D-Link®
Building Networks for People

Manual
Version 1.0

DWL-8220AP
Wireless Switch Access Point

Table of Contents

Product Contents

- ■ DWL-8220AP Wireless Switch Access Point
- ■ Mounting Bracket
- ■ Mounting Template
- ■ Mounting Hardware
- ■ Rubber Feet

System Requirements

- ■ A Network with a D-Link DWS-1008 Wireless Switch

Warning: Installation must be performed by qualified service personnel only. Please follow all warning notices and instructions marked on the product or included in the documentation. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Introduction

The small form factor Wireless Switch Dualband Access Point DWL-8220AP increases wireless LAN secure mobility, supports dualband WLAN connectivity, and provides client access to the functions of the *Air*Premier® MobileLAN™ DWS-1008 Wireless Switch. Each DWL-8220AP continually tunes itself for optimal RF channel and transmit power to provide all mobile clients with the best wireless signal in both the 802.11a and 802.11g bands.

Sensitive Information Not Stored Locally
Individual DWL-8220APs have no local storing of any data so they can be safely installed in unsecured areas without fear of hacking or theft. The DWS-1008 Wireless Switch is the hardware that stores vital network and user information in plain site and is typically stored in a secure location. DWL-8220APs can link to DWS-1008 directly or through the existing wired network - even across Layer 3 boundaries - and receive Power over Ethernet (PoE) from directly connected DWS-1008 or third-party PoE injectors.

Self Configuration and Easy Installation
The DWS-1008 Wireless Switch automatically configures every connected DWL-8220AP so that no configuration is necessary during installation. If a DWL-8220AP needs to be replaced, the replacement DWL-8220AP automatically inherits the same configuration, making the replacement process analogous to changing a light bulb.

These plenum-rated DWL-8220APs intentionally resemble smoke detectors to minimize visibility. With no protruding antennas and no obvious hallmarks of an AP, DWL-8220APs are less likely to be tampered with. For added protection, all APs feature a built-in Kensington security lock interface.

Continuous Channel Scanning To Prevent Rogue APs
DWL-8220APs play a key role in rogue detection – they continuously scan both bands and their associated channels to root out rogues while simultaneously providing wireless connectivity to mobile clients. If a rogue is detected, the closest DWL-8220AP can launch RF Countermeasures by spoofing 802.11 control messages. This prevents clients from communicating, associating and authenticating with a rogue.

Increases User Productivity
For important wireless transmissions such as VoIP related applications, DWL-8220APs also deliver critical user-based services, such as prioritized delivery of voice traffic. Supporting multiple queues per user, DWL-8220APs always prioritize expedited traffic such as voice calls.

* Maximum wireless signal rate based on IEEE Standard 802.11a/11b/11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

Hardware Overview

The DWL-8220AP access point (AP) provides IEEE 802.11 wireless access to the network. It is designed for use with the D-Link DWS-1008 wireless switch. The access point requires hardware installation only. All configuration for the access point takes place on the switch.

The DWL-8220AP has one 802.11a radio and one 802.11b/g radio. Both radios have internal diversity omnidirectional antennas. In addition, both radios have separate jacks for attachment of optional external sectorized or directional antennas. The antennas must be ordered separately.

Note: Installation must be performed by qualified service personnel only. Read and follow all warning notices and instructions marked on the product or included in the documentation.

The access point radios are disabled by default and can be enabled only by a system administrator using the DWS-1008 wireless switch.
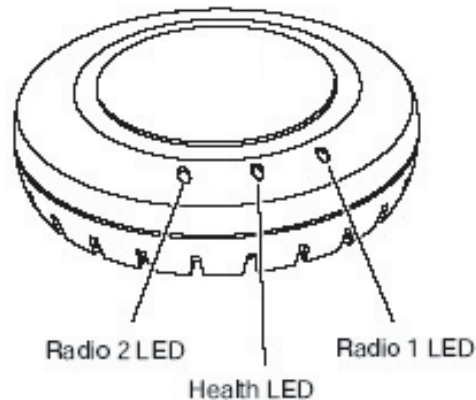
Ethernet Ports

The DWL-8220AP has two RJ-45 ports. Each port provides a 10/100BASE-TX Ethernet connection to a DWS-1008 switch. The connection can be direct to a DWS-1008 switch or indirect through an intermediate Layer 2 or Layer 3 network.

The access point receives power and data through the RJ-45 ports. Use a straight-through Category 5 (CAT5) Ethernet cable to connect an AP to a DWS-1008 switch or other device in the network. The DWL-8220AP supports 802.3af, and also can receive PoE from D-Link switches and D-Link-approved power injectors.

The two RJ-45 ports support dual-homed configurations for redundancy. The DWL-8220AP uses only one link for booting, configuration, and data transfer. If the link becomes unavailable, the AP can reboot using the other link. The ports are identical except for logical numbering (1 or 2). You can use either port to connect an AP access point to a DWS-1008 switch. However, an AP always attempts to boot on port 1 first. Only if the boot attempt on port 1 fails does the AP attempt to boot on port 2. If one port becomes unavailable, the other port can provide full power to the AP.
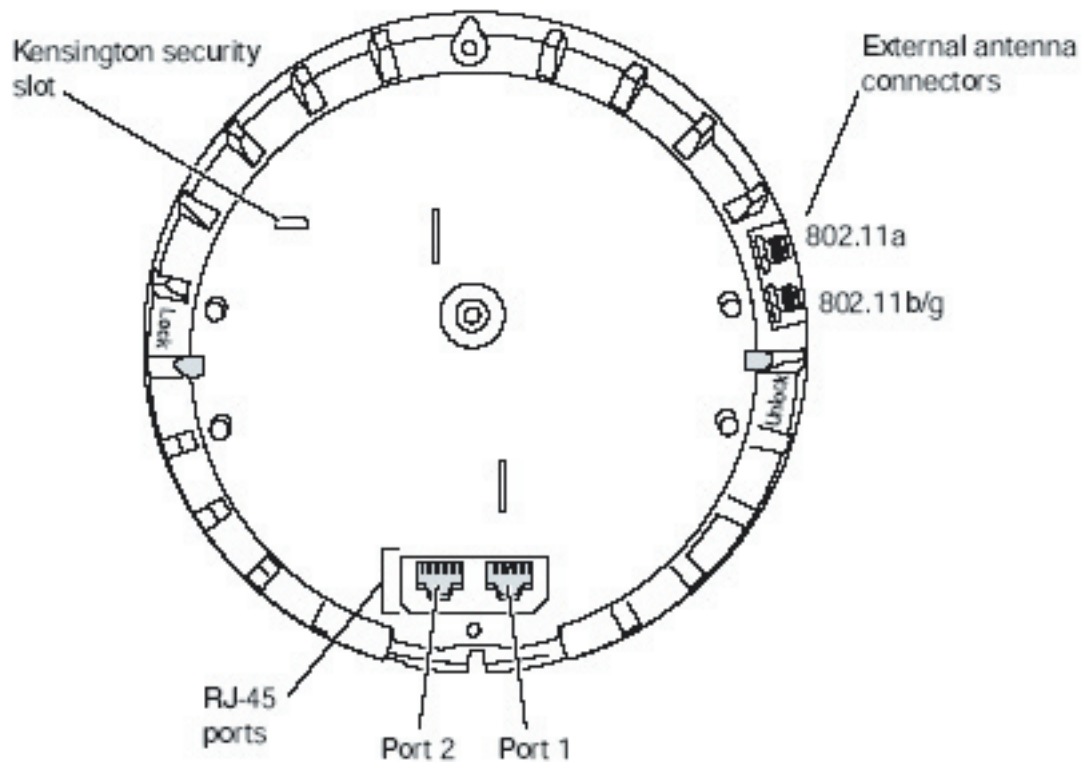
Note: Access points do not support daisy-chain configurations. Do not connect the access point to another access point.

