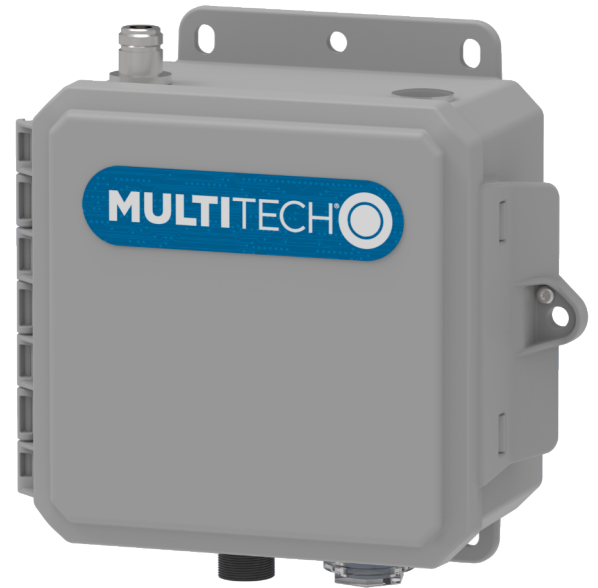
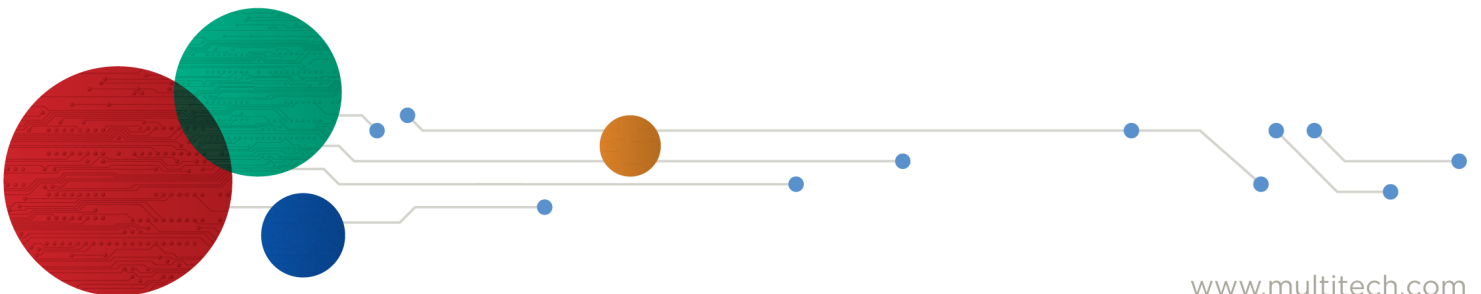




Conduit® IP67 Series 200 Base Station

MTCDTIP2 Hardware Guide



Conduit IP67 200 Series Base Station Hardware Guide

Models: MTCDTIP2-LNA3-B11UKP-L1L, MTCDTIP2-LNA3-B11UKP-L1M, MTCDTIP2-EN-B11UKP-L1M, MTCDTIP2-EN-B11UKP-L1L

Part Number: S000778 Version 1.0

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Contacting MultiTech

Knowledge Base

The Knowledge Base provides immediate access to support information and resolutions for all MultiTech products. Visit <http://www.multitech.com/kb.go>.

Support Portal

To create an account and submit a support case directly to our technical support team, visit: <https://support.multitech.com>.

Support

Business Hours: M-F, 8am to 5pm CT

Country	By Email	By Phone
Europe, Middle East, Africa:	support@multitech.co.uk	+(44) 118 959 7774
U.S., Canada, all others:	support@multitech.com	(800) 972-2439 or (763) 717-5863

Warranty

To read the warranty statement for your product, visit <https://www.multitech.com/legal/warranty>. For other warranty options, visit www.multitech.com/es.go.

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Chapter 1 – Product Overview

The MultiTech Conduit® IP67 200 Series Base Station (MTCDTIP2) is a ruggedized IP67 Base Station connecting thousands of IoT assets to the cloud using the LoRaWAN® protocol. This highly scalable and certified IP67 solution is capable of resisting the harshest environmental factors including moisture, dust, wind, rain, snow and extreme heat, supporting LoRaWAN applications in virtually any environment.

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

Build Options

Model	Description
MTCDTIP2-EN-B11UKP-L1M	Ethernet only mPower Programmable Base Station, 8-channel, 915 MHz with external LoRa antenna.
MTCDTIP2-EN-B11UKP-L1L	Ethernet only mLinux Programmable Base Station, 8-channel, 915 MHz with external LoRa antenna.
MTCDTIP2-LNA3-B11UKP-L1M	LTE Cat 1 mPower Programmable Base Station, 8-channel, 915 MHz with external LoRa antenna and internal cellular antenna. (AT&T/Verizon)
MTCDTIP2-LNA3-B11UKP-L1L	LTE Cat 1 mLinux Programmable Base Station, 8-channel, 915 MHz with external LoRa antenna and internal cellular antenna. (AT&T/Verizon)

Documentation Overview

The following documents are available at <https://www.multitech.com/brands/conduit-ip67-200>. Select your model to find the documents specific for that device.

Document	Description	Part Number
Conduit IP67 Series 200 Base Station Hardware Guide for MTCDTIP2 North America	This document. Includes hardware, regulatory, and safety information.	S000778
mPower Software Guide	<i>For mPower models only.</i> Includes steps for configuring and using devices using the mPower platform.	S000727
Conduit IP67 Series 200 Base Station MTCDTIP2 Installation Guide	Steps for getting started with hardware. Ships with the device and is available online.	821030900L
Telit LE910 AT Commands Reference Guide	For LNA3 devices, lists AT Commands and parameters used to communicate with your device.	80407ST10116A

Developer Documentation

Our developer site includes information for the mLinux platform, advanced mPower information, and LoRa information.

