P300 Wireless Bridge Quick Setup Guide

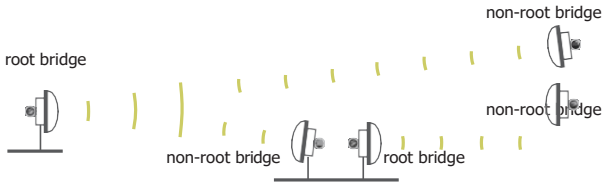
Note: This Quick Setup Guide is designed to work with the *P300 Wireless Bridge Mounting Guide*. Complete the procedures in this document before continuing with the Mounting Guide.

Note: The minimum software revision for the P300 is base image 100.1.0.9 or later. FlexMaster requires firmware 9.12 and later to manage the P300.

This Quick Setup Guide provides information on how to configure the Ruckus Wireless P300 802.11ac point-to-point and point-to-multipoint outdoor wireless bridge on the network. The P300 can use its internal 5GHz antennas, or can optionally use a two-port customer-ordered external 5GHz antenna. After completing the steps described in this Guide, you will be able to place the P300 at your site. The rest of this guide refers to the P300 wireless bridge as the P300, root bridge, or non-root bridge. The P300 can be ordered either as an unconfigured single P300, or as a pre-configured matched pair of P300s. These P300s are almost always installed in pairs, where one is configured as a root bridge and the other as a non-root bridge.

The P300 can be deployed as a root bridge connected to the Ethernet backhaul, or can be deployed as a non-root bridge connected to the root bridge via the wireless link. The P300 can be equipped with customer-purchased external 5GHz antennas to increase the root bridge-to-non-root bridge connectivity range, or to increase the number of non-root bridges that a root bridge can communicate with.

Figure 1. P300s deployed as root bridge and non-root bridge



Note: When deployed in the root bridge--non-root bridge -to- root bridge--non-root bridge configuration, the two wireless links must use different SSIDs.

This Guide in Other Languages

请从以下网站获得该指南的简体中文版
https://support.ruckuswireless.com
Vous trouverez la version française de ce guide à l'adresse suivante
https://support.ruckuswireless.com
このガイドの日本語版は https://support.ruckuswireless.com
でご覧ください
이 가이드의 한국어 버전은 웹 사이트
(https://support.ruckuswireless.com) 에서 확인하시기 바랍니다
Veja a versão em português (Brasil) deste guia em
https://support.ruckuswireless.com
Puede ver la versión en español (América Latina) de esta guía en
https://support.ruckuswireless.com

Before You Begin

Before deploying Ruckus Wireless products, please check for the latest software and the release documentation.

- User Guides and Release Notes are available at http://support.ruckuswireless.com/documents
- Software Upgrades are available at http://support.ruckuswireless.com/software
- Software License and Limited Warranty are available at http://support.ruckuswireless.com/warranty

Safety Warnings

- WARNING! Only trained and qualified personnel should be allowed to install, replace, or service this equipment. The professional installer is responsible for the proper installation and configuration of this P300. The P300 installation must comply with local regulatory requirements, especially with those regulating operation near military and/or weather radar systems.
- WARNING! Installation of this equipment must comply with local and national electrical codes.
- WARNING! Ruckus Wireless strongly recommends that you wear eye protection before mounting the P300.
- WARNING! The Ruckus Wireless PoE injector (ordered separately) is for indoor use only. Never mount the PoE injector outdoors with the P300.
- CAUTION: Make sure that you form a 80mm - 130mm (3”-5”) drip loop in any cable that is attached to the P300 or the building. This will prevent water from running along the cable and entering the P300 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.
- NOTE: Allowable external antenna types and antenna gains may be limited by local regulatory requirements.

