



Indoor Mobility Point™ Quick Start Guide

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For the most current version of all documentation, go to
www.trapezenetworks.com

Part Number: 730-9502-0242 Rev. H

This document provides basic hardware installation instructions for indoor MP Access Point models.



Warning! 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. Before installing the product, read the rest of this document.



Waarschuwing! De installatie mag alleen worden uitgevoerd door bevoegd onderhoudspersoneel. Het is essentieel dat u kennis neemt van alle waarschuwingen en instructies aangebracht op het product zelf en/of opgenomen in de documentatie. Voordat u het product installeert, dient u dit document in zijn geheel te hebben gelezen.



Warnung! Die Installation darf nur von qualifiziertem Servicepersonal vorgenommen werden. Lesen und befolgen Sie alle Warnhinweise und -anleitungen auf dem Produkt bzw. in der Dokumentation. Lesen Sie vor Installation des Produkts den restlichen Teil dieses Dokuments.



Avertissement! L'installation ne peut être effectuée que par un personnel qualifié. Lisez et suivez tous les messages d'avertissement et les instructions inscrits sur le produit ou inclus dans la documentation. Avant d'installer le produit, lisez le reste de ce document.



Attenzione! L'installazione deve essere effettuata unicamente da personale qualificato. Leggere e rispettare tutte le segnalazioni di attenzione e le istruzioni indicate sul prodotto o incluse nella documentazione. Prima d'installare il prodotto, leggere tutto il documento.



¡Advertencia! La instalación debe realizarse exclusivamente por parte de personal de servicio cualificado. Lea y siga todas las notas de advertencia e instrucciones en el producto o la documentación. Antes de instalar el producto deberá leer la parte restante del presente documento.



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Warning! Installation får endast utföras av kvalificerad servicepersonal. Läs och följ alla varningsmeddelanden och instruktioner markerade på produkten eller inkluderade i dokumenteringen. Innan produkten installeras skall resten av dessa dokument läsas.



Advarsel! Installation må kun gennemføres af faglært servicepersonale. Læs, og følg alle de advarselsmeddelelser og anvisninger, der er anført på produktet eller i dokumentationen. Læs resten af dette dokument før installation af produktet.



Advarsel! Installasjon skal kun utføres av kvalifisert service personell. Les og følg alle varsels meldinger og instruksjons merkinger på produktet og i veiledningen. Les resten av denne veiledningen før produktet installeres.



Varoitus! Installatie dient uitsluitend plaats te vinden door bevoegde monteurs. Lees alle waarschuwingen en instructies die op het product zijn aangegeven of in de documentatie zijn opgenomen, en volg deze op. Lees voordat u het product installeert eerst de rest van dit document.



Viðvörðun! Aðeins hæfir þjónustufulltrúar mega sinna uppsetningu tækjanna. Lesið og fylgið öllum viðvörðunum og leiðbeiningum í þessum gögnum. Lesið restina af þessum gögnum fyrir uppsetningu.



Προσοχή! Η εγκατάσταση πρέπει να εκτελείται μόνο από εγκεκριμένο προσωπικό συντήρησης. Διαβάστε και ακολουθείστε όλες τις προειδοποιήσεις και οδηγίες που αναγράφονται στο προϊόν ή που περιλαμβάνονται στην τεκμηρίωση. Πριν προβείτε στην εγκατάσταση του προϊόντος, διαβάστε το υπόλοιπο έγγραφο.



경고! 공인 서비스 기사만 설치 작업을 수행할 수 있습니다. 제품에 표시되어 있거나 설명서에 포함된 모든 경고 문구 및 지침을 읽어 보시고 준수하십시오. 제품을 설치하기 전에 본 설명서를 전체적으로 읽어 보시기 바랍니다.



Warning! 設置は、資格を持ったサービス要員のみのみが行えます。
製品に付いているあるいはドキュメントに含まれている全ての警告注意を
読み、それに従ってください。製品を設置する前に、本ドキュメントの残りをお読みください。



警告！ 安装工作只能由合格服务人员进行。
请阅读且遵照所有在产品上或者在文件内标记的警告通知、说明。
在安装产品之前，请阅读这份文件的剩余部分。



警告！ 安装工作只能由合格服务人员進行。
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在安裝產品之前，請閱讀這份文件的剩餘部分。



Внимание! Монтаж должен производить только квалифицированный
обслуживающий персонал. Прочтите и выполняйте все предупредительные
примечания и инструкции, нанесенные на изделие или включенные в
документацию. Перед монтажом изделия прочтите данный документ до конца.



הרהזא ! דבלב ךמסומ יאנכט ידי לע עצבתת הנקתהה.
תונמוסמה תוארוההו תורהזאה לכל סאתהב לעפו ארק
רצומה תנקתה ינפל, ואולמב הז ךמסמ ארק. דועיתב תועיפומ וא רצומה לע.



تحذير! يجب أن يقوم بأعمال التركيب أفراد الصيانة المؤهلين دون غيرهم. اقرأ واتبع كافة الملاحظات والإرشادات
التحذيرية الموضحة على المنتج أو المدرجة في الوثائق المصاحبة. اقرأ الأجزاء المتبقية من المستند قبل تركيب
المنتج.



Operation of the MP-82 with the PowerDsine PD-7001G PoE injector is subject to
Class A emissions restrictions. Please consult the *Trapeze Networks Regulatory Guide*
for more complete details and suggestions.

For more information about MP installation as well as safety and installation requirements, see the following:

- ❑ *Trapeze Indoor Mobility Point Installation Guide*
- ❑ For detailed compliance information see the *Trapeze Regulatory Guide* located at: http://www.trapezenetworks.com/support/contact_support/. The guide can be downloaded in PDF format.

Unpacking an MP

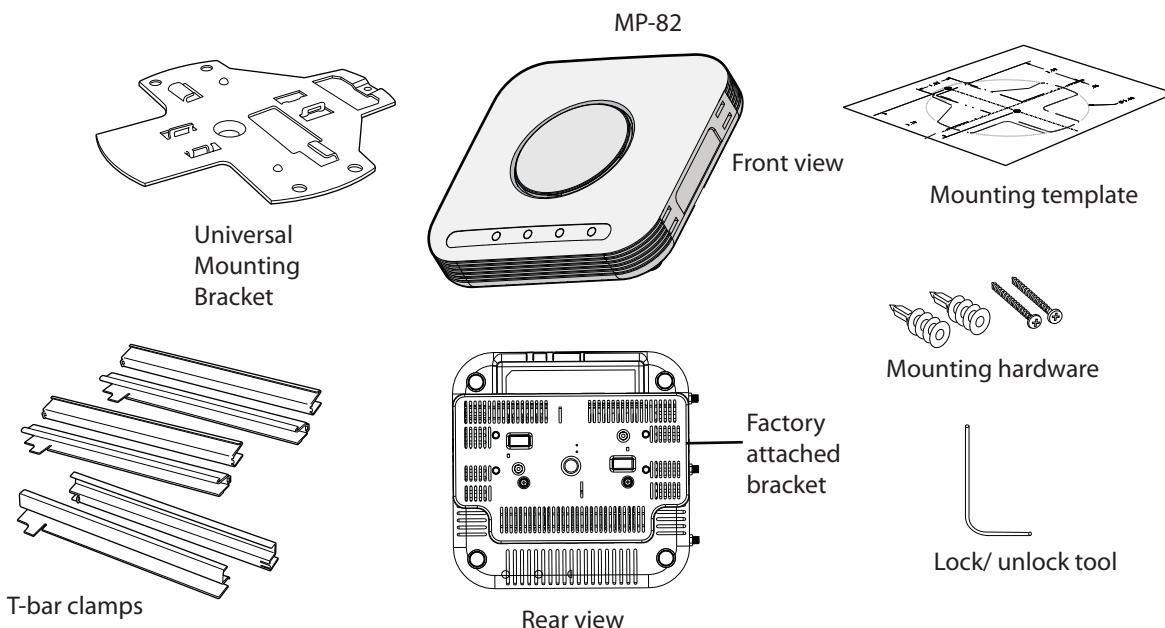
MP-82 Package Contents

The shipping carton for an MP-82 contains the following items:

1. One MP-82
2. Ceiling mounting kit including:
 - ❑ One universal mounting bracket
 - ❑ Mounting template
 - ❑ screws
 - ❑ T-bar clamps
3. Installation manual

Before you begin installation:

1. Open the carton and carefully remove the contents.
2. Place the packing materials back in the carton and save the carton.
3. Verify that you received each item in the previous list. If any item is missing or damaged, contact Trapeze Networks.

