

# AP-65WB Wireless Access Point

## Installation Guide

### About the AP-65WB

The AP-65WB is part of a comprehensive wireless network solution. The device works only in conjunction with an Aruba Mobility Controller, and provides the following capabilities:

- Wireless transceiver
- Protocol-independent networking functionality
- IEEE 802.11a and IEEE 802.11b/g operation as a wireless Access Point
- IEEE 802.11a and IEEE 802.11b/g operation as a wireless Air Monitor
- Compatible with IEEE 802.3af Power Over Ethernet
- Can be centrally managed, configured, and upgraded through an Aruba Mobility Controller
- Can be remotely deployed as a Remote Access Point (RAP)

The AP-65WB is designed to be installed in a standard US double gang electrical wall box. It is possible to insert the AP-65WB in and attach it to most such wall boxes, however it was specifically designed and tested for use with:

- Carlon® Zip Box® Blue 2 gang models
- Carlon® Flex-Plus® Blue 2 gang models
- Thomas & Betts Steel City® 4 11/16 Square Boxes, 2 1/8 deep (requires adapter plate included with AP)

### Package Contents

- 1 x AP-65WB Wireless Access Point (AP)
- 1 x AP-65WB Adapter Plate
- 12 x Installation Screws
  - 4x White #6-32 x 1.5", Flat Head Torx Screw
  - 4x White #6-32 x 1.5", Flat Head Slotted Screw
  - 4x White #8-32 x 1.25", Flat Head Slotted Screw
- 1 x Installation Guide (this document)

Inform your supplier if there are any incorrect, missing or damaged parts. If possible, retain the carton, including the original packing materials. Use them to repack the product in case there is a need to return it.

### Before Starting

Before installing your AP-65WB Wireless Access Point, please ensure you have the following:

- 1 x Fast Ethernet CAT5 UTP cable of required length
- 1 x 802.3af compliant Power over Ethernet source (POE)
- 1 x Aruba Mobility Controller provisioned on the network:
  - > with Layer 2/3 network connectivity to your AP-65WB
  - > One of the following network services:
    - \* Aruba Discovery Protocol (ADP)
    - \* DNS server with an "A" record
    - \* DHCP Server with vendor specific options

### The Aruba AP Setup Process

Setting up an Aruba AP typically consists of a planning stage and three installation steps:

1. **WLAN Planning** — Determine how many Aruba APs are needed for your wireless network deployment and where they will be installed. This can be easily accomplished using Aruba's automated RF Plan site-survey software (available separately). This stage should have been completed during the master Aruba Mobility Controller installation and configuration. In typical Aruba installations, the mobility controllers are configured and installed before APs.
2. **AP Installation** — Once Mobility Controller association has been reliably established, the AP can be physically installed at its intended permanent place of operation.
3. **Mobility Controller Discovery** — Aruba APs are factory configured with initial settings that enable them to automatically discover and associate to a host Aruba Mobility Controller. Once an Aruba AP associates to its host Mobility controller, it will receive its AP configuration and may be provisioned later with additional services and security parameters.
4. **AP Provisioning** — The administrator defines the operational behavior for each Aruba AP such as RF characteristics, security features and location codes. For specific AP configuration information, refer to the ArubaOS User Guide.

### STEP 1: Mobility Controller Discovery

Aruba Networks, in compliance with governmental requirements, has designed the AP-65WB such that only authorized network administrators can change the

settings. For more information on AP configuration, refer to the *ArubaOS User Guide*.



Access points are radio transmission devices and are subject to governmental regulation. Network administrators responsible for the configuration and operation of Access Points must comply with local broadcast regulations. Specifically, Access Points must use channel assignments appropriate to the location in which the Access Point will be used.

### About AP - Mobility Controller Discovery

Aruba APs are factory configured with basic network settings. This enables them (when connected to the network and powered on) to automatically discover and associate to a host Aruba Mobility Controller with no manual intervention required. The methods of automatic discovery and association include:

- **Aruba Discovery Protocol (ADP)**
- **DNS**
- **DHCP with Vendor Specific Options**

### Aruba Discovery Protocol (ADP)

This is the simplest method for AP to Mobility Controller discovery and association. ADP allows Aruba APs to be connected to the network (or directly to an Aruba Mobility Controller) and brought into operation automatically.

