Installing the Access Point

Installing an AP involves the following high-level tasks.

Unpacking the Package

Package Contents

Each AP package contains the following items:

- One C9124AXI or C9124AXD or C9124AXE Outdoor AP

- Ground lug and screws with lock washers

- CAT 5e RJ45 Ethernet port termination plug

✎

Note The provided CAT 5e gland must be used with CAT 5e cable only. When using CAT 6/6A cable you need to use AIR-ACC-CAT6= kit which is an orderable accessory from Cisco.

- Anticorrosion sealant

- Weatherization tape (with C9124AXE only)

- Cisco product documentation and pointer card

Unpacking the Access Point

To unpack the AP, follow these steps:

Procedure

Step 1	Unpack and remove the AP and the accessory kit from the shipping box.
Step 2	Return the packing material to the shipping container and save it for future use.
Step 3	Verify that you have received following items:

- The access point

- Accessory kit (Ethernet port termination plug, ground lug kit)

- (Optional) Mounting brackets only if you opted for these when ordering the AP.

If any item is missing or damaged, contact your Cisco representative or reseller for instructions.

Optional Tools and Hardware from Cisco

Depending on what you ordered, the following optional equipment may be part of your shipment:

- Cisco Orderable Accessories, on page 3

- AP paintable cover C9124-CVR1= Spare only

- Spare part kit containing extra cable glands, power connector, ground lug, and so on. (AIR-ACC-KIT1=)

Additional Tools and Hardware Required for Installation

You must independently procure the following tools and materials, which might be required during various stages of installing the AP:

- Ground lug crimping tool (Panduit CT-720 with CD-720-1 die)

- #2 Phillips Screwdriver

- 5–mm Hex driver or Allen wrench

- Adjustable wrench or 28–mm box wrench

- 6-AWG copper ground wire

- 10–mm open-end or box wrench

- 13–mm box-end wrench or socket set

- 16–mm box-end wrench or socket set

- Large flat or Phillips screwdriver (for SFP port plug)

- 2.54–mm (0.10 inch) hex crimp tool for DC power connector

- Shielded outdoor-rated Ethernet (CAT5e) cable of 0.14 to 0.26 inch (3.5 to 6.5 mm) diameter or CAT6/6A cable of 0.2 to 0.35 inch (5 to 9 mm) diameter.

- Ethernet RJ-45 connector and installation tool

- Shielded outdoor-rated DC power cable with 18–AWG 2 conductor, 0.21 to 0.35 inch (5.5 to 9.0mm) outer diameter

- Ground rod, as required by local regulations

Cisco Orderable Accessories

Order the following accessories separately from Cisco:

- AP-mounting brackets to mount the C9124AXI or C9124AXD AP.

Mounting Brackets	Description
AIR-MNT-VERT1=	Vertical mount to a wall or 2 to 5 inch (51 to 127 mm) diameter pole
AIR-MNT-ART1=	Articulating mount to a wall or 2 to 5 inch (51 to 127 mm) diameter pole
AIR-MNT-VERT2=	Vertical mount with DC adapter to a wall or 2 to 5 inch (51 to 127 mm) diameter pole
AIR-MNT-HORZ1=	Horizontal mount to a wall or 2 to 5 inch (51 to 127 mm) diameter pole
AIR-ACC-PS-MNT1	Optional for AIR-MNT-HORZ1= kit to mount DC power supply
AIR-MNT-STRAND1=	Cable strand horizontal mount

- Accessory kits

Accessory Kit	Description
AIR-SFP-KIT1=	Gland kit for SFP port (Qty: 5)
C9124-CVR1=	AP paintable cover
AIR-ACC-KIT1=	This kit contains the following items: • CAT 5e RJ45 Ethernet port plug and gland assembly (Qty: 5) • RJ45 port dust caps (Qty: 2) • Ground lug (Qty: 1) • DC plug (Qty 1)
AIR-ACC245LA-N=	Lightning Arrestor kit
AIR-ACC-CAT6=	CAT 6/6A Ethernet connector and cable gland assembly. Qty: 5

- Power injectors when PoE is not available.

Power Supply	Description
AIR-PWRINJ-60RGD1=	60W rated outdoor power injector, with North America AC plug

Power Supply	Description
AIR-PWRINJ-60RGD2=	60W rated outdoor power injector, global version without AC plug
AIR-PWRINJ6=	30W rated single-port PoE injector
AIR-PWRINJ7=	65W rated single-port PoE injector

Preinstallation Checks and Installation Guidelines

Because the AP 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:

- Thoroughly review the information provided in Installing the Access Point, on page 1.

- Install the AP in an area where structures, trees, or hills do not obstruct radio signals to and from the AP.

- We recommend that you install the AP no higher than 40 feet to support the wireless clients on the ground. Mounting all the APs at the same height provides the best throughput.

- If the SFP port is not in use, the port plug should remain in place and must be tightened to 12.5 lbf-in torque. If the DC, console, or PoE ports are not in use, the port cap should remain in place.

Note To calculate path loss and determine how far apart to install the APs, consult an RF planning expert.

Before you begin the installation process, ensure the following:

- Perform a site survey. For more information, see Performing Site Surveys.

- Your network infrastructure devices must be operational and properly configured.

- Your controllers must be connected to switch trunk ports.

- Your switch must be configured with untagged access ports for connecting your APs.

- A DHCP server with Option 43 configured must be reachable by your AP, or manually configure the controller information in the AP. For information about configuring DHCP Option 43, see http://www.cisco.com/c/en/us/support/docs/wireless-mobility/wireless-lan-wlan/97066-dhcp-option-43-00.html

- Become familiar with the AP installation components, see Typical Access Point Installation Components, on page 4.

- Familiarize yourself with the best practices to install Cisco outdoor wireless access points video series, see

  https://www.cisco.com/c/en/us/td/docs/wireless/access_point/outdoor/video/ap-best-practices.html

Typical Access Point Installation Components

The Cisco Catalyst 9124AX Series Outdoor Access Point is designed to be installed in an outdoor environment, such as the exterior roof overhang of a tall building or a streetlight pole. Carefully review the Figure 1:

Components in a Typical Access Point Installation, on page 5 to become familiar with the system components, connectors, indicators, cables, system interconnection, and grounding.

Figure 1: Components in a Typical Access Point Installation
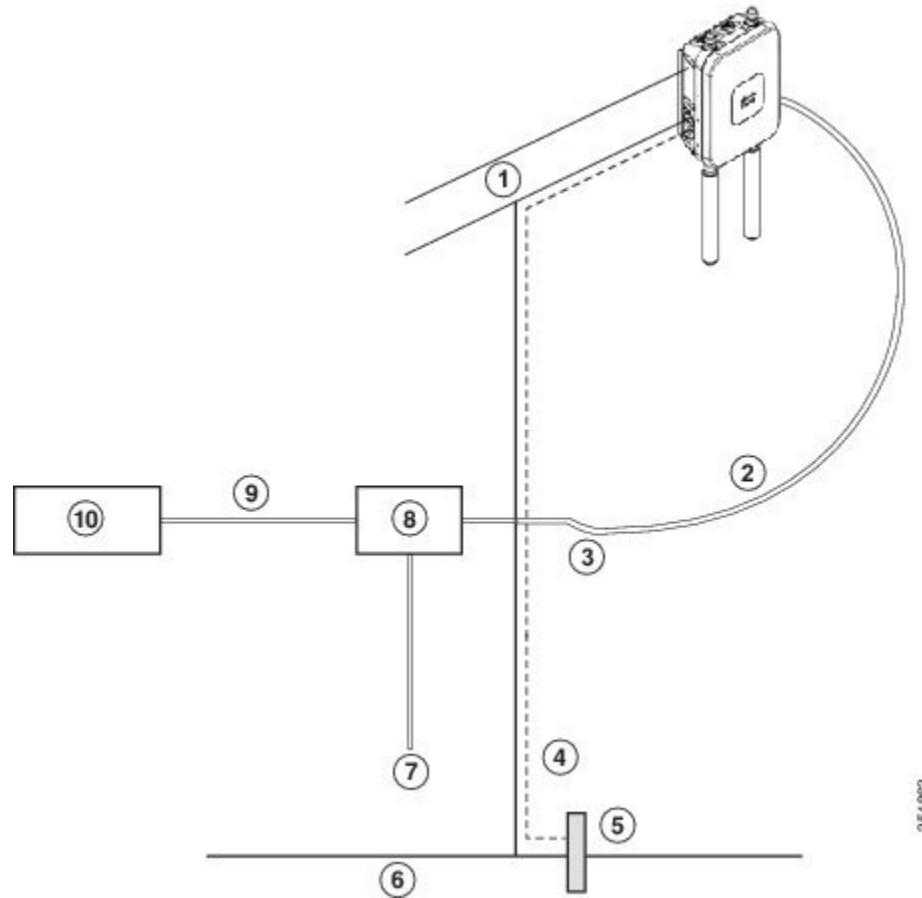
1	Building roof overhang	6	Ground
2	Shielded outdoor-rated Ethernet (CAT5e or better) cable[1]	7	Power cord
3	Water drip loop	8	Power injector
4	6-AWG copper grounding wire [1]	9	Shielded Ethernet (CAT5e or better) cable[1]
5	Ground rod[1]	10	Controller (through a switch)

[1] Independently sourced by the user.

Preparing the AP for Installation

Before you mount and deploy the AP, we recommend that you perform a site survey (or use the site planning tool) to determine the best location to install your AP.

You should have the following information about your wireless network on hand:

- AP locations

- AP-mounting options: To a vertical or horizontal wall or pole

Note The AP can be mounted in various orientations. Depending on the orientation, you may have to purchase additional mounting hardware. For more information, see Mounting the Access Point, on page 8 section.

- AP power options: 802.3at (PoE+), 802.3bt, and Cisco Universal PoE (Cisco UPOE)

Note When you use 802.3af to power an AP, both the 2.4-GHz and 5-GHz radios are disabled, and the Ethernet gets downgraded to 1–GbE speeds. The SFP port and PoE-OUT are also disabled.

- Operating temperature:

  - C9124AXI: -40° to 149℉ (-40° to 65℃) and 131℉ (55℃) with solar loading

  - C9124AXD: -40° to 149℉ (-40° to 65℃) and 131℉ (55℃) with solar loading

  - C9124AXE: -40° to 149℉ (-40° to 65℃) and 131℉ (55℃) with solar loading

- Console access using the console port

  We recommend that you use a console cable that is one meter or less in length.

Note The AP may face issues while booting if you use an unterminated console cable (not plugged into any device or terminal) or a console cable that is more than one meter in length.

We recommend that you prepare a site map showing AP locations so that you can record the device MAC addresses from each location and return them to the person who is planning or managing your wireless network.

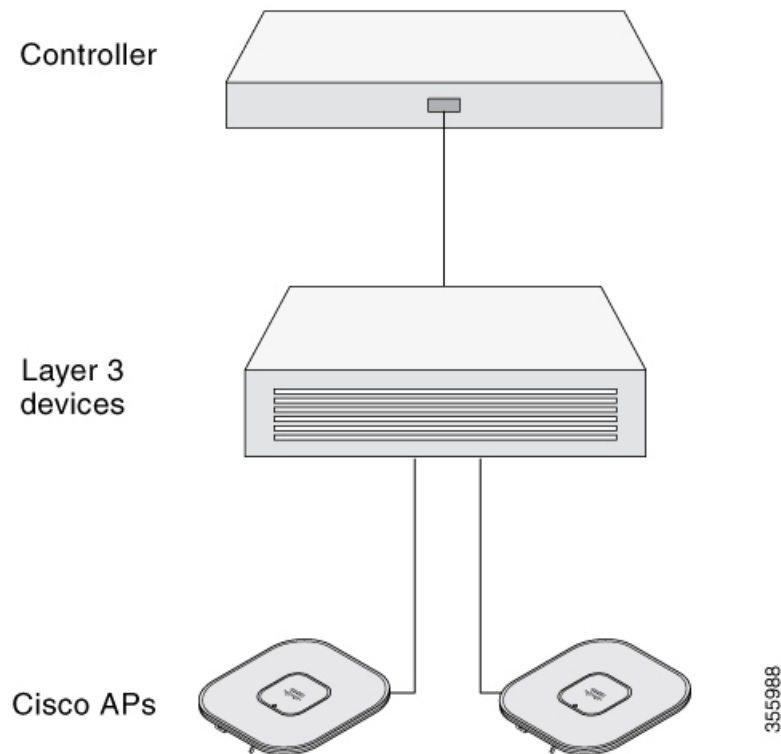# Performing a Preinstallation Configuration (Optional)

Performing the following procedures ensure that the AP installation and the initial operation proceed as expected. This procedure is optional.

Note If your wireless controller is configured properly, you can install the AP in its final location and connect it to the network from there. For additional information, see Deploying the Access Point in a Wireless Network.

The preinstallation configuration setup is illustrated in Figure 2: Preinstallation Configuration Setup, on page 7:

Figure 2: Preinstallation Configuration Setup

To perform preinstallation configuration, follow these steps:

Procedure

Step 1	Ensure that the Cisco Controller Distribution System port is connected to the network. Use the procedure for the CLI or the GUI interface, as described in the release appropriate *Cisco Controller Configuration guide*.