Hardware Overview (LEDs)

Radio 2 LED   Radio 1 LED

Health LED

LED	Appearance	Meaning
Health	Solid green	All the following are true: • Management link with a switch is operational. • Access point has booted. • Access point has received a valid configuration from a switch. • At least one radio is enabled or is in sentry mode.
	Solid amber	Access point is waiting to receive boot instructions and a configuration file from a switch.
	Alternating green and amber	Access point is booting and receiving its configuration file from a switch.
Radio 1/Radio 2	Solid green	A client is associated with the radio.
	Blinking green	Associated client is sending or receiving traffic.
	Blinking amber	Non-associated client is sending or receiving traffic.
	Alternating green/amber	Radio is unable to transmit. This state can occur due to any of the following: • Excessive radio interference in the environment is preventing the radio from sending beacons. • The radio has failed.
	Unlit	Means one of the following: • Radio is disabled. • Radio is enabled, but no clients are associated with the radio and there is no traffic activity.

Hardware Overview (Bottom View)

Connection Options

You can connect an access point directly to a DWS-1008 switch port or indirectly to DWS-1008 switches through an intermediate Layer 2 or Layer 3 network. In either case, use Category 5 (CAT5) cable with straight-through signaling for each AP connection.

You also can provide data link redundancy by connecting both of its ports directly to DWS-1008 switch ports or indirectly to DWS-1008 switches through the network. You can provide DWS-1008 management redundancy even on a single AP Ethernet port by connecting the AP indirectly to multiple DWS-1008 switches through an intermediate Layer 2 or Layer 3 network.

Note: Install the CAT5 cables for the access point at the installation site before installing the access point itself. During installation, you will insert the CAT5 cable(s) into the AP port(s) before attaching the access point to the bracket.

Kensington Security Slot

The DWL-8220AP has a slot for attachment of a Kensington security cable. The cable is not included with the AP but can be ordered separately.

Installation Overview

DWL-8220AP Mounting Options
You can mount a DWL-8220AP access point on any of the following types of surfaces:

- Suspended T-bar ceiling
- Junction box
- Solid surface wall or ceiling
- Tabletop

Note: The solid surface mounting option requires CAT5 cable that does not have strain relief. The other mounting options can use CAT5 cable with or without strain relief.

Wall Installation Recommendations
If you plan to install an AP on a partial wall or other vertical surface, orient the top of the access point (the side with the LEDs) toward the intended coverage area. The radio antennas transmit through the top of the access point but not through the bottom (where the bracket is). This recommendation does not apply if you plan to use external antennas. You can orient the antennas independently of the AP itself. Orient an external antenna to face the intended coverage area.

DWS-1008 Wireless Switch Recommendation
D-Link recommends that you install and configure the DWS-1008 switch before installing an access point. If the switch is already installed and configured for the access point(s), you can immediately verify the cable connection(s) when you plug the cable(s) into the access point.

Warning: The DWL-8220AP is designed to receive power only from an 802.3af-compliant source, a D-Link DWS-1008 wireless switch, or a D-Link-approved power injector. Connecting an access point to a Power over Ethernet (PoE) device that is not approved by D-Link can damage the equipment.

Radio Frequency Exposure
Federal Communications Commission (FCC) Docket 96-8 for Spread Spectrum Transmitters specifies a safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC-certified equipment. When used with the proper antennas (shipped in the product), D-Link access point products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1-1991. Proper installation of the DWL-8220AP access point according to the instructions in this manual will result in user exposure that is below the FCC recommended limits.

Warning: In the U.S., locate the access point and any externally attached antennas a minimum of 20 cm (7.9 inches) away from people. This safety warning conforms with FCC radio frequency exposure limits for dipole antennas such as those used in the DWL-8220AP access point.

Getting Started

Please read the following before you begin:

1. Do not operate the DWL-8220AP access point near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

2. Do not touch or move the DWL-8220AP access point when the antennas are transmitting or receiving.

3. Do not hold any radio device so that the antenna is very close to or touching the face, eyes, or other exposed body part while the device's radio antenna is transmitting.

4. Before using a wireless device in a hazardous location, consult the local codes, national codes, and safety directors of the location for usage constraints.

5. Do not connect or disconnect cables or otherwise work with the DWL-8220AP access point hardware during periods of lightning activity.

6. The DWL-8220AP access point is intended for indoor use only. Do not install the device outdoors.

7. To reduce the possibility of connection interference caused by dust, clean the CAT5 connector pins before inserting a cable into an DWL-8220AP access point.

Cable Requirements

CAT5 cable with straight-through signaling must be installed at the site before you install an access point. A single connection requires one cable. A dual-homed connection requires two cables. The table below lists the pin signals for 10/100 Ethernet straight-through wiring. Pins 4, 5, 7, and 8 are used when D-Link Power over Ethernet (PoE) is enabled on the port. RD means Receive Data and TD means Transmit Data.

DWS Switch		Other Device	
Pin	**Function**	**Pin**	**Function**
1	RD+	1	TD+
2	RD-	2	TD-
3	TD+	3	RD+
4	PoE+	4	PoE+
5	PoE+	5	PoE+
6	TD-	6	RD-
7	PoE-	7	PoE-
8	PoE-	8	PoE-

Mounting a DWL-8220AP access point on a solid surface requires CAT5 cable that does not have strain relief. For installation on all other surfaces, you can use CAT5 cable with or without strain relief.

Installation Hardware and Tools

Required Mounting Hardware and Tools:

Mounting Option:
- Suspended Ceiling - Flush Ceiling Tiles

Required Hardware (included):
- Mounting Template
- Universal Mounting Bracket
- T-Bar Clamp (A T-bar clamp is not required for a 23.9mm (15/16") T-bar ceiling with flush ceiling tiles.

Tools Required (not included):
- Box Cutter
- Small Screwdriver (3mm or 1/8")

Mounting Option:
- Suspended Ceiling - Drop Ceiling Tiles

Required Hardware (included):
- Mounting Template
- Universal Mounting Bracket
- T-Bar Clamp

Tools Required (not included):
- Box Cutter
- Small Screwdriver (3mm or 1/8")

Mounting Option:
- Junction Box (not included)

Required Hardware (included):
- Two #6-32 x 1-inch Machine Screws
- Universal Mounting Bracket

Tools Required (not included):
- #2 Phillips-head Screwdriver
- Small Screwdriver (3mm or 1/8")

Installation Hardware and Tools (continued)

Required Mounting Hardware and Tools:

Mounting Option:
- Solid Wall or Ceiling

Required Hardware (included):
- Universal Mounting Bracket
- Two #6 Sheet Metal Screws
- Two Drywall Anchors

Tools Required (not included):
- Hammer
- Small Screwdriver (3mm or 1/8")
- #2 Phillips-head Screwdriver

Mounting Option:
- Tabletop

Required Hardware (included):
- Three Adhesive Rubber Feet
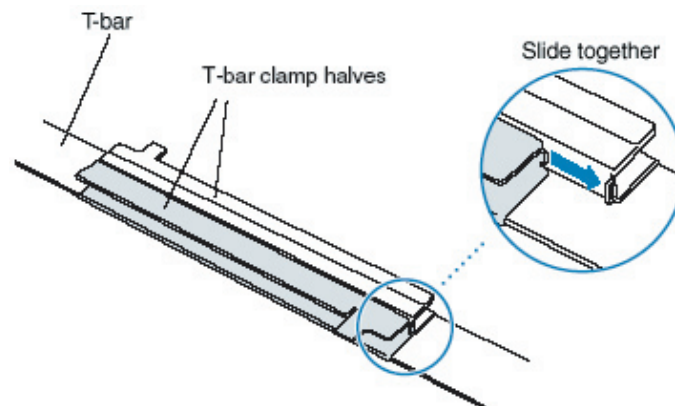- Universal Mounting Bracket

**Tools Required (not included):**
- Small Screwdriver (3mm or 1/8")

Installation

Suspended Ceiling Installation—Flush Ceiling Tiles

1. Select an installation location that is centered over a T-bar in the ceiling.

2. Cut a hole as follows in the ceiling tile for the CAT5 cable(s):

> **a.** Place the mounting template over the area where you plan to install the AP.
> **b.** Use the box cutter to cut along the line marking the opening for the port connectors.
> **c.** Remove the mounting template and the material you cut from the ceiling panel.

