtailed

1

AP-ANT-45 Dual Band 90x90deg 5dBi 4 Element MIMO 4xRPSMA Pigtail Antenna

Direct, using pigtailed

1

AP-ANT-48 Dual Band 60x60deg 8.5dBi 4 Element MIMO 4xRPSMA Pigtail Antenna

### 4. Add antenna mount kit (optional)

#### Antenna mount kits

### Configuration Information

Configuration notes	Description	SKU
Compatible with antenna AP-ANT-48	AP-ANT-MNT-4 AP-ANT-48 Azimuth and Elevation Adjustable Mount Kit	JW021A
Compatible with antenna AP-ANT-45	AP-ANT-MNT-5 AP-ANT-45 Azimuth and Elevation Adjustable Mount Kit	JW022A

### 5. Add powering accessory (optional)

#### Power accessories

Configuration notes	Description	SKU
Add AC power cord	AP-AC-12V30B 12V/30W AC/DC Desktop Style 2.1/5.5/9.5mm Circular 90 Deg Plug DoE Level VI Adapter	JX990A
Add AC power cord	Aruba PD-9001GR-AC 30W 802.3at PoE+ 10/100/1000 Ethernet Indoor Rated Midspan Injector	JW629A

#### AC power cord

Description	SKU
PC-AC-ARG Argentina 220V AC 10A 2-meter AC Power Cord	JW113A
PC-AC-AUS Australian AC Power Cord	JW114A
PC-AC-BR Brazil AC Power Cord	JW115A
PC-AC-CHN China AC Power Cord	JW116A
PC-AC-DEN Denmark 220V AC 10A 2-meter AC Power Cord	JW117A
PC-AC-EC Continental European/Schuko AC Power Cord	JW118A
PC-AC-IN India AC Power Cord	JW119A
PC-AC-IL Israel 250V AC 10A 2-meter AC Power Cord	JW120A
PC-AC-IT Italian AC Power Cord	JW121A
PC-AC-JP Japanese AC Power Cord	JW122A
PC-AC-KOR Korea AC Power Cord	JW123A
PC-AC-NA North America AC Power Cord	JW124A
PC-AC-SWI Switzerland 220V AC 10A 2-meter AC Power Cord	JW125A
PC-AC-TW Taiwan AC Power Cord	JW126A
PC-AC-UK UK AC Power Cord	JW127A
PC-AC-ZA South Africa 250V AC 10A 2-meter AC Power Cord	JW128A

### 6. Add cosmetic snap-on cover (AP-515 only, optional)

#### Cosmetic covers

Configuration notes	Description	SKU
Kit contains covers for 10 access points	AP-515-CVR-20 20-pack for AP-515 with Holes for LED Indicators White Non-glossy Snap-on Covers	Q9H74A

### 7. Add other accessories (optional)

### Configuration Information

#### Other accessories

Configuration notes	Description	SKU
	AP-CBL-SERU Micro-USB TTL3.3V to USB2.0 AP Console Adapter Cable	JY728A

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### Technical Specifications

#### Specifications

##### Hardware variants

- AP-514: External antenna models
  - AP-515: Internal antenna models
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##### Wi-Fi radio specifications

