AP-8122 Access Point
INSTALLATION GUIDE
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1 Introduction

The AP-8122 is a premium, Enterprise class 3x3 802.11 Access Point utilizing two 802.11abgn radios.

An AP-8122 model Access Point uses WiNG 5 software as its onboard operating system. The Access Point’s unique WiNG 5 software enables the Access Point to function as either a Virtual Controller AP capable of adopting and managing up to 24 additional AP-8122 Access Points, a Standalone Access Point or a Dependent mode Access Point managed by its connected controller.

If new to Access Point technology, refer to the WiNG Access Point System Reference Guide to familiarize yourself with Access Point technology and the feature set supported by the WiNG operating system. The guide is available at www.zebra.com/support.

This document is written for the qualified network device installer.

1.1 Document Conventions

The following graphical alerts are used in this document to indicate notable situations:

<table>
<thead>
<tr>
<th>Alert</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE</td>
<td>Tips, hints, or special requirements that you should take note of.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>Care is required. Disregarding a caution can result in data loss or equipment malfunction.</td>
</tr>
<tr>
<td>WARNING</td>
<td>Indicates a condition or procedure that could result in personal injury or equipment damage.</td>
</tr>
</tbody>
</table>
1.2 Warnings
- Read all instructions and site survey reports, and verify correct equipment installation before connecting the AP-8122 model Access Point.
- Remove jewelry and watches before installing this equipment.
- Verify any device connected to this unit is properly wired and grounded.
- Verify there is adequate ventilation around the device, and that ambient temperatures meet equipment operation specifications.

1.3 Site Preparation
- Consult your site survey and network analysis reports to determine specific equipment placement, power drops, and so on.
- Assign installation responsibility to the appropriate personnel.
- Identify and document where all installed components are located.
- Ensure adequate, dust-free ventilation to all installed equipment.
- Identify and prepare Ethernet and console port connections.
- Verify cable lengths are within the maximum allowable distances for optimal signal transmission.

1.4 AP-8122 Package Contents
An AP-8122 Access Point is available in internal antenna models only. An AP-8122 ships with the following:
- AP-8122 Access Point
- AP-8122 Installation Guide (This Guide)
- Wall mount screws and mounting bracket

1.4.1 Features
An AP-8122 Access Point supports the following feature set:
- Two RJ-45 connectors (GE1/POE and Console)
- LED indicators
- Two custom dual band radios
- 3x3 MIMO, 3 spatial streams

The GE1/POE accepts 802.3at or 802.3af compliant power from an external source.

NOTE When operating in a Gigabit Ethernet environment, CAT-5e or CAT-6 cable is recommended for Gigabit operation.
2 Hardware Installation

2.1 Installation Instructions
An AP-8122 Access Point mounts either on a wall (with M 3.5 x 0.6 x 23 MM pan head screws and mounting bracket- or equivalent) or on a suspended ceiling T-bar.

To prepare for the installation:

1. Match the model number on the purchase order with the model numbers in the packing list and on the case of the Access Point.
2. Verify the contents of the box include the intended AP-8122 Access Point, and the included hardware matches the package contents on page 5.
3. Review site survey and network analysis reports to determine the location and mounting position for the AP-8122 Access Point.
4. Connect a CAT-5 or better Ethernet cable to a compatible 802.3at or 802.3af power source and run the cable to the installation site. Ensure there is sufficient slack on the cable to perform the installation steps.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP-8122-67030-US</td>
<td>802.11n 3x3:3 Access Point dual radio US version</td>
</tr>
<tr>
<td>AP-8122-67030-WR</td>
<td>802.11n 3x3:3 Access Point dual radio international version</td>
</tr>
<tr>
<td>AP-8122-67030-EU</td>
<td>802.11n 3x3:3 Access Point dual radio EU version</td>
</tr>
</tbody>
</table>

5. When operating in a Gigabit Ethernet environment, CAT-5e or CAT-6 cable is recommended for Gigabit operation.

2.2 Precautions
Before installing an AP-8122 model Access Point, verify the following:

- Your are using the correctly rated power solution for the AP-8122 (either the AP-FSBIAS-2P3-ATR power injector or the PWRS-14000-247R external power supply)
- Do not install the AP-8122 in wet or dusty areas.
- Verify the environment has a continuous temperature range between 0° C to 40° C.
2.3 Access Point Placement

For optimal performance, install the Access Point away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators and other industrial equipment. Signal loss can occur when metal, concrete, walls or floors block transmission. Install the Access Point in an open area or add Access Points as needed to improve coverage.

Antenna coverage is analogous to lighting. Users might find an area lit from far away to be not bright enough. An area lit sharply might minimize coverage and create dark areas. Uniform antenna placement in an area (like even placement of a light bulb) provides even, efficient coverage.

Install the Access Point at an ideal height of 10 feet from the ground.

To maximize the Access Point’s radio coverage area, conduct a site survey to define and document radio interference obstacles before installing the Access Point.

2.4 Power Injector System

An AP-8122 model Access Point can receive power via an Ethernet cable connected to the GE1/POE (LAN) port.