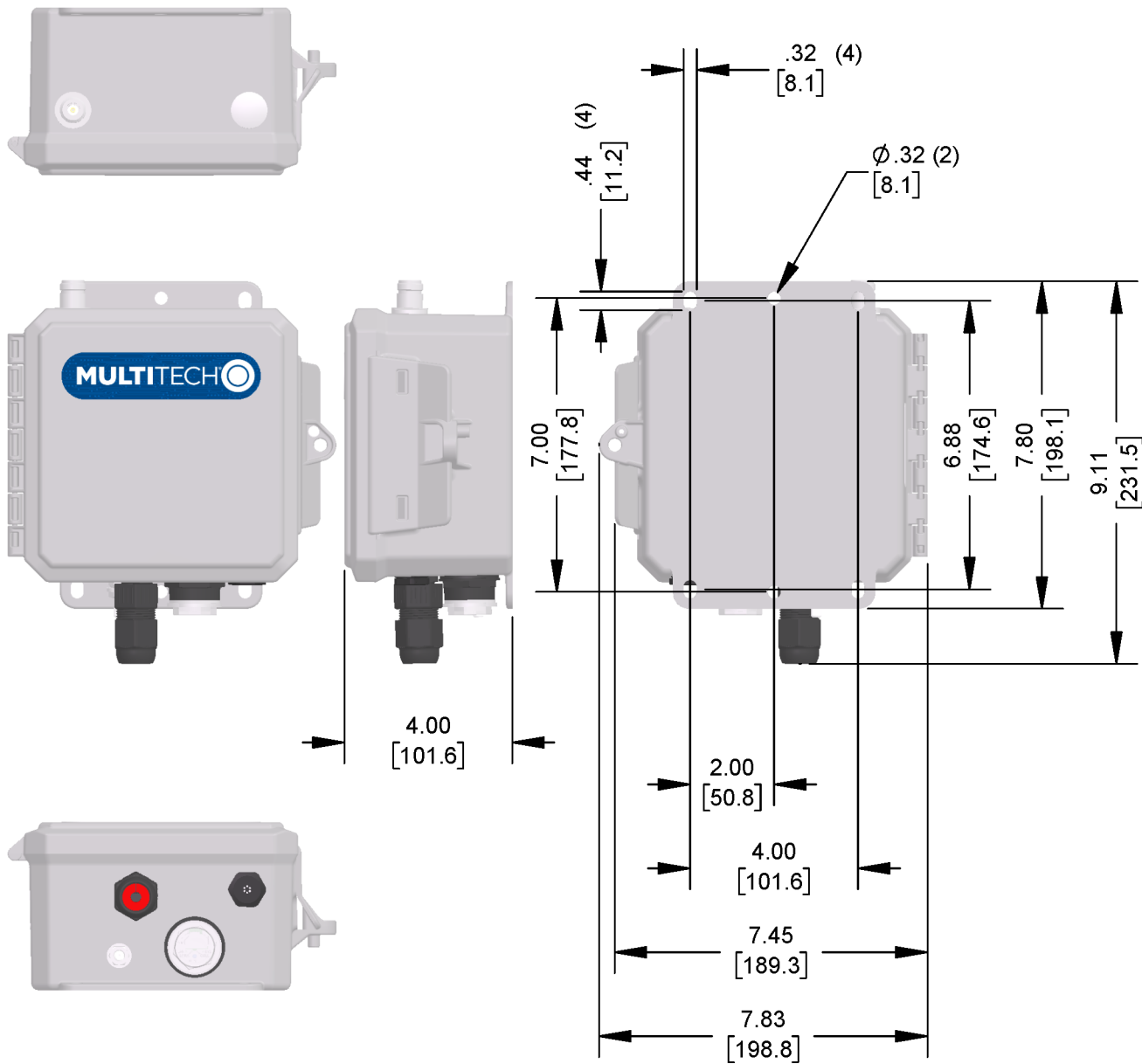
- For mLinux getting started and advanced information, go to <http://www.multitech.net/developer/software/mlinux/>
- For advanced mPower information, go to <http://www.multitech.net/developer/software/aep/>
- For LoRa information, <http://www.multitech.net/developer/software/lora/>

Power over Ethernet (PoE)

For information on using and troubleshooting PoE, refer to the PoE Application Note <https://www.multitech.com/documents/publications/application-notes/S000678.pdf>

Chapter 2 – Specifications and Related Information

Dimensions



DIMENSIONS IN In [mm]