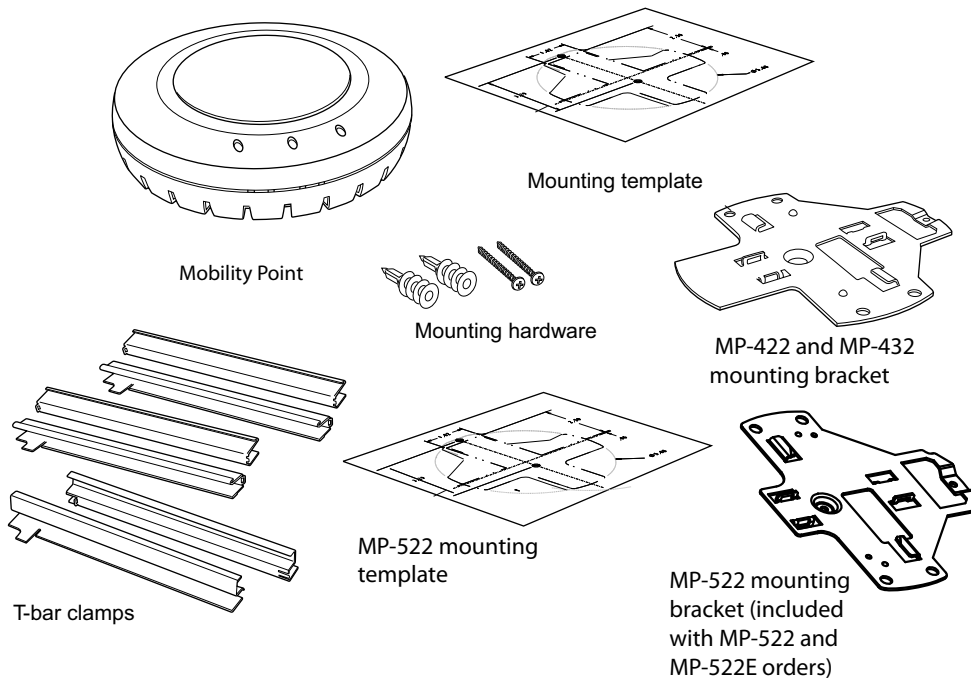


MP-422/432/522 Package Contents

The shipping carton for an MP contains the following items:

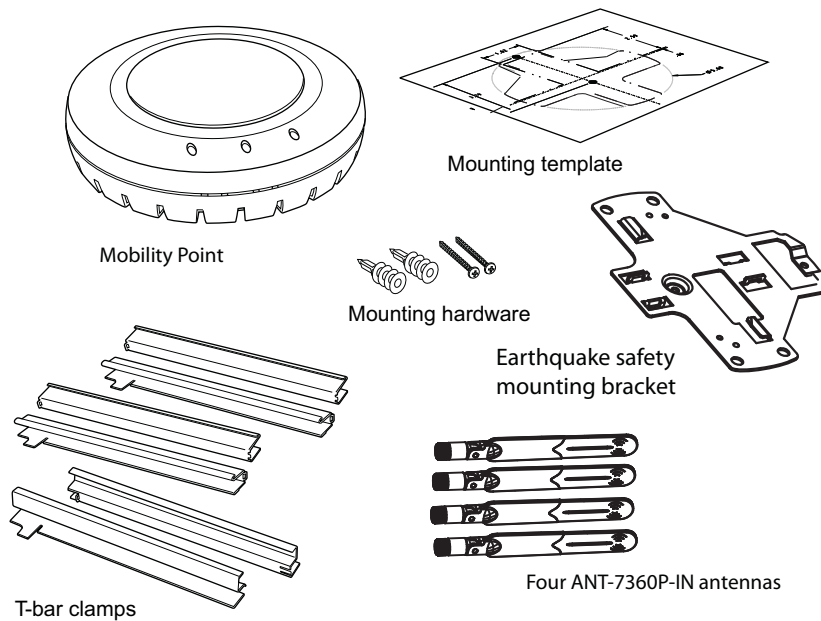
1. One MP
2. Mounting kit including:
 - One mounting bracket (attached to the MP)
The MP-522 package contains a specific mounting bracket (attached to the MP)
 - One paper mounting template (used for marking cutting areas and screw holes)
The MP-522 package contains a specific mounting template with different dimensions than the template used for the MP-422 and MP-432.
 - One two-piece 14.2-millimeter (9/16-inch) T-bar clamp
 - One two-piece 15.9-millimeter (5/8-inch) T-bar clamp
 - One two-piece 23.9-millimeter (15/16-inch) T-bar clamp
 - Two #6 sheet metal screws and two drywall anchors
3. One documentation pack that includes quick mounting instructions and a user guide.

Figure 1–1. Shipping Carton Contents



MP-522E Package Contents

The shipping carton for an MP-522E contains all of the items listed in the MP-422/432/522 with the addition of 4 Omni-directional antennas.



The Trapeze-approved antennas listed in the table below can also be used with the MP-522E.



FCC Caution

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p) is not more than that permitted for successful communication.

This device has been designed to operate with the antennas listed below, and having a maximum gain of [23.5] dB. Antennas not included in this list or having a gain greater than [23.5] dB are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

The tested/certified antennas are equipped with Reverse-SMA or N-type jacks.

Table 1– 1. MP-522E Trapeze-Approved Antennas

Trapeze Model Number	Part Number	2.4GHz / 5GHz dBI Gain	Antenna Type	Number of Connectors	Connector Type
ANT-7360A-OUT	MMO24580608NF	6/8	Omni	1	N-type Jack
	MFB24006	6/ no element	Omni	1	N-type Jack
	MFB24004	4/ no element	Omni	1	N-type Jack
	50 1360	no element/ 8	Omni	1	N-type Jack
	MMO58007NF	no element/ 7	Omni	1	N-type Jack
	ECO6-5500	no element/ 6	Omni	1	N-type Plug
	M6060060MO13620O	6/6	Omni	6	RP-SMA Plug
ANT-77555-OUT	S24517PT36RSM	8/10.7	Panel	3	RP-SMA Plug
	T24060MP13620	6/ no element	Panel	3	RP-SMA Plug
	T58070MP13620	no element/ 7	Panel	3	RP-SMA Plug
	M6060070MP13620	6/7	Panel	6	RP-SMA Plug
ANT-74520-OUT	S245112PT36RSM	10.9/13.5	Panel	3	RP-SMA Plug
ANT-5007-OUT	MA-WA56-DP25NB	no element /23.5	Panel	2	N-type Jack
ANT-7360P-IN	FDE_ACBSMA-BGP	3/5	Omni (Paddle or Rubber Ducky)	1	RP-SMA
	S24493TS	3/4	Omni	3	RP-SMA
	M6025040MO1D3620	2.5/4	Omni	3	RP-SMA
	M6025040MO1D2420M	2.5/4	Omni	3	RP-SMA



Always install the four MP-522E antennas before supplying power to the MP. Failure to do so can cause damage to the unit.

The operation of antenna ANT-5007-OUT is not allowed in India.

Installation Requirements and Recommendations

For best results, follow these requirements and recommendations before installing an MP.

RingMaster Network Plan and Work Orders

If you are using RingMaster to plan your Trapeze Networks Mobility System installation, you might want to create and verify a network plan for the entire Trapeze Network installation and generate an MP work order before installing MPs. A network plan and the MP work orders generated from it provide the following information about MP installation and configuration:

- ❑ Number of MPs required for adequate WLAN capacity in each coverage area
- ❑ Detailed installation location for each MP
- ❑ Settings for all MPs in the WLAN

MX Recommendation

Trapeze Networks recommends that you install and configure the MX before installing an MP. If the MX is already installed and configured for the MP, you can immediately verify the cable connection(s) when you plug the cable(s) into the MP.



An Indoor MP is designed to receive power only from an 802.3af-compliant source, a Trapeze Networks Mobility Exchange (MX), or a Trapeze-approved power injector. Connecting an MP to a Power over Ethernet (PoE) device not approved by Trapeze Networks can damage the equipment.

Wall Installation Recommendations

If you plan to install an MP on a partial wall or other vertical surface, orient the top of the MP (the side with the LEDs) toward the intended coverage area. The radio antennas transmit through the top of the MP but not through the bottom, where the bracket is located.

This recommendation does not apply if you plan to use external antennas. You can orient the antennas independently of the MP. Orient an external antenna to face the intended coverage area.

MP Radio Safety Advisories

When you enable the MP radio(s) as part of MX configuration, the radios can receive and transmit radio frequency energy as soon as you connect the MP to the MX, either directly or through the network.

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), Trapeze Networks MPs meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1-1991. Proper installation of the MP according to the instructions in this manual will result in user exposure that is below the FCC recommended limits.

Federal Communication Commission 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 try 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 that to which the receiver is connected.
- ❑ Consult the dealer or an experienced radio/TV technician for help.

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 Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.



FCC and IC Radiation Exposure Statement

This equipment complies with FCC and IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50cm (19.7 inches) between the radiator and your body.



FCC Notice for the MP-522E:

For indoor operations:

Devices will not permit operations on channels 120-132 for 11a and 11n/a which overlap the 5600 - 5650 MHz band.

For outdoor operations:

In order to meet new FCC, NTIA, FAA and industry restrictions to resolve interference to Terminal Doppler Weather Radar (TDWR) systems used at airports, any outdoor device installed within 35 km of a TDWR location must be separated by at least 30 MHz (center-to-center) from TDWR operating frequency (as shown in the table below). Channels 120-132 and 5600-5650 MHz band are disabled on any antennae located outdoors.

Trapeze recommends that all operators and installers register the location information of the UNII devices operating outdoors in the 5470 – 5725 MHz band within 35 km of any TDWR location at the WISPA sponsored database (see <http://www.spectrumbridge.com/udia/home.aspx>). This database may be used by government agencies in order to expedite resolution of any interference to TDWRs.

Procedures on how to register the devices in the industry-sponsored database with the appropriate information regarding the location and operation of the device and installer information can be found on the database.