When users purchase a WLAN solution, they often need to place Access Points in obscure locations. In the past, a dedicated power source was required for each Access Point in addition to the Ethernet infrastructure. This often required an electrical contractor to install power drops at each Access Point location. The Power Injector merges power and Ethernet into one cable, reducing the burden of installation and allowing optimal Access Point placement in respect to the intended coverage area.

| CAUTION | Using a non-compliant injector, or an injector supporting legacy modes will not allow the AP-8122 to function at optimum performance levels. |
| CAUTION | Do not plug in the AP-PSBIAS-2P3-ATR Power Injector into the Access Point’s Console port. Connecting the Power Injector into the console port can damage the port and void the AP-8122’s product warranty. |

The AP-8122’s supported Power Injector (Part No. AP-PSBIAS-2P3-ATR) is a high power POE Injector delivering up to 30 watts. The Access Point can only use a Power Injector when connecting the unit to the Access Point’s GE1/POE port. The Power Injector is separately ordered and not shipped with an existing AP SKU.

The Access Point Power Supply (Part No. PWRS-14000-247R) is not included with the Access Point and is orderable separately as an accessory. If the Access Point is provided both POE power and PWRS-14000-247R power concurrently, the Access Point will source power from the PWRS-14000-247R supply only. Disconnecting AC power from the PWRS-14000-247R, causes the Access Point to re-boot before sourcing power from the POE power injector. If the AP is operating using injector supplied power, the AP will not automatically reboot if an AC adapter is connected. The Access Point continues to operate with power supplied from the AC adapter without change to the Access Point operating configuration. If using AC adapter supplied power and a change to the AP’s operating configuration is warranted, the Access Point needs to be manually rebooted by the customer.
A separate Power Injector is required for each AP-8122 Access Point comprising the network.

The Power Injector can be installed free standing, on an even horizontal surface or wall mounted using the power injector’s wall mounting key holes. The following guidelines should be adhered to before cabling the Power Injector to an Ethernet source and an Access Point:

- Do not block or cover airflow to the Power Injector.
- Keep the Power Injector away from excessive heat, humidity, vibration and dust.
- The Power Injector isn’t a repeater, and does not amplify the Ethernet signal. For optimal performance, ensure the Power Injector is placed as close as possible to the data port.
To install the Power Injector to an Ethernet data source and an Access Point:

1. Connect the Power Injector to an AC outlet (110VAC to 220VAC).
2. Connect an RJ-45 Ethernet cable between the network data supply (host) and the Power Injector Data In connector.
3. Connect an RJ-45 Ethernet cable between the Power Injector Data & Power Out connector and the Access Point’s GE1/POE port.

Ensure the cable length from the Ethernet source (host) to the Power Injector and Access Point does not exceed 100 meters (333 ft).

The Power Injector has no On/Off power switch. The Injector receives power and is ready for device connection and operation as soon as AC power is applied. Refer to the Installation Guide shipped with the Power Injector for a description of the device’s LEDs.

### 2.5 Wall Mount Instructions

A wall mount deployment requires hanging the AP-8122 Access Point with the provided mounting bracket and two screws. The AP-8122 can be mounted on to any plaster, wood or cement wall surface using the provided mounting bracket.

The hardware required to install the AP-8122 on a wall consists of:

- Two wide-shoulder Phillips pan head self-tapping screws (M3.5 x 0.6 x 23 mm)
- Mounting bracket

Optional customer provided installation tools include:

- Philips head screw driver, or drill and drill bit
2.5.1 Wall Mount Procedure - New Installation

This section describes a new AP-8122 installation with no previous Access Point existing on the intended wall surface.

1. Place the mounting bracket against the wall.
2. Mark the screw hole locations depending on the intended deployment orientation of the unit.

3. At each point, drill a hole in the wall and attach the mounting bracket.

4. Place the Access Point on the mounting bracket.
5. Cable the Access Point using either the Power Injector solution (AP-PSBIAS-2P3-ATR) or the approved AP-8122 power supply (PWRS-14000-247R).

For Power Injector installations:
3. Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the Power Injector Data In connector.
b. Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the Power Injector \textbf{Data & Power Out} connector and the Access Point’s GE1/POE port.

c. Ensure the cable length from the Ethernet source (host) to the Power Injector and Access Point does not exceed 100 meters (333 ft). The Power Injector has no On/Off power switch. The Power Injector receives power as soon as AC power is applied.

For standard power adapter (non Power Injector) and line cord installations:

a. Connect a RJ-45 Ethernet cable between the network data supply (host) and the Access Point’s GE1/POE port.

b. Verify the power adapter is correctly rated according to the country of operation.

c. Connect the power supply line cord to the power adapter.

d. Attach the power adapter cable into the power connector on the Access Point.

e. Attach the power supply line cord to a power supply.

6. Verify the Access Point is receiving power by observing the LEDs are lit or flashing. For more information on AP-8122 LED behavior, see \textit{LED Indicators on page 16}.

7. The Access Point is ready to configure.

---

\textbf{CAUTION} If not using an AP-PSBIAS-2P3-ATR model power injector, ensure only the AP-8122’s designated power supply (PWRS-14000-247R) is used to supply power to the Access Point. Using an incorrectly rated power supply could damage the Access Point and void the product warranty. Do not actually connect to the power source until the cabling portion of the installation is complete.

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\subsection*{2.5.2 Wall Mount Procedure - Existing Access Point Replacement}

An existing AP-7131 or AP-7131N Series Access Point installed on a wall can be replaced by an AP-8122. Simply remove the existing AP-7131 or AP-7131N and install the new provided mounting bracket for AP-8122 directly to the wall. The cabling procedure for such a replacement is as described in the previous section.
2.6 Suspended Ceiling T-Bar Mount Instructions

Ceiling mount requires holding the AP-8122 up against a T-bar of a suspended ceiling grid and twisting the unit on to the T-bar. If deploying the AP-8122 on a sculpted ceiling T-Bar, the Access Point mounting kit (Part No. KT-135628-01) can optionally be used as well.