> **Note** To use an SFP module, you must insert it into an AP's SFP port before the AP boots, in order to ensure correct power consumption and PoE derating.

a) Ensure that the AP has Layer 3 connectivity to the Cisco Controller Management and AP-Manager interfaces.

b) Configure the switch to which the AP should be attached. See the release specific *Cisco Wireless Controller Configuration Guide* for the release your controller is running on.

c) Set the controller as the primary controller so that new AP always joins to it.

d) Ensure that you have enabled DHCP on the network.

The AP must receive its IP address through DHCP.

> **Note** The DHCP server assigns an IP address to an 802.11AX Cisco AP only if a default router (gateway) is configured on the DHCP server (enabling the AP to receive its gateway IP address), and the gateway ARP is resolved..

e) Ensure that the network is configured not to block the CAPWAP UDP ports.

f) The AP must be able to find the IP address of the controller. This can be accomplished using DHCP, DNS, or IP subnet broadcast. This guide describes the DHCP method to convey the controller IP address. For other methods, refer to the product documentation. For more information, see Configuring DHCP Option 43.

Note The AP requires a Gigabit Ethernet (GbE) link to prevent the Ethernet port from becoming a bottleneck for traffic because wireless traffic speeds exceed transmit speeds of a 10/100 Ethernet port.

Step 2 Apply power to the AP. For more information, see Powering the Access Point over Power-over-Ethernet, on page 52.

a) When the AP attempts to connect to the controller, the LED cycles through an off, green, and red sequence, taking up to five minutes.

Note If the AP remains in this mode for more than five minutes, the AP is unable to find the primary controller. Check the connection between the AP and the primary controller and ensure they are on the same subnet.

b) If the AP shuts down, check the power source.

c) After the AP finds the primary controller, it attempts to download the software image if the AP software release differs from the controller release version. While this is happening, the status LED blinks blue.

d) If the software image download is successful, the AP reboots.

Step 3 Configure the AP 802.11AX network settings using the controller CLI, controller GUI, or Cisco Catalyst Center.

Step 4 If the preinstallation configuration is successful, the status LED is green, indicating normal operation.

Disconnect the AP and mount it at the location you intend to deploy it on the wireless network.

Step 5 If the AP does not indicate normal operation, turn it off and repeat the preinstallation configuration.

Note When you are installing a Layer 3 AP on a different subnet than the controller, ensure the following:

- Ensure that a DHCP server is reachable from the subnet on which you want to install the AP.

- The subnet has a route back to the controller and ensure that the route back to the controller has the destination UDP ports 5246 and 5247 open for CAPWAP communications.

- Ensure that the route back to the primary, secondary, and tertiary controllers allows IP packet fragments.

- Ensure that the AP and the controller have a static 1-to-1 NAT to an outside address if address translation is used. (Port Address Translation is not supported.).

Mounting the Access Point

This section provides instructions to mount the AP. Personnel mounting the AP must have knowledge of the wireless AP, bridging techniques, and grounding methods.

Choosing a Mounting Kit

You can mount the AP in one of the following configurations that best fits installation application:

- Vertically mounted to a wall or pole.

- Horizontally mounted to an eave, ceiling, or pole.

- On a cable strand

Note The following table shows the typical mount used for each AP model.

AP Mounting Kit[2]	92AX	91AD	91AE	Purpose
AIR-MNT-VERT1=	N	Y	Y	Fixed mounting kit for vertical mounting on wall and for pole of diameter 2 to 5 inch (51 to 127 mm). See: Vertically Mounting the AP to a Wall, on page 10 Vertically Mounting the AP to a Pole, on page 13
AIR-MNT-VERT2=	N	Y	Y	Fixed mounting kit, allowing mounting of both AP and power supply, for vertical mounting on wall and for pole of diameter 2 to 5 inch (51 to 127 mm). See: Vertically Mounting the AP with DC Supply to a Wall, on page 14 Vertically Mounting the AP with DC Supply to a Pole, on page 16
AIR-MNT-ART1=	Y	Y	Y	Pivoted mounting kit for both vertical and horizontal mounting, on wall or ceiling and for pole of diameter 2 to 5 inch (51 to 127 mm). See: Articulating Mount for the AP to a Wall or Ceiling, on page 18 Articulating Mount for the AP to a Pole, on page 22

AP Mounting Kit[2]	92AX	91NO	91ME	Purpose
AIR-MNT-HORZ1= AIR-ACC-PS-MNT1 (Optional)	Y	N	Y	Fixed mounting kit, allowing mounting the AP to mounted horizontal to the ground. Horizontal mount to a wall or for pole of diameter 2 to 5 inch (51mm to 127 mm). See: Pole Mounting the AP with Horizontal Kit, on page 27 Wall Mounting the AP with Horizontal Kit, on page 25 Optional AIR-ACC-PS-MNT1 kit to mount DC power supply. See: DC Supply Mount Bracket, on page 29
AIR-MNT-STRAND1=	Y	N	N	Cable strand horizontal mount. See: Strand Mounting the AP, on page 30

[2] Mount the AP using no less than four screw holes on a bracket. For the AIR-MNT-STRAND1= bracket, use no less than two screws.

Note

- When mounting an AP vertically, ensure that the AP is oriented with the LED indicators pointing down.

- Mount the AP in such a way that all antenna ports and the console port are visible and accessible for future use.

- Align the AP's omnidirectional antennas vertical to the ground.

- Align the AP's directional antenna such that the main beam is parallel to or tilted down toward the horizon.

Vertically Mounting the AP to a Wall

The AIR-MNT-VERT1= mounting kit contains a mounting bracket for wall mounting or pole mounting.

You can use the mounting bracket as a template to mark the mounting holes' positions for your installation, install the mounting bracket, and then attach the AP to the bracket.

Caution The mounting wall, attaching screws, and wall anchors must support a 50-lb (22.7–kg) static weight.

Figure 3: Mounting Bracket for Wall and Pole Mounting
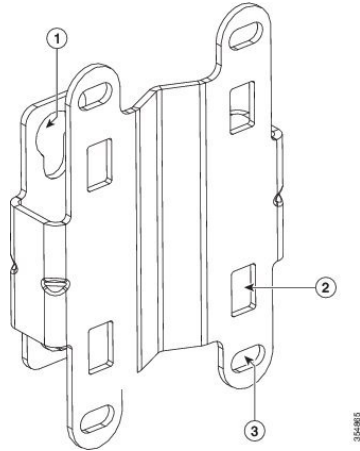
1	One of four keyhole slots to mount the AP.
2	One of four slots for steel band clamps, used for pole mounting only.
3	Bracket mount holes for fastening bracket to the wall. You can use bolts of up to 1/4" or 6 mm in diameter.

Figure 4: Mounting Bracket Dimensions
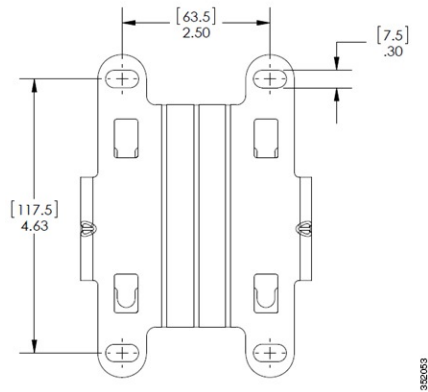
Before you begin

Ensure that you have the following materials before beginning to mount the AP to a wall:

Table 1: Material Required to Mount Access Point to a Wall using AIR-MNT-VERT1= Kit

Materials Required	Supplied in the Kit?
Ground lug and screws (provided with the access point)	Yes
Wall Mount Bracket	Yes

Materials Required	Supplied in the Kit?
Four M6 x 12–mm Hex-head Bolts	Yes
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die	No
Four wall mounting screws	No
Four wall anchors (specified for all material)	No
Drill bit for wall anchors	No
Electric drill and standard screwdriver	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
10–mm box-end wrench or socket set	No

Procedure

Step 1 Use the mounting bracket as a template to mark four screw hole locations on the mounting wall. The mounting bracket screw hole locations are shown in Figure 3: Mounting Bracket for Wall and Pole Mounting, on page 11. The dimensions of the mounting bracket are shown in Figure 4: Mounting Bracket Dimensions, on page 11.

Step 2 Use four screws and, if required, wall anchors to attach the mounting plate to the mounting surface. These screws and anchors are to be sourced independently.

> **Note**
> - You can use an exterior-grade plywood backboard to mount the AP to stucco, cement, or drywall.
> - The mounting wall, attaching screws, and wall anchors must support a 50-lb (22.7 kg) static weight.

Step 3 Screw an M6 x12–mm bolt into each of the four support bolt holes on the back of the AP. Do not screw the bolt all the way in, but leave a gap of approximately 0.13 inch (3.3 mm).

Step 4 Position the AP against the mounting bracket such that the four support bolts on the back of the AP slot into the keyhole slots on the mounting bracket.

Step 5 Slide the AP down to sit securely in keyhole slots on the mounting bracket.

> **Note** The AP should be mounted with the status LED on the base facing downwards.

Step 6 Using a 10–mm wrench, tighten the four bolts that connect the AP to the bracket to 40 lbf-in (4.5 Nm) of torque.

Step 7   Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the AP, powering, and configuring the AP.

Vertically Mounting the AP to a Pole

The AIR-MNT-VERT1= mounting kit contains a mounting bracket used for both wall mounting and pole mounting. This kit can be used to install the AP on a pole or mast. It supports metal, wood, or fiberglass poles of 2 to 5 inches (51 to 127 mm) in diameter.

Figure 5: AP Mounted on a Pole
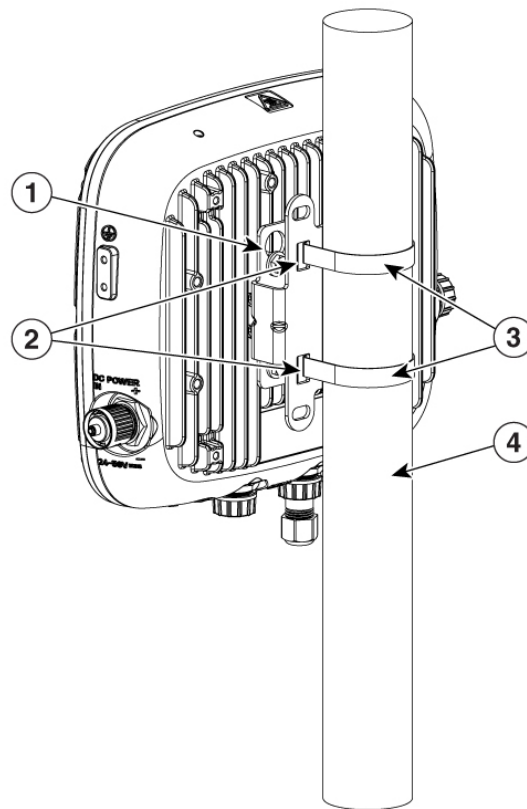
1	One of four M6 keyhole slots for mounting the AP on the bracket.
2	Top and bottom sets of band clamp slots for passing the clamps through.
3	Top and bottom steel band clamps
4	Pole (wood, metal, or fiberglass), 2 to 5 inch (51 to 127mm) diameter

Before you begin

Ensure that you have the following materials before beginning to mount the AP to a pole:

Table 2: Materials Needed to Mount the AP on a Vertical Pole using AIR-MNT-VERT1= Kit

Materials Required	Supplied in the Kit?
One wall mount bracket	Yes
Four M6 x12 mm hex head bolts	Yes
Two stainless steel band clamps (adjustable 2 to 5 inch (51 to 127 mm)	Yes
10–mm box-end wrench	No
Outdoor rated shielded Ethernet cable	No
Ground lug (provided with the access point)	Yes
Ground block and rod	No
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die	No
#6 AWG ground wire	No

Procedure

Step 1   Select a mounting location on the pole to mount the AP. You can attach the AP to a pole having a diameter of 2 to 5 inch (51 to 127 mm).

Step 2   Hold the bracket up against the pole and slide the two band straps through the top and bottom sets of mounting slots on the mounting bracket.

Step 3   Wrap the band straps around the pole, lock them, and then lightly tighten the clamps using a wrench. Only tighten them enough to keep the bracket from sliding down the pole

Step 4   Screw an M6 bolt into each of the four bolt holes on the backside of the AP. Do not screw the bolt in all the way. Leave a gap of about 0.13 inch (3.3 mm).

Step 5   Position the four bolts on the AP into the bracket keyhole slots. Ensure that the AP is seated correctly in the slots.

       Note   The AP should be mounted with the status LED on the base facing downwards.

Step 6   Using a 10–mm wrench, tighten the four bolts that connect the AP to the bracket to 40 lbf-in (4.5 Nm) of torque.

Step 7   Locate the AP to its final position. Tighten the band clamps with the wrench so that the AP does not slide on the pole. Ensure that the clamps are tight enough not to let the AP move.

Step 8   Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the AP, powering, and configuring the AP.

# Vertically Mounting the AP with DC Supply to a Wall

The AIR-MNT-VERT2= mounting kit contains a mounting bracket for wall mounting or pole mounting, the AP, and the power supply together.

You can use the mounting bracket as a template to mark the mounting holes' positions for your installation, install the mounting bracket, and then attach the AP to the bracket.

⚠️

Caution   The mounting wall, attaching screws, and wall anchors must support a 50-lb (22.7–kg) static weight.

