



## Mounting Overview

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This chapter provides an access point/bridge mounting overview. The following sections are included in this chapter:

- [Mounting the Access Point/Bridge, page 3-2](#)
- [Mounting Hardware, page 3-2](#)
- [LEDs, page 3-5](#)

## Mounting the Access Point/Bridge

Typically, the access point/bridge is installed on a rooftop, mast, tower, wall, or a suitable flat surface. Each of these installations requires a different approach. This document provides a mounting overview. For detailed mounting instructions, refer to the mounting instructions that shipped with your unit.

The access point/bridge is available in two configurations:

- Integrated antenna access point/bridge (with 13-dBi)
- External antenna access point/bridge (with two antenna connectors for use with a single antenna or dual diversity antennas)



### Note

Personnel installing the access point/bridge must understand wireless techniques, antenna mounting and adjustment, and grounding methods.



### Note

To meet regulatory restrictions, the external antenna access point/bridge unit and the external antenna must be professionally installed. The network administration or other IT professional responsible for installing and configuring the unit is a suitable professional installer. Following installation, access to the unit should be password-protected by the network administrator to maintain regulatory compliance.

The following warning applies to outdoor and vehicle installations:



### Warning

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**  
Statement 1030

## Mounting Hardware

The access point/bridge supports the following optional mounting kits:

- The roof mount kit (for indoor or outdoor use) contains these items:
  - One roof-wall mount
  - Two dual-coax cables [20 ft (6.1 m) and 50 ft (15.2 m)]
  - Multi-function mount (consisting of a access point/bridge bracket and a mast bracket)
  - Two tower clamps (U-bolts) with four nuts and washers
  - Four bolts and washers for securing the access point/bridge bracket to the mast bracket
  - Four bolts for securing the access point/bridge bracket to the unit
  - Grounding block and mounting screws
  - Ground lug for the access point/bridge, two hex nuts, and two washers
  - Weatherproofing kit (consisting of Coax Seal and electrical joint compound)
- The wall mount kit (for indoor use) contains these items:
  - Wall mount bracket with 4 mounting bolts and washers
  - Two sub-mini RG-59 cables (12 in or 30.5 cm)

## Window Mounting

When a wireless link is deployed through a window, significant signal loss can be introduced by the window. Typical losses range from 5 to 15 dB per window, depending upon the type of glass. You should take this extra loss into account when planning antenna gains and power settings. A thorough site survey is critical for deployments through windows.

For additional information on a window mounting bracket, refer to the following URL:

<http://www.terrawave.com/BR1300>

## Multi-Function Mount

The multi-function mount provides a method for mounting the access point/bridge on a mast, tower, or a roof mount and consists of two parts (see [Figure 3-1](#)):

- An access point/bridge bracket—attaches to the back of the unit
- A mast bracket—attaches to the mast, tower, or roof mount

The multi-function mount permits easy azimuth and elevation adjustments. The basic mounting procedure is shown below:

1. Mount the access point/bridge bracket to the mounting lugs on the access point/bridge.
2. Mount the mast bracket to the tower or mast using the supplied U-bolts or appropriately sized user-supplied U-bolts.
3. Suspend the access point/bridge on the mast bracket using the support pins.
4. Secure the access point/bridge bracket to the mast bracket using the supplied nuts, bolts, and washers (hand tighten).
5. Connect the dual-coax cable to the power injector dual-coax Ethernet ports (F-type connectors) on the access point/bridge.



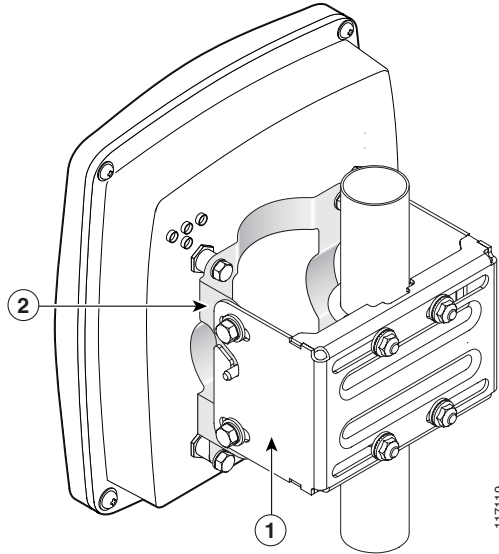
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**Note** You should securely tighten the cable connectors (15 to 20 inch-pounds) using a small wrench.

