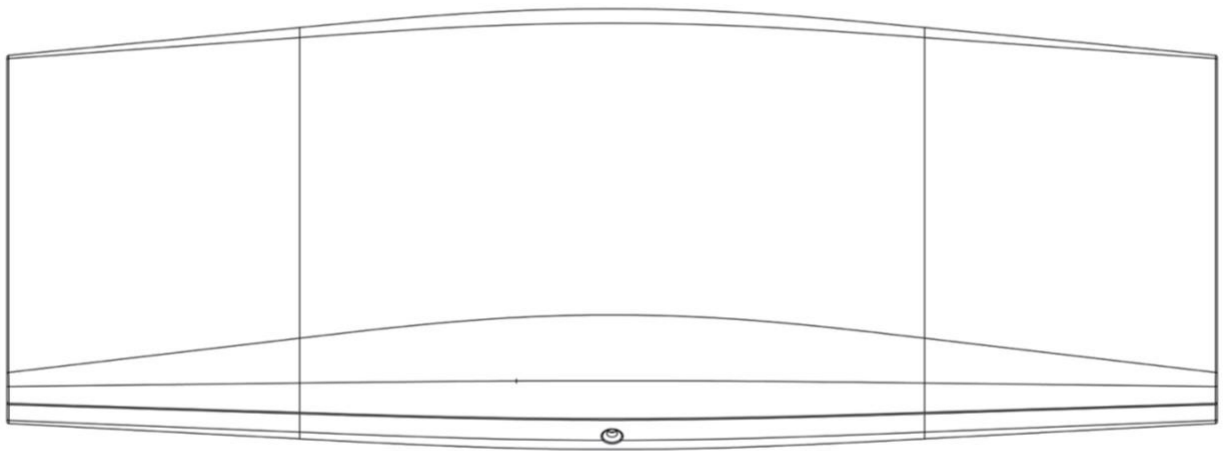




Meraki



Meraki MR45-HW

Hardware Installation Guide

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1 Scope of Document and Related Publications

The MR45-HW Hardware Installation Guide describes the installation procedure for the MR45-HW indoor access point. Additional reference documents are available online at www.meraki.com/library/product.

2 MR45-HW Overview

The Meraki MR45-HW is an enterprise-class, dual-concurrent 4x4 MIMO 802.11ax indoor access point designed for high-density deployments in offices, schools, hospitals and hotels. When connected to the Meraki Cloud Controller, the MR45-HW enables the creation of ultra-high speed, reliable indoor wireless networks quickly, easily and cost- effectively.

2.1 Package Contents

The MR45-HW package contains the following:

MR45-HW access

point

Mounting plate

Drop ceiling mounting

kit Wall screws

Security screws

Mounting Template

2.2 Understanding the MR45-HW

MR45-HW Operation Temperature:

32 ° F to 104 ° F (0 ° C to 40 ° C)

Your Meraki MR45-HW has the following features:

Kensington lock hard point

Mount plate attachment slots (2x)

Cable access bay

Desk mount feet (4x)

MR45-HW cable access bay

Factory Reset Button

Ethernet port Power supplied by PoE: 50-57Vdc 0.6A

AC Adapter plug (sold separately) Power supplied by adapter: 12Vdc, 2.5A

Your MR45-HW mount plate has the following features:

Access point mounting posts (2x)

Various mounting holes

2.3 Security Features

The MR45-HW features multiple options for physically securing the access point after installation:

1. Security screw – The accessory kit includes screws that can be used to secure the access point to the mount plate. Engaging the security screw prevents accidental dislodging and theft.
2. Kensington lock – The access point contains a hard point that allows it to be secured to any nearby permanent structure using a standard Kensington lock.

2.4 Ethernet Ports

The MR45-HW features an Ethernet RJ45 port that accepts 802.3at power (labeled "PoE"). This port should be used for uplink to your WAN connection.

2.5 Power Source Options

The MR45-HW access point can be powered using either the Meraki AC Adapter or 802.3at PoE Injector (both sold separately) or a third-party 802.3at PoE switch.

2.6 Factory Reset Button

If the button is pressed and held for at least five seconds and then released, the MR45-HW will reboot and be restored to its original factory settings by deleting all configuration information stored on the unit.