3. Determine whether to install a T-bar clamp onto the ceiling T-bar:
> • If the T-bar width is 14.2 mm (9/16 inches), you need to install the 14.2-mm (9/16 inch) T-bar clamp. Go to step 4.
> • If the T-bar width is 23.9 mm (15/16 inches), the universal mounting bracket fits directly onto the T-bar. Go to step 5.

4. Install the 14.2-mm (9/16-inch) T-bar clamp onto the ceiling T-bar as shown below.
> **a.** Slide each half of the clamp onto the T-bar so that the clamp lip is fully on the T-bar.
> **b.** Slide the two halves of the clamp toward each other until the tabs are inserted completely into the holes and the clamp fits snugly on the T-bar.
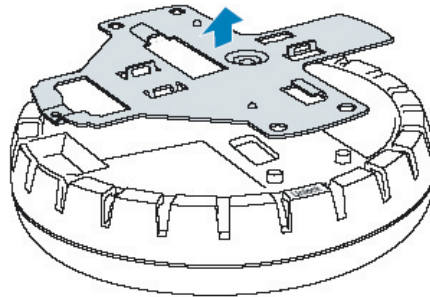

5. Unlock the universal mounting bracket from the AP by inserting the 3-mm or 1/8-inch screwdriver into the Unlock hole on the AP.
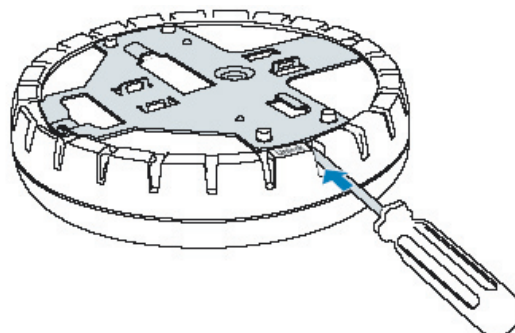
Installation (continued)

6. Remove the bracket as shown below.

7. Install the universal mounting bracket as follows onto the T-bar or T-bar clamp:

> **a.** As shown below, place the universal mounting bracket against the T-bar or clamp so that the two screw holes face downward and the two T-bar flanges face upward and are adjacent to the T-bar edges.

Universal mounting bracket

T-bar

Port connector opening
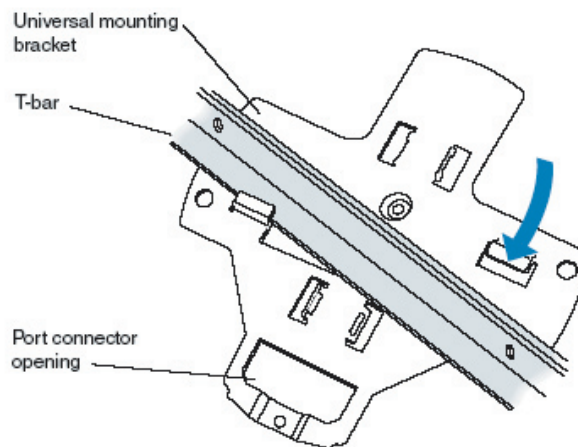
(Viewed from above ceiling tiles, looking down.)

> **b.** Properly align the bracket for mounting by placing the bracket so that its port connector opening is to the left of the hole you cut for the cables.
> **c.** Rotate the universal mounting bracket clockwise until the flanges snap into place on the T-bar or clamp as shown.

Port connector opening

Universal mounting bracket

T-bar
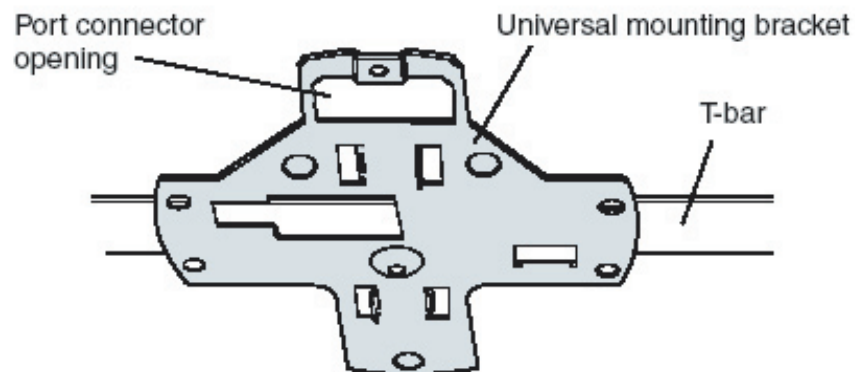
Installation (continued)

8. Pull the CAT5 cable(s) about 15 cm (about 6 inches) out of the hole in the ceiling tile and through the port connector opening to create enough slack to insert the cable(s).

9. Insert the CAT5 cable(s) into the connector(s):
> • For a single connection, use the connector for port 1.
> • For redundancy, insert one cable into each connector.

10. Install the Kensington lock, if you plan to used one.
> **a.** Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.
> **b.** Insert the key into the Kensington lock.
> **c.** Insert the Kensington lock into the security slot on the AP.
> **d.** Rotate the key right or left to secure the lock to the AP.
> **e.** Pull on the lock to verify that it is secured to the AP.
> **f.** Remove the key.

11. Lift the access point into place on the universal mounting bracket as shown below. Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the access point and the bracket.
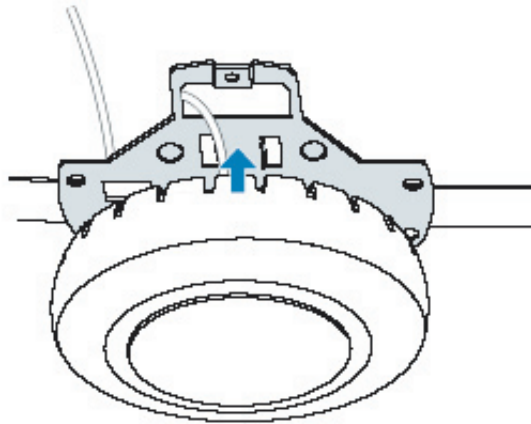
12. Lock the access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the Lock hole on the access point as shown below.

