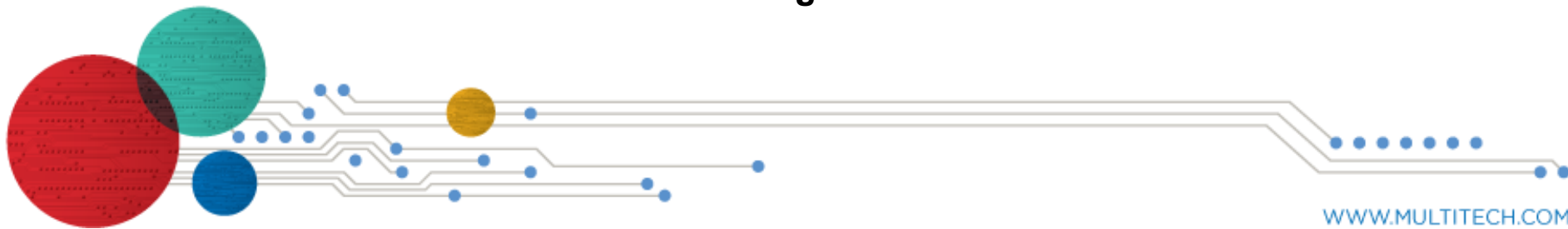




Conduit® IOT Starter Kit for LoRa® Technology Getting Started for Cellular Models



WWW.MULTITECH.COM

Conduit Reset Button Functions

The Conduit reset button has three functions as follows:

- **Conduit Reboot**
To do this, hold the reset button for less than 5 seconds.
- **Reset to Factory Starter Kit Configuration**
This resets the original starter kit configuration and retains the device's ability to connect to the IBM cloud. To do this, hold the reset button for 5-29 seconds.
- **Clear Starter Kit Configuration**
This deletes the starter kit configuration. To do this, hold the reset button for more than 30 seconds.

For any of these functions, you need a pin, paperclip, or similar thin object that can fit into the reset hole.

If you accidentally delete the starter kit configuration, go to the following URL for steps for restoring the starter kit configuration:

<https://www.multitech.com/support/resolutionid/5080639>

MultiConnect Conduit IoT Starter Kit for LoRa Technology Getting Started for Cellular Models

Part Number: 82103700L Rev. 2

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Conduit IoT Starter Kit for LoRa Technology

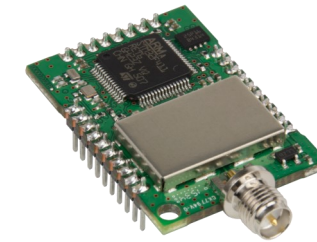
The Conduit IoT Starter Kit for LoRa Technology provides everything needed to get your LoRa proof of concept running and connected to the cloud. The Starter Kit enables you to obtain sensor information and display it in the cloud quickly. All major components of the Starter Kit are pre-configured for use with the Conduit platform and select MultiTech cloud partners and only require simple actions to finish set-up.

Note: Before getting started, check for an updated version of this document at <https://www.multitech.com/brands/multiconnect-conduit-lora-starter-kits>.

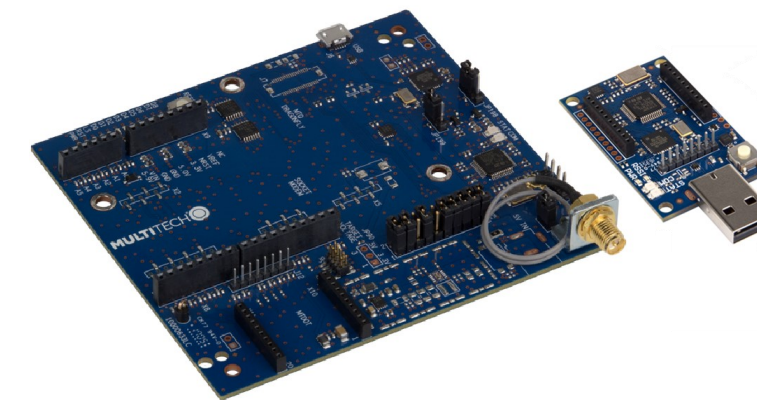
Starter Kit Products



The Starter Kit includes a Conduit with a pre-installed LoRaWAN® mCard capable of supporting thousands of mDot™ and xDot® long range RF modules connected to remote sensors or appliances. The Conduit is the industry's most configurable, manageable, and scalable cellular communications gateway for industrial IoT applications. For the Starter Kit, the Conduit features an IBM Node-RED graphical, drag-and-drop interface. For more advanced applications, an open mLinux developer platform is available.



