How To: <u>LaunchPad (CC3200) IoT</u>

Description

The Texas Instruments CC3200 LaunchPad is a low-cost ARM Cortex-M4F-based evaluation platform. The CC3200 is a single-chip Microcontroller (MCU) with built-in Wi-Fi connectivity. This LaunchPad allows for rapid WiFi prototyping and provides a software configurable interface for a variety of sensors.

This guide will provide the step-by-step details on how to assemble, configure, and load the LaunchPad to publish the following data:

- Information Log Messages
- Location Data (Latitude, Longitude, etc.)
- Ethernet MAC Attribute Information
- Analog to Digital Convertor (ADC) Temperature Sensor Property

Software Prototyping Platform

The Energia open-source software prototyping platform will be used throughout this guide. Energia includes an integrated development environment (IDE) that is compatible with the LaunchPad.

Requirements

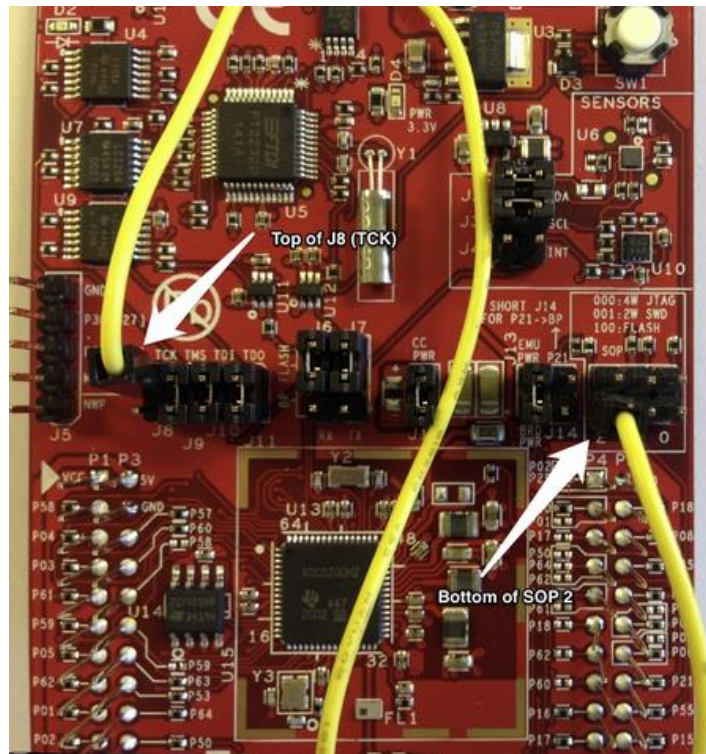The following items are requirements for a working LaunchPad IoT:

- CC3200 LaunchPad Evaluation Kit
- Female-to-Female Jumper Cable
- Windows Compatible PC with Internet Access
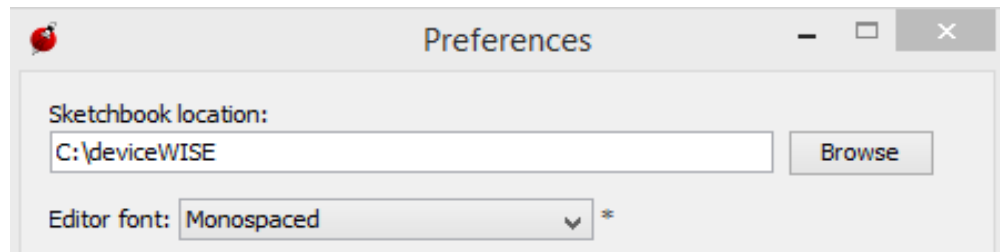- Energia Prototyping Platform (steps outlined below)

Setup

Setup for the LaunchPad IoT consist of these steps:

1. Signup for an M2M Account on the Management Portal

2. Download the getting started file from the Management Portal

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 'LaunchPad'
   4. In the 'Description' field enter 'LaunchPad App'
   5. In the 'Auto Registration Thing Definition ID' select 'DevKit IoT Device'
   6. Check the 'Org Admin' checkbox and press the 'Add' button
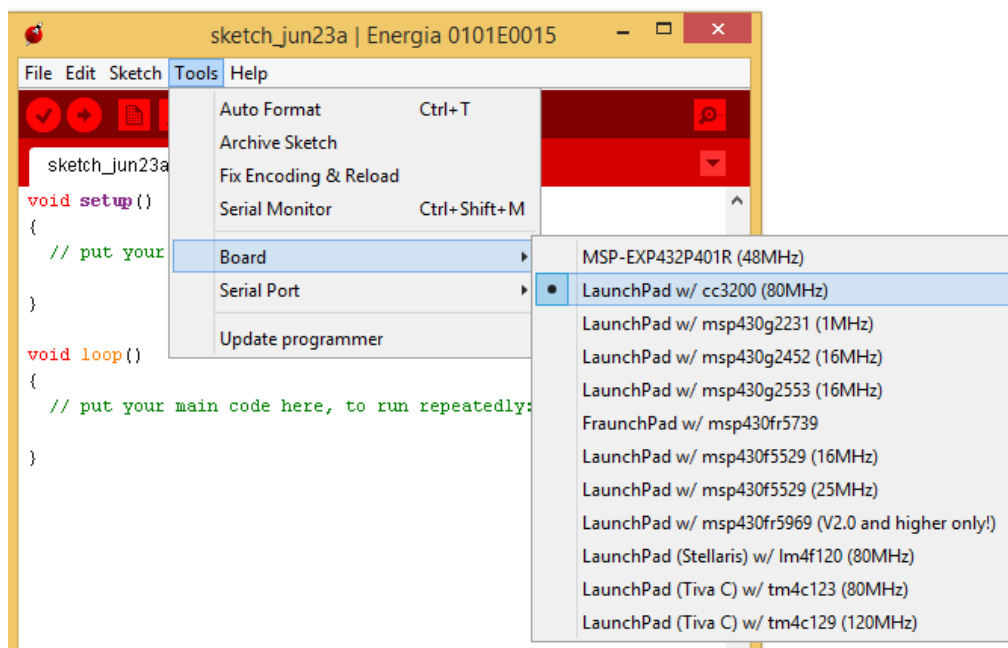   7. Record the 'Token' ID that is provided for a subsequent step – this is your Application token

5. Install the required debug/run Female-to-Female jumper from J8 to SOP2 as shown below.
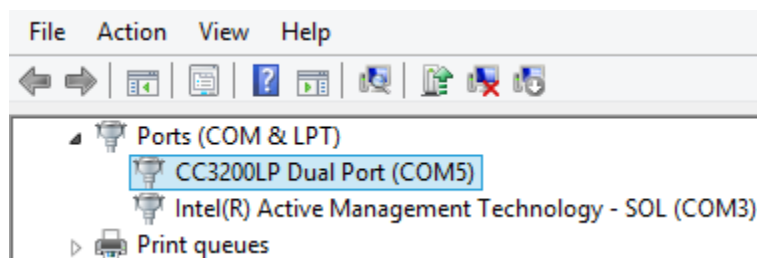

6. Install the CC3200 LaunchPad USB driver
   1. Do **not** connect your LaunchPad to your PC yet - If you already plugged it into your PC then unplug it before proceeding to step 2.
   2. Download the LaunchPad drivers for Windows: [CC3200 LaunchPad USB Driver](#)
   3. Unzip and double click DPinst.exe for Windows 32bit or DPinst64.exe for Windows 64 bit.
   4. Follow the installer instructions.
   5. The LaunchPad is now ready for use