Lock

T-bar
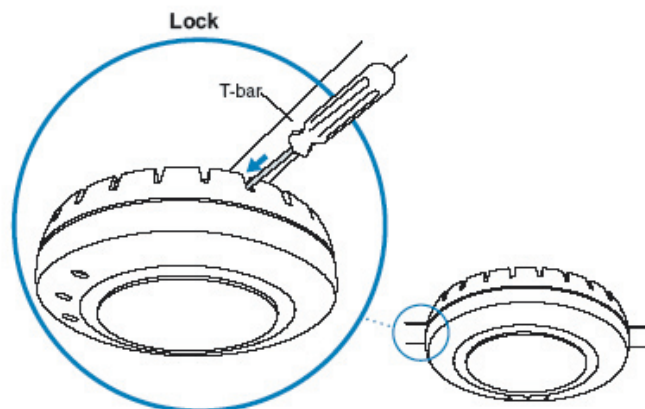
Installation (continued)

13. To ensure that the access point is fully locked onto the bracket, gently pull down on the access point and attempt to rotate it from side to side.

14. If the access point comes off the bracket, relock the device onto the bracket as described in step 12.

15. If the access point requires an external antenna, install and connect the antenna.

16. If the other ends of the CAT5 cable(s) are not already connected and the link activated, go to "Connecting an AP to a DWS-1008 Wireless Switch" on page 27. Otherwise, go to "Verifying AP Health" on page 28.
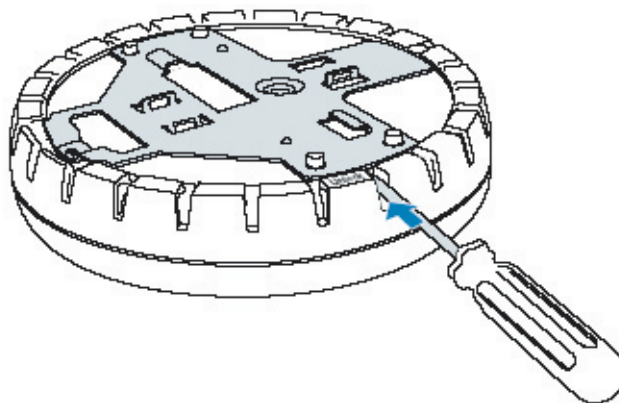
Installation (continued)

Suspended Ceiling Installation—Drop Ceiling Tiles

1. Select an installation location that is centered over a T-bar in the ceiling.

2. Cut a hole as follows in the ceiling tile for the CAT5 cable(s):

   a. Place the mounting template over the area where you plan to install the access point.

   b. Use the box cutter to cut along the line marking the opening for the port connectors.

   c. Remove the mounting template and the material you cut from the ceiling panel.

3. Install the T-bar clamp that fits the T-bar:

   a. Slide each half of the clamp onto the T-bar so that the clamp lip is fully on the T-bar.

   b. Slide the two halves of the clamp toward each other until the tabs are inserted completely into the holes and the clamp fits snugly on the T-bar.
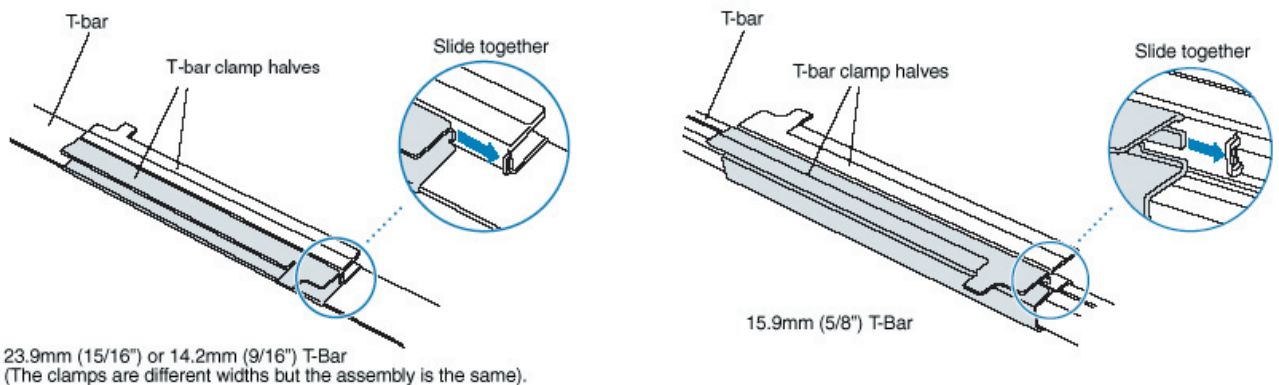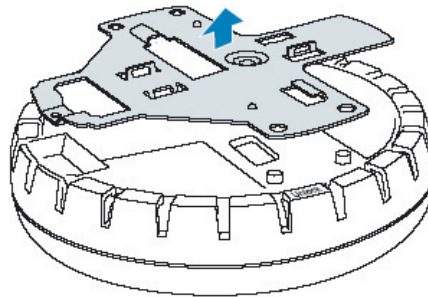

4. Unlock the universal mounting bracket from the access point by inserting the 3-mm or 1/8-inch screwdriver into the Unlock hole on the access point as shown below.

Note: To avoid damage to the access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the Unlock or Lock hole.

Installation (continued)

5. Remove the bracket as shown below.

6. Install the universal mounting bracket as follows onto the T-bar clamp:

> **a.** Place the universal mounting bracket against the T-bar clamp so that the two screw holes face downward and the two T-bar flanges face upward and are adjacent to the T-bar edges.

Universal mounting bracket
T-bar
Port connector opening
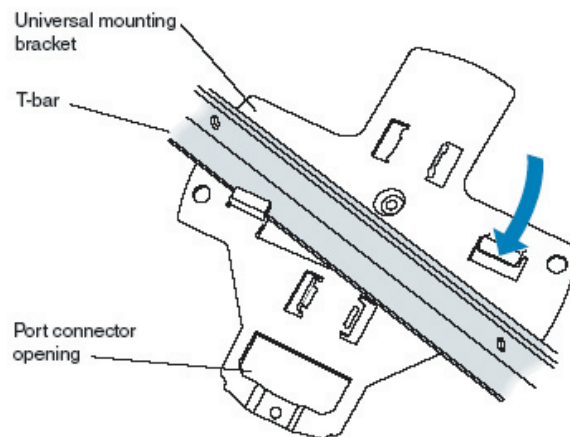
*(Viewed from above ceiling tiles, looking down.)*

> **b.** Properly align the bracket for mounting by placing the bracket so that its port connector opening is to the left of the hole you cut for the cables.
> **c.** Rotate the universal mounting bracket clockwise until the flanges snap into place on the T-bar clamp as shown below.

Port connector opening   Universal mounting bracket
T-bar
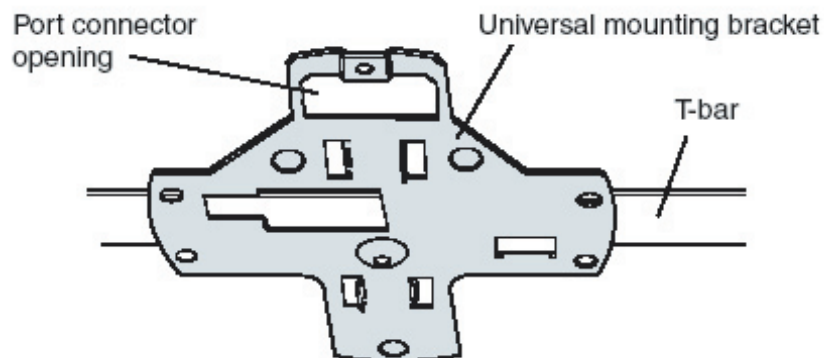
Installation (continued)

7. Pull the CAT5 cable(s) about 15 cm (about 6 inches) out of the hole in the ceiling tile and through the port connector opening to create enough slack to insert the cable(s).