Table 1- 2. TDWR Location Information

State	City	Longitude	Latitude	Frequency	Terrain Elevation (MSL) [ft]	Antenna Height Above Terrain [ft]
AZ	Phoenix	W 112 09 46	N 33 25 14	5610 MHz	1024	64
CO	Denver	W 104 31 35	N 39 43 39	5615 MHz	5643	64
FL	Ft. Lauderdale	W 080 20 39	N 26 08 36	5645 MHz	7	113
FL	Miami	W 080 29 28	N 25 45 27	5605 MHz	10	113
FL	Orlando	W 081 19 33	N 28 20 37	5640 MHz	72	97
FL	Tampa	W 082 31 04	N 27 51 35	5620 MHz	14	80
FL	West Palm Beach	W 080 16 23	N 26 41 17	5615 MHz	20	113
GA	Atlanta	W 084 15 44	N 33 38 48	5615 MHz	962	113
IL	McCook	W 087 51 31	N 41 47 50	5615 MHz	646	97
IL	Crestwood	W 087 43 47	N 41 39 05	5645 MHz	663	113
IN	Indianapolis	W 086 29 08	N 39 38 14	5605 MHz	751	97
KS	Wichita	W 097 26 13	N 37 30 26	5603 MHz	1270	80
KY	Covington Cincinnati	W 084 34 48	N 38 55 53	5601 MHz	942	97
KY	Louisville	W 085 36 38	N 38 02 45	5646 MHz	617	113
LA	New Orleans	W 090 24 11	N 30 01 18	5645 MHz	2	97
MA	Boston	W 070 56 01	N 42 09 30	5610 MHz	151	113
MD	Brandywine	W 076 50 42	N 38 41 43	5635 MHz	233	113
MD	Benfield	W 076 37 48	N 39 05 23	5645 MHz	184	113
MD	Clinton	W 076 57 43	N 38 45 32	5615 MHz	249	97
MI	Detroit	W 083 30 54	N 42 06 40	5615 MHz	656	113
MN	Minneapolis	W 092 55 58	N 44 52 17	5610 MHz	1040	80
MO	Kansas City	W 094 44 31	N 39 29 55	5605 MHz	1040	64
MO	Saint Louis	W 090 29 21	N 38 48 20	5610 MHz	551	97
MS	Desoto County	W 089 59 33	N 34 53 45	5610 MHz	371	113
NC	Charlotte	W 080 53 06	N 35 20 14	5608 MHz	757	113
NC	Raleigh Durham	W 078 41 50	N 36 00 07	5647 MHz	400	113
NJ	Woodbridge	W 074 16 13	N 40 35 37	5620 MHz	19	113
NJ	Pennsauken	W 075 04 12	N 39 56 57	5610 MHz	39	113
NV	Las Vegas	W 115 00 26	N 36 08 37	5645 MHz	1995	64
NY	Floyd Bennett Field	W 073 52 49	N 40 35 20	5647 MHz	8	97
OH	Dayton	W 084 07 23	N 40 01 19	5640 MHz	922	97
OH	Cleveland	W 082 00 28	N 41 17 23	5645 MHz	817	113
OH	Columbus	W 082 42 55	N 40 00 20	5605 MHz	1037	113

Table 1– 2. TDWR Location Information

State	City	Longitude	Latitude	Frequency	Terrain Elevation (MSL) [ft]	Antenna Height Above Terrain [ft]
OK	Aero. Ctr TDWR #1	W 097 37 31	N 35 24 19	5610 MHz	1285	80
OK	Aero. Ctr TDWR #2	W 097 37 43	N 35 23 34	5620 MHz	1293	97
OK	Tulsa	W 095 49 34	N 36 04 14	5605 MHz	712	113
OK	Oklahoma City	W 097 30 36	N 35 16 34	5603 MHz	1195	64
PA	Hanover	W 080 29 10	N 40 30 05	5615 MHz	1266	113
PR	San Juan	W 066 10 46	N 18 28 26	5610 MHz	59	113
TN	Nashville	W 086 39 42	N 35 58 47	5605 MHz	722	97
TX	Houston Intercontinental	W 095 34 01	N 30 03 54	5605 MHz	154	97
TX	Pearland	W 095 14 30	N 29 30 59	5645 MHz	36	80



FCC Caution for the MP-522E

To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

The maximum antenna gain permitted (for devices in the bands 5250-5350 MHz and 5470-5725 MHz) to comply with the e.i.r.p. limit.

The maximum antenna gain permitted (for devices in the band 5725-5825 MHz) to comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate, as stated in section A9.2(3).

High-power radars are allocated as primary users (meaning they have priority) of the bands 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices



IC Statement for the MP-522E- This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Additional Radio Safety Advisories

For translations of warnings, see the *TrapezeRegulatory Guide*. The *Trapeze Regulatory Guide* is located at http://www.trapezenetworks.com/support/contact_support/ and can be downloaded in PDF format.



In the U.S., locate the MP and any externally attached antennas a minimum of **50cm (19.7 inches)** away from people. This safety warning conforms with FCC radio frequency exposure limits for dipole antennas such as those used in the MP.



Do not operate the MP near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

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



Do not touch or move the MP when the antennas are transmitting or receiving.

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 radio antenna is transmitting.

Cabling Requirements



Do not connect or disconnect cables or otherwise work with the MP hardware during periods of lightning activity.



The MP is intended for indoor use only. Do not install the device outdoors, unless you install it with a Trapeze Networks outdoor MP enclosure.



To reduce the possibility of connection interference caused by dust, clean the Cat 5 connector pins before inserting a cable into an MP.

Category 5 cable with straight-through signaling must be installed at the site before you install an MP. A single connection requires one cable. A dual-homed connection requires two cables.

Mounting an MP on a solid surface requires Cat 5 cable that does not have strain relief. For installation on all other surfaces, use a Cat 5 cable with or without strain relief.

Installing an Indoor Mobility Point

Installation Hardware and Tools


The table below lists the mounting hardware and tools required for each type of MP installation.

Table 1- 3. Required Mounting Hardware and Tools

Mounting Option	Required Hardware and Tools	Included with the Product
Suspended ceiling—flush ceiling tiles	Mounting template	Yes
	Universal mounting bracket	Yes
	T-bar clamp — A T-bar clamp is not required for a 23.9-millimeter (15/16-inch) T-bar ceiling with flush ceiling tiles.	Yes
	Box cutter	No
	Small screwdriver (3-millimeter or 1/8-inch)	No
	small-pointed instrument or a paperclip	No

Table 1- 3. Required Mounting Hardware and Tools

Mounting Option	Required Hardware and Tools	Included with the Product
Suspended ceiling—drop ceiling tiles	Mounting template	Yes
	Universal mounting bracket	Yes
	T-bar clamp	Yes
	Box cutter	No
	Small screwdriver (3-millimeter or 1/8-inch)	No
	small-pointed instrument or a paperclip	No
Junction box	Junction box	No
	Two #6-32 x 1-inch machine screws	Yes
	Universal mounting bracket	Yes
	Small screwdriver (3-millimeter or 1/8-inch)	No
	#2 Phillips-head screwdriver	No
	small-pointed instrument or a paperclip	No
Solid wall or ceiling	Two #6 sheet metal screws and two drywall anchors	Yes
	Universal mounting bracket	Yes
	Hammer	No
	Small screwdriver (3-millimeter or 1/8-inch)	No
	#2 Phillips-head screwdriver	No
	small-pointed instrument or a paperclip	No
Tabletop	Universal mounting bracket	Yes
	Small screwdriver (3-millimeter or 1/8-inch)	No
	small-pointed instrument or a paperclip	No

 Indoor MPs are UL2043 plenum rated, so it also can be installed in the space above the ceiling if preferred.

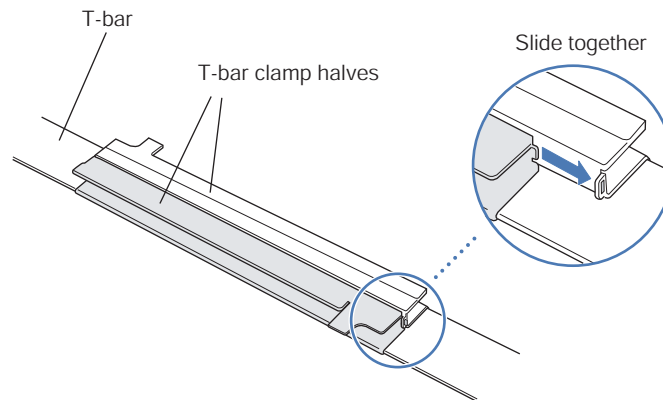
MP-82 Ceiling Mount Instructions

Suspended Ceiling Installation – Flush Ceiling Tiles MP-82

1. Select an installation location centered over a T-bar in the ceiling.
2. Cut a hole as follows in the ceiling tile for the Cat 5 cable:
 - a. Place the mounting template over the area where you plan to install the MP.
 - 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:

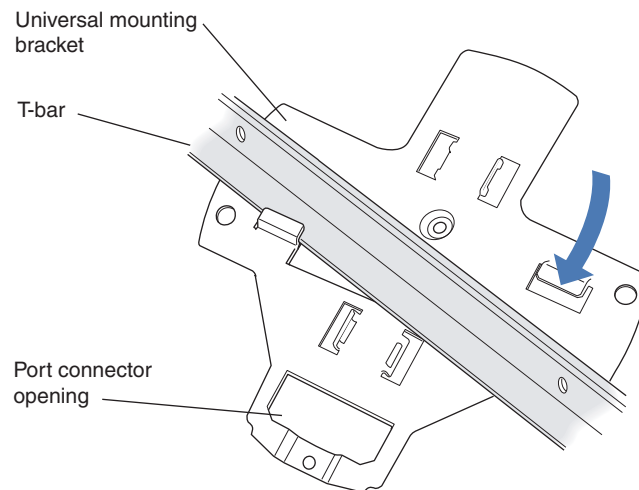
- If the T-bar width is 14.2 millimeter (9/16 inches), you need to install the 14.2-millimeter (9/16 inches) T-bar clamp. Go to step 4.
 - If the T-bar width is 23.9 millimeter (15/16 inches), the universal mounting bracket fits directly onto the T-bar. Go to step 5.
4. Install the 14.2-millimeter (9/16-inch) T-bar clamp onto the ceiling T-bar as shown in Figure 1–5.
 - 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.

Figure 1–2. Step 4—Installing a T-bar Clamp



5. Install the universal mounting bracket as follows onto the T-bar or T-bar clamp.
 - a. As shown in the figure 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.