- AP type: Indoor, dual radio, 5GHz 802.11ax 4x4 MIMO and 2.4GHz 802.11ax 2x2 MIMO
  - 5GHz radio:
    - Four spatial stream Single User (SU) MIMO for up to 4.8Gbps wireless data rate to individual 4SS HE160 802.11ax client devices (max)
    - Two spatial stream Single User (SU) MIMO for up to 1.2Gbps wireless data rate to individual 2SS HE80 802.11ax client devices (typical)
    - Four spatial stream Multi User (MU) MIMO for up to 4.8Gbps wireless data rate to up to four 1SS or two 2SS HE160 802.11ax DL-MU-MIMO capable client devices simultaneously (max)
    - Four spatial stream Multi User (MU) MIMO for up to 2.4Gbps wireless data rate to up to four 1SS or two 2SS HE80 802.11ax DL-MU-MIMO capable client devices simultaneously (typical)
  - 2.4GHz radio:
    - Two spatial stream Single User (SU) MIMO for up to 575Mbps wireless data rate to individual 2SS HE40 802.11ax client devices or to two 1SS HE40 802.11ax DL-MU-MIMO capable client devices simultaneously (max)
    - Two spatial stream Single User (SU) MIMO for up to 287Mbps wireless data rate to individual 2SS HE20 802.11ax client devices or to two 1SS HE20 802.11ax DL-MU-MIMO capable client devices simultaneously (typical)
  - Support for up to 256 associated client devices per radio, and up to 16 BSSIDs per radio
  - Supported frequency bands (country-specific restrictions apply):
    - 2.400 to 2.4835GHz
    - 5.150 to 5.250GHz
    - 5.250 to 5.350GHz
    - 5.470 to 5.725GHz
    - 5.725 to 5.850GHz
  - Available channels: Dependent on configured regulatory domain
  - Dynamic frequency selection (DFS) optimizes the use of available RF spectrum
  - 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 16 resource units (for an 80MHz channel)
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### Technical Specifications

- 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: VHT20/40/80/160
  - 802.11ax high efficiency (HE) support: HE20/40/80/160
- Supported data rates (Mbps) :
  - 802.11b: 1, 2, 5.5, 11
  - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - 802.11n (2.4GHz): 6.5 to 300 (MCS0 to MCS15, HT20 to HT40)
  - 802.11n (5GHz): 6.5 to 600 (MCS0 to MVC31, HT20 to HT40)
  - 802.11ac: 6.5 to 3,467 (MCS0 to MCS9, NSS = 1 to 4, VHT20 to VHT160)
  - 802.11ax (2.4GHz): 3.6 to 574 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE40)
  - 802.11ax (5GHz): 3.6 to 4,803 (MCS0 to MCS11, NSS = 1 to 4, HE20 to HE160)
  - 802.11n/ac packet aggregation: A-MPDU, A-MSDU
- Transmit power: Configurable in increments of 0.5 dBm

### Wi-Fi radio specifications

- Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):
  - 2.4 GHz band: +21 dBm (18dBm per chain)
  - 5 GHz band: +24 dBm (18 dBm per chain)
  - **NOTE:** conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.
- Advanced Cellular Coexistence (ACC) minimizes the impact of interference from cellular networks
- Maximum ratio combining (MRC) for improved receiver performance
- Cyclic delay/shift diversity (CDD/CSD) for improved downlink RF performance
- Space-time block coding (STBC) for increased range and improved reception
- Low-density parity check (LDPC) for high-efficiency error correction and increased throughput
- Transmit beam-forming (TxBF) for increased signal reliability and range
- 802.11ax Target Wait Time (TWT) to support low-power client devices

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### Wi-Fi antennas

- AP-514: Four RP-SMA connectors for external dual band antennas (A0 through A3, corresponding with

### Technical Specifications

radio chains 0 through 3). Worst-case internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 1.3dB in 2.4GHz and 1.7dB in 5GHz.

- AP-515: Four integrated dual-band downtilt omni-directional antennas for 4x4 MIMO with peak antenna gain of 4.2dBi in 2.4GHz and 7.5dBi in 5GHz. 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 effective per-antenna pattern is 3.8dBi in 2.4GHz and 4.6dBi in 5GHz.

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### Additional interfaces

- E0: HPE SmartRate port (RJ-45, maximum negotiated speed 2.5Gbps)
    - Auto-sensing link speed (100/1000/2500BASE-T) and MDI/MDX
    - 2.5Gbps speed complies with NBase-T and 802.3bz specifications
    - POE-PD: 48Vdc (nominal) 802.3af/802.3at POE
  - E1: 10/100/1000BASE-T Ethernet network interface (RJ-45)
    - Auto-sensing link speed and MDI/MDX
  - Link aggregation (LACP) support between both network ports for redundancy and increased capacity
  - DC power interface: 12Vdc (nominal, +/- 5%), accepts 2.1mm/5.5mm center-positive circular plug with 9.5mm 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 8dBm transmit power (class 1) and -95dBm receive sensitivity
    - Zigbee: up to 8dBm transmit power and -97dBm receive sensitivity
    - Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 3.5dBi (AP-515) or 4.9dBi (AP-514)
  - Visual indicators (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)
  - Kensington security slot
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### Power sources and power consumption