8. Insert the CAT5 cable(s) into the connector(s):
- • For a single connection, use the connector for port 1.
- • For redundancy, insert one cable into each connector.

9. Install the Kensington lock, if you plan to used one.
> **a.** Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.
> **b.** Insert the key into the Kensington lock.
> **c.** Insert the Kensington lock into the security slot on the AP.
> **d.** Rotate the key right or left to secure the lock to the AP.
> **e.** Pull on the lock to verify that it is secured to the AP.
> **f.** Remove the key.

10. Lift the access point into place on the universal mounting bracket as shown below.

Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the access point and the bracket.
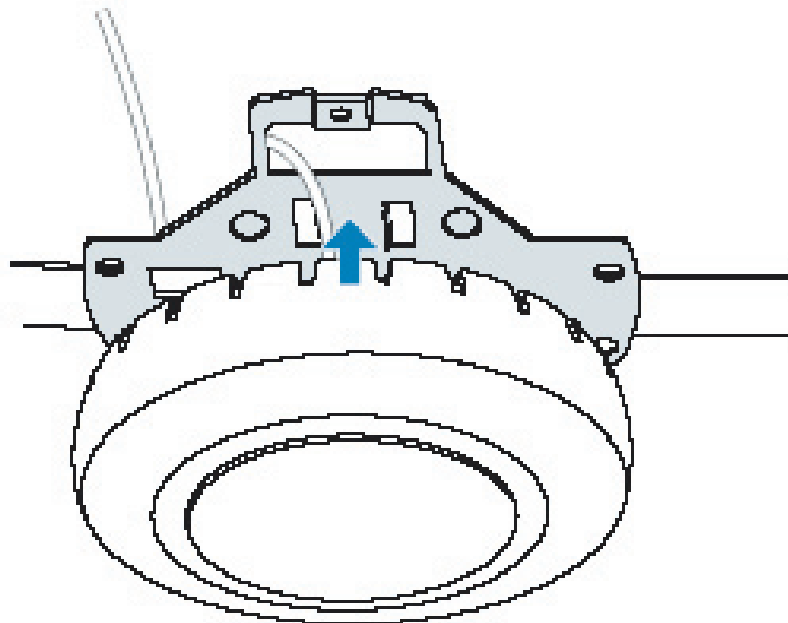
Installation (continued)

11. Lock the access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the Lock hole on the access point as shown below.
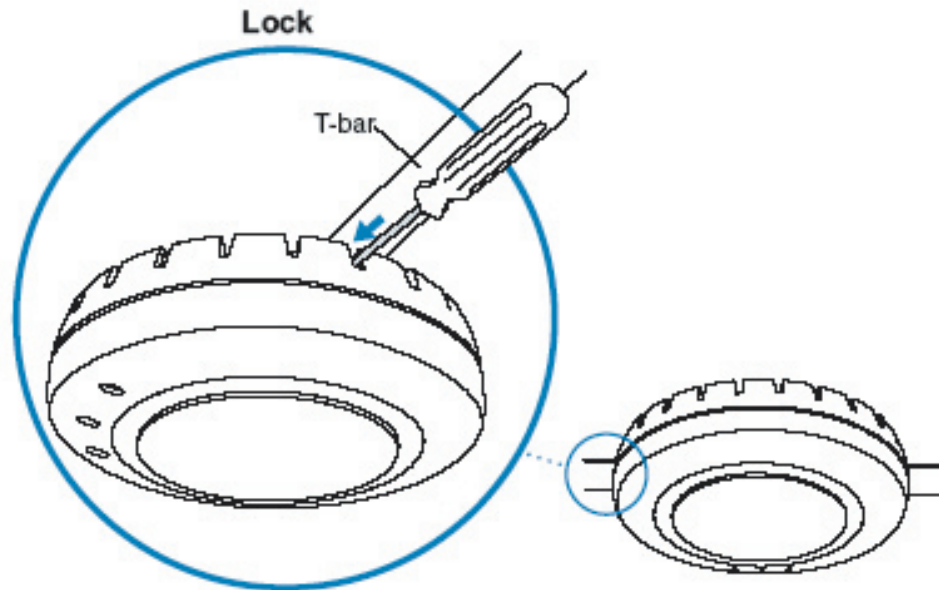
12. To ensure that the access point is fully locked onto the bracket, gently pull down on the access point and attempt to rotate it from side to side.

13. If the access point comes off the bracket, relock the device onto the bracket as described in step 11.

14. If the access point requires an external antenna, install and connect the antenna.

15. If the other ends of the CAT5 cable(s) are not already connected and the link activated, go to "Connecting an AP to a DWS-1008 Wireless Switch" on page 27. Otherwise, go to "Verifying AP Health" on page 28.

Installation (continued)

Junction Box Installation

1. Remove the mounting bracket from the DWL-8220AP.
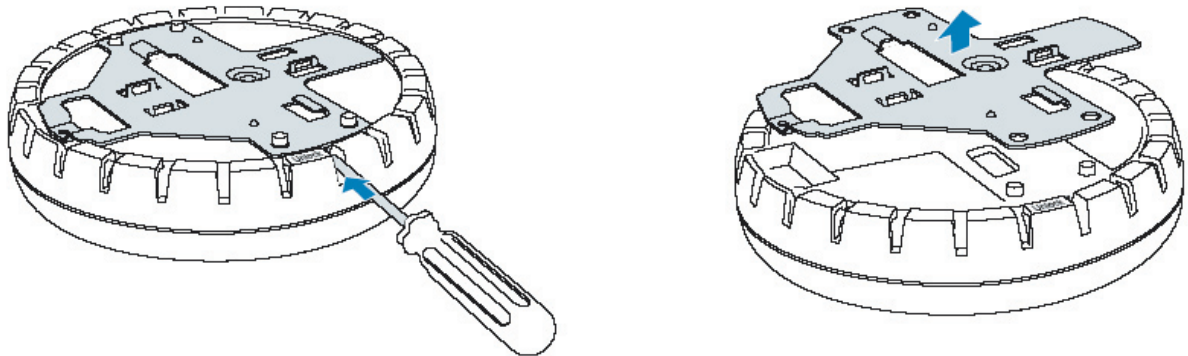
2. Attach the bracket to the junction box.

Port connector opening
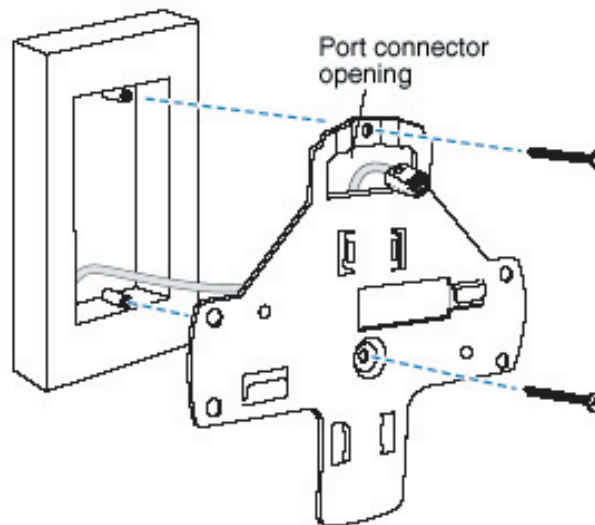
3. Plug the CAT5 cable into the access point and attach the DWL-8220AP to the mounting bracket.

