

# EVCC Terminal Driver Installation

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## Overview

Using a USB to serial bridge is a generic and popular way to connect a host computer to a microcontroller, such as the EVCC. The EVCC is supplied with a USB to serial cable: the cable connects to the host computer by USB and to the EVCC by the 3.5mm TRS jack.

In order to use the serial port, the host computer requires the correct serial port drivers (the Virtual Comm Port Drivers) in addition to a terminal application (or “telnet client”).

The steps to install this software are basically the same regardless of the host computer and operating system. Installation instructions are initially given below for Windows. Later sections show describe Mac OSX and Android installation instructions.

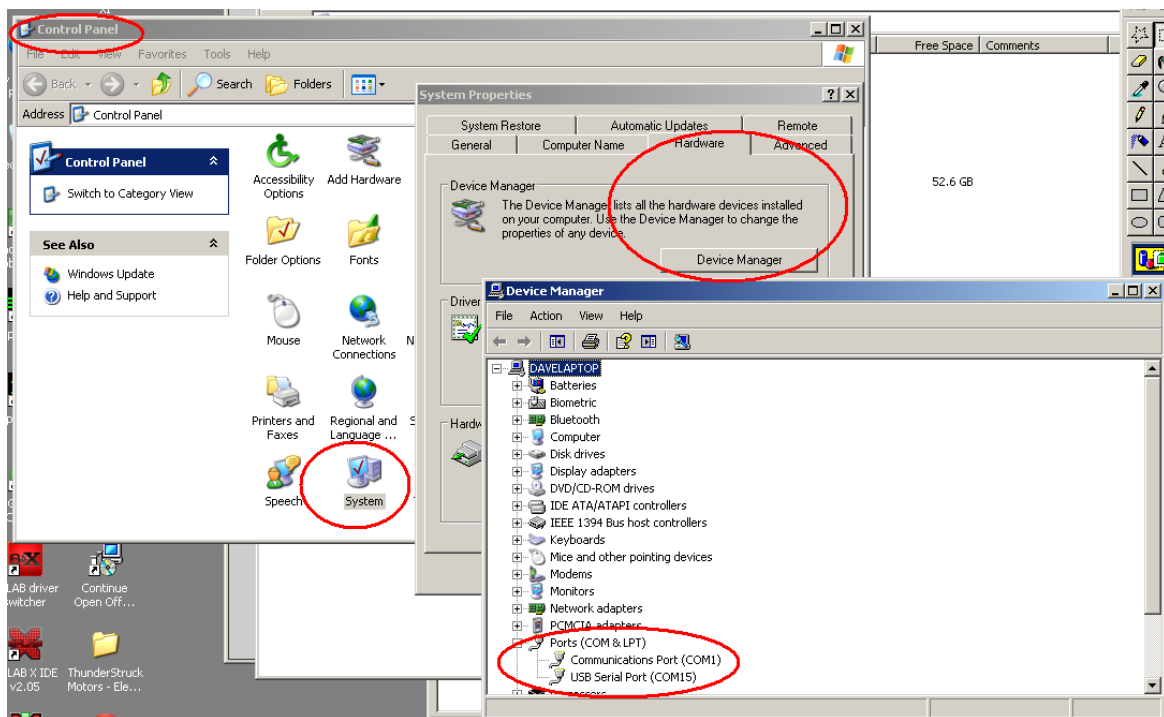
Note that there are good tutorials on how to install the necessary drivers and application software available on the Internet (for other versions of Windows, MAC, Linux, etc). (Search for “ftdi installation”, “putty installation”, etc).

**Step 1:** Install the Virtual Comm Port (VCP) driver on the host computer. The VCP driver is software on the host computer that emulates a serial port “on top of” a USB connection.

- VCP drivers are available at: [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm).
- Installation documentation is available at [www.ftdichip.com/Support/Documents/InstallGuides.htm](http://www.ftdichip.com/Support/Documents/InstallGuides.htm).

**Step 2:** Plug in the USB to serial port cable. If the drivers are correctly installed, the host computer will recognize the new virtual serial port device.; to use this device, is necessary to determine the virtual serial port device name.

- The virtual serial port device name is of the form “COM<n>”, where n is a small number. This number can be determined by looking at “Control Panel -> System -> Device Manager -> Ports”. In the example below, it is “COM15”.

