



**Ruckus Wireless™
ZoneFlex™ SmartCell™ 8800
(SC8800-S) Outdoor Access Point**

Installation Guide

Part Number 800-70420-001 Rev B
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Contents

1	About this Installation Guide	1
	Using this Installation Guide	1
	Related Documentation	3
	Documentation Feedback	3
2	Planning the SC8800-S AP Installation	4
	About the AP	4
	AP Connectors and LEDs	6
	Pointing the Internal GPS Antenna	10
	Performing a Site Survey	11
	Planning the Physical Installation	12
	Notes on Power Sources	12
	Deciding How to Power the AP	12
3	Preparing the SC8800-S AP at the Depot and Shipping to the Field	13
	Unpacking the AP	13
	Package Contents	13
	Mounting Kit Contents	14
	Powering the AP	14
	Checking LED Operation	14
	Configuring the AP for Management by ZoneDirector	15
	Connecting the AP to ZoneDirector	15
	Verifying the AP Registration	15
	Configuring the AP for Management by FlexMaster or for Standalone Operation ..	17
	Configuring the Administrative Computer	17
	Connecting the AP to the Administrative Computer	19
	Logging In to the Access Point's Web Interface	19
	Configuring Common Wireless Settings	20
	Configuring Wireless # Settings	22
	(Optional) Setting the FlexMaster Server Address	23

Verifying AP Operation	25
Connecting the AP to the Network	25
Associating a Wireless Client with the AP	26
Checking the TR069 Status (FlexMaster Management Only)	26
Disconnecting the AP from the Power Source and the Network	27
Disconnecting the AP from the Administrative Computer	27
Restoring the Administrative Computer's Network Settings	27
Shipping the AP to the Field	28
4 Installing the SC8800-S AP in the Field	29
Installation Components and Constraints	29
Deploying the Access Point	32
Connecting and Sealing the RJ-45 Cables	33
Preparing the Power Connections	34
Mounting the Access Point	37
Mounting the U-Joint Bracket to the Main Mounting Bracket	39
Attaching the Main Mounting Bracket to a Flat Surface	39
Attaching the Main Mounting Bracket to a Wooden Pole	40
Attaching the Main Mounting Bracket to a Metal Pole	42
Mounting the Hook Bracket to the U-Joint Bracket	43
Assembling the AP Attachment Bracket and the Access Point	44
Attaching the AP Attachment Bracket and AP to the Hook Bracket	45
Safety-Cabling the AP	46
Mounting External Antennas (Optional)	48
Verifying Access Point Operation	50
Powering the AP	50
Connecting the AP to the Network	53
Configuring the External Antenna Gain	54
Associating a Wireless Client with the AP	59
Checking the TR069 Status (FlexMaster Management only)	59
5 What to Do Next	60
Changing the Administrative Password	60
Configuring the Security Settings	60
Configuring Advanced Settings and Features	60
Reading Related Documentation	60

Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts	61
Appendix B: Resetting the Access Point to Factory Default Settings	65
Appendix C: Installer Mounting Dimensions	66

1 About this Installation Guide

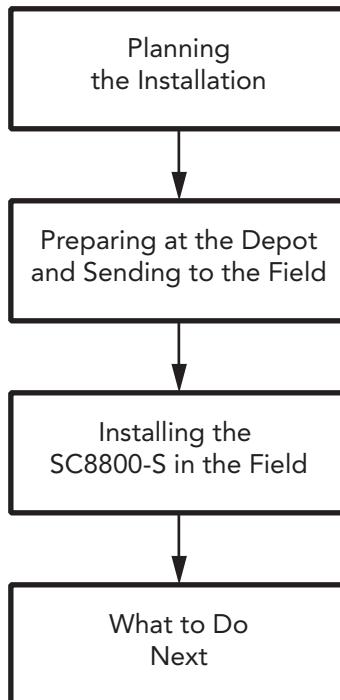
This *Installation Guide* provides information on how to add the Ruckus Wireless™ Smart-Cell™ 8800 Access Point (SC8800-S AP, or AP) to your Ruckus Wireless network. Topics covered in this guide include installing, basic configuring, and device mounting.

This guide is intended for use by those responsible for installing and setting up network equipment. Consequently, it assumes a basic working knowledge of local area networking, wireless networking, and wireless devices.

Using this Installation Guide

The AP installation is completed with four main steps. Each step includes some substeps. [Figure 1](#) shows the main steps, and [Table 1](#) includes the substeps.

Figure 1. Adding an SC8800-S AP to an existing Ruckus Wireless network flowchart



About this Installation Guide

Using this Installation Guide

Table 1. Adding an SC8800-S AP to an Existing Ruckus Wireless network

Section	Heading
2	<u>Planning the SC8800-S AP Installation</u> <ul style="list-style-type: none">• About the AP• AP Connectors and LEDs• Pointing the Internal GPS Antenna• Performing a Site Survey• Planning the Physical Installation
3	<u>Preparing the SC8800-S AP at the Depot and Shipping to the Field</u> <ul style="list-style-type: none">• Unpacking the AP• Powering the AP• Configuring the AP for Management by ZoneDirector• Configuring the AP for Management by FlexMaster or for Standalone Operation• Verifying AP Operation• Shipping the AP to the Field
4	<u>Installing the SC8800-S AP in the Field</u> <ul style="list-style-type: none">• Installation Components and Constraints• Deploying the AP• Mounting the AP• Verifying AP Operation
5	<u>What to Do Next</u> <ul style="list-style-type: none">• Changing the Administrative Password• Configuring the Security Settings• Configuring Advanced Settings and Features• Reading Related Documentation



NOTE: The AP can be managed using an AP web browser interface, an AP command line interface (CLI), and using a simple network management protocol (SNMP) interface, such as Ruckus Wireless ZoneDirector™ or FlexMaster™. This document contains configuring instructions using these interfaces, as appropriate.

Related Documentation

In addition to this guide, each Ruckus Wireless SC8800-S AP documentation set includes the following:

- **User Guide:** Provides detailed information on how to configure the AP. The *ZoneFlex Outdoor AP User Guide* is available for download on the Ruckus Wireless Support Web site at
<https://support.ruckuswireless.com/documents>
(login required)
- **Release Notes:** Provides late-breaking information about the current software release, including new features, enhancements, and known issues. If the information in the Release Notes differs from the information in this guide, follow the instructions in the Release Notes.
- **Online Help:** Accessible from the AP's web interface, the Online Help provides information that helps you configure the device from the web interface.

Documentation Feedback

Ruckus Wireless is interested in improving its documentation and welcomes your

comments and suggestions. You can email your comments to Ruckus Wireless at

docs@ruckuswireless.com

When contacting us, please include the following information:

- Document title
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- *ZoneFlex SmartCell SC8800-S Outdoor Access Point Installation Guide*
- Part number: 800-70420-001 Rev B
- Page 29

2 Planning the SC8800-S AP Installation

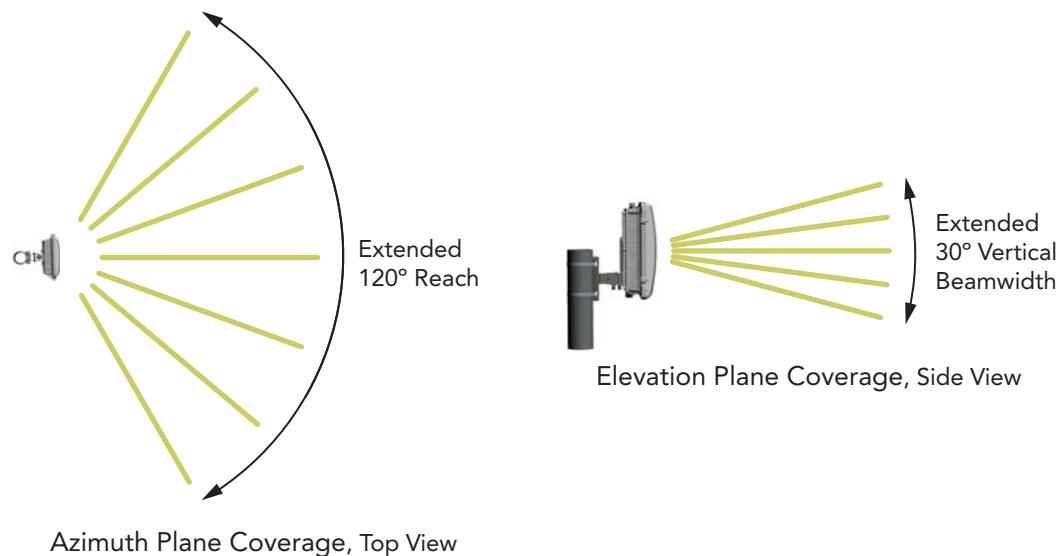
Before installing the SC8800-S AP, it is helpful to verify the version and to plan the AP installation:

- [About the AP](#)
- [Pointing the Internal GPS Antenna](#)
- [Performing a Site Survey](#)
- [Planning the Physical Installation](#)
- [Deciding How to Power the AP](#)

About the AP

The AP is equipped with 120-Degree Sector 2.4GHz and 5GHz internal antennas, and these antennas can be deployed where 2.4GHz and 5GHz horizontal beamforming can provide extended reach and throughput to a 120-degree coverage area. See [Figure 2](#).

Figure 2. Internal antenna 120-Degree sector coverage



The AP is equipped with two 5GHz N-type connectors, which allow operators to use up to two customer-supplied external 5GHz antennas instead of the internal 5GHz antennas. These external antennas can support operator-defined coverage areas and point-to-point deployments. For instance, [Figure 3](#) shows an AP used with omni external antennas, and [Figure 4](#) shows two APs used in a point-to-point backhaul deployment.

Figure 3. Typical AP omni deployment with an external antenna

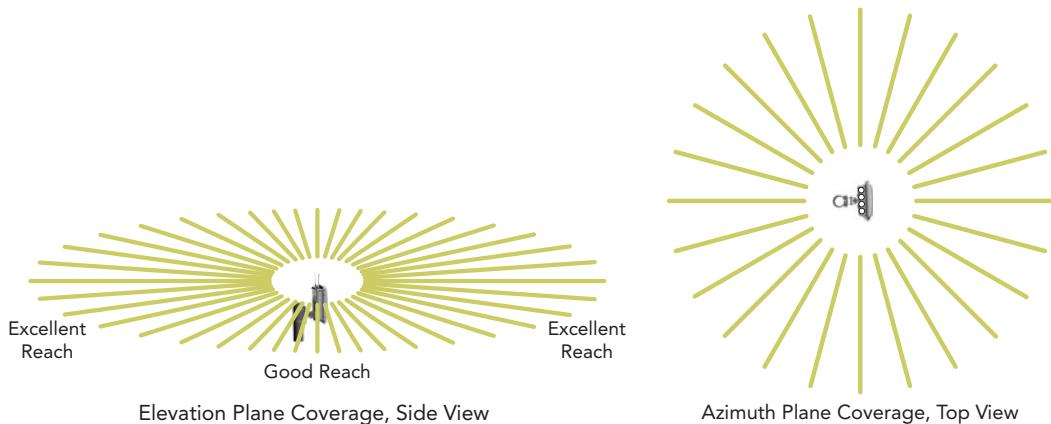
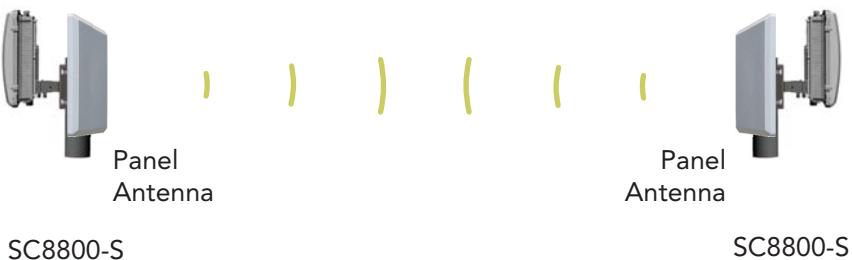


Figure 4. Typical AP long-range point-to-point deployment with external antennas



AP Connectors and LEDs

[Figure 5](#) identifies the top-panel connectors on the AP. [Table 2](#) describes these connectors.

Figure 5. Top-panel connectors

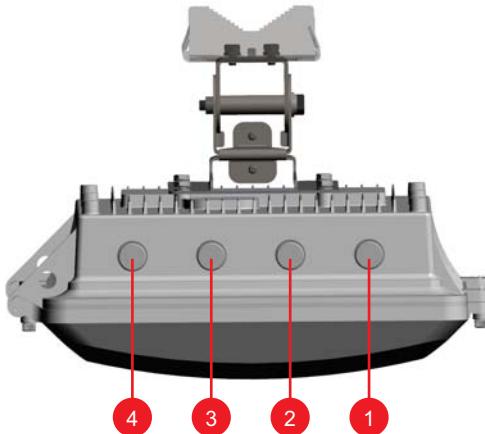


Table 2. Top-panel connectors

No.	Label	Description
1	5 GHz	5GHz 50-ohm N-type connector. Can be used with an external antenna for ANT 0 port operator-defined coverage areas and point-to-point deployments.
2	2.4 GHz	2.4GHz 50-ohm N-type connector. Can be used with an external antenna for ANT 2 port operator-defined coverage areas and point-to-point deployments.
3	2.4 GHz	2.4GHz 50-ohm N-type connector. Can be used with an external antenna for ANT 0 port operator-defined coverage areas and point-to-point deployments.
4	5 GHz	5GHz 50-ohm N-type connector. Can be used with an external antenna for ANT 2 port operator-defined coverage areas and point-to-point deployments.