- The AP supports direct DC power and Power over Ethernet (POE; on port E0)
- When both power sources are available, DC power takes priority over POE
- Power sources are sold separately; see the ordering Information section below for details
- When powered by DC or 802.3at POE, the AP will operate without restrictions
- When powered by 802.3af POE and with the IPM feature enabled, the AP will start up in unrestricted mode, but it may apply restrictions depending on the POE budget and actual power. What IPM restrictions to apply, and in what order, is programmable.

### Power sources and power consumption

### Technical Specifications

- When powered by 802.3af POE with the IPM feature disabled, the AP operates in power-save mode, and will apply some fixed restrictions:
    - The USB interface and E1 Ethernet port are disabled
    - The 5GHz radio is restricted to 2x2 operation
  - Maximum (worst-case) power consumption:
    - DC powered: 17W
    - POE powered (802.3at): 20.8W
    - POE powered (802.3af): 13.5W
    - All numbers above are without an external USB device connected. When sourcing the full 5W power budget to such a device, the incremental (worst-case) power consumption for the AP is up to 6.5W.
  - Maximum (worst-case) power consumption in idle mode: 11W (DC or POE)
  - Maximum (worst-case) power consumption in deep-sleep mode: 1W (DC or POE)
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### 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 (sold separately) mount kits; see the ordering Information section below for details.

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### Mechanical specifications

- Dimensions/weight (AP-515; unit, excluding mount bracket):
    - 200mm (W) x 200mm (D) x 46mm (H) / 7.9"? (W) x 7.9"? (D) x 1.8"? (H)
    - 810g / 28.5oz
  - Dimensions/weight (AP-515; shipping):
    - 230mm (W) x 220mm (D) x 72mm (H) / 9.1"? (W) x 8.7"? (D) x 2.8"? (H)
    - 1010 / 35.5oz
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### Environmental specifications

- Operating conditions
    - Temperature: 0C to +50C / +32F to +122F
    - 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: -40C to +70C / -40F to +158F
    - Humidity: 5% to 93% non-condensing
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### Technical Specifications

- ETS 300 019 classes 1.2 and 2.3 environments
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### Reliability

Mean Time Between Failure (MTBF): 560,000hrs (64yrs) at +25C operating temperature.

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### Regulatory compliance

- 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

For more country-specific regulatory information and approvals, please see your Aruba representative.

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### Regulatory model numbers

- AP-514: APIN0514
  - AP-515: APIN0515
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### Certifications

- UL2043 plenum rating
- Wi-Fi Alliance:

- Wi-Fi CERTIFIED a, b, g, n, ac

- Wi-Fi CERTIFIED ax

**NOTE:** May require software update. Certification effort will be kicked off as soon as the Wi-Fi Alliance starts the program

- WPA, WPA2 and WPA3 - Enterprise, Personal

- WMM, WMM-PS, Wi-Fi Vantage, W-Fi Agile Multiband

- Wi-Fi Location

**NOTE:** Not available initially; will require a software upgrade

- Passpoint (release 2)

- Bluetooth SIG
  - Ethernet Alliance (POE, PD device, class 4)
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### Warranty

Aruba's hardware limited lifetime warranty.

