



## Installation Overview

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This chapter provides warnings, safety information, and information needed before you begin the installation of your access point/bridge system. This chapter includes the following sections:

- [Safety Warnings, page 2-2](#)
- [Safety Information, page 2-3](#)
- [Unpacking the Access Point/Bridge, page 2-6](#)
- [Before Beginning the Installation, page 2-7](#)
- [Installation Summary, page 2-9](#)

# Safety Warnings

Translated versions of all safety warnings are available in the safety warning document that shipped with your access point or on Cisco.com. To browse to the document on Cisco.com, refer to [Appendix A, “Translated Safety Warnings”](#) for instructions.

## All Installations



Warning

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### IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

Statement 1071

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**SAVE THESE INSTRUCTIONS**


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Warning

Do not operate your wireless network device near unshielded blasting caps or in an explosive environment unless the device has been modified to be especially qualified for such use.

Statement 245B



Warning

In order to comply with international radio frequency (RF) exposure limits, dish antennas should be placed at a minimum of 8.7 inches (22 cm) from the bodies of all persons. Other antennas should be placed a minimum of 7.9 inches (20 cm) from the bodies of all persons. Statement 346



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Statement 1001



Warning

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: **20A** Statement 1005



Warning

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024



Warning

Ultimate disposal of this product should be handled according to all national laws and regulations.

Statement 1040



Warning

Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper

installation and grounding of the antenna, please refer to national and local codes (e.g. U.S.:NFPA 70, National Electrical Code, Article 810, in Canada: Canadian Electrical Code, Section 54).  
Statement 1052

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## Outdoor and DC Power Source Installations

The following warning applies to outdoor and DC power source installations:



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

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## DC Power Source Installations

The following warnings apply to DC power source installations using the optional LR2T power injector:



**A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.**  
Statement 1022

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**Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards.** Statement 1033

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## Safety Information

Follow the guidelines in this section to ensure proper operation and safe use of the access point/bridge.

## FCC Safety Compliance Statement

The FCC, with its action in ET Docket 96-8, has adopted a safety standard for human exposure to RF electromagnetic energy emitted by FCC-certified equipment. When used with approved Cisco Aironet antennas, Cisco Aironet products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1, 1991. Proper operation of this radio device according to the instructions in this publication results in user exposure substantially below the FCC recommended limits.

## Safety Precautions



**Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (e.g. U.S.:NFPA 70, National Electrical Code, Article 810, in Canada: Canadian Electrical Code, Section 54).**  
Statement 1052

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Each year hundreds of people are killed or injured when attempting to install an antenna. In many of these cases, the victim was aware of the danger of electrocution, but did not take adequate steps to avoid the hazard.

For your safety, and to help you achieve a good installation, please read and follow these safety precautions. They may save your life!

1. If you are installing an antenna for the first time, for your own safety as well as others, seek professional assistance.
2. Select your installation site with safety, as well as performance in mind. Remember: electric power lines and phone lines look alike. For your safety, assume that any overhead line can kill you.
3. Call your electric power company. Tell them your plans and ask them to come look at your proposed installation. This is a small inconvenience considering your life is at stake.
4. Plan your installation carefully and completely before you begin. Successful raising of a mast or tower is largely a matter of coordination. Each person should be assigned to a specific task, and should know what to do and when to do it. One person should be in charge of the operation to issue instructions and watch for signs of trouble.
5. When installing your antenna, remember:
  - a. Do not use a metal ladder.
  - b. Do not work on a wet or windy day.
  - c. Do dress properly—shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
6. If the assembly starts to drop, get away from it and let it fall. Remember, the antenna, mast, cable, and metal guy wires are all excellent conductors of electrical current. Even the slightest touch of any of these parts to a power line complete an electrical path through the antenna and the installer: you!
7. If any part of the antenna system should come in contact with a power line, don't touch it or try to remove it yourself. Call your local power company. They will remove it safely.

If an accident should occur with the power lines call for qualified emergency help immediately.