The mDot is a secure, Arm® Mbed™ programmable, low-power RF module that provides long-range, low bit rate M2M data connectivity to sensors, industrial equipment and remote appliances. LoRaWAN certified, the mDot provides bi-directional data communication up to 10 miles/15 km line-of-sight and 1-3 miles/2 km into buildings using sub-GHz ISM bands North America, Europe, Australia, and Asia Pacific.



The mDot™ Box helps you determine if LoRa® is the right technology to effectively connect to and manage thousands of assets and sensors in the field to while meeting your company's cost, performance, and strategic needs. The mDot Box pairs an mDot RF module with built in sensors including temperature, ambient light, pressure, electrical current, and a 3-Axis accelerometer. It comes standard with GPS to enable site survey and location-based proof of concept testing.



The xDot® Micro Developer Kit is a USB dongle that allows you to plug in an xDot and start developing your application. As with the mDot, the xDot is a secure, Arm Mbed programmable, low-power RF module that provides long-range, low bit rate M2M data connectivity to sensors, industrial equipment, and remote appliances. It is also LoRaWAN certified, provides bi-directional data communication up to 10 miles/15 km line-of-sight and 1-3 miles/2 km into buildings using sub-GHz ISM bands in North America, Europe, Australia, and Asia Pacific.

For developing with the mDot, the Starter includes both the mDot Micro Developer Kit and the full-sized mDot Developer Kit. Both options allow you to plug in the mDot and use it for testing, programming, and evaluation. The portable design of the Micro Developer Kit makes it ideal for connecting to a laptop and doing LoRa network doing range testing.

Starter Kit Accessories

Item	Description	Quantity	Item	Description	Quantity
	Ethernet cable	1		Power supply with one or more changeable blades	1 set
	GPS antenna	1		9 Volt battery	2
	Ribbon cable	1		Micro USB cables	2
	Wi-Fi/Bluetooth Antenna	1		Screwdriver	1
	LoRa antenna	2		Getting Started Guide and Legal Notices	2
	Cellular antenna	2			

About this Document

This Getting Started document walks you through setting up the Conduit and mDot Box as well as the basics of sending sensor data to the cloud. This demonstrates a little about platform capabilities, but for developing your proof-of-concept or getting started with the mDot or xDot, and recipes for our Conduit partner's cloud platforms, go to <https://www.multitech.com/landing-pages/starter-kit>.

To check for an updated version of this Getting Started Guide, go to <https://www.multitech.com/brands/multiconnect-conduit-lora-starter-kits>.

Getting Started with the Conduit

Requirements

In addition to the starter kit contents, you need:

- A mini SIM card (2FF) from your cellular provider.

Registering a DeviceHQ Account

IMPORTANT: When the Conduit restarts during initial configuration, a new IP address is assigned to it via WAN. You need this value to access the Conduit's web administration interface. DeviceHQ offers quick access to the new IP address.

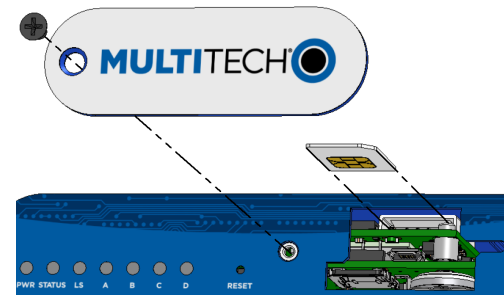
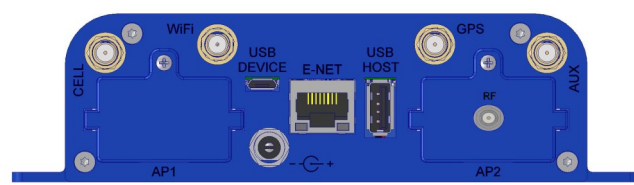
If you don't have a DeviceHQ Account:

- Open a web browser window and go to www.devicehq.com. If you have an account, login, and skip to Step 3.
- If you don't have a DeviceHQ account, click **Register Account** and complete the registration form. Your email will be your user name. MultiTech sends a link to activate your account. Click the link to log in.
- On the DeviceHQ dashboard, click your email address in the upper right corner and select **Account Info**. Highlight and copy the value in the Key field. You will need this to complete the steps in *Configuring the Conduit*.

Preparing Conduit Hardware

To prepare the Conduit:

- Remove the screw that secures the MultiTech nameplate to the enclosure.
- Insert your SIM card into the SIM slot at the top of the opening, so the contacts are on the bottom and the notched corner is on the right side as shown.
- Replace the nameplate.
- Attach a LoRa antenna to the LoRa mCard's RF connector in the AP2 slot on back of the Conduit. Finger-tighten the antenna.
- Attach the cellular antennas to the CELL and AUX antenna connectors on the back of the Conduit. Finger-tighten the antennas.
- Attach the Wi-Fi antenna to the Wi-Fi connector on the back of the Conduit. Finger-tighten the antenna.
- Attach the power supply blades for your country to the power supply.
- Connect the power supply to the Conduit and plug it in to an electric outlet. The PWR, STATUS, and LS LEDs turn on and flash a few times. After 90-120 seconds, STATUS starts blinking.
- Plug one end of the Ethernet cable into your computer and the other into the E-NET port on the Conduit.



Configuring the Conduit

To log in and configure the Conduit:

- Open a web browser and enter the device's default address: <http://192.168.2.1>
A screen appears telling you the connection is not private or not secure. This occurs because the device is self-signed.

Note: You may need to manually configure your IP address and subnet mask into the Network settings on your PC.

To continue to the login page:

- If using Internet Explorer, select **Continue to this website**.
- If using Chrome, click **ADVANCED** and then click **Proceed to 192.168.2.1**.
- If using Firefox, click **Advance** and then click **Add Exception**. Click **Confirm Security Exception**.

- Enter the default **Username** and **Password** and click **Login**. After up to 30 seconds, the First-Time Setup Wizard launches.

- Username: **admin**
- Password: **MTCDT--<first eight characters of Conduit UUID (numbers and capital letters)>**

Tip: See label located on the bottom of the device for the UUID. Enter the first eight characters as numbers and capital letters.

- Click **Next** and step through the Wizard screens to set the following.

Tip: Do not click Finish until you have entered these settings. If you accidentally exit the wizard, click **Administration** and select **Initial Setup** to reopen it.

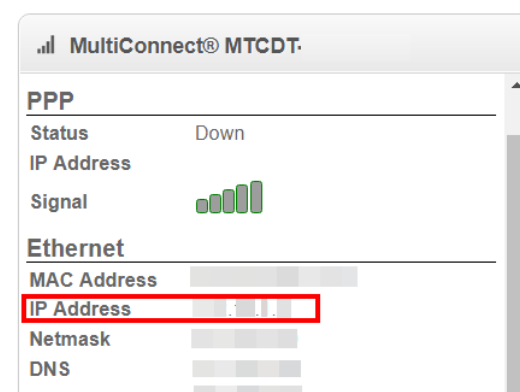
- Password** (Setting a new password is recommended for security reasons)
- Date and Time**
- PPP**
- On IP Setup - et0**
- Access Configuration** (leave the default settings)

- Click **Finish**.
- Click **Administration** and select **Access Configuration**. Under Node-Red, check the box for **Via WAN**.
- Click **Continue** to close the pop-up and then click **Submit**.
- Click **Administration** and select **Remote Management**. Under Remote Server, select **Enabled** and paste the key copied from DeviceHQ in the **Account Key** field (from *Registering a DeviceHQ Account* or the email sent by MultiTech). Click **Submit**.
- Click **Save and Restart**. Wait for 2 minutes for the device to restart.
- Remove the Ethernet cord from your computer and connect it to a router or LAN allowing the Conduit to access the Internet.

