HP MSM430, MSM460, MSM466 802.11n AP Installation Guide

Abstract

This document describes how to install and initially configure the HP MSM430, MSM460, and MSM466 802.11n Access Points (hereafter referred to as the AP). Professional wireless and electrical equipment experience is required. The main configuration information for autonomous mode is found in the *MSM3xx / MSM4xx APs Configuration Guide*. The main configuration information for controlled mode is found in the *MSM7xx Controllers Configuration Guide*.



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Warranty

WARRANTY STATEMENT: See the warranty information sheet provided in the product box and available online.

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1 Preparing for installation

The MSM430, MSM460, and MSM466 are Wi-Fi Alliance authorized Wi-Fi CERTIFIED 802.11n/a/b/g products. The Wi-Fi CERTIFIED Logo is a certification mark of the Wi-Fi Alliance.

Product models

This document applies to these HP APs:

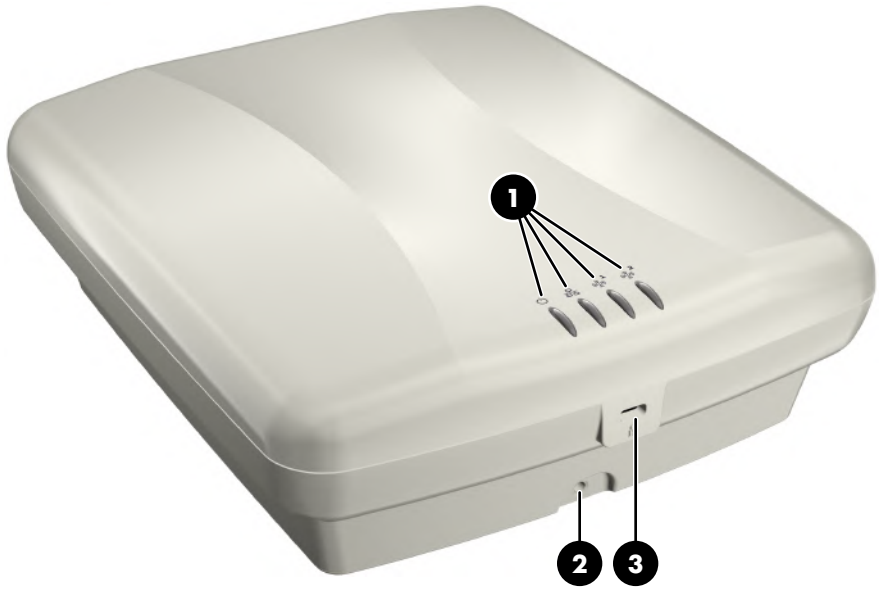
Model	WW	Americas	TAA	Japan	Israel
MSM430	J9651A	J9650A	J9654A	J9652A	J9653A
MSM460	J9591A	J9590A	J9655A	J9589A	J9618A
MSM466	J9622A	J9621A	J9656A	J9620A	J9619A

"WW" identifies worldwide regions not otherwise explicitly named.

Package contents

- The AP
- AP Bracket, Padlock Bracket, two sets of AP Bracket T-bar clips with screws, two mounting screws with wall anchors, retention screw (4-40x1/4"), Adapter Bracket
- Documentation

Identifying AP components

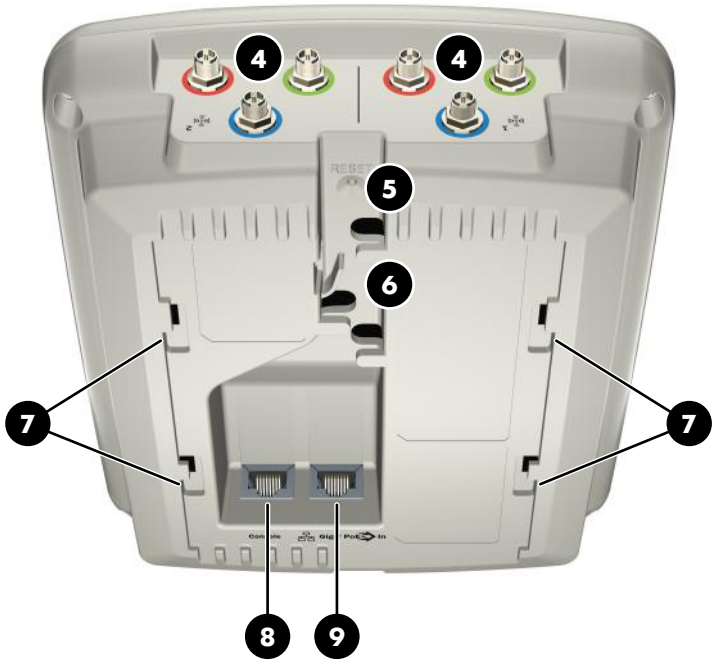


Front view

1: Status Lights (Left to right) Power, Ethernet, Radio 1, Radio 2

2: Retention screw hole

3: Cable lock hole



Bottom view

4: Antenna connectors (MSM466 only), Radio 1 right, Radio 2 left

5: Reset button

6: Cable channel

7: AP Bracket tab slot

8: Console port

9: Ethernet port

Status lights

The status lights provide different information depending on whether the AP is operating in autonomous mode or controlled mode. For more information on these modes, see "About controlled mode and autonomous mode" (page 15).

Autonomous mode

In autonomous mode, the status lights indicate the following:

Light	State	Description
Power	Off	The AP has no power.
	On	The AP is fully operational.
	Blinking	The AP is starting up. If the Power light continues to blink after several minutes, it indicates that the software failed to load. Reset or power cycle the AP. If this condition persists, contact HP Support.
Ethernet	Off	The port is not connected or there is no activity.
	Blinking	The port is transmitting or receiving data.
Radio	Blinking	The radio is transmitting or receiving data.

