Connecting SmartMesh IP Mote to MCU Guide

Team 13
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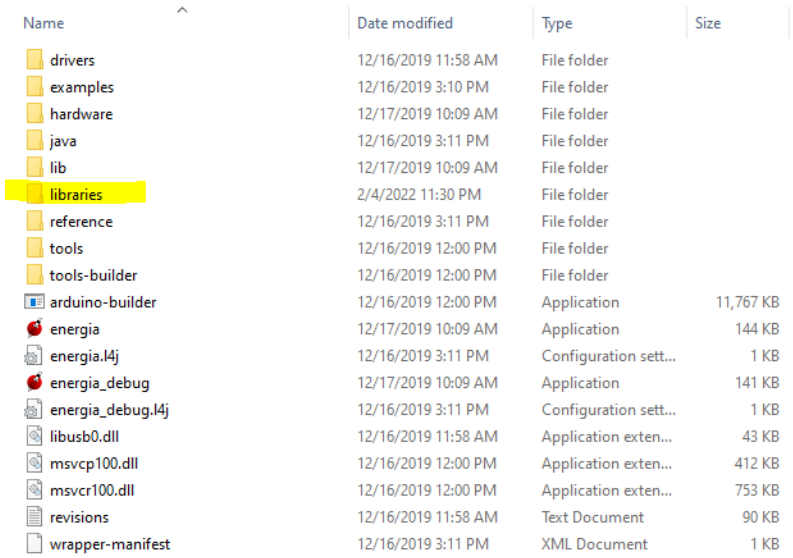
Version 0.1

1. Install Energia IDE (https://energia.nu/download/).
2. In the “libraries” folder for Energia put the “IpMtWrapper” and “TriangleGenerator” folders which are found in last year’s capstone GitHub (https://github.com/ECE-412-Capstone-Sensor-Suite/Team-20-Sensor-Suite) in Firmware → ENERGIA CODE → SmartMesh C library → sm_clib-master → examples → MSP432 energia → Libraries



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examples	12/16/2019 3:10 PM	File folder	
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java	12/16/2019 3:11 PM	File folder	
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reference	12/16/2019 3:11 PM	File folder	
tools	12/16/2019 12:00 PM	File folder	
tools-builder	12/16/2019 12:00 PM	File folder	
arduino-builder	12/16/2019 12:00 PM	Application	11,767 KB
energia	12/17/2019 10:09 AM	Application	144 KB
energia.l4j	12/16/2019 3:11 PM	Configuration sett...	1 KB
energia_debug	12/17/2019 10:09 AM	Application	141 KB
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msvcr100.dll	12/16/2019 12:00 PM	Application exten...	753 KB
revisions	12/16/2019 11:58 AM	Text Document	90 KB
wrapper-manifest	12/16/2019 3:11 PM	XML Document	1 KB

Figure 1: Energia IDE folders and files

3. In the “libraries” folder for Energia also put the “sm_clib” folder which is found in last year’s capstone GitHub in Firmware → ENERGIA CODE → SmartMesh C library → sm_clib-master
4. Open “Triangle2manager.ino” with Energia which is found in last year’s capstone GitHub in Firmware → ENERGIA CODE → SmartMesh C library → sm_clib-master → examples → MSP432 energia → Triangle2manager

5. Make sure that in Energia the “MSP-EXP430FR5994LP” board is selected (Figure 2) and then upload the code to the board using a USB cable.