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### Technical Specifications

#### Minimum operating system software versions

ArubaOS and Aruba InstantOS 8.5.0.0

#### RF performance table

Band, rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
<b>2.4GHz, 802.11b</b>		
1Mbps	18	-96
11Mbps	18	-88
<b>2.4GHz, 802.11g</b>		
6Mbps	18	-93
54Mbps	17	-75
<b>2.4GHz, 802.11n HT20</b>		
MCS0	18	-93
MCS7	16	-75
<b>2.4GHz, 802.11ax HE20</b>		
MCS0	18	-92
MCS11	14	-62
<b>5GHz, 802.11a</b>		
6Mbps	18	-93
54Mbps	17	-75
<b>5GHz, 802.11n HT20</b>		
MCS0	18	-93
MCS7	16	-73
<b>5GHz, 802.11n HT40</b>		
MCS0	18	-90
MCS7	16	-70
<b>5GHz, 802.11ac VHT20</b>		
MCS0	18	-93
MCS9	16	-68
<b>5GHz, 802.11ac VHT40</b>		
MCS0	18	-90
MCS9	16	-65
<b>5GHz, 802.11ac VHT80</b>		
MCS0	18	-87
MCS9	16	-62
<b>5GHz, 802.11ac VHT160</b>		
MCS0	18	-84
MCS9	16	-59
<b>5GHz, 802.11ax HE20</b>		
MCS0	18	-90
MCS11	14	-60
<b>5GHz, 802.11ax HE40</b>		
MCS0	18	-87
MCS11	14	-57
<b>5GHz, 802.11ax HE80</b>		
MCS0	18	-84