Controlled mode

During startup/discovery in controlled mode, the status lights indicate the following:

Status light behavior	Description
Power light blinks every two seconds.	The AP is starting up.
Power light blinks once per second.	The AP is looking for an IP address, or building the list of VLANs on which to perform controller discovery. The management tool is available until discovery occurs.
Power, Ethernet, and Radio, lights blink in sequence from left to right.	The AP has obtained an IP address and is attempting to discover a controller.
Power light is on. Ethernet and Radio lights blink alternately.	The AP has found a controller and is attempting to establish a secure management tunnel with it.
Power and Ethernet lights blink alternately and quickly. Radio lights are off.	The AP has received a discovery reply from two or more controllers with the same priority setting. The AP is unable to connect with either controller until the conflict is resolved.
Power and Radio lights blink slowly.	The AP is attempting to establish a local mesh link to a master node.
Power and Ethernet lights blink slowly.	The AP is attempting to establish wired connectivity.

Once the discovery process is complete, and the AP has established a secure management tunnel to a controller, the Power light remains on and the Ethernet and Radio lights blink to indicate the presence of traffic.

Ports

- **Ethernet port:** Auto-sensing 10/100/1000 BaseT Ethernet port with an RJ-45 connector. The port supports Power over Ethernet (PoE) 802.3af.
- **Console port:** Standard console (serial) port with an RJ-45 connector. For details, see *Console Ports* in the *MSM3xx / MSM4xx APs Configuration Guide*. There is no need to use the Console port for initial configuration.

⚠ **WARNING! Never connect the Console port to an Ethernet switch or PoE power source. This may damage the AP. Connect it only to other serial ports via an RJ-45 to serial port adapter.**

Radio and antenna

The MSM430, MSM460, and MSM466 each feature two radios, providing 802.11n/a on Radio 1 and 802.11n/a/b/g on Radio 2. For maximum performance, the MSM460 and MSM466 both support 3x3 MIMO three-spatial-stream 802.11n. The MSM430 supports 3x3 MIMO two-spatial-stream 802.11n.

The MSM430 and the MSM460 each contain two 3-element, dual-band, MIMO antennas. The MSM466 includes no integrated antennas. It provides three antenna connectors for each radio, color-coded red, green, and blue. When connecting the antenna cables, be sure to respect the color-coding.

Only the following antennas are approved for use with the MSM466:

Part	Type	Band	Gain	Use	Elements
J9171A	Omni-directional	2.4/5GHz	3/4dBi	Indoor	3
J9659A	Omni-directional	2.4/5GHz	2.5/5.9dBi	Indoor	6
J9169A	Narrow Beam Sector	2.4/5GHz	8/10.7dBi	Outdoor	3

Part	Type	Band	Gain	Use	Elements
J9170A	Directional	2.4/5GHz	10.9/13.5dBi	Outdoor	3
J9719A	Omni-directional	2.4GHz	6dBi	Outdoor	3
J9720A	Omni-directional	5GHz	8dBi	Outdoor	3

The following information applies only to the MSM466.

CAUTION:

- In the European Community, the J9169A and J9170A antennas can only be used in the 5470-5725 MHz band. In the USA, the same antennas can be only be used in the 5725-5850 MHz band.
- Depending on the country of use, the antenna selected, and your radio settings, it may be mandatory to reduce the radio transmission power level to maintain regulatory compliance. For specific power limits for your country, consult the Antenna Power-Level Setting Guide (for MSM Products) available from www.hp.com/support/manuals. Search by antenna part number.

For MIMO antenna installation information, refer to the respective Antenna Guide. Important safety information is included.

Reset button

- The Reset button is accessible via a hole on the bottom of the AP, labeled as 5 in "Identifying AP components" (page 5). Insert a paper clip into the Reset button hole. Press and quickly release the button to reset the AP.
- To reset the AP to factory defaults, press the button until the status lights blink three times, then release. **Following a reset to factory defaults, the AP starts up in controlled mode with a an option to switch it to autonomous mode**.

Important information to read before installing

For indoor installation only.

Professional installation required

WARNING! Prior to installing or using the AP, consult with a professional installer trained in RF installation and knowledgeable in local regulations including building and wiring codes, safety, channel, power, indoor/outdoor restrictions, and license requirements for the intended country. It is the responsibility of the end user to ensure that installation and use comply with local safety and radio regulations.

Surge protection and grounding

WARNING! If you plan on connecting an outdoor antenna to the AP, make sure that proper lightning surge protection and grounding precautions are taken according to local electrical code. Failure to do so may result in personal injury, fire, equipment damage, or a voided warranty. The HP hardware warranty provides no protection against damage caused by static discharge or a lightning strike.

Cabling

You must use the appropriate cables, and where applicable, surge protection, for your given region. For compliance with EN55022 Class-B emissions requirements, use shielded Ethernet cables. Cat 5e (or better) cabling is required.

Plenum installation

The AP can be installed in a plenum (UL2043 rating). The AP is suitable for use in environmental air space in accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1.

The AP should be installed in a similar orientation as in a ceiling installation. However, it is left to a qualified installer to determine how to install and secure the AP in a plenum in an appropriate and safe manner. Plenum-rated cables and attachment hardware must be used.

Country of use

△ **CAUTION:** In some regions, you are prompted to select the country of use during setup. Once the country has been set, the AP will automatically limit the available wireless channels, ensuring compliant operation in the selected country. Entering the incorrect country may result in illegal operation and may cause harmful interference to other systems.

