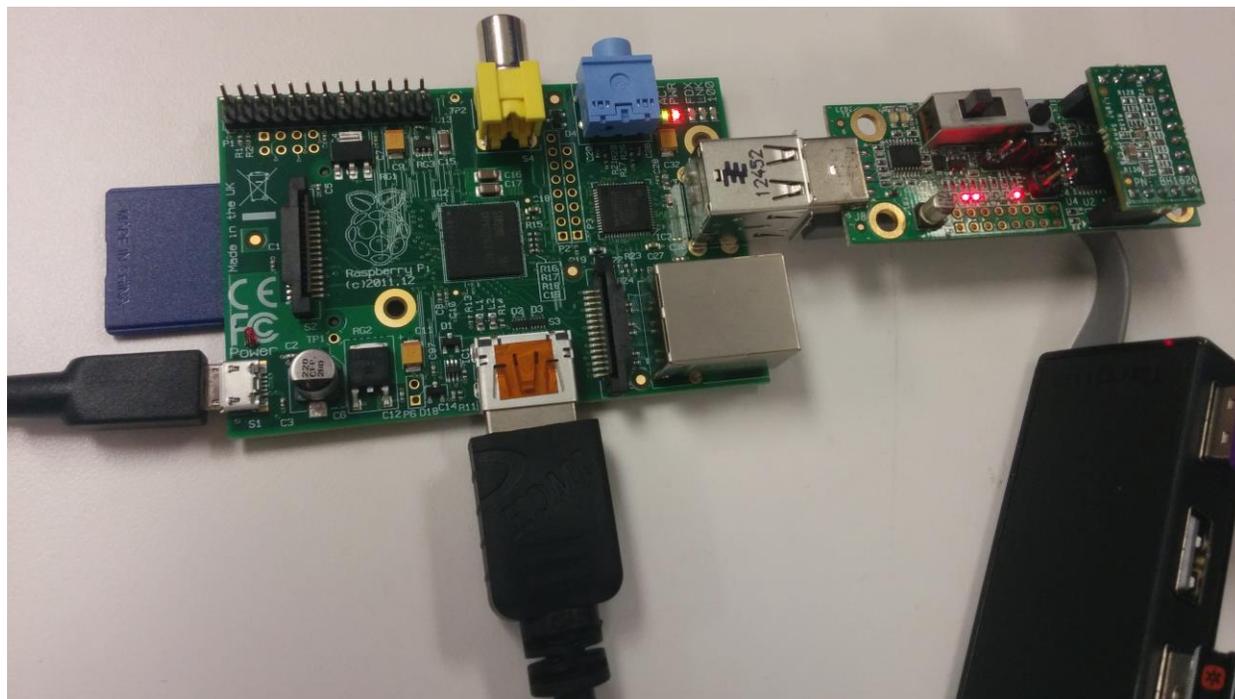


Connecting the Sensor Platform Kit to the Raspberry Pi Platform



Above: ROHM Sensor Platform Base Board connected to the Raspberry Pi



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Copyright and License

Raspberry Pi is a trademark of the Raspberry Pi Foundation. For additional information, please see <http://www.raspberrypi.org/>

Please note that all references to ROHM's Sensor Platform Kit are also shared under open source guidelines under the GNU General Public License, Version 3. Details can be found at the following link: <https://github.com/ROHMUSDC/ROHMSensorPlatformEVK>.

Revision History

Date	Description	Revision ID
12 January 2015	First Draft	A

Introduction

The following document was written to provide a brief connection guide and starting point for using ROHM's Sensor Platform Kit with the Raspberry Pi Platform of boards. This guide assumes that the user has basic functional knowledge of both the Sensor Platform Kit and the Raspberry Pi itself. If this is not correct, please see the following links for other guides and information on these products.