3 Pre-Install Preparation

You should complete the following steps before going on-site to perform an installation.

3.1 Configure Your Network in Dashboard

The following is a brief overview only of the steps required to add an MR45-HW to your network. For detailed instructions about creating, configuring and managing Meraki wireless networks, refer to the Meraki Cloud Controller Manual (meraki.com/library/product).

1. Login to <http://dashboard.meraki.com>. If this is your first time, create a new account.
2. Find the network to which you plan to add your APs or create a new network.
3. Add your APs to your network. You will need your Meraki order number (found on your invoice if you ordered directly from Meraki) or the serial number of each AP, which looks like Qxxx-xxxx-xxxx, and is found on the bottom of the unit. You will also need your Enterprise Cloud Controller license key, which you should have received via email from shipping@meraki.com.
4. Go to the map / floor plan view and place each AP on the map by clicking and dragging it to the location where you plan to mount it.

3.2 Check and Upgrade Firmware

To ensure your MR45-HW performs optimally immediately following installation, Meraki recommends that you facilitate a firmware upgrade prior to mounting your MR45-HW.

1. Attach your MR45-HW to power and a wired Internet connection. See p. 19 of this Hardware Installation Guide for details.
 2. The MR45-HW will turn on and the Power LED will glow solid orange. If the unit does not require a firmware upgrade, the Power LED will turn white within thirty seconds.
- * If the unit requires an upgrade, the Power LED will begin blinking orange until the upgrade is complete, at which point the Power LED will turn solid white. You should allow about an hour for the firmware upgrade to complete, depending on the speed of your internet connection.

3.3 Check and Configure Firewall Settings

If a firewall is in place, it must allow outgoing connections on particular ports to particular IP addresses. The most current list of outbound ports and IP addresses can be found here:

<http://tinyurl.com/y79une3>

3.4 Assigning IP Addresses to MR45-HWs

All gateway MR45-HWs (MR45-HWs with Ethernet connections to the LAN) must be assigned routable IP addresses. These IP addresses can be dynamically assigned via DHCP or statically assigned.

3.4.1 Dynamic Assignment

When using DHCP, the DHCP server should be configured to assign a static IP address for each MAC address belonging to a Meraki AP. Other features of the wireless network such as 802.1x authentication, may rely on the property that the APs have static IP addresses.

3.4.2 Static Assignment

Static IPs are assigned using the local web server on each AP. The following procedure describes how to set the static IP:

1. Using a client machine (e.g. a laptop), connect to the AP either wirelessly (by associating to any SSID broadcast by the AP) or over a wired connection.

If using a wired connection, connect the client machine to the MR45-HW either through a PoE switch or a Meraki PoE Injector. If using a PoE switch, plug an Ethernet cable into the MR45-HW's Ethernet jack, and the other end into a PoE switch. Then connect the client machine over Ethernet cable to the PoE switch. If using a Meraki PoE Injector, connect the MR45-HW to the "PoE" port of the Injector, and the client machine to the "LAN" port.

2. Using a web browser on the client machine, access the AP's built-in web server by browsing to <http://my.meraki.com>. Alternatively, browse to <http://10.128.128.128>.
3. Click on the "Static IP Configuration" tab. Log in. The default user name is "admin". The default password is the AP's serial number, with hyphens included
4. Configure the static IP address, net mask, gateway IP address and DNS servers that this AP will use on its wired connection.
5. If necessary, reconnect the AP to the LAN.

3.4.3 Static IP via DHCP Reservations

Instead of associating to each Meraki AP individually to configure static IP addresses, an administrator can assign static IP addresses on the upstream DHCP server. Through "DHCP reservations", IP addresses are "reserved" for the MAC addresses of the Meraki APs. Please consult the documentation for the DHCP server to configure DHCP reservations.

