RUCKUS
an ARRIS company

Q910 LTE
Access Point
User Guide

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- o   Increase the separation between the equipment and receiver.

- o   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- o   Consult the dealer or an experienced radio/TV technician for help.

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This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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https://www.ruckuswireless.com/

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Contents

Preface

Document conventions

The following tables list the text and notice conventions that are used throughout this guide.

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

TABLE 1 Text conventions

Convention	Description	Example
monospace	Identifies command syntax examples.	`device(config)# interface ethernet 1/1/6`
bold	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs**.
italic text	Publication titles	Refer to the *Ruckus Small Cell Release Notes* for more information

Notes, Cautions, and Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE
A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

CAUTION
A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

DANGER
A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
[ ]	Syntax components displayed within square brackets are optional.
	Default responses to system prompts are enclosed in square brackets.
{x| y| z}	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x|y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

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When contacting us, please include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)
- For example:
    - Ruckus Small Cell Alarms Guide SC Release 1.3
    - Part number: 800-71306-001
    - Page 88

Ruckus Product Documentation Resources

Visit the Ruckus website to locate related documentation for your product and additional Ruckus resources.

Release Notes and other user documentation are available at https://support.ruckuswireless.com/documents. You can locate documentation by product or perform a text search. Access to Release Notes requires an active support contract and Ruckus Support Portal user account. Other technical documentation content is available without logging into the Ruckus Support Portal.

White papers, data sheets, and other product documentation are available at https://www.ruckuswireless.com.

Online Training Resources

To access a variety of online Ruckus training modules, including free introductory courses to wireless networking essentials, site surveys, and Ruckus products, visit the Ruckus Training Portal at https://training.ruckuswireless.com.

Contacting Ruckus Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their Ruckus Networks products, and customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the Support Portal using https://support.ruckuswireless.com, or go to https://www.ruckuswireless.com and select **Support**.

What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the self-service resources use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Open a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Request for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, and Asia Pacific, toll-free numbers are available at https://support.ruckuswireless.com/contact-us and Live Chat is also available.

Self-Service Resources

The Support Portal at https://support.ruckuswireless.com/contact-us offers a number of tools to help you research and resolve problems with your Ruckus products, including:

- Technical Documentation—https://support.ruckuswireless.com/documents
- Community Forums—https://forums.ruckuswireless.com/ruckuswireless/categories
- Knowledge Base Articles—https://support.ruckuswireless.com/answers
- Software Downloads and Release Notes—https://support.ruckuswireless.com/software
- Security Bulletins—https://support.ruckuswireless.com/security

Using these resources will help you to resolve some issues and will provide TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at https://support.ruckuswireless.com/case management

About this Document

Introduction

This is a Ruckus Small Cell (RSC) setup guide authored to enable readers to onboard RSCs with the help of Ruckus Cloud Management system.

After successful setup and commissioning, Ruckus APs are capable of transmitting on 10 or 20 MHz bandwidth channels in TDD-LTE and providing wireless coverage to compatible LTE devices.

The goal for this document is to help users configure and setup a Q710 AP and successfully register and attach a user-equipment (UE) to be able to browse the internet.

This document can be divided broadly into following two sections:

- Hardware installation for Q910 APs
- Commissioning of APs using Ruckus Cloud

Each AP could be powered by either a managed PoE+ switch or PoE injector (PoE+ advisable) or DC power adaptor shipped within the AP box, whichever is available.

APs are by default configured to send dhcp requests when powered up and successful bootup is complete. APs rely on an external dhcp server to provide each AP, a routable IP address which will enable it to route and send connection requests to:

1. EMS (Ruckus Cloud)
2. Network (EPC)
3. SAS
4. Timing source (Master AP or GPS)

IP connectivity to 1, 2, 3, and PTP timing phase and frequency lock (4) is mandatory for an AP to be able to provide LTE service. A disruption of connection with any one may lead to a service outage.