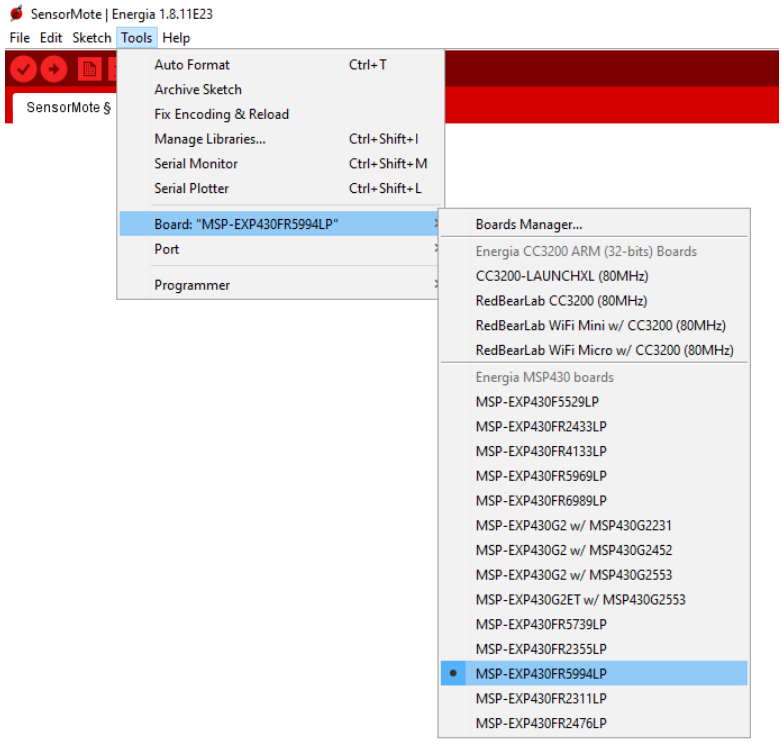

Figure 2: Selecting the MSP-EXP430FR5994LP board in Energia IDE

6. Download SmartMesh SDK from https://github.com/dustcloud/smartmeshsdk/tree/develop (Figure 3)

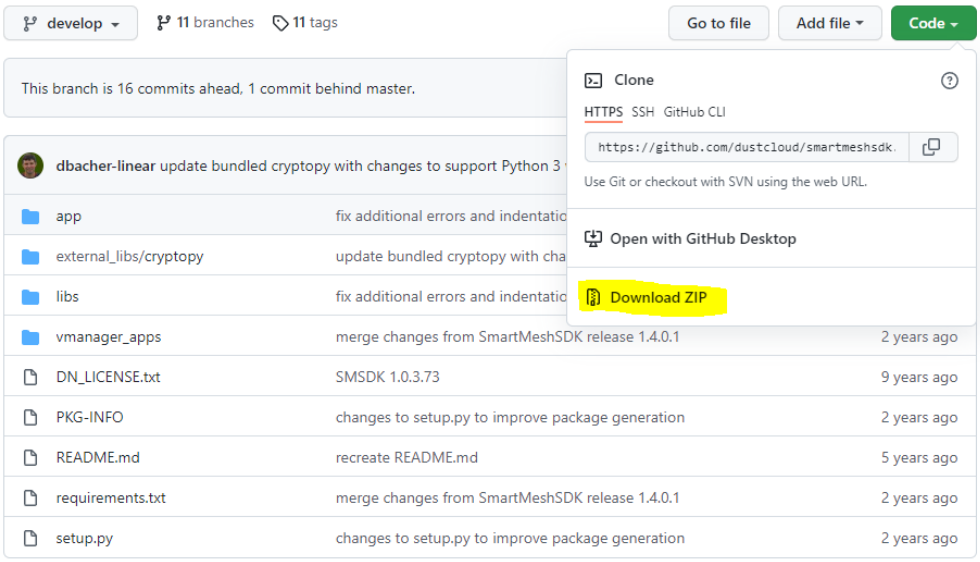

Figure 3: SmartMesh SDK GitHub download

7. Now connect the MSP430 to the SmartMesh IP mote (mote has to be in “slave” mode not “master” mode) using jumper wires as shown in Table 1 and in Figures 4 and 5. ****MAKE SURE TO REMOVE BATTERY FROM SMARTMESH MOTE AS IT WILL BE POWERED BY THE MICROCONTROLLER****

LaunchPad pin	DC9018B-B pin	Wire color in the pictures
GND	GND	Green
3V3	VBAT	Orange
P6.0	RX	Brown
P6.1	TX	Blue
GND	TX_CTSn	Gray
3V3	RX_RTSn	Purple