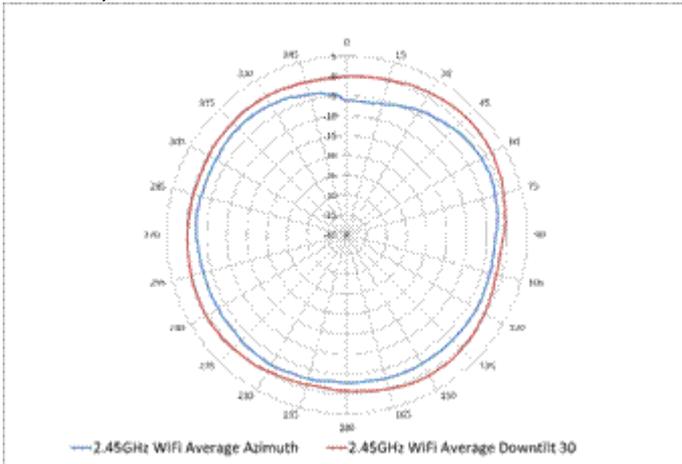
### Technical Specifications

MCS11	14	-54
<b>5GHz, 802.11ax HE160</b>		
MCS0	18	-81
MCS11	13	-51

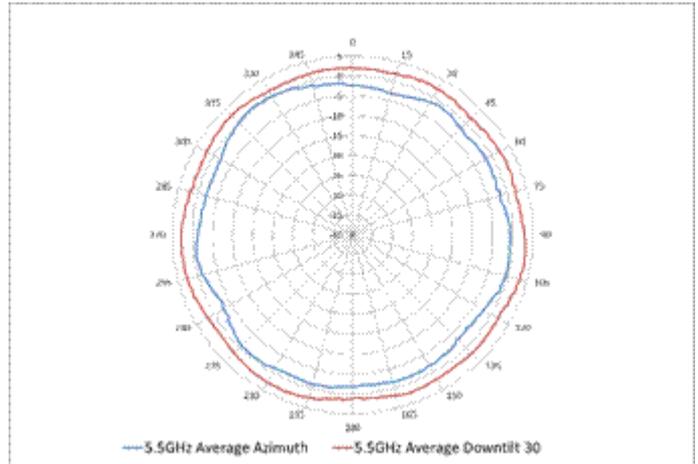
### Antenna patterns

#### Horizontal planes (top view)

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



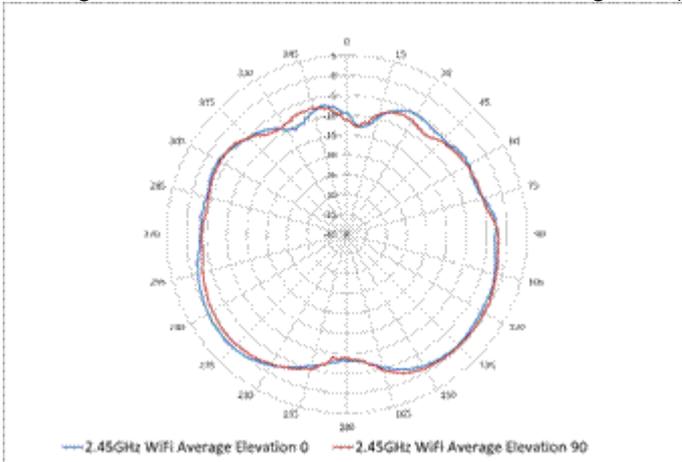
**2.45GHz Wi-Fi (antennas 1, 2)**



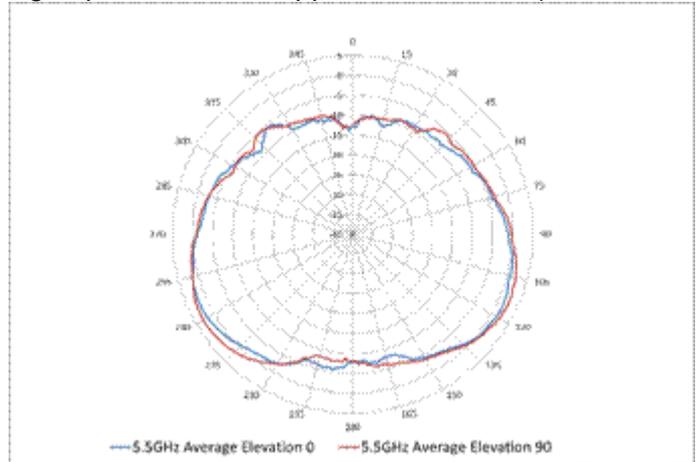
**5.5GHz Wi-Fi (antennas 1, 2, 3, 4)**

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

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



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



**5.5GHz Wi-Fi (antennas 1, 2, 3, 4)**

### Accessories

#### Accessories

Description	SKU
<b>Mounting kits</b>	
AP-MNT-MP10-A Campus AP mount bracket kit (10-pack) type A: suspended ceiling rail	JZ370A
AP-MNT-MP10-B Campus AP mount bracket kit (10-pack) type B: suspended ceiling rail	Q9G69A
AP-MNT-MP10-C Campus AP mount bracket kit (10-pack) type C: suspended ceiling rail	Q9G70A
AP-MNT-MP10-D Campus AP mount bracket kit (10-pack) type D: solid surface	Q9G71A
AP-MNT-MP10-E Campus AP mount bracket kit (10-pack) type E: wall-box	R1C72A
AP-MNT-A Campus AP mount bracket kit (individual) type A: suspended ceiling rail, flat 9/16	R3J15A
AP-MNT-B Campus AP mount bracket kit (individual) type B: suspended ceiling rail, flat 15/16	R3J16A
AP-MNT-C Campus AP mount bracket kit (individual) type C: suspended ceiling rail, profile 9/16	R3J17A
AP-MNT-D Campus AP mount bracket kit (individual) type D: solid surface	R3J18A
AP-MNT-E Campus AP mount bracket kit (individual) type E: wall-box	R3J19A
<b>Cosmetic covers</b>	
AP-515-CVR-20 20-pack for AP-515 White Non-glossy Snap-on Covers	Q9H74A
<b>Power accessories</b>	
AP-AC-12V30B 12V/30W AC/DC Desktop Style 2.1/5.5/9.5mm Circular 90 Deg Plug DoE Level VI Adapter	JX990A
Aruba PD-9001GR-AC 30W 802.3at PoE+ 10/100/1000 Ethernet Indoor Rated Midspan Injector	JW629A
<b>Other accessories</b>	
AP-CBL-SERU Micro-USB TTL3.3V to USB2.0 AP Console Adapter Cable	JY728A

### Summary of Changes

Date	Version History	Action	Description of Change
03-Jun-2019	Version 3	Changed	Configuration and Accessories sections were updated. New SKUs were added.
18-Feb-2019	Version 2	Changed	Minor change made on Technical Specifications
13-Nov-2018	Version 1	New	New QuickSpecs



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