3.5 Collect Tools

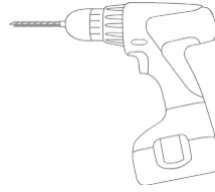
You will need the following tools to perform an installation:



Phillips
screwdriver



Hammer



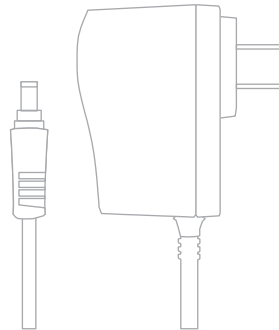
Drill with
1/4"
(6.3mm)
bits

3.6 Collect Additional Hardware for Installation



802.3at PoE power source (either
PoE switch or Meraki 802.3at PoE
Injector)

or



AC Adapter



Network cables with RJ45 connectors
long enough for your particular mounting

location

4 Installation Instructions

4.1 Choose Your Mounting Location

A good mounting location is important to getting the best performance out of your MR45-HW access point. Keep the following in mind:

1. The device should have unobstructed line of sight to most coverage areas. For example, if installing in an office filled with workspaces divided by mid-height cubicle walls, installing on the ceiling or high on a wall would be ideal.
2. Power over Ethernet supports a maximum cable length of 300 ft (100 m).
3. If being used in a mesh deployment, the MR45-HW should have line of sight to at least two other Meraki devices. For more detailed instructions regarding access point location selection, reference the Meraki Network Design Guide (meraki.com/library/product).

4.2 Install the MR45-HW

For most mounting scenarios, the MR45-HW mount plate provides a quick, simple, and flexible means of mounting your device. The installation should be done in two steps. First, install the mount plate to your selected location. Then, attach the MR45-HW to the mount plate.

!!! This equipment is only suitable for mounting at heights ≤ 2 m !!!

4.2.1 Attach the Mount Plate

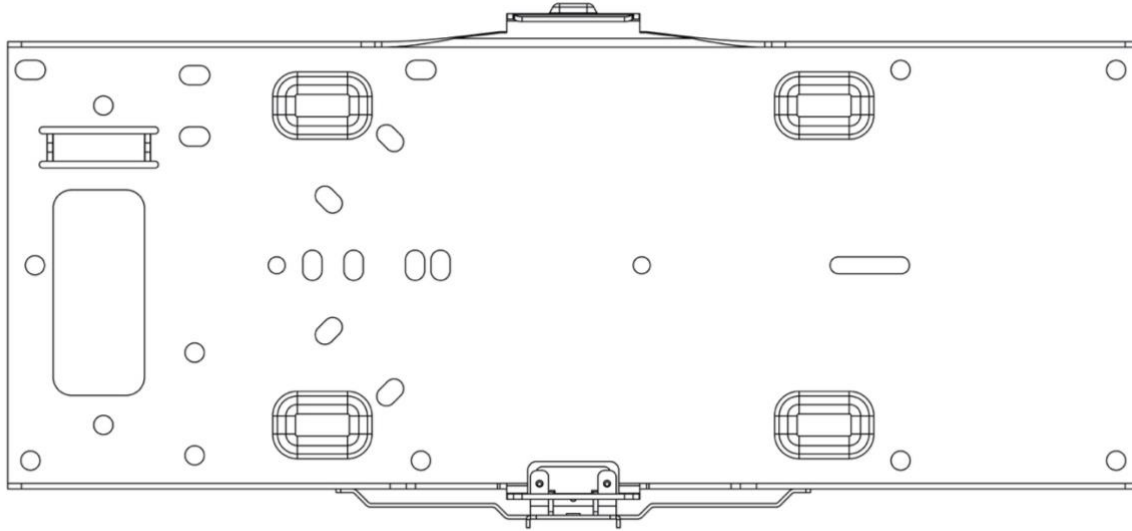
The MR45-HW mount plate can be used to install your access point in a wide range of scenarios: wall or solid ceiling, below a drop ceiling, on various electrical junction boxes, or above a drop ceiling (in the plenum).

The mount plate contains a variety of hole patterns that are customized for each installation scenario. The mounting template (included in box with mount plate) should be used to drill holes for wall mounts and also to identify the correct hole patterns in the mount plate that should be used for each type of mount.

The following images also show the hole patterns that should be used for each type of mount:

4.2.1.1 Wall or Solid Ceiling Mount Using Mount Plate

Using included screws, attach the mount plate to your mounting wall or ceiling.