### ADP performs a single key task

Obtain the IP address of the host Aruba Mobility Controller from which the Aruba AP will acquire its initial software configuration.



Additionally, the AP software can also be uploaded via a standard TFTP server.

### ADP with Directly / Layer 2 Connected APs

If your Aruba AP is directly connected to an active Ethernet interface on an Aruba Mobility Controller, then no configuration is required. You may proceed to the next step.

### ADP with Layer 3 Connected APs

If your Aruba AP is NOT directly / Layer 2 connected to an Aruba Mobility Controller, and IP multicast routing is enabled on the host network, then ADP multicasts packets to locate a host Aruba Mobility Controller's IP address.

To ensure ADP is enabled, issue the following commands on the Master Aruba Mobility Controller:

```
(A6000) (config) #adp discovery enable
(A6000) (config) #adp igmp-join enable
```

An IP helper address on the subnet's default gateway, mapped to the host Aruba Mobility Controller's IP address, can be also used to facilitate the multicast / broadcast.

### DNS

If the AP-65WB is Layer 3 network connected, it can use network based DNS to resolve a factory configured default host name "aruba-master" to derive the host Mobility Controller's IP address. To enable this, a record for "aruba-master" must be created on the network DNS server.

### DHCP with Vendor Specific Options

A standards compliant DHCP server can be configured to return the host Aruba Mobility Controller's IP address through Vendor Specific Options (option 43) in the DHCP reply. If the host Mobility Controller's IP address is obtained via DHCP, it will be used to upload the Aruba AP's software image and configuration.



If you have location-specific configurations for your APs, you need to apply this configuration information using AP Provisioning.

### Next Steps

If you wish to fully configure and provision your Aruba AP before installing it at its final desired location, before installing it proceed to step 3, "AP Provisioning".

### STEP 2: Installing the AP-65WB

#### Preparing the Pre-installed Wall Box

Before installing the AP-65WB, the cover plate must be removed from the existing wall box. To do this:

1. Remove the four (4) screws holding the cover plate to the wall box.
2. Pull the cover plate away and set it aside.

### Connecting Required Cables

The AP-65WB's integrated 10/100 Mbps Fast Ethernet (FE) port is used to connect the AP to a 10Base-T/100Base-TX (twisted-pair) Ethernet LAN segment or directly to an Aruba Mobility Controller. Use a 4 or 8-conductor, Category 5 UTP, straight-through FE cable, however, the AP-65WB FE port supports MDI/MDX and automatically adjusts for straight-through or crossover cables. The maximum length for FE cables is 100 meters (325 feet). Install cables in accordance with all applicable local and national regulations and practices.



AP-65WB access points are intended only for installation in Environment A as defined in IEEE 802.3af, Power over Ethernet. All interconnected equipment must be contained within the same building, including the interconnected equipment's associated LAN connections.

### Connecting Cables & Power

1. Connect one end of the FE cable directly to the AP-65WB's FE port.
2. Connect the other end of the FE cable to a network mid-span device that supports 802.3af (PoE) compliant port.

### FE Port Specifications

The 10/100 Mbps FE port is located on the rear of the AP-65WB and has an RJ-45 female connector. The port pin-outs are shown in Figure 4:

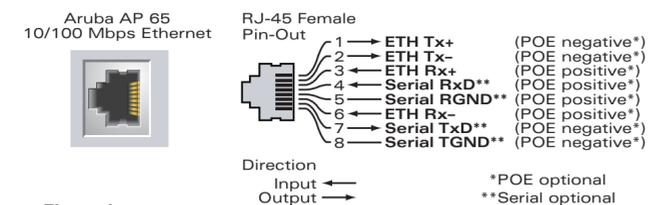


Figure 4

### Installing The AP-65WB in a Wall Box

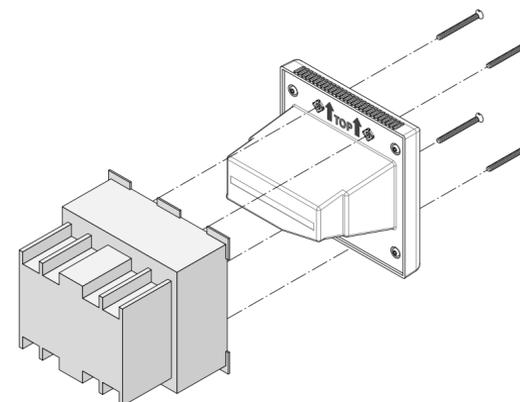


The AP-65WB's internal antennas are optimized for mounting in double gang wallboxes installed 18" off the floor. If the double gang wallbox is installed higher than five (5) feet off the floor, Aruba recommends installing the AP-65WB upside down (with the ethernet port facing the ceiling).