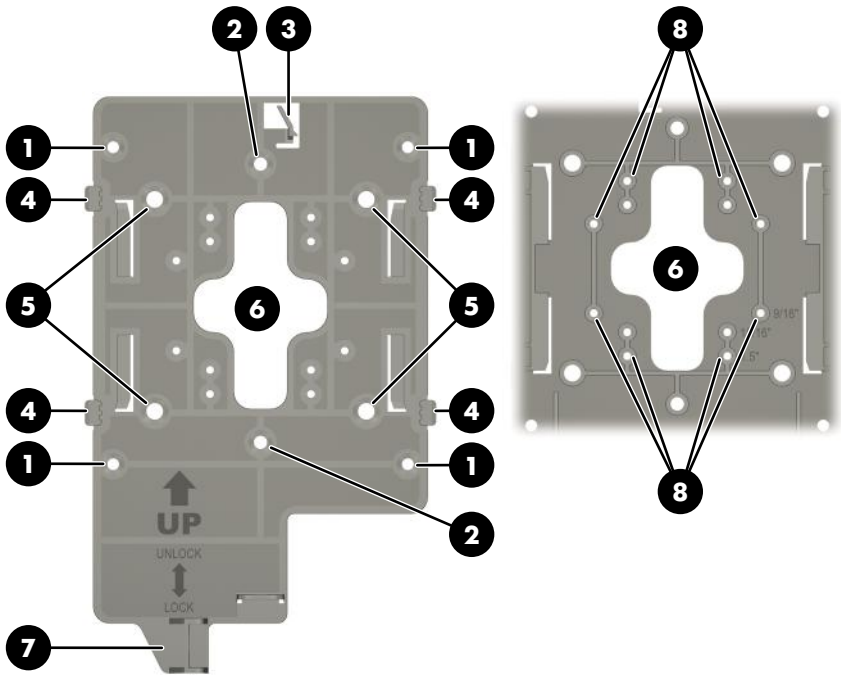
Safety

Take note of the following safety information during installation.

- If your network covers an area served by more than one power distribution system, be sure all safety grounds are securely interconnected.
- Network cables may occasionally be subject to hazardous transient voltages (caused by lightning or disturbances in the electrical power grid).
- Handle exposed metal components of the network with caution.
- The AP is powered-on when connected to a PoE power source.
- The AP and all interconnected equipment must be installed indoors within the same building (except for outdoor antennas), including all PoE-powered network connections as described by Environment A of the IEEE 802.3af standard.

2 Installation

The AP can be mounted on a wall, a wall-mounted electrical box, or a suspended ceiling. In all cases, the first step is to mount the bracket, and the second step is to attach the AP to the bracket.The AP Bracket is two-sided: The AP is installed on the side with the UP arrow. The other side with the T-bar clip screw holes faces the wall or T-bar.



AP Bracket (AP side left, wall/ ceiling side right)

1: Adapter Bracket mounting holes

2: Electrical box mounting holes

3: AP Bracket latch

4: AP retention tabs

5: Drywall mounting holes

6: Cutout area

7: AP Bracket lock tab

8: T-bar clip screw holes

Mounting directly on a wall

1. Respecting the **UP** indicator on the bracket, hold the bracket against the wall at the desired position. Mark two holes for the screws (wall anchors) and one hole in the cutout area of the bracket for the Ethernet cable.
2. Drill two holes for the wall anchors, typically 4.7 mm (3/16 inch) in diameter.
3. If necessary, drill a hole for the Ethernet cable in the marked cutout area of the bracket. Alternatively, you can feed the Ethernet cable from above and through the AP cable channel.
4. Insert the anchors and tap them flush with the wall surface.
5. If applicable, pull the Ethernet cable through the hole in the wall and the hole in the bracket.
6. Screw the bracket to the wall.
7. Continue with "Attaching the AP to the mounting bracket" (page 12).

Mounting on a wall-mounted electrical box

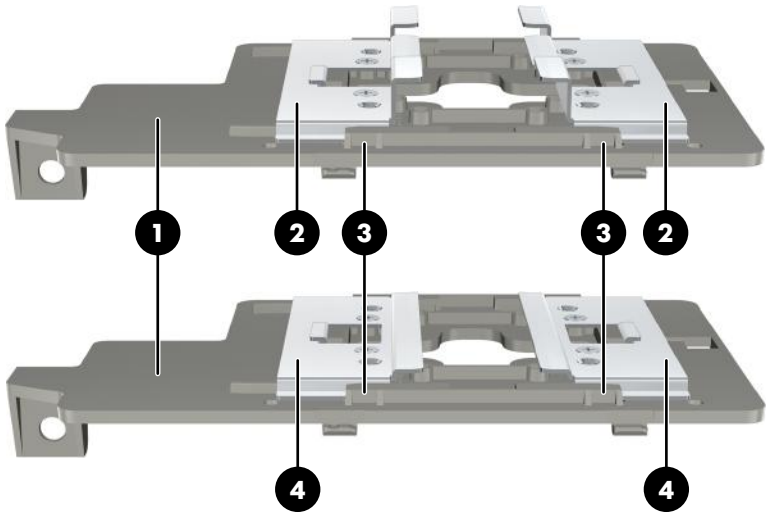
The AP can be mounted on a wall-mounted electrical box using the supplied mounting bracket.

1. Disconnect power and take any other needed safety precautions.
2. Remove the electrical box cover and any contents.

3. Pull the Ethernet cable down into the box and then through the hole in the bracket.
4. Hold the bracket against the box respecting the **UP** indicator and attach the bracket to the box using appropriate countersunk screws.
5. Continue with "Attaching the AP to the mounting bracket" (page 12).

Mounting on a suspended ceiling

The AP can be mounted on a suspended ceiling using the supplied T-bar clips. Two sets of T-bar clips are provided, a 12.5 mm set for recessed tiles and a 4.5 mm set for flush-mount tiles.



T-bar clips for ceiling mount

1: AP Bracket

2: Recessed tile 12.5 mm T-bar clip

3: AP Bracket T-bar slot

4: Flat tile 4.5 mm T-bar clip

1. Slide one of the T-bar clips into the AP Bracket T-bar slot. Screw it into place using two of the four provided self-tapping screws. Select the screw holes marked according to the width of your T-bar, one of 9/16", 15/16", or 1.5". (The other T-bar clip must be attached to the AP Bracket from above the false ceiling, after the bracket is in place on the T-bar.)

