

MTCDTIP Hardware Installation Guide

MultiConnect® Conduit™ IP67 Base Station



Warning and Caution

Warning and Caution symbols mean potential danger. You are in a situation that could cause bodily injury. Before working on any equipment, be aware of hazards in the installation area and be knowledgeable about electrical circuitry. Be familiar with standard practices for preventing accidents.

For translations of key cautions and warnings, go to <http://www.multitech.net/developer/basestation>.

WARNING: Only trained and qualified personnel should install, replace, or service this equipment. Installation must comply with local and national electrical codes.

- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- Disconnect PoE power (Ethernet PoE port) before servicing IP67 Base Station.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This device is not designed or approved to be used in any Hazardous Locations. Do not install or operate device if area is known to be an explosive environment.
- Externally ground this equipment using a customer-supplied ground wire before applying power. Contact an electrician if you are uncertain that suitable grounding is available. Refer to *Installing the Ground Wire* instructions.
- All wall mounting installations are subject to the acceptance of local jurisdiction.
- Do not locate antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes.

CAUTION:

- Power over Ethernet (PoE) Certification does not apply or extend to voltages outside of standard PoE range. Any PoE voltages beyond 0vdc to 60Vdc have not been evaluated by UL or MULTITECH. Nominal PoE voltage is 48Vdc. The end user supplies the PoE cable. This cable must be suitable for outdoor location. This is an 802.3at Type 2 device. For more information, refer to the MultiConnect Conduit IP67 Base Station PoE Application Note (S000678).
- Ethernet port is not designed to be connected to a public Telecommunication (PSTN) or any other connection other than IEEE 802.3-2012 power over Ethernet devices.
- Do not remove product labels.

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WARNING! HOT SURFACE DO NOT TOUCH

Note: This symbol is included on the serial label. UL evaluated this device to a safety and outdoor certification temperature of -30c to +85c. Operating temperature is -40c to +70c.

MultiConnect Conduit IP67 Base Station
Part Number: 82102800L, Version 1.2
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MultiConnect Conduit IP67 Base Station

Use the MultiConnect Conduit IP67 Base Station (MTCDTIP) to deploy gateways in the field.

CAUTION: Read installation instructions and safety information before starting Base Station installation. Do not connect power until directed to do so. If you do not install the accessories when you install the Base Station, cover the LoRa connectors to keep them dry.

IMPORTANT: Do not attempt to disassemble the Base Station. There are no serviceable parts. Opening the enclosure without authorization may void the warranty.

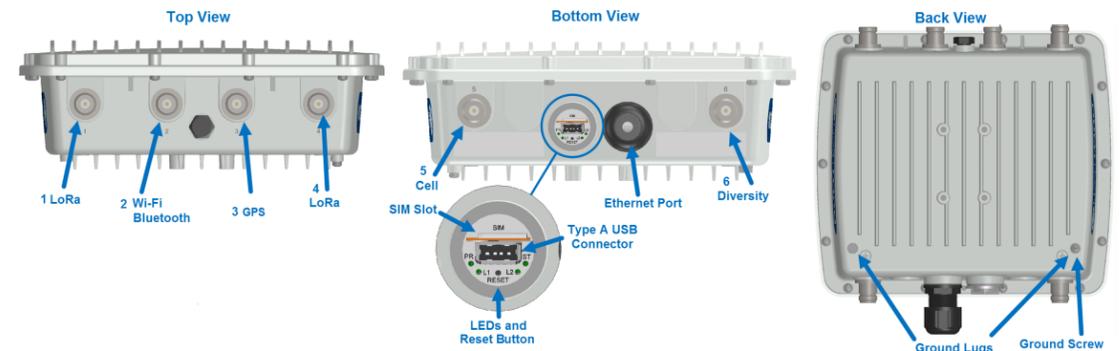
Package Contents

Note: Package contents vary by model.



| Item | Description | Quantity |
|------|---|------------------------------------|
| 1 | MTCDTIP Base Station | 1 |
| | Mounting bracket | 1 |
| 2 | M5 x 10mm screws, washers and split washers (shown in the mounting bracket) | 4 each |
| 3 | ¼ x 1 inch screws and anchors | 4 each |
| 4 | Hose clamps | 2 |
| 5 | GNSS antenna | 1 with GNSS models only |
| 6 | LoRa antennas | 1 or 2 depending on the model |
| 7 | LTE antennas | 2 with LTE models only |
| 8 | Wi-Fi antenna | 1 with Wi-Fi/Bluetooth models only |
| 9 | Installation Guide | 1 |

Connector Locations



LEDs

| Label | LED | Description | Label | LED | Description |
|-------|--------|---|-------|--------|---------------------------------------|
| PR | Power | Green when powered up. | L1 | LoRa 1 | These are user-defined. Red or green. |
| ST | Status | Red with blinking green. These are user programmable. | L2 | LoRa 2 | |

Additional Documentation

For additional documentation including hardware specifications, PoE application notes, and steps for using AEP, mLinux, and LoRa, go to www.multitech.net/developer/basestation. If this document has been updated, the update will be available at that location.