## Typical Outdoor Installation Components

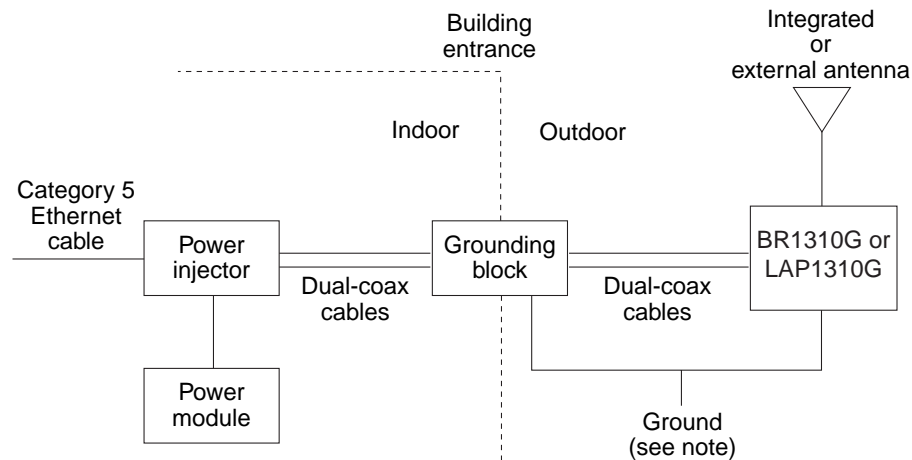
The access point/bridge is designed to be installed in an outdoor environment, typically on a tower or a tall building. A typical outdoor installation diagram is shown in [Figure 2-1](#).



Note

The lightweight access point can only operate as an access point.

**Figure 2-1** Typical Outdoor Installation Diagram



Note

Ground wires must comply with Sections 810 and 820 of the National Electrical Code and Section 54 of the Canadian Electrical Code.



Caution

To ensure correct installation and grounding, install the access point/bridge in compliance with your local and national electrical codes: National Fire Protection Association (NFPA) 70, National Electrical Code (U.S.); Canadian Electrical Code, Part I, CSA 22.1 (Canada); and if local or national electrical codes are not available, refer to IEC 364, Part 1 through 7 (other countries).



Note

The grounding block is not required for indoor installations of the access point/bridge and antenna.

## Installation Guidelines

Because the access point/bridge is a radio device, it is susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- Install the access point/bridge in an area where structures, trees, or hills do not obstruct radio signals to and from the unit.
- Install the access point/bridge at a height sufficient to provide a clear line-of-sight signal path.

# Site Surveys

Every network application is a unique installation. Before installing multiple access point/bridges, you should perform a site survey to determine the optimum use of networking components and to maximize range, coverage, and network performance.

Consider the following operating and environmental conditions when performing a site survey:

- Data rates—Sensitivity and range are inversely proportional to data bit rates. The maximum radio range is achieved at the lowest workable data rate. A decrease in receiver sensitivity occurs as the radio data increases.
- Antenna type and placement—Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, range increases in proportion to antenna height. However, do not place the antenna higher than necessary because the extra height also increases potential interference from other unlicensed radio systems.
- Physical environment—Clear or open areas provide better radio range than closed or filled areas.
- Obstructions—Physical obstructions such as buildings, trees, or hills can hinder performance of wireless devices. Avoid locating the devices in a location where there is an obstruction between the sending and receiving antennas.

## Unpacking the Access Point/Bridge

Follow these steps to unpack the access point/bridge:

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- Step 1 Open the shipping container and carefully remove the contents.
  - Step 2 Return all packing materials to the shipping container and save it.
  - Step 3 Ensure that all items listed in the “[Package Contents](#)” section are included in the shipment. If any item is damaged or missing, notify your authorized Cisco sales representative.
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## Package Contents

Each access point/bridge package contains these items:

- An access point/bridge unit (model: AIR-BR1310G or AIR-LAP1310G)
  - Integrated antenna or external antenna configuration
- Power injector (LR2) unit
- Power module and AC power cord
- Quick start guide
- Mounting instructions document
- Read Me document
- Translated safety warnings document
- Cisco product registration and Cisco documentation feedback cards

**Note**

The external antenna access point/bridge configuration does not ship with an external antenna. An external antenna must be purchased.