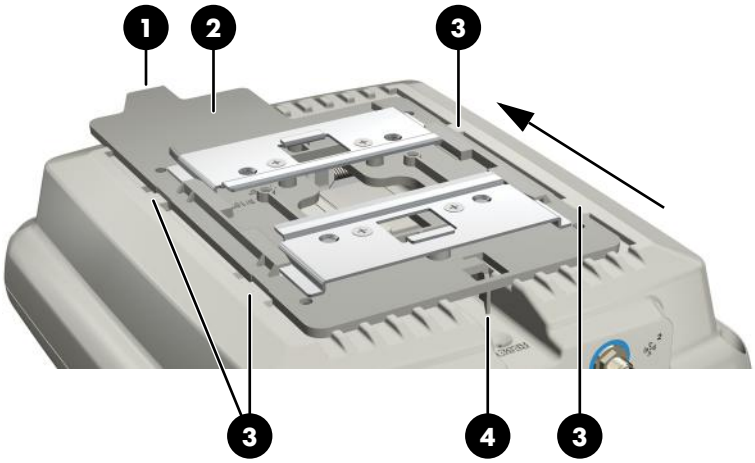
⚠ **WARNING!** *Areas above false ceilings may contain dangerous electrical cabling, gas pipes, and other hazards. Make whatever safety arrangements are needed to ensure that you can work safely above the false ceiling. It is recommended that you use a non-conductive step ladder such as one made of fiberglass.*

2. Normally, you will need to position yourself at shoulder-height above the ceiling so that you can attach the second T-bar clip. Remove/relocate two ceiling tiles, one on each side of the T-bar on which you will perform the installation.
3. Carrying a screw driver, the AP Bracket with T-bar clip attached, and the other T-bar clip and two screws, position yourself approximately 60 cm (2 feet) above the T-bar on which you will install the AP Bracket.
4. Attach the AP Bracket with the already-installed T-bar clip onto the T-bar, and then slide the other T-bar clip into the AP Bracket T-bar clip slot and screw it in place so that both T-bar clips firmly grip the T-bar.
5. Tighten all four T-bar clip screws fully and verify that the AP Bracket is firmly anchored to the T-bar from both sides.
6. Re-install the ceiling tile through which you will pass the Ethernet cable.

7. Using the hole in the AP Bracket as a guide, drill or cut a hole in the ceiling tile at the desired position large enough to pass through the Ethernet connector. Alternatively, you can run a cable outside of the ceiling tile and through the cable channel.
8. Slide the ceiling tile to the side. Feed the Ethernet cable down from above and through the hole in the tile and through the hole in the AP Bracket. Pull through an extra 60 cm (2 feet) of cable.

Attaching the AP to the mounting bracket

1. Connect the Ethernet cable to the AP Ethernet port.
2. Hold the bottom side of the AP against the AP Bracket, aligning the AP tab slots with the AP retention tabs on the AP Bracket. Pull back any Ethernet cable slack at the same time.
3. While firmly holding the AP against the AP Bracket, slide the AP toward the AP Bracket lock tab so that the AP snaps onto the bracket. DO NOT let go of the AP until you confirm that it is firmly in place.



AP attached to bracket

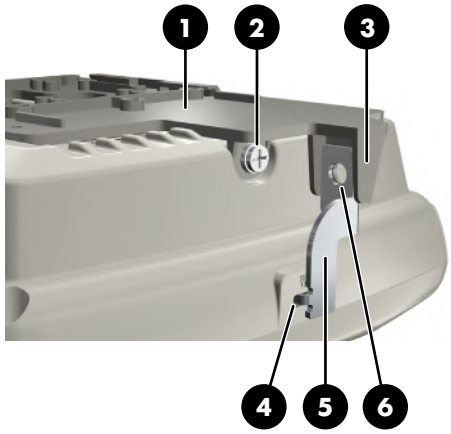
1: AP Bracket lock tab
2: AP Bracket
3: AP tab slots snapped onto AP Bracket retention tabs
4: AP Bracket latch

Securing the AP

It is strongly recommended that as soon as the AP is installed, you perform the following.

1. Install at least the retention screw that anchors the AP Bracket to the AP.

2. Optionally, attach a cable lock in its hole or Insert the tab of the supplied AP Padlock Bracket into the cable lock hole, and then align the AP Padlock Bracket hole with the AP Bracket lock hole and install a user-supplied padlock.



Retention / locking features

1: AP Bracket	4: Cable lock hole
2: Retention screw	5: AP Padlock Bracket
3: AP Bracket lock tab	6: Padlock hole

Connecting the antennas (MSM466 only)

Connect the antenna cables to the MSM466, respecting the color-coding and radio designation.

Removing the AP

To remove the AP from the bracket:

1. Detach any locks and remove the retaining screw.
2. While carefully holding the AP, insert a flat screwdriver into the cable channel between the channel wall and the AP Bracket latch, releasing the AP from the bracket, while being careful to retain grip on the AP as you slide it away from the AP Bracket lock tab and remove the AP.
3. Disconnect the Ethernet cable from the AP.

Using pre-installed brackets (optional)

If you have other AP brackets installed for HP devices such as the MSM320, MSM335, and MSM422 APs, you can attach the supplied Adapter Bracket between the existing bracket and the supplied AP Bracket using the existing screw holes. In some cases, for example with the MSM335 and the MSM422, you must discard the old bracket, and attach the Adapter Bracket, using the same screw holes.

1. Attach the Adapter Bracket to the AP Bracket via the four raised screw holes on the Adapter Bracket and the four outermost screw holes on the four corners of the AP Bracket. Four counter-sunk machine screws are provided.
2. Attach the AP to the AP Bracket as already described. Openings in the center of the Adapter Bracket that align with similar openings in the AP Bracket can be used for running an Ethernet cable.

NOTE: The AP can be directly attached to an MSM410 bracket in place of the AP Bracket. However you must provide your own mechanism to ensure that the AP remains firmly anchored to the ceiling. This is not an issue when mounting the AP vertically on a wall.

Powering the AP

The AP can be powered by:

- A 10/100 or 10/100/1000 PoE-enabled switch. PoE-enabled switches are available from HP.
- An HP 1-Port Power Injector (J9407A).