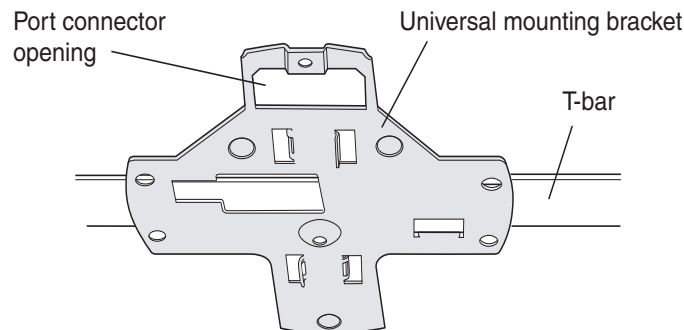
Figure 1–3. Step 7—Top View



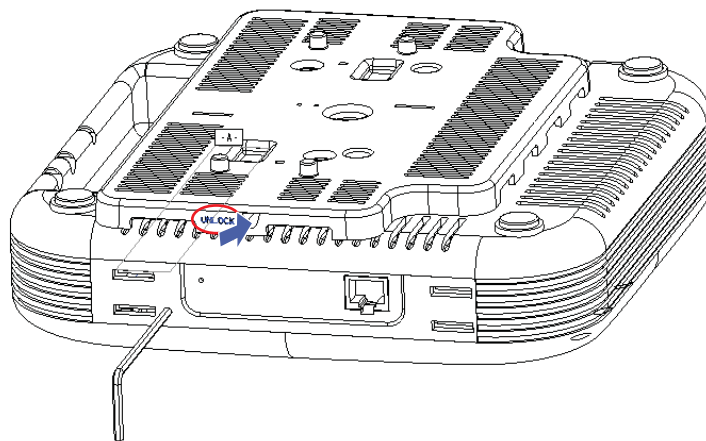
(Viewed from above ceiling tiles, looking down.)

- b. Properly align the bracket for mounting by placing the bracket so the 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 in the figure below.

Figure 1-4. Step 7—Bottom View

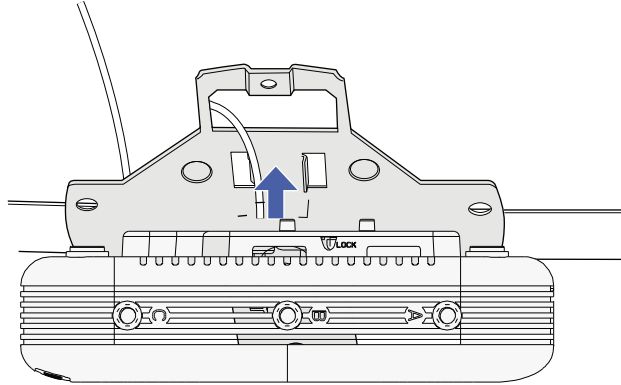


6. Pull the Cat 5 cable about 15 centimeters (about 6 inches) out of the hole in the ceiling tile and through the port connector opening to create enough slack to insert the cable.
7. Insert the Cat 5 cable into the connector.
8. Install the Kensington lock, if you plan to use one.
 - a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.
9. Unlock the MP-82 by inserting the lock/unlock tool into the Unlock hole and push until you feel the internal bracket slide across.

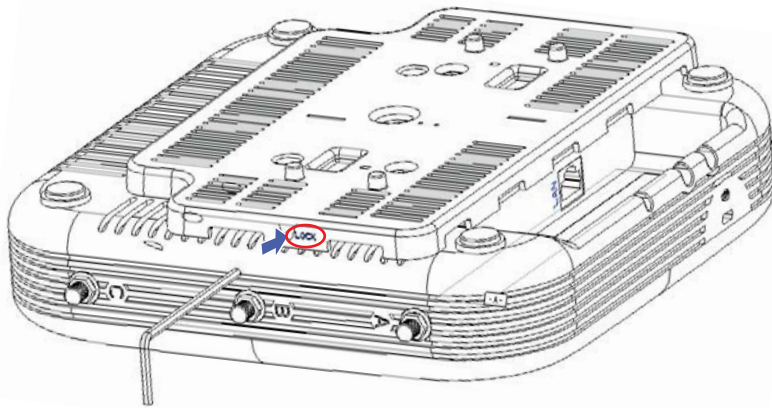


10. Lift the MP into place on the universal mounting bracket as shown below.

Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the MP and the bracket.



11. Lock the MP onto the bracket by inserting the lock/unlock tool into the **Lock** hole on the MP and push until you feel the internal bracket slide across.



To prevent possible damage to the MP, make sure the device is fully locked onto the bracket before releasing it.

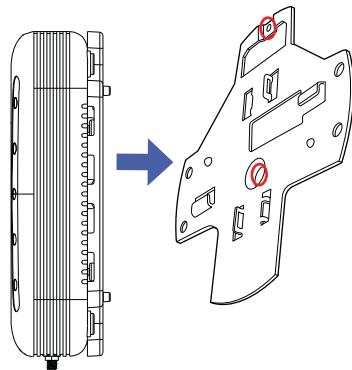
12. To ensure that the MP is fully locked onto the bracket, gently pull down on the MP and attempt to rotate it from side to side.
13. If the MP comes off the bracket, relock the device onto the bracket.

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

MP-82 Wall Mount Installation

Use the included universal mounting bracket to wall mount the MP.

1. Screw the universal mounting bracket directly to a wall.
 - If mounting to drywall, use two screws and two wall anchors in the provided holes on the bracket that are circled in red below.



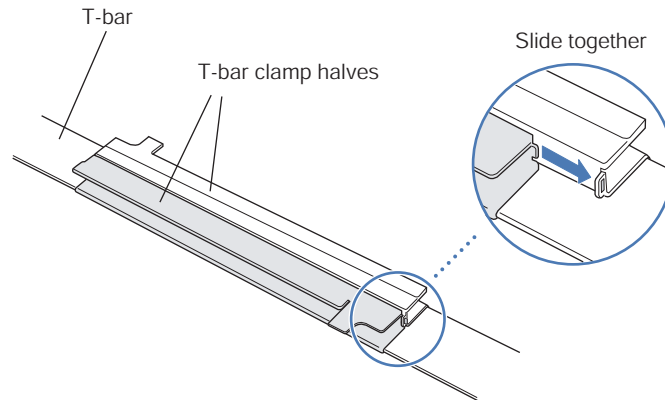
2. Connect the Ethernet cable (for power and network connection) to the port on the back of the MP-82.
3. Unlock the MP by inserting the lock/unlock tool into the Unlock hole and push until you feel the internal bracket slide across.
4. Mount the MP-82 onto the mounting bracket.
5. Lock the MP onto the bracket by inserting the lock/unlock tool into the **Lock** hole on the MP and push until you feel the internal bracket slide across.

Installing an Indoor MP-422/432/522

Suspended Ceiling Installation – Flush Ceiling Tiles for the MP-422/432/522

1. Select an installation location centered over a T-bar in the ceiling.
2. Cut a hole as follows in the ceiling tile for the Cat 5 cable:
 - a. Place the mounting template over the area where you plan to install the MP.
 - 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 millimeter (9/16 inches), you need to install the 14.2-millimeter (9/16 inches) T-bar clamp. Go to step 4.
 - If the T-bar width is 23.9 millimeter (15/16 inches), the universal mounting bracket fits directly onto the T-bar. Go to step 5.
4. Install the 14.2-millimeter (9/16-inch) T-bar clamp onto the ceiling T-bar as shown in Figure 1–5.
 - 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.

Figure 1-5. Step 4—Installing a T-bar Clamp

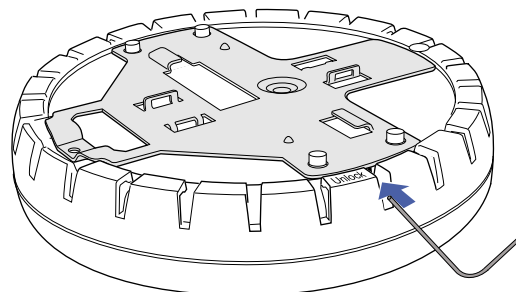


5. Unlock the universal mounting bracket from the MP by inserting the lock/unlock tool into the **Unlock** hole on the MP as shown in Figure 1-6 below.



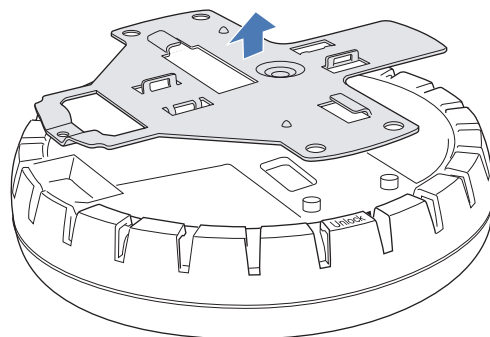
Use a small-pointed instrument or a paperclip to unlock the MP. Do not use a screwdriver because it may cause damage to the MP lock mechanism or electronic components. Do not use excessive force when inserting a tool into the **Unlock** or **Lock** hole.

Figure 1-6. Step 5—Unlocking the Bracket



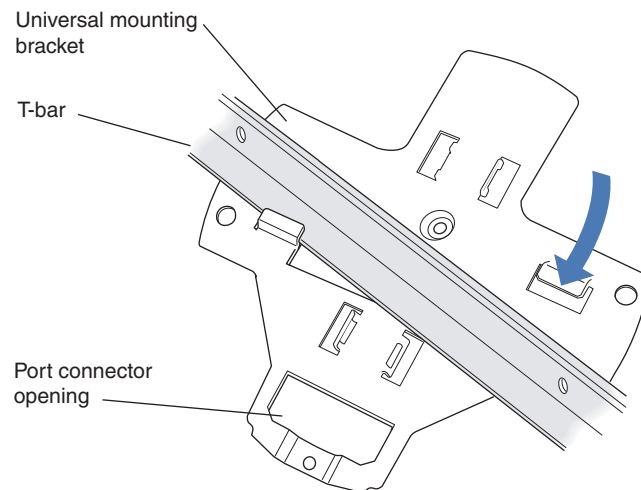
6. Remove the bracket as shown in Figure 1-7 below.