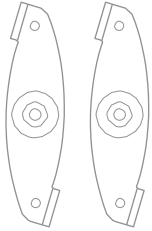
It is recommended that the MR45-HW be mounted to a wall or solid ceiling using the mount plate for physical security reasons.

! If mounting your MR45-HW to a wall, skip to “Power the MR45-HW“ on P. 20

4.2.1.2 Drop Ceiling Mount Using Mount Plate

To mount your MR45-HW on a drop ceiling T-rail, use the included drop ceiling mounting accessory kit. The accessory kit can be used to mount to most 9/16", 15/16" or 1 1/2" T-rails.

The kit contains:



Dropped ceiling mounting clips with set screws



6-32x4 mm screws



6-32x7 mm

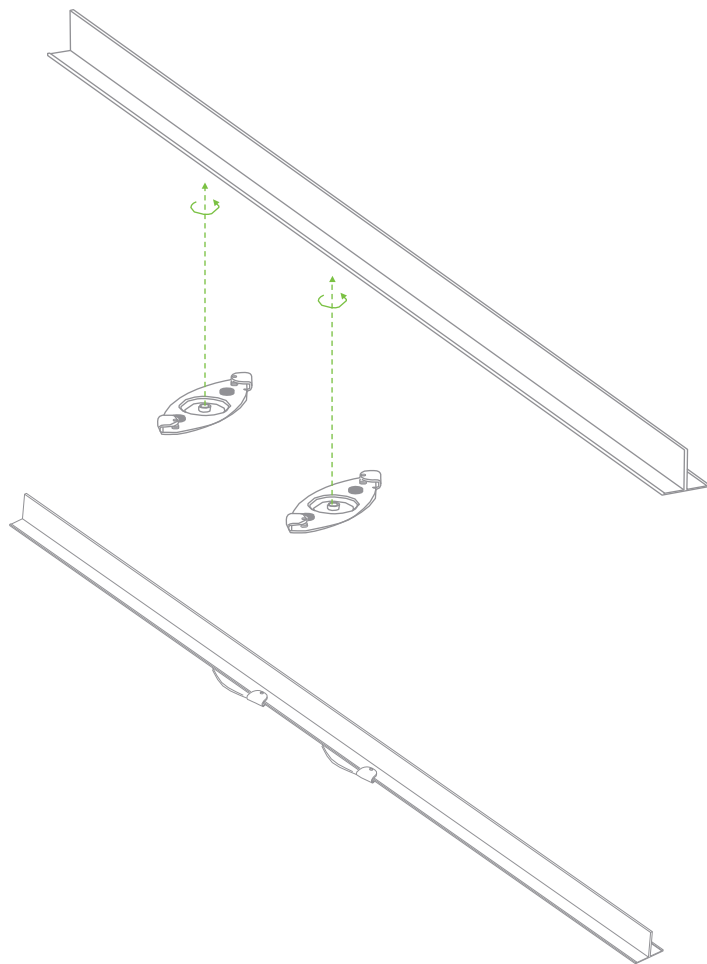
Only used for recessed rail mount (uncommon)