△ **CAUTION:** If the AP will be powered by a user-supplied PoE power injector, use only a gigabit-compatible power injector. PoE injectors designed only for 10/100 networks are NOT compatible with the AP.

3 Initially Configuring (Autonomous mode)

About controlled mode and autonomous mode

The AP can operate in one of two modes: controlled (the default) or autonomous. Switching modes resets all configuration settings to factory defaults.

- **Controlled mode:** To become operational, the AP must establish a management tunnel with an MSM7xx Controller. The controller manages the AP and provides all configuration settings. Discovery of the controller is automatic if default settings are used on the AP and the controller, and both devices are on the same subnet. See *Working with controlled APs* in the *MSM7xx Controllers Configuration Guide*.
- **Autonomous mode:** After being switched to autonomous mode, the AP operates as a stand-alone AP. You configure and manage an autonomous AP by using its Web-based management tool as described in "Initial configuration (autonomous mode)" (page 15).

Initial configuration (autonomous mode)

This procedure describes how to switch a factory-default AP to autonomous mode and then perform its initial configuration that enables you to establish a wireless connection through the AP to the Internet.

In autonomous mode, the AP is managed via its Web-based management tool as described in this section. This requires at least Microsoft Internet Explorer 8+ or Mozilla Firefox 3+.

For controlled mode configuration, see *Working with controlled APs* in the *MSM7xx Controllers Configuration Guide*.

△ **CAUTION:** **Wireless protection:** A factory-default AP that has been switched to autonomous mode has wireless protection options disabled. It is recommended that after initial configuration, you enable a wireless security option to properly safeguard the wireless network from intruders. See *Wireless protection* in the *MSM3xx / MSM4xx APs Configuration Guide*.

NOTE: Do not power-on the AP until directed.

Step 1: Configure your computer

1. Disconnect your computer LAN port and configure it to use a static IP address in the range **192.168.1.2** to **192.168.1.254**, and a subnet mask of **255.255.255.0**. Set the default gateway to **192.168.1.1**, and DNS server to **192.168.1.1**.
2. Disable any wireless connection on your computer.

Step 2: Connect the cables and power on the AP

1. Connect the cables:
   - If using a PoE switch, use Ethernet cables to connect your computer and the AP to an unused factory-default PoE switch.
   - If using a PoE injector, use Ethernet cables to connect your computer to the data-in port on the PoE injector and the AP to the data and power-out port on the PoE injector.
2. Power on the AP by powering on the PoE switch or injector.
3. Initially, the AP power light will blink once every two seconds. Wait approximately one minute until it begins blinking once per second before proceeding to the next step.

Step 3: Switch the AP to autonomous mode

NOTE: A factory-default AP is assumed.

1. In a Web browser, enter the address: https://192.168.1.1.
2. A security certificate warning is displayed the first time you connect to the management tool. This is normal. Select whatever option is needed in your Web browser to continue to the management tool.
3. On the Login page, specify **admin** for both **Username** and **Password,** and then select **Login**. The management tool home page opens.
4. Select **Switch to Autonomous Mode** and confirm the change. The AP restarts in autonomous mode.

NOTE: To avoid a delay after switching modes, clear the ARP (address resolution protocol) cache on your computer. In Windows for example, from the **Windows Start** menu, select **Run** and enter "`arp -d`" (without the quotes). Select **OK**.

Step 4: Log in

1. Wait until the Power light stops blinking and remains on.
2. On the Login page, specify **admin** for both **Username** and **Password,** and then select **Login**.
3. Click through the prompts for License and Registration.
4. In some regions, a **Country** prompt appears. Select the country in which the AP will operate. *The correct country must be selected*. See "Country of use" (page 9).
5. At the password prompt it is recommended that you change the default password and select **Save**. New passwords must be at least six characters long and include four different characters.

The management tool is organized with menus and sub-menus. Instructions for making menu selections, such as "select **Wireless > Local mesh**" instruct you to select the **Wireless** menu and then the **Local mesh** sub-menu, as follows:



Step 5: Configure basic wireless protection

It is recommended that you at least configure basic wireless protection. See *Wireless protection* in the *MSM3xx / MSM4xx APs Configuration Guide*. To configure basic WPA protection:

1. Select **VSC > HP** and then enable **Wireless protection** and set it to **WPA**.
2. Under **Mode**, select **WPA or WPA2**, then under **Key source**, select **Preshared key** and specify a key of at least 20 characters. Select **Save**.

Step 6: Assign an IP address to the AP

By default, the AP operates as a DHCP client. This means that if the network has a DHCP server, the AP will automatically receive a new IP address in place of its default address of 192.168.1.1 upon connecting to the network. Use one of the following methods to assign an IP address to the AP:

- **Pre-configure the DHCP server** to assign a specific IP address to the AP. To do this you need to specify the AP Ethernet MAC address and a reserved IP address on the DHCP server. The AP Ethernet MAC address is printed on the AP label identified as **Ethernet Base MAC**, and listed on the management tool Home page as **Ethernet base MAC address**.
- **Let the DHCP server automatically assign an IP address**. By default, the DHCP server will assign an IP address once the AP connects to the network. Once the DHCP server has assigned an IP address to the AP, you can then find the IP address of the AP by looking for its Ethernet

base MAC address in the DHCP server log. For example after sub-step 4 below, you could go to the DHCP server log to retrieve the IP address assigned to the AP.

- **Assign a static IP address to the AP**. The address must be on the same subnet as the network to which the AP will connect.
  1. Select **Network > DNS**, and set the DNS server address. Select **Save**.
  2. Select **Network > Ports > Bridge port**.
  3. Select **Static** and then **Configure**. Configure settings as follows:
     - **IP address:** Set an address that is on the same subnet as the network to which the AP will connect once installed. Respect any DHCP server-mandated static address ranges.
     - **Mask:** Set the corresponding mask for the IP address.
     - **Default gateway:** Set the IP address of the gateway on the network.
  4. Select **Save**. Connection to the management tool is lost.