Figure 1-7. Step 6—Removing the Bracket



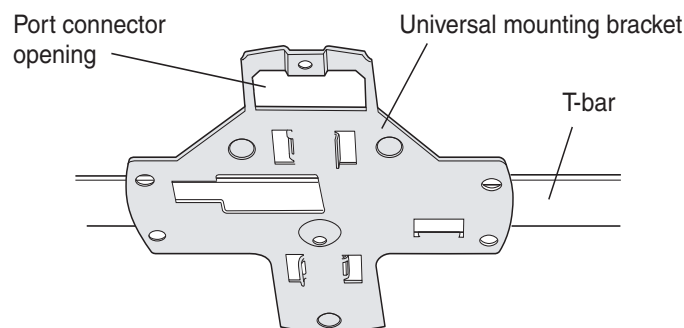
7. Install the universal mounting bracket as follows onto the T-bar or T-bar clamp.
 - a. As shown in Figure 1–8 below, place the universal mounting bracket against the T-bar or clamp so that the two screw holes face downward and the two T-bar flanges face upward and are adjacent to the T-bar edges.

Figure 1–8. Step 7—Top View



- b. Properly align the bracket for mounting by placing the bracket so the 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 below.

Figure 1–9. Step 7—Bottom View

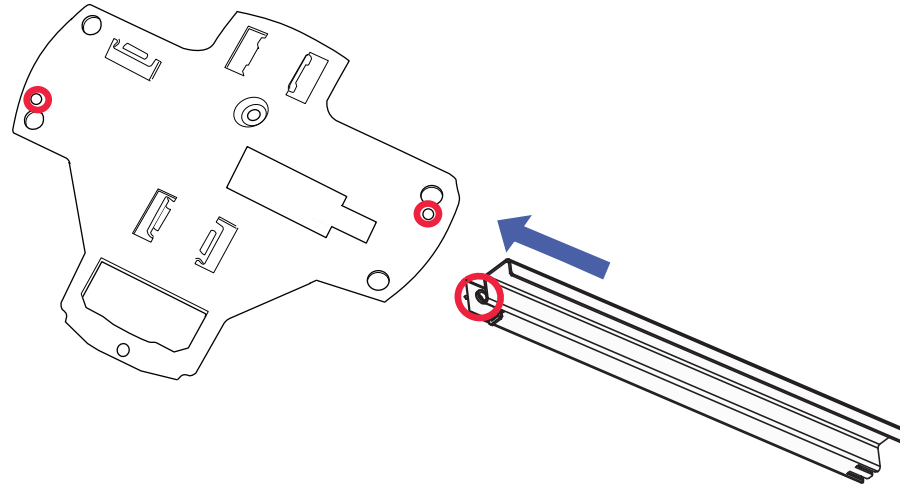




MP-522-Specific Optional Earthquake Safety Step

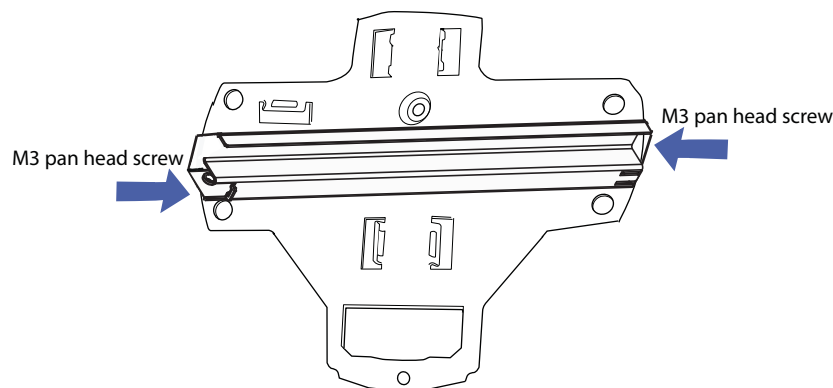
At this point, once you have the T-bar installed and the universal mounting bracket snapped into place, you have the option of securing the bracket for earthquake safety using the two supplied M3 pan head threaded screws.

Note that the T-bars and the universal mounting bracket in the MP-522 Installation Kit have two additional screw holes as shown below.



When the universal mounting bracket is snapped into place, the holes will align.

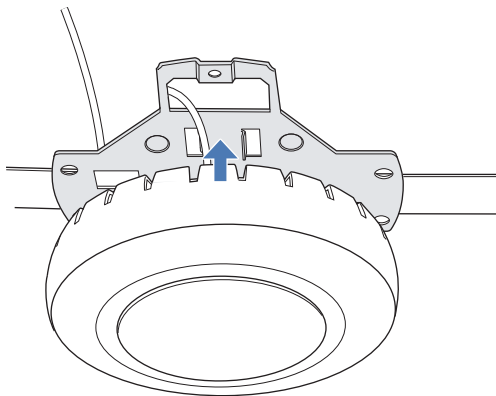
Screw the two M3 pan head threaded screws into the holes. The screws will hold the T-bar and universal mounting bracket together in the event of an earthquake. The MP-522 is then locked securely into place on the secured universal mounting bracket.



8. Pull the Cat 5 cable about 15 centimeters (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.
9. Insert the Cat 5 cable into the connector.
10. Install the Kensington lock, if you plan to use one.

- a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.
11. Lift the MP into place on the universal mounting bracket as shown in Figure 1–10 below.
Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the MP and the bracket.

Figure 1–10. Step 10—Placing the MP on the Bracket

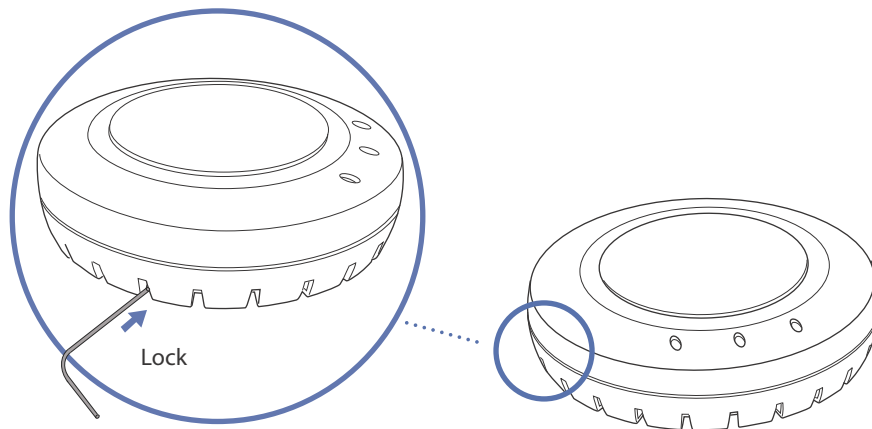


12. Lock the MP onto the bracket by inserting a small-pointed instrument or a paperclip into the **Lock** hole on the MP as shown in Figure 1–11 below.



To prevent possible damage to the MP, make sure the device is fully locked onto the bracket before releasing it.

Figure 1–11. Step 12—Locking the Bracket



13. To ensure that the MP is fully locked onto the bracket, gently pull down on the MP and attempt to rotate it from side to side.
14. If the MP comes off the bracket, relock the device onto the bracket as described in step 12 on page 22.
15. If the MP requires an external antenna, install and connect the antenna.

Suspended Ceiling Installation—Drop Ceiling Tiles

(For required mounting hardware and tools, see [Table 1– 2 on page 12](#).)

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 Cat 5 cable:
 - a. Place the mounting template over the area where you plan to install the MP.
 - 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.

Figure 1–12 shows an example for a 23.9-millimeter (15/16-inch) T-bar. Figure 1–13 shows an example for a 15.9-millimeter (5/8-inch) T-bar.

Figure 1–12. Step 3—Installing the T-bar Clamp for a 23.9-millimeter (15/16-inch) T-bar

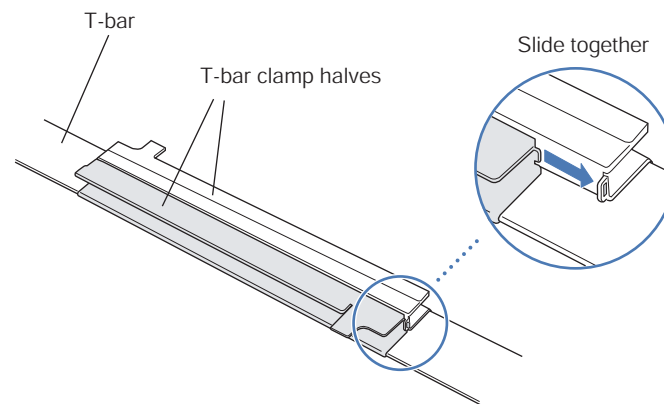
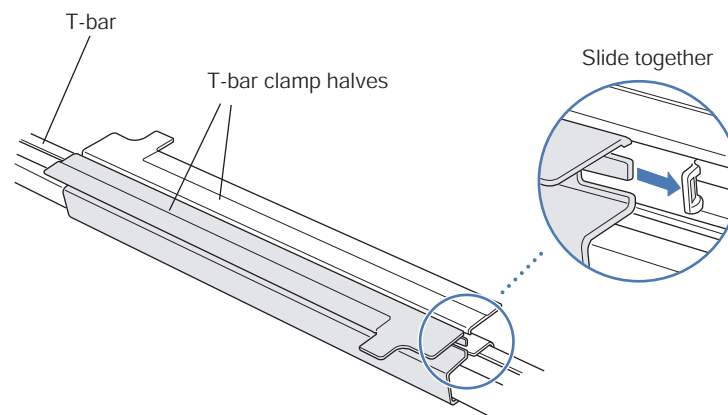


Figure 1–13. Step 3—Installing the T-bar Clamp for a 15.9-millimeter (5/8-inch) T-bar

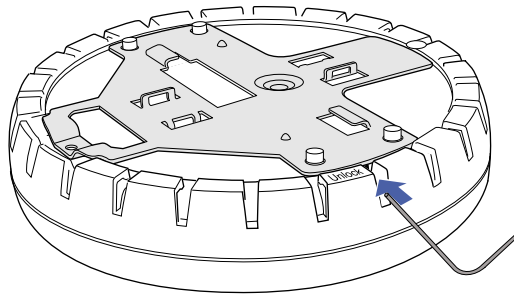


4. Unlock the universal mounting bracket from the MP by inserting a small-pointed instrument or a paperclip into the **Unlock** hole on the MP as shown in Figure 1–14 below.