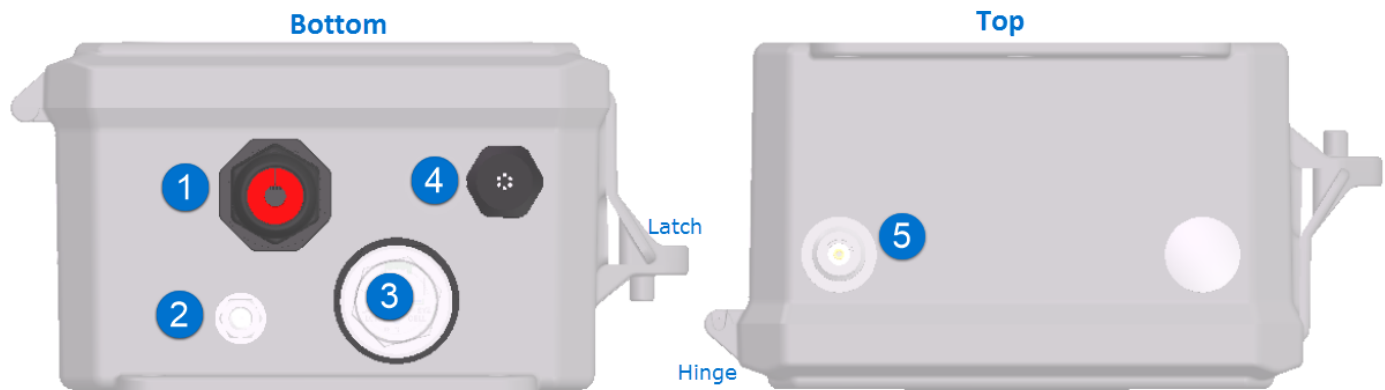
Specifications

Category	Description
General	
Standards	LoRaWAN 1.0.2 specifications
	LTE 3GPP Release 9 (<i>-LNA3 models only</i>)
	HSPA+ (<i>-LNA3 models only</i>)
RAM	256MB
Flash	256MB
Radio Frequency (<i>-LNA3 models only</i>)	
ISM Band	915 MHz ISM band for US and Canada
4G/LTE	1900 (B2) / AWS 1700 (B4) / 850 (B5) / 700 (B12/13)
3G	1900 (B2) / 850 (B5)
Physical Description	
Weight	2.09 lbs (0.95 kg)
Dimensions	Refer to Mechanical Drawings for Dimensions.
Chassis Type	IP67-Rated composite
Environment	
Operating Temperature ¹	-40° C to +70° C
Storage Temperature	-40° C to +85° C
Humidity	20%-90% RH, non-condensing
Power Requirements	
PoE Input Power	42.5 to 57 VDC with Ethernet speed 10/100
PoE Standard:	IEEE 802.3at
Minimum Watts	15W (Minimum watts required to run the device)
Certifications and Compliance	
Outdoor Certification/IP Outdoor Protected Class	UL/CSA 60950-22 & IP67
EMC and Radio Compliance	FCC Part 15B (Class A)
	FCC Part 15C
	FCC Part 22 24, 27
	ICES-003 Class A
	ISED. RSS-247 Issue 2 (Canada)

Category	Description
Safety Compliance	UL 62368-1 2nd Ed
	cUL 62368-1 2nd Ed
	UL 60950-1
	cUL 60950-1

¹Product has been tested to +70° C excluding PoE supply. PoE supply temperature rating and operation depend on the environment where the PoE supply is located. The selected PoE supply must be designed and certified to limit power source (LPS) and meet MTCDTIP2 power ratings.

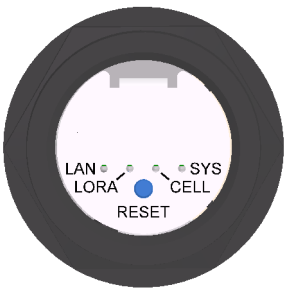
LEDs and Connectors



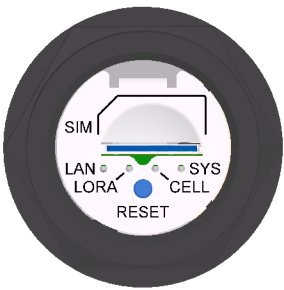
#	Connector	Description
1	Ethernet Port	Ethernet port with IP67 rated cable gland.
2	Grounding Lug	Connector for ground wire.
3	SIM Slot and LEDs	Under a plastic cover, for all models, LEDs. For cellular models, a SIM holder. (See Cellular models image under LEDs for more detail.)
4	Vent Valve	Protective breathable vent plug.
5	LoRa	Connector for LoRa antenna.

Important: DO NOT block the vent valve.

LEDs



LoRa only models



Cellular models

Label	Description
LAN	Lights when Ethernet is connected. Blinks when there is data.
LORA	Lights when LoRa software is active.
SYS	Blinks when operating system is fully loaded.
CELL	<i>Cellular models only.</i> Lights when there is power to the radio. Blinks when the SIM is registered with the carrier.

Reset Button

You need:

- A slim screwdriver (1 or 2mm), paperclip, or similar thin object that can fit into the reset hole.

The following is the default condition for the RESET button on the device. You can program a change to the behavior of the button if needed. To reset the device:

1. Remove the clear plastic cap.
- 
2. Find the hole labeled RESET. The reset button is recessed.
 3. Use the screwdriver or paperclip to press and release the RESET button as follows:
 - To reboot, press RESET for less than 3 seconds.
 - To reboot and restore user-defined defaults (if previously set), press RESET for 3 to 29 seconds.
 - To reboot, restore factory settings, and erase user-defined defaults, press RESET for 30 seconds or longer.
 4. Reattach the plastic cover and tighten to 10.5 lbf.in (12 kgf.cm).

Note: The device reboots when restoring settings.

Power Measurements

Cellular Power Measurements

Note:

- Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into the power source when determining product load.
- **Maximum Power:** The continuous current during maximum data rate with the radio transmitter/LoRa at maximum power.
- **Tx Pulse:** The average peak current during HSDPA/LTE connection with LoRa at Max power.
- **Inrush Charge:** The total inrush charge at power on.

Voltage	Power Down Mode via Radio Command	Live Connection Idle (No Data)	Average Measured Current at Max Power	TS Pulse Average Peak Current for HSDPA/ LTE	Total Inrush Charge measured in MilliCoulombs	Total Inrush Charge DURATION during Powerup (INRUSH Duration0
LTE BAND 5 (836.5 Mhz)						
38VDC POE	47 mA	59 mA	171 mA	328 mA	1.52 mC	32.8 mS
56VDC POE	36 mA	49 mA	125 mA	252 mA	1.21 mC	21.6 mS
WCDMA Band 2 1854 MHz						
38VDC POE	46 mA	52 mA	210 mA	368 mA	1.52 mC	32.8 ms

Voltage	Power Down Mode via Radio Command	Live Connection Idle (No Data)	Average Measured Current at Max Power	TS Pulse Average Peak Current for HSDPA/ LTE	Total Inrush Charge measured in MilliCoulombs	Total Inrush Charge DURATION during Powerup (INRUSH Duration0)
56VDC POE	36 mA	47 mA	151 mA	220 mA	1.21 mC	21.6 mS

Ethernet Models

Note:

- Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into the power source when determining product load.
- **Maximum Power:** The continuous current during maximum data rate with the LoRa at maximum power setting.
- **Tx Pulse:** The average peak current during LoRa transmission.
- **Inrush Charge:** The total inrush charge at power on.

Voltage	Idle Measure	Average Measured Current at Max Power	TS Pulse Average Peak Current for HSDPA/ LTE	Total Inrush Charge measured in MilliCoulombs	Total Inrush Charge DURATION during Powerup (INRUSH Duration0)
37VDC POE	49 mA	96 mA	260 mA	0.818 mC	7.61 mS
57VDC POE	34 mA	71 mA	140 mA	0.962 mC	7.70 mS

Chapter 3 – Antennas

Antenna

Depending on the model, your Base Station ships with one of the following antennas.