ROHM's Sensor Platform Kit: <https://github.com/ROHMUSDC/ROHMSensorPlatformEVK>

Raspberry Pi Platform: <http://www.raspberrypi.org/>

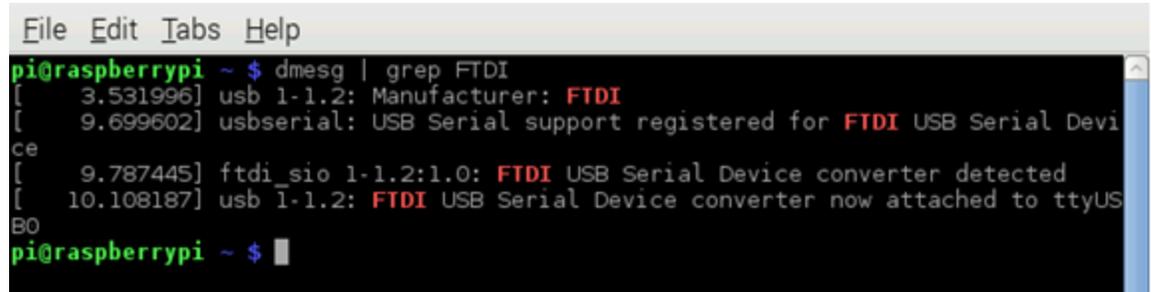
Getting Started

1. Initial Setup
 - a. ROHM Sensor Platform Kit
 - i. The Sensor Platform Base Board can be connected to the Raspberry Pi Platform directly via USB; thus, there are no pre-requisites for this side of the system
 - ii. We would recommend a USB-A to USB-B extender to allow for movement of the sensor base board while connected to the Raspberry Pi.
 - b. The following are recommended for using the Raspberry Pi for this guide
 - i. Raspian OS installed through NOOBS
 1. <http://www.raspberrypi.org/help/noobs-setup/>
 - ii. USB Cable (micro B) for Power
 - iii. HDMI Cable and Monitor for Display
 - iv. USB Mouse and Keyboard for User Input
 - v. WiFi Dongle for Internet Connectivity

Connecting the Sensor Platform UART Output to the Raspberry Pi (Using the Console)

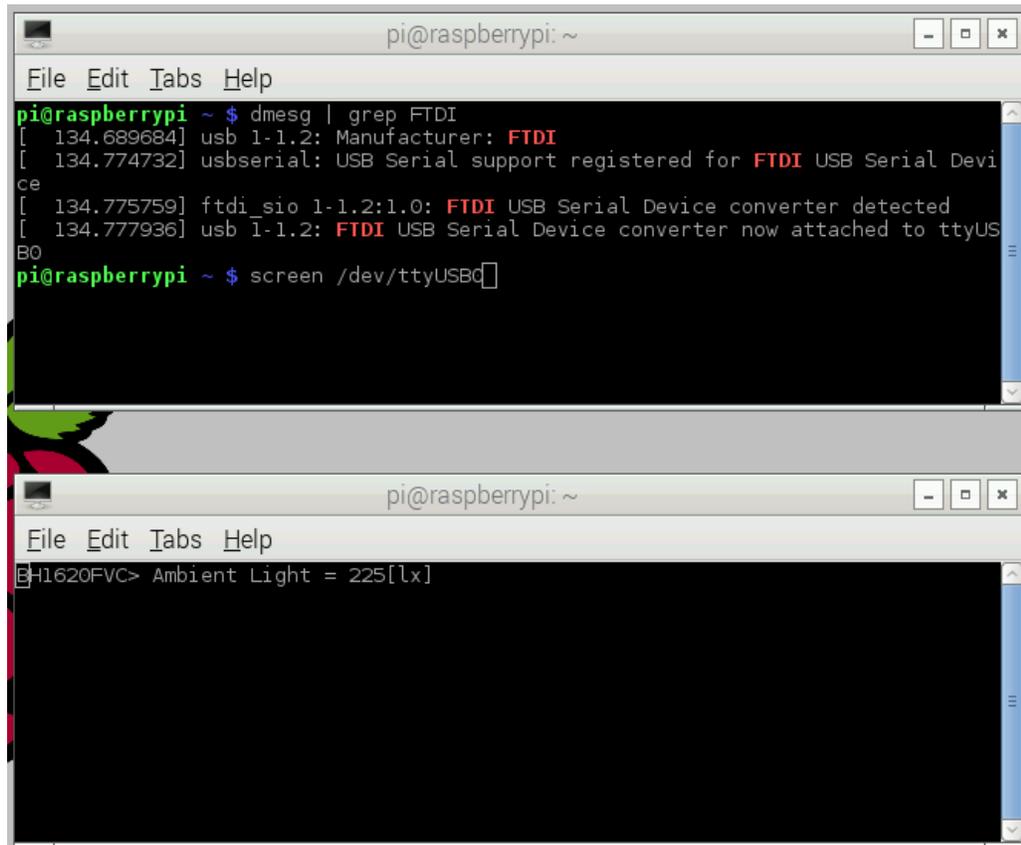
1. The Sensor Platform Board uses FTDI's FT230XS-R as the on board UART to USB Bridge for data transmission.
2. For this guide, we will explain how to connect the sensor platform kit to Raspberry Pi's Raspian OS using the VCP drivers built into the linux kernel. For additional support on D2XX driver, please see FTDI's installation guide for Linux.
 - a. http://www.ftdichip.com/Support/Documents/AppNotes/AN_220_FTDI_Drivers_Installation_Guide_for_Linux%20.pdf
3. Connect the sensor platform base kit and any sensor to the Raspberry Pi hardware using any USB slot connector.
4. Next, check to see if the VCP drivers are working correctly by entering the following into the command line:

- a. "dmesg | grep FTDI"
- b. The message should return with the information in the picture below



```
File Edit Tabs Help
pi@raspberrypi ~ $ dmesg | grep FTDI
[  3.531996] usb 1-1.2: Manufacturer: FTDI
[  9.699602] usbserial: USB Serial support registered for FTDI USB Serial Device
[  9.787445] ftdi_sio 1-1.2:1.0: FTDI USB Serial Device converter detected
[ 10.108187] usb 1-1.2: FTDI USB Serial Device converter now attached to ttyUSB0
pi@raspberrypi ~ $
```

- c.
5. Since this FTDI chip is essentially a COM port, we can easily view the data stream through the console using "screen" application
 - a. In the console, type the following to install "screen"
 - i. "sudo apt-get install screen"
6. We can now access the COM port by using the screen application using the following command
 - a. "screen /dev/ttyUSB0"
 - i. *Note, please use whichever USB device returned from the above "dmesg | grep FTDI" command instead of ttyUSB0
 - b. If done correctly, a new console window will open showing the streaming data from the device. See below for a picture



```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi ~ $ dmesg | grep FTDI  
[ 134.689684] usb 1-1.2: Manufacturer: FTDI  
[ 134.774732] usbserial: USB Serial support registered for FTDI USB Serial Device  
ce  
[ 134.775759] ftdi_sio 1-1.2:1.0: FTDI USB Serial Device converter detected  
[ 134.777936] usb 1-1.2: FTDI USB Serial Device converter now attached to ttyUSB0  
pi@raspberrypi ~ $ screen /dev/ttyUSB0  
  
pi@raspberrypi: ~  
File Edit Tabs Help  
H1620FVC> Ambient Light = 225[lx]
```

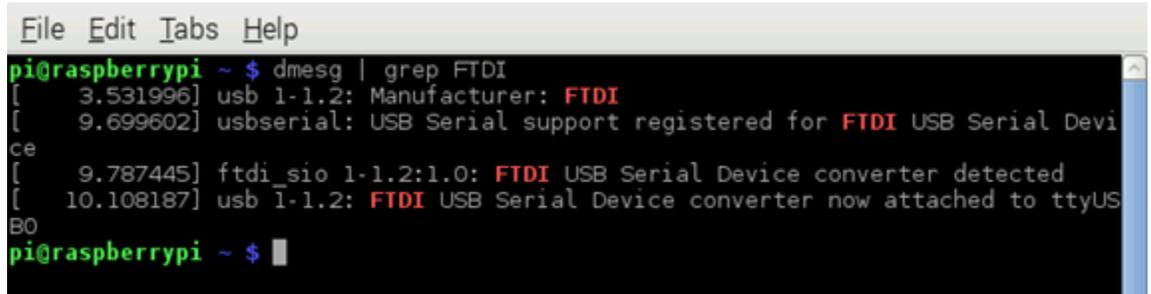
- c.
 - i. Note: you can return to the terminal by using the keyboard command “ctrl + A + D”. You can then return to this screen output via terminal by using the command “screen -rd”