The optional roof mount kit 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 optional wall mount kit (for indoor use) contains these items:

- Wall mount bracket with 4 mounting bolts and washers
- Two sub-mini RG-59 coax cables (12 in. or 30.5 cm)

The optional transportation power injector

- Power injector (LR2T) unit

## Before Beginning the Installation

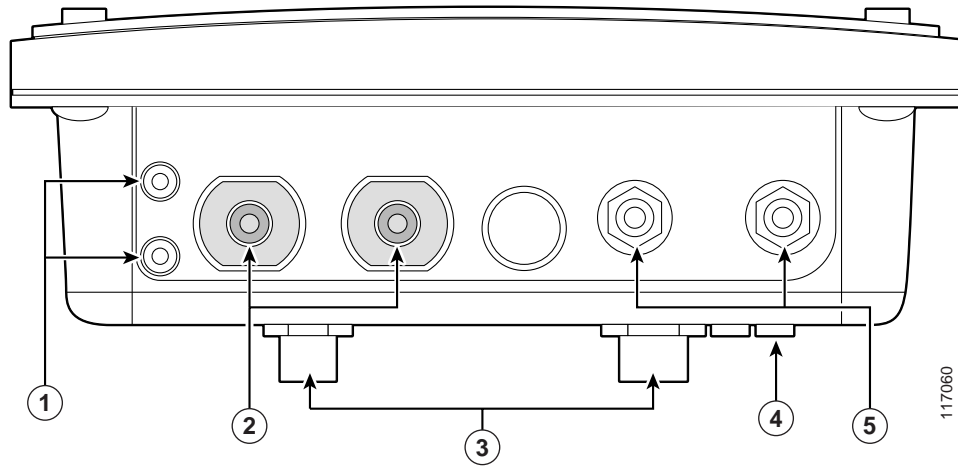
Before you begin the installation process, please carefully review the following list of figures to become familiar with the system components, connectors, indicators, cables, system interconnection, and grounding:

- Installation diagram ([Figure 2-1](#))
- Access point/bridge layout ([Figure 2-2](#))
- Power injector layout ([Figure 2-3](#))
- Power module ([Figure 2-4](#))
- Grounding block ([Figure 2-5](#))

**Note**

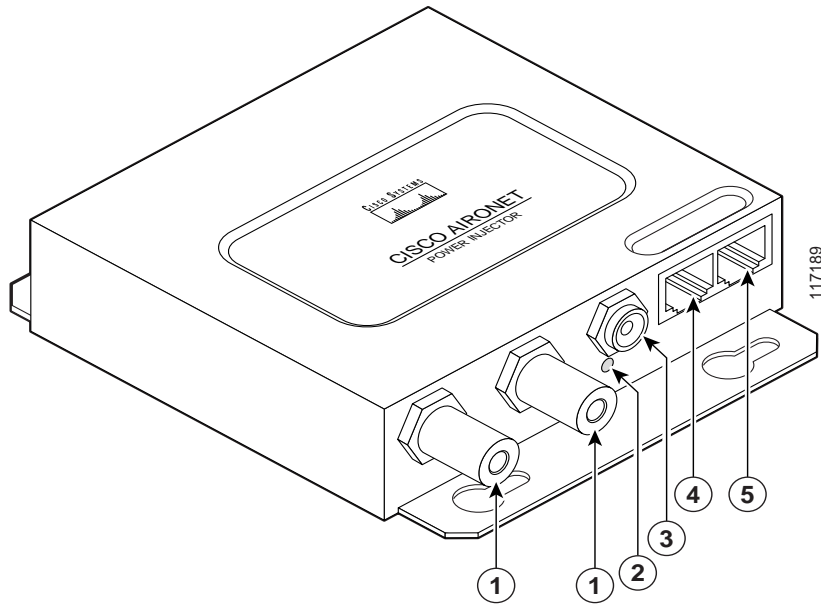
To meet regulatory restrictions, the external antenna access point/bridge unit and the external antenna must be professionally installed. The network administration or other IT professional responsible for installing and configuring the unit is a suitable professional installer. Following installation,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