Important: Only use the MultiTech provided antenna. Using another antenna violates the FCC authorization.

Due to FCC 15.203 regulations, the MTCDTIP2 requires installation by a professional, to insure the integrity of the radio transmission system. The authority to operate the LoRa transmitter will be void if using antennas other than the ones listed in the following table. Contact MultiTech for additional antenna information.

Manufacturer	Model	Description
L-Com	HGV-906U	6dBi Gain IP67 Lora Antenna
Pulse	RO8063/21704NM	3dBi Gain IP67 Lora Antenna

ISED Antenna Approval

This radio transmitter 125A-0058 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio 125A-0058 a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

L-com Omnidirectional Antenna

Manufacturer:	L-com
Description:	Hyperlink Wireless 800/900 MHz 6dBi High Performance Omnidirectional antenna
Model Number:	HGV-906U

Antenna Specifications

Category	Description
Frequency Range	824-960 MHz
VSWR	< 1.5:1 Avg
Gain, Maximum	6.0 dBi $\pm$ 1 dB
Polarization	Vertical
Impedance	50 Ω
Max. Input Power	100 Watts
Horizontal Plane	360°
Vertical Plane	30°

Category	Description
Dimensions	23.6 inches (599.44 mm) x 1.3 inches (50.8 mm)
Rated Wind Velocity	108 MPH

Pulse Omnidirectional Antenna

Manufacturer:	Pulse
Description:	Omnidirectional antenna 806-960/1710-2170 MHz radome
Model Number:	RO8063/21704NM



Antenna Specifications

Category	Description
Frequency Range	806-960 MHz
	1710-2170 MHz
VSWR	2.5:1 Max
Gain, Maximum	3.0 dBi $\pm$ 1 dB at 806-960 MHz
	4.0 dBi $\pm$ 1 dB at 1710-2170 MHz
Polarization	Vertical
Impedance	50 Ω
Radiation Pattern	3 dB Beamwidth
Horizontal Plane	Omni
Vertical Plane - 806-960	53° Avg
Vertical Plane – 1710-2170	39° Avg
Dimensions	15.28 inches (388.5 mm) x 1.45 inches (36.9 mm)

Chapter 4 – Labels

Note: Actual labels vary depending on the regulatory approval markings and content.

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.

The label shown is not the actual size.

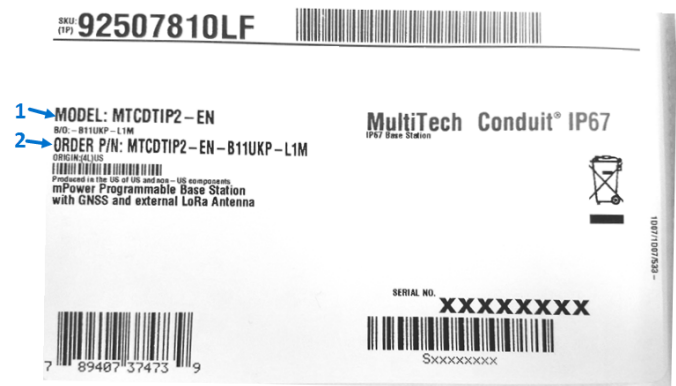
- 1 - MultiTech Model Identification.
- 2 - MultiTech Ordering Part Number.
- 3 - Device Node Number
- 4 - IMEI Number
- 5 - UUID

Label images are not actual size.

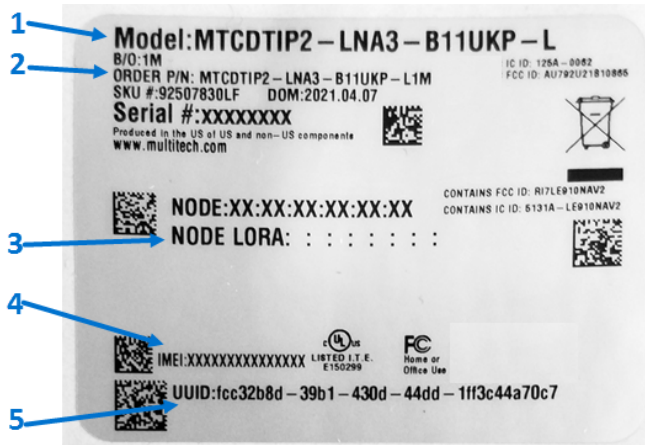
Device Label



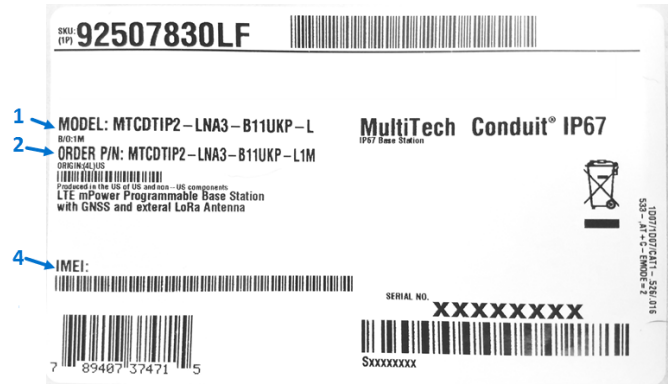
Package



Device Label



Package



Chapter 5 – Safety Notices

PoE Safety



Warnings and



Cautions

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.



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

Classification of use by: Skilled person.

- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- 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 in the *Installation Guide*.
- Disconnect PoE power (Ethernet PoE port) before servicing the device.
- 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.
- 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. If the cable is to be used outdoors, the cable must be certified for outdoor location.

- Recommended PoE: 802.3at-compliant Type 2 Class 4 Power-over-Ethernet (PoE) Powered Devices (PDs) and require PoE Power Supply Equipment (PSE) that is 802.3at-compliant with minimum 25.5W output power capability.
- This is an 802.3at Type 2 device. For more information, refer to the *Conduit 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.