1. Attach the mounting bracket into the mounting slots on the AP-8122.

2. Cable the Access Point using either the Power Injector solution (AP-PSBIAS-2P3-ATR) or the approved AP-8122 power supply (PWRS-14000-247R).

   For Power Injector installations:
   a. Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the Power Injector Data In connector.
   b. Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the Power Injector Data & Power Out connector and the Access Point’s GE1/POE port.
   c. Ensure the cable length from the Ethernet source (host) to the Power Injector and Access Point does not exceed 100 meters (333 ft). The Power Injector has no On/Off power switch. The Power Injector receives power as soon as AC power is applied.
For standard power adapter (non Power Injector) and line cord installations:

a. Connect a RJ-45 Ethernet cable between the network data supply (host) and the Access Point’s GE1/POE port.
b. Verify the power adapter is correctly rated according the country of operation.
c. Connect the power supply line cord to the power adapter.
d. Attach the power adapter cable into the power connector on the Access Point.
e. Attach the power supply line cord to a power supply.

3. Verify the unit has power by observing the LEDs. For more information on AP-8122 LED behavior, see LED Indicators on page 16.

4. Align the bottom of the ceiling T-bar with the back of the Access Point.
5. Orient the Access Point chassis by its length and the length of the ceiling T-bar.
6. Rotate the Access Point chassis 45 degrees clockwise.
7. Push the back of the Access Point chassis on to the bottom of the ceiling T-bar.
8. Rotate the Access Point chassis 45 degrees counter-clockwise. The clips click as they fasten to the T-bar.

9. The Access Point is ready to configure.
2.7 LED Indicators
The AP-8122 LED activity indicators are recessed in the slots on the front of the case.

The LEDs provide a status display indicating error conditions, transmission, and network activity for the 5 GHz 802.11an (amber) radio and the 2.4 GHz 802.11bgn (green) radio.

<table>
<thead>
<tr>
<th>Task</th>
<th>5 GHz Activity LED (Amber)</th>
<th>2.4 GHz Activity LED (Green)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconfigured Radio</td>
<td>On</td>
<td>On</td>
</tr>
</tbody>
</table>
| Normal Operation    | • If this radio band is enabled: Blink at 5 second interval  
                       • If this radio band is disabled: Off 
                       • If there is activity on this band: Blink interval at 1 time per second | • If this radio band is enabled: Blink at 5 second interval  
                       • If this radio band is disabled: Off 
                       • If there is activity on this band: Blink interval at 1 time per second |
| Firmware Update     | On                                                  | Off                                                 |
| Locate AP Mode      | LEDs blink in an alternating green, red and amber pattern using an irregular blink rate. This LED state in no way resembles normal operating conditions. | LEDs blink in an alternating green, red and amber pattern using an irregular blink rate. This LED state in no way resembles normal operating conditions |
3  Basic Access Point Configuration

Once the AP-8122 is installed and powered on, complete the following steps to get the Access Point up and running and access management functions:

1. The Access Point's IP address is optimally provided using DHCP. A zero config IP address can also be derived if DHCP resources are unavailable. Using zero config, the last two octets in the IP address are the decimal equivalent of the last two bytes in the Access Point’s hardcoded MAC address.
   For example:
   
   MAC address - 00:C0:23:00:F0:0A
   Zero-config IP address - 169.254.240.10

   To derive the Access Point’s IP address using its MAC address:
   a. Open the Windows calculator by selecting Start > All Programs > Accessories > Calculator. This menu path may vary slightly depending on your version of Windows.
   b. With the Calculator displayed, select View > Scientific. Select the Hex radio button.
   c. Enter a hex byte of the Access Point’s MAC address. For example, F0.
   d. Select the Dec radio button. The calculator converts F0 into 240. Repeat this process for the last Access Point MAC address octet.

2. Point the Web browser to the Access Point’s IP address. The following login screen displays:
3. Enter the default username **admin** in the **Username** field.
4. Enter the default password **admin123** in the **Password** field.
5. Click the **Login** button to load the management interface.

**NOTE** When logging in for the first time, you’re prompted to change the password to enhance device security in subsequent logins.

**NOTE** If you get disconnected when running the wizard, you can connect again with the Access Point’s actual IP address (once obtained) and resume the wizard.

6. If this is the first time the management interface has been accessed, the Initial Setup Wizard automatically displays.

**Function Highlight**

- Access Point Types: Virtual Controller AP, Standalone AP, or Dependent AP
- Networking Mode: Bridge or Router Operation
- LAN Configuration
- Radio Configuration
- WAN Configuration
- Wireless LAN Setup
- Location, Country Code, Time Zone, Date and Time
- Summary and Save/Commit

**Choose One Type to Setup the Access Point**

- **Typical Setup (Recommended)**
  - The wizard uses as many default parameters as possible to simplify the configuration process.

- **Advanced Setup**
  - With this selection, you may configure the access point’s LAN, WAN, Radio Mapping, Radius Server, VLAN, etc.
The Introduction screen displays the various actions that can be performed using the wizard under the Function Highlight field.