Package Contents

Before configuring or deploying your P300, verify that all items listed below are included in the package. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

One or two P300 kits, depending on ordered part:

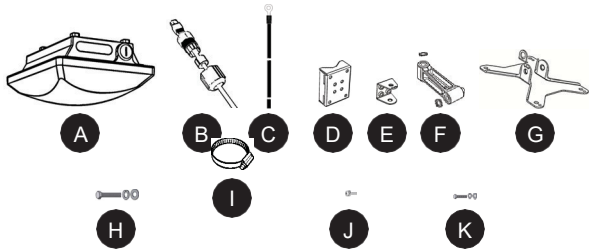
- 901-P300-xx01, P300, 802.11ac 5GHz point-to-point wireless bridge, includes one P300 kit
- 901-P300-xx02, P300, 802.11ac 5GHz point-to-point wireless bridge, pre-provisioned pair, includes two P300 kits
  where ‘xx’ is a country-specific code.

Each P300 kit contains:

- One P300, which includes a 12mm stainless steel M6x1 Phillips earth ground screw with split lock and flat washers (A in Figure 2)
- One M25 data cable gland (B in Figure 2)
- One green/yellow earth ground wire with ring terminal (C in Figure 2)
- One wall- or pole-mounting bracket (D in Figure 2)
- One U-joint bracket (E in Figure 2)
- One linkage bracket with two serrated external-tooth lock washers (F in Figure 2)
- One P300 bracket (G in Figure 2)
- Two sets 50mm stainless steel M8x1.25 hex bolt with split lock and flat washers (H in Figure 2)
- Four SAE32-sized stainless steel clamps, 38.1mm to 63.5mm (1.5" to 2.5") inner diameter (I in Figure 2)
- Four sets stainless steel 8mm M4x0.7 pan head Phillips screws with split lock and flat washers (J in Figure 2)
- Eight sets stainless steel 0.5-inch x 0.250-28 hex bolt with split lock and flat washers (K in Figure 2)
- Service Level Agreement/Limited Warranty Statement
- Regulatory Statement
- Declaration of Conformity, if required
- This *Quick Setup Guide*
- *P300 Wireless Bridge Mounting Guide*
- *N-Type Connector Sealing Instructions*

NOTE: *This kit includes extra bolts, nuts and washers. You may use the extras wherever required.*

Figure 2. P300 field-installation kit contents



Copyright © 2019 CommScope, Inc. All rights reserved.
Published November 2019, Part Number 800-70607-001 Rev D

LEDs and Indications

The P300 has five LEDs visible on the outside of the chassis. The LEDs have two different operating modes, and the LEDs can be manually turned on and off by the operator. Refer to Table 1 for a description of these LEDs and their operating modes.

Table 1. P300 LED indications

LED	Normal Mode	Aiming Mode (all green)
PWR	• Red = booting • Green = normal operation	Aiming Strength 4 • Solid: Min + 36 RSSI (RSSI >= 42) • Blinking: Min + 32 RSSI (42> RSSI >= 36)
CTL	• Off = standalone operation • Other modes = to be determined	Aiming Strength 3 • Solid: Min + 24 RSSI (36 > RSSI >= 30) • Blinking: Min + 18 RSSI (30 > RSSI >= 24)
ROOT	• Off = non root bridge • Solid green = root bridge	Aiming Strength 2 • Solid: Min + 12 RSSI (24 > RSSI >= 18) • Blinking: Min + 6 RSSI (18 > RSSI >= 12)
5G	• Off = radio down • Solid green = radio up & link up • Flashing green = radio up but no link	Aiming Strength 1 • Solid: RSSI >= Configured Minimum (12 > RSSI >= 6) • Blinking: RSSI < Configured minimum (Default: 6 which is configurable)
AIM	• Green = aiming mode • Off = normal mode	• Green = aiming mode (Note) • Off = normal operation mode
Note: The P300 remains in aiming mode for 15 minutes after aiming is started.		