Figure 2-2 Access Point/Bridge Layout



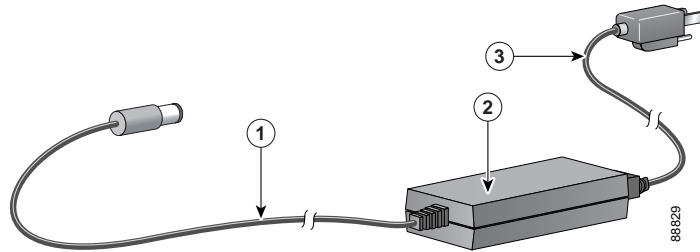
1	Grounding studs	4	LEDs
2	Antenna connectors	5	Dual-coax Ethernet ports (F-Type connectors)
3	Mounting lugs		

Figure 2-3 Power Injector Indicators and Connectors



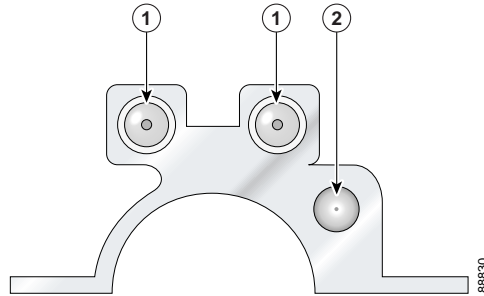
1	Dual-coax Ethernet ports (F-Type connectors)	4	Ethernet LAN port (RJ-45 connector)
2	Power LED	5	Console serial port (RJ-45 connector)
3	Power jack		

Figure 2-4 Power Module



1	48-VDC power output cable	3	AC power cord
2	Power module		

Figure 2-5 Grounding Block



1	F-type coaxial connectors	2	Ground wire lug
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# Installation Summary

  
Caution

You should read and carefully follow the installation instructions before connecting the system to its power source. The access point/bridge and power injector can be damaged by incorrect power application.

  
Note

To meet regulatory restrictions, the external antenna access point/bridge unit and the external antenna must be professionally installed. The network administrator 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.

During the installation of the access point/bridge, you will perform the following operations:

- Connect a user-supplied Category 5 Ethernet cable from your wired LAN network to the power injector.

- For outdoor installations, connect the dual-coax Ethernet cables between the power injector and the grounding block. For indoor installations, connect the dual-coax cables to the power injector.

**Tip**

You can connect the dual-coax cable connectors to either of the grounding block connectors or the power injector's dual-coax Ethernet ports. The access point/bridge senses the Ethernet signals and automatically switches internal circuitry to match the cable connections.

**Note**

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

- For outdoor installations, connect a ground wire to the grounding block.
- Mount the access point/bridge to the mast, tower, or wall. For additional information, refer to the mounting instructions that shipped with your access point/bridge.

**Warning**

**This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

- Connect a ground wire to the access point/bridge (use the ground lug).
- For outdoor installations, connect the dual-coax Ethernet cables to the grounding block and to the access point/bridge. For indoor installations, connect the dual-coax cables directly to the access point/bridge.

**Tip**

You can connect the dual-coax cable connectors to either of the grounding block connectors or the access point/bridge's dual-coax ports. The access point/bridge senses the Ethernet signals and automatically switches internal circuitry to match the cable connections.

**Note**

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

**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20A** Statement 1005

- For indoor installations, connect these items:
  - The AC power cord to the 48-VDC power module.
  - The power module power plug to the power injector and plug the AC cord into an AC power receptacle.
- For outdoor installations, refer to the mounting instruction document that shipped with your access point/bridge.
- Seal all external connectors with special weather sealing material.

Configure security and other access point/bridge options. For additional information, refer to the *Cisco IOS Software Configuration Guide for Access Points* or the *Cisco Wireless LAN Controller Configuration Guide*.