2 rubber spacers

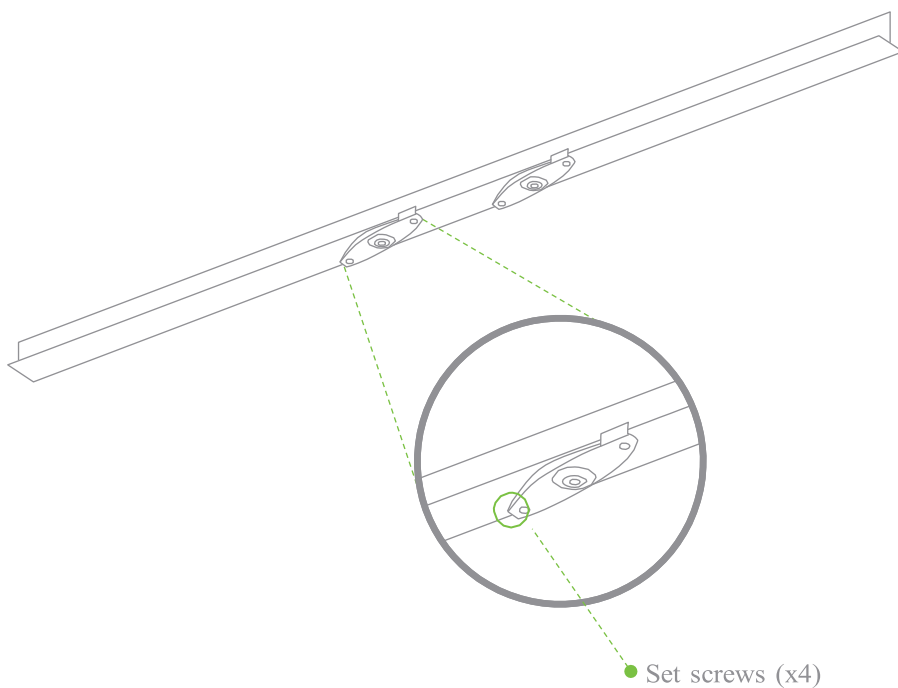
Only used for recessed rail mount (uncommon)

1. Attach the T-rail clips to the T-rail by rotating them and snapping them into place as shown. The black foam pads should be compressed slightly after installation.



2. Using the dashed lines on the mount plate template as a guide, set the proper spacing of the T-rail clips on the T-rail

3. Tighten the set screws on the T-rail clips to secure the clips using a 5/64"(2 mm) hex key.



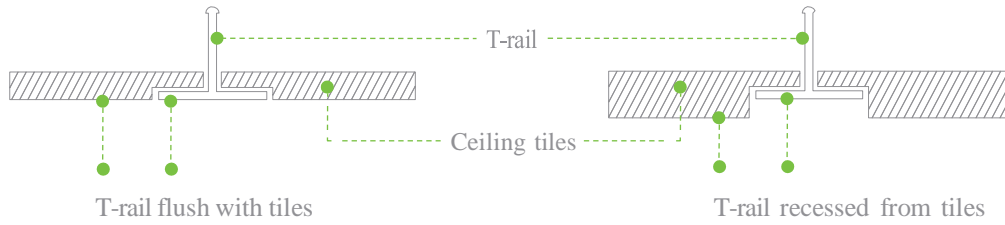
4. Attach the mount plate to the T-rail clips using the mount plate holes (marked with a "T").



To select the correct set of mounting hardware to use, first determine whether you are mounting to a "flush" or "recessed" rail. (See below images for clarification)

Flush T-rail

Recessed T-rail



4.2.1.3 Electrical Junction Box Mount Using Mount Plate

The MR45-HW can be mounted to a 4" square cable junction box, a 3.5 or 4" round cable junction box, or various U.S. and European outlet boxes (mounting screws are not included).

Using appropriate mounting hardware for your specific type of junction box, attach the mount

4.2.2 Power the MR45-HW

If mounting to an electrical junction box, feed the Ethernet cable through the cable access hole in the Mount Plate.

If mounting to a wall or ceiling, the Ethernet cable will feed through the cable slot on bottom of the MR45-HW.

4.2.2.1 Powering the MR45-HW with the Meraki AC Adapter (sold separately)

1. Plug the power cord into the MR45-HW and the other end into a wall outlet.
2. Plug an Ethernet cable that is connected to an active Ethernet connection into the Eth0 port on the MR45-HW.