Continue with the following:

- Configuring the P300
- Physical Installation
- Troubleshooting

CONFIGURING THE P300

Continue with the following steps:

- Step 1: Collecting Setup Requirements, Hardware, and Tools
- Step 2: Connecting Your Computer to the P300
- Step 3: Preparing Your Computer for P300 Setup
- Step 4: Logging Into the P300 Web Interface
- Step 5A: Manually Provisioning a P300 Using the Web Interface
- Step 5B: Manually Provisioning a Non-Root Bridge Using a Local Configuration File
- Step 5C: Customizing the Wireless Settings for a Provisioned P300
- Step 6: Auto-Provisioning a Root Bridge and Non-Root Bridge Pair
- Step 7: Verifying Association Between the P300s

Step 1: Collecting Setup Requirements, Hardware, and Tools

- A computer with Ethernet adapter running Windows 7 or equivalent, with Firefox or equivalent web browser. (Procedures for common operating systems are similar.)
- Two Cat 5e (or better) Ethernet cables.
- A Ruckus Wireless 902-0184-xx00 or better PoE injector (sold separately)
  --OR--
  an 802.3af-compliant Power over Ethernet (PoE) switch or PoE injector.

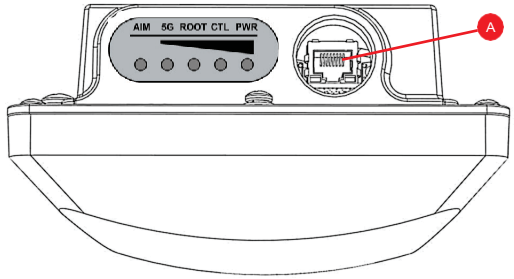
Continue with Step 2: Connecting Your Computer to the P300.

Step 2: Connecting Your Computer to the P300

CAUTION: Do not attempt to access the Web interface of two P300s at the same time by connecting both to the same Layer 2 switch or to the same broadcast domain on a live network. This causes a network loop, which can disrupt your network.

1. After removing your P300 from its package, place it next to your computer.
2. Remove the cable gland from the bottom of the P300.
3. Using an Ethernet cable, connect the 10/100/1000 Ethernet port on the P300 (A in Figure 3) to a PoE injector or switch for both power and network connectivity.
4. If necessary, using another Ethernet cable, connect your computer's network port to a data/network port on the PoE injector or switch.

Figure 3. P300 LEDs and Ethernet port



5. After bootup, verify that the PWR LED on the P300 is a steady green.

Continue with Step 3: Preparing Your Computer for P300 Setup.

Step 3: Preparing Your Computer for P300 Setup

NOTE: The following procedures assume that Windows 7 is the operating system. Procedures for other operating systems are similar.

1. On your Windows 7 computer, configure your network adapter from the *Local Area Connection* settings as follows:
   - Start > Control Panel > Network and Sharing Center > Change Adapter Settings
2. Edit the TCP/IPv4 address settings as follows:
   - Local Area Connection > Properties > Internet Protocol Version 4 (TCP/IPv4) > Properties

   The *Internet Protocol Version 4 (TCP/IPv4) Properties* dialog box appears.

   IMPORTANT! Write down all of the currently active settings so you can restore your computer to its current configuration when this procedure is completed.
3. Select Use the following IP address (if it is not already selected) and then make the following entries:
   - IP address: 192.168.2.22 (or any available address in the 192.168.2.x network, except 192.168.2.1 and 192.168.2.254, which are the defaults used by the P300s)
   - Subnet mask: 255.255.255.0

   Leave the DNS server and Default gateway fields empty.
4. Click OK to save your changes.

Your changes are put into effect immediately. Continue with Step 4: Logging Into the P300 Web Interface.

Step 4: Logging Into the P300 Web Interface

As specified in Step 3: Preparing Your Computer for P300 Setup, the computer should be connected to your P300 through the Ethernet port and powered on, ready for setup.

1. On your computer, open a Web browser window.
2. In the browser, enter a URL to connect to the P300:
   - **Root bridge**: `https://192.168.2.1`
   - **Non-root bridges**: `https://192.168.2.254`
3. Press <Enter> to initiate the connection. When a security alert dialog box appears, click OK/Yes to proceed.
4. When the *Ruckus Wireless Admin* login page appears, enter the following:
   - **Username**: super
   - **Password**: sp-admin
5. Click Login. On your first login, you will be prompted to change the default password.
6. When the *Change Password* dialog box displays, enter the following:
   - **New Password**: Enter a new password.
   - **Confirm Password**: Re-enter the new password.
7. Click **Submit**.
8. Log in using the new password.