Avertissement et mises en garde

Les symboles d'avertissement et de mise en garde indiquent un danger potentiel. Vous vous trouvez dans une situation qui peut entraîner des blessures corporelles. Avant de travailler sur un équipement, vous devez être conscient des dangers potentiels dans la zone d'installation et connaître les circuits électriques. Familiarisez-vous avec les pratiques normalisées de prévention des accidents.



AVERTISSEMENTS: Seul un personnel formé et qualifié doit installer, remplacer ou entretenir cet équipement. L'installation doit être conforme aux codes électriques locaux et nationaux.

- Lors de l'installation ou du remplacement de l'appareil, la connexion à la terre doit toujours être effectuée en premier et débranchée en dernier.
- Mettez cet équipement à la terre en utilisant un fil de terre fourni par le client avant de le mettre sous tension. Communiquez avec un électricien si vous n'êtes pas sûr qu'une mise à la terre appropriée soit disponible. Reportez-vous aux instructions relatives à l'*Installation du fil de terre*.
- Déconnectez l'alimentation PoE (port Ethernet PoE) avant de procéder à l'entretien cet appareil.
- Ne travaillez pas sur le système et ne branchez ni débranchez les câbles pendant les périodes d'activité de la foudre.
- Cet appareil n'est ni conçu ni approuvé pour être utilisé dans des endroits dangereux. N'installez pas et ne faites pas fonctionner l'appareil si la zone est connue pour être un environnement où il y a des risques d'explosion.
- Toutes les installations de montage mural sont soumises à l'acceptation de la juridiction locale. Ne placez pas l'antenne à proximité de lignes électriques aériennes ou d'autres feux électriques ou circuits électriques, ou à un endroit où elle peut entrer en contact avec de tels circuits. Lors de l'installation de l'antenne, veillez à ne pas toucher ces circuits, car ils peuvent causer des blessures graves, voire la mort. Pour une installation et une mise à la terre adéquates de l'antenne, veuillez consulter les codes nationaux et locaux.



! MISES EN GARDE :

- La certification PoE (Power over Ethernet) ne s'applique pas et ne s'étend pas aux tensions situées en dehors de la plage PoE standard. La plage PoE pour le MTCDTIP2 se situe entre 42,5 et 57 VDC. Toute tension PoE en dehors de la plage indiquée n'a pas été évaluée par UL ou MULTITECH. L'utilisateur final fournit le câble PoE. Ce câble doit être adapté à un emplacement extérieur. Il s'agit d'un appareil 802.3at de type 2. Pour de plus amples renseignements, reportez-vous à la note d'application PoE de Conduit (S000678).

Le port Ethernet n'est pas conçu pour être connecté à un réseau de télécommunication public (PSTN) ou à toute autre connexion autre que les dispositifs Power over Ethernet IEEE 802.3-2012.

- Ne retirez pas les étiquettes du produit.

Installation Safety

This information is also available in the Installation Guide, in the box and available at <https://www.multitech.com/brands/conduit-ip67-200>. Select your model to find the correct installation guide for your device.

Warnings and Cautions

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, refer Appendix A.



Warning: Only trained and qualified personnel should install, replace, or service this equipment. Installation must comply with local and national electrical codes. Classification of use by: Skilled person

- 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 device.
- 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 in the Installation Guide (available at <https://www.multitech.com/brands/conduit-ip67-200>). 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.

Note: MultiTech recommends inspecting the mounting hardware every 3-6 months to ensure it has not become loose or damaged due to weather conditions (such as lightning or wind) or a corrosive environment (such as saltwater).

User Responsibility

Respect all local regulations for operating your wireless device. Use the security features to block unauthorized use and theft.

Notice regarding Compliance with FCC and Industry Canada Requirements for RF Exposure

The antenna intended for use with this unit meets the requirements for mobile operating configurations and for fixed mounted operations, as defined in 2.1091 of the FCC rules for satisfying RF exposure compliance. If an alternate antenna is used, consult user documentation for required antenna specifications.

Compliance of the device with the FCC, and IC rules regarding RF Exposure was established and is given with the maximum antenna gain as specified above for a minimum distance of 35 cm between the devices radiating structures (the antenna) and the body of users. Qualification for distances closer than 35 cm (portable operation) would require re-certification.

Wireless devices could generate radiation. Other nearby electronic devices, like microwave ovens, may also generate additional radiation to the user causing a higher level of RF exposure.

Radio Frequency (RF) Safety

Due to the possibility of radio frequency (RF) interference, it is important that you follow any special regulations regarding the use of radio equipment. Follow the safety advice given below.

- Operating your device close to other electronic equipment may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers' recommendations.
- Different industries and businesses restrict the use of cellular devices. Respect restrictions on the use of radio equipment in fuel depots, chemical plants, or where blasting operations are in process. Follow restrictions for any environment where you operate the device.
- Switch OFF your wireless device when in an aircraft. Using portable electronic devices in an aircraft may endanger aircraft operation, disrupt the cellular network, and is illegal. Failing to observe this restriction may lead to suspension or denial of cellular services to the offender, legal action, or both.
- Switch OFF your wireless device when around gasoline or diesel-fuel pumps and before filling your vehicle with fuel.
- Switch OFF your wireless device in hospitals and any other place where medical equipment may be in use.

Sécurité relative aux appareils à radiofréquence (RF)

À cause du risque d'interférences de radiofréquence (RF), il est important de respecter toutes les réglementations spéciales relatives aux équipements radio. Suivez les conseils de sécurité ci-dessous.