Step 7: Test the wireless network

For the purposes of this example, the network must have a DHCP server and an Internet connection. Broadband routers typically include a DHCP server.

1. Disconnect your computer from the PoE switch or injector.
2. Power off the AP by disconnecting the Ethernet cable from the AP.
3. Use a standard Ethernet cable to connect the switch or the data in port of the injector to the network.
4. Reconnect and power on the AP. Use a standard Ethernet cable to reconnect the AP to the PoE switch or the data and power-out port of the injector.
5. Enable the wireless network interface on your computer, and verify that it is set to obtain an IP address automatically.
6. By default, the AP creates a wireless network named **HP** in the 5 GHz band for 802.11n and 802.11a users. Connect your computer to this wireless network, specifying the preshared key you set earlier in "Step 5: Configure basic wireless protection" (page 16).
7. Confirm that you can browse the Internet using the wireless network.

Step 8: Perform additional configuration

Configure your computer LAN port and connect it to the same network as the AP. Re-launch the AP management tool at **https://<IP address>** where **<IP address>** is the AP IP address from "Step 6: Assign an IP address to the AP" (page 16).

To enable access to other resources

By default, the AP only permits traffic that is addressed to the default gateway on the network (which enables you to connect to the Internet). To enable access to other resources:

1. Select **VSC > Profiles** and then select the **HP** profile.
2. On the **Add/Edit Virtual Service Community** page clear the **Wireless security filters** checkbox.
3. Select **Save**.

4 Support and other resources

Online Documentation

You can download documentation from the HP Support Website at: www.hp.com/support/manuals. Search by product number or name.

Contacting HP

For worldwide technical support information, see the HP support Website: www.hp.com/networking/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

HP Websites

For additional information, see the following HP Websites:

- www.hp.com/networking
- www.hp.com

Typographic conventions

Table 1 Document conventions

Convention	Element
Blue text: Table 1 (page 18)	Cross-reference links and e-mail addresses
Blue, underlined text: www.hp.com	Website addresses
Bold text	• Keys that are pressed • Text typed into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes

WARNING! Indicates that failure to follow directions could result in bodily harm or death.

CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.

TIP: Provides helpful hints and shortcuts.

A Regulatory information

Notice for U.S.A.

Manufacturer's FCC Declaration of Conformity statement

Manufacturer:	Hewlett-Packard Company 3000 Hanover Street Palo Alto, CA 94304-1185 USA

For questions regarding this declaration, contact the Product Regulations Manager at the above address.

FCC Class B statement

This FCC Class B 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.

This device 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 communications. 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 the 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/television technician for help.

The FCC requires the user to be notified that any changes or modifications made to the device that are not expressly approved by the Hewlett-Packard Company may void the user's authority to operate the equipment.

Notice to professional installers

As a Professional Installer responsible for the proper installation and configuration of this Access Point, you need to understand and prepare for operating near any TDWR (Terminal Doppler Weather Radar) locations. The FCC has requested that you become familiar with and comply with the following:

- Read and understand the FCC Memorandum dated July 27th, 2010, Subject: Elimination of interference to Terminal Doppler Weather Radar (TDWR) located here: www.spectrumbridge.com/Libraries/Misc_docs/FCC_Memorandum_on_UNII_Device_Operartion.sflb.ashx
- If the AP system is within the specified range 35km (21.75 mi) of any TDWR, set the primary transmit frequency (and alternate frequencies, if used) to a frequency (or frequencies) at least 30 MHz (center-to-center) from the TDWR operation frequency shown on www.spectrumbridge.com/udia/search.aspx, or in the table shown in the above FCC Memorandum.

- If you are using automatic channel assignment, add the channels you need to avoid in the automatic channel exclusion list.
- Register each AP system operating within 35km (21.75mi) of any TDWR in the voluntary WISPA-sponsored database at: www.spectrumbridge.com/udia/home.aspx

Exposure to radio frequency energy

⚠ **WARNING!** Although the radiated output power of this device is below the FCC radio exposure limits, the device should be used in such a manner that the potential for human contact with the antennas during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antennas should not be less than 20 cm (8 inches) during normal operation.

Notice for Canada

The following notices apply to Canada:

- This device complies with the limits for a Class B digital device and conforms to Industry Canada standard ICES-003. Products that contain a radio transmitter comply with Industry Canada standard RSS210 and are labeled with an IC approval number.
- Cet appareil numérique de la classe B est conforme à la norme ICES-003 de Industry Canada. La radio sans fil de ce dispsitif est conforme à la certification RSS 210 de Industry Canada et est étiquetée avec un numéro d'approbation IC.
- This device complies with the Class B limits of Industry Canada. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept interference received, including interference that may cause undesired operation.

To reduce potential radio interference with other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Notice for the European Community

CE①

This device complies with the EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC and R&TTE Directive 1999/5/EC. Compliance with these directives implies conformity to harmonized European standards (European Norms) that are listed on the EU Declaration of Conformity that has been issued by HP for this device.

Countries of operation & conditions of use

This device may be used in the following EU and EFTA countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. Requirements for outdoor vs. indoor operation, licensing and allowed channels of operation apply in some countries as described below.

NOTE: The user must use the configuration utility provided with this device to ensure the channels of operation are in conformance with the spectrum usage rules for EU and EFTA countries as described below.

2.4 GHz operation

- This device may be operated outdoors or indoors in all EU and EFTA countries using the 2.4 GHz band (Channels 1 - 13), except where noted below.
- In **France**, this device may use the entire 2400 - 2483.5 MHz band (Channels 1 through 13) for indoor applications. For outdoor use, only the 2400 - 2454 MHz frequency band (Channels 1 through 9) may be used. For the latest requirements, see http://www.art-telecom.fr.

  L'utilisation de cet equipement (2.4 GHz wireless LAN) est soumise à certaines restrictions: cet equipement peut être utilisé à l'interieur d'un batiment en utilisant toutes les frequences de 2400 a 2483.5 MHz (Chaine 1-13). Pour une utilisation en environnement exterieur, vous devez utiliser les frequencies comprises entre 2400 a 2454-MHz (Chaine 1-9). Pour les dernières restrictions, voir http://www.art-telecom.fr.