[Figure 6](#) identifies the AP bottom-panel connectors and LED locations on the AP. [Table 3](#) describes these connectors and LEDs.

Figure 6. Bottom-panel connectors and LED locations

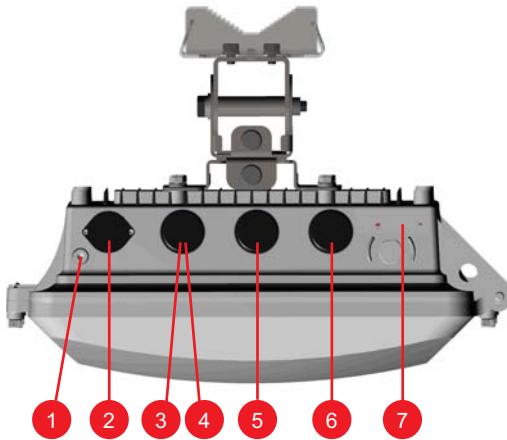


Table 3. Bottom-panel connectors

No.	Label	Description
1	Earth ground screw	Use this screw to attach an earth ground to the AP as required by local regulations.
2	AC power connector	You can use AC to supply power to the AP, in addition to using PoE.
3	PoE OUT RJ45 data connector	Supports 10/100/1000Mbps connections and PoE out. If the AP is powered using AC or the Ruckus Wireless PoE injector (ordered separately), then this port can supply 802.3af (15.4W) PoE to a connected PoE-capable device (for example, an IP-based surveillance camera). This port alternatively can supply 802.3at (25.5W) PoE when used with 20m (65.6 ft.) or shorter CAT5e UTP or better cable.
4	RESET button	This button resets the AP to its factory defaults, and is mounted under the RESET/PoE OUT RJ-45 waterproof gland. Refer to "Appendix B: Resetting the Access Point to Factory Default Settings" on page 65 to access the reset button and reset the AP.
5	PoE IN RJ45 data connector	Supports 10/100/1000Mbps connections, connects to the network and receives Power over Ethernet (PoE) from the Ruckus Wireless 60W PoE injector. (Refer to "Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts" on page 61 to order a Ruckus Wireless 60W PoE injector.)
6	FIBER port	This waterproof gland allows you to run a fiber-optic cable into the SC8800-S chassis to an optional fiber modem.
7	LEDs	See Figure 7 .

[Figure 7](#) identifies the AP bottom-panel LED locations on the AP. [Table 4](#) describes these connectors and LEDs.

Figure 7. LEDs

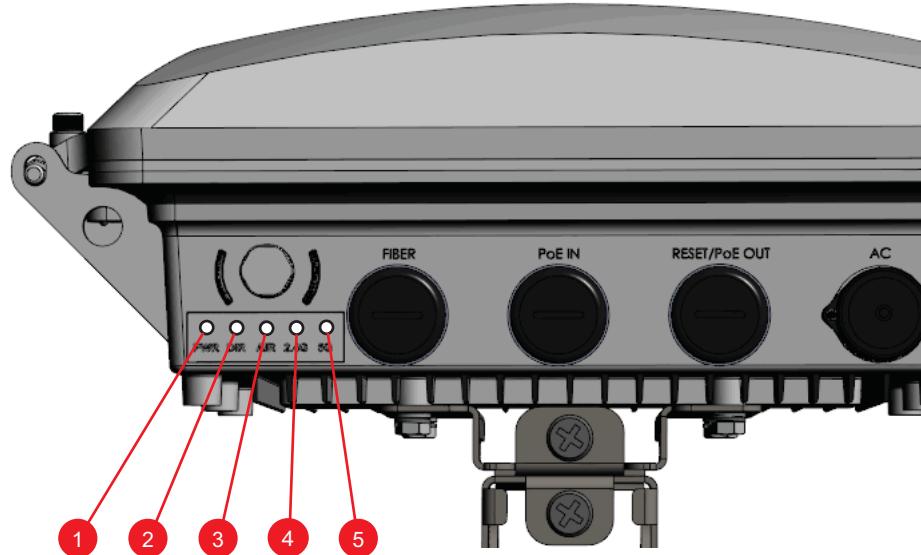


Table 4. LED descriptions

No.	Label	Description
1	PWR LED	<ul style="list-style-type: none"> Off: No power is available, or the AP is not connected to a power source. Solid Red: The AP is powering on. Solid Green: The AP is connected to a power source and has completed its power-on sequence.
2	DIR LED	<ul style="list-style-type: none"> Off: The AP is NOT managed by ZoneDirector (standalone mode). Solid Green: The AP is managed by ZoneDirector and connection to ZoneDirector has been established. Fast Flashing Green (0.5Hz): The AP is managed by ZoneDirector and is currently receiving configuration settings (provisioning) or a firmware update. Slow Flashing Green (2Hz): The AP is managed by ZoneDirector, but is currently unable to communicate with ZoneDirector.

Table 4. LED descriptions (Continued)

No.	Label	Description
3	AIR LED	<ul style="list-style-type: none"> <i>Off</i>: The AP is in standalone mode, or acting as a Root AP if in mesh mode. <i>Solid Green</i>: The AP is functioning as a Mesh AP (MAP) and the uplink signal quality is good (>24dBm). <i>Fast Flashing Green (0.5Hz)</i>: The AP is functioning as a Mesh AP (MAP) and the wireless signal to its uplink AP is fair. <i>Slow Flashing Green (2Hz)</i>: The AP is in mesh mode, but the AP is still searching for a mesh uplink.
4	2.4G LED	<ul style="list-style-type: none"> <i>Off</i>: WLAN service is down. <i>Amber (Yellow)</i>: WLAN service is up but with no client connected. <i>Solid Green</i>: WLAN service is up with at least one client connected.
5	5G LED	<ul style="list-style-type: none"> <i>Off</i>: WLAN service is down. <i>Amber (Yellow)</i>: WLAN service is up but with no clients or downlink MAPs associated/connected. <i>Solid Green</i>: WLAN service is up with at least one client is associated. No downlink MAPs are connected. <i>Fast Flashing Green (0.5Hz)</i>: The WLAN is up, at least one downlink MAP is connected, and at least one client is associated. <i>Slow Flashing Green (2Hz)</i>: The WLAN is up and at least one downlink MAP is connected. No clients are associated.

Pointing the Internal GPS Antenna

The AP includes an internal GPS antenna. When the AP is to be used with the optional GPS feature enabled, the GPS antenna must be mounted outdoors and have as clear a view of the sky as possible (as close as possible to 360 degrees, and with no obstructing trees or buildings). The GPS antenna must not be installed where it can be covered with snow buildup to avoid attenuating the GPS signal. These requirements must be met to ensure that the GPS module can obtain lock and provide accurate GPS time and position. If the GPS antenna has less than a clear 360-degree view of the sky, then the GPS module may experience degraded performance.

Figure 8. GPS Antenna Location under Radome

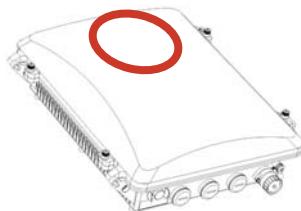
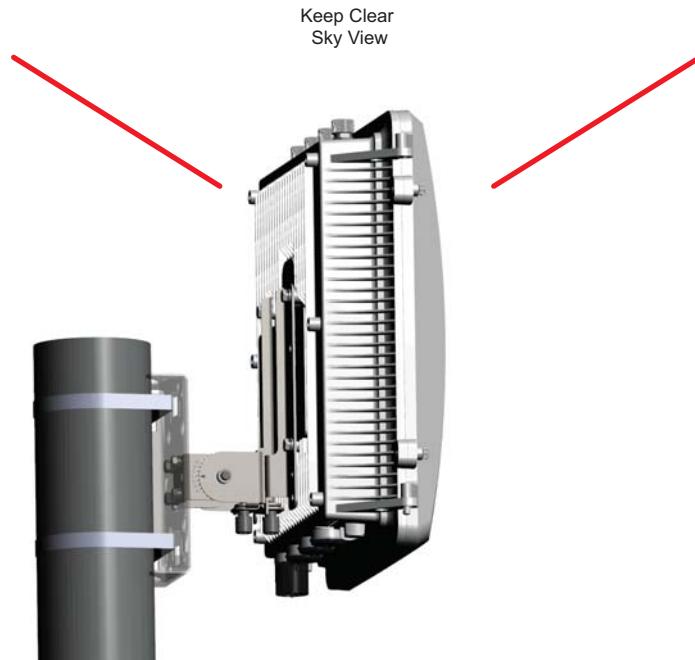


Figure 9. Mounted GPS Antenna Position



Performing a Site Survey

Perform a site survey to determine the optimal AP placement or maximum range, coverage, and network performance. Ruckus Wireless Support can supply Site Survey best practices information.

The location and orientation that you choose for the AP play a critical role in the performance of your wireless network. In general, Ruckus Wireless recommends installing the AP away from obstructions and sources of interference and ensuring that the AP's best coverage zone (refer to ["About the AP" on page 4](#)) is pointing in the general direction of its wireless clients or associated bridge units.

When performing a site survey, consider the following factors:

- *Data rates*: Range is generally inversely proportional to data rates. The maximum radio range is achieved at the lowest workable data rate. Higher data rates will generally be achieved at closer distances.
- *Antenna type and placement*: Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, radio range is increased by mounting the radio higher off of the ground with the AP oriented so that the dome is facing down (for recommended orientation examples, refer to ["About the AP" on page 4](#)).
- *Physical environment*: Clear or open areas provide better radio range than closed or filled areas. The less cluttered the operating environment, the greater the wireless range.
- *Obstructions, building materials, and sources of interference*: Physical obstructions, such as concrete pillars, steel beams, filing cabinets, buildings and trees, can block or hinder wireless communication. Avoid installing the AP in an environment where there is an obstruction between sending and receiving devices. A number of machines and electronic devices that emit radio waves, such as cranes, wireless phones, microwave ovens, and satellite dishes, interfere with and block wireless signals. Building materials used in construction also influence radio signal penetration. For example, drywall construction permits greater range than concrete blocks.
- *GPS Considerations*: If the AP is to be used with the optional GPS feature enabled, then the AP must be mounted outdoors and have as clear a view of the sky as possible (as close as possible to 360 degrees) to help the GPS module obtain lock and provide accurate GPS time and position. (Refer to ["Pointing the Internal GPS Antenna" on page 10](#).) The GPS antenna must not be installed where it can be covered with snow buildup to avoid attenuating the GPS signal. If the GPS antenna has less than a clear 360-degree view of the sky, then the GPS module may experience degraded performance.

Planning the Physical Installation

The AP can be installed indoors or outdoors, such as on an interior wall or ceiling, on the exterior roof overhang of a building, or on a streetlight pole. The GPS antenna must be installed outdoors for proper GPS operation.

Notes on Power Sources

- The AP only requires one power source (either AC or PoE), but can be powered by AC and PoE at the same time.
- The AP may be powered by AC power or by PoE input using an Ruckus Wireless 60W PoE injector (part number 902-0180-XX00, where XX is the country code).
- PoE OUT supports 802.3af (15.4W output) loads when the AP is operating off AC input power or when operating off the PoE input port using a high-power 60W PoE Injector.
- When AC powered and PoE is present, the AP draws power from the AC connection.
- The AP PoE Output supports high power peripheral devices up to 25W, such as a small cell or micro cell radio but only with the following restrictions: the PoE Output cable length between the AP and peripheral device is less than 8m (25 feet) and that the AP is operating off of AC Input power. High-power peripherals (up to 25W) may also be powered by an AP operating from the PoE Input using a high power 60W injector, provided that the PoE input cable length between the injector and AP is less than 8m (25 feet) and that the DC voltage at the AP PoE input connector is at least 44 VDC.

Deciding How to Power the AP

The AP can be powered using either AC power and/or Power over Ethernet (PoE). Use this information and the information in ["Installation Components and Constraints"](#) on [page 29](#) to determine how to power the AP.

AC Power

Ruckus Wireless supplies an AC power cable connector with the AP. The customer supplies the country-specific 3-wire AC power cable. The supported input voltages are 90-264 VAC at 50/60Hz.

The APs used in a mesh network generally use AC power.

Power over Ethernet

The customer orders a Ruckus Wireless 60W PoE injector (part number 902-0180-XX00, where XX is the country code).

The AP can be powered by 60W PoE to support 802.3at PoE Out to 27W. 802.3at (25.5W) PoE can be supported with 8m (25 ft.) or shorter CAT5e UTP or better cable, and an 8m (25 ft.) or shorter CAT5e UTP or better input cable. When AC powered and PoE is present, the AP draws power from the AC connection.

3 Preparing the SC8800-S AP at the Depot and Shipping to the Field

- [Unpacking the AP](#)
- [AP Connectors and LEDs](#)
- [Powering the AP](#)
- [Configuring the AP for Management by ZoneDirector](#)
- [Configuring the AP for Management by FlexMaster or for Standalone Operation](#)
- [Verifying AP Operation](#)
- [Shipping the AP to the Field](#)

Unpacking the AP

1. Open the ZoneFlex SC8800-S package, and then carefully remove the contents.
2. Return all packing materials to the shipping box, and put the box away in a dry location.
3. Verify that all items listed in ["Package Contents"](#) and ["Mounting Kit Contents"](#) are included in the package. Check each item for damage. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.