Use the Choose One type to Setup the Access Point field options to select the type of wizard to run. The Typical Setup is the recommended wizard. This wizard uses the default parameters for most of the configuration parameters and sets up a working network with the least amount of manual configuration.

The Advanced Setup wizard is for administrators who prefer more control over the different configuration parameters. A few more configuration screens are available for customization when the Advanced Setup wizard is used.

The first page of the Initial Setup Wizard displays the Navigation Panel and Function Highlights for the configuration activities comprising the Access Point’s initial setup. This page also displays options to select the typical or advanced mode for the wizard.

The Navigation Panel for the Typical Setup Wizard displays the basic configuration options.

<table>
<thead>
<tr>
<th>Navigation Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Introduction</td>
</tr>
<tr>
<td>✗ Access Point Type</td>
</tr>
<tr>
<td>Access Point Mode</td>
</tr>
<tr>
<td>L3/L4 Configuration</td>
</tr>
<tr>
<td>Wireless L3/L4 Setting</td>
</tr>
<tr>
<td>Summary and Commit</td>
</tr>
</tbody>
</table>

A green checkmark to the left of an item in the Navigation Panel defines the task as having its minimum required configuration set correctly. A red X defines a task as still requiring at least one parameter be defined correctly.
7. Select **Save/Commit** within each page to save the updates made to that page’s configuration. Select **Next** to proceed to the next page listed in the Navigation Panel without saving your updates.

---

**NOTE** While you can navigate to any page in the navigation panel, you cannot complete the Initial AP Setup Wizard until each task in the Navigation Panel has a green checkmark.

---

For the purposes of this guide, use the **Typical Setup (Recommended)** option to simplify the process of getting the Access Point up and running quickly with a minimum number of changes to the Access Point’s default configuration.

For information on using the Access Point’s Advanced Setup option, refer to the WiNG Access Point System Reference Guide to familiarize yourself with the feature set supported by the WiNG operating system. The guide is available at [www.zebra.com/support](http://www.zebra.com/support).

To configure the Access Point using the Typical Setup Wizard:

8. Select **Typical Setup** from the **Choose One type to Setup the Access Point** field on the Initial Setup Wizard.

9. The Typical Setup Wizard displays the **Access Point Settings** screen to define the Access Point’s Standalone versus Virtual Controller AP functionality. This screen also enables selection of the country of operation for the Access Point.

---

**Access Point Type Selection**

- **Virtual Controller AP**: When more than one access point is deployed, a single access point can function as a Virtual Controller AP and manage Dependent mode access points. This Virtual Controller AP can adopt and configure other Wi-Fi APs in a 24-cell deployment.

- **Standalone AP**: Select this option to deploy the access point as an autonomous “standalone” access point. A standalone AP isn’t managed by a Virtual Controller AP or selected by a controller.
10. Select an **Access Point Type** from the following options:
   - **Virtual Controller AP** - When more than one Access Point is deployed, a single Access Point can function as a Virtual Controller AP. Up to 24 Access Points can be connected to, and managed by, a single Virtual Controller AP of the same Access Point model. These connected Access Points must be the same model as the Virtual Controller AP.
   - **Standalone AP** - Select this option to deploy this Access Point as an autonomous fat Access Point. A Standalone AP isn’t managed by a Virtual Controller AP, or adopted by a controller.

**NOTE** If wanting to adopt the Access Point to a controller or service platform, use the controller or service platform’s resident UI to connect to the Access Point, provision its configuration and administrate the Access Point’s configuration.

**NOTE** If designating the Access Point as a Standalone AP, use the Access Point’s UI exclusively to define its device configuration, and not the CLI. The CLI provides the ability to define more than one profile and the UI does not. Consequently, the two interfaces cannot be used collectively to manage profiles without an administrator encountering problems.

11. Select the **Country Code** of the country where the Access Point is deployed. Selecting a proper country is a critical task while configuring the Access Point, as it defines the correct channels of operation and ensures compliance to the regulations of the selected country. This field is only available for the Typical Setup Wizard.

12. Select **Next** to set the Access Point’s network mode.
13. The Typical Setup Wizard displays the **Network Topology** screen to define how the Access Point handles network traffic.

**Network Topology**

- **Router Mode** - In Router Mode, the access point routes traffic between the wireless network and the Internet or corporate network (WAN).

- **Bridge Mode** - In Bridge Mode, the access point depends on an external router for routing LAN and WAN traffic. Routing is generally used on one device, whereas bridging is typically used in a larger density network. Thus, select Bridge Mode when deploying this access point with numerous peer APs supporting clients on both the 2.4 and 5GHz radio bands.

14. Select an Access Point Mode from the available options.

- **Router Mode** - In Router Mode, the Access Point routes traffic between the local network (LAN) and the Internet or external network (WAN). Router mode is recommended in a deployment supported by just a single Access Point.

- **Bridge Mode** - In Bridge Mode, the Access Point depends on an external router for routing LAN and WAN traffic. Routing is generally used on one device, whereas bridging is typically used in a larger density network. Select Bridge Mode when deploying this Access Point with numerous peer Access Points supporting clients on both the 2.4GHz and 5GHz radio bands.

**NOTE** When Bridge Mode is selected, WAN configuration cannot be performed and the Typical Setup Wizard does not display the WAN configuration screen.
15. Select **Next**. The Typical Setup Wizard displays the **LAN Configuration** screen to set the Access Point’s LAN interface configuration.