If the P300 displays the *Manual Provisioning Wizard* page and you do not have a local configuration file, then continue with Step 5A: Manually Provisioning a P300 Using the Web Interface.

If the P300 displays the *Manual Provisioning Wizard* page and you do have a local configuration file, then continue with Step 5B: Manually Provisioning a Non-Root Bridge Using a Local Configuration File.

If a provisioned P300 displays the *Manual Provisioning Wizard* page, then continue with Step 5C: Customizing the Wireless Settings for a Provisioned P300.

Copyright © 2019 CommScope, Inc. All rights reserved.
Published November 2019, Part Number 800-70607-001 Rev D

Step 5A: Manually Provisioning a P300 Using the Web Interface

Each root bridge can support up to 10 non-root bridges in a point-to-multipoint deployment. This step allows you to provision a P300 as root bridge or a non-root bridge.

NOTE: When you are manually provisioning another P300, you may also need to assign a static IP address to avoid having multiple P300s with the same IP address (192.168.2.1 or 192.168.2.254), unless the IP addresses are to be assigned using DHCP.

1 Log into the P300's Web interface as described in Step 4: Logging Into the P300 Web Interface.
2 If the P300 is in the unprovisioned, factory-default state, then the P300 displays the *Manual Provisioning Wizard*.
3 In the *Manual Provisioning Wizard*, select Root AP for a root bridge, or select Mesh AP for a non-root bridge.
4 Click Next. The *Manual Provisioning Wizard* displays the *Tell us about your WLAN configuration* page.

NOTE: The following Channel Width, Country Code, SSID and Passphrase entries must be the same for the root bridge and the non-root bridge.

5 In the *Tell us about your WLAN configuration* page, enter the following:
- Channel Width -- 20 MHz, 40 MHZ, or 80 MHz (default).
- Country Code -- Select the country in which the P300s will be operating.
  NOTE: If you purchased the AP in the United States, then this value is fixed to United States at the factory and is not user configurable. If you purchased the AP outside the United States, then 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.
- SSID -- Enter a link-specific service set identifier.
- Passphrase -- Enter a link-specific passphrase.
- Import Configuration (non-root bridge only) -- Click Choose File to import the configuration file which has been exported from an existing root bridge. The configuration file was exported from a root bridge as described in Step 5C: Customizing the Wireless Settings for a Provisioned P300.

6 Click Next. The *Manual Provisioning Wizard* displays the *Your Setup* page.
7 In the *Your Setup* page, click Reboot. The P300 saves your configuration and reboots.

If you have an unmatched pair of P300s, then continue with Step 6: Auto-Provisioning a Root Bridge and Non-Root Bridge Pair. If you want to verify the association between P300s, then continue with Step 7: Verifying Association Between the P300s.

Step 5B: Manually Provisioning a Non-Root Bridge Using a Local Configuration File

Each root bridge can support up to 10 non-root bridges in a point-to-multipoint deployment. For best performance use no more than four non-root bridges. This step allows you to provision a P300 as a non-root bridge using a local provisioning file.

NOTE: When you are manually provisioning another P300, you may also need to assign a static IP address to avoid having multiple P300s with the same IP address (192.168.2.1 or 192.168.2.254), unless the IP addresses are to be assigned using DHCP.

1 Log into the P300's Web interface as described in Step 4: Logging Into the P300 Web Interface.
2 If the P300 is in the unprovisioned, factory-default state, then the P300 displays the *Manual Provisioning Wizard*.
3 In the *Manual Provisioning Wizard*, select Mesh AP for a non-root bridge.
4 Click Next. The *Manual Provisioning Wizard* displays the *Tell us about your WLAN configuration* page.
5 In the *Tell us about your WLAN configuration* page, select *Import Configuration* / Choose File. Select the configuration which has been exported from an existing root bridge using the procedure in Step 5C: Customizing the Wireless Settings for a Provisioned P300.
6 Click Next. The *Manual Provisioning Wizard* displays the *Your Setup* page.
7 In the *Your Setup* page, click Reboot. The P300 saves your configuration and reboots.