Each AP can be configured to:

- Obtain its timing information from the GPS satellites and then assume the role of a Master PTP source for other APs in the network.
- Assume a PTP slave role and obtain its timing information from another AP that is the designated Master (that's IP reachable) for that venue.

For the AP to obtain timing via GPS and/or function as Master timing source, place the AP such that it has direct line-of-sight with open sky or as close to the outside facing windows or doors as possible.

> **NOTE**
> The terms Ruckus Small Cell (RSC) and Access Point (AP) imply the same meaning and may be used interchangeably through this guide.

Abbreviations

The following table describes the abbreviations used in the document.

TABLE 2 Abbreviations

Abbreviation	Description
AP	Access Point
EMS	Element Management System
EPC	Evolved Packet Core
GPS	Global Positioning System
MME	Mobility Management Entity
RSC	Ruckus Small Cell

Physical Installation of Q910

Q910 Access Point Installation

This section covers steps involved in assembling and installing a Q910 Access Point (AP) on strand mounts.

This Quick Setup Guide provides step-by-step instructions on how to set up your Ruckus Small Cell ™ Q910 AP. After completing the steps described in this guide, you will be able to place the Q910 at your site and provide LTE wireless network access to users.

FIGURE 1 Ruckus Small Cell Q910 Access Point

Before You Begin

The AP box shipped to you must be come with everything required to mount and power up the AP. Check the package contents as follows:

- Q910 LTE Access Point
- Two M25 data cable glands
- Outdoor AP Mounting Bracket Kit, consists of:
  - Mounting bracket
  - U-joint bracket
  - Long (175mm) linkage bracket
  - Short (100mm) linkage bracket
  - AP bracket
  - Four (4) hose clamps
  - Packet of screws, washers, and other hardware
- Safety cable kit

- One ground wire with lug
- Service Level Agreement/Limited Warranty Statement
- Regulatory Statement
- Quick Setup guide

Mounting Instructions

The following section provides instructions for connecting, attaching, and mounting the LTE Access Point.

Step 1: Connecting and Sealing the RJ45 Cables

Q910 may use one or two RJ-45 cables, one for Ethernet and Power (PoE IN), and another when Q910 is optionally supplying Ethernet out to a peripheral device, such as a small camera or backhaul radio. Connect and seal the RJ-45 cables using the M25 data cable glands.