### For Most Plastic Wall Boxes

1. Insert the AP-65WB into the wall box.
2. Verify that the screw holes on the AP-65WB are aligned with those on the wall box.
3. Insert the provided screws into the screw holes and tighten them until they are secure.

Figure 1 Installing the AP-65WB



### For Most Metal Wall Boxes

1. Attach the adapter plate to the wall box as shown in Figure 2, using the four provided slot-head 8-32 screws.
2. Connect the RJ-45 cable to the AP-65WB.
3. Insert the AP-65WB into the wall box/adapter plate as shown in Figure 3.

4. Use either four provided Torx-head or four provided slot-head 6-32 screws to secure the AP to the adapter plate.

Figure 2 Installing the Adapter Plate

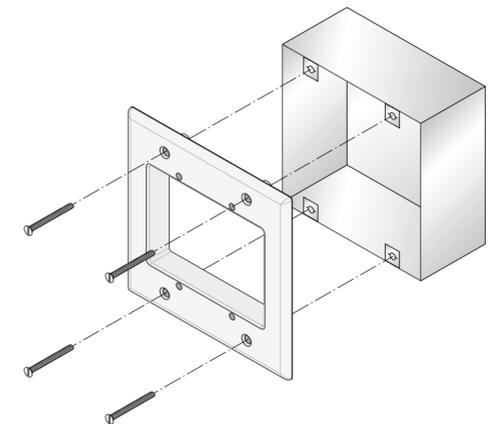
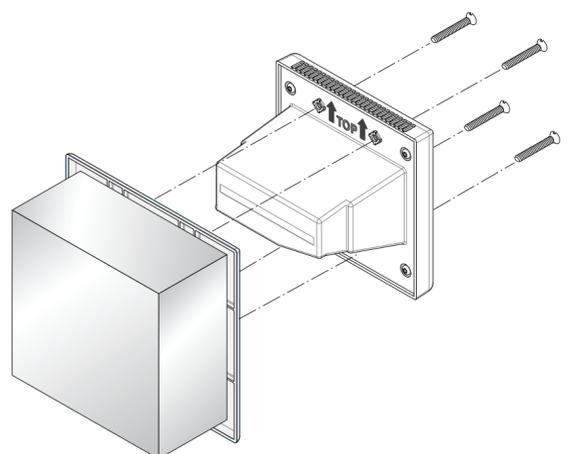


Figure 3 Installing the AP-65WB in a Metal Gang-Box



### STEP 3: Provisioning the AP-65WB

After an AP associates to a host Aruba Mobility Controller and receives its basic configuration, it may be provisioned.

AP Provisioning is the process by which APs are assigned advanced or AP unique configuration parameters, for example location codes, security credentials, or Remote AP credentials. Location codes are important for RF calibration and triangulation.

AP Provisioning is not mandatory for basic wireless deployment however it is recommended. It is mandatory for situations where APs are required to be pre-staged or provisioned in advance of shipment and final network installation, such as Remote AP (RAP) deployments.

Aruba APs may be provisioned in bulk in AP programming mode, where configuration parameters are defined on the Aruba Mobility Controller via command line interface or web interface, and then uploaded to APs in batches. For details on AP configuration and provisioning, see the *ArubaOS User Guide*.