5 GHz operation

- This device requires the user or installer to properly enter the **current country of operation** in the 5 GHz Radio Configuration Window.
- This device will automatically limit the allowable channels determined by the current country of operation. Incorrectly entering the country of operation may result in illegal operation and may cause harmful interference to other systems. The user is obligated to ensure the device is operating according to the channel limitations, outdoor/indoor restrictions and license requirements for each European Community country as described in this guide.
- This device employs **a radar detection feature** required for European Community and EFTA country operation in the 5 GHz band. This feature is automatically enabled when the country of operation is correctly configured for any European Community or EFTA country. The presence of nearby radar operation may result in temporary interruption of operation of this device. The radar detection feature will automatically restart operation on a channel free of radar.
- This device is restricted to **indoor** use when operated in EU and EFTA countries using the 5.15-5.35 GHz band (Channels 36, 40, 44, 48, 52, 56, 60 and 64). See the table below for the allowed 5 GHz channels in each band.

Operation using 5 GHz channels in the European Community

The user/installer must use the provided configuration utility to check the current channel of operation and make necessary configuration changes to ensure operation occurs in conformance with European National spectrum usage laws as described below and elsewhere in this guide.

Frequency Band (MHz)	Allowed Channels	Usage	Maximum EIRP (mW)
5150 - 5250	36, 40, 44, 48	Indoor use only	200
5250 - 5350	52, 56, 60, 64	Indoor use only	200
5470 - 5725	100, 104, 108, 112, 116, 132, 136, 140.	Indoor or outdoor use	1000

Notice for Brazil, Aviso aos usuários no Brasil

Este equipamento opera em caráter secundário, isto é, não tem direito à proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Notice for Taiwan

DGT LPD (Low Power Device) statement

低功率電波輻射性電機管理辦法

第十四條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十七條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Korean notices

Class B equipment

B급 기기 (가정용 정보통신기기)

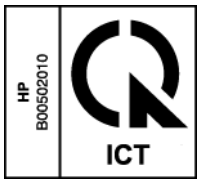
이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Turkish recycling notice



Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Vietnamese Information Technology and Communications compliance marking



B Recycle statements

Waste Electrical and Electronic Equipment (WEEE) statements

English recycling notice

Disposal of waste equipment by users in private household in the European Union



This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information, please contact your household waste disposal service

Bulgarian recycling notice

Изхвърляне на отпадъчно оборудване от потребители в частни домакинства в Европейския съюз



Този символ върху продукта или опаковката му показва, че продуктът не трябва да се изхвърля заедно с другите битови отпадъци. Вместо това, трябва да предпазите човешкото здраве и околната среда, като предадете отпадъчното оборудване в предназначен за събирането му пункт за рециклиране на неизползваемо електрическо и електронно борудване. За допълнителна информация се свържете с фирмата по чистота, чиито услуги използвате.

Czech recycling notice

Likvidace zařízení v domácnostech v Evropské unii



Tento symbol znamená, že nesmíte tento produkt likvidovat spolu s jiným domovním odpadem. Místo toho byste měli chránit lidské zdraví a životní prostředí tím, že jej předáte na k tomu určené sběrné pracoviště, kde se zabývají recyklací elektrického a elektronického vybavení. Pro více informací kontaktujte společnost zabývající se sběrem a svozem domovního odpadu.

Danish recycling notice

Bortskaffelse af brugt udstyr hos brugere i private hjem i EU



Dette symbol betyder, at produktet ikke må bortskaffes sammen med andet husholdningsaffald. Du skal i stedet den menneskelige sundhed og miljøet ved at afl evere dit brugte udstyr på et dertil beregnet indsamlingssted for af brugt, elektrisk og elektronisk udstyr. Kontakt nærmeste renovationsafdeling for yderligere oplysninger.

Dutch recycling notice

Inzameling van afgedankte apparatuur van particuliere huishoudens in de Europese Unie



Dit symbool betekent dat het product niet mag worden gedeponeerd bij het overige huishoudelijke afval. Bescherm de gezondheid en het milieu door afgedankte apparatuur in te leveren bij een hiervoor bestemd inzamelpunt voor recycling van afgedankte elektrische en elektronische apparatuur. Neem voor meer informatie contact op met uw gemeentereinigingsdienst.

Estonian recycling notice

Äravisatavate seadmete likvideerimine Euroopa Liidu eramajapidamistes



See märk näitab, et seadet ei tohi visata olmeprügi hulka. Inimeste tervise ja keskkonna säästmise nimel tuleb äravisatav toode tuua elektriliste ja elektrooniliste seadmete käitlemisega egelevasse kogumispunkti. Küsimuste korral pöörduge kohaliku prügikäitlusettevõtte poole.

Finnish recycling notice

Kotitalousjätteiden hävittäminen Euroopan unionin alueella



Tämä symboli merkitsee, että laitetta ei saa hävittää muiden kotitalousjätteiden mukana. Sen sijaan sinun on suojattava ihmisten terveyttä ja ympäristöä toimittamalla käytöstä poistettu laite sähkö- tai elektroniikkajätteen kierrätyspisteeseen. Lisätietoja sat jätehuoltoyhtiöltä.

French recycling notice

Mise au rebut d'équipement par les utilisateurs privés dans l'Union Européenne



Ce symbole indique que vous ne devez pas jeter votre produit avec les ordures ménagères. Il est de votre responsabilité de protéger la santé et l'environnement et de vous débarrasser de votre équipement en le remettant à une déchetterie effectuant le recyclage des équipements électriques et électroniques. Pour de plus amples informations, prenez contact avec votre service d'élimination des ordures ménagères.