⚠ *WARNING*
Do not use any PoE Injector that is not tested and approved by Ruckus Wireless to power the Q910 Access Point.
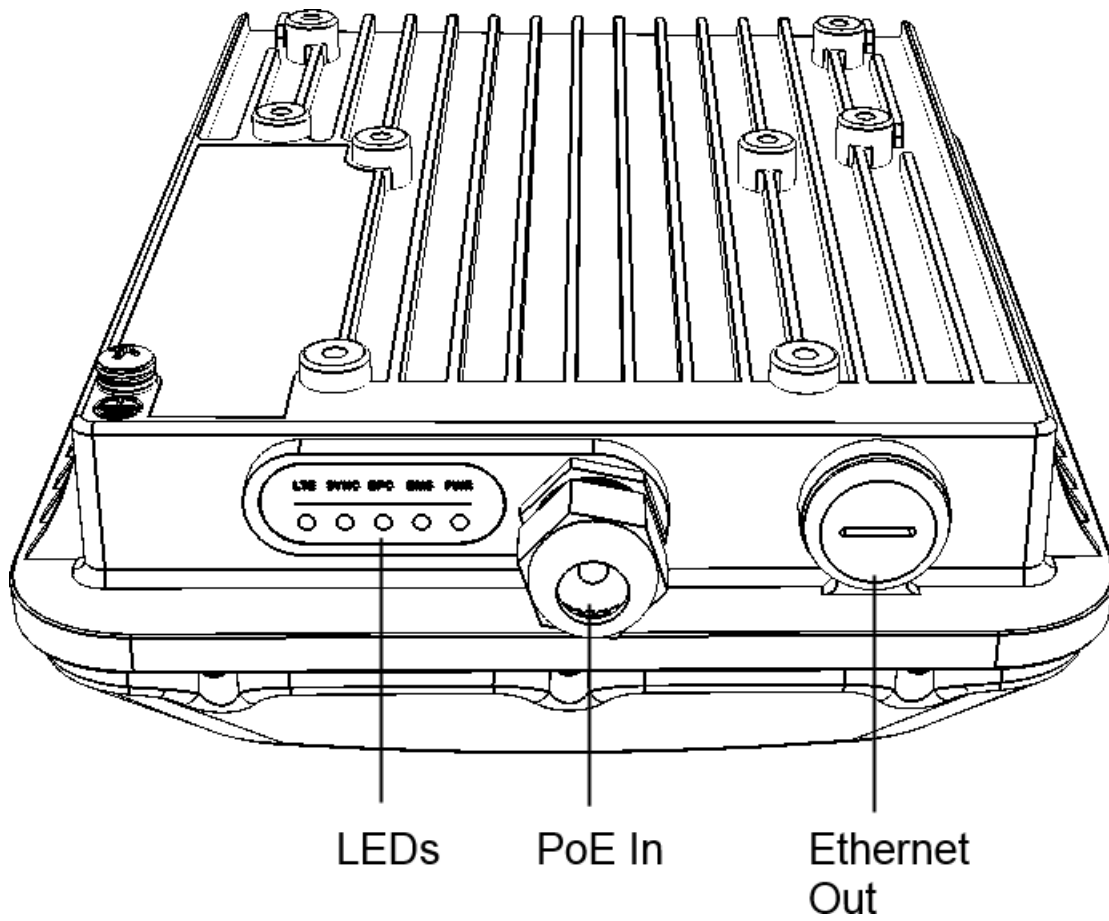
⚠ *WARNING*
Do not plug PoE IN power into the Ethernet OUT port.
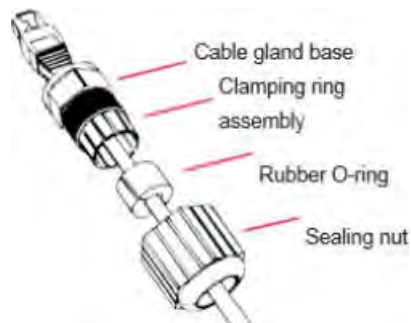
⚠ *WARNING*
If using a PoE switch to supply power to Q910, 30W must be reserved for Q910 on the switch. Failure to ensure a 30W supply may result in unpredictable operation of the access point.

FIGURE 2 LEDs, PoE IN and Ethernet OUT Ports

LEDs   PoE In   Ethernet Out

1. Feed the end of the cable through the sealing nut, rubber O-ring, clamping ring assembly and cable gland base.

FIGURE 3 RJ-45 Cable and Cable Gland Assembly

Cable gland base
Clamping ring assembly
Rubber O-ring
Sealing nut

2. Connect the cable to the Ethernet port in Q910.
3. Tighten the cable gland base into the Q910 chassis to 7 N.m or 62 in-lbs.
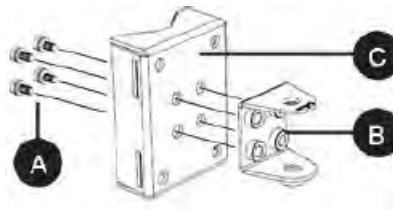
4. Wrap the clamping ring assembly around the rubber O-ring. Make sure that the clamping ring assembly fully encloses the rubber O-ring.