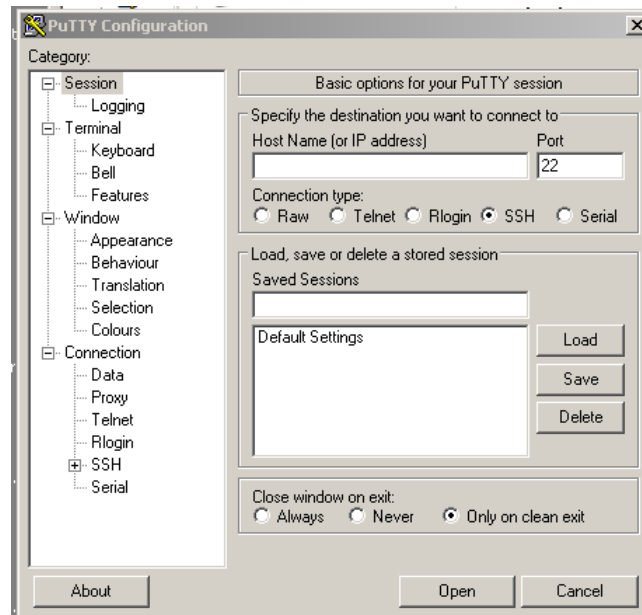


**Step 3:** Install a terminal console program (e.g., a “telnet client”) on the host computer.

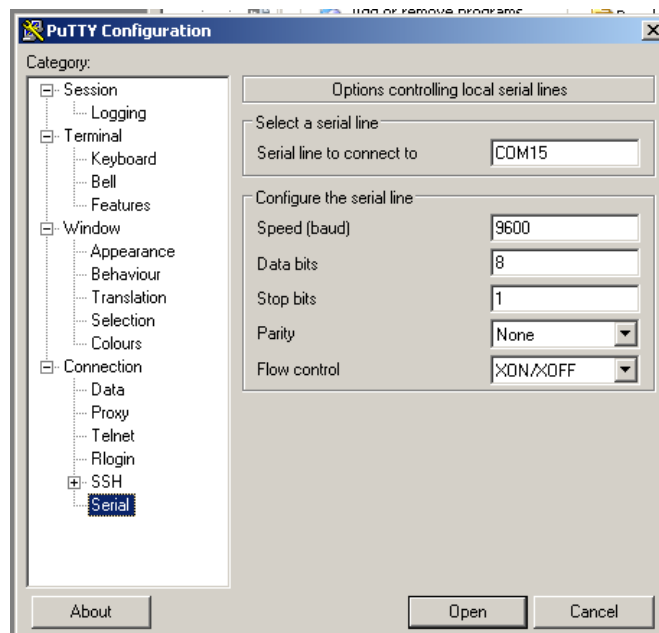
There are many suitable telnet clients that may be used. One popular choice is PuTTY, available for download at <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>.

**Step 4:** Configure the telnet client for use.

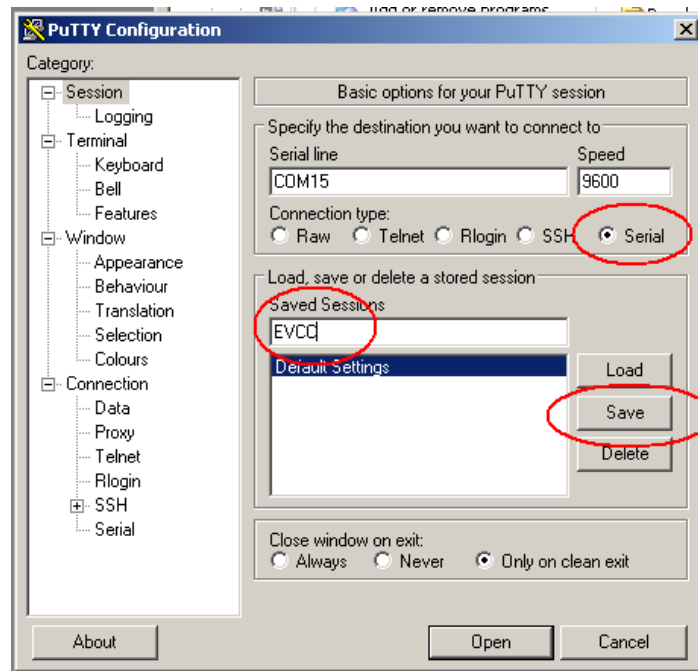
The first time PuTTY is opened, it will present the following:



Click on “Serial” in the Category column. Verify that the Speed is 9600, 8 data bits, 1 stop bit. Enter the Serial Line to connect to (in this case, “COM15”).

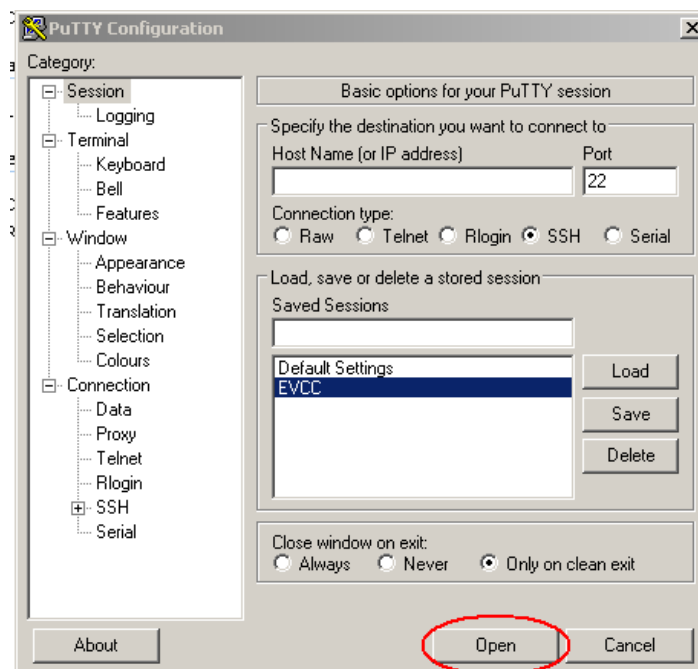


Do not hit “Open” just yet. Go back to “Session” by clicking the word “Session” in the Category window.