Lock

T-bar
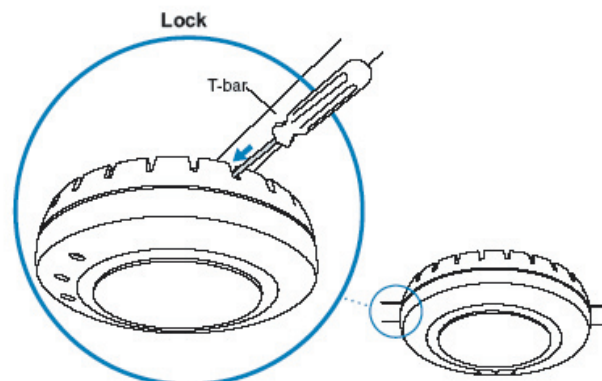
Warning: If you plan to use an external antenna for the 802.11b/g or 802.11a radio, install the antenna at least 20 cm from the access point.

Installation (continued)

Solid Wall or Ceiling Installation

Note. The solid surface mounting option requires CAT5 cable that does not have strain relief, unless you plan to route the cable through a hole in the wall or ceiling. The other options can use CAT5 cable with or without strain relief.

1. Prepare holes in the wall or ceiling for the universal mounting bracket, using the following steps:

> **a.** Place the paper mounting template over the location where you want to install the access point.
>
> **b.** Mark the screw hole location(s).
>
> > • If you plan to route the CAT5 cable externally along the wall or ceiling, mark the locations of both the center screw hole and the screw hole by the port connector opening.
> >
> > • If you plan to route the CAT5 cable through a hole in the wall or ceiling, mark the location of the center screw hole only. You cannot use the screw hole by the port connector opening if you cut a hole for the opening.
>
> **Note:** Do not mark the four holes on the edges of the bracket. These are the holes indicated by the dashed lines on page 20. The access point fits into these holes. They are not screw holes.
>
> **c.** Remove the template.

2. Install the drywall anchor(s):

> **a.** Hammer a drywall anchor into each hole, up to the beginning of the threads on the anchor.
>
> **b.** Screw each anchor the rest of the way into its hole using a #2 Phillips-head screwdriver.
>
> **c.** Remove the screw from each anchor and save the screw(s) for step 6 on page 20.

3. Unlock the universal mounting bracket from the access point by inserting the 3-mm or 1/8-inch screwdriver into the Unlock hole on the access point as shown below.

Note: To avoid damage to the access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the Unlock or Lock hole.
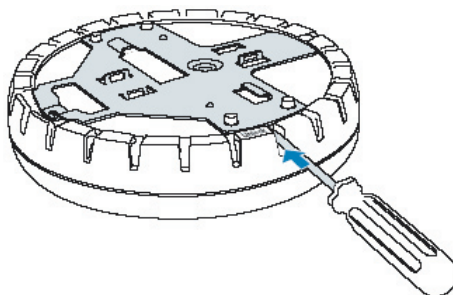
Installation (continued)

4. Remove the bracket as shown below.

5. Feed the CAT5 cable(s) through the port connector opening and align the universal mounting bracket over the drywall anchors so that the two screw holes in the bracket face the drywall anchors.

6. Insert the #6 sheet metal screws into the screw holes, and tighten them to secure the universal mounting bracket to the wall or ceiling. If you routed the CAT5 cable through a hole in the wall or ceiling, insert the screw into the center screw hole only.

Note: Do not insert screws in the four holes on the edges of the bracket. The access point fits into these holes. They are not screw holes.
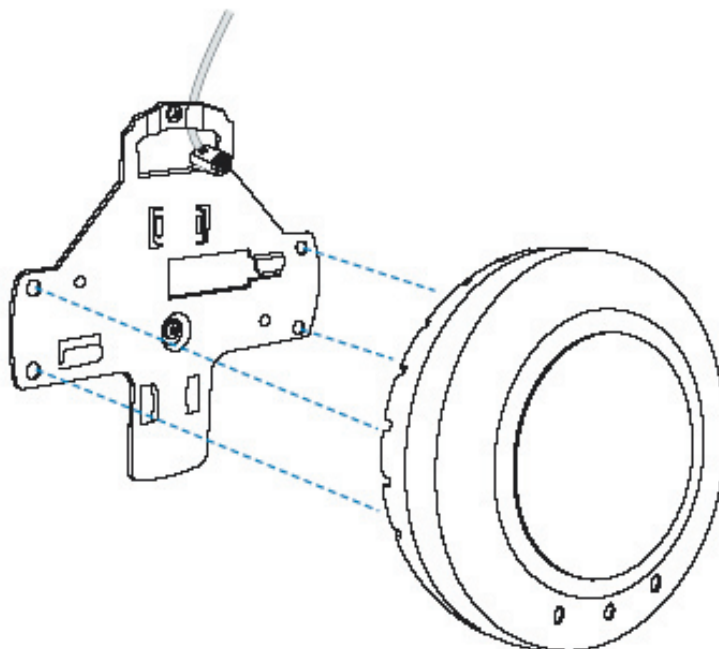
Installation (continued)

7. Insert the CAT5 cable(s) into the connector(s):
  * For a single connection, use the connector for port 1.
  * For redundancy, insert one cable into each connector.

8. Install the Kensington lock, if you plan to use one.
  a. Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.
  b. Insert the key into the Kensington lock.
  c. Insert the Kensington lock into the security slot on the AP.
  d. Rotate the key right or left to secure the lock to the AP.
  e. Pull on the lock to verify that it is secured to the AP.
  f. Remove the key.

9. Place the access point on the bracket, making sure to remove any slack that occurs in the cable between the bracket and the access point.

Cable

Universal mounting bracket

10. Lock the access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the Lock hole on the access point as shown below.
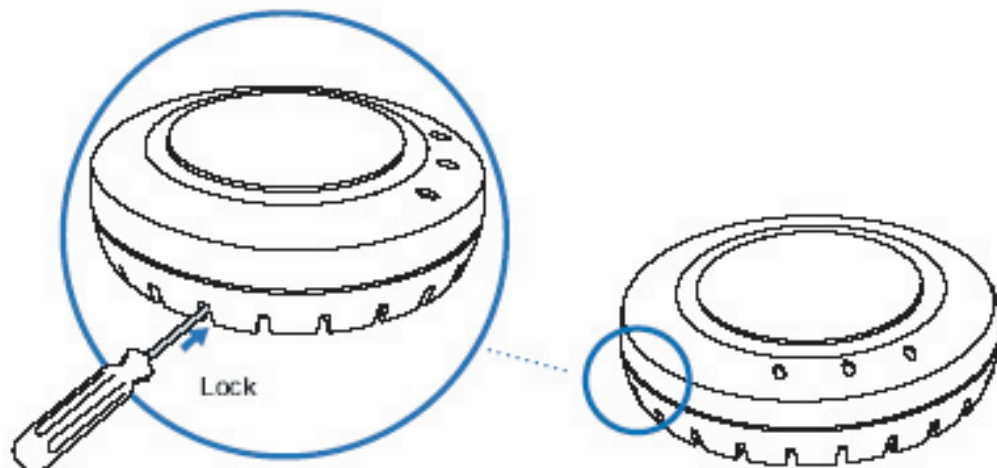
Lock

Installation (continued)