5. Seat the clamping ring assembly and rubber O-ring in the cable gland base.

6. Hand-tighten the sealing nut.

Step 2: Attaching the U-Joint bracket to the Mounting Bracket

1. Position the U-joint bracket on the mounting bracket.

   NOTE
   Mount the U-joint bracket in any direction on the mounting bracket, preferably to allow AP azimuth adjustments. Then the AP bracket allows AP elevation adjustments.
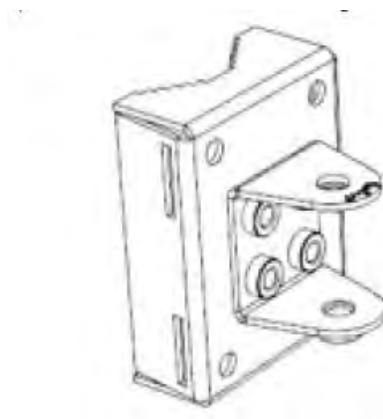

2. Use four 1/4-28 bolt and washer sets (A) to mount the U-joint bracket (B) to the mounting bracket (C). Tighten the bolts to 9.5 N.m (7 ft-lbs.)

3. Continue with Step 3A: Attaching the Mounting Bracket to a Flat Surface on page 10 and Step 3B: Attaching the Mounting Bracket to a Metal Pole on page 11.

Step 3A: Attaching the Mounting Bracket to a Flat Surface

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

   FIGURE 4 Mounting bracket flat surface holes

2. Remove the mounting bracket from the flat surface.

3.   Drill holes required for the mounting hardware.

> ***NOTE***
> The hardware required for mounting to a wall are not included in the mounting kit.

4.   Attach the mounting bracket to the flat surface using the mounting hardware.
5.   Using the mounting hardware instructions, tighten the hardware to secure the mounting bracket.
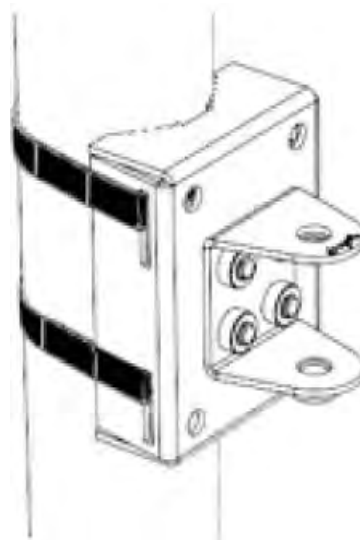6.   Continue with

Step 3B: Attaching the Mounting Bracket to a Metal Pole

1.   Insert the open end of one steel clamp into the upper two slots on the mounting bracket.
2.   Take the other steel clamp and insert it into the lower two slots on the mounting bracket.

> ***NOTE***
> The clamps can be daisy-chained together to accommodate larger poles.

3.   Use the clamps to attach the mounting bracket to the pole. Tighten the clamps to 3 N.m or 27 in-lbs., or per manufacturer's specifications.

4.   Continue with

Step 4: Mounting the Linkage Bracket to the U-Joint Bracket

The linkage bracket attaches to the U-joint bracket using an M8 bolt and washer set. The linkage bracket is symmetrical and either end can be attached to the U-joint bracket.

> ***NOTE***
> If you are mounting Q910 horizontally, use the longer (175 mm) linkage bracket. If you are mounting Q910 vertically, use the shorter (100 mm) linkage bracket.