## Specifications

### Software

- ArubaOS 3.3.2.12 or later required

### Mechanical

#### Device Dimensions (HxWxD):

- 4.53" x 4.53" x 3.29"

#### Device Weight:

- 0.45 lbs / 0.204 Kilos

#### Shipping Dimensions (HxWxD):

- 138mm x 172mm x 51mm
- 7" x 7" x 5"

#### Shipping Weight:

- 0.5 lbs / 0.227 Kilos

#### Temperature:

- Operating: 0°C to 40°C (32°F to 104°F)
- Storage: -40°C to 70°C (-40°F to 158°F)

#### Relative Humidity:

- 5% to 90% non-condensing

#### Mounting:

- Standard US double gang electrical wall box

#### Visual Status Indicators (LEDs):

- N/A

## Electrical

### Ethernet:

- 1 x 10/100 Base-T auto-sensing Ethernet RJ-45 Interface, MDI/MDX
- IEEE 802.3af compliant Power Over Ethernet, 48VDC/220mA
- IEEE 802.3, IEEE 802.3u
- Power Over Ethernet, 48V DC / 220mA

### Wireless LAN

#### Network Standards:

- IEEE 802.11a, IEEE 802.11b and IEEE 802.11g

#### Antenna Type:

- Integral, 802.11a/b/g omni-directional high-gain antenna

#### Antenna Gain:

- 5.150GHz / 2.5dBi
- 5.350GHz / 3.3dBi
- 2.4 ~ 2.5GHz / 3.3dBi
- VSWR 1.5:1
- Dual antenna - supports diversity

#### Radio Technology:

- Orthogonal Frequency Division Multiplexing (OFDM)
- Direct Sequence Spread Spectrum (DSSS)

#### Radio Modulation Type:

- 802.11a - BPSK, QPSK, 16-QAM, 64-QAM
- 802.11b - CCK, BPSK, QPSK
- 802.11g - CCK, BPSK, QPSK, 16-QAM, 64-QAM

#### Media Access Control:

- CSMA/CA with ACK

#### Supported Frequency Bands 5GHz:

- 5.150 ~ 5.250GHz (low band), country specific
- 5.250 ~ 5.350GHz (mid band), country specific
- 5.470 ~ 5.725GHz (Europe), country specific
- 5.725 ~ 5.850GHz (high band), country specific

#### Supported Frequency Bands 2.4GHz:

- 2.400 ~ 2.4835GHz (Global), channels country specific

#### Supported Operating Channels:

802.11b	802.11g	802.11a
<ul style="list-style-type: none"><li>US, Canada, Taiwan 11</li><li>ETSI up to 13</li><li>Japan 14</li></ul>	<ul style="list-style-type: none"><li>US, Canada, Taiwan 11</li><li>ETSI up to 13</li><li>Japan 13</li></ul>	<ul style="list-style-type: none"><li>US, Canada, Taiwan 7</li><li>ETSI up to 19</li><li>Japan 8</li></ul>

#### Data Rates:

- 802.11a - 6, 9, 12, 18, 24, 36, 48 and 54 Mbps per channel
- 802.11b - 1, 2, 5.5, 11 Mbps per channel
- 802.11g - 6, 9, 12, 18, 24, 36, 48 and 54 Mbps per channel

#### Output Transmit Power:

- 100 mW maximum (or lower as configured on the Aruba Mobility Controller to comply with local regulatory requirements).

## Miscellaneous Functionality

### Maximum Clients:

- 255

### Radio Band Selection:

- Via Mobility Controller in software

### Manageability:

- Management of all 802.11 parameters
- Network Wide AP Management via CLI, WEB GUI and SNMPv3
- Access Point Profiles, managed by Geographical Location, BSSID and Radio Type

### Encryption (AP and Mobility Controller):

- 40bit / 64bit / 128bit / 152bit WEP, TKIP, AES

## Compliance

Aruba provides a multi-language document containing country-specific restrictions and additional safety and regulatory information for all Aruba hardware products. You can read or download this document, on our website at [www.arubanetworks.com/safety\\_addendum](http://www.arubanetworks.com/safety_addendum).



Aruba Access Points must be installed by a professional installer. The professional installer is responsible for ensuring that grounding is available and that it meets applicable local and national electrical codes.

## Certifications

### Electromagnetic Compatibility

- FCC DOC Part 15 Class B (digital portion)
- FCC Part 15 Subpart C 15.247
- FCC Part 15 Subpart E 15.407
- UL/EN 60950-1 cTUVus

### Disposal of the AP-65WB

For the most current information about Global Environmental Compliance and Aruba products, see our website at [www.arubanetworks.com/safety\\_addendum](http://www.arubanetworks.com/safety_addendum).