4.2.2.2 Powering the M410-HW with the Meraki 802.3at Power over Ethernet Injector (sold separately)

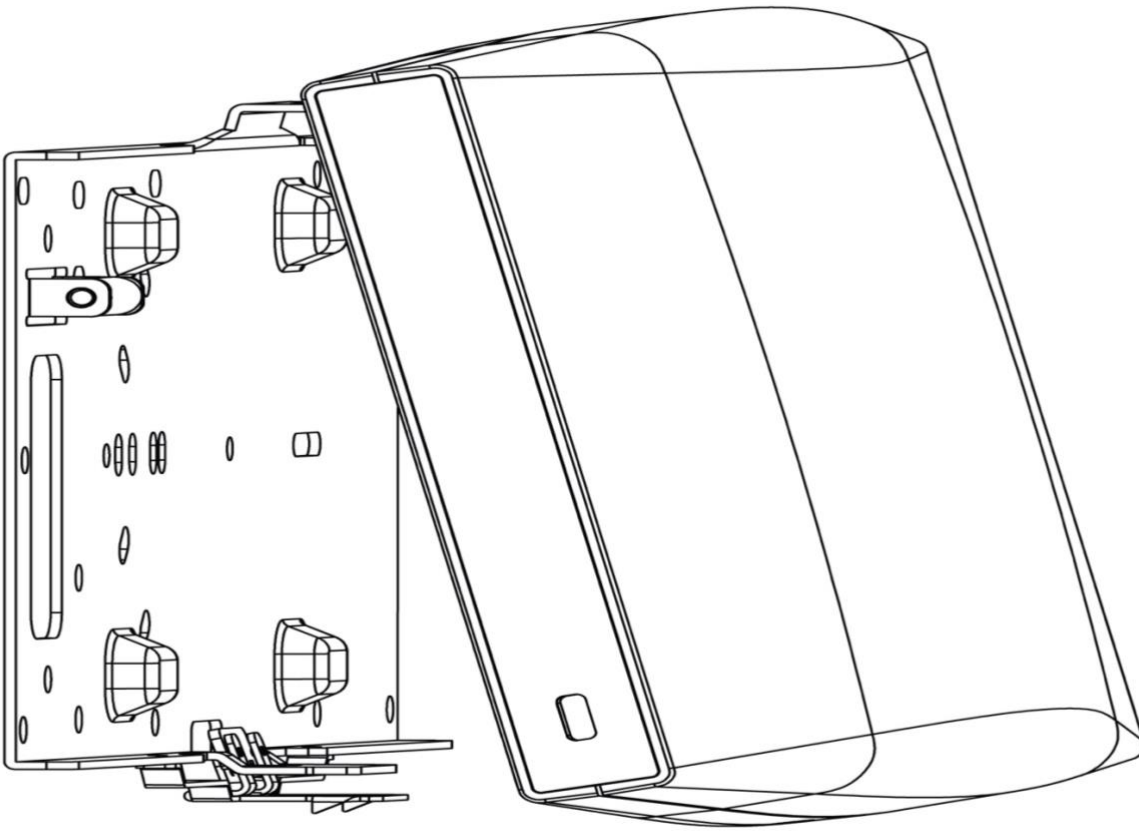
1. Plug the power cord into the PoE Injector and the other end into wall power.
2. Plug an Ethernet cable that is connected to an active Ethernet connection into the "IN" port on the injector.
3. Route Ethernet cable from the "OUT" port on the injector to the Eth0 port in the cable bay of the MR45-HW.

4.2.2.3 Powering the MR45-HW with an 802.3at Power over Ethernet Switch

Route Ethernet cable from a port on an active 802.3at PoE switch to the Eth0 port in the bay of the MR45-HW.

! The MR45-HW is Gigabit Ethernet-capable. To maximize device performance, a Gigabit-capable switch should be used.