- Power cycle the Conduit (disconnect and then reconnect the power supply), so it gets an IP Address from the router and checks into DeviceHQ. Wait 2 minutes for the device to complete this process before going to the next step.

- In a web browser, go to www.devicehq.com and log in. Click **Devices**, then click on your device listing (not the check box for the device). A pop-up window opens showing device details. The new IP Address the Conduit acquired via WAN appears under Ethernet. Record the new IP address.

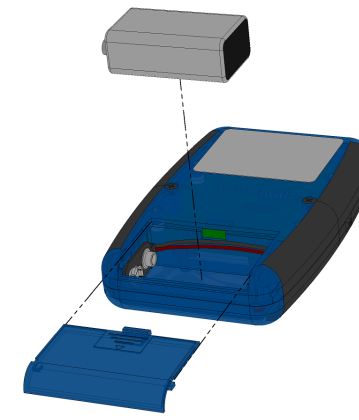
- Open a new browser tab and enter the new IP address to access the Conduit's interface.



Preparing the mDot Box

To get started with the mDot Box:

- Attach a LoRa antenna to antenna connector on the mDot Box and finger-tighten.
- Remove the battery cover on the back of the mDot Box. Remove the protective cap from a 9-volt battery included in the starter kit and connect the battery to the mDot Box's 9-volt connector. Put the battery in the battery slot and replace the cover.

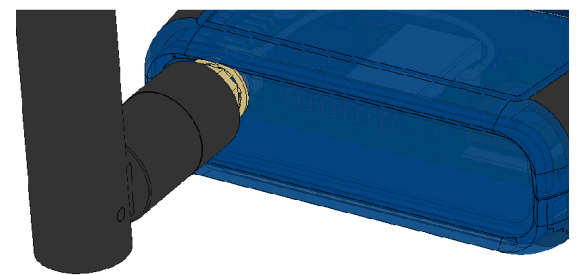


Note: Battery life is limited. Power off device when not in use.

- Power up mDot Box by sliding the switch on the left side.
- Select your region based on your channel plan. Press **SW2** to scroll through the options and press **SW1** to select. The device performs a GPS detect, which may take a few minutes.
- When **Select Mode** appears, the selection arrow (=>) indicates **LoRa Demo** by default. Press **SW1** to select.
- Press **SW2** for **Interval**. This periodically sends sensor data to the Conduit.

By default the mDot Box sends data across the LoRa network every 10 seconds. To change the Interval, press **SW1**.

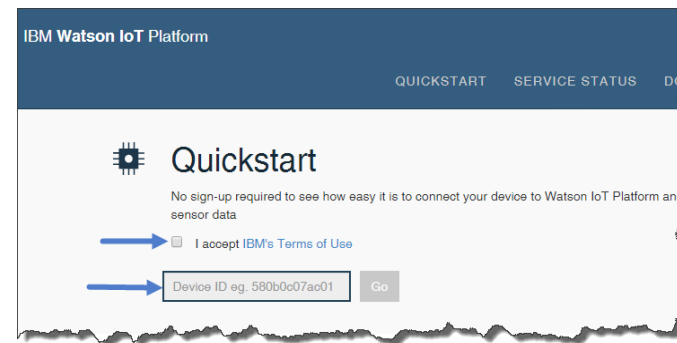
The screen displays the sensor data. For more information on the mDot Box, refer to the enclosed mDot Box Quick Start or go to <http://www.multitech.net/developer/software/dot-box-and-evb-software/>



Select Mode	
View Data	
Select Region	
=> LoRa Demo	
Configuration	
Survey Single	
Survey Sweep	
Survey GPS	
Scroll	Select
o	o
SW2	SW1

Sending Data to the IBM Cloud

Note: For secure data submission, create an IBM account and sign in. When not logged in, data submitted to the IBM Quickstart page is not private and can be accessed by any party possessing your Conduit's machine address.

