MTCDTIP2 Hardware Installation Guide

Conduit® IP67 Base Station 200 Series

MULTITECH

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.

Pour une traduction en français, reportez-vous à PoE Safety dans le Guide du matériel. For other translations of key cautions and warnings, refer to the *Conduit IP67 Series 200 Base Station MTCDTIP2 Hardware Guide* for your model available at www.multitech.com/brands/conduit-ip67-200.

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 the 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. Failure to properly ground the device voids the warranty. 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. PoE range for the MTCDTIP2 is 42.5-57 VDC. Any PoE voltages outside this range have not been evaluated by UL or MULTITECH. The end user supplies the PoE cable. This cable must be suitable for an outdoor location. This is an 802.3at Type 2 device. For more information, refer to the 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.

Conduit IP67 Base Station 200 Series
Models: MTCDTIP2-EN-B11EKP-Lxx MTCDTIP2-L4E1-B11EKP-Lxx,
Part Number: 82130901L

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Conduit IP67 Base Station 200 Series

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.

1 - MTCDTIP2 Base Station 1 - LoRa Antenna 1 - Installation Guide

Requirements

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

1 - PoE Injector. For requirements, refer to *Conduit IP67 Base Station PoE Application Note* (S000678).

1 - Cat 5 or greater Ethernet cable rated for outdoor use with a diameter between 5.5 and 7 mm and no cable strain relief/jacket. Select an Ethernet cable suitable for your installation, such as a cable rated for burial or extreme temperatures. Other considerations include rodent resistant, a spline to keep the cable from being crushed, and a shielded cable to reduce EMI/ESD.

1 - Micro SIM (3FF) card (*LTE models only*). MultiTech recommends using a SIM card rated for the climate where the device will be installed.

1 - 14 AWG 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, mounting kits, lightning arrestors, and accessories are available through https://www.multitech.com/brands/conduit-ip67-200

Note: The LoRa antenna can be directly mounted on the Base Station or up to 5 feet away if necessary for your location.

Lightning and ESD Protection

Lightning strikes are a risk for any outdoor installation. Use industry standard practices for lightning protection. For more information, refer to the National Fire Protection Agency's "*Standard for Installation of Lightning Protection System*" (NFPA 780).

Outdoor Ethernet cables subject to air movement generate electrostatic discharge (ESD). Using a shielded and properly grounded Ethernet cable helps prevent damage to your device.

Recommendations to protect equipment from surge and over-voltage:

- PoE surge protector suitable for your cable and installation.
- Shielded and grounded Ethernet cable, if installation is subject to air movement.
- Proper grounding, refer to the *Installing a Ground Wire*.

Safety Instructions

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

- Consider safety and performance when selecting an installation site. Exercise caution when working near power lines. Remember electric power lines and phone lines look alike. Assume that any overhead line can cause bodily harm or death. If burying cable, verify that it is safe to dig before doing so.
- 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 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.

IMPORTANT: Refer to *Warnings and Cautions* on the back page for additional information.

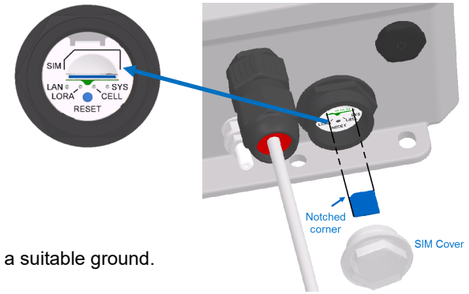
Connector Locations

#	Connector	Description
1	Ethernet Port	Ethernet port with IP67 rated cable gland.
2	Grounding Lug	Connector for ground wire.
3	SIM Slot and LEDs	Under a plastic cover, for all models, LEDs and reset button. For cellular models, a SIM holder.
4	LoRa	Connector for LoRa antenna.

Installing a Micro SIM Card (*Cellular models only*)

To install a SIM card:

1. Remove the SIM cover.
2. Gently push the micro SIM card into the holder with the cut corner to the left and the SIM contacts facing down as shown.
3. Reattach the plastic cover and tighten to 10.5 lbf.in (12 kgf.cm).



Installing a Ground Wire

WARNING: This device MUST be grounded. Never operate the device without a suitable ground. Failure to properly ground the device voids the warranty.

Proper grounding of the enclosure is required to ensure safety and prevent equipment damage.
The device enclosure has a grounding lug on the bottom (#2 in Connector Locations). Connecting the grounding lug to an earth ground is required. Refer to the National Electric Code or your local codes for additional information or contact a licensed electrician for assistance in grounding an installation.

WARNING: When installing or replacing the unit, the ground connection must always be made first and disconnected last.

Ground wire (not provided) must be suitable for outdoor location and meet a minimum wire gauge of 14 AWG or larger. Ground wire terminal (not provided) must be closed loop (ring type, see image right) and corrosive free in design.