### LAN Configuration

Please configure interface settings for LAN (VLAN 1) which will be used by wireless clients.

- **Use DHCP** - Select the checkbox to enable an automatic network address configuration using the Access Point’s DHCP server.
- **Static IP Address/Subnet** - Enter an IP Address and a subnet for the Access Point’s LAN interface. If **Use DHCP** is selected, this field is not available. When selecting this option, define the following **DHCP Server** and **Domain Name Server (DNS)** resources, as those fields will become enabled on the bottom portion of the screen.
  - **Use on-board DHCP server to assign IP addresses to wireless clients**
  - **Range** - Enter a starting and ending IP Address range for client assignments on the LAN interface. Avoid assigning IP addresses from x.x.x.1 - x.x.x.10 and x.x.x.255, as they are often reserved for standard network services. This is a required parameter.
  - **Default Gateway** - Define a default gateway address for use with the default gateway. This is a required parameter.

16. Set the following DHCP and Static IP Address/Subnet information for the LAN interface:

- **Use DHCP** - Select the checkbox to enable an automatic network address configuration using the Access Point’s DHCP server.

- **Static IP Address/Subnet** - Enter an IP Address and a subnet for the Access Point’s LAN interface. If **Use DHCP** is selected, this field is not available. When selecting this option, define the following **DHCP Server** and **Domain Name Server (DNS)** resources, as those fields will become enabled on the bottom portion of the screen.
  - **Use on-board DHCP server to assign IP addresses to wireless clients**
  - **Range** - Enter a starting and ending IP Address range for client assignments on the LAN interface. Avoid assigning IP addresses from x.x.x.1 - x.x.x.10 and x.x.x.255, as they are often reserved for standard network services. This is a required parameter.
  - **Default Gateway** - Define a default gateway address for use with the default gateway. This is a required parameter.
- **DNS Forwarding** - Select this option to allow a DNS server to translate domain names into IP addresses. If this option is not selected, a primary and secondary DNS resource must be specified. DNS forwarding is useful when a request for a domain name is made but the DNS server, responsible for converting the name into its corresponding IP address, cannot locate the matching IP address.

- **Primary DNS** - Enter an IP Address for the main Domain Name Server providing DNS services for the Access Point’s LAN interface.

- **Secondary DNS** - Enter an IP Address for the backup Domain Name Server providing DNS services for the Access Point’s LAN interface.

17. Select **Next**. The Typical Setup Wizard displays the **Wireless LAN Setup** screen to set the Access Point's Wireless LAN interface configuration.

### WLAN 1 Configuration

![WLAN 1 Configuration](image)

- **SSID**
  - **WLAN_01**
  - *What is this?*

- **WLAN Type**
  - **No Authentication and No Encryption**  *What is this?*
  - **Captive Portal Authentication and No Encryption**  *What is this?*
  - **PSK authentication, WPA2 encryption**  *What is this?*

18. Set the following WLAN1 Configuration parameters:

- **SSID** - Configure the SSID for the WLAN.

- **WLAN Type** - Configure the encryption and authentication to use with this WLAN.

  - **No Authentication and No Encryption** - Configures a network without any authentication. This option also configures the network without encryption. This means that any data transmitted through the network is in plain text. Any device between end points can see the information transmitted. This is the least secure of all network configurations.

  - **Captive Portal Authentication and No Encryption** - Configures a network that uses a RADIUS server to authenticate users before allowing them on to the network. Once on the network, no encryption is used for the data being transmitted through the network. Select this option to use a Web page (either internally or externally hosted) to authenticate users before access is granted to the network.

  - **PSK authentication, WPA2 encryption** - Configures a network that uses PSK authentication and WPA2 encryption. Select this option to implement a pre-shared key that must be correctly shared between the Access Point and requesting clients using this WLAN.
19. Select **Next**. The Typical Setup Wizard displays the **RADIUS Server Configuration** screen if required. Otherwise, the **Typical Setup Wizard** displays the **Summary and Commit** screen.

20. Use the **Radius Server Configuration** screen to configure the users for the onboard RADIUS server. Use the screen to add, modify and remove RADIUS users.

Some WiLANs require authentication using the onboard RADIUS server. User accounts must be added for all users that should be authorized by the server.

<table>
<thead>
<tr>
<th>Username</th>
<th>Description</th>
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</table>
21. Select Add User to display the dialog to enter user information to add to the RADIUS server user database.

22. Enter the following user information:
   - Username - Provide a user name used to authenticate the user.
   - Password - Provide a password used to authenticate the user.
   - Confirm Password - Confirm the password by entering the same password as entered in the Password field.
   - Description - Provide a description to identify the user created in the RADIUS server database.

23. To create the entry in the RADIUS server database and add another user, select Create. To create the entry in the RADIUS server database and close the Add User dialog, select Create & Close.

24. Select Modify User on the RADIUS Server Configuration screen to modify information for an existing user from the RADIUS database. Highlight the user entry then select Modify User.

25. Select Delete User on the RADIUS Server Configuration screen to remove information for an existing user from the RADIUS database. Highlight the user entry and select Delete User.

26. Select Confirm on the dialog displayed. The entry for the user is removed from the RADIUS database.

27. To dismiss the dialog without adding, modifying or removing entries in the RADIUS server database, select Cancel.
28. Select **Next**. The Typical Setup Wizard displays the **Summary and Commit** screen to summarize the screens (pages) and settings updated using the Typical Setup Wizard.