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6. Connect the ground wire to the outdoor mounted access point/bridge using the supplied ground lug.
7. Connect the power cable to the power injector.
8. Tighten the nuts and bolts.

**Figure 3-1 Multi-Function Mount**



|          |  |          |              |
|----------|--|----------|--------------|
| <b>1</b> | Access point bracket with support pins | <b>2</b> | Mast bracket |
|----------|--|----------|--------------|

## Access Point Bracket

The access point/bridge bracket mounts on the back side of the unit housing. The bracket mounts on four lugs on the unit. The bracket contains two support pins that are used to suspend the unit in the notches on the mast mounting bracket until you secure the mounting bolts.

The access point/bridge must be positioned to obtain the correct antenna polarization that matches the remote antenna. The integrated access point/bridge antenna is vertically polarized. All access point/bridges must use the same antenna polarization for best operation.

## Mast Bracket

The mast bracket attaches to a mast or tower support and is used to secure the access point/bridge (see [Table 3-1](#)).

**Table 3-1 Mast Bracket Attachment Methods**

| Mast Type                        | Mast Diameter                        | Mast Attachment Method  |
|----------------------------------|--------------------------------------|---|
| Roof mount, small mast, or tower | 1.5 to 2.75 in.<br>(30.5 to 69.9 mm) | Attach the pipe inside the mounting bracket, between the bracket and access point/bridge. |



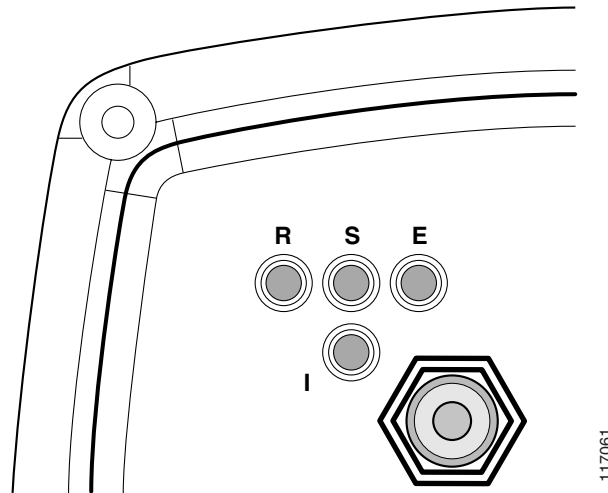
**Note**

The U-bolts provided with the roof mounting kit support mast diameters up to 1.75 in. (44.5 mm). For larger masts, you must supply the U-bolts to attach the access point/bridge.

# LEDs

The LEDs indicate the status, radio activity, and Ethernet activity. The LEDs are mounted on the back of the housing (see [Figure 3-2](#)).

**Figure 3-2** LEDs



|          |            |          |              |
|----------|------------|----------|--------------|
| <b>R</b> | Radio LED  | <b>E</b> | Ethernet LED |
| <b>S</b> | Status LED | <b>I</b> | Install LED  |

For additional information on LED indications, refer to the [“Troubleshooting Autonomous Access Points and Bridges”](#) section on page 4-1 or the [“Troubleshooting Lightweight Access Points”](#) section on page 5-1.

## Autonomous Access Point/Bridge

When the autonomous access point/bridge running Cisco IOS Release 12.3(4)JA is initially powered-up, the unit defaults to a root access point with the radio disabled and no default SSID. To allow client associations, you must configure an SSID and enable the radio interface (refer to the *Cisco IOS Software Configuration Guide for Access Points*).

When the autonomous access point/bridge running Cisco IOS Release 12.3(2)JA2 and earlier is initially powered-up, the bridge installation mode is activated and the unit attempts to associate to a root bridge for 60 seconds. If it is unable to associate with a root bridge, it automatically assumes the root bridge role.