- Utiliser l'appareil à proximité d'autres équipements électroniques peut causer des interférences si les équipements ne sont pas bien protégés. Respectez tous les panneaux d'avertissement et les recommandations du fabricant.
- Certains secteurs industriels et certaines entreprises limitent l'utilisation des appareils cellulaires. Respectez ces restrictions relatives aux équipements radio dans les dépôts de carburant, dans les usines de produits chimiques, ou dans les zones où des dynamitages sont en cours. Suivez les restrictions relatives à chaque type d'environnement où vous utiliserez l'appareil.
- Éteignez votre appareil sans fil dans les avions. L'utilisation d'appareils électroniques portables en avion est illégale: elle peut fortement perturber le fonctionnement de l'appareil et désactiver le réseau cellulaires. S'il ne respecte pas cette consigne, le responsable peut voir son accès aux services cellulaires suspendu ou interdit, peut être poursuivi en justice, ou les deux.
- Éteignez votre appareil sans fil à proximité des pompes à essence ou de diesel avant de remplir le réservoir de votre véhicule de carburant.
- Éteignez votre appareil sans fil dans les hôpitaux ou dans toutes les zones où des appareils médicaux sont susceptibles d'être utilisés.

Interference with Pacemakers and Other Medical Devices

Potential interference

Radio frequency energy (RF) from cellular devices can interact with some electronic devices. This is electromagnetic interference (EMI). The FDA helped develop a detailed test method to measure EMI of implanted cardiac pacemakers and defibrillators from cellular devices. This test method is part of the Association for the Advancement of Medical Instrumentation (AAMI) standard. This standard allows manufacturers to ensure that cardiac pacemakers and defibrillators are safe from cellular device EMI.

The FDA continues to monitor cellular devices for interactions with other medical devices. If harmful interference occurs, the FDA will assess the interference and work to resolve the problem.

Precautions for pacemaker wearers

If EMI occurs, it could affect a pacemaker in one of three ways:

- Stop the pacemaker from delivering the stimulating pulses that regulate the heart's rhythm.
- Cause the pacemaker to deliver the pulses irregularly.
- Cause the pacemaker to ignore the heart's own rhythm and deliver pulses at a fixed rate.

Based on current research, cellular devices do not pose a significant health problem for most pacemaker wearers. However, people with pacemakers may want to take simple precautions to be sure that their device doesn't cause a problem.

- Keep the device on the opposite side of the body from the pacemaker to add extra distance between the pacemaker and the device.
- Avoid placing a turned-on device next to the pacemaker (for example, don't carry the device in a shirt or jacket pocket directly over the pacemaker).

Chapter 6 – Regulatory Information

47 CFR Part 15 Regulation Class A Devices

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Plug 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.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Notice

Per FCC 15.19(a)(3) and (a)(4) 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.

MultiTech provides software code meant to operate the radio to a level that maintains compliance with the operating modes under which these radio devices were certified. To ensure this level of compliance, the software code is provided in binary form only. Users are prohibited from making any changes that affect the operation of the radio performance. Accessing or controlling the radio through any means other than the provided binary software will require the user to obtain their own intentional radiator license from the certification body governing their locality, as all pre-certification provided with mDot will have been made invalid.

FCC Grant Information

FCC Identifier:	RI7LE910NA
Equipment Class:	PCS Licensed Transmitter
Notes:	LTE/3G/2G Module
Modular Type:	Single Modular
FCC Rule Parts:	22H, 24E, 27,

Rule Parts	Frequency Range	Output Wats	Frequency Tolerance	Emission Designator
22H	824.2 - 848.2	1.64059	1.0 PM	248KGXW
22H	824.2 - 848.2	0.42554	1.0 PM	248KG7W

Rule Parts	Frequency Range	Output Wats	Frequency Tolerance	Emission Designator
24E	1850.2 - 1909.8	0.93325	1.0 PM	253KGXW
24E	1850.2 - 1909.8	0.23439	1.0 PM	246KG7W
22H	826.4 - 846.6	0.21727	1.0 PM	4M16G9W
22H	826.4 - 846.6	0.20845	1.0 PM	4M18G9W
22H	826.4 - 846.6	0.20989	1.0 PM	4M17G9W
24E	1852.4 - 1907.6	0.22336	1.0 PM	4M15G9W
24E	1852.4 - 1907.6	0.19231	1.0 PM	4M17G9W
24E	1852.4 - 1907.6	0.18155	1.0 PM	4M17G9W
27	706.5 - 713.5	0.18408	1.0 PM	4M52G7W
27	706.5 - 713.5	0.16406	1.0 PM	4M52D7W
27	709.0 - 711.0	0.18967	1.0 PM	8M98G7W
27	709.0 - 711.0	0.17458	1.0 PM	9M01D7W
22H	826.5 - 846.5	0.20559	1.0 PM	4M51G7W
22H	826.5 - 846.5	0.16904	1.0 PM	4M50D7W
22H	829.0 - 844.0	0.19409	1.0 PM	9M00G7W
22H	829.0 - 844.0	0.16331	1.0 PM	9M00D7W
27	1712.5 - 1752.5	0.17378	1.0 PM	4M51G7W
27	1712.5 - 1752.5	0.17906	1.0 PM	4M51D7W
27	1715.0 - 1750.0	0.1803	1.0 PM	9M01G7W
27	1715.0 - 1750.0	0.1766	1.0 PM	8M89D7W
27	1720.0 - 1745.0	0.18113	1.0 PM	17M9G7W
27	1720.0 - 1745.0	0.19454	1.0 PM	18M0D7W
24E	1852.5 - 1907.5	0.19815	1.0 PM	4M50G7W
24E	1852.5 - 1907.5	0.18793	1.0 PM	4M51D7W
24E	1855.0 - 1905.0	0.18155	1.0 PM	9M01G7W
24E	1855.0 - 1905.0	0.18323	1.0 PM	8M97D7W
24E	1860.0 - 1900.0	0.1803	1.0 PM	17M9G7W
24E	1860.0 - 1900.0	0.17579	1.0 PM	17M9D7W

Single Modular Approval. Power output listed is conducted. This device is approved for mobile and fixed use with respect to RF exposure compliance, and may only be marketed to OEM installers. The antenna(s) used for this transmitter, as described in this filing, must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operate in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. Installers and end-users must be provided with operating conditions for satisfying RF exposure compliance. Maximum permitted antenna gain/cable loss: 700 MHz: 8.74 dBi, 850 MHz: 6.93 dBi, 1700 MHz: 5.0 dBi, 1900 MHz: 2.51 dBi.