- **Access Point Type Page**
  - Access Point Type: Standalone AP

- **Networking Mode Page**
  - Networking Mode: Router Mode

- **LAN Configuration Page**
  - LAN Configuration Type: Static IP Address/Subnet
  - VLAN ID for the LAN Interface: 1
  - Static IP Address/Subnet: 192.168.13.250/4

- **WAN Configuration Page**
  - WAN Configuration Type: Use DHCP
  - Port to External: GE1 Port

**No user intervention or additional settings are required. It's an additional means of validating the Access Point's updated configuration before it's deployed. However, if a screen displays settings not intended as part of the initial configuration, then any screen can be selected again from within the Navigation Panel and its settings modified accordingly.**

29. If the configuration displays as intended, select **Save/Commit** to implement these settings to the Access Point's configuration. If additional changes are warranted based on the summary, either select the target page from the **Navigational Panel**, or use the **Back** and **Next** buttons to scroll to the target screen.
4 Specifications

4.1 Electrical Characteristics
An AP-8122 model Access Point has the following electrical characteristics:

- **Operating Current & Voltage**
  - 48VDC, 0.625A (AUX input voltage)
  - 48VDC, 0.75A (PWRS-14000-247R power supply)
  - 802.3at, 25.5W (AP-PSBIAS-2P3-ATR Power Injector)

4.2 Physical Characteristics
An AP-8122 model Access Point has the following physical characteristics:

- **Dimensions**
  - 10.2 inches x 7.2 inches x 1.9 inches
  - 25.9 cm x 18.3 cm x 4.85 cm

- **Housing**
  - Plastic cover with metal base

- **Weight**
  - 3.46 lbs / 1.57 kg

- **Operating Temperature**
  - 32°F to 104°F/0°C to 40°C

- **Storage Temperature**
  - -40°F to 185°F/-40°C to 85°C

- **Operating Humidity**
  - 5 to 95% Relative Humidity non-condensing

- **Storage Humidity**
  - 85% Relative Humidity non-condensing

- **Operating Altitude (max)**
  - 8,000 ft @ 28C

- **Storage Altitude (max)**
  - 30,000 ft @ 12C

- **Electrostatic Discharge**
  - +/-15kV Air and +/-8kV Contact @ 50% Relative Humidity
4.3 Radio Characteristics
The AP-8122 model Access Point has the following radio characteristics:

**Data Rates Supported**
- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11g: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, and 54 Mbps
- 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps
- 802.11n: MCS 0-23 up to 450 Mbps

**Wireless Medium**
- Direct Sequence Spread Spectrum (DSSS)
- Orthogonal Frequency Division Multiplexing (OFDM)
- Spatial multiplexing (MIMO)
- Transmit Beamforming

**Network Standards**
- 802.11a, 802.11b, 802.11g, 802.3, 802.11n

**Transmit Power Adjustment**
- 1dB increments
5 Regulatory Information

5.1 Regulatory Information
This guide applies to the following Model Numbers: AP-8122.
All Zebra devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required.
Local language translations are available at the following website: www.zebra.com/support
Any changes or modifications to Zebra equipment, not expressly approved by Zebra could void the user’s authority to operate the equipment.
Zebra devices are professionally installed, the Radio Frequency Output Power will not exceed the maximum allowable limit for the country of operation.
Antennas: Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could cause damage and may violate regulations.

5.2 Wireless Device Country Approvals
Regulatory markings, subject to certification, are applied to the device signifying the radio(s) is/are approved for use in the following countries: United States, Canada, Japan, China, S. Korea, Australia, and Europe 1
Please refer to the Declaration of Conformity (DoC) for details of other country markings. This is available at: www.zebra.com/doc

Note: For 2.4GHz or 5GHz Products: Europe includes, Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.
Operation of the device without regulatory approval is illegal.

5.2.1 Country Selection – Note for AP & Wireless Controller
Select only the country in which you are using the device. Any other selection will make the operation of this device illegal. The US version of Access Point will only have US listed in the country selection table. The US version will be sold /used in the US protectorates: American Samoa, Guam, Puerto Rico, US Virgin Islands.

5.2.2 Frequency of Operation – FCC and IC
You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders).

2.4 GHz Only
The available channels for 802.11bg operation in the US are Channels 1 to 11. The range of channels is limited by firmware.

5 GHz Only
The use in the UNII (Unlicensed National Information Infrastructure) band 1 (5150-5250 MHz) is restricted to Indoor Use Only; any other use will make the operation of this device illegal.

Industry Canada Statement:
Caution: The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-Channel mobile satellite systems. High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.


5.3 Health and Safety Recommendations

5.3.1 Warnings for the use of Wireless Devices

Please observe all warning notices with regard to the usage of wireless devices.

5.3.2 Potentially Hazardous Atmospheres – Fixed Installations

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders).

5.3.3 Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. When installed adjacent to other equipment, it is advised to verify that the adjacent equipment is not adversely affected.

Pacemakers

Pacemaker manufacturers recommended that a minimum of 15cm (6 inches) be maintained between a handheld wireless device and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with independent research and recommendations by Wireless Technology Research.

Persons with Pacemakers:

- Should ALWAYS keep the device more than 15cm (6 inches) from their pacemaker when turned ON.
- Should not carry the device in a breast pocket.
- Should use the ear furthest from the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, turn OFF your device.

Other Medical Devices

Please consult your physician or the manufacturer of the medical device, to determine if the operation of your wireless product may interfere with the medical device.