NOTE: ["Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts"](#) on [page 61](#) includes pictures and descriptions of these and other factory-orderable and customer-supplied parts.

Package Contents

A complete SC8800-S AP package contains all of the items listed below:

- SC8800-S Outdoor Access Point
- One AC power cable input end connector and cap
- Two M 25 data cable glands
- Service Level Agreement/Limited Warranty Statement
- Regulatory Statement
- Registration card
- Declaration of Conformity
- This *Installation Guide*
- Mounting kit (refer to ["Mounting Kit Contents"](#) for details)

Mounting Kit Contents



NOTE: ["Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts"](#) on [page 61](#) includes pictures and descriptions of these and other factory-orderable and customer-supplied parts.

- Main mounting bracket (1 piece)
- U-Joint Bracket (1 piece)
- Small 10mm M6 x 1 Hex Bolt with Lock and Flat Washers (9 sets)
- Hook Bracket (1 piece)
- Large 70mm M8x1.25 hex bolt with spring lock and flat washers (1 set)
- AP Attachment Bracket (1 piece)
- SAE32 steel clamps, 2.5-inch diameter (4 pieces)

Powering the AP



NOTE: You only need to connect one type of power source at this point, even if you are planning to use both PoE and AC power in your final deployment.

Apply power to the AP using one of these two methods:

- ["Powering the AP with AC"](#) on [page 51](#)
- ["Powering the Access Point with PoE"](#) on [page 52](#)

Checking LED Operation

Perform a spot-check using the LEDs to verify that the AP is operating normally. When the AP is operating normally and no wireless clients are associated with it:

- The **PWR** LED is green.
- The **2.4G** and **5G** LED shows slow blinking green. This indicates that there are no wireless clients connected to the AP's WLAN services.

You have checked the LED operation. Continue with ["Configuring the AP for Management by ZoneDirector"](#) on [page 15](#) or ["Configuring the AP for Management by FlexMaster or for Standalone Operation"](#) on [page 17](#).

Configuring the AP for Management by ZoneDirector

1. Collect required equipment and information:
 - One Cat5e or better Ethernet cable.
 - MAC address (12 alphanumeric digits) from the outside of the AP case.
2. Verify that the AP is powered on as described in ["Powering the AP" on page 14](#).

Connecting the AP to ZoneDirector



NOTE: In addition to using Layer 2 auto discovery to enable the Access Point to register with ZoneDirector, you can also use DHCP Option 43 or DNS. For more information, refer to the *ZoneDirector User Guide*.

3. If you are powering the AP with PoE, then continue with [Step 4](#). If you are powering the AP with AC, then continue with [Step 7](#).
4. Connect one end of the Ethernet cable to the *Data In* port on the PoE injector.
5. Connect the other end of the Ethernet cable to the same Layer 2 subnet as ZoneDirector. The same Layer 2 subnet means that there should not be any router between the AP and ZoneDirector.
The AP automatically discovers and registers with ZoneDirector.
6. You have completed connecting the AP to ZoneDirector. Continue with [Step 10](#).
7. Connect one end of the Ethernet cable to the **PoE IN** port on the AP.
8. Connect the other end of the Ethernet cable to the same Layer 2 subnet as ZoneDirector. The same Layer 2 subnet means that there should not be any router between the AP and ZoneDirector.
The AP automatically discovers and registers with ZoneDirector.
9. You have completed connecting the AP to ZoneDirector. Continue with [Step 10](#).

Verifying the AP Registration

10. Log in to ZoneDirector, and then go to the **Monitor > Access Points** page.
11. Look for the MAC address of the AP, and then in the *Action* column click the **Allow** icon. This allows the AP to register with ZoneDirector.

When the *Status* column shows **Connected**, this indicates that the AP has successfully registered with ZoneDirector.



NOTE: If the ZoneDirector is set to *Enable Mesh*, it automatically assigns the AP as a *Root AP*.

Continue with ["Verifying Access Point Operation"](#) on [page 50](#).

Configuring the AP for Management by FlexMaster or for Standalone Operation

1. Collect required equipment and information:

- An administrative computer (notebook computer) running Windows 7/Vista/XP/2000 with one wireless 802.11b/g/n network card and one Ethernet card installed.
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer.
- One Cat5e or better Ethernet cable.
- MAC address (12 alphanumeric digits) from the outside of the AP case.



NOTE: You may need to disable the firewall between the AP and the FlexMaster server to complete this procedure.

-
2. Verify that the AP is powered on as described in [“Powering the AP”](#) on [page 14](#).
 3. Continue with [“Configuring the Administrative Computer”](#) on [page 17](#).

Configuring the Administrative Computer



NOTE: The following procedure is applicable if the administrative computer is running Windows XP or Windows 7. If you are using a different operating system, refer to the documentation that was shipped with your operating system for information on how to modify the computer's IP address settings.

-
1. On your Windows 7 or Windows XP computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
 - On Windows 7, click **Start > Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Settings**.
 - On Windows XP, click **Start > Control Panel > Network Connections**.
 2. When the *Network Connections* window appears, right-click the icon for *Local Area Connection*, and then click **Properties**.



NOTE: Make sure that you configure the *Local Area Connection* properties, not the *Wireless Network Connection* properties.

-
3. When the *Local Area Connection Properties* dialog box appears, select **Internet Protocol (TCP/IP)** or **TCP/IPv4** in Windows 7 from the scrolling list, and then click **Properties**. The *Internet Protocol (TCP/IP) Properties* dialog box appears.

Preparing the SC8800-S AP at the Depot and Shipping to the Field

Configuring the AP for Management by FlexMaster or for Standalone Operation

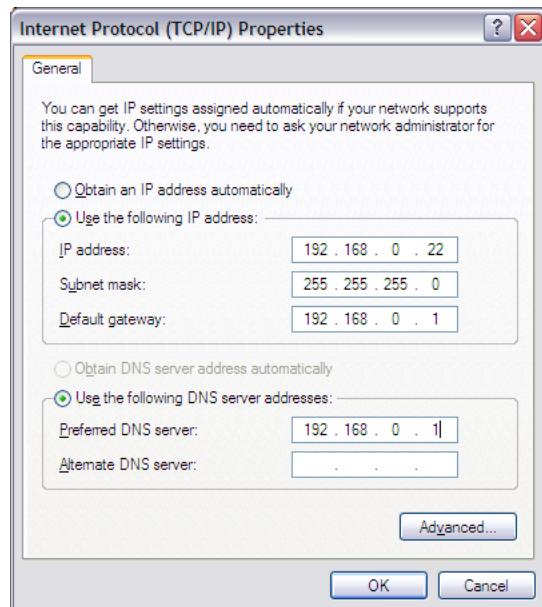
4. Write down all of the currently active network settings. You will need this information later when you restore your computer to its current network configuration.
5. Click **Use the following IP address**, and then configure the IP address settings with the values listed in [Table 5](#). For a sample configuration, refer to [Figure 10](#).

Table 5. Configure your computer's IP address settings

IP address	192.168.0.22 (or any address in the 192.168.0.x network—with the exception of 192.168.0.1 , which is the default IP address assigned to the Access Point)
Subnet mask	255.255.255.0

Note: You can leave the *Default Gateway* and *DNS server* fields blank.

Figure 10. Sample configuration in the Internet Protocol (TCP/IP) Properties dialog box



6. Click **OK** to save your changes and close the *TCP/IP Properties* dialog box.
 7. Click **OK** again to close the *Local Area Connection Properties* dialog box.
- Windows saves the IP address settings that you have configured. Continue with ["Connecting the AP to the Administrative Computer"](#) on [page 19](#).

Connecting the AP to the Administrative Computer

1. Verify that the AP is powered on as described in [“Powering the AP”](#) on [page 14](#).
2. If you are powering the AP with PoE, then continue with [Step 3](#). If you are powering the AP with AC, then continue with [Step 6](#).
3. Connect one end of the Ethernet cable to the *Data In* port on the PoE injector.
4. Connect the other end of the Ethernet cable to the administrative computer either directly or through a hub.
5. You have completed connecting the AP to the administrative computer. Continue with [“Logging In to the Access Point’s Web Interface”](#) on [page 19](#).
6. Connect one end of the Ethernet cable to the **PoE IN** port on the AP.
7. Connect the other end of the Ethernet cable to the administrative computer.
8. You have completed connecting the AP to the administrative computer. Continue with [“Logging In to the Access Point’s Web Interface”](#) on [page 19](#).

Logging In to the Access Point’s Web Interface

1. In the address or location bar, type the following address:
https://192.168.0.1
2. Press **<Enter>** on the keyboard to connect to the AP’s web interface. A security alert message appears.
3. Click **Yes** or **OK** or **Proceed anyway** (depending on the browser) to continue. The AP’s login page appears.

Figure 11. The ZoneFlex Access Point login page



4. In *Username*, type **super**.
5. In *Password*, type **sp-admin**.
6. Click **Login**. The web interface appears, displaying the *Status > Device* page.
7. Continue with [“Configuring Common Wireless Settings”](#) on [page 20](#).

Configuring Common Wireless Settings

The settings on the **Common** tab are required to enable wireless devices to associate with the AP. The default wireless settings on the AP are listed in [Table 6](#).

Table 6. Default wireless settings

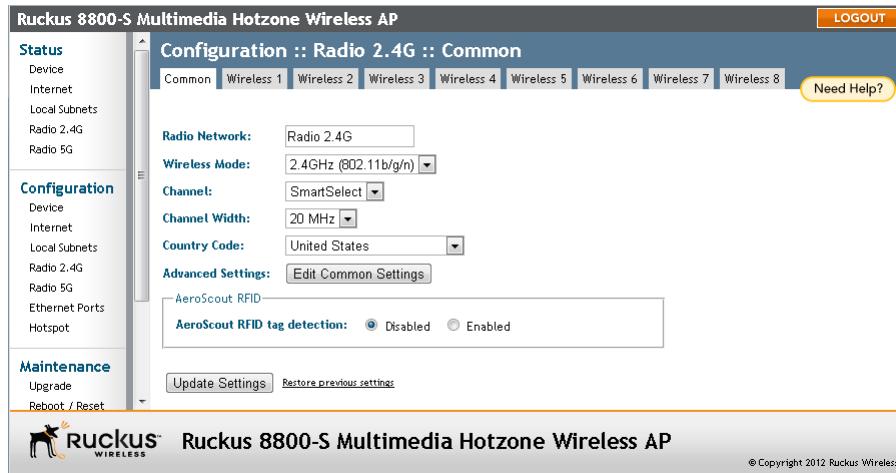
Setting	Default Value
SSID (network name)	Wireless 1 to Wireless 8 (8 WLANs)
Encryption (security)	Disabled on all WLANs
Default management IP address	192.168.0.1



NOTE: The AP has one 2.4GHz radio and one 5GHz radio. The wireless settings for each radio need to be configured separately on the web interface. To configure the 2.4GHz radio settings, click **Configuration > Radio 2.4G**. To configlure the 5GHz radio settings, click **Configuration > Radio 5G**.

1. On the left menu of the web interface, click **Configuration > Radio {2.4/5} G**. The **Common** page appears ([Figure 12](#)).

Figure 12. The Configuration > Radio 2.4 > Common tab



2. Verify that the common wireless settings are configured as listed in [Table 7](#).

Table 7. Common wireless configuration

Setting	Recommended Value
Wireless Mode	<ul style="list-style-type: none">• 2.4GHz (802.11b/g/n) for Configuration > Radio 2.4G > Common.• 5GHz (802.11a/n) for Configuration > Radio 5G > Common.
Channel	SmartSelect.
Channel Width	20 MHz.
Country Code	<ul style="list-style-type: none">• If you purchased the AP in the United States, this value is fixed to United States at the factory and is not user configurable.• If you purchased the AP outside the United States, verify that the value is set to your country or region. Selecting the correct country code ensures that the AP uses only the radio channels allowed in your country or region.

Note: The two radios on the ZoneFlex AP are always configured with the same country code setting. If you change the country code for Radio 2.4G, for example, the same change will be automatically applied to Radio 5G.

3. If you made any changes to the *Common* tab, then click **Update Settings**.
4. Continue with [“Configuring Wireless # Settings”](#) on [page 22](#).

Configuring Wireless # Settings

The settings on at least one **Wireless #** tab are required to enable wireless devices to associate with the AP.

1. Click one of the **Wireless #** tabs. The selected **Wireless #** page appears (Figure 13).

Figure 13. The Configuration > Radio 2.4 > Wireless 1 tab

2. In **Wireless Availability**, click **Enabled**.
3. In **Broadcast SSID**, click **Enabled**.
4. Clear the **SSID** box, and then type a unique and descriptive name that you want to call this wireless network.

For example, you can type **Ruckus Wireless AP**. This SSID is the name that helps users identify this wireless network in their wireless network connection application.

NOTE: You may also configure other wireless settings on this and other **Wireless #** tabs (in addition to the settings described above), although it is not necessary for completing the AP installation.

5. Click **Update Settings**. You have completed configuring the basic wireless settings of the AP.



If you are configuring the AP for management by FlexMaster, then continue with [“\(Optional\) Setting the FlexMaster Server Address”](#) on [page 23](#). If you are configuring the AP for standalone operation, then continue with [“Disconnecting the AP from the Administrative Computer”](#) on [page 27](#).