The Install LED provides bridge association status during installation mode as shown in [Table 3-2](#).

**Table 3-2** *Install LED Status*

| Install LED    | Status               | Bridge State   |
|----------------|----------------------|--|
| Off            | Self test            | Startup.   |
| Amber blinking | Non-root, searching  | Not associated (non-root mode). The access point/bridge attempts to associate with a root bridge for 60 seconds <sup>1</sup> . |
| Amber          | Non-root, associated | Associated (non-root mode).  |
| Green blinking | Root, searching      | Not associated (root mode). The access point/bridge attempts to associate with a non-root bridge indefinitely.                 |
| Green          | Root, associated     | Associated (root mode).  |
| Red            | Error                | Overvoltage or overcurrent error <sup>2</sup>  |

1. Preconfigured bridges search indefinitely.
2. Disconnect power to the power injector, wait approximately 1 minute, and reconnect power. If error continues, contact technical support.

Use the Install LED to determine when the bridge successfully associates with a remote bridge and to verify its mode of operation. After association, the other three LEDs indicate signal strength.

The startup and association sequence depends on the access point/bridge configuration, which can be one of the following types:

- Default—The access point/bridge attempts to associate with a root bridge for 60 seconds. If it does not associate with a root bridge, it attempts to associate with a non-root bridge.
- Preconfigured bridge mode—The unit attempts to associate with a remote bridge in the configured mode, either root or non-root. Because there are no timeouts, it is easier to align the antenna.
- Preconfigured access point or workgroup bridge modes—the bridge Install LED does not operate.

## Aligning the Autonomous Bridge Antenna Using RSSI LED Indications

For the autonomous bridge, you can align the integrated antenna using LEDs after the unit successfully associates with a remote bridge. In the installation mode before association to another bridge, the Install LED blinks amber. If the unit associates to a root bridge, the Install LED turns amber. If the unit does not associate to a root bridge in the first 60 seconds, the Install LED blinks green to indicate that beacons are being transmitted and that the unit is waiting for another non-root bridge to associate.

During the first 20 seconds after association, the unit reads the receive signal strength indicator (RSSI) levels and records the maximum level received. After 20 seconds have elapsed, the Install LED turns amber and the Ethernet, status, and radio LEDs display the relative RSSI levels compared to the maximum received. The RSSI LED indications are shown in [Table 3-3](#).



### Note

For the signal level (dBm), a smaller number represents a stronger signal because the signal level is given as a negative value.

**Table 3-3 Bridge LED Installation Mode RSSI Display**

| RSSI Level (dBm) | Ethernet LED              | Status LED                | Radio LED                 |
|------------------|---------------------------|---------------------------|---------------------------|
| > -44            | On                        | On                        | On                        |
| -47 to -44       | Fast blink <sup>1</sup>   | On                        | On                        |
| -50 to -47       | Medium blink <sup>2</sup> | On                        | On                        |
| -53 to -50       | Slow blink <sup>3</sup>   | On                        | On                        |
| -54 to -53       | Off                       | On                        | On                        |
| -57 to -54       | Off                       | Fast blink <sup>1</sup>   | On                        |
| -60 to -57       | Off                       | Medium blink <sup>2</sup> | On                        |
| -63 to -60       | Off                       | Slow blink <sup>3</sup>   | On                        |
| -66 to -63       | Off                       | Off                       | On                        |
| -69 to -66       | Off                       | Off                       | Fast blink <sup>1</sup>   |
| -72 to -69       | Off                       | Off                       | Medium blink <sup>2</sup> |
| -75 to -72       | Off                       | Off                       | Slow blink <sup>3</sup>   |
| < -75            | Off                       | Off                       | Off                       |

1. Slow blinking rate of 1 blink/sec.
2. Medium blinking rate of 2 blinks/sec.
3. Fast blinking rate of 4 blinks/sec.

When using LEDs to maximize the signal, adjust the antenna until as many LEDs as possible are turned on and the rest are blinking as fast as possible.