7. Connect the LaunchPad IoT to the USB port of the computer

8. Install the Energia IDE
   1. Using Windows Explorer, create a deviceWISE folder on the C: (ie C:\deviceWISE)
   2. Download the Energia package from [here](#)
   3. Open the downloaded file (should be located in your 'Downloads' folder) and copy the folder into C:\deviceWISE. (Result should be C:\deviceWISE\energia...)
   4. Create a shortcut for "C:\deviceWISE\energia…\energia.exe" to the Desktop
   5. Open Energia by double clicking on the Desktop shortcut
   6. Select 'File' from the Energia menubar and then 'Preferences'
   7. Enter "C:\deviceWISE" into the "Sketchbook location" field and press "OK"

8. Select 'Tools' from the Energia menubar then 'Board' and afterwards your LaunchPad model. (In this demo we are using the LaunchPad w/cc3200 80Mhz model.)

9. Open the Windows "Device Manager" on your computer

10. Find your "CC3200LP" under "Ports" and take note of the COM port assigned to your CC3200 (COM5 in this specific example)
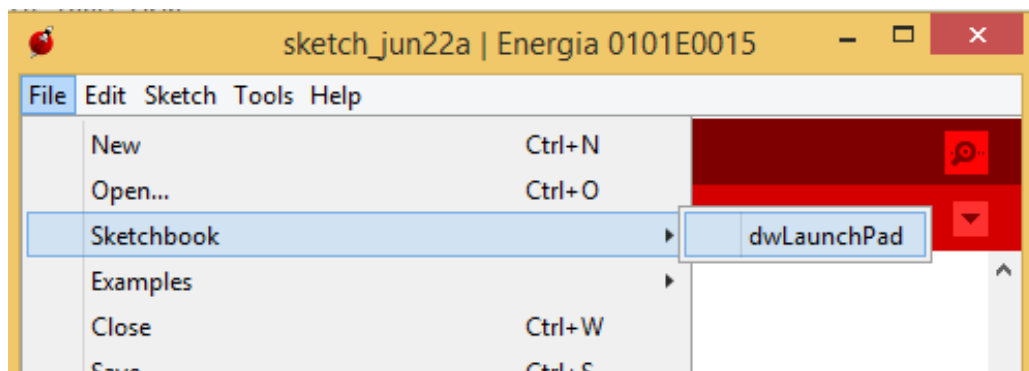
11. On Energia select 'Tools' from the menubar and then 'Serial Port'. Select the displayed COM port so it has a √ (Check) mark.

12. Exit Energia by selecting "File" and then "Quit" from the Energia menubar.

9. From within the file downloaded in step 2

1. Copy the "dwLaunchPad" folder into C:\deviceWISE. This will result in a "C:\deviceWISE\dwLaunchPad" folder.

2. Copy the "libraries" folder into C:\deviceWISE. This will result in a "C:\deviceWISE\libraries" folder.

10. Open the Energia IDE and select File->Sketchbook to load in the sample dwLaunchPad sketch.

11. Ensure that the "#define WIFI_AVAILABLE 1" one line 34 is not commented out


```
#define WIFI_AVAILABLE 1

#ifdef WIFI_AVAILABLE

    #include <SPI.h>
    #include <WiFi.h>
    #include <WifiIPStack.h>

    //Wi-Fi Network - SSID / Password
    #define WIFI_SSID         "UserGUEST"
    #define WIFI_PW           "UserPassword"
```
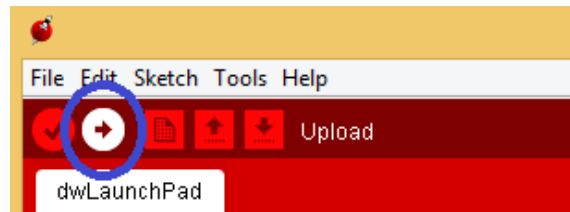
12. Enter the appropriate WiFi User ID and Password for your WiFi network.

13. Enter the m2m Application Token (on line 59) that was obtained in the earlier step

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

14. Compile and load the demo program onto the LaunchPad by pressing the "Upload" arrow button

15. After the Upload completes, press the "<Shift><Ctrl>M" keys to display the demo program output

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 LaunchPad.