Tabletop Installation
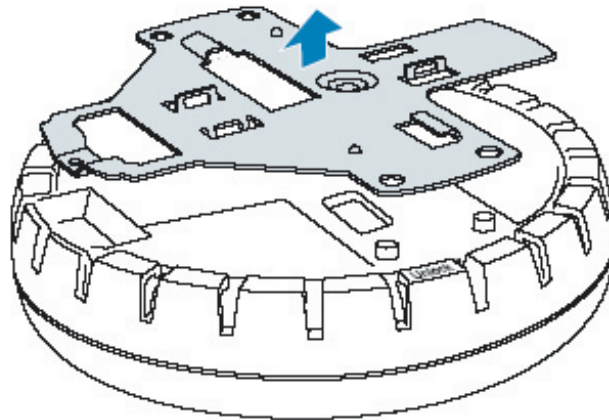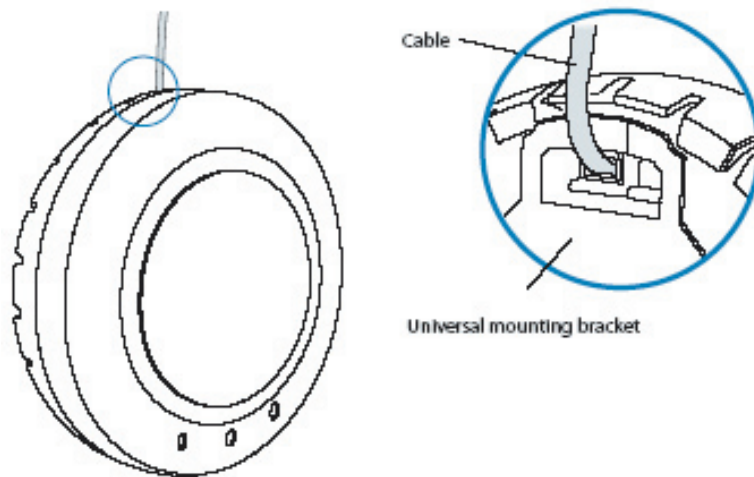
1. Reverse the universal mounting bracket:

    a. Unlock the universal mounting bracket from the access point by inserting the 3-mm or 1/8-inch screwdriver into the Unlock hole on the access point as shown below.

    b. Remove the bracket as shown below.
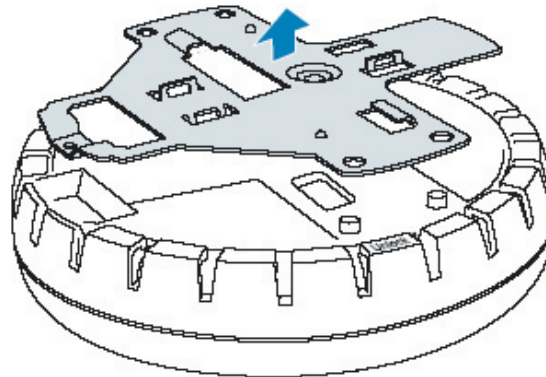
    c. Turn over the universal mounting bracket, then align the bracket over the cable ports and the four mounting posts as shown below.
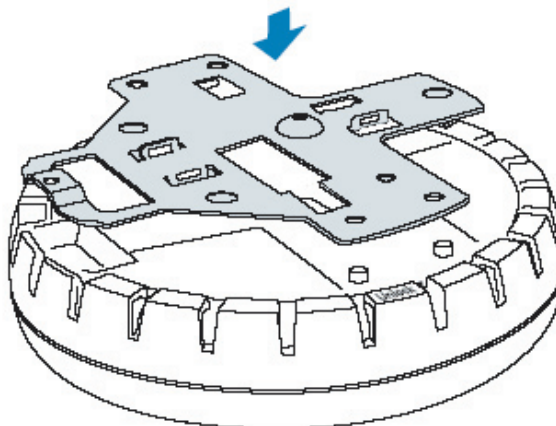
Installation (continued)

d. Once the bracket is fully seated, lock the bracket onto the access point by inserting the 3-mm or 1/8-inch screwdriver into the Lock hole on the access point as shown below.

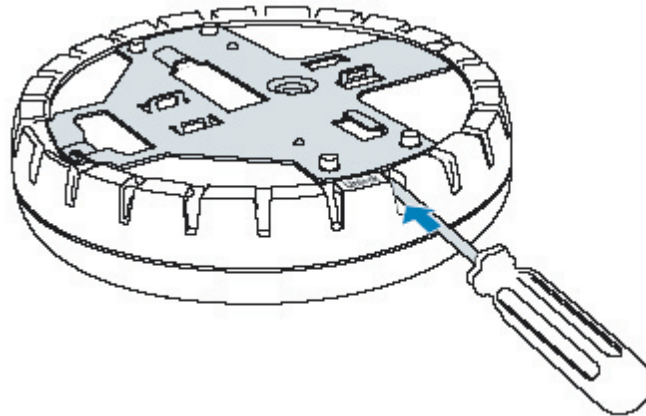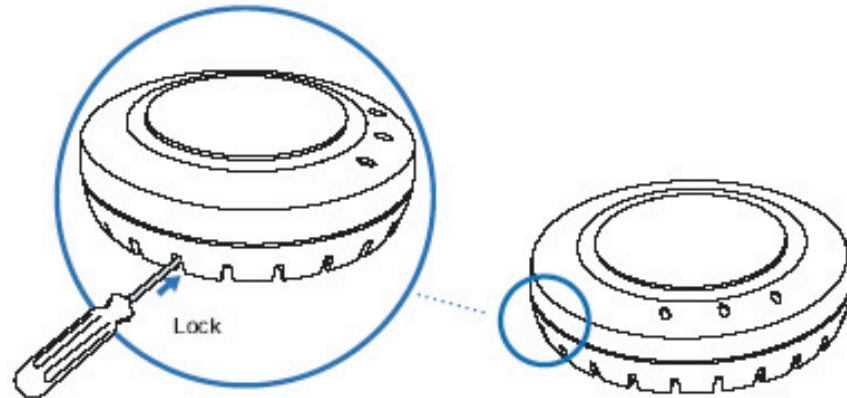**2.** Attach the three rubber adhesive feet onto the universal mounting bracket, in the three location circles, as shown below.
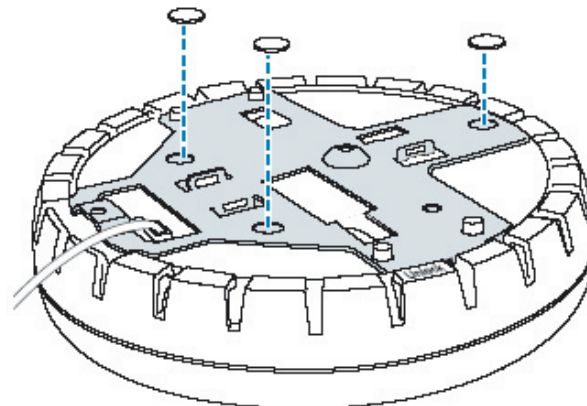
3. Insert the CAT5 cable(s) into the connector(s):
> • For a single connection, use the connector for port 1.
> • For redundancy, insert one cable into each connector.

4. Install the Kensington lock, if you plan to used one.
> **a.** Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.
> **b.** Insert the key into the Kensington lock.
> **c.** Insert the Kensington lock into the security slot on the AP.
> **d.** Rotate the key right or left to secure the lock to the AP.
> **e.** Pull on the lock to verify that it is secured to the AP.
> **f.** Remove the key.

5. Place the AP access point in the desired location on the table.

6. If the AP requires an external antenna, install and connect the antenna.

Installation (continued)

Connecting an AP to an External Antenna

Each radio in a DWL-8220AP can use an optional D-Link external antenna. To mount the antenna, see the instructions that come with the antenna.

To connect a mounted external antenna to a DWL-8220AP:
1. Attach the exterior antenna cable that is shipped with the antenna to the AP external antenna connector. Both connectors are labeled to indicate the radio type. The AP has standard SMA connectors for attachment to the 802.11b/g antenna and to the 802.11a antenna.