Connecting the Sensor Platform UART Output to the Raspberry Pi (Using Graphical Interfaces)

7. The Sensor Platform Board uses FTDI’s FT230XS-R as the on board UART to USB Bridge for data transmission.
8. For this guide, we will explain how to connect the sensor platform kit to Raspberry Pi’s Raspian OS using the VCP drivers built into the linux kernel. For additional support on D2XX driver, please see FTDI’s installation guide for Linux.
 - a. http://www.ftdichip.com/Support/Documents/AppNotes/AN_220_FTDI_Drivers_Installation_Guide_for_Linux%20.pdf
9. After you’ve booted up your raspian distribution and with a stable internet connection, install Putty by entering the following text into the command line:
 - a. “sudo apt-get install putty -y”
10. After this installation has completed, connect the sensor platform base kit and any sensor to the Raspberry Pi hardware using any USB slot connector.

11. Next, check to see if the VCP drivers are working correctly by entering the following into the command line:

- a. "dmesg | grep FTDI"
- b. The message should return with the information in the picture below

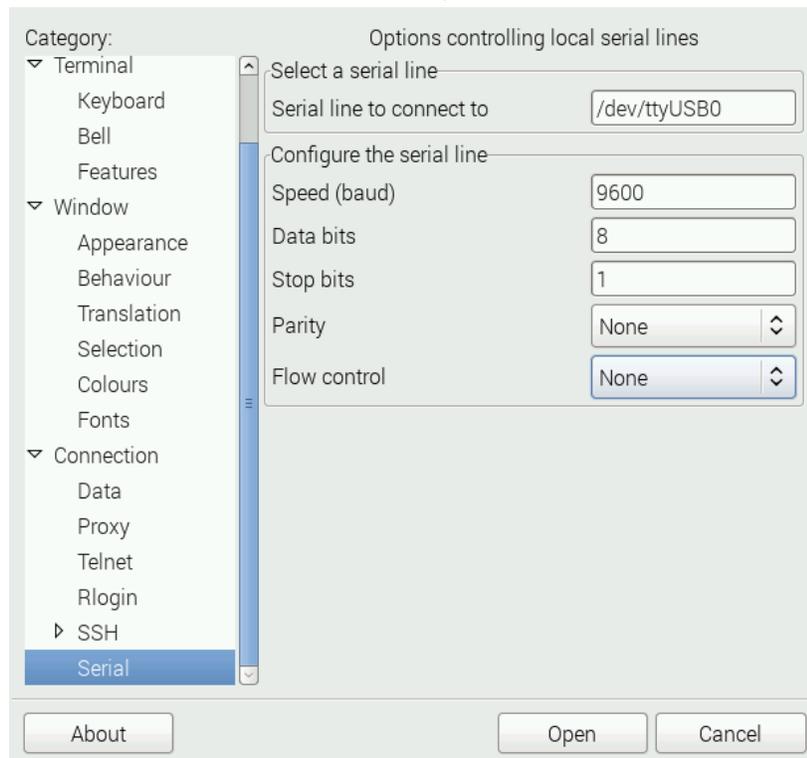


```
File Edit Tabs Help
pi@raspberrypi ~ $ dmesg | grep FTDI
[  3.531996] usb 1-1.2: Manufacturer: FTDI
[  9.699602] usbserial: USB Serial support registered for FTDI USB Serial Devi
ce
[  9.787445] ftdi_sio 1-1.2:1.0: FTDI USB Serial Device converter detected
[ 10.108187] usb 1-1.2: FTDI USB Serial Device converter now attached to ttyUS
B0
pi@raspberrypi ~ $
```

- c.
- d. *Please keep a note of the port that this device is connected to. In the above picture, the Port is "ttyUSB0"