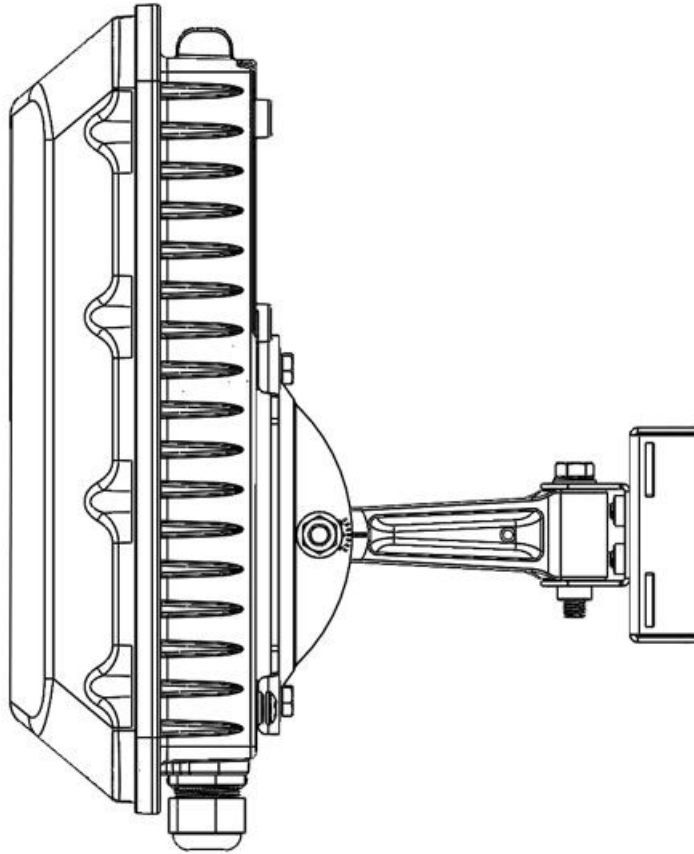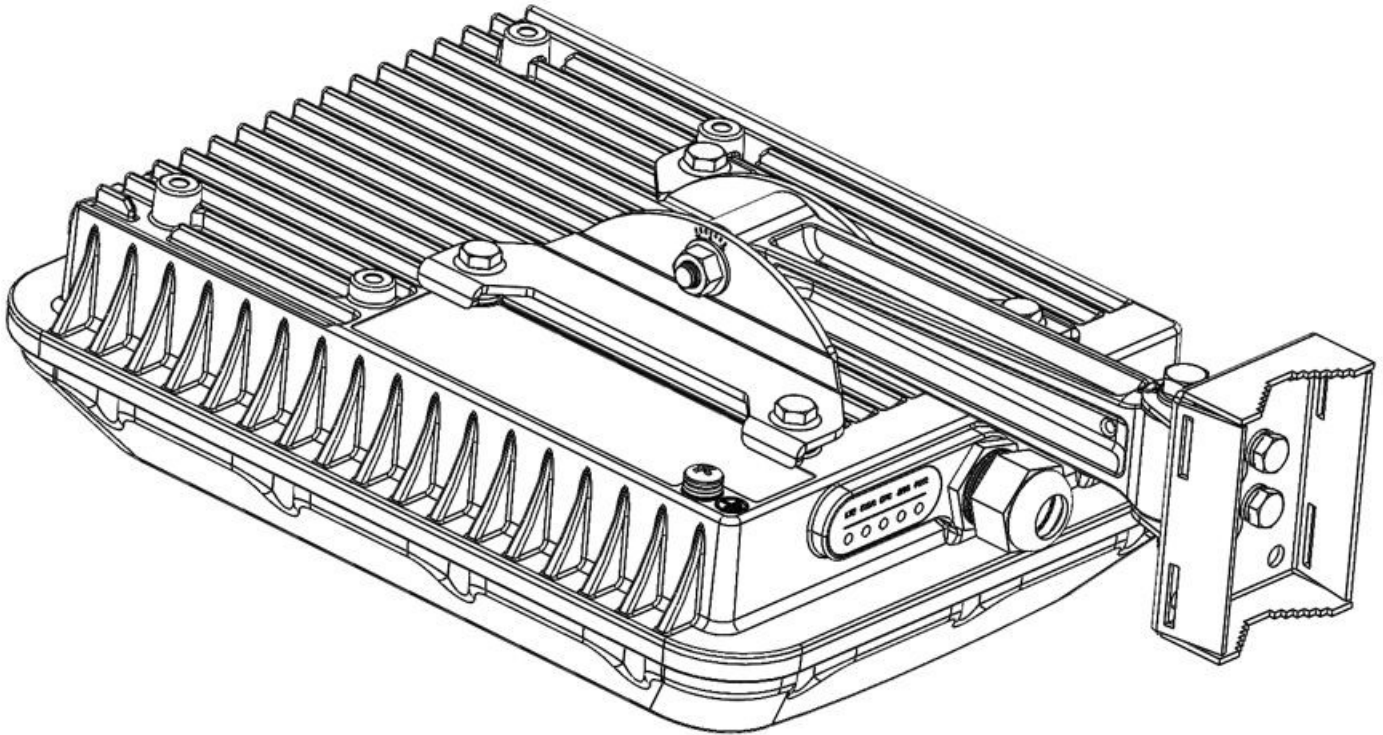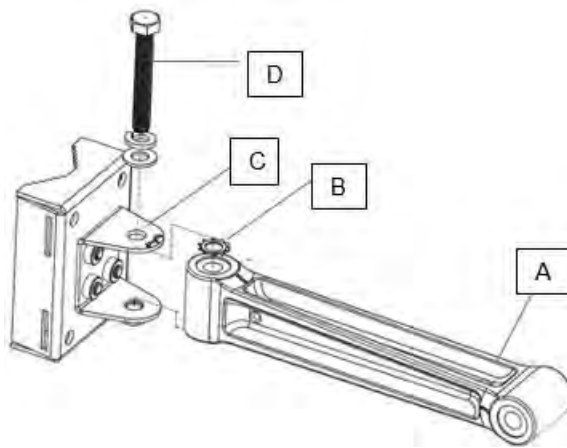*FIGURE 5 Vertical mounting with Short Linkage Arm*