Figure 6: Mounting Bracket for Wall and Pole Mounting AP with Power Supply
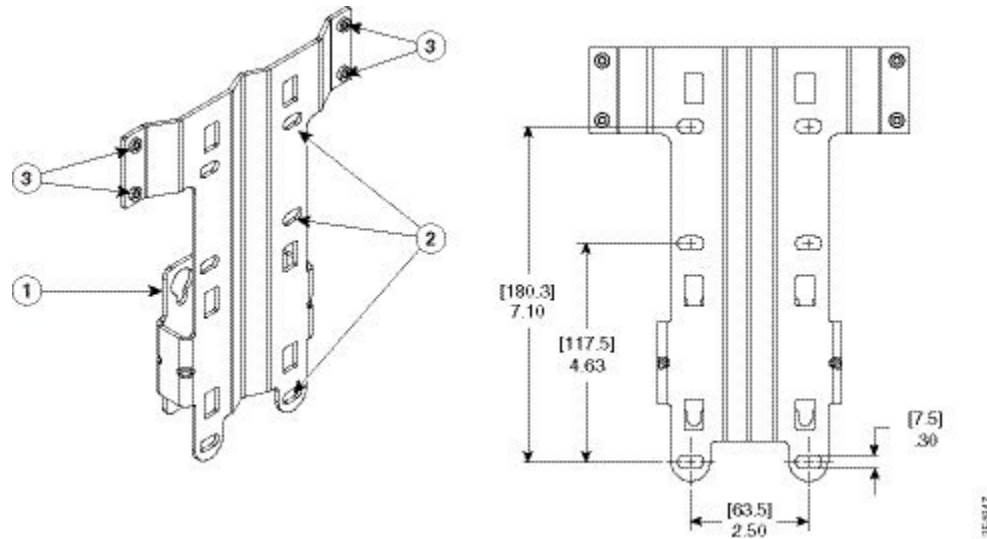
1	One of four keyhole slots to mount the AP.
2	Three of six bracket mount holes for fastening the bracket to a wall. Support bolts of up to 0.25 inch (6 mm) in diameter
3	Screw holes for fastening the power supply to the bracket

Before you begin

Ensure that you have the following materials before beginning to mount the AP to a wall:

Table 3: Materials Required to Mount AP to a Wall using AIR-MNT-VERT2= Kit

| Materials Required	Supplied in the Kit?
Wall Mount Bracket	Yes
Ground lug and screws (provided with the access point)	Yes
Four M6 x 12-mm Hex-head Bolts	Yes
Four #8-32 screws to mount the power supply	No
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die	No
Four wall mounting screws	No

Materials Required	Supplied in the Kit?
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
10-mm box-end wrench or socket set	No

Procedure

Step 1 Use the mounting bracket as a template to mark six screw hole locations on the mounting wall. The mounting bracket screw hole locations and the dimensions of the mounting bracket are shown in .

Step 2 Use six screws and, if required, wall anchors to attach the mounting plate to the mounting surface. These screws and anchors are to be sourced independently.

> **Note** You can use an exterior-grade plywood backboard to mount the AP to stucco, cement, or drywall.

> **Note** The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7–kg) static weight.

Step 3 Screw an M6 x12–mm bolt into each of the four support bolt holes on the back of the AP. Do not screw the bolt all the way in, but leave a gap of approximately 0.13 inch (3.3 mm).

Step 4 Position the AP against the mounting bracket such that the four support bolts on the back of the AP slot into the keyhole slots on the mounting bracket.

Step 5 Slide the AP down to sit securely in keyhole slots on the mounting bracket.

> **Note** The AP should be mounted with the status LED on the base facing downwards.

Step 6 Using a 10–mm wrench, tighten the four bolts that connect the AP to the bracket to 40 lbf-in (4.5 Nm) of torque.

Step 7 Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the AP, powering and configuring the AP.

Vertically Mounting the AP with DC Supply to a Pole

The AIR-MNT-VERT2= fixed mounting kit contains a mounting bracket for both wall-mounting and pole-mounting, the AP, along with the power supply kit. This mounting kit supports metal, wood, or fiberglass poles from 2 to 5 inch (51 to 127 mm) in diameter.
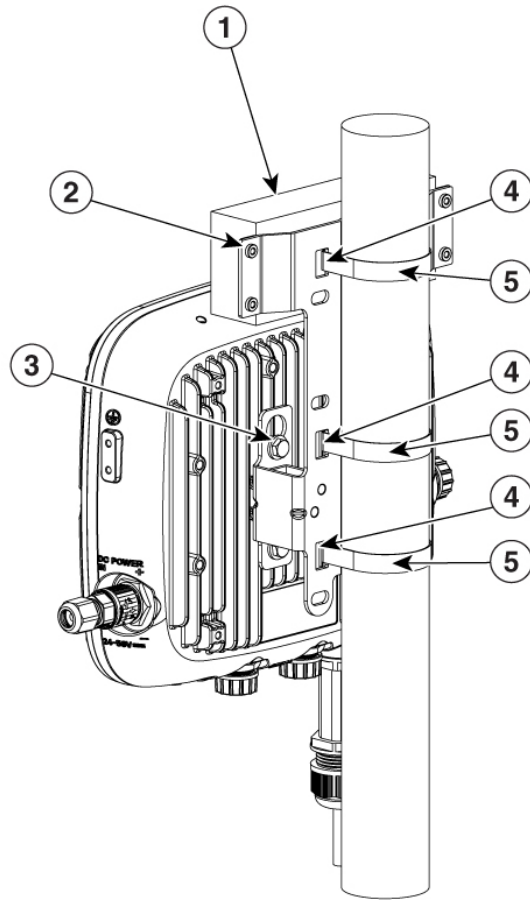
357297

1	Power supply	4	Band clamp slots for passing the clamps through.
2	Screw holes for four #8-32 screws.	5	Steel band clamps.
3	One of four M6 keyhole slots for mounting the AP on the bracket.		

Before you begin

Ensure that you have the following materials before beginning to mount the AP to a pole:

Table 4: Materials Needed to Mount the AP using AIR-MNT-VERT2= Kit

Materials Needed	Supplied in the Kit?
One wall mount bracket	Yes
Four M6 x12 mm hex head bolts	Yes
Three stainless steel band clamps (adjustable 2 to 5 inch (51 to 127 mm)	Yes
Ground lug (provided with the access point)	Yes

Materials Needed	Supplied in the Kit?
Four #8-32 screws to mount the power supply	No
10–mm box-end wrench	No
Outdoor rated shielded ethernet cable	No
Ground block and rod	No
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die	No
#6 AWG ground wire	No

Procedure

Step 1   Select a mounting location on the pole to mount the AP. You can attach the AP to a pole having a diameter of 2 to 5 inch (51 to 127 mm).

Step 2   Hold the bracket up against the pole and slide the three-band straps through the top, middle, and bottom sets of mounting slots on the mounting bracket.

Step 3   Wrap the band straps around the pole, lock them, and then lightly tighten the clamps using a wrench. Only tighten them enough to keep the bracket from sliding down the pole

Step 4   Screw an M6 bolt into each of the four bolt holes on the backside of the AP. Do not screw the bolt in all the way. Leave a gap of about 0.13 inch (3.3 mm).

Step 5   Position the four bolts on the AP into the bracket keyhole slots. Ensure that the AP is seated correctly in the slots.

            Note   The AP should be mounted with the status LED on the base facing downwards.

Step 6   Using a 10–mm wrench, tighten the four bolts that connect the AP to the bracket to 40 lbf-in (4.5 Nm) of torque.

Step 7   Mount the power supply to the bracket with four #8-32 screws.

Step 8   Locate the AP to its final position. Tighten the band clamps with the wrench. Ensure that the clamps are tight enough not to let the AP move.

Step 9   Proceed to Grounding the Access Point, on page 36.

Articulating Mount for the AP to a Wall or Ceiling

The optional pivoting mounting kit AIR-MNT-ART1= contains a pivoting mounting bracket for both wall and pole mounting. This kit allows for adjusting the position of the AP by pivoting the AP along its vertical plane.

You can also, using this kit, mount the AP to a ceiling in a horizontal plane.

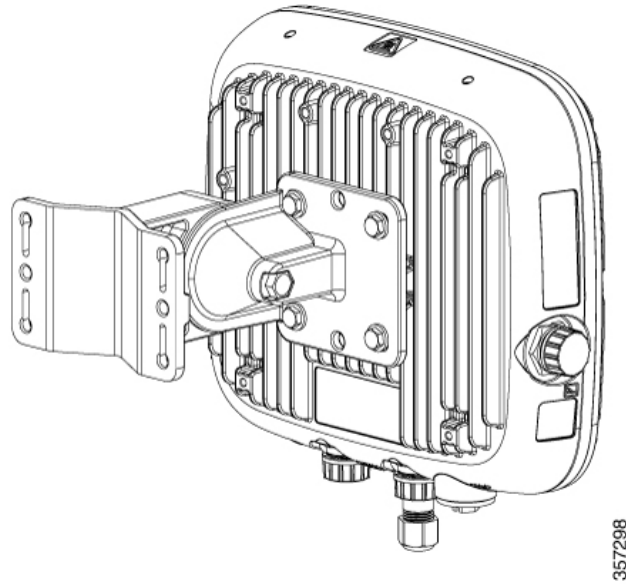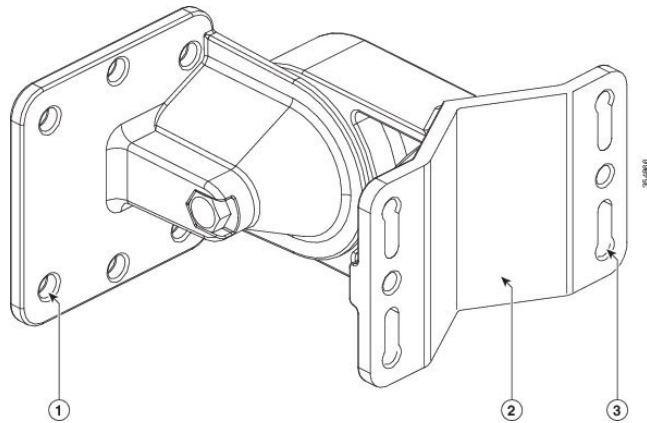Figure 7: Visualization of AP Fastened to the Pivoting Wall Mounting Kit

Figure 8: Pivoting Wall Mounting Bracket

1	One of four bolt holes for fastening to the back of the AP. This is the AP-plate end of the bracket and is fastened to the back of the AP.	3	Screw holes for wall mounting. These screw holes can also be used as slots for steel band clamps in pole-mount installations.
2	Wall-plate end of the bracket. This plate is fastened to the wall.		

Figure 9: Pivoting Wall Mounting Bracket Dimensions
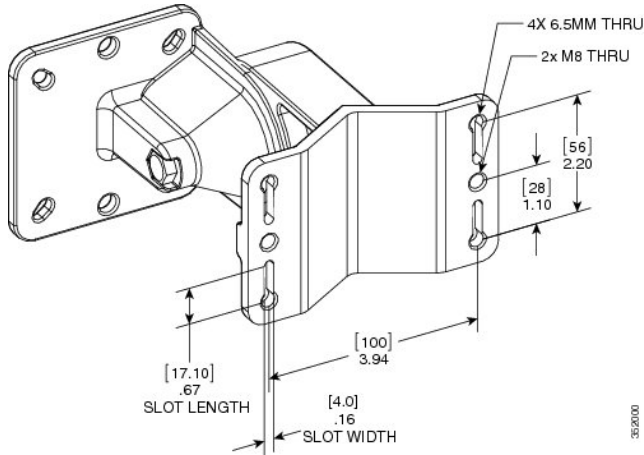
Figure 10: Exploded View of the Pivoting Mounting Kit
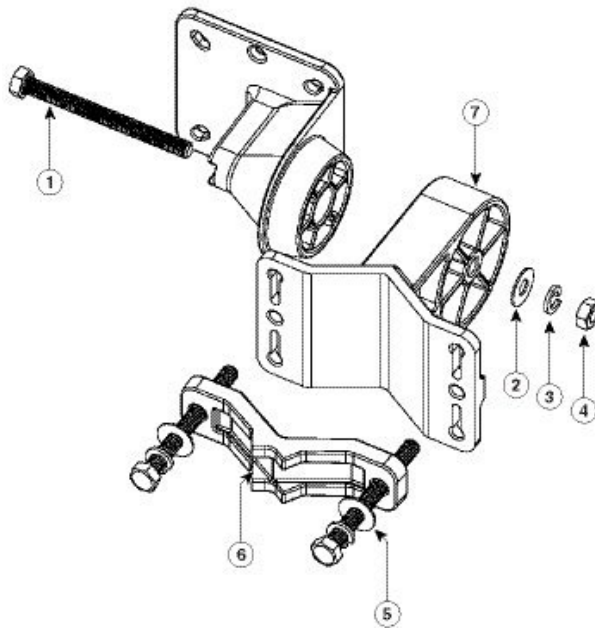
1	90.0 mm M8 screw	5	80.0 mm M8 screw with washer and spring washer for fastening the pole-mount screw clamp to the pivoting bracket base plate.
2	M8 washer	6	Pole-mount screw clamp
3	M8 spring washer	7	Pivoting bracket base plate
4	M8 nut		

Before you begin

Ensure that you have the following materials before beginning to mount the AP to a wall:

Table 5: Materials for Mounting AP to a Wall with AIR-MNT-ART1= Kit

Materials Needed	Supplied in the Kit?
Ground lug and screws (provided with the access point)	Yes
Pivoting mount kit and hardware	Yes
(8) M6 x 12-mm Hex-head Bolts	Yes
Adapter bracket for option horizontal mount	Yes
Two stainless steel band clamps (adjustable 2 to 5 inch (51 to 127 mm)	Yes
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die	No
Four wall mounting screws (6 mm max)	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
13-mm box-end wrench or socket set	No
10-mm box-end wrench	No

⚠️

Caution　The mounting surface, attaching screws, and optional wall anchors to support a 50 lb (22.7 kg) static weight.