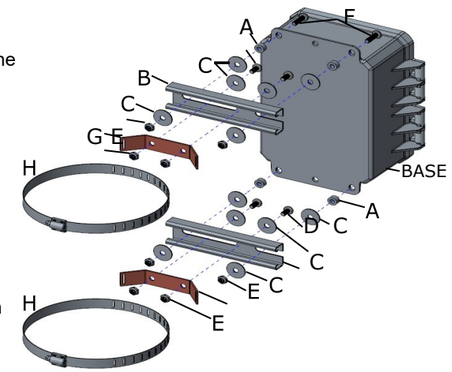
1. Remove the nut on the grounding lug.
2. Put the loop terminal on the grounding lug.
3. Run the ground wire to a safe earth ground location where the energy can be dispersed.
4. Replace the nut and tighten to 10 in-lbs (11.5 kg.cm).

IMPORTANT: If using a PoE surge protector, lightning arrestor and/or shielded cable, ensure they are also properly grounded.

Mounting on a Pole

You will need a mounting kit. MultiTech has mounting kits for a variety of pole sizes. The pole should be made of a corrosive free material with UV protection and able to support four times the weight of the MTCDTIP2 with accessories attached.

	Description	QTY		Description	QTY
A	Spacer, ¼”	4	E	Nylon Nut, ¼-20	8
B	Strut Rails	2	F	Pan Head Screws, ¼-20 X ⅞”	4
C	Fender Washer, ¼”	12	G	Band Clamp Bracket	2
D	Pan Head Screws,¼-20 X ½”	4	H	Hose Clamp	2



1. Attach band clamp brackets (G) through slots in strut rails (B) and secure with pan head screws (D), fender washers (C), and nylon nuts (E) (x4).Torque to 32 in-lbs (36.8 kg-cm) max.
2. Install pan head screws (F) through slots in enclosure base (x4). Align spacers (A) and fender washers (C) over 7/8” screw length sticking through at the rear of the MTCDTIP2. Attach strut rail sub assembly to the MTCDTIP2 securing with fender washers (C) and nylon nuts (E). Torque to 32 in-lbs (36.8 kg-cm) max.
3. Feed hose clamp (H) through slots in band clamp (G) (x2).
4. Wrap hose clamps around pole and tighten.

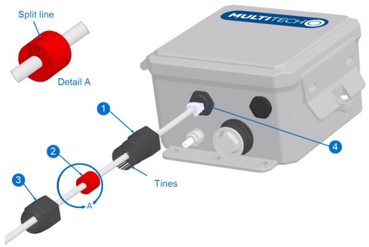
Mounting on a Wall

The location should be able to support four times the weight of the MTCDTIP2 with accessories attached. To mount the device on a wall:

- Use ¼ inch x 1¼ inch (minimum length) screws in the mounting holes tabs on the chassis. Use with wall anchors if necessary.

Connecting the Ethernet Cable

#	Connector	#	Connector
1	Cable Gland Body	3	Cable Gland Nut
2	Cable Gland Seal	4	Ethernet Port Threads



To connect the Ethernet cable to the device:

Note: For power, the Ethernet cable needs to be connected to a POE injector.

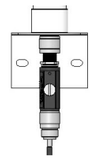
CAUTION: Disconnect power before mounting or working on the device.

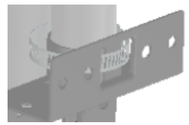
1. Slide the cable gland nut and the cable gland body onto the cable and plug the cable into the Ethernet port as shown.
2. Install the cable gland body and then tighten to a torque specification of 10 in-lbs (11.5 kg.cm) or firmly by hand.
3. Pull the cable gland seal apart at the split line and install it onto the cable as shown.
4. Push the cable gland seal into the cable gland body on the end with the tines.
5. Install the cable gland nut onto the cable gland body threads and then hold the cable gland body while tightening the cable gland nut to a torque specification of 10 in-lbs (11.5 kg.cm) or firmly by hand.

Note: Do not over tighten the cable gland body or the cable gland nut. A seal that is overtightened will aid in water ingress. Follow recommended torque specifications.

Attaching the Antenna

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





To attach the LoRa antenna directly to the device:

- Attach the antenna to the connector at the top of the Base Station.

To attach the a LoRa antenna via a cable:

1. Use an antenna hose clamp to attach the antenna bracket to a LoRa antenna.
2. Attach the lightning arrestor (recommended) to the antenna as shown (right).
3. Attach a coaxial antenna cable to the lightning arrestor.
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. Attach the antenna cable to the LoRa connector.

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 and Additional Documentation

Connect the Ethernet cable to the PoE injector. After connecting and powering up the Base Station:

- For mPower models, refer to S000727 mPower Software Guide at www.multitech.net/developer/basestation

For additional documentation, find your model at www.multitech.net/developer/basestation.

- **Conduit IP67 Base Station Hardware Guide**
- **AT Command Reference Guide:** *For LTE models only*, model specific.
- **POE Application Note**: Includes standards, recommendations, and troubleshooting.

Regulatory Information

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. Additional regulatory information is in the hardware guide.