FIGURE 6 Horizontal mounting with Long Linkage Arm

1. Loosely assemble the linkage bracket (A), the U-joint bracket (C), one serrated external-tooth lock washer (B), and one M8 bolt and washer set (D).

FIGURE 7 Attaching the linkage bracket to the U-joint bracket

2. Set the azimuth required by AP.
3. Tighten the M8 bolt to 13.6 N-m (10 ft-lbs.)
4. Continue with Step 5: Attaching the AP Bracket to the Linkage Bracket on page 14.

Step 5: Attaching the AP Bracket to the Linkage Bracket

Attach the AP bracket to the linkage bracket using the included bolt, nut, lock washer, flat washer, serrated external tooth washer shown in below figure.
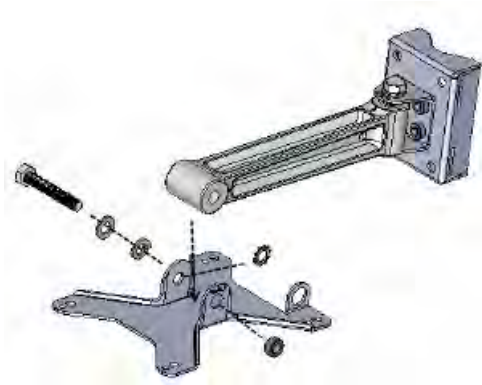
The AP bracket attaches to the linkage bracket using an M8 bolt and washer set. The linkage bracket is symmetrical, and either end can be attached to the AP bracket.

> **NOTE**
> Make sure that linkage bracket is installed with its serrated external-tooth lock washer on the inside of the AP bracket flanges. This ensures that the elevation adjustment does not change.

As described in Step 4: Mounting the Linkage Bracket to the U-Joint Bracket on page 11, loosely assemble the AP bracket, the linkage bracket, the second serrated external-tooth lock washer, and the second M8 bolt and washer set.