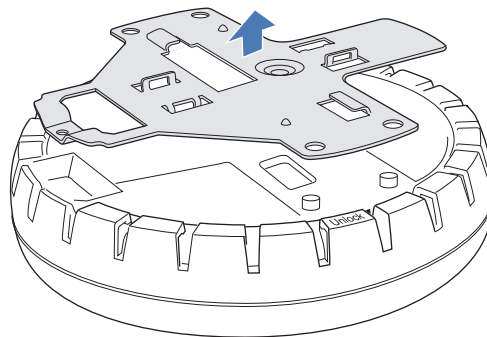
Use a small-pointed instrument or a paperclip to unlock the MP. Do not use a screwdriver because it may cause damage to the MP lock mechanism or electronic components. Do not use excessive force when inserting a tool into the **Unlock** or **Lock** hole.

Figure 1-14. Step 4—Unlocking the Bracket

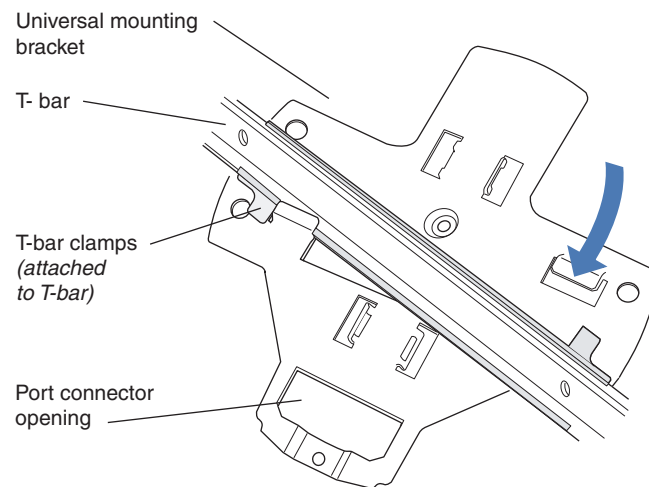


5. Remove the bracket as shown in Figure 1-15 below.

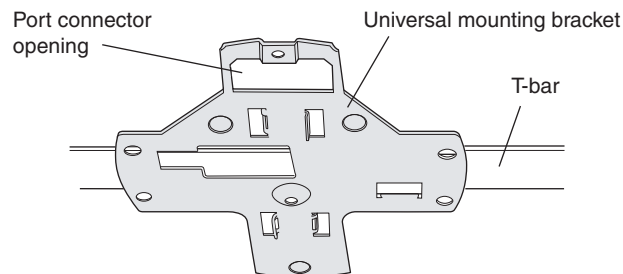
Figure 1-15. Step 5—Removing the Bracket



6. Install the universal mounting bracket as follows onto the T-bar clamp:
 - a. As shown in Figure 1-16, 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.
 - b. Properly align the bracket for mounting by placing the bracket so that the 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.

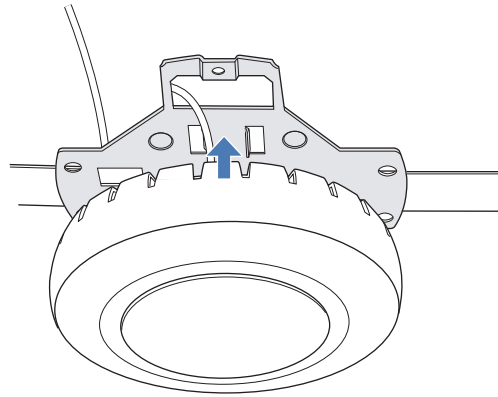
Figure 1-16. Step 6—Top View

(Viewed from above ceiling tiles, looking down.)

Figure 1-17. Step 6—Bottom View

7. Pull the Cat 5 cable about 15 centimeters (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.
8. Insert the Cat 5 cable into the connector.
9. Install the Kensington lock, if you plan to use one.
 - a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.
10. Lift the MP into place on the universal mounting bracket as shown in Figure 1-18.
Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the MP and the bracket.

Figure 1-18. Step 9—Placing the MP on the Bracket

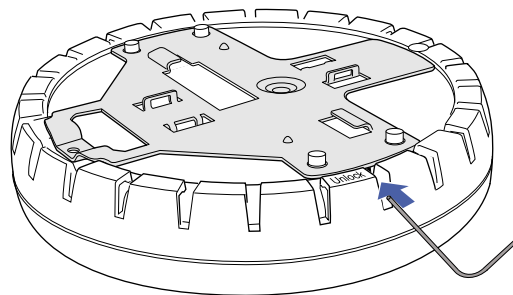


11. Lock the MP onto the bracket by inserting a small-pointed instrument or a paperclip into the **Lock** hole on the MP as shown in Figure 1-19 below.



To prevent possible damage to the MP, make sure the device is fully locked onto the bracket before releasing it.

Figure 1-19. Step 10—Locking the Bracket



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

If the MP comes off the bracket, relock the device onto the bracket as described in step 11 on page 26.

13. If the MP requires an external antenna, install and connect the antenna.

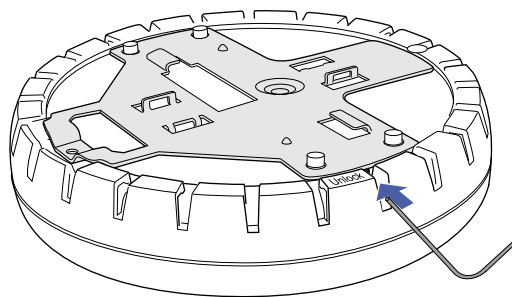
Junction Box Installation

1. Unlock the universal mounting bracket from the MP by inserting a small-pointed instrument or a paperclip into the **Unlock** hole on the MP as shown in Figure 1–20.



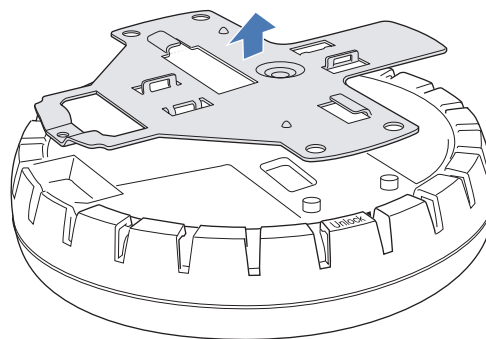
Use a lock/unlock tool to unlock the MP. Do not use a screwdriver because it may cause damage to the MP lock mechanism or electronic components. Do not use excessive force when inserting a tool into the **Unlock** or **Lock** hole.

Figure 1–20. Step 1—Unlocking the Bracket



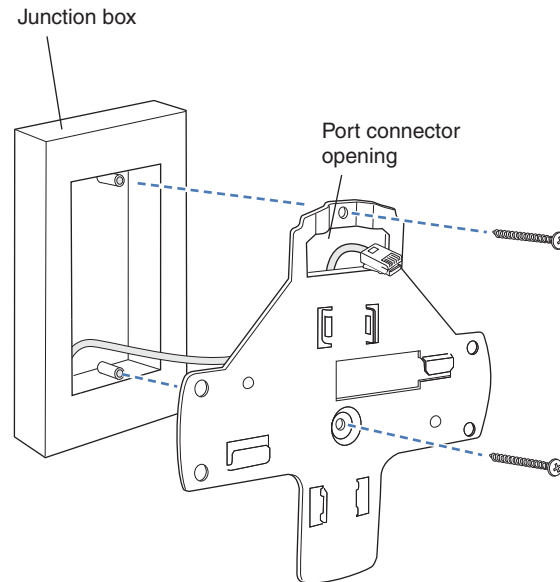
2. Remove the bracket as shown in Figure 1–21.

Figure 1–21. Step 2—Removing the Bracket



3. Attach the universal mounting bracket to the junction box as shown in Figure 1–22:
 - a. Place the universal mounting bracket against the junction box so that the two screw holes face the junction box and align over the screw holes in the box.
 - b. Insert the #6-32 x 1-inch machine screws in the universal mounting bracket screw holes, and use a #2 Phillips-head screwdriver to tighten them.

Figure 1–22. Step 3—Placing the Bracket on the Junction Box

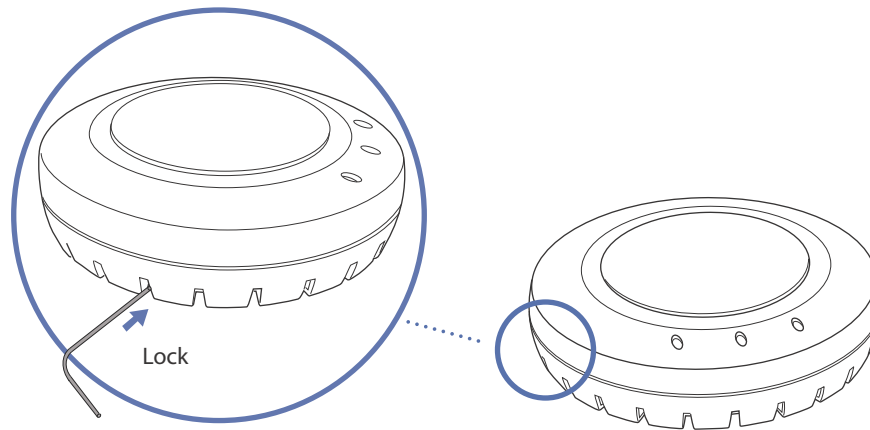


4. Pull the Cat 5 cable about 15 centimeters (about 6 inches) out of the junction box and through the port connector opening to create enough slack to insert the cable into the port connectors.
5. Insert the Cat 5 cable into the connector.
6. Install the Kensington lock, if you plan to use one.
 - a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.
7. Lift the MP into place on the universal mounting bracket.