Procedure

Step 1　Disassemble the pivot kit, if not already disassembled.

Step 2　Use the mounting bracket's wall-plate end as a template to mark four screw hole locations on the mounting surface. See Figure 8: Pivoting Wall Mounting Bracket , on page 19 for the mounting bracket screw hole locations (screw holes of maximum 6 mm). See Figure 9: Pivoting Wall Mounting Bracket Dimensions, on page 20 for the dimensions of the pivoting mounting bracket.

Step 3　Use four screws and, if required, wall anchors to attach the mounting bracket's wall-plate end to the mounting surface. These screws and anchors are to be sourced independently.

Note
- You can use an exterior-grade plywood backboard to mount the AP to stucco, cement, or drywall.

- The mounting surface, attaching screws, and wall anchors must support a 50-lb (22.7 kg) static weight. It is important to use proper anchoring for the mount surface to support the static load.

Step 4   Align the AP-plate end of the bracket with the screw holes in the AP's back.

Step 5   Fasten the bracket plate to the AP by using four M6 x12 mm bolts and a 10–mm box or socket wrench. Tighten the bolts to 40 lbf-in (4.5 Nm) of torque.

Step 6   Using the 90 mm M8 long screw and the hardware supplied with the pivoting bracket, bolt the AP and bracket plate to the wall plate mounted on the wall. See Figure 8: Pivoting Wall Mounting Bracket , on page 19 for this assembly. Do not fully tighten the assembly.

> **Note**   The AP should be mounted with the status LED on the base facing downwards.

Step 7   Pivot the AP as required, and then fully tighten the 90 mm M8 long screw using a 13–mm wrench.

Step 8   Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the AP, powering, and configuring the AP.

Articulating Mount for the AP to a Pole

The optional articulating mounting kit AIR-MNT-ART1= contains a pivoting mounting bracket for both wall and pole mounting. This kit can be used to install the AP on a pole or mast. It supports metal, wood, or fiberglass poles from 2 to 5 inch (51 to 127mm) in diameter.
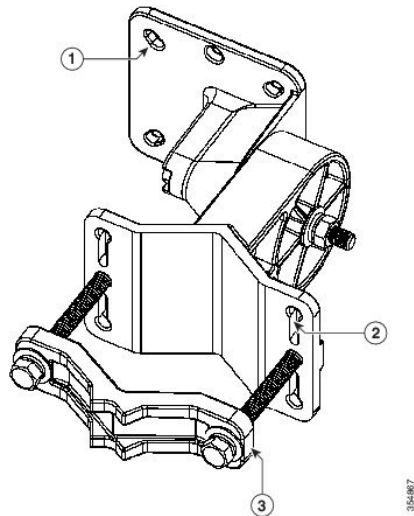
The AIR-MNT-ART1= articulating mounting kit allows for adjusting the AP position by pivoting the AP along its vertical plane.

Figure 11: AP Pole Mounted Using the Pivoting Mounting Bracket
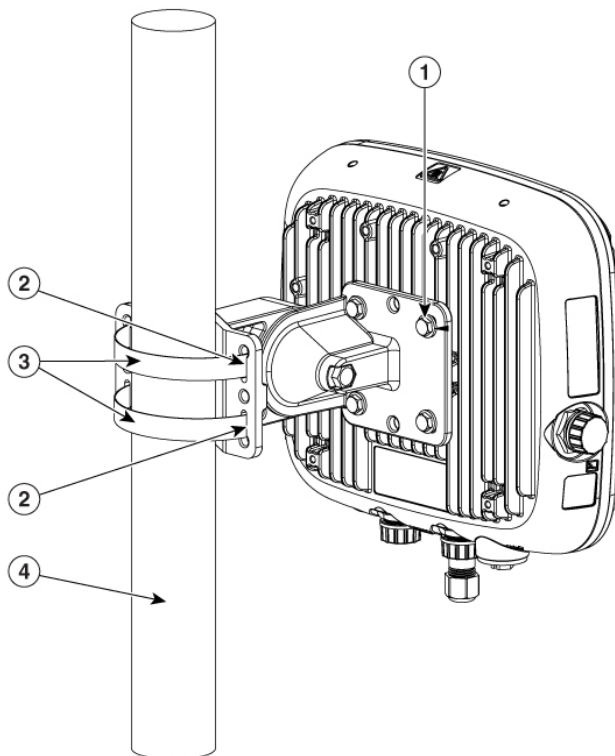
1	One of four mounting holes for mounting the AP to the bracket	3	Steel band clamps
2	Slots for band clamps	4	Pole

Figure 12: Pivoting Mounting Kit with Pole Mount Clamp

1	One of four mounting holes for the AP. This is the AP-plate end of the bracket and is fastened to the back of the AP	3	Pole mount screw clamp. It can fit poles having a diameter of up to 2 to 3 inches (50 to 76 mm)
2	One of four slots for band clamps. This is the pivot bracket base plate and is fastened to the pole. Pole mount installation using band clamps are shown in Figure 11: AP Pole Mounted Using the Pivoting Mounting Bracket, on page 22.		

Before you begin

Ensure that you have the following materials before beginning to mount the AP to a pole:

Table 6: Materials for Mounting the AP on a Pole using AIR-MNT-ART1= Kit

Materials Required	Supplied in the Kit?
Ground lug and screws (provided with the access point)	Yes
Pivoting mount kit and hardware	Yes
(8) M6 x 12-mm Hex-head Bolts	Yes
Adapter bracket for option horizontal mount	Yes

Materials Required	Supplied in the Kit?
Two stainless steel band clamps (adjustable 2 to 5 inch (51 to 127mm)	Yes
Crimping tool for ground lug, Panduit CT0720 with CD-720-1 die	No
Four wall mounting screws (6 mm max)	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
13-mm box-end wrench or socket set	No
10-mm box-end wrench	No

Procedure

Step 1 Select a mounting location on the pole to mount the AP. You can attach the AP to any pole with a diameter of 2 to 5 inch (51 to 127mm).

Step 2 Disassemble the pivot kit, if not already disassembled.

Step 3 Fasten the pivot bracket base plate to the pole using either one set of the adjustable band clamps or the screw clamp (the screw clamp can be used only on poles that are 2 to 3 inch (50 to 76 mm) in diameter).

Step 4 Position the pivot bracket base plate and clamp(s) on the pole. Tighten only enough to hold the bracket base plate in place to prevent it from sliding along the pole but still pivot on the pole. Fully tighten only after the AP is mounted and positioned.

Step 5 Align the AP-plate end of the bracket with the screw holes in the AP's back.

Step 6 Fasten the bracket plate to the AP by using four M6 x12–mm bolts and a 10–mm box or socket wrench. Tighten the bolts to 40–lbf-in (4.5 Nm) of torque.

Step 7 Using the 90 mm M8 long screw and the hardware supplied with the pivoting bracket, bolt the AP and bracket plate to the base plate mounted on the pole. Do not fully tighten the assembly.

Note The AP should be mounted with the status LED on the base facing downwards.

Step 8 Pivot and position the AP as required, and then fully tighten the 90 mm M8 long screw using a 13–mm wrench and then tighten the clamps on the pole.

Note Use caution when tightening the 80 mm bolts on the pole-mount screw clamp. Ensure the clamp face remains parallel to the bracket base plate while tightening the bolts. Tighten the M8 x 80 mm bolts to 52 to 61 lbf-in (5.9 to 6.9 Nm) of torque.

Caution Misalignment and over-torquing can result in breaking the screw clamp.

Wall Mounting the AP with Horizontal Kit

⚠️

Caution   The mounting wall, attaching screws, and wall anchors must support the least 50-lb (22.7-kg) static weight. The installer must supply proper screws and anchors in accordance with local codes.

Before you begin

Ensure that you have the following materials before beginning to mount the AP horizontally to a wall:

Table 7: Materials Needed for Mounting the AP using AIR-MNT-HORZ1= Kit

Materials Required	Supplied in the Kit?
Wall/Pole Mount L-Bracket	Yes
Solar Shield Cover	Yes
(4) M6 x 12-mm Hex-head Bolts	Yes
(2) Adjustable Band Clamps 2 to 5 inch (51 to 127 mm) Dia	Yes
(4) 8-32 x 0.62" Phillips Pan Head Screw	Yes
(4) wall screws and anchors (specified for wall material)	No
Drill bit for wall anchors	No
10–mm box-end wrench or socket set	No
Phillips Screwdriver	No

Procedure

Step 1   Use the mounting bracket as a template to mark four screw hole locations on the mounting wall. See Figure 13: Wall mount L-bracket screw hole dimensions, on page 26 for the mounting bracket screw hole locations and dimensions. See Figure 14: L-bracket AP mount dimensions, on page 26 for dimensions of the mounting L-bracket.
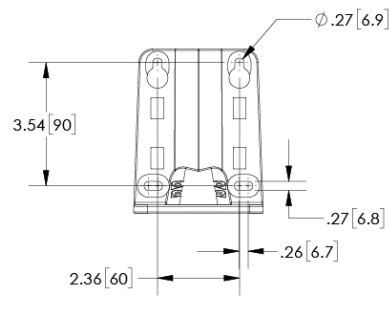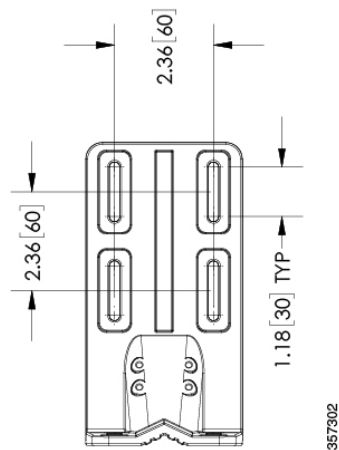
Figure 13: Wall mount L-bracket screw hole dimensions


Figure 14: L-bracket AP mount dimensions

Step 2 Use four screws and, if required, wall anchors to attach the L-bracket to the mounting surface. You must procure these screws and anchors, and they must follow local codes to support at least 50 lbs (22.7 kg.)

Step 3 Position the AP horizontally against the L-bracket's bottom to align the four mounting holes on the AP's back with the slots in the mounting bracket.

> **Note** The AP has additional mounting holes to be positioned and located to best accommodate on site cabling. Ensure to review before mounting the AP to the bracket.

Step 4 Screw an M6 x12–mm bolt into each of the four support bolt holes on the back of the AP by hand. Do not tighten the bolt completely. Leave it loose to slide in the bracket slot.

Step 5 Ensure that the AP and all attached cables have clearance to install and provide drip loops.

Step 6 Tighten the four M6 bolts to 40–lbf-in (4.5 Nm) torque using a 10–mm wrench.

Step 7 Position and install the solar shield on top of the L-bracket and AP. Align four holes in the shield to mount holes in AP. Insert four #8-32 screws through the shield into AP. Torque tighten the screws to 15 lbf-in (17 kgf-cm).

> **Note** We recommend you install the solar shield. However, if the AP's installed location is shaded from the sun (For example: indoors or under an eave), the solar shield is not required.

Pole Mounting the AP with Horizontal Kit

The AIR-MNT-HORZ1= mounting kit contains a mounting L-bracket and components for both pole mounting and wall mounting. Using this kit, you can install the AP on a pole or mast. It supports metal, wood, or fiberglass poles from 2 to 5 inches (51 to 127 mm) in diameter.

Figure 15: Pole Mounted Horizontal Kit (AIR-MNT-HORZ1=)
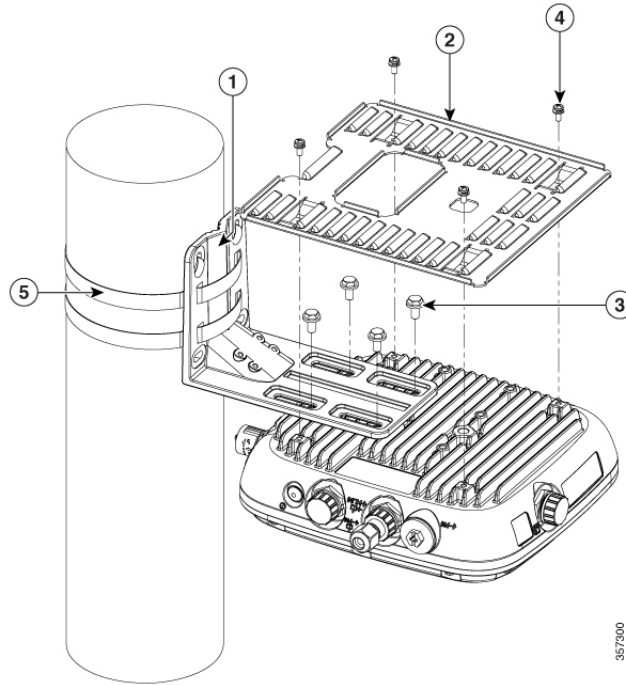
1	L-Bracket
2	Solar Shield
3	(4) M6 x 12–mm Hex-head Bolts
4	(4) 8-32 x 0.62" Phillips Pan Head Screw
5	(2) Adjustable Band Clamps 2 to 5 inch (51 to 127 mm) Dia. passing through the bracket slots

Before you begin

Ensure that you have the following materials before beginning to mount the AP horizontally to a pole:

Table 8: Materials Needed for Mounting the AP using AIR-MNT-HORZ1= Kit

Materials Required	Supplied in the Kit?
Wall/Pole Mount L-Bracket	Yes
Solar Shield	Yes

| Materials Required	Supplied in the Kit?
(4) M6 x 12-mm Hex-head Bolts	Yes
(2) Adjustable Band Clamps 2 to 5 inch (51 to 127 mm) Dia	Yes
(4) 8-32 x 0.62" Phillips Pan Head Screw	Yes
(4) wall screws and anchors (specified for wall material)	No
Drill bit for wall anchors	No
10–mm box-end wrench or socket set	No
Phillips Screwdriver	No

Procedure

Step 1 Select a mounting location on the pole to mount the AP. You can attach the AP to a pole with a diameter of 2 to 5 inch (51 to 127 mm).