If you have an unmatched pair of P300s, then continue with Step 6: Auto-Provisioning a Root Bridge and Non-Root Bridge Pair. If you want to verify the association between P300s, then continue with Step 7: Verifying Association Between the P300s.

Step 5C: Customizing the Wireless Settings for a Provisioned P300

This step allows you to change the Channel Width, Country Code, SSID and Passphrase selections, as well as the Channel, root bridge or non-root bridge mode, and other Advanced and Rate Limiting settings. This step also allows you to deactivate the internal antenna and activate external 5GHz antennas. Finally, it allows you to export a root bridge configuration file which can be manually imported into a non-root bridge.

Table 2. Default P300 Settings (for your reference)

Channel	Auto
Channel Width	80 MHz
Country Code	United States
Default Management IP Address	192.168.2.1 root bridge, and 192.168.2.254 non-root bridge

1 Log into the P300's Web interface as described in Step 4: Logging Into the P300 Web Interface.
2 Navigate to Configuration > Wireless. The *Configuration > Radio 5G* page appears.
  If the P300 displays the *Manual Provisioning Wizard* page, then skip this step and continue with Step 5A: Manually Provisioning a P300 Using the Web Interface or Step 5B: Manually Provisioning a Non-Root Bridge Using a Local Configuration File.
3 In the *Configuration > Radio 5G* page, make any or all of the following changes:

CAUTION: The Channel, Channel Width, Country Code, SSID and Passphrase entries must be the same for the root bridge and all non-root bridges in the same linked group of P300s.

CAUTION: If you are changing the Country Code after the P300s have already been configured, then you must configure the non-root bridges first and then the root bridge last to avoid losing connectivity.

- Radio Network -- This name can be changed.
- Channel -- This can remain as Auto (SmartSelect) or you can manually select a channel for this linked group of P300s.
- Available Channel -- If you selected *Auto* Channel, then you can deselect channels that you do not want the link to use. If you selected any other Channel, then you can select channels that the link can also use.
- Channel Width -- Select 20 MHz, 40 MHz, or 80 MHz (default).
- Country Code -- Select the country in which the P300s will be operating.
- Advanced Settings -- Click *Edit Advanced Settings*. Refer to the Outdoor AP User Guide for instructions.
- Rate Limit Settings -- Click *Edit Rate Limit Settings*. Refer to the Outdoor AP User Guide for instructions.
- External Antenna -- Select *Enabled* to use an external 5GHz antenna, or select *Disabled* to use the internal P300 antenna.
- SSID -- Enter a link-specific service set identifier.
- Passphrase -- Enter a link-specific passphrase.
- Wireless Bridge Mode -- Select Root AP = root bridge or Mesh AP = non-root bridge to change the basic P300 configuration.
- Export Configuration (root bridge only) -- STOP! If you have made no changes after updating the settings, then click Export Configuration to have the P300 save the current configuration to a local computer file. If you have made any changes, then click Update Settings to have the P300 save your current selections before clicking Export Configuration.

Copyright © 2019 CommScope, Inc. All rights reserved.
Published November 2019, Part Number 800-70607-001 Rev D

4 Click Update Settings to have the P300 save your current selections.

Optional: In a default P300 configuration, the P300 uses a DHCP-assigned IP address.
If you anticipate logging into the P300 regularly to perform monitoring or maintenance once it is in place, then you may want to consider switching from DHCP and instead assigning a static IP address to the P300.

A. On the Web interface menu, click Configuration > Internet.
B. Click the Static IP option.
C. Fill in the IP Address and Mask fields.
D. Click Update Settings to save your changes.

5 Click Logout to exit the Web interface.
6 When the *Ruckus Wireless Admin* login page reappears, you can exit your browser.
7 Disconnect the P300 from the computer and from the power source, and then restore your computer to its original network connection configuration.

NOTE: You can use a Ruckus Wireless controller for bulk P300 provisioning and performing other commands. Refer to the controller documents for instructions.

If you have an unmatched pair of P300s, then continue with Step 6: Auto-Provisioning a Root Bridge and Non-Root Bridge Pair. If you want to verify the association between P300s, then continue with Step 7: Verifying Association Between the P300s.