Table 1: Jumper wire connections for LaunchPad and DC9018B-B SmartMesh mote

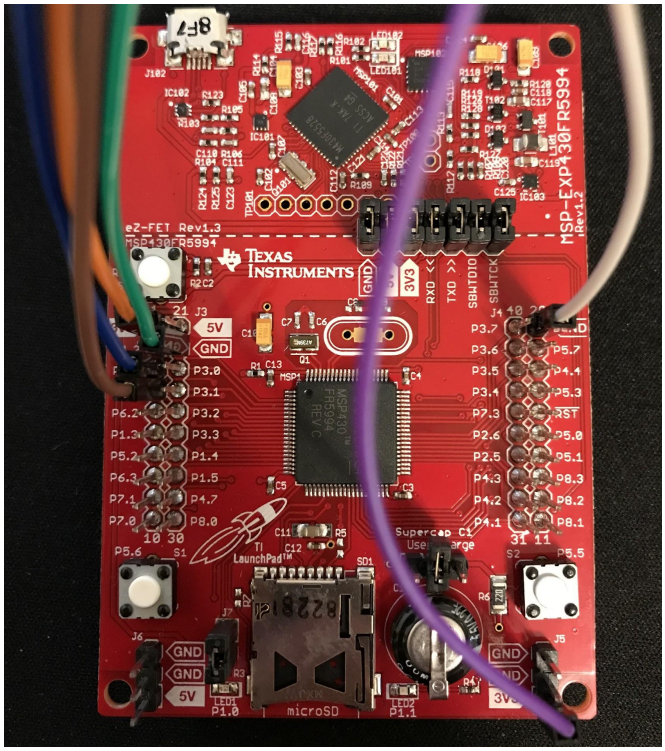

Figure 4: LaunchPad jumper wire connections

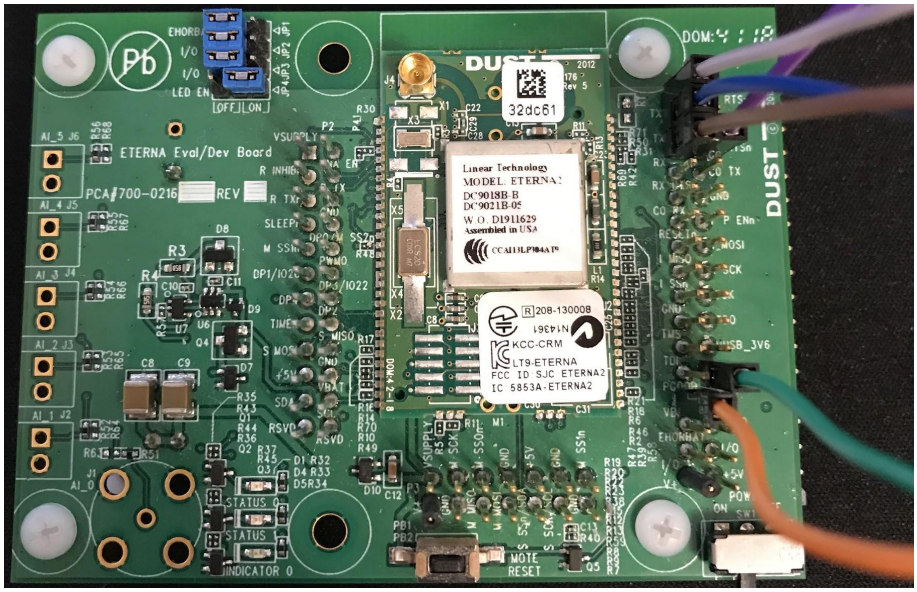

Figure 5: DC9018B-B SmartMesh mote jumper wire connections

8. Open the SmartMesh SDK folder and open the SensorDataReceiver Python application found in app → SensorDataReceiver
9. Connect the manager to a USB port on your computer and put in the port name for the manager in the SensorDataReceiver application. In this case it is “COM6”. Your number may differ but you must always choose the fourth COM port. For example if COMs 7, 8, 9, 10 appear under ports in the device manager then you choose the fourth COM port (COM10) to put into the SensorDataReceiver application (Figures 6 and 7).