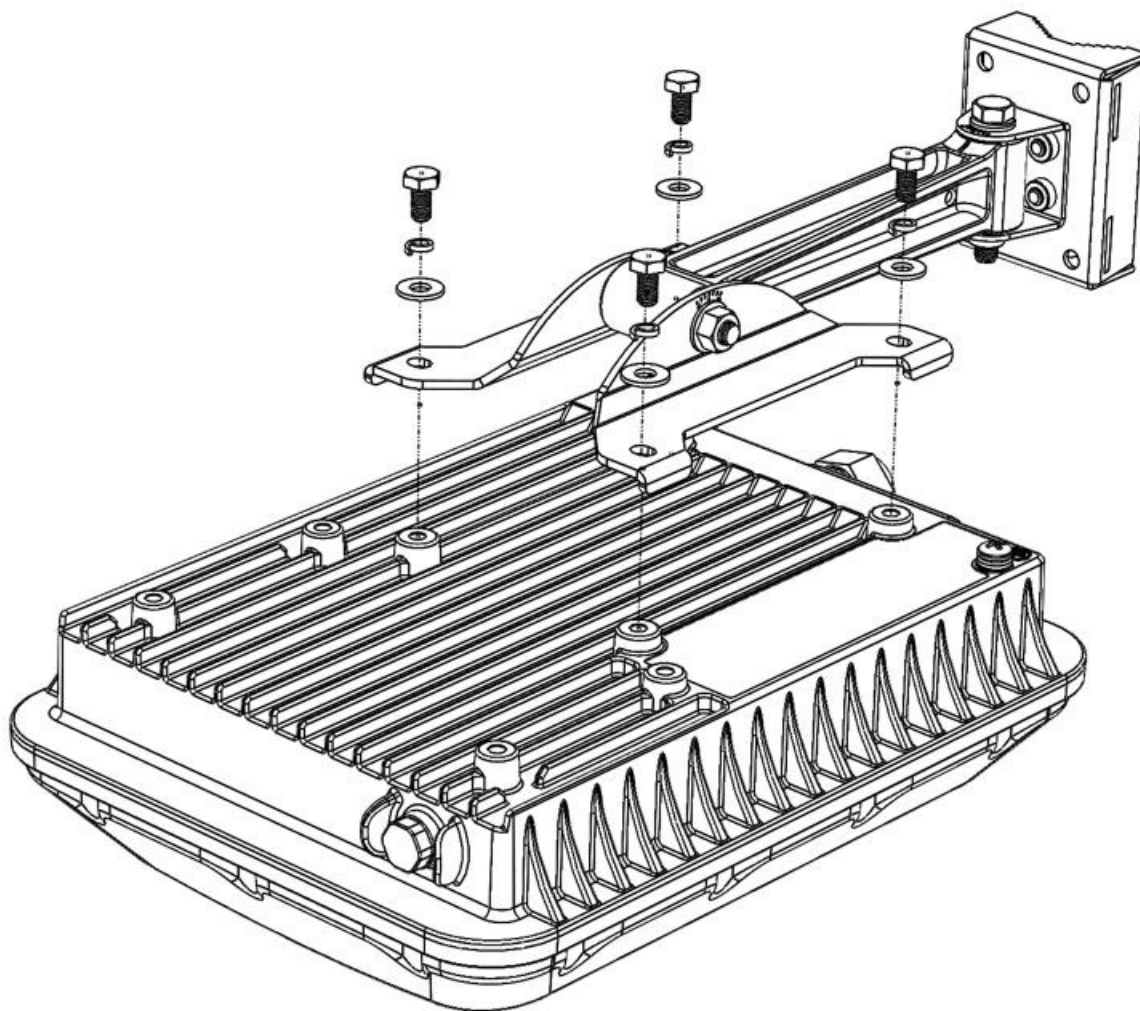*FIGURE 8 Attach the linkage bracket to the AP bracket*

Step 6: Attaching the AP Bracket to the Access Point

1. Place the AP bracket on to the back side of AP so that the four larger screw holes on the bracket align with the four screw holes on AP. Make sure that the end of the AP bracket with hoisting loop is on the same side as the AP PoE IN port.

   FIGURE 9 Attaching the AP bracket to AP

2. Use four 0.5-inch x 0.250-28 hex bolts with split lock and flat washer sets to mount the AP bracket to AP. Tighten the bolts to 2.5-3.0 N.m or 22-27 in-lbs.