Requirements

In addition to the Base Station and included accessories, you will need:

- 1 - PoE Injector. For requirements, refer to *MultiConnect Conduit IP67 Base Station PoE Application Note* (S000678).
- 1 - Cat 5 or greater Ethernet cable rated for outdoor use.
- 1 - Micro SIM (3FF) card for LTE models. MultiTech recommends using a SIM card rated for the climate where the device will be installed.
- 1 - 14awg or larger ground wire with a closed loop terminal. For details, go to *Installing a Ground Wire* in this document.
- 1 - Phillips screwdriver.

Related Accessories

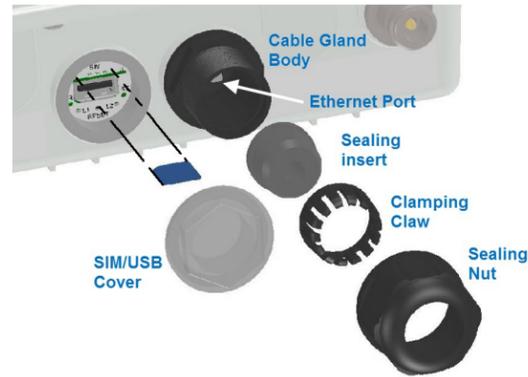
PoE injectors, higher gain LoRa antennas, lightning arrestors, and antenna accessories are available through www.multitech.com/ip67.

Note: All antennas can be directly mounted on the Base Station; however, you can mount LoRa antenna(s) up to 5 feet away from the Base Station if necessary for your location.

Installing a Micro SIM Card

To install a SIM card:

1. Remove the SIM/USB cover. The SIM holder is above the USB port.
2. Gently push the micro SIM card into the holder with the cut corner to the right and the SIM contacts facing towards the USB port as shown.
3. Reattach the plastic cover and tighten to 10.5 lbf.in (12 kgf.cm).



Installing a Ground Wire

Proper grounding of the metal enclosure is required to ensure safety. There are two ground lugs and one ground screw located on the enclosure back as shown in the *Back* image (under *Connector Locations*). Connecting a ground lug to an earth ground is the recommended method. Refer to the National Electric Code or your local codes for additional information or contact a licensed electrician for assistance in grounding an installation.



Ground wire (not provided) must be suitable for outdoor location and meet a minimum wire gauge of 14awg or larger. Use the supplied ground screw to fasten wire.

Ground wire terminal (not provided) must be closed loop (ring type, see image right) and corrosive free in design. Insert screw through loop terminal and fasten to 15 lbf.in (17.28 kfg.cm).

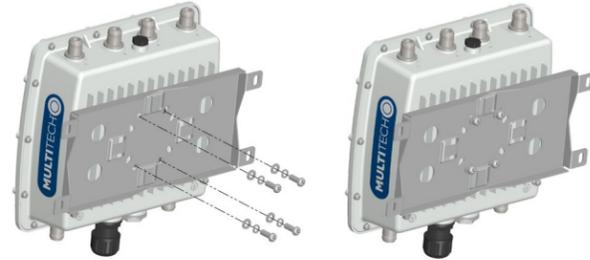


You can use either ground lug with the ground screw to connect the ground wire to the enclosure.

Attaching the Mounting Bracket

To attach the mounting bracket to the Base Station:

- Attach the bracket to the back of the Base Station using the supplied screws and washers as shown (right).



Mounting on a Pole

To attach the Base Station on a pole:

- Attach the Base Station to the pole using the supplied hose clamps as shown below.



Mounting on a Wall

To mount the device on a wall:

- Use the four bracket tabs to attach the Base Station to the wall with the supplied screws and anchors as shown below.



Attaching Antennas

After mounting the Base Station:

Note: All antennas should be finger-tightened plus a quarter turn.