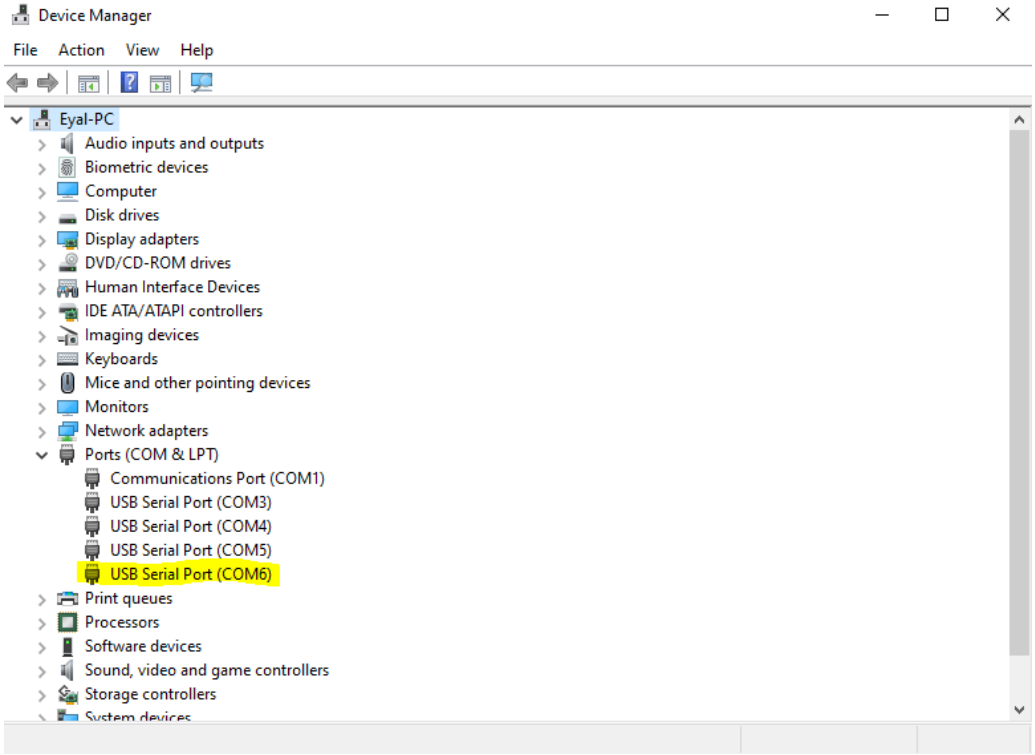

Figure 6: Locating the port name of the manager for the SensorDataReceiver application

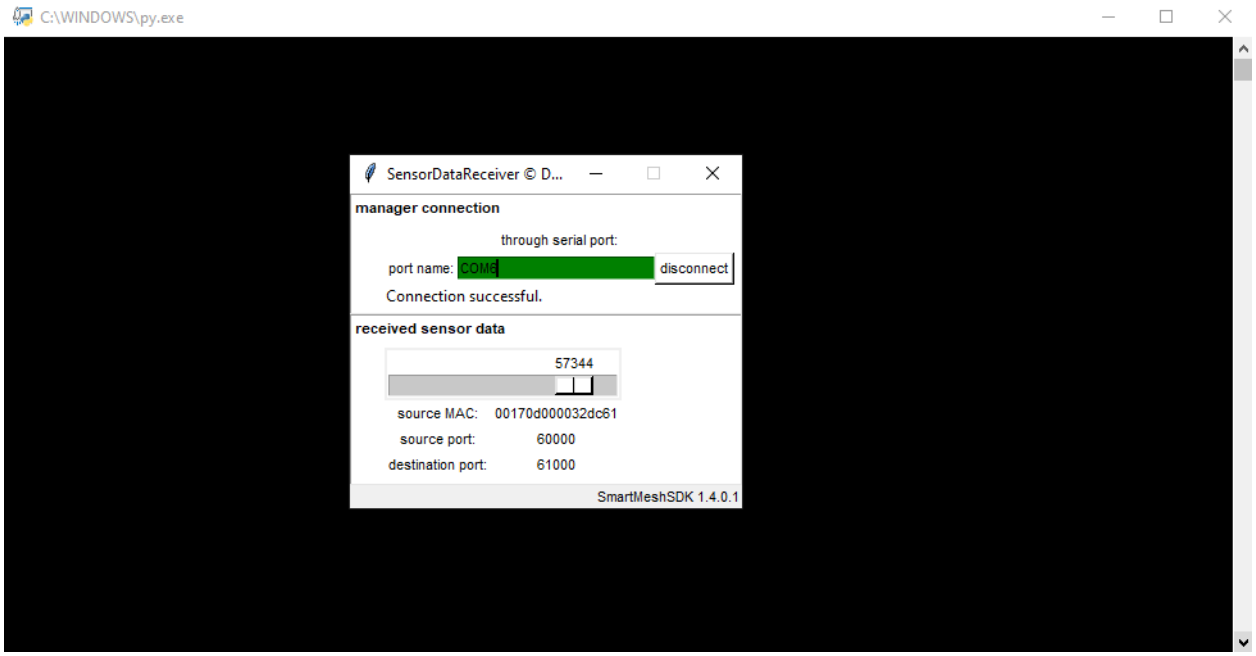

Figure 7: Typing in the port name for the manager in the SensorDataReceiver application

10. Connect a USB cable to the MSP430FR5994 and connect to the other end of the USB cable to your computer.
11. Now data should be transfering from the MSP430/mote system to the manager and the data values should appear on your computer screen.
12. To view the status of operation of the mote, first download and open PuTTY (https://www.putty.org/).
13. Click on “Session” in the category list in PuTTY and then select the “Serial” bubble. Keep “Speed” at 9600. Under “Serial line” type in the third COM port that appeared in the device manager. In this case, the third COM port is COM5. Then click “Open” (Figures 8 and 9).

