How To: <u>LinkIt ONE WiFi IoT</u>

Description

The LinkIt ONE development platform is an open source, high performance board for prototyping Wearables and IoT devices. It is based on the MediaTek Aster (MT2502) SoC combined with high performance Wi-Fi (MT5931) and GPS (MT3332) chipsets to provide network connectivity. Additionally, it provides similar pin-out features to Arduino boards making it easy to connect various sensors, peripherals, and Arduino shields.

This "How To" will provide the step-by-step details on how to assemble, configure, and load the LinkIt ONE to publish the following data:

- Information Log Messages
- Location Data (Latitude, Longitude, etc)
- Ethernet MAC Attribute Information
- Temperature & Humidity Sensor Property data
- Simulated Alarm Data

Software Prototyping Platform

The Arduino open-source software prototyping platform will be used throughout the demo. Arduino includes an integrated development environment (IDE) that is compatible with the LinkIt ONE.
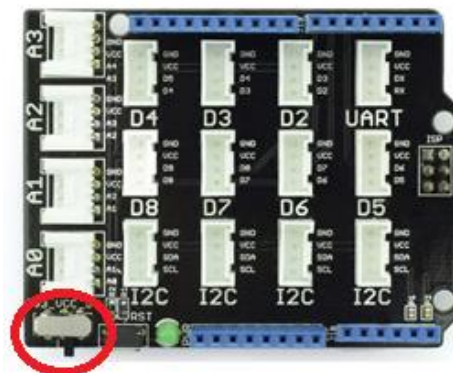
Requirements

The following items are requirements for a working LaunchPad IoT:

- LinkIt ONE Developer Board
- Grove Starter Kit for LinkIt ONE
- Windows Compatible PC with Internet Access
- Arduino Prototyping Platform (steps outlined below)

Setup

Setup for the LinkIt ONE IoT consist of these steps:

1. Signup for an M2M Account on the Management Portal

2. Download the getting started file

3. Create a new "Thing" Definition on the Management Portal
   1. Open the downloaded file and extract the 'DevKitThingDefinition.json' file to your PC's desktop
   2. Select 'Developer' from the Management Portal
   3. Click on 'Thing definitions' and then click the 'Import' button
   4. Click the 'Attach File' button and select the JSON file copied in the previous step
   5. Press the 'Import' to import the thing definition into the ORG

4. Create an Application token for your thing definition
   1. Select 'Developer' from the Management Portal
   2. Click on 'Applications' and then click the 'New Application' button
   3. In the 'Name' field enter 'LinkIt'
   4. In the 'Description' field enter 'LinkIt App'
   5. In the 'Auto Registration Thing Definition ID' select 'DevKit IoT Device'
   6. Check the 'Org Admin' checkbox and press the 'Add' button
   7. Record the 'Token' ID that is provided for a subsequent step – this is your Application token

5. Set the VCC switch on the Grove Starter Kit Board to 3V3
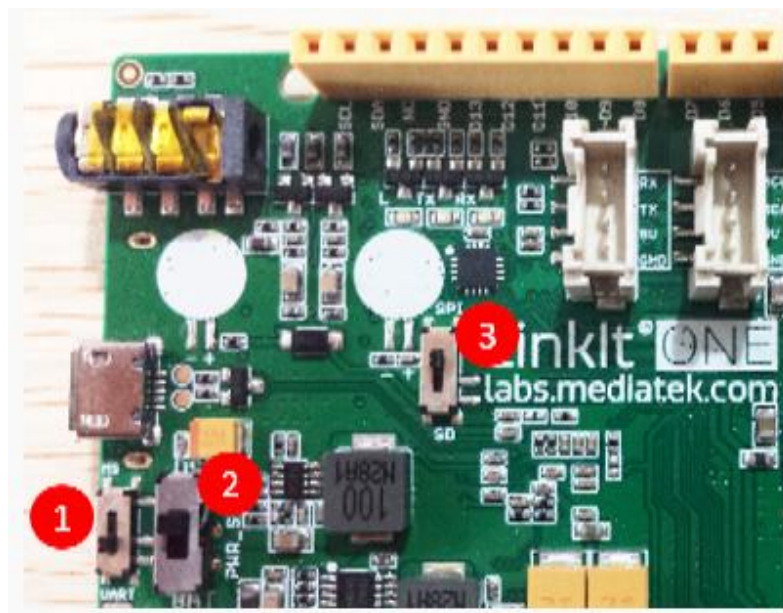
6. Connect Grove Kit sensors to the Grove Starter Kit Board