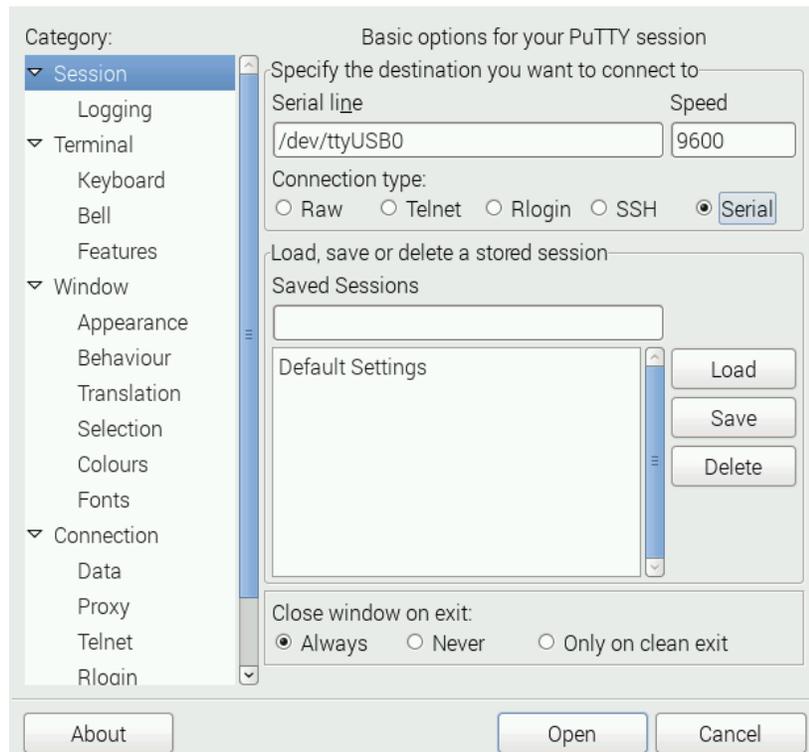
12. Next, open the newly installed Putty

13. In the far left side under "categories", scroll all the way down to serial. This will show options for using putty to connect to a serial port. Edit the fields to match the below settings (Adjust the "serial line to connect to" field to match the port as shown in the console above).



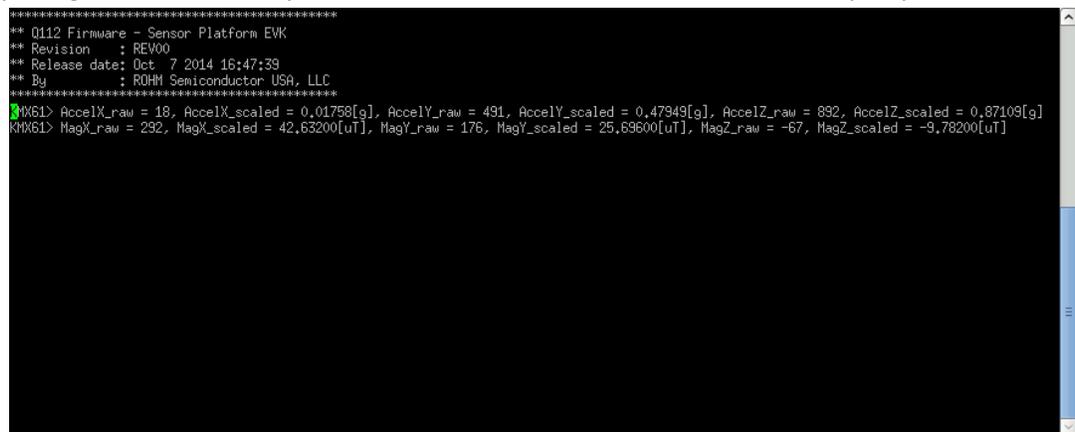
a.

14. In Putty, scroll back up to the "Session" category and change the connection type to "Serial". Then click the "Open" Button



a.

15. Upon opening this connection, you should see the sensor data stream into the putty console.



a.

b. Resetting the base board will show the firmware revision indication as well as the connected sensor data