Step 2 Hold the bracket up against the pole, slide the two band straps through the top and bottom sets of mounting slots on the mounting bracket, see .

Step 3 Wrap the band straps around the pole, lock them, and lightly tighten the clamps using a wrench. Only tighten them enough to keep the bracket from sliding down the pole.

Step 4 Position the AP horizontally against the L-bracket's bottom to align the four mounting holes on the AP's back with the slots in the mounting bracket.

> **Note** The AP has additional mounting holes to be positioned and located to best accommodate on site cabling. Ensure to review before mounting the AP to the bracket.

Step 5 Screw an M6 x12–mm bolt into each of the four support bolt holes on the back of the AP by hand. Do not completely tighten the bolt. Leave it loose to slide in the bracket slot.

Step 6 Hold the AP position to its final position. Tighten the band clamps with the wrench so that the AP does not slide or rotate on the pole. Ensure that the clamps are tight enough not to let the AP move. Ensure that the AP and all attached cables have clearance to install and provide drip loops.

Step 7 Using a 10–mm wrench, tighten the four M6 bolts to 40–lbf-in (4.5 Nm) torque.

Step 8 Position and install the solar shield on top of the L-bracket and AP. Align four holes in the shield to mount holes in AP. Insert four #8-32 screws through the shield into AP. Torque tighten the screws to 15 lbf-in (17 kgf-cm).

> **Note** We recommend you install the solar shield. However, if the AP's installed location is shaded from the sun (For example: indoors or under an eave), the solar shield is not required.
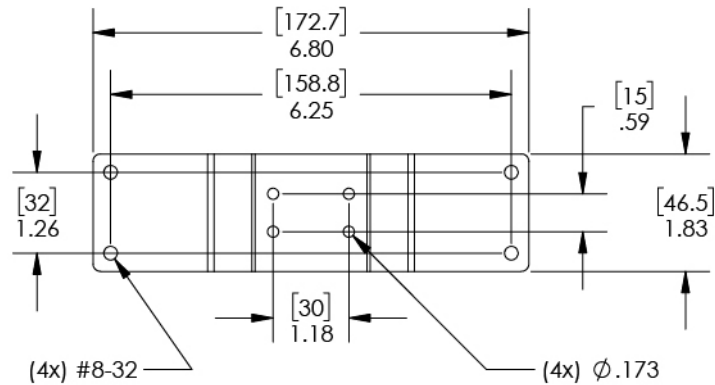
DC Supply Mount Bracket

The AIR-ACC-PS-MNT1= bracket is an orderable option to mount a DC supply to the AIR-MNT-HORZ1=
L-bracket kit.

Figure 16: Installing the DC supply bracket on to the L-bracket
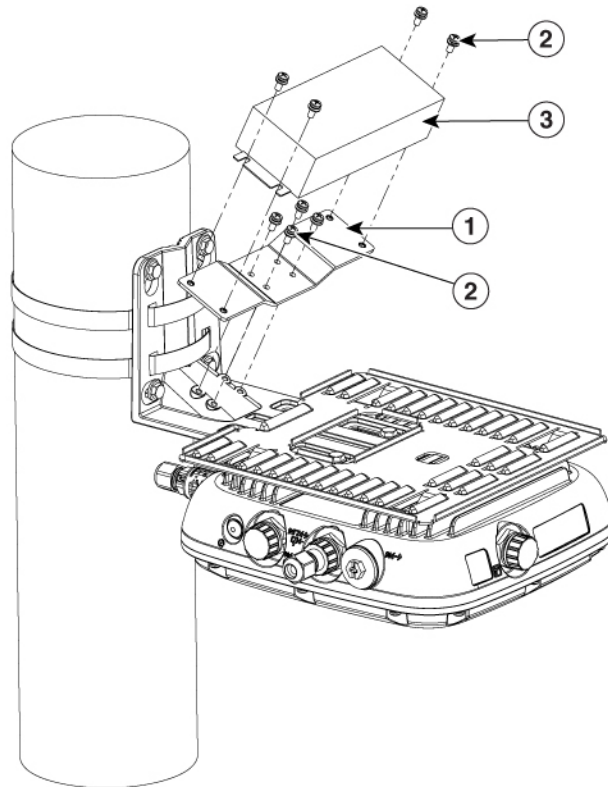
1	DC supply mount bracket
2	8-32 x 0.62 lg Bracket screws
3	DC Supply

Figure 17: DC Supply Bracket Dimensions

Procedure

Step 1   Install the DC bracket to the L-bracket with the four screws supplied. Tighten the screws to 15 lbf-in (17 kgf-cm) of tourque. See Figure 16: Installing the DC supply bracket on to the L-bracket, on page 29.

Step 2   Mount the DC supply to the bracket. For bracket dimensions, see Figure 17: DC Supply Bracket Dimensions, on page 30.

Strand Mounting the AP

The Strand Mount Kit (SMK) is used to mount the AP horizontally onto a cable strand. The SMK can accommodate a 2 to 3-inch (51 to 76-mm) cable bundle between the support cable strand and the AP's back surface.
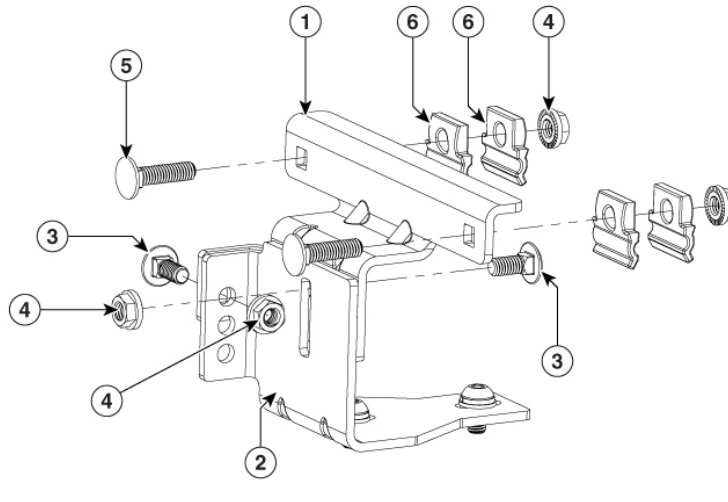
The SMK can also accommodate up to 10 degrees of strand or cable droop.

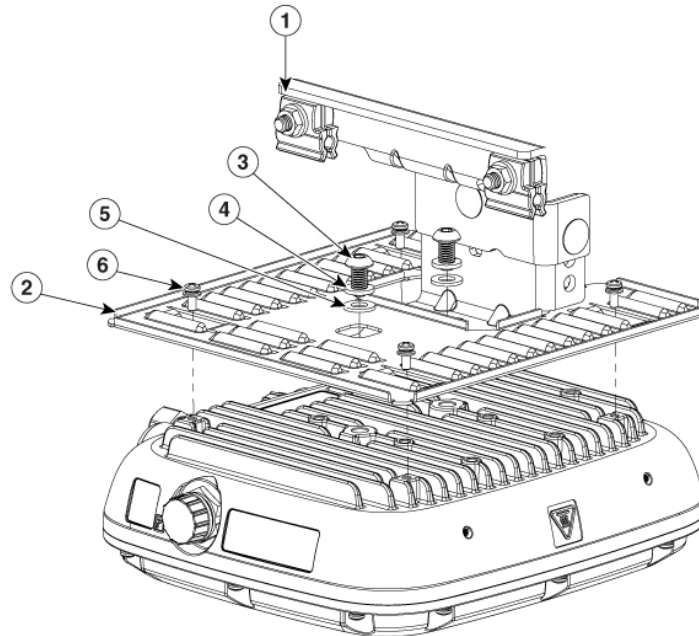*Figure 18: SMK Bracket Assembly Dimensions with Mounted AP*
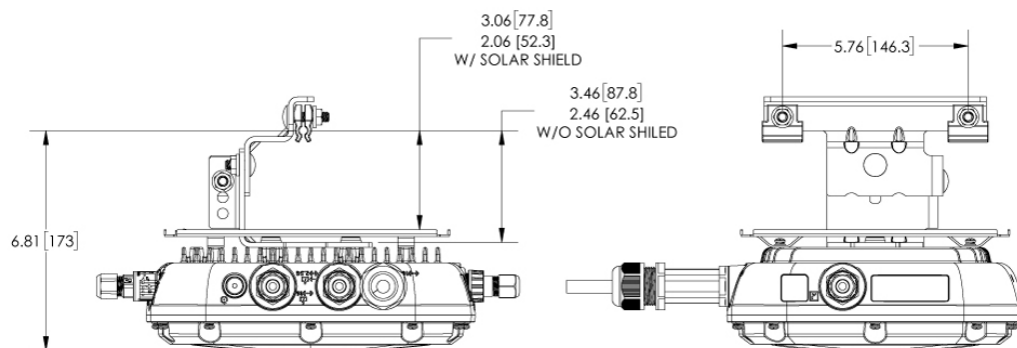
Figure 19: Assembling the cable bracket and Clamps

1	SMK Upper Bracket	4	5/16-18 Hex Nut with Serrated flange
2	SMK Lower Bracket	5	5/16-18 x 1.25 inchBolt
3	5/16-18 x 0.75" Bolt	6	Cable Clamp

Figure 20: Assembling the AP to the SMK and Solar Shield

1	SMK Bracket Assembly	4	M8 split lock washer
2	Solar Shield	5	M8 flat washer

3	M8 x 16 mm Button head hex bolt	6	8-32 x 0.62 inch Phillips Pan Head Screw

To mount the AP horizontally onto a cable strand, follow these steps:

Before you begin

Ensure that you have the following materials before strand mounting the AP:

Table 9: Materials Needed for Mounting the AP using AIR-MNT-STRAND1= Kit

Materials Required	Supplied in the Kit?
Strand Mount Kit (including hardware)	Yes
Solar Shield Cover	Yes
(2) M8 x 16 mm Button head hex bolts	Yes
(2) M8 split lock washer	Yes
(2) M8 flat lock washer	Yes
(4) 8-32 x 0.62" Phillips Pan Head Screw	Yes
5–mm Hex wrench	No
13–mm box-end wrench or socket set	No
Phillips Screwdriver	No

Procedure

Step 1   Assemble the cable clamps to the cable bracket on both cable brackets (see Figure 20: Assembling the AP to the SMK and Solar Shield, on page 31). Set the height of the cable brackets as required. You should hand-tighten the cable clamp nuts sufficiently enough to only prevent them from falling off.

Step 2   Install the solar shield over the SMK bracket assembly. See Figure 21: Assembling the cable bracket and Clamps, on page 33.

Note   We recommend you install the solar shield. However, if the AP's installed location is shaded from the sun (For example: indoors or under an eave), the solar shield is not required.

Step 3   Secure SMK bracket assembly with two M8 x16 bolts (with flat and lock washers) on the AP's back surface. Using a 5–mm Hex wrench, tighten the bolts to 13 to 15 lb.-ft (17.6 to 20.3 Nm) of torque.

Step 4   Secure the solar shield with four 8-32 screws. Tighten the screws to 15 lbf-in (17 kgf-cm) of torque.

Step 5   Place the cable bracket, attached to the AP, on the cable strand, with each pair of cable clamps clamping on to the cable strand. Tighten the cable clamps by tightening the two 5/16"–18 nuts to 13 to 15 lb-ft (17.6 to 20.3 Nm) of torque.

Figure 21: Assembling the cable bracket and Clamps
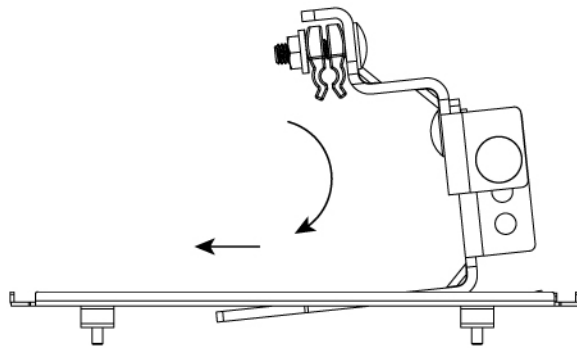
| **Note**	If needed, reposition the AP on the bracket assembly so it hangs level. Loosen the M8 screws just enough to move on a slotted hole, then re-tighten the screws to 15 lbf-in (17 kgf-cm) of torque.