(Optional) Setting the FlexMaster Server Address

If you have a FlexMaster server installed on the network and you intend to use FlexMaster to manage the AP, you can set the FlexMaster server address at this point. Before starting this procedure, make sure you obtain the correct FlexMaster server URL.



NOTE: In addition to setting the FlexMaster server URL manually on the AP, you can also use DHCP Option 43 or DNS to point the AP to the FlexMaster server. For more information, refer to the *FlexMaster User Guide*.

1. Navigate to **Administration > Management** ([Figure 14](#)).
2. Scroll down the page to the **TR069 / SNMP Management Choice** section.

Figure 14. Type the FlexMaster server URL

3. Verify that the **Auto** option is selected.

4. In **FlexMaster Server URL**, type the URL of the FlexMaster server on the network. You can use either `http` or `https` to connect to the URL and include either the host name or IP address of the FlexMaster server in the URL. The following are examples of valid FlexMaster server URLs:

`http://flexmaster/intune/server`

`https://flexmaster/intune/server`

`http://192.168.20.1/intune/server`

`https://192.168.20.1/intune/server`

5. Click **Update Settings** to save your changes. You have completed setting the FlexMaster server address on the AP.



NOTE: Instructions on how to verify that the AP and FlexMaster can communicate with each other are provided in ["Checking the TR069 Status \(FlexMaster Management Only\)"](#) on [page 26](#).

6. Continue with ["Verifying AP Operation"](#) on [page 25](#).

Verifying AP Operation

Ruckus Wireless recommends that you verify that the AP is operating correctly.



NOTE: You can perform these verification tasks indoors.

To verify that the AP is operating correctly, perform the following procedures:

- [Connecting the AP to the Network](#)
- [Associating a Wireless Client with the AP](#)
- [Checking the TR069 Status \(FlexMaster Management Only\)](#)
- [Disconnecting the AP from the Power Source and the Network](#)
- [Disconnecting the AP from the Administrative Computer](#)
- [Restoring the Administrative Computer's Network Settings](#)

Connecting the AP to the Network

This procedure assumes that you have already assembled an AC cord connector as described in ["Powering the AP with AC"](#) on [page 51](#), or that you have a Ruckus Wireless 60W PoE injector available as described in ["Powering the Access Point with PoE"](#) on [page 52](#).



NOTE: You only need to connect one type of power source at this point, even if you are planning to use both PoE and AC power in your final deployment.

The AP can connect to the network using data cables, or can connect to the network using wireless backhaul if it is part of a mesh network.



NOTE: If the ZoneDirector is set to *Enable Mesh*, ZoneDirector automatically assigned the AP as a *Root AP* while ["Configuring the AP for Management by ZoneDirector"](#) on [page 15](#).

1. If the AP is part of an available mesh network, continue with [Step 2](#). If the AP is using AC power, then continue with [Step 4](#). If the AP is using PoE, then continue with [Step 6](#).
2. When the AP has been configured as *Root AP*, and is powered up and does not find a wired connection back to its ZoneDirector, it automatically looks for another *Root AP*. When it finds another AP in the mesh network, it automatically provisions itself as a *Mesh AP* in the mesh network.
3. Continue with ["Associating a Wireless Client with the AP"](#) on [page 59](#).
4. Connect the Ethernet cable from your network's router or switch to the **PoE IN** port on the AP.

5. Continue with ["Associating a Wireless Client with the AP"](#) on [page 59](#).
6. Connect the Ethernet cable from the *Data In* port on the PoE injector to your network's router or switch.
7. Continue with ["Associating a Wireless Client with the AP"](#) on [page 59](#).

Associating a Wireless Client with the AP

1. In the client device's wireless interface, select the SSID configured in the ["Configuring Wireless # Settings"](#) on [page 22](#) section.
2. Connect the client device to the selected WLAN SSID.
3. After the wireless client successfully connects to the wireless LAN, continue with ["Checking the TR069 Status \(FlexMaster Management Only\)"](#) on [page 26](#) or ["Disconnecting the AP from the Power Source and the Network"](#) on [page 27](#).

Checking the TR069 Status (FlexMaster Management Only)

If you configured the AP to report to a FlexMaster server on the network (see ["\(Optional\) Setting the FlexMaster Server Address"](#) on [page 23](#)), then make sure you verify that the AP can successfully communicate with the FlexMaster server. You can do this by checking the TR069 status on the AP's web interface.

1. In the AP's web interface, go to the **Administration > Management** page.
2. Scroll down to the **TR069 Status** section.
3. Check the value for *Last successful contact*. If it shows a date in green, then the AP was able to communicate successfully with FlexMaster.
4. Continue with ["Disconnecting the AP from the Power Source and the Network"](#) on [page 27](#).

Disconnecting the AP from the Power Source and the Network

1. Disconnect the AP from the power source (either from the PoE injector or AC power source).
2. Verify that the **PWR** LED is off.
3. Disconnect the Ethernet cable that runs to the AP's **PoE IN** RJ45 port from your network's router or switch.
4. Continue with ["Disconnecting the AP from the Administrative Computer"](#) on [page 27](#).

Disconnecting the AP from the Administrative Computer

1. If not already done, disconnect the AP from the power source (either from the AC power source or PoE injector).
2. Verify that the **PWR** LED is off.
3. Disconnect the Ethernet cable from the administrative computer's Ethernet port.
4. Continue with ["Restoring the Administrative Computer's Network Settings"](#) on [page 27](#).

Restoring the Administrative Computer's Network Settings

If the administrative computer's network settings were changed as described in ["Configuring the Administrative Computer"](#) on [page 17](#) and you do not want to change the network settings back now, then continue with ["Shipping the AP to the Field"](#) on [page 28](#). If you do want to change the network settings back now, continue with the following steps:



NOTE: You may need to enable the firewall between the AP and the FlexMaster server to complete this procedure.

1. On your Windows 7 or Windows XP computer, open the *Network Connections* (or *Network and Dial-up Connections*) control panel according to how the Start menu is set up:
 - In Windows 7, click *Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings*.
 - In Windows XP, click *Start > Control Panel > Network Connections*.
2. When the *Network Connections* window appears, right-click the icon for *Local Area Connection*, and then click **Properties**.

3. When the *Local Area Connection Properties* dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The *TCP/IP Properties* dialog box appears.
4. Restore the computer's network settings by typing the original IP address settings in the *TCP/IP Properties* dialog box.
5. On the *TCP/IP Properties* dialog box, click **OK** to close it.
6. Click **OK** again to close the *Local Area Connection Properties* dialog box.

You are now ready to ship the AP. Continue with ["Shipping the AP to the Field"](#) on [page 28](#).

Shipping the AP to the Field

After you have prepared the AP as described earlier in this section, repack the AP and its mounting kit in the original shipping container and ship it to its final installation site.

Continue with ["Installing the SC8800-S AP in the Field"](#) on [page 29](#).

4 Installing the SC8800-S AP in the Field

Before installing the AP, Ruckus Wireless recommends that you first complete the procedures described in [“Planning the SC8800-S AP Installation”](#) on [page 4](#) and [“Preparing the SC8800-S AP at the Depot and Shipping to the Field”](#) on [page 13](#). Completing these procedures ensures that the AP installation has been planned, and that the AP has been prepared for installation.

Continue with the following procedures:

- [Installation Components and Constraints](#)
- [Deploying the Access Point](#)
- [Mounting the Access Point](#)
- [Verifying Access Point Operation](#)

Installation Components and Constraints

- The AP can be installed indoors or outdoors, such as on an interior wall or ceiling, on the exterior roof overhang of a building, or on a streetlight pole.
- Refer to [Figure 15](#) for the components involved in a typical outdoor PoE installation. Refer to [Figure 16](#) for the components involved in a typical outdoor AC installation. Note which components must be installed indoors and outdoors.
- Ruckus Wireless strongly recommends 80mm - 130mm (3" -5") drip loops on any cables that are installed outdoors (for example, on an outdoor AP).
- The AP can be powered using either AC power and/or Power over Ethernet (PoE).
 - **AC Power:** An AC power cable connector is supplied with the AP. The customer supplies the country-specific 3-wire AC power cable. The supported input voltages are 90-264 VAC 50/60Hz.
 - **Power over Ethernet:** The customer orders a Ruckus Wireless PoE injector (part number 02-0180-XX00, where XX is the country code).
- The APs used in a mesh network generally use AC power.



NOTE: The AP only requires one power source (either AC or PoE, but can be powered by AC and PoE at the same time).

- The AP can be powered by 60W PoE to support 802.3af PoE Out to 15.4W.
- The AP can be powered by 60W PoE to support 802.3at PoE Out to 27W. 802.3at (25.5W) PoE can be supported with 20m (65.6 ft.) or shorter CAT5e UTP or better cable.
- When AC powered and PoE is present, the AP draws power from the AC connection.



WARNING: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



WARNING: Installation of this equipment must comply with local and national electrical codes.



CAUTION: Make sure that you form a 80mm - 130mm (3" -5") drip loop in any cable that is attached to the AP or the building. This will prevent water from running along the cable and entering the AP or the building where the cable terminates.



CAUTION: Be sure that grounding is available and that it meets local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.



CAUTION: Make sure that proper lightning surge protection precautions are taken according to local electrical code.

Figure 15. Typical outdoor PoE installation components

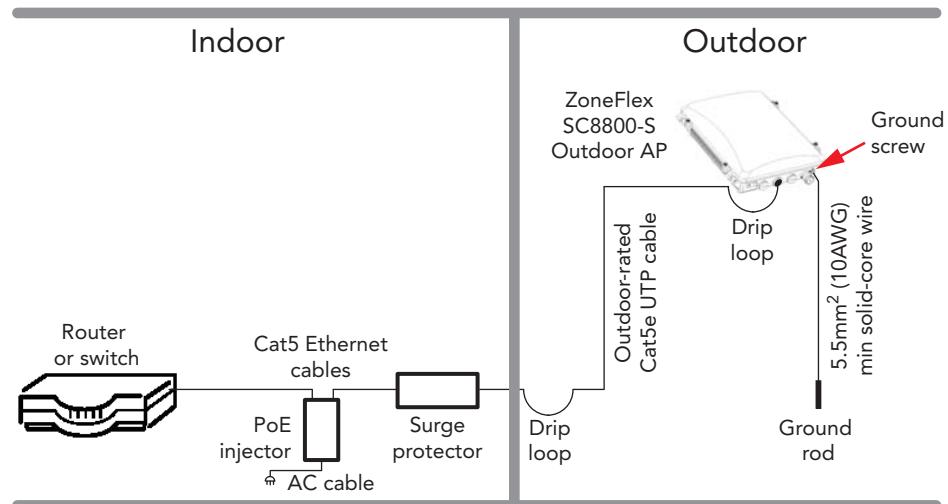
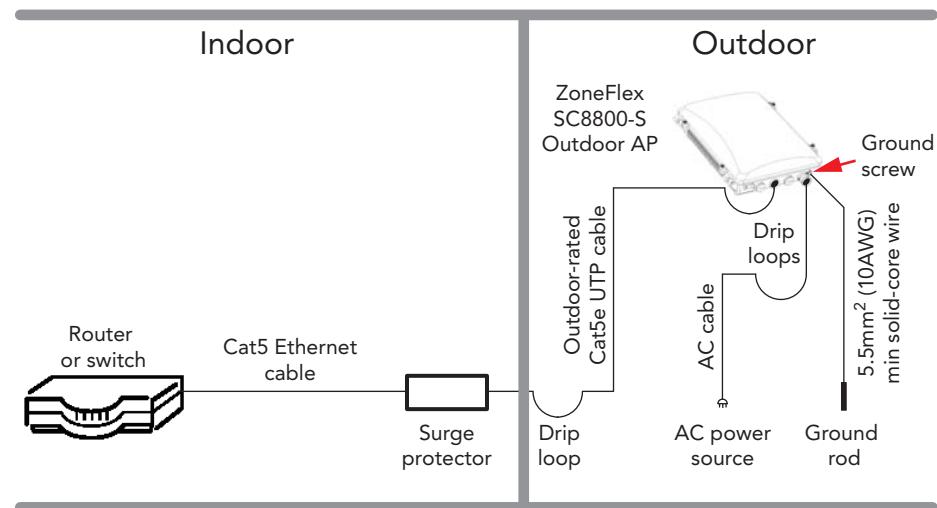


Figure 16. Typical outdoor AC installation components



Deploying the Access Point

In this section, you will mount the AP in its final mounting location and verify its operation.