This product at end of life is subject to separate collection and treatment in the EU Member States, Norway, and Switzerland, and therefore is marked with the symbol shown at the left (crossed out wheeled bin). The treatment applied at end of life of these products in these countries shall comply with the applicable national laws implementing Directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE).

The WEEE Directive 2002/96/EC and RoHS (Restriction of Hazardous Substances) Directive 2002/95/EC sets collection, recycling and recovery targets for various categories of electrical products and their waste.

### European Union RoHS

The Restriction on Hazardous Substances Directive (RoHS) (2002/95/EC), which accompanies the WEEE Directive, bans the use of heavy metals and brominated flame-retardants in the manufacture of electrical and electronic equipment. Specifically, restricted materials under the RoHS Directive are Lead (Including Solder used in PCB's), Cadmium, Mercury, Hexavalent Chromium, and Bromine.

Aruba declares compliance with the European Union (EU) WEEE Directive (2002/96/EC). For more information on WEEE, refer to: <http://www.dti.gov.uk/sustainability/weee>

### China RoHS

Aruba products comply with China environmental declaration requirements and are labeled with the "EFUP 50" label shown at the left.



部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substances)					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Chromium VI Compounds (Cr <sup>6+</sup> )	多溴联苯 Polybrominated Diphenyls (PBB)	多溴二苯醚 Polybrominated Diphenyl Ether (PBDE)
电路板 PCA Board	X	o	o	o	o	o
机械组件 Mechanical Subassembly	X	o	o	o	o	o
O: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。 This component does not contain this hazardous substance above the maximum concentration values in homogeneous materials specified in the SJ/T11363-2006 Industry Standard. X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。 This component does contain this hazardous substance above the maximum concentration values in homogeneous materials specified in the SJ/T11363-2006 Industry Standard. 对标签之目的所有产品。本表显示 供应链中的电子产品可能包含这些物质。 This table shows where these substances may be found in the supply chain of electronic information products, as of the date of sale of the enclosed product. 此标签为针对所有产品及产品的环保使用期标志。 某些零件会有一个不同的环保使用期(例如, 电池单元模块)贴在其产品上。 此环保使用期只适用于产品是在产品手册中所规定的条件下工作。 The Environment-Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here. The Environment-Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.						

Part Number: 0510303-01

## Warranty

Standard warranty - 1 year return to manufacturer

# AP-65WB Wireless Access Point Installation Guide



## Contacting Aruba Networks

Web Site Support	
Main Site	<a href="http://www.arubanetworks.com">http://www.arubanetworks.com</a>
Support Site	<a href="https://support.arubanetworks.com">https://support.arubanetworks.com</a>
Software Licensing Site	<a href="https://licensing.arubanetworks.com/login.php">https://licensing.arubanetworks.com/login.php</a>
Wireless Security Incident Response Team (WSIRT)	<a href="http://www.arubanetworks.com/support/wsirt.php">http://www.arubanetworks.com/support/wsirt.php</a>
Americas and APAC Support Email	<a href="mailto:support@arubanetworks.com">support@arubanetworks.com</a>
EMEA Support Email	<a href="mailto:emea.support@arubanetworks.com">emea.support@arubanetworks.com</a>
WSIRT Email Please email details of any security problem found in an Aruba product.	<a href="mailto:wsirt@arubanetworks.com">wsirt@arubanetworks.com</a>

Telephone Support	
Aruba Corporate	+1 (408) 227-4500
FAX	+1 (408) 227-4550
Support United States	800-WI-FI-LAN (800-943-4526) +800-4WIFI-LAN (+800-49434-526)
Universal Free Phone Service Number (UIFN): Australia, Canada, China, France, Germany, Hong Kong, Ireland, Israel, Japan, Korea, Singapore, South Africa, Taiwan, and the UK	
All Other Countries	+1 (408) 754-1200

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## Warranty

This hardware product is protected by the standard Aruba warranty of one year parts/labor. For more information, refer to the ARBAGARE SERVICE AND SUPPORT TERMS AND CONDITIONS.  
Altering this device (such as painting it) voids the warranty.



[www.arubanetworks.com](http://www.arubanetworks.com)  
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