Step 6   Connect the data cables, ground the AP, and power the AP.

| **Note**	You may require to pull the cable strand or support cable away from the fiber or cable bundle during installation. Ensure to re-secure the cable after the installation.

AP Paintable Cover Kit

You can install a cover C9124-CVR1= and paint these covers to blend the AP in its surrounding environment. You can install the cover before or after all connections are completed. However, if you require to install the remote cabled antennas, the shield may need to be installed before the antenna cables are attached to the AP.
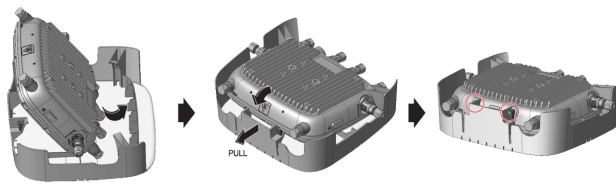
Figure 22: AP with Paintable Cover Kit
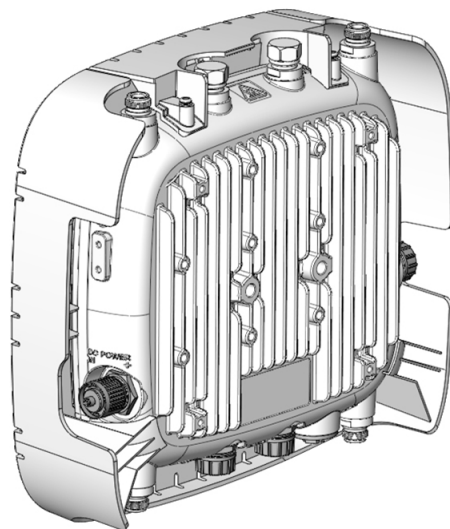
Figure 23: Installing the AP Cover on an Installed AP
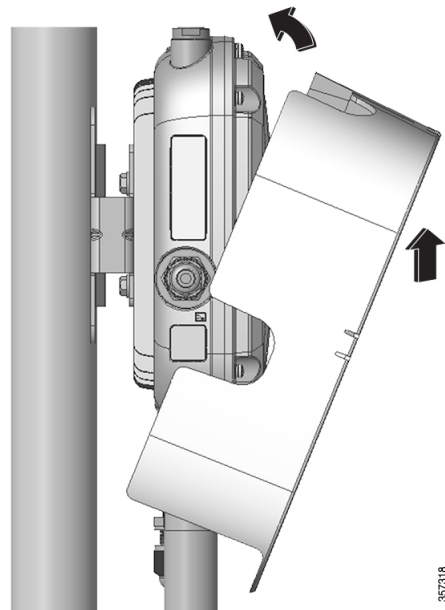
Procedure

Step 1 Position and rotate the cover over the AP.

Figure 24: Installing the AP Cover Kit

Step 2 Carefully pull back the flanged wall with screws to pass the cover over the AP. The covers are a snug fit to the AP.

Step 3 Align the two captive screws on the top of the cover with the screw holes.

Installing a Lightning Arrestor

Overvoltage transients can be created through lightning static discharges, switch processes, direct contact with power lines, or through earth currents. The Cisco Aironet AIR-ACC245LA-N Lightning Arrestor limits the amplitude and duration of disturbing interference voltages and improves the over voltage resistance of in-line equipment, systems, and components. A lightning arrestor installed according to these mounting instructions balances the voltage potential, thus preventing inductive interference to parallel signal lines within the protected system.

Installation Considerations

Cisco recommends that you bulkhead mount the lightning arrestor so it can be installed as a wall-feed through on the wall of the protected space.

The importance of obtaining a good ground and bonding connection cannot be overstressed. Consider these points when grounding the lightning arrestor:

- Connect the lightning arrestor components directly to the grounding point.

- The contact points of the ground connection must be clean and free of dust and moisture.

- Tighten threaded contacts to the torque specified by the manufacturer.

Lightning Arrestor Installation Notes

This lightning arrestor is designed to be installed between the antenna cable that is attached to an outdoor antenna and the Cisco Aironet wireless device. You can install the lightning arrestor either indoors or outdoors. It can be connected directly to a wireless device having an external N connector. It can also be mounted inline or as a feed-through. Feed-through installations require 5/8 in. (16 mm) hole to accommodate the lightning arrestor.

Note
- This lightning arrestor is part of a lightning arrestor kit. The kit contains a lightning arrestor and a grounding lug

- When you install the lightning arrestor, follow the regulations or best practices applicable to lightning protection installation in your local area.

Installing the Lightning Arrestor Outdoors

If you install the lightning arrestor outdoors, use the supplied ground lug and a heavy wire (#6 solid copper) to connect it to a good earth ground, such as a ground rod. The connection should be as short as possible.
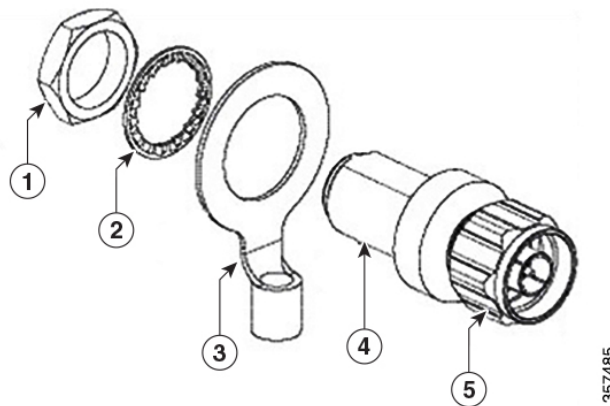
1	Nut	4	Unprotected Side (to antenna)
2	Lockwasher	5	Protected side (to wireless device)

3	Ground lug		

Cable for the Lightning Arrestor

Coaxial cable loses efficiency as the frequency increases, resulting in signal loss. The cable should be kept as short as possible because cable length also determines the amount of signal loss (the longer the run, the greater the loss).

Cisco recommends a high-quality, low-loss cable for use with the lightning arrestor.
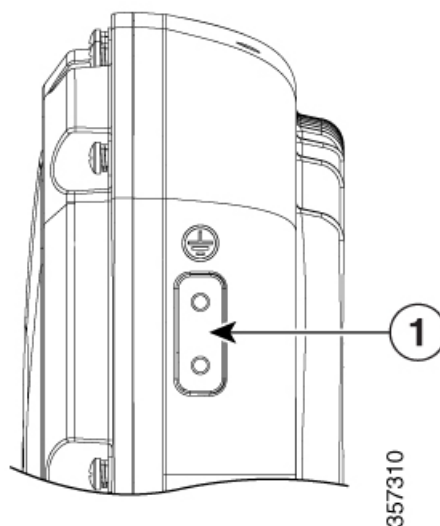
Grounding the Access Point

The AP must be grounded before connecting power.

In all outdoor installations, you must follow these steps to ground the case properly:

Procedure

Step 1 If using insulated 6-AWG copper ground wire, strip the insulation required for the grounding lug.

Step 2 Use the appropriate crimping tool to crimp the bare 6-AWG copper ground wire to the supplied grounding lug.

Note The grounding lug and hardware used must comply with local and national electrical codes.

Step 3 Open the anti-corrosion sealant (supplied) and apply a liberal amount over the metal surface called the Ground Pad, where the ground strap screw holes are located.

Step 4 Connect the grounding lug to the AP grounding screw holes using the supplied two Phillips head screws (M4 x10–mm) with lock washers. Tighten the grounding screw with 22 to 24 lb-in (2.5 to 2.7 Nm) of torque.

Step 5 If necessary, strip the other end of the ground wire and connect it to a reliable earth ground, such as a grounding rod or an appropriate grounding point on a metal streetlight pole that is grounded.

Figure 25: Position of the Ground Pad on the Right Side of the AP

1	Ground pad, where the ground strap screw holes are located.

Powering the Access Point

The AP supports these power sources:

- DC power – 24–56 VDC

- Power-over-Ethernet (PoE)

The AP can be powered via the PoE input from an inline power injector or a suitably powered switch port. Depending on the configuration and regulatory domain, the required power for full operation is 802.3bt or UPOE.

✎

Note   The supporting outdoor power injectors are AIR-PWRINJ-60RGD1 and AIR-PWRINJ-60RGD2 rated at 60W each. These power injectors support 10/100/1000BASE-T operation only. They do not support the 2.5GBAST-T (mGig) Ethernet speed.

Table 10: Cisco Catalyst 9124AX AP Reduced Power Feature Matrix

SKU	PoE-in/DC Input	Radio 0	dBm	Radio 1	dBm	AUX Radio	Ethernet mGig	SFP Module	GbE PHY	PoE-out	Notes
		SS	Per Path	SS	Per Path						
		2.4-GHz radio		5-GHz Primary radio		Chillwave					
C9124AXI, C9124AXD. C9124AXE Dual Radio mode	.3af (15.4W)	disabled	–	disabled	–	enabled	1G	N	N	N	Serving radios disabled
	.3at (30W)	2x2	23	2x2	23	enabled	1G	N	Y	N	-
	.3bt / UPOE (39.5W)	4x4	24	4x4	24	enabled	2.5G	Y	Y	15.4W	PoE output is 802.3af compliant
	DC input (60W)	4x4	24	4x4	24	enabled	2.5G	Y	Y	15.4W	using DC power source ≥60W

SKU	PoE-in/DC Input	Radio 0	dBm	Radio 1	dBm	AUX Radio	Ethernet mGig	SFP Module	GbE PHY	PoE-out	Notes
C9124AXE Tri-Radio mode	.3af (15.4W)	disabled	—	disabled	—	enabled	1G	N	N	N	Serving radios disabled
	.3at (30W)	disabled	—	disabled	—	enabled	1G	N	N	N	-
	.3bt / UPOE (39.5W)	2x2	24	2x2	24	enabled	2.5G	Y	Y	15.4W	PoE output is 802.3af compliant
	DC input (60W)	2x2	24	2x2	24	enabled	2.5G	Y	Y	15.4W	using DC power source ≥60W

Note The dual-radio configuration is set as default and tri-radio configuration is disabled.

Table 11: C9124AXE Dual Radio Supported Antenna Configuration

Antenna Mode	5 GHz Radio (Slot 1)					2.4 GHz Radio (Slot 0)			
	Ant-3	Ant-4	Ant-1	Ant-2	Ant-5	Ant-1	Ant-2	Ant-3	Ant-4
1x1 (20/40/80 MHz)	Y	–	–	–	–	Y	–	–	–
2x2 (20/40/80 MHz)	Y	Y	–	–	–	Y	Y	–	–
4x4 (20/40/80 MHz)	Y	Y	Y	y	–	Y	Y	Y	Y
2x2 160 MHz	Y	–	–	–	Y	–	–	–	–

Table 12: C9124AXE Tri-Radio Supported Antenna Configuration

Antenna Mode	5 GHz Radio (Slot 1)	5 GHz Radio (Slot 2)	2.4 GHz Radio (Slot 0)

	Ant–3	Ant–4	Ant–1	Ant–2	Ant–5	Ant–6	Ant–1	Ant–2	Ant–3	Ant–4
1x1 (20/40/80 MHz)	Y	–	–	–	Y	–	Y	–	–	–
2x2 (20/40/80 MHz)	Y	Y	–	–	Y	Y	Y	Y	–	–

Connecting a Power Injector

The AP supports the following power injectors:

Table 13: Supporting Power Injectors

Power Source	Description
AIR-PWRINJ-60RGD1=	60W rated outdoor power injector, with North America AC plug
AIR-PWRINJ-60RGD2=	60W rated outdoor power injector, global version without AC plug
AIR-PWRINJ6=	30W rated single-port PoE injector
AIR-PWRINJ7=	65W rated single-port PoE injector (802.3bt), mGig Ethernet

The power injector provides DC voltage to the AP over the Ethernet cable and supports a total end-to-end Ethernet cable length of 100 m (328 ft) from the switch to the AP.

When an optional power injector powers your AP, follow these steps to complete the installation:

Procedure

Step 1   Before applying PoE to the AP, ensure that the AP is grounded (see Grounding the Access Point, on page 36).

Step 2   Identify the components needed for the installation, see the Typical Access Point Installation Components, on page 4.

Step 3   Connect a CAT5e or better Ethernet cable from your wired LAN network to the power injector.

Danger   **To reduce the risk of fire, use only No. 24 AWG or larger telecommunication line cord.** Statement 1023

Note   The installer is responsible for ensuring that powering the AP from this type of power injector is allowed by local and/or national safety and telecommunications equipment standards.

Step 4   Ensure that the antennas are connected, and that ground is attached to the AP before you apply power to the AP.

Step 5   Connect a shielded outdoor-rated Ethernet (CAT5e or better) cable between the power injector and the AP's PoE-in connector.

Step 6   Connect the Ethernet cable to the AP PoE-In port. See Installing a CAT 5e Ethernet Cable and Gland Assembly to the Access Point, on page 43.

Connecting a DC Power Cable to the Access Point

When powering the AP with DC power, you must ensure that DC power can be conveniently removed from the unit. The power should not be removed by disconnecting the DC power connector on the unit

If you supply DC power using your own DC supply, you need to use the DC plug kit supplied with the AIR-ACC-KIT1= accessory kit.