Industry Canada Class A Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement Canadien sur le matériel brouilleur.

Chapter 7 – Environmental Notices

Waste Electrical and Electronic Equipment Statement

Note: This statement may be used in documentation for your final product applications.

WEEE Directive

The WEEE Directive places an obligation on EU-based manufacturers, distributors, retailers, and importers to take-back electronics products at the end of their useful life. A sister directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all MultiTech products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

July, 2005



Restriction of the Use of Hazardous Substances (RoHS)

Multi-Tech Systems, Inc.

Certificate of Compliance

2015/863

Multi-Tech Systems, Inc. confirms that its embedded products comply with the chemical concentration limitations set forth in the directive 2015/863 of the European Parliament (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment - RoHS 3).

These MultiTech products do not contain the following banned chemicals¹:

- Lead, [Pb] < 1000 PPM
- Mercury, [Hg] < 100 PPM
- Cadmium, [Cd] < 100 PPM
- Hexavalent Chromium, [Cr+6] < 1000 PPM
- Polybrominated Biphenyl, [PBB] < 1000 PPM
- Polybrominated Diphenyl Ethers, [PBDE] < 1000 PPM
- Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm
- Benzyl butyl phthalate (BBP): < 1000 ppm
- Dibutyl phthalate (DBP): < 1000 ppm
- Diisobutyl phthalate (DIBP): < 1000 ppm

Environmental considerations:

- Moisture Sensitivity Level (MSL) =1
- Maximum Soldering temperature = 260C (in SMT reflow oven)

¹Lead usage in some components is exempted by the following RoHS annex, therefore higher lead concentration would be found in some modules (>1000 PPM);

- Resistors containing lead in a glass or ceramic matrix compound.

REACH Statement

Registration of Substances

Multi-Tech Systems, Inc. confirms that none of its products or packaging contain any of the Substances of Very High Concern (SVHC) on the REACH Candidate List, in a concentration above the 0.1% by weight allowable limit

The latest **197** substances restricted per the REACH Regulation were **last updated January 2019**. Refer to the following for the most current candidate list of substances: <http://echa.europa.eu/candidate-list-table>.

Information on HS/TS Substances According to Chinese Standards (in Chinese)

依照中国标准的有毒有害物质信息

根据中华人民共和国信息产业部 (MII) 制定的电子信息产品 (EIP) 标准—中华人民共和国《电子信息产品污染控制管理办法》(第 39 号), 也称作中国 RoHS, 下表列出了 Multi-Tech Systems, Inc. 产品中可能含有的有毒物质 (TS) 或有害物质 (HS) 的名称及含量水平方面的信息。

有害/有毒物质/元素

成分名称	铅 (PB)	汞 (Hg)	镉 (CD)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板	O	O	O	O	O	O
电阻器	X	O	O	O	O	O
电容器	X	O	O	O	O	O
铁氧体磁环	O	O	O	O	O	O
继电器/光学部件	O	O	O	O	O	O
ICs	O	O	O	O	O	O
二极管/晶体管	O	O	O	O	O	O
振荡器和晶振	X	O	O	O	O	O
调节器	O	O	O	O	O	O
电压传感器	O	O	O	O	O	O
变压器	O	O	O	O	O	O
扬声器	O	O	O	O	O	O
连接器	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
螺丝、螺母以及其它五金件	X	O	O	O	O	O
交流-直流电源	O	O	O	O	O	O
软件/文档 CD	O	O	O	O	O	O
手册和纸页	O	O	O	O	O	O
底盘	O	O	O	O	O	O

X 表示所有使用类似材料的设备中有害/有毒物质的含量水平高于 SJ/Txxx-2006 限量要求。

O 表示不含该物质或者该物质的含量水平在上述限量要求之内。

Information on HS/TS Substances According to Chinese Standards

In accordance with China's Administrative Measures on the Control of Pollution Caused by Electronic Information Products (EIP) # 39, also known as China RoHS, the following information is provided regarding the names and concentration levels of Toxic Substances (TS) or Hazardous Substances (HS) which may be contained in Multi-Tech Systems Inc. products relative to the EIP standards set by China's Ministry of Information Industry (MII).

Hazardous/Toxic Substance/Elements

Name of the Component	Lead (PB)	Mercury (Hg)	Cadmium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Printed Circuit Boards	O	O	O	O	O	O
Resistors	X	O	O	O	O	O
Capacitors	X	O	O	O	O	O
Ferrite Beads	O	O	O	O	O	O
Relays/Opticals	O	O	O	O	O	O
ICs	O	O	O	O	O	O
Diodes/ Transistors	O	O	O	O	O	O
Oscillators and Crystals	X	O	O	O	O	O
Regulator	O	O	O	O	O	O
Voltage Sensor	O	O	O	O	O	O
Transformer	O	O	O	O	O	O
Speaker	O	O	O	O	O	O
Connectors	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
Screws, Nuts, and other Hardware	X	O	O	O	O	O
AC-DC Power Supplies	O	O	O	O	O	O
Software /Documentation CDs	O	O	O	O	O	O
Booklets and Paperwork	O	O	O	O	O	O
Chassis	O	O	O	O	O	O

X Represents that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/Txxx-2006 Requirements for Concentration Limits.

O Represents that no such substances are used or that the concentration is within the aforementioned limits.

Appendix A – Safety Statements

The following are translations of key cautions and warnings from the *Conduit IP67 Base Station 200 Series MTCDTIP2 Installation Guide*.

English

CAUTION: Read installation instructions and safety information before starting Base Station installation. Do not connect power until directed to do so.

WARNING: If you connected power to the device, disconnect it before continuing.

Bulgarian

ВНИМАНИЕ: Прочетете инструкциите за монтаж и информацията за безопасност, преди да започнете монтаж на базовата станция. Не включвайте захранването, преди да е упоменато.

ПРЕДУПРЕЖДЕНИЕ: Ако вече сте включили захранването в устройството, изключете го, преди да продължите.