⚠️ **CAUTION**
   Make sure that the screws are no longer than 0.5 inch. If a screw is longer than 0.5 inch, it can damage the AP chassis.

3. If required, suspend AP by attaching a carabiner to the hoisting loop on the AP bracket.

> *NOTE*
> This kit may include extra screws, nuts, and washers. You may use the extras wherever required.

4. Continue with

Step 7: Setting the Elevation and Tightening the Elevation Bolt

1. Set the elevation required by AP.
2. Tighten the M8 bolt to 13.6 N-m (10 ft-lbs.)
3. Continue with

Step 8: Earth Grounding the AP

⚠️ *CAUTION*
Make sure that earth grounding is available and that it meets local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.

NOTE
The color coding of ground wires varies by region. Before completing this step, check your local wiring standards for guidance.
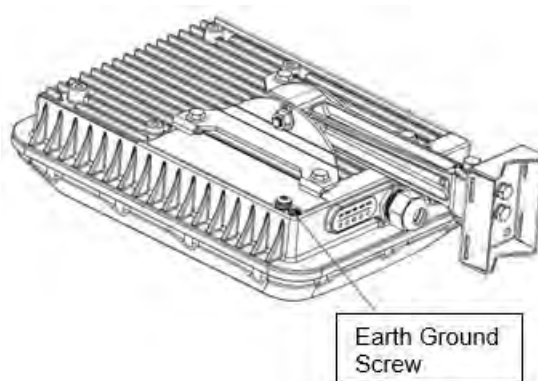
Using the factory-supplied ground wire and ground screw/ washer set, connect a good earth ground to the AP chassis ground point.

⚠️ *CAUTION*
Q910 AP includes one 12 mm stainless steel M6x1 earth ground screw with split lock and flat washers. Make sure that any replacement screw is no longer than 12 mm. If a screw is longer than 12 mm, it can damage the AP chassis.
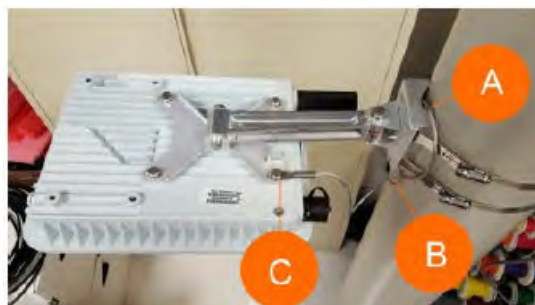
FIGURE 10 Connect good earth ground to AP here

Earth Ground Screw

Step 9: Installing the Security Cable

1. Thread the security cable through the mounting bracket and through the eye on the cable itself.
2. Attach the safety cable to the AP.

FIGURE 11 Attaching the Security Cable

Congratulations! You have mounted your Q910 access point.

Step 10: Checking LED Lights

Once connected, the AP will power on and automatically connect to the Ruckus Cloud over the Internet to configure itself. You will see some activity and after 2-5 minutes all lights should turn solid Green or solid Amber (LTE LED).

If any light on the AP is off or flashing, see the following table for troubleshooting:

TABLE 2 Troubleshooting Table for LED Lights

Light	Troubleshooting Action
PWR	Check Power, Ethernet connections and PoE switch.
EMS	Check Internet connection and network settings.
EPC	Check Internet connection and network settings.
SYNC	Make sure at least one of the APs in the network is near an unobstructed window for a good GPS signal.
LTE	Use the Ruckus Cloud.

Factory Resetting AP Q910

In case the AP fails to connect to the Cloud, do Factory Reset for the AP by long-press-hold action for up to 20 seconds on to the Reset button provided right beside the GPS connector.

(Once connected to the Cloud, Factory Reset can be performed via Edit AP drop-down as well).

Support

In case you run into any issue and you need help, please call us or email us: at http://support.ruckuswireless.com