⚠️

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

To connect a DC power cable, you need to supply these tools and material:

- Shielded outdoor-rated DC power cable (18 AWG) with outside cable diameter of 0.20 to 0.35 inch (0.51 to 0.89 cm)

- Adjustable or open-end wrench

- Hex crimp tool: 0.10 inch (2.54-mm)

To connect the DC power cable to the AP, follow these steps:

Procedure

Step 1   Before connecting DC power to the AP, ensure that the ground is connected to the AP. See Grounding the Access Point, on page 36.

Step 2   Turn off all power sources to the AP, including the DC power source.

Danger   **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Caution   When installing DC power to the AP, always connect the AP end of the cable FIRST. When removing the DC power connector, always disconnect the AP end of the cable LAST.

Step 3   Remove the cap from the DC connector located on the right side of the AP. Push inward toward the AP and turn counterclockwise about a ¼ turn. The cap should dis-engage from the bayonet thread on the 2-pin DC connector. Do not discard the cap unless you are sure the port will never need to be sealed in the future. See the following image for the location of the DC power connector.

Figure 26: Position of the DC Power-In Port on the Right Side of the AP
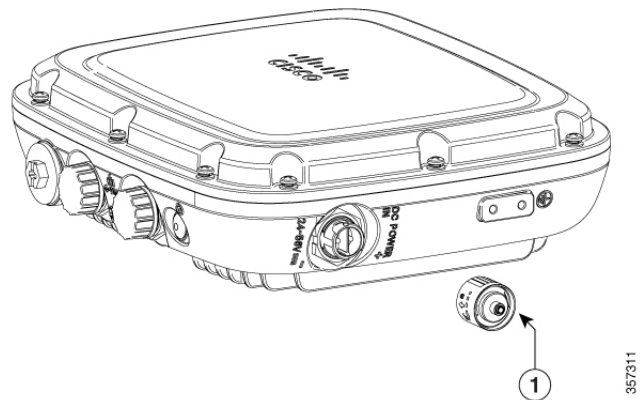
1	DC Connector Cap

Step 4 Insert DC supply 2-pin connector into plug located on the left side of the AP. Position and orient the plug to align with the keyed pins on the connector. Push inward toward the AP until the connector body rotates and clicks into place. The plug is a bayonet-style. It should automatically lock into place when pushed inward.
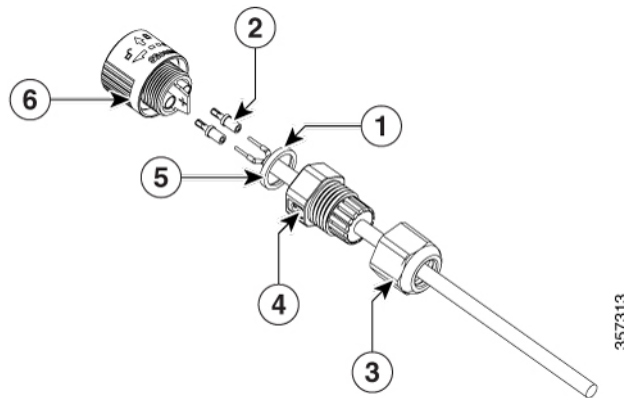
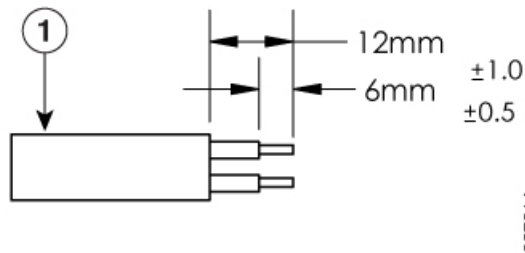*Figure 27: Installing the DC plug*
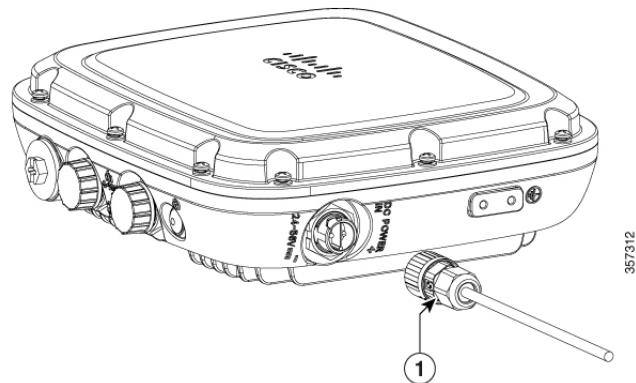
1	2-Pin DC plug

Step 5 If the AP is to be power with customer supplied DC source. The following steps show how to terminate the Cisco-supplied DC plug to the cable.

Figure 28: Terminating DC plug to the cable

1	DC 2-conductor 18 AWG cable	4	Grommet and Seal Ring
2	Crimp Pins	5	Gasket
3	Seal Nut	6	Connector body

Figure 29: Wire Stripping Length

1	cable

a) Dis-assemble the DC plug .

b) Pass the cable through the plug components.

c) Strip the cable end.

> **Note** Remove the wire jacket and tin the wire strands. Tinning the strands helps to insert the wire into the crimp pins.

d) Insert wire conductor into crimp pins. Using a 0.10 inch (2.54 mm) Hex crimp tool, crimp the pin to the wire to secure it in place. Repeat for the second pin. If you must re-do the crimping process, you can use the 2 extra pins supplied.

e) Insert the crimped pins and wire into the female barrel of the connector body. Be sure to insert the proper wire polarity into the corresponding barrel shown on the body. Push to be sure the pin is fully seated into the barrel.

> **Note** Pin 1 (+V) Pin 2 (-V), the connector body is marked (+) and (-) to show polarity pin assignments.

f) Slide the gasket and seal the ring down the cable, thread the ring on to the body. Use caution to be sure the gasket is correctly seated into the ring. Hand tighten to seal gasket fully.

g) Thread the seal nut on to the seal ring. Hand tighten until the ring grommet seals onto the cable jacket.

Step 6   Install the DC plug into the AP connector.

Connecting Data Cables

All the models of this AP support data connections through the Ethernet port and the Small Form-factor Pluggable (SFP) port. However, both the Ethernet port and the SFP port cannot be used for data simultaneously.

If the SFP is detected and active, the Ethernet port is disconnected. If the SFP is not detected, the Ethernet port stays connected.

If you are using the SFP port to deliver data through a fiber-optic cable, the AP must be powered by DC power, power adapter, or a power injector.

For details on installing Ethernet cable, see

Installing a CAT 5e Ethernet Cable and Gland Assembly to the Access Point, on page 43

Installing a CAT 6/6A Ethernet Cable and Gland Assembly to the Access Point, on page 46

For details on installing a fiber-optic cable, see Connecting a Fiber-optic Cable to the AP (AIR-SFP-KIT1=), on page 49.

Connecting an Ethernet Cable to the Access Point

Installing a CAT 5e Ethernet Cable and Gland Assembly to the Access Point

Figure 30: CAT 5e Cable Gland Assembly

| 1 | CAT 5e RJ45 Plug | 4 | Screw nut |
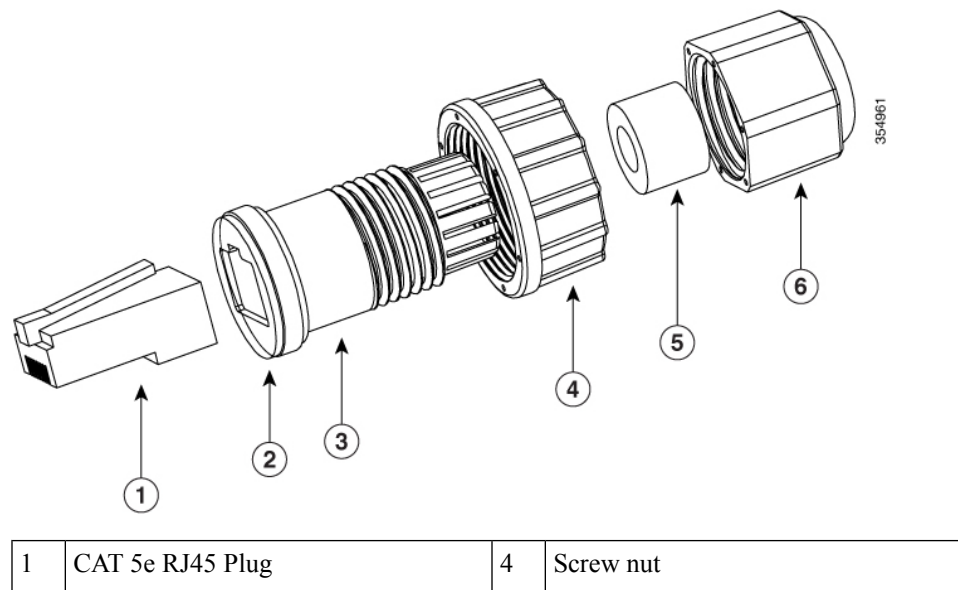
2	Gasket It is pre-attached to the Clamp ring.	5	Cable Seal
3	Clamp ring	6	Cable Sealing Nut

Before you begin

You must supply these tools and materials:

- Shielded outdoor-rated CAT 5e Ethernet cable with a diameter of 0.14 to 0.26 inch (3.5 to 6.5mm)

- CAT 5e RJ45 connector and installation tool

- Adjustable wrench or 18–mm box wrench

- CAT 5e gland kit is supplied standard with AP

Note
- The provided CAT 5e gland must be used with CAT 5e cable only. When using CAT 6/6A cable you need to use AIR-ACC-CAT6= kit which is an orderable accessory from Cisco.

- We recommend the application of dielectric grease on the RJ45 connector pins as an additional layer of protection from moisture. The dielectric grease creates a moisture barrier preventing the RJ45 connector pins from corrosion if the gland's weathertight seal fails.

Procedure

Step 1   Disconnect power to the power injector and ensure all power sources to the AP are turned off.

Danger   **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Step 2   Ensure a 6 AWG ground wire is connected to the AP (see Grounding the Access Point, on page 36).

Step 3   Remove the covering cap from the PoE port.

Step 4   Loosen and remove the cable sealing nut of the cable gland by turning it counterclockwise.

Note   Verify that the cable gland has a rubber seal and a gasket. Ensure that it is not damaged.

Caution   If the cable gland and rubber gasket is not installed correctly, it causes the cable grip to leak.

**Step 5**   Re-install Cable Seal and Sealing Nut.

Step 6   Insert the Ethernet cable's unterminated end through the sealing nut end of the cable gland.

Pass the Ethernet cable through the cable seal and pull several inches of cable through the adapted components.

Step 7   Install an RJ45 connector on the Ethernet cable's unterminated end using your Ethernet cable installation tool.

|	
Note	Ensure that the RJ45 connector end where the cable enters is free from cable foil, shielding, or jacket that was peeled back during termination. If any material is left, this may cause internal component interference and fail to seal properly to the RJ45 port.
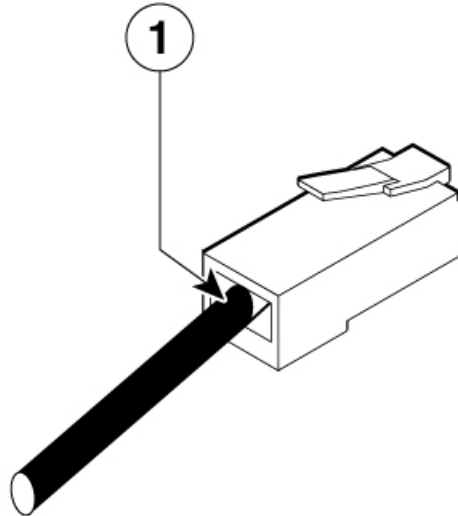
1	RJ45 connector end where the cable enters, terminate the cable foil, shielding, or jacket that was peeled back during termination at this line.

Step 8	Slide the terminated RJ45 connector into the clamp ring till it stops.
	Pull the cable to ensure that the connector is seated into the clamp ring.
Step 9	Rotate the Cable Seal Nut to tighten seal around cable jacket.
	Use an adjustable or 18 mm wrench and torque to 7-9 lbf-in (8-10 kgf-cm).
Step 10	Insert the RJ45 cable gland assembly into the port on the AP.
	Thread the screw nut onto the AP threaded port and tighten by hand to be sure the gland seals to the port. Torque to 15 lbf-in (17 kgf-cm), if possible.
Step 11	Route your Ethernet cable and cut off any excess cable.
Step 12	Install an RJ45 connector on the unterminated cable end and insert it into the power injector or device PoE port.
Step 13	Turn on the power to the power injector.