5.4 RF Exposure Guidelines

5.4.1 Safety Information

Reducing RF Exposure - Use Properly

Only operate the device in accordance with the instructions supplied.
5.4.2 International
The device complies with internationally recognized standards covering human exposure to electromagnetic fields from radio devices. For information on “International” human exposure to electromagnetic fields refer to the Declaration of Conformity (DoC) at: www.zebra.com/doc

5.4.3 EU
Remote and Standalone Antenna Configurations
To comply with EU RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop of similar configurations must operate with a minimum separation distance of 20cm from all persons.

5.4.4 US and Canada
Co-located statement
To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must not be co-located or operating in conjunction with any other transmitter/antenna except those already approved in this filling.

Remote and Standalone Antenna Configurations
To comply with FCC RF exposure requirements, Antennas that are mounted externally must be professionally installed at a fixed location and operate with a minimum distance of 35cm from all persons.

5.4.5 IC Radiation Exposure Statement
This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncon-trolled environment. This equipment should be installed and operated with minimum distance 35cm between the radiator & your body.

Déclaration d’exposition aux radiations:
Cet équipement est conforme aux limites d’exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 35cm de distance entre la source de rayonnement et votre corps.

5.5 Power Supply
This device must be powered from a 802.3af or 802.3at compliant power source which has been certified by the appropriate agencies, or by a LISTED Type no. PWRS-14000-247R or AP-PS8IAS-2P3-ATR, direct plug-in power supply, marked Class 2 or LPS (IEC60950-1, SELV). Use of alternative Power Supply will invalidate any approvals given to this unit and may be dangerous.
5.6 Radio Frequency Interference Requirements—FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

5.6.1 Radio Transmitters (Part 15)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The use of 5 GHz WLAN’s, for use in the US, have the following restrictions:

- Notched Band 5.60 - 5.65 GHz

5.6.2 Radio Transmitters

For RLAN Devices:

The use of 5 GHz RLAN’s, for use in Canada, have the following restrictions:

- Restricted Band 5.60 – 5.65 GHz

This device complies with RSS 210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Ce dispositif est conforme à la norme CNR-210 d’Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Label Marking: The Term “IC:” before the radio certification only signifies that Industry Canada technical specifications were met.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication.

The device could automatically discontinue transmission in case of absence of information to trans-mit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

The maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.

In compliance with respective local regulatory law, the AP software provides professional installers the option to configure the antenna type and antenna gain for approved antennas.

This radio transmitter (identify the device by certification number, or model number if Category I) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type.
indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s’il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l’impédance requise pour chaque type d’antenne. Les types d’antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l’exploitation de l’émetteur.

Refer to section 2.8 of this guide for a listing of the 2.4 and 5 GHz antennas initially approved for use with the AP-8122.

5.7 CE Marking and European Economic Area (EEA)

The use of 2.4 GHz RLAN’s, for use through the EEA, have the following restrictions:

- Maximum radiated transmit power of 100 mW EIRP in the frequency range 2.400 - 2.4835 GHz.
- Italy requires a user license for outside usage.

5.8 Statement of Compliance

Zebra hereby, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. A Declaration of Conformity may be obtained from www.zebra.com/doc.

5.9 Japan (VCCI) - Voluntary Control Council for Interference

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会（V C C I）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをして下さい。

5.10 Korea Warning Statement for Class B

<table>
<thead>
<tr>
<th>기종별</th>
<th>사용자 안내문</th>
</tr>
</thead>
<tbody>
<tr>
<td>B급 기기 (가정용 방송통신기자재)</td>
<td>이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.</td>
</tr>
</tbody>
</table>
5.11 Other Countries

Australia
Use of 5GHz RLAN’s in Australia is restricted in the following band 5.50 – 5.65GHz.

Brazil
Declarações Regulamentares para AP-8122 - Brasil
Nota: A marca de certificação se aplica ao Transceptor, modelo AP-8122. Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário. Para maiores informações sobre ANATEL consulte o site: www.anatel.gov.br

Chile
Este equipo cumple con la Resolución No 403 de 2008, de la Subsecretaria de telecomunicaciones, relativa a radiaciones electromagnéticas.

China

Mexico
Restrict Frequency Range to: 2.450 – 2.4835 GHz.

S. Korea
무선설비는 문화 보호 관련기관이 적음

 당해 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.
Taiwan

臺灣

低功率電波輻射性電機管理辦法

第十二條
經型式認證合格之低功率電波電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條
低功率電波電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停止使用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信規定之作業之無線電通信。
低功率電波電機須於受管區內通訊或工業、科學及醫療用電波輻射性電機設備之干擾。

在 5.25-5.35 兆赫頻帶內操作之無線資訊傳輸設備，限於室內使用

無線接入點 (專業安裝)

• 「本公司於說明書中提供所有必要資訊以指導使用者/安裝者正確的安裝及操作」
  警語。
  並於該中文使用說明書及器材上標示
• 「本器材須由專業工程人員安裝及設定，始得設置使用，且不得直接販售給一般消費
  者」警語。

Thailand

เครื่องวิทยุดิบและอุปกรณ์นี้ มีความเสถียรตลอดตามข้อกำหนดของ ยุทธ.
5.12 Waste Electrical and Electronic Equipment (WEEE)

**English:** For EU Customers: All products at the end of their life must be returned to Zebra for recycling. For information on how to return product, please go to: www.zebra.com/weee.