1. For LTE models, attach the LTE cellular antennas to the Cell (5) and Diversity (6) connectors on the bottom of the Base Station.
2. Attach the GPS antenna to the GPS (3) connector on the top of the Base Station.
3. For Wi-Fi/Bluetooth models, attach the Wi-Fi antenna to the Wi-Fi (2) connector on the top of the Base Station.
4. Attach the LoRa antenna(s) to the LoRa (1) and (4) connectors at the top of the Base Station. If only one LoRa antenna, install on LoRa (1) connector.

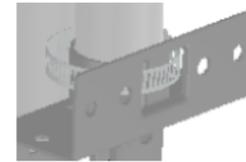
If attaching LoRa antennas away from the Base Station, go to *Attaching LoRa Antennas via Cable*.

5. Go to *Connecting Ethernet* for steps on connecting the Base Station to power and Ethernet.



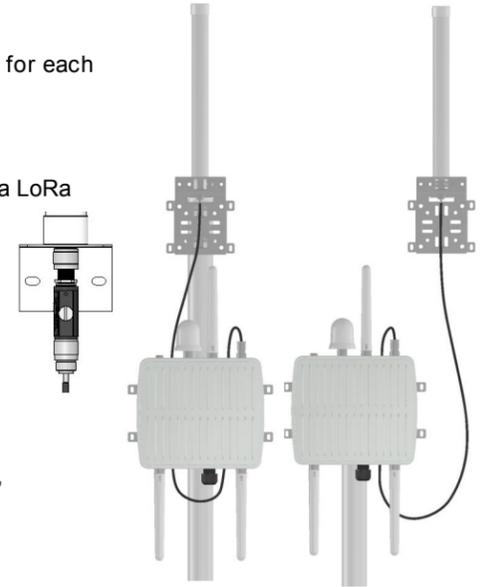
Attaching LoRa Antennas via Cable

Recommended for this option: Lightning arrester, coaxial cable, and mounting bracket for each LoRa antenna. Refer to *Related Accessories* for details.



After attaching other antennas:

1. Use an antenna hose clamp to attach the antenna bracket to a LoRa antenna.
2. Attach the lightning arrester (optional) to the antenna as shown (right).
3. Attach coaxial antenna cable to the lightning arrester.
4. For a pole mount, use hose clamps to mount the antenna mounting bracket to the pole. For a wall mount, attach the antenna bracket to the wall using the four tabs on the bracket.
5. If you have a second LoRa antenna, repeat Steps 1 – 4 for the second LoRa antenna.
6. Attach the antenna cable to the LoRa (1) connector. If you have a second LoRa antenna, connect to the second LoRa (4) connector.



Connecting Ethernet

Note: This is an 802.3at Type 2 device. It needs a power input of at least 25W from standard 802.3at PoE input. For more information refer to *MultiConnect Conduit IP67 Base Station PoE Application Note* (S000678).

To connect your Ethernet cable and PoE injector:

1. Remove the sealing nut, clamping claw, and sealing insert.
2. Thread the Ethernet cable (not provided) through the sealing nut
3. Wrap the sealing insert around the cable and the clamping claw over the sealing insert.
4. Plug the Ethernet cable into the Ethernet port.
5. Push the seal and clamping claw into the cable gland body.
6. Push the sealing nut over the insert and clamping claw and tighten on the cable gland body to 10.5 lbf in (12.0 kgf cm).

Best Practices

We recommend covering all connections with a rubber insulating tape, such as 3M's130C. Although the Base Station is rated IP67, taping provides additional protection against environmental particulates.

Next Steps

After connecting and powering up the Base Station, refer the *MultiConnect Conduit Base Station IP67 Getting Started Guide* (S000665) for help configuring for your device. AEP, mLinux, and LoRa information is available at www.multitech.net/developer/basestation.

Regulatory Information

This device complies with Part 15 of the FCC rules and with ICES-003 of industry Canada for a Class A digital apparatus. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference that may cause undesired operation.

MultiTech declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The declaration of conformity may be requested at <https://support.multitech.com>.

Safety Instructions

For safety and to achieve a good installation, please follow these safety precautions:

- Consider safety and performance when selecting an installation site. Remember electric power lines and phone lines look alike. Assume that any overhead line can cause bodily harm or death.
- Call your power company and ask them to look at your proposed installation. This is important if raising a mast or tower.
- When installing the device:
 - Do not use a metal ladder.
 - Do not work on a wet or windy day.
 - Dress properly—shoes with rubber soles and heels, rubber gloves, long-sleeved shirt or jacket.
- If any part of the antenna system comes in contact with a power line, do not touch it or try to remove it yourself. Call your local power company. They will remove it safely. If an accident occurs, call for emergency help immediately.