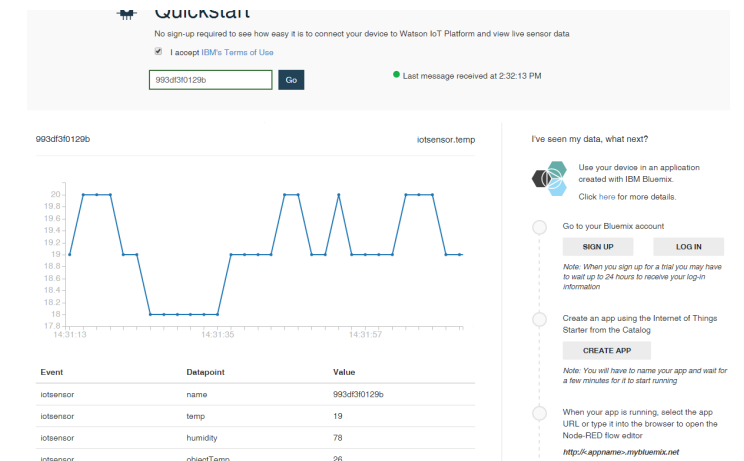


To send data from the mDot Box to the Cloud:

- On your computer, use a web browser to go to <https://quickstart.internetofthings.ibmcloud.com/>.
- Check to accept **IBM's Terms of Use**.
- Find the Conduit's NODE ID, which is on the product label on the bottom. NODE ID is formatted as: 00:08:00:XX:XX:XX.
- On the IBM Quickstart page, enter the Conduit's NODE ID in the **Device ID** field, using hyphens instead of the colons, for example 00-08-00-4A-01-3E.
- Click **Go**. After a short delay, your data appears in the graphs.

Using IBM Cloud

- Click on datapoint fields (temperature, light, etc.) below the chart to view corresponding charts.
- Creating an IBM Cloud account allows you to create a personalized application with safe data storage.
- An IBM Cloud account also gives you access to a variety of data storage and analytic tools.
- After creating an account on IBM Cloud for data storage, access the Conduit's Node-RED application and create a new output node to send data to your IBM Cloud account. Learn more about using Node-RED on the Conduit: www.multitech.net/developer/wp-content/uploads/2015/08/DeviceHQ_Dev_User_Guide.pdf.



Next Steps

- Developer resources and product documentation for the Starter Kit products are available at www.multitech.net.
- Developer forums are available at <http://www.multitech.net/developer/forums>.
- Video demonstrations are available at:
 - LoRa videos: https://www.youtube.com/results?search_query=MultiTech+MultiConnect%C2%AE+mDot
 - mDot & xDot: <https://www.youtube.com/watch?v=w9ixiSduqxo>
 - Conduit install: <https://www.youtube.com/watch?v=H18pVF8qlaY>
 - mDot Box: <https://www.youtube.com/watch?v=r7ez4pd9N2c>
- Cloud platform recipes for our Conduit service solution partners are available at: <https://www.multitech.com/landing-pages/starter-kit>

Mbed

ARM® Mbed™ is a free, open-source platform and operating system for embedded devices using the ARM Cortex-M microcontrollers. The Mbed website provides free software libraries, hardware designs, and online tools for rapid prototyping of products. The platform includes a standards-based C/C++ SDK, a microcontroller HDK, and supported development boards, an online compiler and online developer collaboration tools.

- MultiConnect mDot and Developer Kits: <https://developer.mbed.org/platforms/MTS-mdot-f411/>
- MultiConnect xDot and Developer Kit: <https://os.mbed.com/platforms/MTS-xDot-L151CC/>
- MultiConnect mDot Box: <https://developer.mbed.org/platforms/mdotevb/>
- Getting started with Mbed: <https://os.mbed.com/getting-started>

Need Help?

Our sales engineers focus on Starter Kit support; answering getting started and specific questions. Submit your questions through the Support Portal.

- To register for a Support Portal account go to: <https://support.multitech.com/support/signup.html>.
- If you already have an account, log in at <https://support.multitech.com/support>.