Perform the following:

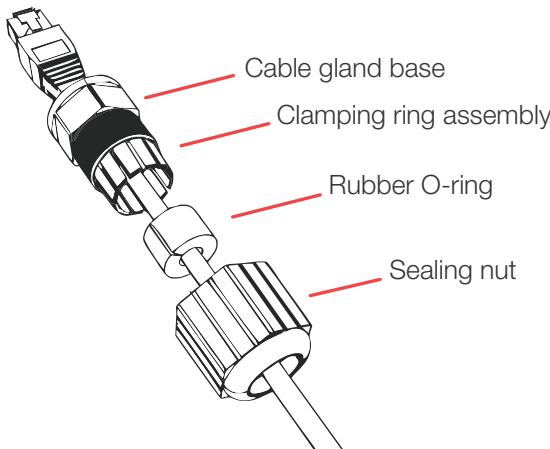
- [Connecting and Sealing the RJ-45 Cables](#)
- [Preparing the Power Connections](#)
- [Attaching the Main Mounting Bracket to a Flat Surface](#)
- [Attaching the Main Mounting Bracket to a Metal Pole](#)
- [Assembling the AP Attachment Bracket and the Access Point](#)
- [Attaching the AP Attachment Bracket and AP to the Hook Bracket](#)
- [Safety-Cabling the AP](#)
- [Mounting External Antennas \(Optional\)](#)
- [Powering the AP](#)
- [Connecting the AP to the Network](#)
- [Configuring the External Antenna Gain](#)
- [Associating a Wireless Client with the AP](#)
- [Checking the TR069 Status \(FlexMaster Management only\)](#)

Connecting and Sealing the RJ-45 Cables

The AP comes with two sets of waterproof RJ-45 cable glands. To complete this procedure, you will need an RJ-45 cable and a cable gland.

1. Take out one of the plastic bags containing a cable gland.
2. Feed the end of the cable through the sealing nut, rubber O-ring, clamping ring assembly and cable gland base as shown in [Figure 17](#).

Figure 17. Cable and cable gland assembly



3. Remove the required (RESET/PoE OUT or PoE IN) blanking cap from the SC8800-S. (See [Figure 6](#) for cap location.)
4. Connect the cable to the ethernet port in the SC8800-S.
5. Hand-tighten the cable gland base into the SC8800-S chassis.
6. Wrap the clamping ring assembly around the rubber O-ring. Make sure that the clamping ring assembly fully encloses the rubber O-ring.
7. Seat the clamping ring assembly and rubber O-ring in the cable gland base.
8. Hand-tighten the sealing nut

You have completed connecting and sealing the cable. Repeat this procedure as required for the other cables.

Preparing the Power Connections

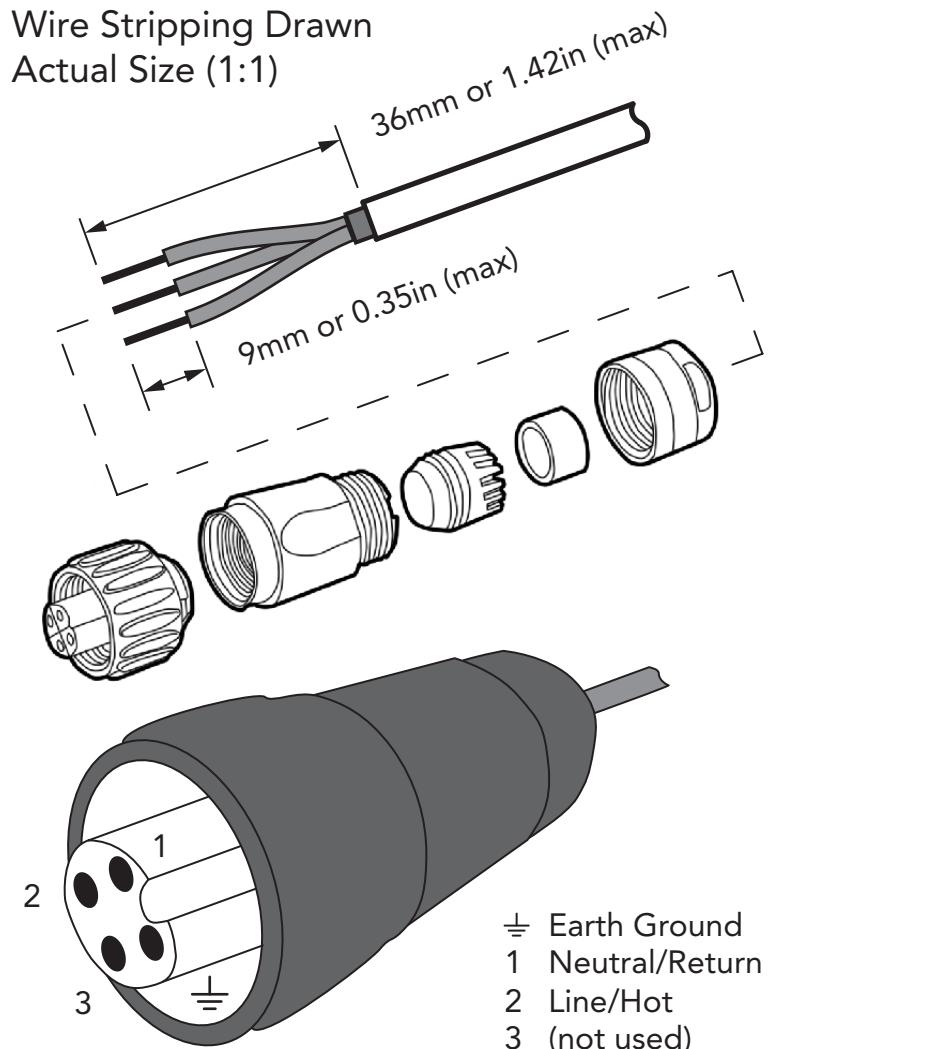
The AP supports both AC power and PoE and it can be connected to both power sources at the same time. If you want use both power sources, complete these power connections using both of these two methods:

- [Preparing the AC Power Connection](#)
- [Preparing the PoE Power Connection](#)

Preparing the AC Power Connection

1. Collect required tools and supplies:
 - An outdoor-rated three-wire (1-2mm² or 14-18AWG) AC cable that is long enough to connect the AP with the AC power source.
 - A wire stripper.
 - A pair of long-nose pliers.
 - A small screwdriver.
 - A ruler (for measuring the stripped portion of the AC cable).
2. Remove the small plastic bag that contains the AC cable connector from the AP package.
3. Separate the AC cable connector parts by unscrewing the boot from the cable gland and the cable gland from the connector housing. See [Figure 18](#).

Figure 18. Assembling the AC power connector



4. Feed the end of the AC cable through the boot and cable gland.
5. Strip the AC cable as shown in [Figure 18](#).
6. Insert the stripped part of the conductors into the appropriate terminals on the connector housing. The conductors are color-coded and must be connected to the appropriate terminals as shown in [Figure 18](#). Refer to [Table 8](#) for typical AC wire colors.

Table 8. Typical AC wire colors

Terminal	Color
\pm (Earth Ground)	Green (US), Green/Yellow (EU)
1 (Neutral/Return)	White or Gray (US), Blue (EU)
2 (Line/Hot)	Black (US), Brown (EU)
3	(not used)

Note: The color coding of wire conductors varies by region. Before completing this step, check your local wiring standards for guidance.

7. Using a small screwdriver, tighten the small screws around the connector housing to fix the connector pins into the terminals.
8. Mate the cable gland with the connector housing, and then tighten.



NOTE: Two different-sized grommets are supplied in the AC connector assembly kit. Use the grommet that is appropriate to the diameter of the AC cable that you are using.

9. Mate the boot with the cable gland, and then tighten to seal.
10. Connect the AC cord connector that you have assembled to the **AC** power socket on the AP.



WARNING: Do not apply power to the AP at this point. You should connect the AP to a power source only after you finish connecting all other components included in ["Verifying Access Point Operation" on page 50](#).

You have prepared the AC power connection.

Preparing the PoE Power Connection

1. Obtain a Ruckus Wireless 60W PoE injector. (Refer to ["Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts" on page 61](#) to order a Ruckus Wireless 60W PoE injector.)
2. Obtain one outdoor-rated and one indoor-rated Cat5e or better Ethernet cable.
3. Connect one end of the *outdoor*-rated Ethernet cable to the *Data Out/Power Out* port on the PoE injector, and then connect the other end to the **PoE IN** port on the AP.



WARNING: Do not apply power to the AP at this point. You should connect the AP to a power source only after you finish connecting all other components in ["Verifying Access Point Operation" on page 50](#).

You have prepared the PoE power connection.

Mounting the Access Point

The AP package includes a mounting bracket kit shown in [Figure 19](#). The kit components are described in [Table 9](#).

Figure 19. AP Mounting Bracket Exploded Assembly

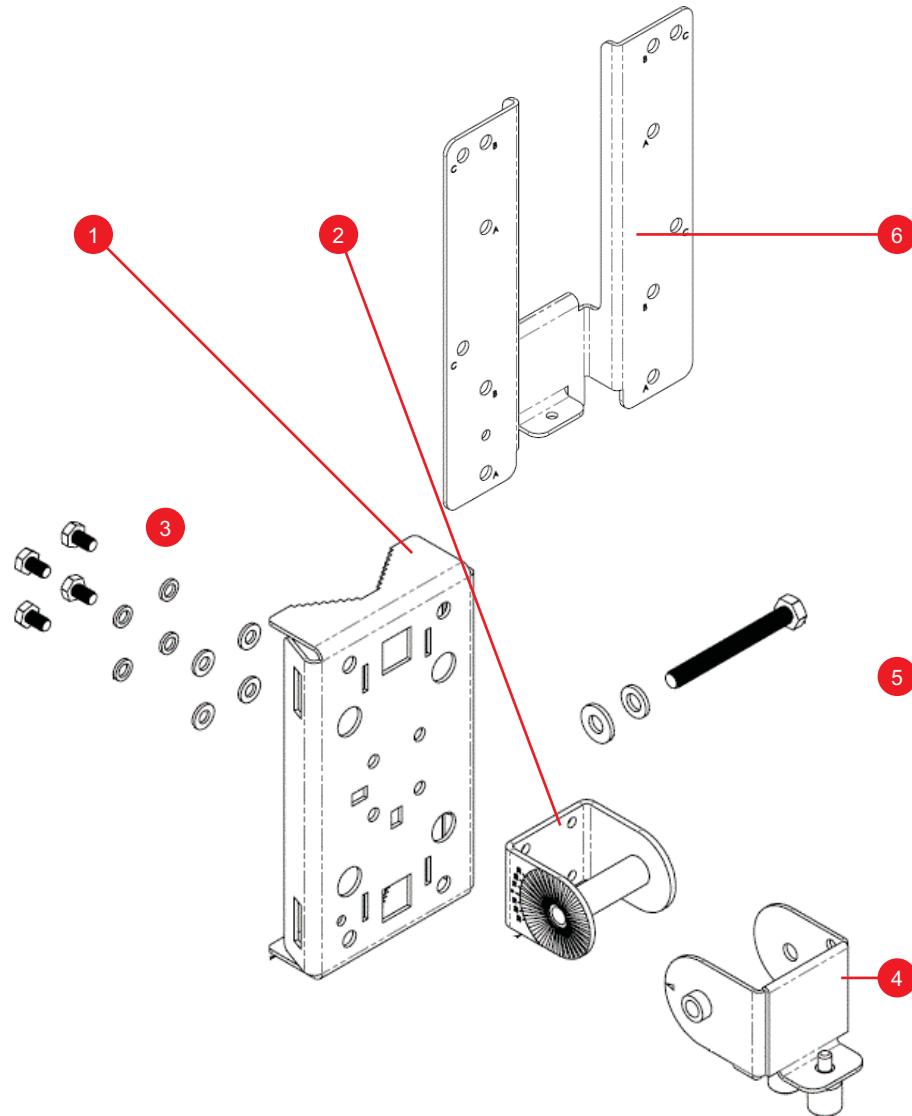


Table 9. AP Mounting Bracket Kit Description

No.	Interface Element	Description
1	Main Mounting Bracket	Mounting bracket for use on flat surfaces and poles. Designed for use with the following fasteners: <ul style="list-style-type: none"> Two M16 (5/8") carriage bolts for wooden poles (customer-supplied). Four 6mm (1/4") bolts or screws (customer-supplied). Four 14mm (1/2") bolts or screws (customer-supplied). Four 1 1/2" (12.7mm) wide stainless steel adjustable clamps, 2.5" (63.5mm) diameter, for smaller poles (factory-supplied). Two 7/8" (22mm) wide stainless steel adjustable clamps for larger poles (customer-supplied).
2	U-Joint Bracket	Attaches to Main Mounting Bracket with four Small M6 Bolt and Washer Sets.
3	Small M6 Bolt and Washer Sets	Nine sets of M6 hex bolt, 10mm M6 x 1 with spring lock and flat washers. Attaches U-Joint Bracket to Main Mounting Bracket, attaches AP Attachment Bracket to AP, and attaches safety cable to AP Attachment Bracket.
4	Hook Bracket	Attaches to U-Joint Bracket with one Large M8 Bolt and Washer Set. Allows up to 30° elevation up/tilt or down/tilt. Attaches to AP Attach Bracket with two captive screws.
5	Large M8 Bolt and Washer Set	One set of M8 hex bolt, 70mm, M8x1.25, with spring lock and flat washers.
6	AP Attachment Bracket	Mounts on the back of the AP using four Small M6 Bolt and Washer Sets. Attaches to the Hook Bracket with two Hook Bracket captive screws.