Chinese

小心：在开始安装基站前，阅读安装说明和安全信息。在得到指示前请勿连接电源。

警告：如果您已连接设备电源，请中断连接之后再继续安装。

Czech

VAROVÁNÍ: Před zahájením instalace základní stanice si přečtěte pokyny k instalaci a bezpečnostní informace. Nepřipojujte napájení, dokud k tomu nebudete vyzváni.

VÝSTRAHA: Pokud jste k zařízení připojili napájení, před pokračováním ho odpojte.

Danish

FORSIGTIG: Læs installationsinstruktionerne og sikkerhedsinformationerne, inden du begynder på installation af basisstationen. Tilslut ikke strømmen, før du bliver bedt om det.

ADVARSEL! Hvis du sluttede enheden til strømmen, så frakobl den, inden du fortsætter.

Dutch

LET OP: Lees de installatie-instructies en veiligheidsinformatie voordat u aan de installatie van het Base Station begint. Sluit de stroom pas aan als dit wordt aangegeven.

WAARSCHUWING! Als u het apparaat op de stroomtoevoer hebt aangesloten, koppel deze dan los voordat u verder gaat.

Estonian

ETTEVAATUST: Enne alusjaama paigaldust, tutvuge paigaldusjuhiste ja ohutusälase teabega. Ärge ühendage vooluvõrku enne, kui seda on selgesõnaliselt soovitatud.

HOIATUS: Kui ühendasite seadme vooluvõrguga, siis võtke pistik enne jätkamist vooluvõrgust välja.

Flemish

OPGELET: Lees de installatie-instructies en veiligheidsinformatie voor u de installatie van het Basisstation start. U mag de stroom pas aansluiten wanneer u de instructie krijgt om dit te doen.

WAARSCHUWING: Als u de stroom hebt aangesloten op het apparaat moet u hem loskoppelen voor u doorgaat.

French

ATTENTION: Lisez les instructions d'installation et les consignes de sécurité avant de commencer l'installation de la station de base. Ne faites aucune connexion avant d'avoir reçu des instructions à cet effet.

AVERTISSEMENT: Si vous avez déjà effectué une connexion à l'appareil, débranchez-la avant de continuer.

German

ACHTUNG: Vor Installation der Basisstation die Installationsanweisungen und Sicherheitshinweise lesen. Die Stromversorgung erst nach Aufforderung anschließen.

WARNUNG: Vor dem Fortfahren die Stromversorgung trennen, falls sie an das Gerät angeschlossen wurde.

Hungarian

VIGYÁZAT: A bázisállomás telepítésének megkezdése előtt olvassa el a telepítési utasításokat és a biztonsági információkat. Ne helyezze áram alá, amíg erre utasítást nem kap.

FIGYELEM: Ha az eszközt már áram alá helyezte, a folytatás előtt csatlakoztassa le.

Italian

ATTENZIONE: leggere le istruzioni per l'installazione e le informazioni di sicurezza prima di iniziare l'installazione della stazione di base. Non collegare l'alimentazione fino a quando non viene richiesto.

AVVERTENZA: se il dispositivo è stato collegato alla corrente, scollegarlo prima di continuare.

Korean

주의: Base Station 설치를 시작하기 전에 설치 지침과 안전 정보를 읽으십시오. 지시가 있을 때까지 전원 공급 장치를 연결하지 마십시오.

경고: 장치에 전원 공급 장치를 연결한 경우, 계속 진행하기 전에 이를 분리하십시오.

Latvian

UZMANĪBU: Pirms uzstādīt bāzes staciju, izlasiet uzstādīšanas norādījumus un drošības informāciju. Nepieslēdziet barošanu, kamēr nav sniegts atbilstošs norādījums.

BRĪDINĀJUMS. Ja ierīcei ir pieslēgta barošana, pirms turpināt darbu, atvienojiet to.

Lithuanian

ATSARGIAI: Prieš pradėdami montuoti bazinę stotį, perskaitykite montavimo instrukciją ir saugos informaciją. Elektros maitinimąjunkite tik tada, kai gausite tokį nurodymą.

ĮSPĖJIMAS: Jeigu įrenginys buvo prijungtas prie elektros maitinimo, atjunkite jį prieš tęsdami darbą.

Norwegian

FORSIKTIG: Les installasjonsinstruksjonene og sikkerhetsinformasjonen før du starter installasjonen av basestasjonen. Ikke koble til strømmen før du blir bedt om det.

ADVARSEL: Hvis du koblet strøm til apparatet, koble den fra før du fortsetter.

Polish

PRZESTROGA: Przed rozpoczęciem montażu stacji bazowej należy zapoznać się z instrukcją montażu oraz informacjami dotyczącymi bezpieczeństwa. Nie należy podłączać zasilania bez wyraźnego polecenia.

UWAGA: Jeżeli zasilanie zostało podłączone do urządzenia, należy je odłączyć przed kontynuowaniem prac.

Romanian

ATENȚIE: Înainte de a începe instalarea stației de bază citiți instrucțiunile de instalare și informațiile referitoare la siguranță. Nu conectați la curent până când nu vi se indică să faceți acest lucru.

AVERTISMENT: Dacă ați conectat dispozitivul la curent, deconectați-l înainte de a continua.

Russian

ВНИМАНИЕ: Перед началом установки базовой станции прочтите инструкции по установке и информацию по технике безопасности. Не подключайте питание, пока не получите соответствующие указания.

ПРЕДУПРЕЖДЕНИЕ. Если вы подключили питание к устройству, отключите его, прежде чем продолжить.

Spanish

PRECAUCIÓN: Lea las instrucciones de instalación y la información de seguridad antes de instalar la estación base. No conecte la alimentación eléctrica del dispositivo hasta que no se le indique.

ADVERTENCIA: Si ha conectado la alimentación eléctrica del dispositivo, desconéctela antes de continuar.

Swedish

FÖRSIKTIG! Läs installationsanvisningarna och säkerhetsinformationen innan du påbörjar installationen av basstationen. Koppla inte in strömmen förrän du blir anvisad att göra så.

WARNING! Om du har kopplat in strömmen till enheten ska du koppla ut den innan du fortsätter.

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