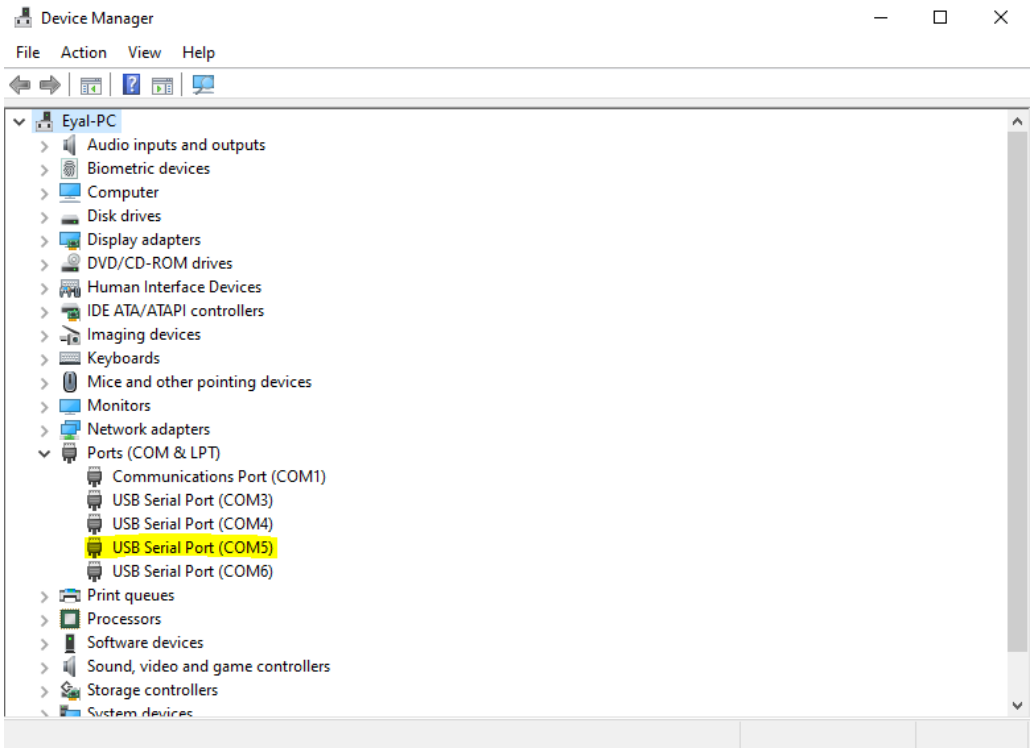

Figure 8: Locating the third COM port in the device manager

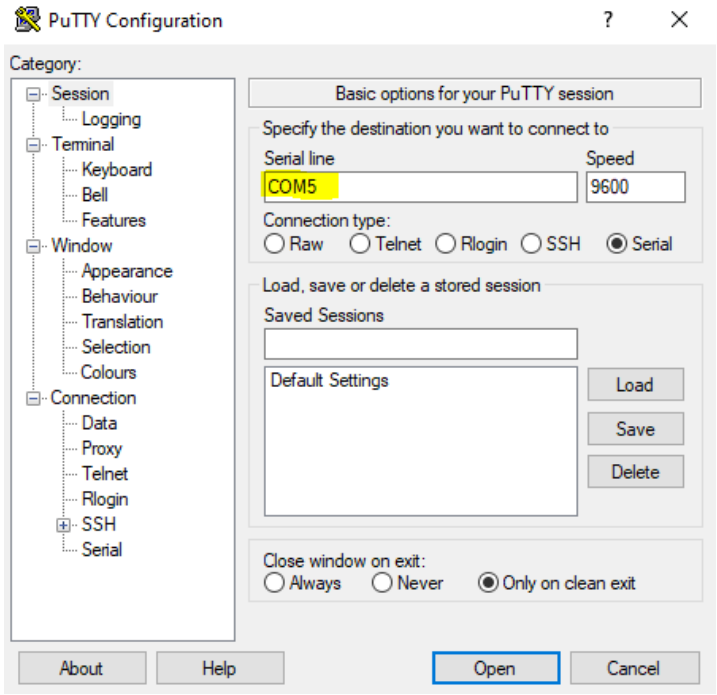

Figure 9: Entering the third COM port in PuTTY

14. Hit enter one or more times in order to display the “>” symbol.
15. Now type “login user”.
16. Type “help” for a list of available commands.
17. Type “sm” to show a list of all of the motes and their status of operation.