Step 6: Auto-Provisioning a Root Bridge and Non-Root Bridge Pair

If you want a matched pair of root and non-root bridges for a point-to-point connection, then continue with this step. If you do not want a matched pair of root and non-root bridges, or if your P300s are already a matched pair, skip this step and continue with Step 7: Verifying Association Between the P300s.

NOTE: Auto provisioning can only be performed on two P300s. If you will be using more than two, then you will need to manually provision the third P300 using Step 5A: Manually Provisioning a P300 Using the Web Interface or Step 5B: Manually Provisioning a Non-Root Bridge Using a Local Configuration File after you have matched a pair of P300s first.

NOTE: The resulting root bridge is assigned IP address 192.168.2.1, and the resulting non-root bridge is assigned IP address 192.168.2.254. Both of these IP addresses can be changed manually or by using DHCP after reboot.

1 Power up both P300s.
2 Use an Ethernet cable to connect the two P300s. The auto-provisioning process starts.
   During the auto-provisioning process, the ROOT LEDs on the P300s flash about once every two seconds until a root and a non-root bridge are selected. The process automatically chooses the P300 with the lower MAC address as the root bridge, and automatically chooses the P300 with the higher MAC address as the non-root bridge.
   When the auto-provisioning process is completed, the root bridge's ROOT LED is solid green, and the non-root bridge's ROOT LED is off.
3 Note which P300 is root and which is the non-root bridge.
4 Disconnect the Ethernet cable between the two P300s, and then:
   A. Log into each P300's Web interface as described in Step 4: Logging Into the P300 Web Interface.
   B. Navigate to the Maintenance > Reboot/Reset page and reboot each P300.

Continue with Step 7: Verifying Association Between the P300s.

Step 7: Verifying Association Between the P300s

After you have provisioned a root and non-root pair, verify that they automatically associate with each other.

1 If not already done, power up both P300s.
2 Verify that the PWR LEDs on both P300s are steady green.
3 Log into each P300's Web interface as described in Step 4: Logging Into the P300 Web Interface.
4 Navigate to each Status > Wireless page.
5 Wait approximately one to two minutes.
6 When the two P300s associate with each other, in the *Connected Devices* section each Status > Wireless page, the P300 display changes from "No stations are currently associated with this WLAN" to a visual indicator of the connected P300 IP address, MAC address, SSID, and other information. When this information appears, you have verified that the two P300s are associated with each other. Continue with Physical Installation.
7 If the P300s fail to associate with each other after a few minutes, make sure that the Country Codes, SSIDs, and Passphrases are set to the same values, and that the Channels are set to Auto (or to the same channel, if set manually).
   If these settings are the same, then use the ping, traceroute, show ARP table, and show FDB table tools on the Administration > Diagnostics page to diagnose the problem.

Congratulations! You have configured your P300 wireless bridge(s).
Continue with Physical Installation.

PHYSICAL INSTALLATION

After you have completed the procedures in this guide, continue with the *P300 Wireless Bridge Mounting Guide*.

TROUBLESHOOTING

CAUTION: *If required, you can reset the P300 to its factory default settings by pressing and holding the reset button located inside the PoE IN port, on the side farther from the P300 LEDs, for six seconds. DO NOT DO THIS UNLESS SO INSTRUCTED. (Doing this resets the P300 IP address to 192.168.2.1.)*

NOTE: *After a reset, you can access the internal P300 web interface using* https://192.168.2.1 *for a root bridge or* https://192.168.2.254 *for a non-root bridge). Your device must use any other address from 192.168.2.2 through 192.168.2.253, with subnet mask 255.255.255.0. The username is* `super`*, and the password is* `sp-admin`*. Refer to the P300 Wireless Bridge User Guide for information on configuring and operating the P300. This document is available at* https://support.ruckuswireless.com

NOTE: *After a P300 is removed from its mounting, it may drip some water from the channel surrounding the radome. As long as the P300 has been operating normally, this incidental water collection and dripping is normal, and is not service-affecting.*

Copyright © 2019 CommScope, Inc. All rights reserved.
Published November 2019, Part Number 800-70607-001 Rev D