**Français:** Clients de l’Union Européenne: Tous les produits en fin de cycle de vie doivent être retournés à Zebra pour recyclage. Pour de plus amples informations sur le retour de produits, consultez : www.zebra.com/weee.

**Español:** Para clientes en la Unión Europea: todos los productos deberán entregarse a Zebra al final de su ciclo de vida para que sean reciclados. Si desea más información sobre cómo devolver un producto, visite: www.zebra.com/weee.

**Български:** За клиенти от ЕС: След края на полезния им живот всички продукти трябва да се връщат на Zebra за рециклиране. За информация относно връщането на продукти, моля отидете на адрес: www.zebra.com/weee.


**Italiano:** per i clienti dell’UE: tutti i prodotti che sono giunti al termine del rispettivo ciclo di vita devono essere restituiti a Zebra al fine di consentirne il riciclaggio. Per informazioni sulle modalità di restituzione, visitare il seguente sito Web: www.zebra.com/weee.

**Português:** Para clientes da UE: todos os produtos no fim de vida devem ser devolvidos à Zebra para reciclagem. Para obter informações sobre como devolver o produto, visite: www.zebra.com/weee.

**Nederlands:** Voor klanten in de EU: alle producten dienen aan het einde van hun levensduur naar Zebra te worden teruggezonden voor recycling. Raadpleeg www.zebra.com/weee voor meer informatie over het terugzenden van producten.

**Polski:** Klienci z obszaru Unii Europejskiej: Produkty wycofane z eksploatacji należy zwrotować do firmy Zebra w celu ich utylizacji. Informacje na temat zwrotu produktów znajdzieš siê na stronie internetowej www.zebra.com/weee.

**Čeština:** Pro zákazníky z EU: Všechny produkty je nutné po skončení jejich životnosti vrátit společnosti Zebra k recyklaci. Informace o způsobu vrácení produktu najdete na webové stránce: www.zebra.com/weee.

**Eesti:** EL klientidele: kõik toodetud, kellel on lõppedud kasutusel, toodetud Zebra poolt pruugivõimalus. Lisainfot toodetutel kohta jagame Enese internetist, aadress on: www.zebra.com/weee.

**Magyar:** Az EU-ban vásárlóknak: Minden tönkrement terméket a Zebra vállalathoz kell eljuttatni újrahasznosítás céljából. A termék visszajuttatásának módjával kapcsolatos tudnivalókért látogasson el a www.zebra.com/weee weboldalra.

**Svenska:** För kunder inom EU: Alla produkter som uppnått sin livslängd måste returneras till Zebra för återvinning. Information om hur du returnerar produkten finns på www.zebra.com/weee.

**Suomi:** Asiakkaat Euroopan unionin alueella: Kaikki tuotteet on palautettava kierrätettäväksi Zebra-yhtiöön, kun tuotetta ei enää käytetä. Lisätietoja tuotteiden palauttamisesta on osoitteessa www.zebra.com/weee.

**Dansk:** Til kunder i EU: Alle produkter skal returneres til Zebra til recirkulering, når de er udtjent. Læs oplysninger om returering af produkter på: www.zebra.com/weee.

**Ελληνικά:** Για πελάτες στην Ε.Ε.: Όλα τα προϊόντα, στο τέλος της διάρκειας ζωής τους, πρέπει να επιστρέφονται στην Zebra για ανακύκλωση. Για περαιτέρω πληροφορίες σχετικά με την επιστροφή ενός προϊόντος, επισκεφθείτε τη διεύθυνση www.zebra.com/weee στο Διαδίκτυο.
5.13 TURKISH WEEE Statement of Compliance

EEE Yönetmelğine Uygundur
6 Support

If you have a problem with your equipment, contact support for your region.

Contact information is available at: www.zebra.com/support.

When contacting Support, please provide the following information:

- Serial number of the unit
- Model number or product name
- Software type and version number

Support responds to calls by e-mail, telephone, or fax within the time limits set forth in support agreements. If you purchased your product from a business partner, contact that business partner for support.

Customer Support Web Sites

Support, located at www.zebra.com/support provides information and online assistance including developer tools, software downloads, product manuals and online repair requests.

Manuals

www.zebra.com/support
# 7 AP-8122 Access Point China ROHS Compliance

![Image of AP-8122 Access Point](image-url)

<table>
<thead>
<tr>
<th>部件名称 (Parts)</th>
<th>有害物质</th>
<th>含量 ( \text{(Pb)} )</th>
<th>水银 ( \text{(Hg)} )</th>
<th>铅 ( \text{(Cd)} )</th>
<th>六价铬 ( \text{(Cr(VI))} )</th>
<th>多溴联苯 ( \text{(PBB)} )</th>
<th>多溴联苯醚 ( \text{(PBDE)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>金属部件 (Metal Parts)</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>电路模块 (Circuit Modules)</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>电缆及电缆组件 (Cables and Cable Assemblies)</td>
<td>X</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>塑料和聚合物部件 (Plastic and Polymeric Parts)</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>光学和光学组件 (Optics and Optical Components)</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>电池 (Batteries)</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

本表格依据SJ/T 11364 的规定编制。

0：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572 规定的限量要求。（企业可在此处，根据实际情况对上表中打“X”的技术原因进行进一步说明。）

This table was created to comply with China RoHS requirements for the AP-8122 Access Point.