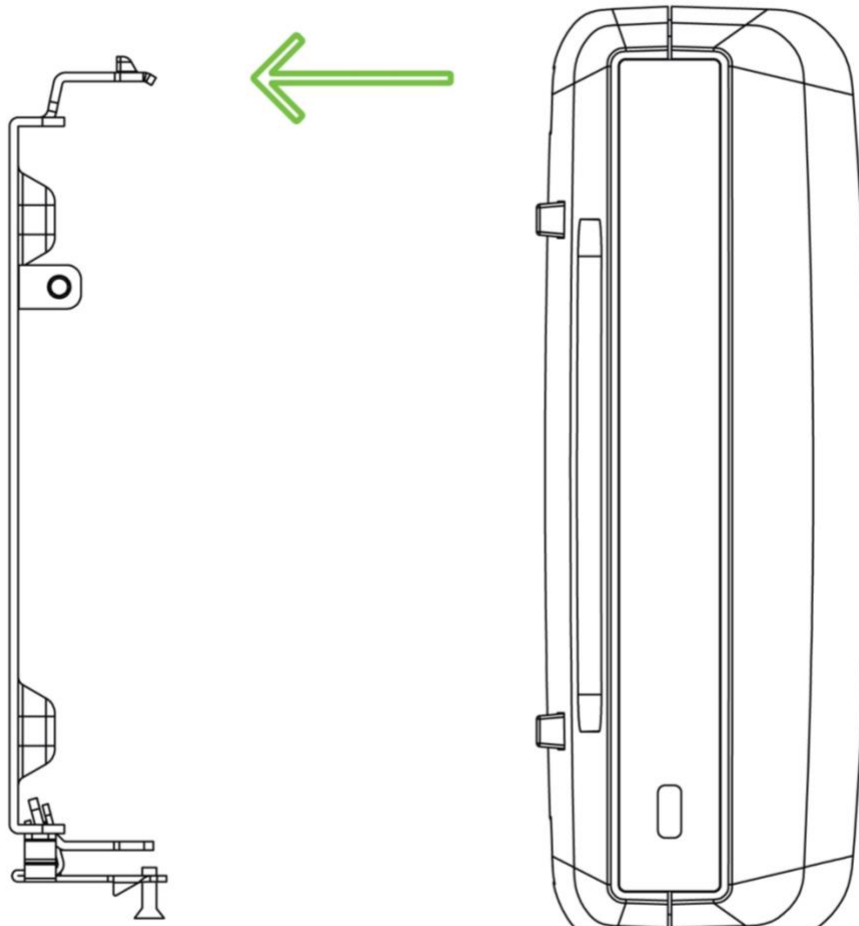
4.2.3 Mount the MR45-HW



4.2.3.2 Assemble MR45-HW to the Mount Plate

(This section applies to wall and/or solid ceiling, drop ceiling or electrical junction box mount where you have already installed the mount plate.)

Insert the top latch on the mount plate into the top mount plate attachment slots on the back of the device. Rotate the bottom of the unit into the bottom mount plate attachment slot. The unit will click into place.



Security screw shown
for orientation

4.2.3.3 Desk or Shelf Mount

The MR45-HW can be placed on a desk or shelf resting on the non-scratch rubber feet. The mount plate is not necessary for a desk or shelf mounting.

4.3 Secure the MR45-HW

Depending on your mounting environment, you may want to secure the MR45-HW to its mount location. Your MR45-HW

can be secured in several ways. If the MR45-HW has been installed using the mount plate, it can be secured via security screw (Torx and phillips head security screws are included; choose one), and/or Kensington lock. If the mount plate was not used, the MR45-HW can still be secured using a Kensington lock.

4.3.1 Security Screw

Install the security screw in the lower mount plate tab.

4.3.2 Kensington Lock

Attach a Kensington lock cable to the access point at the hard point on the side of the device. Attach the other end of the cable to a secure location, such as a pipe or building fixture.

4.4 Verify Device Functionality and Test Network Coverage

1. Check LEDs

The LED should be solid white. If it is flashing orange, the firmware is automatically upgrading and the LED should turn green when the upgrade is completed (normally in under thirty minutes).

Note: Your MR45-HW must have an active route to the Internet to check and upgrade its firmware.

2. Verify access point connectivity

Use any 802.11 client device to connect to the MR45-HW and verify proper connectivity using the client's web browser.

3. Check network coverage

Confirm that you have good signal strength throughout your coverage area. You can use the signal strength meter on a laptop, smart phone, or other wireless device.

5 Troubleshooting

Reference the Meraki knowledge base at http://meraki.com/support/knowledge_base for additional information and troubleshooting tips.

6 Regulatory

FCC Compliance Statement

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.

FCC Interference 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 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 correct the interference by one 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 which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

Any changes or modifications not expressly approved by Meraki could void the user's authority to operate this equipment. This Transmitter must not be co-located or operation in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 33 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the USA is firmware-limited to channels 1 through 11.

If the device is going to be operated in the 5.15 - 5.25 frequency range, then it is restricted to indoor environment only.

This device meets all other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence.

Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage

préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Industry Canada Caution

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Avertissement:

(i) les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Industry Canada Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 39 cm between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 39 cm de distance entre la source de rayonnement et votre corps.

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