Installing a CAT 6/6A Ethernet Cable and Gland Assembly to the Access Point

Figure 31: CAT 6/6a Cable Gland Assembly
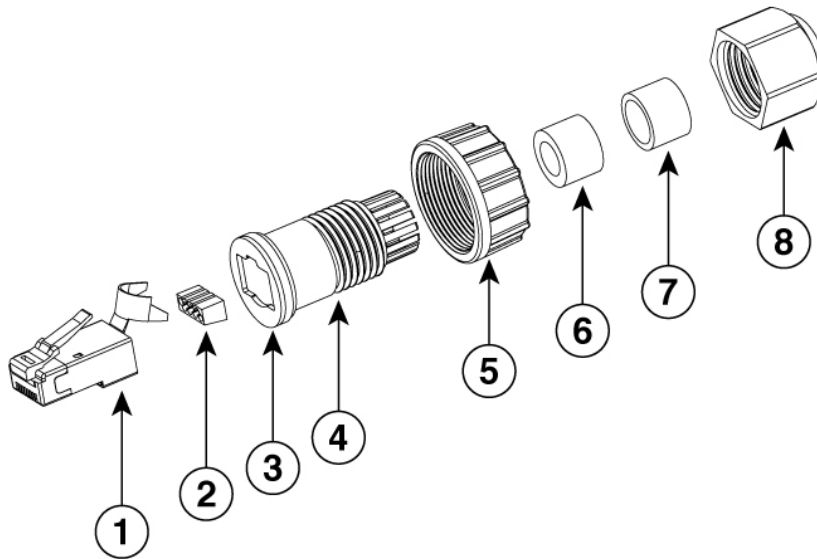
1	CAT 6/6A RJ45 Plug	5	Screw nut
2	RJ45 wire load bar Note the orientation into plug	6	Cable Seal (Cable OD range 5 mm to 7 mm)
3	Gasket It is pre-attached to the Clamp ring.	7	Cable Seal (Cable OD range 7 mm to9 mm)
4	Clamp ring	8	Cable sealing nut

Before you begin

You must supply these tools and materials:

- Shielded outdoor-rated Ethernet (CAT 6 or CAT 6A) cable with a diameter of 0.2 to 0.35 inch (5 to 9 mm)

- CAT 6 RJ45 connector installation tool

- Adjustable wrench or 18–mm box wrench

- CAT 6 / CAT 6A gland ordered separately with AIR-ACC-CAT6= kit

✎

Note
- The provided CAT 5e gland must be used with CAT 5e cable only. When using CAT 6/6A cable you need to use AIR-ACC-CAT6= kit which is an orderable accessory from Cisco.

- We recommend the application of dielectric grease on the RJ45 connector pins as an additional layer of protection from moisture. The dielectric grease creates a moisture barrier preventing the RJ45 connector pins from corrosion if the gland's weathertight seal fails.

Procedure

Step 1   Disconnect power to the power injector and ensure all power sources to the AP are turned off.

Danger   **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Step 2   Ensure a 6 AWG ground wire is connected to the AP (see Grounding the Access Point, on page 36).

Step 3   Remove the covering cap from the PoE port.

Note   Verify that the cable gland has a rubber seal and gasket. Ensure that it is not damaged.

Caution   If the cable gland and rubber gasket are not installed correctly, it causes the cable grip to leak.

Step 4   Loosen and remove the cable sealing nut of the cable gland by turning it counter clockwise.

Step 5   Insert the Ethernet cable's unterminated end through the cable sealing nut.

Pass the Ethernet cable through the appropriate size cable seal, then pull several inches of cable through the gland components.

Note   • Install the proper cable seal that fits the OD of the Ethernet cable used.

Step 6   Insert the cable seal into the clamp ring, then install the cable seal nut back to the clamp ring.

Do not tighten the clamp ring.

Step 7   Install the CAT 6/6A RJ45 connector on the Ethernet cable's unterminated end using your Ethernet cable installation tool.

Follow the common CAT6/6A Ethernet connector installation procedures. Fold and crimp the connector metal strain lug end over the outer cable jacket, foil and ground wire if equipped.

Caution   Ensure the RJ45 connector end where the cable enters is free from cable foil, shielding, and jacket that was peeled back during termination. If any material is left this may cause internal component interference and fail to seal properly to the RJ45 port.
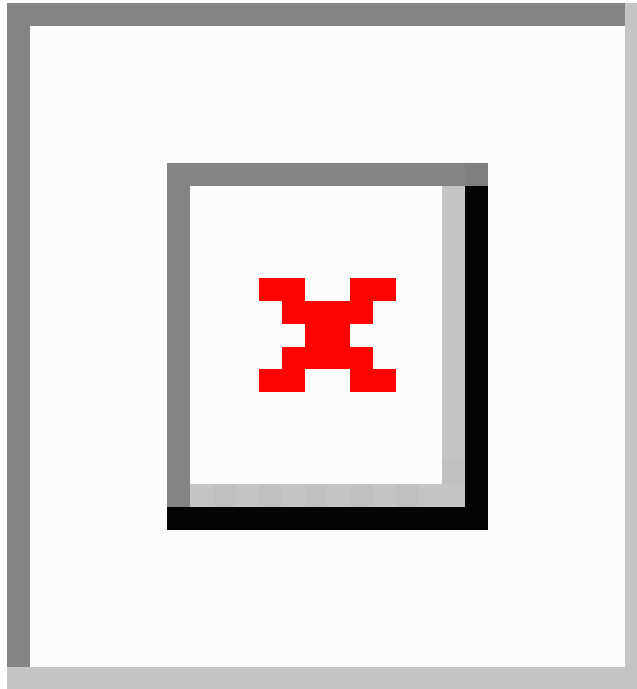
1	RJ45 connector end where the cable enters, terminate the cable foil, shielding, or jacket that was peeled back during termination at this line.

Note   • Position and insert load bar with notches aligned to connector as shown in the figure.

• Ensure individual conductor sequence matches opposite connection end. Typical sequence follows the T568B pinout standard.

Step 8   Slide the terminated RJ45 connector into the clamp ring till it stops.

Pull the cable to ensure that the connector is seated into the clamp ring.

Step 9   Tighten the cable seal nut around the cable.

Using a 18mm or adjustable wrench, tighten the nut to 7-9 lbf-in (8 – 10 kgf-cm).

Step 10   Install the RJ45 cable gland assembly into the AP port.

Thread the screw nut onto the AP threaded port and tighten by hand to be sure the gland seals to the port. Torque to 15 lbf-in (17 kgf-cm), if possible.

Step 11   Route your Ethernet cable and cut off any excess cable.

Step 12   Install an RJ45 connector on the unterminated cable end and insert it into the power injector or device PoE port.

Note   Ensure individual conductor sequence matches opposite connection end. Typical sequence follows T568B pinout standard.

Step 13   Turn on the power to the power injector.

Connecting a Fiber-optic Cable to the AP (AIR-SFP-KIT1=)

The optional Cisco accessory fiber-optic kit enables the AP to support fiber-optic network connections.

You can connect the fiber-optic networking cable to the SFP port. The small form-factor pluggable (SFP) transceiver module connects the cable to the SFP port.

Figure 32: Fiber-Optic cable and gland installed to AP


Before you begin

You require the following materials for connecting the fiber-optic cable to the AP:

- Cisco Small form-factor pluggable (SFP) adapter kit

- SFP transceiver module

- SC or Duplex LC fiber-optic cables. The fiber optic cable's outer diameter should be 0.24 to 0.50 inch (6 to 12.7 mm). The cable gland cannot hold a cable with a diameter more than 0.50" (12.7 mm)

- 12–mm wrench or large flat blade or Philips screwdriver

- Adjustable wrench

Procedure

Step 1   Disconnect all power sources from the AP.

Step 2   Remove the plug from the SFP port by following the guidelines given in this step.

Figure 33: Removing the SFP port plug
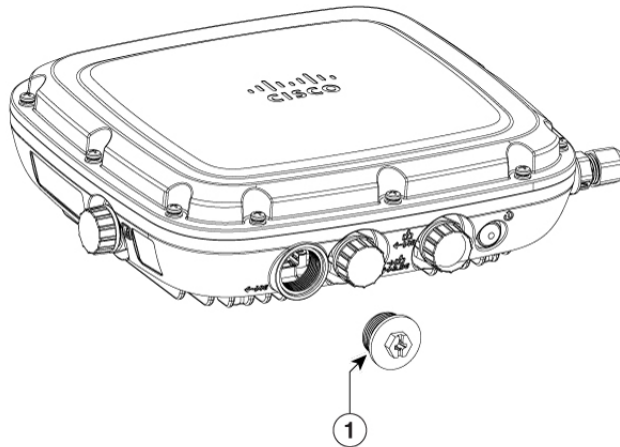

1	SFP Port Plug

Do not discard the plug unless you are sure the SFP port will never need to be sealed in the future.

a) Place the AP on its back (resting on the heat fins) on a stable but padded surface to avoid scratching the paint.

b) Using a 12-mm wrench or large flat blade, or Philips screwdriver, turn the SFP port plug counterclockwise and remove it.

Step 3 Insert the SFP module into the SFP port and ensure that it latches properly.

Step 4 Loosen and dis-assemble the SFP adapter gland components.

*Figure 34: Exploded view of Fiber-Optic cable and Gland assembly*
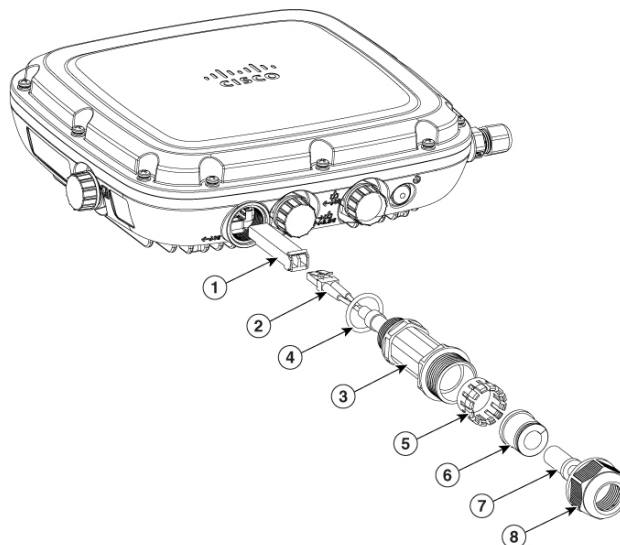
1	SFP Transceiver Module	5	Gland Compression Ferrule

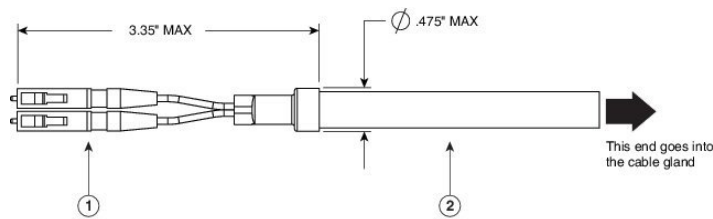| 2	Duplex LC Fiber-optic cable	6	Large Cable Rubber Gland 0.30 to 0.50 inch (7.6 to 12.7 mm) diameter
3	SFP Gland Adapter body	7	Small Cable Rubber Gland 0.24 to 0.30 inch (6.0 to 7.6 mm) diameter
4	Body O-ring	8	Gland nut

Step 5 Terminate the SC or LC fiber optic cable.

Figure 35: SC Fiber-optic cable
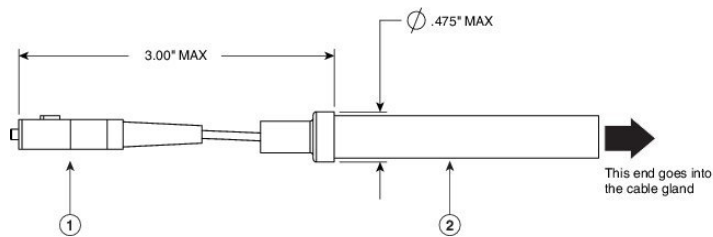
1	SC optic fiber connector	2	Optic fiber cable

Figure 36: Duplex LC Fiber Optic Cable

1	Duplex LC optic fiber connector	2	Optic fiber cable

Step 6 Using caution not to damage the fiber connector end, pass the fiber connector through the adapter gland components. Ensure components are ordered and orientated, as shown in Figure 36: Duplex LC Fiber Optic Cable, on page 51.

Note Ensure you use the proper rubber gland combination. If the fiber cable outside diameter (OD) is 0.30 to 0.50 inches (7.6 to 12.7 mm), then the small rubber gland can be discarded. If the cable OD is 0.24 to 0.30 inches (6.0 to 7.6 mm), then the small rubber gland is inserted into the large rubber gland.

Step 7 Verify the O-ring is correctly seated on the gland adapter body. Re-assemble the components of the adapter gland. Do not tighten the gland nut on the rubber inserts. Leave it loose so the gland can easily slide on the fiber cable. If you tightened the cable in this step, you might damage the cable.

Step 8 Insert the SC or LC optic fiber connector-end of the cable into the SFP transceiver module and ensure it latches into place.

Step 9 Thread the adapter body into the SFP port on the AP. Tighten the adapter body by hand until it is fully seated. Inspect that the body is seated correctly. Using an adjustable wrench, tighten the body snugly to the AP body to approximately 13 to 17 lb-in (15 to 20 kgf-cm) of torque.

Step 10   To seal the rubber gland to the fiber cable, hand tighten the gland nut. Using an adjustable wrench, tighten the nut ¼ revolution to make a water-tight seal on the cable to approximately 15 to 22 lbf-in (17 to 25 kgf-cm) torque.

Caution   When removing this SFP assembly, you must proceed in the reverse order of this installation. Start by loosening the cable gland's nut.

Powering the Access Point over Power-over-Ethernet

The AP can be powered through Power-over-Ethernet (PoE) using the following:

- 802.3at (PoE+): Any 802.3at (30W) compliant switch port or Cisco Power Injector AIR-PWRINJ6=

- 802.3bt: Any 802.3bt compliant switch port or IEEE 802.3bt compliant Power Injector

- Cisco Universal PoE (Cisco UPOE)

Note   If 802.3af is used, both the 2.4-GHz and 5-GHz radios are disabled, and Ethernet gets downgraded to 1 GbE speeds. The SFP port and PoE-OUT is also disabled.