Make sure the cable feeds properly into the junction box as you lift the device, and does not become trapped between the MP and the bracket.
8. Lock the MP onto the bracket by inserting a small-pointed instrument or a paperclip into the **Lock** hole on the MP as shown in Figure 1–23.



To prevent possible damage to the MP, make sure the device is fully locked onto the bracket before releasing it.

Figure 1–23. Step 7—Locking the Bracket

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

If the MP comes off the bracket, relock the device onto the bracket as described in step 8.

10. If the MP requires an external antenna, install and connect the antenna.

Solid Wall or Ceiling Installation



The solid surface mounting option requires Cat 5 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 Cat 5 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 to install the MP.
 - b. Mark the screw hole location(s).
 - c. If you plan to route the Cat 5 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.
 - d. If you plan to route the Cat 5 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.



Do not mark the four holes on the edges of the bracket. (These are the holes indicated by the dashed lines in Figure 1–26.) The MP fits into these holes. They are not screw holes.

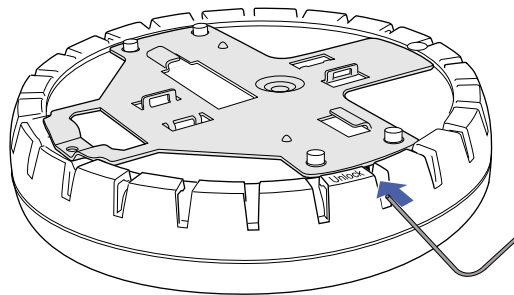
- e. Remove the template.

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 the hole using a #2 Phillips-head screwdriver.
 - c. Remove the screw from each anchor and save the screw(s) for step 6.
3. Unlock the universal mounting bracket from the MP by inserting the lock/unlock tool into the **Unlock** hole on the MP as shown below.



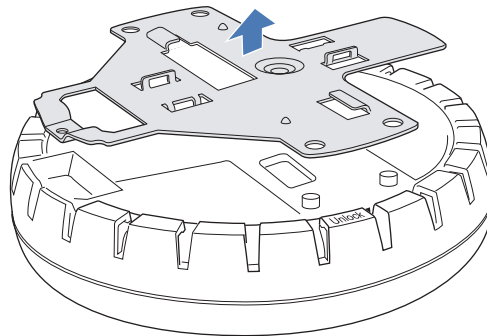
Use the lock/unlock tool to unlock the MP. Do not use a screwdriver because it may cause damage to the MP lock mechanism or electronic components. Do not use excessive force when inserting a tool into the **Unlock** or **Lock** hole.

Figure 1-24. Step 3—Unlocking the Bracket



4. Remove the bracket as shown in Figure 1-25.

Figure 1-25. Step 4—Removing the Bracket



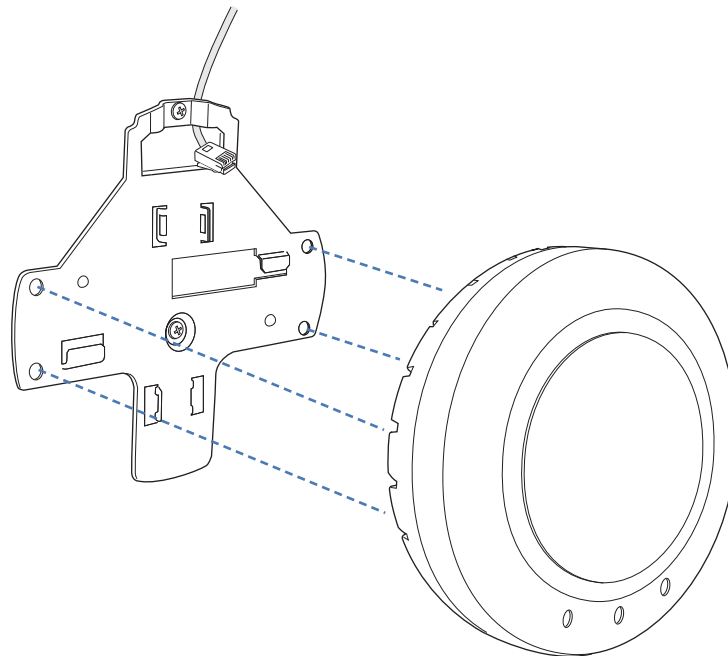
5. As shown in Figure 1-26, feed the Cat 5 cable through the port connector opening and align the universal mounting bracket over the drywall anchors so that the two screw holes in the bracket face the drywall anchors.

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 Cat 5 cable through a hole in the wall or ceiling, insert the screw into the center screw hole only.)



Do not insert screws in the four holes on the edges of the bracket. (These are the holes indicated by the dashed lines in Figure 1–26.) The MP fits into these holes. They are not screw holes.

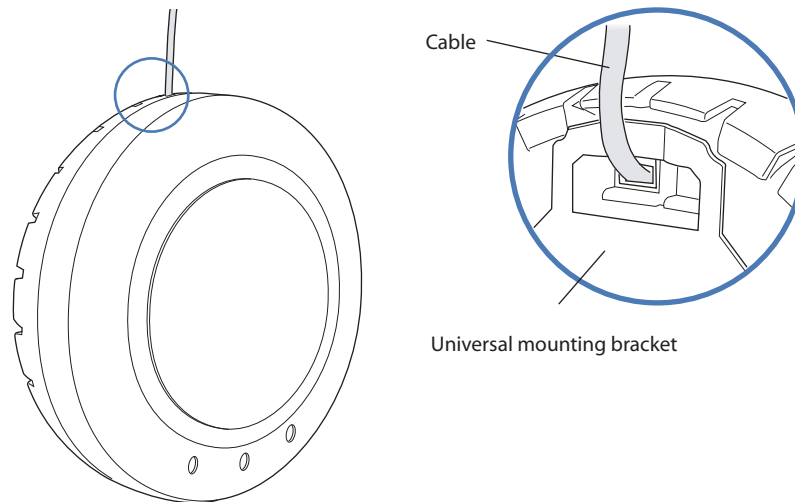
Figure 1–26. Steps 5 and 6—Bracket Placement on Solid Wall or Ceiling



7. Insert the Cat 5 cable into the connector.
8. Install the Kensington lock, if you plan to use one.
 - a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.

- As shown in Figure 1–27, place the MP on the bracket, making sure to remove any slack that occurs in the cable between the bracket and the MP.

Figure 1–27. Step 8—Cable Placement

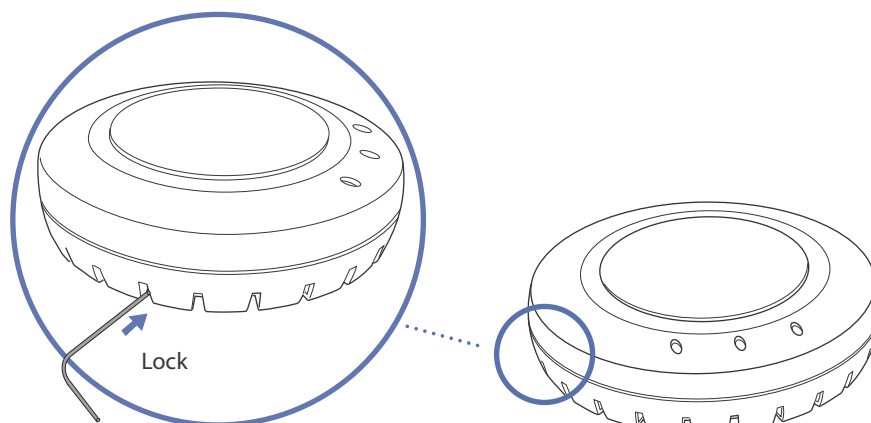


- Lock the MP onto the bracket by inserting the lock/unlock tool into the **Lock** hole on the MP as shown below.



To prevent possible damage to the MP, make sure the device is fully locked onto the bracket before releasing it.

Figure 1–28. Step 9—Locking the Bracket



- To ensure that the MP is fully locked onto the bracket, gently pull on the MP and attempt to rotate it from side to side.

If the MP comes off the bracket, relock the device onto the bracket as described in step 10 on page 32.

12. If the MP requires an external antenna, install and connect the antenna.

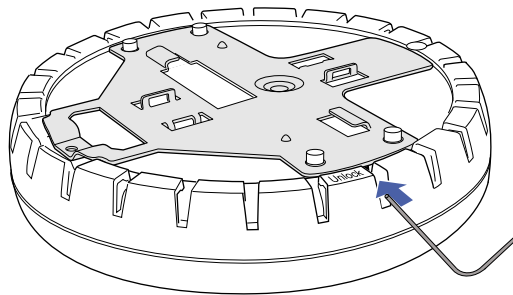
Tabletop Installation

1. Reverse the universal mounting bracket:
 - a. Unlock the universal mounting bracket from the MP by inserting the lock/unlock tool into the **Unlock** hole on the MP as shown in below.



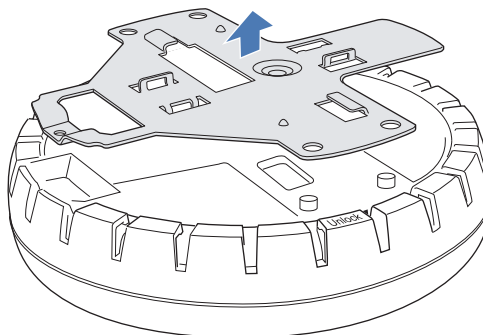
Use the lock/unlock tool to unlock the MP. Do not use a screwdriver because it may cause damage to the MP lock mechanism or electronic components. Do not use excessive force when inserting a tool into the **Unlock** or **Lock** hole.