To mount the AP:

1. Collect the following items:

- Bracket mounting kit (see [Figure 19](#))

If you are mounting the AP on a flat surface, then you will also need:

- An electric drill with drill bits
- Customer-supplied wall anchors, flat washers, and hex nuts

If you are mounting the AP on a pipe or pole, then you will also need:

- A pipe or pole
- Other mounting hardware and tools as described in [Table 9](#)

2. Continue with ["Mounting the U-Joint Bracket to the Main Mounting Bracket"](#) on [page 39](#).

Mounting the U-Joint Bracket to the Main Mounting Bracket

1. Position the U-joint bracket on the main mounting bracket. (Note the orientation.)

Figure 20. U-Joint Bracket Attached Horizontally to the Main Mounting Bracket

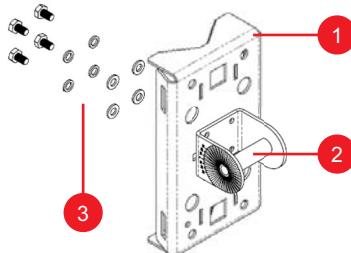


Table 10. Main Mounting Bracket and U-Joint Bracket

No.	Description
1	Main Mounting Bracket
2	U-Joint Bracket
3	Small M6 Bolt and Washer Sets

2. Use four small M6 bolt and washer sets to mount the U-joint bracket to the main mounting bracket. Tighten the bolts to 9.5 N.m (7 ft-lbs).
3. Continue with ["Attaching the Main Mounting Bracket to a Flat Surface"](#) on [page 39](#) or ["Attaching the Main Mounting Bracket to a Wooden Pole"](#) on [page 40](#), or ["Attaching the Main Mounting Bracket to a Metal Pole"](#) on [page 42](#).

Attaching the Main Mounting Bracket to a Flat Surface

The main mounting bracket can be attached to a flat surface using small or large bolts or screws as described in [Table 9](#).



WARNING: Ruckus Wireless strongly recommends that you wear eye protection before drilling holes in the mounting surface.

1. Place the main mounting bracket at the location on the mounting surface where you want to mount the AP.
2. Use the holes on the main mounting bracket as a template to mark the locations of the mounting holes.

Figure 21. Flat Surface Mounting Hole Locations

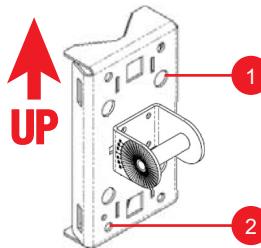


Table 11. Main Mounting Bracket Flat Surface Holes

No.	Interface Element	Description
1	Large Holes (4 places)	Designed for use with four customer-supplied 14mm (1/2") bolts or screws.
2	Small Holes (4 places)	Designed for use with four customer-supplied 6mm (1/4") bolts or screws.

3. Remove the main mounting bracket from the mounting surface.
4. Drill holes required for the mounting hardware (see [Table 9](#) for mounting hardware options).
5. Attach the main mounting bracket to the flat surface using the mounting hardware. Note the UP direction.
6. Using the mounting hardware instructions, tighten the hardware to secure the main mounting bracket.
7. Continue with ["Mounting the Hook Bracket to the U-Joint Bracket"](#) on [page 43](#).

Attaching the Main Mounting Bracket to a Wooden Pole

The main mounting bracket can be attached to a wooden pole using carriage bolts as described in [Table 9](#).



WARNING: Ruckus Wireless strongly recommends that you wear eye protection before drilling holes in the pole.

1. Place the main mounting bracket at the location on the mounting surface where you want to mount the AP.
2. Use the square holes on the main mounting bracket as a template to mark the locations of the mounting holes.

Figure 22. Wooden Pole Mounting Hole Locations

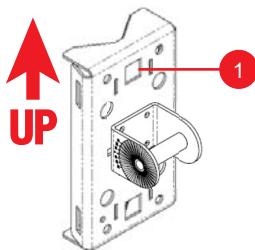


Table 12. Main Mounting Bracket Carriage Bolt Holes

No.	Interface Element	Description
1	Square Holes (2 places)	Designed for use with two customer-supplied M16 (5/8") carriage bolts.

3. Remove the main mounting bracket from the pole.
4. Drill holes for the carriage bolts as required by the local pole owner.
5. Attach the main mounting bracket to the flat surface using the carriage bolts. Note the UP direction.
6. Using carriage bolt nuts, tighten the carriage bolts as required by the local pole owner to secure the main mounting bracket.
7. Continue with ["Mounting the Hook Bracket to the U-Joint Bracket"](#) on [page 43](#).

Attaching the Main Mounting Bracket to a Metal Pole

The main mounting bracket can be attached to a metal pole using stainless steel adjustable clamps as described in [Table 9](#).

1. Insert the open end of one steel clamp into the upper two slots on the main mounting bracket.

Figure 23. Adjustable Clamp Slots for a Vertical Pole

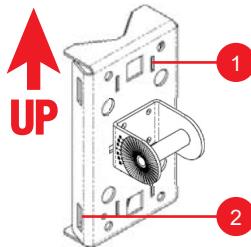
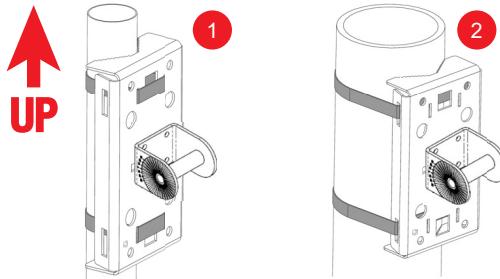


Table 13. Main Mounting Bracket Adjustable Clamp Slots

No.	Interface Element	Description
1	Small Slots (4 places)	Designed for use with two or four factory-supplied 1/2" (12.7mm) wide stainless steel adjustable clamps, 2.5" (63.5mm) diameter, for smaller poles.
2	Large Slots (4 places)	Designed for use with two customer-supplied 7/8" (22mm) wide stainless steel adjustable clamps for larger poles.

2. Take the other steel clamp and insert it into the lower two slots on the main mounting bracket.
3. Use the clamps to attach the main mounting bracket to the pole (see [Figure 24](#)). Note the UP direction. Tighten the clamps to 1.1-1.2 N.m or 9.7-10.6 in-lbs, or per manufacturer's specifications.

Figure 24. Attaching the Main Mounting Bracket to a Vertical Pole



4. Continue with ["Mounting the Hook Bracket to the U-Joint Bracket" on page 43.](#)

Mounting the Hook Bracket to the U-Joint Bracket

The hook bracket attaches to the U-joint bracket using the large M8 bolt and washer set.



NOTE: The AP can be mounted outdoors in any orientation, as long as the internal GPS antenna is pointed up or toward a mostly-unobstructed view of the sky. Refer to ["Pointing the Internal GPS Antenna" on page 10.](#)

Figure 25. Attaching the Hook Bracket to the U-Joint Bracket

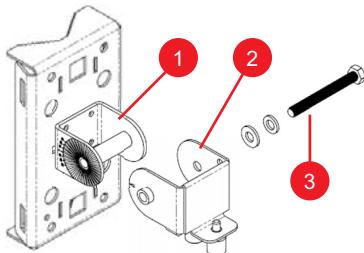


Table 14. Hook Bracket and U-Joint Bracket

No.	Description
1	U-Joint Bracket
2	Hook Bracket
3	Large M8 Bolt and Washer Set

1. Loosely assemble the hook bracket, the U-joint bracket, and the large M8 bolt and washer set.
2. Set the elevation up tilt or down tilt required by the AP.
3. Tighten the large bolt to 27 N.m (20 ft-lbs).
4. Continue with ["Assembling the AP Attachment Bracket and the Access Point" on page 44.](#)

Assembling the AP Attachment Bracket and the Access Point

1. Place the AP attachment bracket onto the back side of the AP so that the four screw holes on the bracket align with the four screw holes on the AP. Make sure that the longer end of the AP attachment bracket is on the same side as the AP antenna connectors. See [Figure 26](#).

Figure 26. Attaching the AP Attachment Bracket to the AP



2. Use four small M6 bolt and washer sets to mount the AP attachment bracket to the AP. Tighten the bolts to 9.5 N.m (7 ft-lbs).
3. Continue with ["Attaching the AP Attachment Bracket and AP to the Hook Bracket"](#) on page 45.

Attaching the AP Attachment Bracket and AP to the Hook Bracket

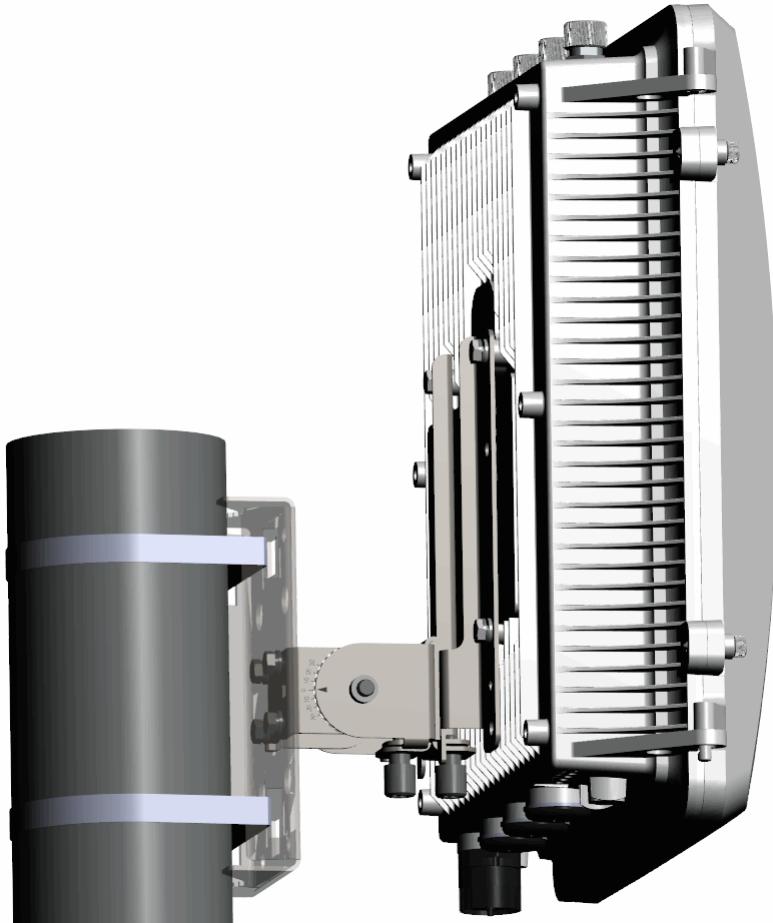
1. Slide the AP attachment bracket and AP assembly onto the hook bracket.



CAUTION: MAKE SURE that the AP attachment bracket slides securely onto the hook bracket.

2. Finger-tighten the two hook bracket captive screws to secure the AP attachment bracket and AP.

Figure 27. AP Attachment Bracket and AP Attached to the Hook Bracket



3. Continue with [“Safety-Cabling the AP”](#) on [page 46](#).

Safety-Cabling the AP

1. Collect the 1/8" (3mm) diameter galvanized steel safety cable with loop on one end and retaining washer on the eye end (24", 610 mm).
2. Thread the safety cable around the main mounting bracket and thread the eye end through the loop end as shown in [Figure 28](#).

Figure 28. Secured safety cable



Table 15. Secured Safety Cable

No.	Description
1	Main Mounting Bracket
2	Safety Cable
3	Eye End

3. Use one small M6 bolt and washer set to attach the eye end of the safety cable to a threaded boss on the back of the AP. Tighten the bolt to 9.5 N.m (7 ft-lbs).

Figure 29. Attaching the Safety Cable to the AP

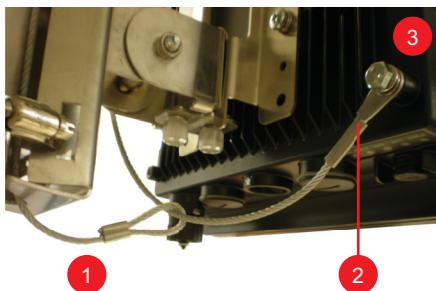


Table 16. Safety Cable and AP

No.	Description
1	Safety Cable
2	Eye End
3	SC8800-S Threaded Boss

You have mounted and safety-cabled the AP. If you are installing external antennas, then continue with [“Mounting External Antennas \(Optional\)”](#) on [page 48](#). If you are not installing an external antennas, then you have completed mounting the AP; continue with [“Verifying Access Point Operation”](#) on [page 50](#).

Mounting External Antennas (Optional)



NOTE: Mount internal and external antennas at least 20cm (7.9") away from each other.

You can connect one or two 5GHz external antennas to the 5 GHz ANT 0 and 5 GHz ANT 2 50-ohm N-type female connectors on the AP. You can also connect one or two 2.4GHz external antennas to the 2.4 GHz ANT 2 and 2.4 GHz ANT 0 50-ohm N-type female connectors on the AP.

In all cases, connecting external 5GHz antennas disables the internal AP 5GHz antennas, and connecting external 2.4GHz antennas to the AP disables the internal AP 2.4GHz antennas.

Refer to ["Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts"](#) on [page 61](#) for customer-ordered Ruckus Wireless external antennas. Refer to ["Planning the SC8800-S AP Installation"](#) on [page 4](#) for typical external antenna coverage patterns.



WARNING: Only trained and qualified installers should be allowed to install, replace, or service this equipment.

The professional installer is responsible for the proper installation and configuration of this AP. The AP installation must comply with local regulatory requirements, especially with those regulating operation near military and/or weather radar systems.



CAUTION: If you are not connecting external antennas to the AP, then make sure that the metal caps remain installed and securely fastened to protect the interfaces from elements, such as water and dirt.

1. Collect the external antenna(s), torque wrench and weatherproofing tape.
2. If the AP is powered, then disconnect the AP from the power source.