    1. Touch Sensor to D2

    2. Temp & Humidity Sensor to D4

    3. LED Bar to D8

7. Connect the supplied WiFi Antenna to the LinkIt ONE developer board

8. Set LinkIt ONE configuration switches

    1. Set Switch #1 to UART

    2. Set Switch #2 to USB

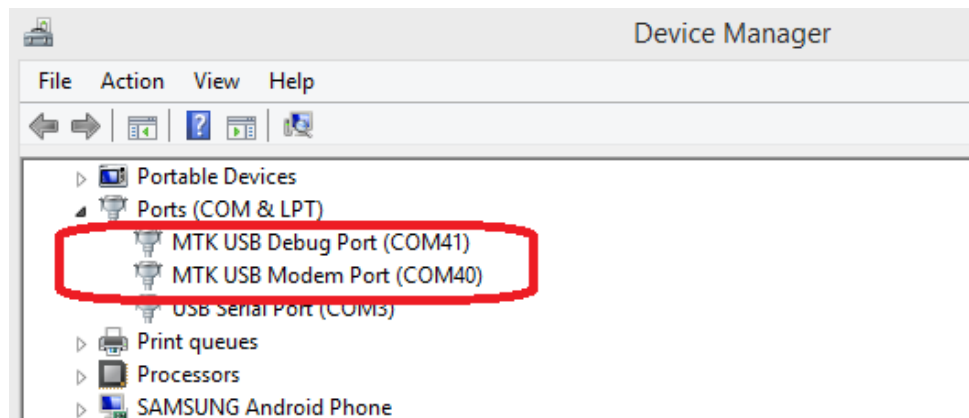   3. Set Switch #3 to SPI

9. Mount the Grove Starter Kit Board onto the LinkIt ONE Developer board

10. Install the LinkIt ONE USB driver

    1. Do NOT connect your LinkIt ONE to your PC. If you already plugged it into your PC then unplug it before proceeding to step 2.

    2. Download the LinkIt ONE drivers for Windows: LinkIt ONE USB Driver

    3. Unzip and double click InstallMTKUSBCOMPortDriver.exe

4. Follow the installer instructions.

5. Connect your LinkIt ONE to your PC. The LinkIt ONE will be automatically recognized.

6. Using the Windows' Device Manager View, record the COM Ports being used by the LinkIt ONE.

1. MTK USB Debug Port – to be used by Arduino IDE
2. MTK USB Modem Port – to be used by Terminal Emulator

7. The LinkIt ONE is now ready for use

11. Install 'Putty' – the terminal emulator program to be used within this demo

1. Download 'Putty' from here.
2. Create a shortcut for 'Putty' on your Desktop
3. Launch 'Putty' by double clicking on your 'Putty' shortcut
4. Select the 'Serial' radio button
5. Specify your 'Putty' Serial Line (Specify the 'MTK USB Modem COM Port that was displayed in the previous step.) and then press 'Open'
6. Enter 'LinkIt' in the Saved Sessions and press the 'Save' button

12. Install the Arduino

   1. Using Windows Explorer, create a deviceWISE folder on the C: (ie C:\deviceWISE)
   2. Download the Arduino package from here
   3. Run the Arduino installer and follow the prompted instructions
   4. Open Arduino by double clicking on the Desktop Arduino shortcut
   5. Select 'Tools' from the Arduino menubar then 'Board' and afterwards 'LinkIt ONE'
   6. Select 'Tools' from the menubar and then 'Serial Port'.
   7. Select the "MTK USB Debug Port" as displayed in the earlier step
   8. Exit Arduino by selecting "File" and then "Quit" from the Arduino menubar.
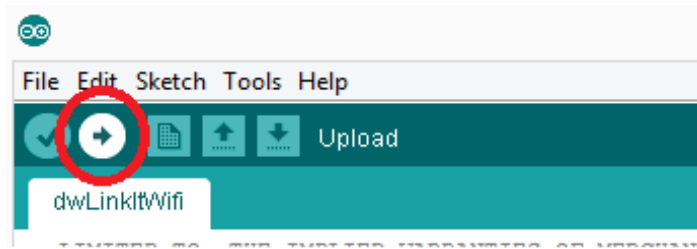
13. From within the file downloaded in step 2

   1. Copy the "dwLinkItWifi" folder into the …\Documents\Arduino folder. This will result in a "…\Documents\Arduino\dwLinkItWifi" folder.

   2. Copy the "libraries" folder into …\Documents\Arduino\libraries folder. This will result in a "…\Documents\Arduino\libraries\dwOpenClientLinkIt" folder.

   3. Open the Arduino IDE and select File->Sketchbook to load in the sample dwLinkItWifi sketch.

   4. Enter the appropriate WiFi UserID and Password for your WiFi network.

```
//Wi-Fi Network - SSID / Password
#define WIFI_SSID          "UserGUEST"
#define WIFI_PW            "UserPassword"
```

   5. Enter the m2m Application Token that was obtained in the earlier step

```
// Authentication/Registration Details
#define DWOPEN_APPTOKEN    "IgP2lz2ghabxqw7J"      //Application Token
```

6. Compile and load the demo program onto the LinkIt ONE by pressing the "Upload" arrow button (Ensure the Grove libraries are also added to your project.)

14. Start Putty and Load the "LinkIt" Saved Session that was created in the earlier step
15. The demo program output will be displayed in the 'Putty' terminal server
16. Open the "Things" page on the Management Portal to display your device
17. Open your 'Thing' device by clicking the 'view' icon (the eyeball) next to your device. All your device's details are displayed on this page.
18. Use the 'Methods' tab and the 'Green LED' and 'Red LED' methods to turn ON and OFF the LEDs on the LED Bar.
19. Use the Touch sensor to change the status of the LED Bar. Notice that an Alarm will be set on the Portal when the LED bar reaches Yellow and Red.