Note: The external connectors on the AP are labeled: 11B/G and 11A. Each connector is a standard SMA connector. Make sure you attach the antenna to the correct connector.

2. Attach the other end of the antenna cable to the antenna.

Connecting an AP to a DWS-1008 Wireless Switch

You can connect an access point directly to a DWS-1008 switch or indirectly to the switch through an intermediate Layer 2 or Layer 3 network.

- To connect the AP directly to a DWS-1008 switch, configure the DWS-1008 switch port as an access port and use the following procedure to insert the cable into the switch and verify the link.
- To connect the AP indirectly to a DWS-1008 switch though the network, configure a Distributed AP connection on the DWS-1008 switch.

You can use the CLI to configure an access port. The image below shows how to insert a CAT5 cable into 10/100 Ethernet port on a DWS-1008 wireless switch. Refer to this figure as you perform the procedure.

1. Insert a CAT5 cable with a standard RJ-45 connector into one of the ports on the DWS-1008 wireless switch. For connection to an access point, use a straight-through cable.

Installation (continued)

2. When the link is activated, observe the AP LED for the port on the DWS-1008 switch:

AP LED Appearance	Meaning
Solid green	For an access point's active link, all the followng are true: • Access point has booted. • Access point has received a valid configuration from the switch. • Management link with an access point is operational. • At least one radio is enabled or is in sentry mode. For an access point's secondary link, the link is present.
Alternating green and amber	Access point is booting with an image received from the switch. After the access point boots and receives its configuration, this LED appearance persists until a radio is enabled or is placed in sentry mode.
Solid amber	PoE is on.
Blinking amber	AP is unresponsive or there is a PoE problem.
No Light	PoE is off.

Note: A DWS-1008 switch's 10/100 Ethernet ports are configured as wired network ports by default. You or the system administrator must change the port type for a DWS-1008 port directly connected to an AP to activate the link.

Verifying AP Health
After you install the access point and enable PoE on the Ethernet cable connected to the AP, you can easily verify the AP's status by observing the LEDs, particularly the health LED.

The health or LINK LED indicates whether the access point is ready for operation.
  • If the LED is green and glowing steadily, the AP has been booted successfully by the switch and is ready for operation.
  • If the LED is not steadily glowing green, contact the system administrator for the switch or, if you are the system administrator, refer to the Troubleshooting section.

Technical Specifications

Hardware

Physical and Environmental
- Dimensions
    - Diameter: 6.6 in (16.76 cm)
    - Height: 1.85 in (4.69 cm)
    - Weight: 12.5 oz (354 g)
- Operating Temperature:
    - 0ºC to 50ºC (32ºF to 122ºF)
- Storage Temperature:
    - -20ºC to 70ºC (-4ºF to 158ºF)
- Humidity % non-condensing:
    - 10% to 95%
- Status Indicators:
    - 3 LEDs
- Wired Network Ports:
    - 2 RJ-45 ports for 10/100 Ethernet and Power over Ethernet (PoE)
- IEEE 802.11
- IEEE 802.11a
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11h
- IEEE 802.11af
- WPA (Wi-Fi Protected Access) TKIP, AES (802.11i)
- IETF CAPWAP

Safety and Electromagnetic Compliance
- ETS 300.328 (2.4 GHz) and 301.893 (5 GHz)
- FCC Part 15
- IC Part 15
- RSS-139-1 and RSS-210
- R&TTE Directive 1999/5/EC
- EN 60101-1-2 (1993)
- Plenum rated to meet safety and insurance requirements for building deployments

General
- Encryption:
    - 64-bit WEP, 128-bit WEP, WPA-PSK (TKIP/AES)
- Multiple SSID/BSSID support
- Transmit power control in 1 dB increments
- Power-save mode supported
- Supports up to 500 clients

Technical Specifications (continued)

802.11a Radio Specifications

Frequency Band
- 5.15 GHz - 5.85 GHz

Operating Channels
- Based on the regulatory domain specified by the system administrator

Association Rates*
- 54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps and 6 Mbps with automatic fallback

Modulation
- Orthogonal frequency division multiplexing (OFDM)

Transmit Power
- Based on the regulatory domain specified by the system administrator

802.11b Radio Specifications

Frequency Band
- 2.4 GHz - 2.484 GHz

Operating Channels
- Based on the regulatory domain specified by the system administrator Association Rates*
- 11 Mbps, 5.5 Mbps, 2 Mbps and 1 Mbps with automatic fallback

Modulation
- Direct-sequence spread-spectrum (DSSS)

Transmit Power
- Based on the regulatory domain specified by the system administrator

Technical Specifications (continued)

802.11g Radio Specifications

Frequency Band
- 2.4 GHz - 2.484 GHz

Operating Channels
- Based on the regulatory domain specified by the system administrator

Association Rates*
- 54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps and 6 Mbps with automatic fallback

Modulation
- Orthogonal frequency division multiplexing (OFDM)

Transmit Power
- Based on the regulatory domain specified by the system administrator

* Maximum wireless signal rate based on IEEE Standard 802.11a/b/g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

Warranty

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited warranty for its product only to the person or entity that originally purchased the product from:

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, addresses with an APO or FPO.

Limited Warranty:

D-Link warrants that the hardware portion of the D-Link products described below will be free from material defects in workmanship and materials from the date of original retail purchase of the product, for the period set forth below applicable to the product type ("Warranty Period"), except as otherwise stated herein.

1-Year Limited Warranty for the Product(s) is defined as follows:
- Hardware (excluding power supplies and fans) One (1) Year
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

D-Link's sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at D-Link's sole discretion. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or have an identical make, model or part. D-Link may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty:

D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link's sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund at D-Link's sole discretion.

Warranty (continued)

Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Software will be warranted for the remainder of the original Warranty Period from the date or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty:
The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim:
The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:
- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.
- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.

Warranty (continued)

• Return Merchandise Ship-To Address
   (USA): 17595 Mt. Herrmann, Fountain Valley, CA 92708
   (Canada): 2180 Winston Park Drive, Oakville, ON, L6H 5W1
   (Visit http://www.dlink.ca for detailed warranty information within Canada)

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered:
This limited warranty provided by D-Link does not cover:
Products, if in D-Link's judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. Repair by anyone other than D-Link or an Authorized D-Link Service Office will void this Warranty.

Disclaimer of Other Warranties:
EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability:
TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION,

Warranty (continued)

FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY.

Governing Law:
This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

Trademarks:
D-Link is a registered trademark of D-Link Systems, Inc. Other trademarks or registered trademarks are the property of their respective manufacturers or owners.

Copyright Statement:
No part of this publication or documentation accompanying this Product may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from D-Link Corporation/D-Link Systems, Inc., as stipulated by the United States Copyright Act of 1976. Contents are subject to change without prior notice. Copyright © 2002 by D-Link Corporation/D-Link Systems, Inc. All rights reserved.

CE Mark Warning: This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Warranty (continued)

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For detailed warranty outside the United States, please contact corresponding local D-Link office.

FCC Caution:
The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment; such modifications could void the user's authority to operate the equipment.
(1) The devices are restricted to indoor operations within the 5.15 to 5.25GHz range.
(2) For this device to operate in the 5.15 to 5.25GHz range, the devices must use integral antennas.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least eight inches (20 cm) from all persons. This equipment must not be operated in conjunction with any other antenna.

Registration

Register your product online at:
http://support.dlink.com/register

Product registration is entirely voluntary and failure to complete or return this form will not diminish your warranty rights.

Revised: 08/09/2005
Version 1.00