WARNING: MAKE SURE that you disconnect the AP from the power source to avoid electrocution or equipment damage.

3. Unscrew the metal caps that protect the antenna connectors. Place the metal caps in a safe place, in case you need them later.
4. Physically mount the antenna(s) at your desired location, preferably on the same mounting structure as the AP.
5. Connect 5GHz antenna(s) to the 5 GHz ANT 0 and 5 GHz ANT 2 50-ohm N-type female antenna connectors on the AP.
6. Connect 2.4GHz antennas to the 2.4 GHz ANT 2 and 2.4 GHz ANT 0 50-ohm N-type female antenna connectors on the AP.

7. Use a torque wrench to tighten the connectors to 1.58 N.m (14 in-lbs).
If you do not have a torque wrench, then hand-tighten the connectors until the internal washers are compressed, but do not overtighten.
8. Apply weatherproofing tape to the antenna connectors to help prevent water and dirt from entering the AP.

You have completed connecting external antennas to the AP. Continue with ["Verifying Access Point Operation"](#) on [page 50](#).

Verifying Access Point Operation

After mounting the AP, Ruckus Wireless strongly recommends that you verify that the AP is operating correctly. To do this, you will need to do the following:

- [Powering the AP](#)
- [Connecting the AP to the Network](#)
- [Configuring the External Antenna Gain](#)
- [Associating a Wireless Client with the AP](#)
- [Checking the TR069 Status \(FlexMaster Management only\)](#)

Powering the AP

Refer to the following:

- ["Powering Options" on page 50](#)
- ["Powering the AP with AC" on page 51](#)
- ["Powering the Access Point with PoE" on page 52](#)
- ["Checking the LED Operation" on page 52](#)

Powering Options

The connections required for your installation depend on the power source that you are using.

[Figure 15](#) shows an example of the connections required for a typical outdoor PoE installation. [Figure 16](#) shows an example of the connections required for a typical outdoor AC installation. Note which components must be installed indoors and outdoors.

Ruckus Wireless strongly recommends 80mm - 130mm (3" -5") drip loops on any cables that are installed outdoors.



NOTE: The AP only requires one power source (either AC or PoE), but can be powered by AC and PoE at the same time.

- The AP can be powered by 60W PoE to support 802.3af PoE Out to 15.4W.
 - The AP can be powered by 60W PoE to support 802.3at PoE Out to 27W. 802.3at (25.5W) PoE can be supported with 20m (65.6 ft.) or shorter CAT5e UTP or better cable.
 - When AC powered and PoE is present, the AP draws power from the AC connection.
-



WARNING: When the AP is powered by AC and installed in a damp or wet location, the AC branch circuit should be protected with a Residual-Current Circuit Breaker (RCCB), also known as a Ground Fault Circuit Interrupter (GFCI), per National Electrical Code Article 210.

Powering the AP with AC

1. Collect required tools and supplies:
 - An outdoor-rated three-wire (1-2mm² or 14-18AWG) AC cable long enough to connect the AP with the AC power source.
 - A wire stripper.
 - A pair of long-nose pliers.
 - A small screwdriver.
 - A ruler (for measuring the stripped portion of the AC cable).
2. Remove the small plastic bag that contains the AC cable connector from the AP package.
3. Separate the AC cable connector parts by unscrewing the boot from the cable gland and the cable gland from the connector housing. See [Figure 18](#).
4. Feed the end of the AC cable through the boot and cable gland.
5. Strip the AC cable as shown in [Figure 18](#).
6. Insert the stripped part of the conductors into the appropriate terminals on the connector housing. The conductors are color-coded and must be connected to the appropriate terminals as shown in [Figure 18](#). See [Table 17](#) for typical AC wire colors.

Table 17. Typical AC wire colors

Terminal	Color
$\frac{1}{2}$ (Earth Ground)	Green (US), Green/Yellow (EU)
1 (Neutral/Return)	White or Gray (US), Blue (EU)
2 (Line/Hot)	Black (US), Brown (EU)
3	(not used)

Note: The color coding of wire conductors varies by region. Before completing this step, check your local wiring standards for guidance.

7. Using a small screwdriver, tighten the small screws around the connector housing to fix the connector pins into the terminals.
8. Mate the cable gland with the connector housing, and then tighten.



NOTE: Two different-sized grommets are supplied in the AC connector assembly kit. Use the grommet that is appropriate to the diameter of the AC cable that you are using.

9. Mate the boot with the cable gland, and then tighten to seal.
10. Connect the AC cord connector that you have assembled to the **AC** power socket on the AP.
11. Connect the AC cord to an AC power source.

12. Check the **PWR** LED. Initially, the LED turns *red* as the AP powers on. After it completes the power-on sequence, the LED turns *green*.



NOTE: If the **PWR** LED does not turn on at all, one or both of the AC power supply fuses inside the SC8800-S chassis may have burned out. Open the SC8800-S cover and replace any burned-out 5A, 250V, slow-blow fuse(s), as required.

13. You have completed connecting the AP to an AC power source. Continue with ["Checking the LED Operation" on page 52](#).

Powering the Access Point with PoE

1. Obtain a Ruckus Wireless 60W PoE injector. (Refer to ["Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts" on page 61](#) to order a Ruckus Wireless 60W PoE injector.)
2. Obtain one Cat5e or better Ethernet cable.
3. Connect one end of one Ethernet cable to the *Data Out/Power Out* port on the PoE injector, and then connect the other end to the **PoE IN** port on the AP.
4. Connect the PoE injector to a power source.
5. Check the **PWR** LED. Initially, the LED turns *red* as the AP powers on. After it completes the power-on sequence, the LED turns *green*.
6. You have completed connecting the AP to a PoE power source. Continue with ["Checking the LED Operation" on page 52](#).

Checking the LED Operation

- Perform a spot-check using the LEDs to verify that the AP is operating normally. When the AP is operating normally and no wireless clients are associated with it:
 - The **PWR** LED is *green*.
 - The **2.4G** and **5G** LEDs show slow blinking *amber*. This indicates that there are no wireless clients connected to the AP's WLAN services.

You have checked the LED operation. Continue with ["Connecting the AP to the Network" on page 53](#).

Connecting the AP to the Network

The AP can connect to the network using data cables, or can connect to the network using wireless backhaul if it is part of a mesh network.



NOTE: If the ZoneDirector is set to *Enable Mesh*, ZoneDirector automatically assigned the AP as a Root AP while ["Configuring the AP for Management by ZoneDirector" on page 15](#).

1. If the AP is part of a mesh network, continue with [Step 2](#). If the AP is using AC power, then continue with [Step 4](#). If the AP is using PoE, then continue with [Step 6](#).
2. When the AP has been configured as Root AP, and is powered up and does not find a wired connection back to its ZoneDirector, it automatically looks for another Root AP. When it finds another AP in the mesh network, it automatically provisions itself as a Mesh AP in the mesh network.
3. Continue with ["Configuring the External Antenna Gain" on page 54](#) or ["Associating a Wireless Client with the AP" on page 59](#).
4. Connect the Ethernet cable from your network's router or switch to the **PoE IN** port on the AP.
5. Continue with ["Configuring the External Antenna Gain" on page 54](#) or ["Associating a Wireless Client with the AP" on page 59](#).
6. Connect the Ethernet cable from the *Data In* port on the PoE injector to your network's router or switch.
7. Continue with ["Configuring the External Antenna Gain" on page 54](#) or ["Associating a Wireless Client with the AP" on page 59](#).

Configuring the External Antenna Gain

You can configure the maximum gain for each set of 5GHz and 2.4GHz external antennas connected to the AP ([“Mounting External Antennas \(Optional\)”](#) on [page 48](#)). Refer to the following to set the maximum gains:

- [“Configuring 5GHz External Antenna Gain”](#) on [page 54](#)
- [“Configuring 2.4GHz External Antenna Gain”](#) on [page 57](#)

Configuring 5GHz External Antenna Gain

The AP allows you to configure the gain of up to two customer-supplied 5GHz external antennas. The maximum value for the antenna gain depends on the type of external antennas that you are connecting to the AP. Refer to [Table 18](#) for the recommended antenna gain values that you can use for different 5GHz antenna types.

Table 18. Antenna gain values for different 5GHz antenna types

Antenna Type	5GHz Antenna Gain Value
Omni Antenna	6dBi or lower
Sector Antenna	12.5dBi or lower
Point-to-Point Antenna	24dBi or lower

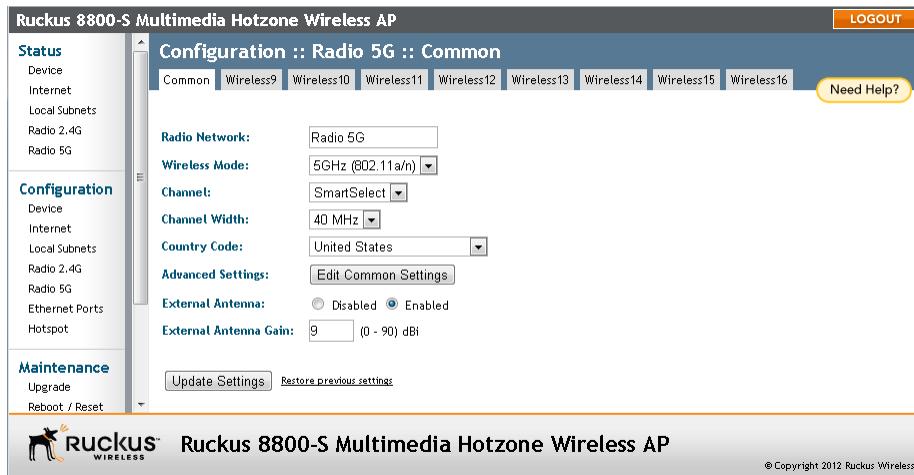
There are three ways you can configure the gain for the 5GHz antennas:

- [Configuring the 5GHz Antenna Gain from the AP Web Interface](#)
- [Configuring the 5GHz Antenna Gain from the AP CLI](#)
- [Configuring the 5GHz Antenna Gain from the ZoneDirector Web Interface](#)

Configuring the 5GHz Antenna Gain from the AP Web Interface

1. If not already done, log in to the AP web interface as described in [“Logging In to the Access Point’s Web Interface”](#) on [page 19](#).
2. On the left menu of the web interface, click **Configuration > Radio 5G**. The *Common* page appears.

Figure 30. Configure the external 5GHz antenna gain - AP web interface



3. In *External Antenna*, click **Enabled**.
4. In *External Antenna Gain*, enter the antenna gain value (in dBi).
5. If you made any changes to the *Common* tab, then click **Update Settings**.

You have configured the 5GHz antenna gain. If you are also configuring the 2.4GHz antenna gain, then continue with ["Configuring 2.4GHz External Antenna Gain"](#) on [page 57](#). If you are not configuring the 2.4GHz antenna gain, then continue with ["Verifying Access Point Operation"](#) on [page 50](#).

Configuring the 5GHz Antenna Gain from the AP CLI

1. Log in to the AP command line interface.
2. Set the 5GHz antenna gain by entering the following command:
`set extantgain wifi1 <0 - 90dBi>`
3. Verify that the antenna gain has been configured by entering the following command:
`get extantgain wifi1`

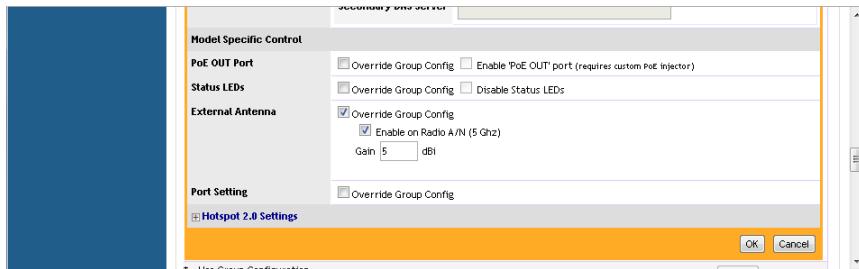
You have configured the 5GHz antenna gain. If you are also configuring the 2.4GHz antenna gain, then continue with ["Configuring 2.4GHz External Antenna Gain"](#) on [page 57](#). If you are not configuring the 2.4GHz antenna gain, then continue with ["Verifying Access Point Operation"](#) on [page 50](#).

Configuring the 5GHz Antenna Gain from the ZoneDirector Web Interface

1. Log in to the web interface of the ZoneDirector device that is managing the AP.
2. Go to the **Configure > Access Point Groups** page.

3. In the *Model Specific Control* parameter, select **ZoneFlex AP**. ZoneDirector displays the *External Antenna* entries.

Figure 31. Configure the 5GHz antenna gain - ZoneDirector



4. In the *External Antenna* section:

- Select the *External Antenna* checkbox.
- Enter the external antenna gain in dB for the 5GHz antenna(s).

5. Click **OK** at the bottom of the form to save your changes.

You have configured the 5GHz antenna gain. If you are also configuring the 2.4GHz antenna gain, then continue with ["Configuring 2.4GHz External Antenna Gain" on page 57](#). If you are not configuring the 2.4GHz antenna gain, then continue with ["Verifying Access Point Operation" on page 50](#).

Configuring 2.4GHz External Antenna Gain

The AP allows you to configure the gain of up to two customer-supplied 2.4GHz external antennas. The maximum value for the antenna gain that you should set depends on the type of external antennas that you are connecting to the AP. Refer to [Table 19](#) for the recommended antenna gain values that you can use for different antenna types.