German recycling notice

Entsorgung von Altgeräten von Benutzern in privaten Haushalten in der EU



Dieses Symbol besagt, dass dieses Produkt nicht mit dem Haushaltsmüll entsorgt werden darf. Zum Schutze der Gesundheit und der Umwelt sollten Sie stattdessen Ihre Altgeräte zur Entsorgung einer dafür vorgesehenen Recyclingstelle für elektrische und elektronische Geräte übergeben. Weitere Informationen erhalten Sie von Ihrem Entsorgungsunternehmen für Hausmüll.

Greek recycling notice

Απόρριψη άχρηστου εξοπλισμού από ιδιώτες χρήστες στην Ευρωπαϊκή Ένωση



Αυτό το σύμβολο σημαίνει ότι δεν πρέπει να απορρίψετε το προϊόν με τα λοιπά οικιακά απορρίμματα. Αντίθετα, πρέπει να προστατέψετε την ανθρώπινη υγεία και το περιβάλλον παραδίδοντας τον άχρηστο εξοπλισμό σας σε εξουσιοδοτημένο σημείο συλλογής για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Για περισσότερες πληροφορίες, επικοινωνήστε με την υπηρεσία απόρριψης απορριμμάτων της περιοχής σας.

Hungarian recycling notice

A hulladék anyagok megsemmisítése az Európai Unió háztartásaiban



Ez a szimbólum azt jelzi, hogy a készüléket nem szabad a háztartási hulladékkal együtt kidobni. Ehelyett a leselejtezett berendezéseknek az elektromos vagy elektronikus hulladék átvételére kijelölt helyen történő beszolgáltatásával megóvja az emberi egészséget és a környezetet.További információt a helyi köztisztasági vállalattól kaphat.

Italian recycling notice

Smaltimento di apparecchiature usate da parte di utenti privati nell'Unione Europea



Questo simbolo avvisa di non smaltire il prodotto con i normali rifi uti domestici. Rispettare la salute umana e l'ambiente conferendo l'apparecchiatura dismessa a un centro di raccolta designato per il riciclo di apparecchiature elettroniche ed elettriche. Per ulteriori informazioni, rivolgersi al servizio per lo smaltimento dei rifi uti domestici.

Latvian recycling notice

Europos Sąjungos namų ūkio vartotojų įrangos atliekų šalinimas



Šis simbolis nurodo, kad gaminio negalima išmesti kartu su kitomis buitinėmis atliekomis. Kad apsaugotumėte žmonių sveikatą ir aplinką, pasenusią nenaudojamą įrangą turite nuvežti į elektrinių ir elektroninių atliekų surinkimo punktą. Daugiau informacijos teiraukitės buitinių atliekų surinkimo tarnybos.

Lithuanian recycling notice

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienības privātajās mājsaimniecībās



Šis simbols norāda, ka ierīci nedrīkst utilizēt kopā ar citiem mājsaimniecības atkritumiem. Jums jārūpējas par cilvēku veselības un vides aizsardzību, nododot lietoto aprīkojumu otrreizējai pārstrādei īpašā lietotu elektrisko un elektronisko ierīču savākšanas punktā. Lai iegūtu plašāku informāciju, lūdzu, sazinieties ar savu mājsaimniecības atkritumu likvidēšanas dienestu.

Polish recycling notice

Utylizacja zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w krajach Unii Europejskiej



Ten symbol oznacza, że nie wolno wyrzucać produktu wraz z innymi domowymi odpadkami. Obowiązkiem użytkownika jest ochrona zdrowa ludzkiego i środowiska przez przekazanie zużytego sprzętu do wyznaczonego punktu zajmującego się recyklingiem odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Więcej informacji można uzyskać od lokalnej firmy zajmującej wywozem nieczystości.

Portuguese recycling notice

Descarte de equipamentos usados por utilizadores domésticos na União Europeia



Este símbolo indica que não deve descartar o seu produto juntamente com os outros lixos domiciliares. Ao invés disso, deve proteger a saúde humana e o meio ambiente levando o seu equipamento para descarte em um ponto de recolha destinado à reciclagem de resíduos de equipamentos eléctricos e electrónicos. Para obter mais informações, contacte o seu serviço de tratamento de resíduos domésticos.

Romanian recycling notice

Casarea echipamentului uzat de către utilizatorii casnici din Uniunea Europeană



Acest simbol înseamnă să nu se arunce produsul cu alte deșeuri menajere. În schimb, trebuie să protejați sănătatea umană și mediul predând echipamentul uzat la un punct de colectare desemnat pentru reciclarea echipamentelor electrice și electronice uzate. Pentru informații suplimentare, vă rugăm să contactați serviciul de eliminare a deșeurilor menajere local.

Slovak recycling notice

Likvidácia vyradených zariadení používateľmi v domácnostiach v Európskej únii



Tento symbol znamená, že tento produkt sa nemá likvidovať s ostatným domovým odpadom. Namiesto toho by ste mali chrániť ľudské zdravie a životné prostredie odovzdaním odpadového zariadenia na zbernom mieste, ktoré je určené na recykláciu odpadových elektrických a elektronických zariadení. Ďalšie informácie získate od spoločnosti zaoberajúcej sa likvidáciou domového odpadu.

Spanish recycling notice

Eliminación de los equipos que ya no se utilizan en entornos domésticos de la Unión Europea



Este símbolo indica que este producto no debe eliminarse con los residuos domésticos. En lugar de ello, debe evitar causar daños a la salud de las personas y al medio ambiente llevando los equipos que no utilice a un punto de recogida designado para el reciclaje de equipos eléctricos y electrónicos que ya no se utilizan. Para obtener más información, póngase en contacto con el servicio de recogida de residuos domésticos.

Swedish recycling notice

Hantering av elektroniskt avfall för hemanvändare inom EU



Den här symbolen innebär att du inte ska kasta din produkt i hushållsavfallet. Värna i stället om natur och miljö genom att lämna in uttjänt utrustning på anvisad insamlingsplats. Allt elektriskt och elektroniskt avfall går sedan vidare till återvinning. Kontakta ditt återvinningsföretag för mer information.