Figure 1-29. Step 1a—Unlocking the Bracket



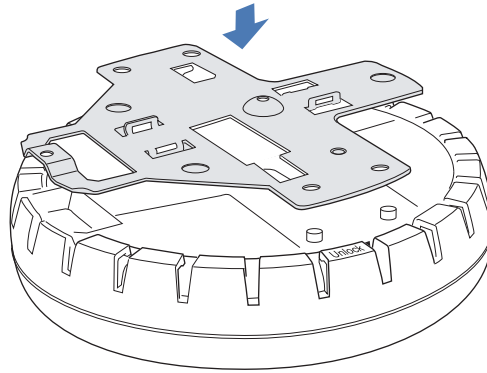
- b. Remove the bracket as shown in Figure 1-30 below.

Figure 1-30. Step 1b—Removing the Bracket



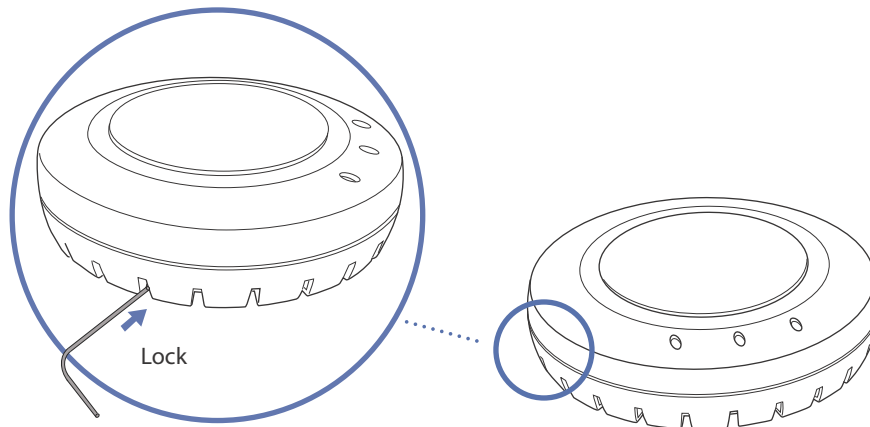
- c. Turn over the universal mounting bracket, then align the bracket over the cable ports and the four mounting posts as shown in Figure 1–31 below.

Figure 1–31. Step 1c—Turning Over the Bracket



- d. Once the bracket is fully seated, lock the bracket onto the MP by inserting the lock/unlock tool into the **Lock** hole on the MP as shown in below.

Figure 1–32. Step 1d—Locking the Bracket



2. Insert the Cat 5 cable into the connector.
3. Install the Kensington lock, if you plan to use one.
 - a. Loop the Kensington lock 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 MP.
 - d. Rotate the key right or left to secure the lock to the MP.
 - e. Pull on the lock to verify that it is secured to the MP.
 - f. Remove the key.

4. Place the MP in the desired location on the table.
5. If the MP requires an external antenna, install and connect the antenna.

Connecting an MP to an External Antenna

Each radio in an Indoor MP can use an optional Trapeze external antenna. To mount the antenna, see the instructions that come with the antenna.

To connect a mounted external antenna to an MP:

1. Attach the exterior antenna cable that is shipped with the antenna to the MP external antenna connector.

Both connectors are labeled to indicate the radio type. The MP has RP-SMA connectors for attachment to the 802.11b/g antenna and to the 802.11a antenna.



The external connectors on the MP are labeled: 11B/G and 11A (excluding the MP-522E which has numbered ports only). Each connector is a RP-SMA connector. Make sure you attach the antenna to the correct connector.



If the MP is installed in a Trapeze Networks outdoor MP enclosure, attach the antenna cable to the lightning surge arrester (if installed) or the RP-SMA bulkhead connector on the enclosure.

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

Installing an Indoor MP-522E

The MP-522E installation steps for ceiling or wall mount are the same as the MP-422/432/522 except that you must install and orient the four antennas on the MP before supplying power to the unit. The MP-522E has no internal antennas and requires antennas for all types of operation. Once the MP is installed on either the wall or ceiling with antennas attached you can switch between Radio 1 and 2 using the CLI command “set ap # radio x mode disable.”



Always install the four MP-522E antennas before supplying power to the MP. Failure to do so can cause damage to the unit.

The tested/certified antennas are equipped with Reverse-SMA or N-type jacks.

This device and its antenna(s) must not be co-located or operated in conjunction with any other antenna or transmitter.

The external connectors on the MP-522E are labeled 1, 2, 3, 6 on the housing. Each connector is a RP-SMA connector. Make sure you attach the antenna to the correct connector.

For products available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

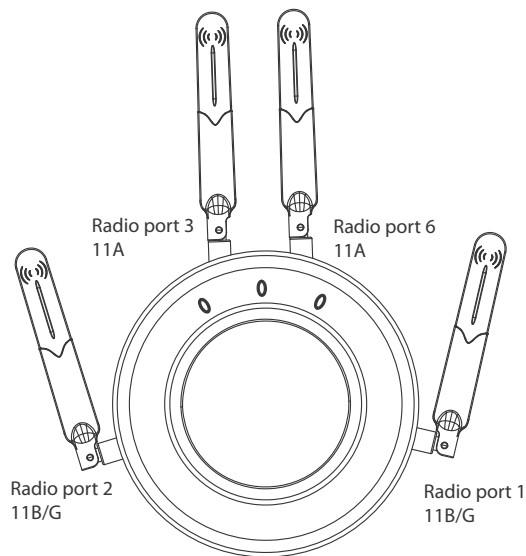
MP-522E Installation Antenna Orientation

Adjust the MP-522E antennas as shown below for optimal polarization.

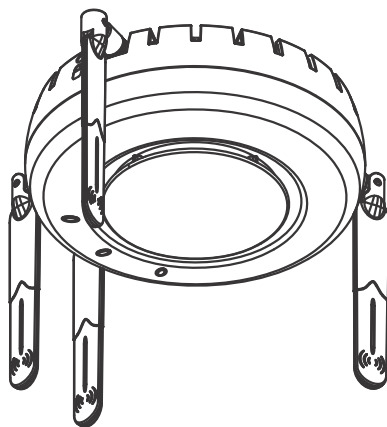


Always turn the paddle antenna clockwise while adjusting the antenna orientation in order to prevent loosening of the connector.

Wall Mount



Ceiling Mount



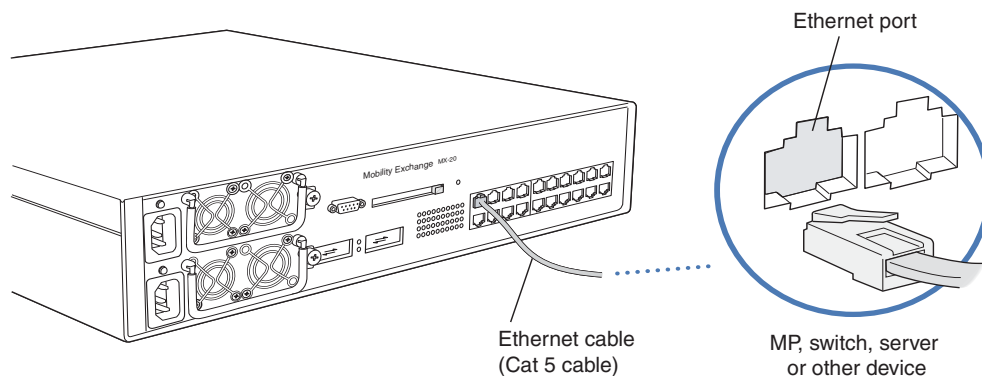
Connecting an MP to an MX

You can connect an MP directly to an MX or indirectly to the MX through an intermediate Layer 2 or Layer 3 network. If you are connecting the MP directly to an MX, use the following procedure to insert the cable into the MX and verify the link.

You can use the CLI or RingMaster to configure an MP connection. If you are installing the MP as a Mesh AP in a WLAN Mesh or wireless bridge configuration, you must configure the MP connection before deploying the MP in the final location. (See the *Mobility System Software Configuration Guide* or the *Configuration Guide*.)

Figure 1–33 below shows how to insert a Cat 5 cable into 10/100 Ethernet port on an MX. Refer to this figure as you perform the procedure.

Figure 1–33. 10/100 Cat 5 Cable Installation



1. Insert a Cat 5 cable with a standard RJ-45 connector as shown in Figure 1–33. For connection to an MP, use a straight-through cable.
2. When the link is activated, observe the MP LED for the port on the MX:

Configuring the MP

To configure the channels, power settings, and other MP parameters, see the following:

- *Trapeze Mobility System Software Quick Start Guide*
- “Configuring MP Access Points” chapter in the *Trapeze Mobility System Software Configuration Guide*

External Antenna Connectors

The Indoor MPs (except for the MP-82 and MP-432) have connectors for attaching optional external antennas. **Table 1–3** below lists the Trapeze-supported external antenna models.



The numbers in parentheses in the table below are the numbers that appear on the back of an 802.11a antenna reflector plate. To verify an 802.11a external antenna model number, look for the number in parentheses



The MP-82 has three external antenna connectors, but external antennas are not supported at this time.

Table 1- 4. Trapeze External Antenna Models MP-422 Only

Model	Type	Gain	Beamwidth	
			Horizontal	Vertical
ANT-7360	802.11a	8 dBi	360°	15°
	802.11b/g	6 dBi	360°	25°
ANT-7360-OUT	802.11a	8 dBi	360°	15°
	802.11b/g	6 dBi	360°	22°
ANT-5060 (ASTN6S)	802.11a	14.5 dBi	60°	14°
ANT-5120 (ASTN6T)	802.11a	12.5 dBi	120°	14°
ANT-5180 (ASTN6H)	802.11a	10.8 dBi	180°	14°
ANT-1060	802.11b/g	10 dBi	60°	65°
ANT-1120	802.11b/g	7 dBi	120°	60°
ANT-1180	802.11b/g	6 dBi	180°	40°



The Indoor MP radios are certified for use only with these external antennas.



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