Table 19. Antenna gain values for different 2.4GHz antenna types

Antenna Type	2.4GHz Antenna Gain Value
Omni Antenna	5dBi or lower
Sector Antenna	19dBi or lower

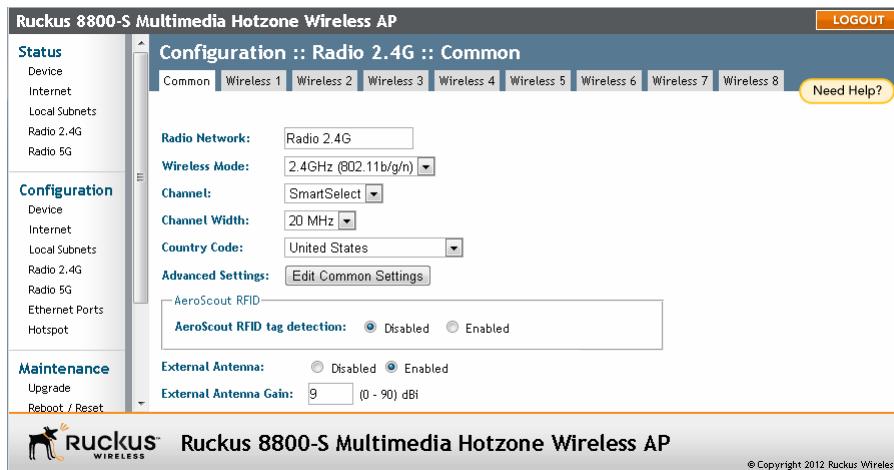
There are three ways you can configure the gain for the 2.4GHz antennas:

- [Configuring the 2.4GHz Antenna Gain from the AP Web Interface](#)
- [Configuring the 2.4GHz Antenna Gain from the AP CLI](#)
- [Configuring the 2.4GHz Antenna Gain from the ZoneDirector Web Interface](#)

Configuring the 2.4GHz Antenna Gain from the AP Web Interface

1. If not already done, log in to the AP web interface as described in ["Logging In to the Access Point's Web Interface" on page 19](#).
2. On the left menu of the web interface, click **Configuration > Radio 2.4G**. The **Common** page appears.

Figure 32. Configure the external 2.4GHz antenna gain - AP web interface



3. In **External Antenna**, click **Enabled**.
4. In **External Antenna Gain**, enter the antenna gain value (in dBi).

5. If you made any changes to the *Common* tab, click **Update Settings**.

You have configured the 2.4GHz antenna gain. Continue with ["Associating a Wireless Client with the AP" on page 59](#).

Configuring the 2.4GHz Antenna Gain from the AP CLI

1. Log in to the AP command line interface.
2. Set the 2.4GHz antenna gain by entering the following command:
`set extantgain wifi0 <0 - 90dBi>`
3. Verify that the antenna gain has been configured by entering the following command:
`get extantgain wifi0`

You have configured the 2.4GHz antenna gain. Continue with ["Associating a Wireless Client with the AP" on page 59](#).

Configuring the 2.4GHz Antenna Gain from the ZoneDirector Web Interface

1. Log in to the web interface of the ZoneDirector device that is managing the AP.
2. Go to the **Configure > Access Point Groups** page.
3. In the *Model Specific Control* parameter, select **ZoneFlex AP**. ZoneDirector displays the *External Antenna* entries.
4. In the *External Antenna* section:
 - Select the *External Antenna* checkbox.
 - Enter the external antenna gain in dBi for the 2.4GHz antenna(s).
5. Click **OK** at the bottom of the form to save your changes.

You have configured the 2.4GHz antenna gain. Continue with ["Associating a Wireless Client with the AP" on page 59](#).

Associating a Wireless Client with the AP

1. In the client device's wireless interface, select the SSID configured in the ["Configuring Wireless # Settings"](#) on [page 22](#) section.
2. Connect the client device to the selected WLAN SSID.
3. After the wireless client successfully connects to the wireless LAN, continue with ["Checking the TR069 Status \(FlexMaster Management only\)"](#) on [page 59](#) or ["What to Do Next"](#) on [page 60](#).

Checking the TR069 Status (FlexMaster Management only)

If you configured the AP to report to a FlexMaster server on the network, then make sure you verify that it can successfully communicate with the FlexMaster server. You can do this by checking the TR069 status on the AP's web interface.

1. If not already done, log in to the AP's web interface as described in ["Logging In to the Access Point's Web Interface"](#) on [page 19](#).
2. Go to the **Administration > Management** page.
3. Scroll down to the **TR069 Status** section.
4. Check the value for **Last successful contact**. If it shows a date in green, this indicates that the AP was able to communicate successfully with FlexMaster.

You have installed the AP in the field. Continue with ["What to Do Next"](#) on [page 60](#).

5 **What to Do Next**

The following are some of the post-installation tasks that Ruckus Wireless recommends. Refer to the *ZoneFlex Outdoor Access Point User Guide* for more information on configuring and managing the AP.

Changing the Administrative Password

Management access to the web interface of the AP is controlled through administrative user name and password. As soon as you complete the AP setup, make sure you log on to the AP's web interface and change the default administrative user name and password. This will help prevent unauthorized users from logging in to the AP's web interface and changing the AP settings to compromise your network.

Configuring the Security Settings

Unlike wired networks, anyone with a compatible wireless adapter can receive wireless data transmissions from your network well beyond your walls. To prevent unauthorized users from entering your wireless network and accessing your computers and files, Ruckus Wireless strongly recommends enabling and configuring wireless security on the AP. The AP supports several types of encryption and authentication methods to help prevent unauthorized access to your wireless network.

Configuring Advanced Settings and Features

The AP has been configured for basic operation. However, the Ruckus Wireless AP supports many advanced settings and features. Refer to the *ZoneFlex Outdoor Access Point User Guide*, *ZoneDirector User Guide*, or *FlexMaster User Guide* for instructions on how to configure the advanced setting and feature parameters.

Reading Related Documentation

If you are using FlexMaster or ZoneDirector to manage the AP, make sure you read the accompanying documentation to learn how to configure and manage the AP from the FlexMaster and ZoneDirector web interface.

The latest versions of Ruckus Wireless product documentation are available for download on the Ruckus Wireless Support Web site at

<http://support.ruckuswireless.com/documents>

Appendix A: Ruckus Wireless-Supplied and Customer-Ordered Parts

Table 20. Ruckus Wireless- and customer-supplied parts

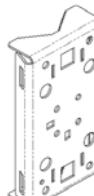
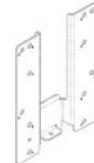
Part	Ruckus Wireless P/N	Factory Kit or Customer Ordered	Notes
Main Mounting Bracket (1 piece)		--	Factory AP Mounting Kit
U-Joint Bracket (1 piece)		--	Factory AP Mounting Kit
Small M6 Bolt and Washer Sets- -M6 hex bolt, 10mm, M6 x 1 with lock and flat washers (9 sets)		--	Factory AP Mounting Kit Stainless steel
Hook Bracket (1 piece)		--	Factory AP Mounting Kit
Large M8 Bolt and Washer Set --M8 hex bolt, 70mm, M8x1.25, with lock and flat washers (1 set)		--	Factory AP Mounting Kit Stainless steel
AP Attachment Bracket (1 piece)		--	Factory AP Mounting Kit

Table 20. Ruckus Wireless- and customer-supplied parts (Continued)

Part	Ruckus Wireless P/N	Factory Kit or Customer Ordered	Notes
1/2" (12.7mm) wide stainless steel adjustable clamps, 2.5-inch (63.5mm) diameter (4 pieces)	--	Factory AP Mounting Kit	Stainless steel
M 25 waterproof ethernet cable gland (2 pieces)	902-0183-0000	Factory AP Small Parts Kit	
AC cable connector (1 piece)	902-0185-0000	Factory AP Small Parts Kit	
Safety Cable Kit	902-0115-0000	Factory AP Small Parts Kit	
Ruckus Wireless 60W PoE injector (optional)	902-0180-XX00, where XX is the country code	Optionally customer-ordered	Only if PoE is used
Country-specific 3-wire AC power cable with an IEC C13 plug on the PoE injector end	--	Customer-supplied	Only if AC is used

Table 21. Orderable 2.4GHz Antennas

Part	Ruckus Wireless P/N	Notes
2.4GHz 5dBi V External Omni Outdoor Antenna	911-0005-VP01	Kit includes one vertically-polarized antenna

Table 21. Orderable 2.4GHz Antennas (Continued)

Part	Ruckus Wireless P/N	Notes
2.4GHz 6dBi H External Omni Outdoor Antenna	911-0006-HP01	Kit includes one horizontally-polarized antenna

Table 22. Orderable 5GHz Antennas

Part	Ruckus Wireless P/N	Notes
5GHz 12dBi 120-degree 2x2 Dual-Polarized Sector Outdoor Antenna	911-1212-DP01	--
5GHz 21dBi Point-to-Point 2x2 Dual-Polarized Directional Outdoor Antenna	911-2101-DP01	--
5GHz 24dBi Point-to-Point 2x2 Dual-Polarized Directional Outdoor Antenna	911-2401-DP01	--
5GHz 5.5dBi V External Omni Outdoor Antenna	911-0636-VP01	Kit includes one vertically-polarized antenna

Table 22. Orderable 5GHz Antennas (Continued)

Part	Ruckus Wireless P/N	Notes
5GHz 5dBi H External Omni Outdoor Antenna	911-0536-HP01	Kit includes one horizontally-polarized antenna
5GHz 5dBi H and V External Omni Outdoor Antennas	911-0636-VH01	Kit includes one vertically- and one horizontally-polarized antennas

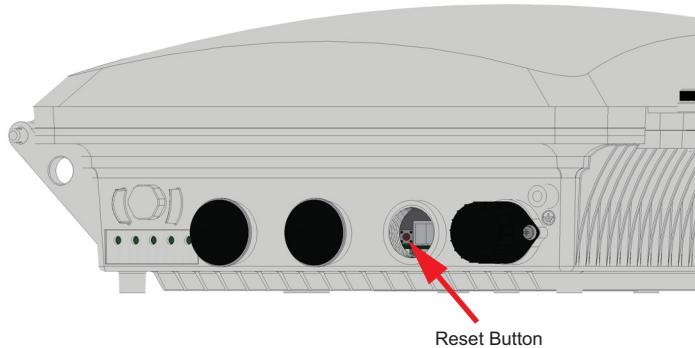
Appendix B: Resetting the Access Point to Factory Default Settings

You can reset the AP to its factory default settings by pressing the reset button located inside the *PoE OUT/RESET* port.

1. Remove the **PoE OUT/RESET** blanking cap or cable gland.
2. Make sure that the AP is powered.
3. Locate the reset button inside the *PoE OUT/RESET* port.
4. Using a pen or a similar pointed object, press the button for 10 seconds. The **PWR** LED turns red.
5. After the AP reboots, verify that the **PWR** LED is solid green. When the **PWR** LED is solid green, it indicates that the reset process is complete.

You have completed resetting the AP to its factory default settings.

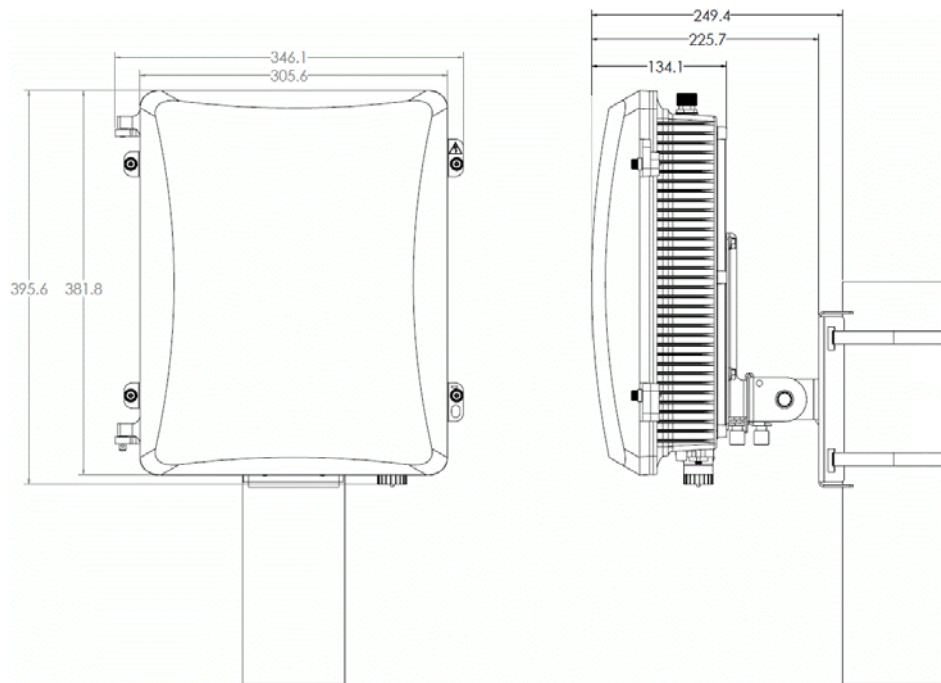
Figure 33. Location of the reset button



Appendix C: Installer Mounting Dimensions

All dimensions are in millimeters.

Figure 34. SC8800-S dimensions





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