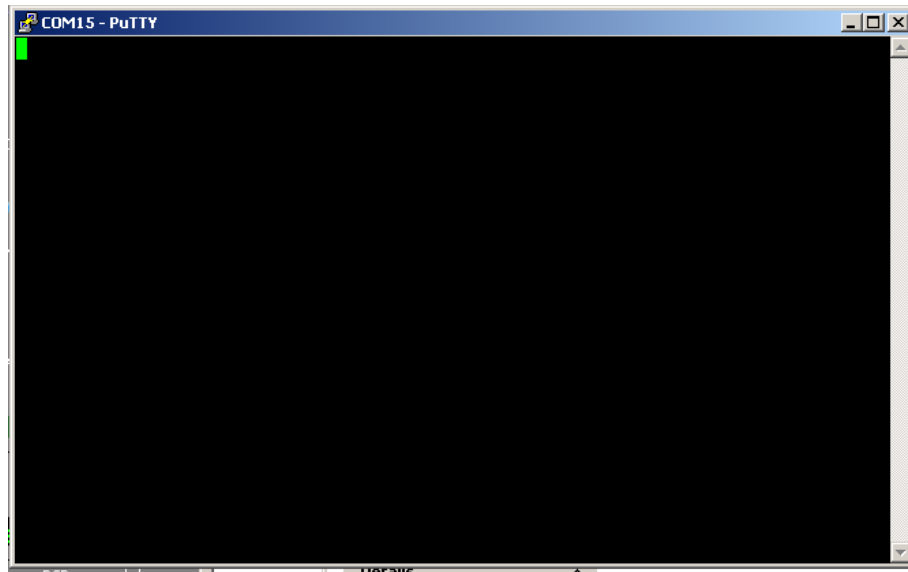


Set the Connection type to Serial. Give the new session a name (in this case “EVCC” in the Saved Sessions window) and press “Save” to save the session. PuTTY is now configured.

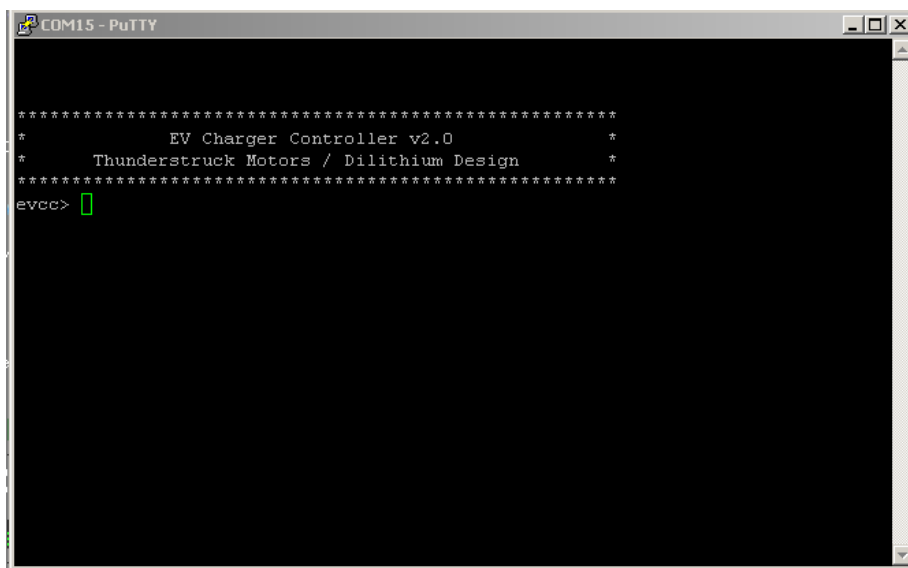
**Step 4:** Open the comm port. Select the saved session “EVCC” and click Open.



A screen like the following should appear:



**Step 5:** Connect the serial cable to the EVCC. Apply power to the EVCC. A startup banner similar to the following should be displayed:



**Step 6:** Installation is complete.

## Firmware Upgrade

The EVCC firmware may be upgraded by the customer using the serial port. Firmware upgrade requires the same VCP drivers as serial communications, however firmware upgrade uses a special bootloader application program.

The opensource ds30 PIC bootloader is used, distributed under the GNU GPL license. This bootloader is free and the application runs on Windows, MAC and Linux servers. Documentation, screenshots and downloads are available at:

<http://picbootloader.com/>

When starting the bootloader utility, set the following options.

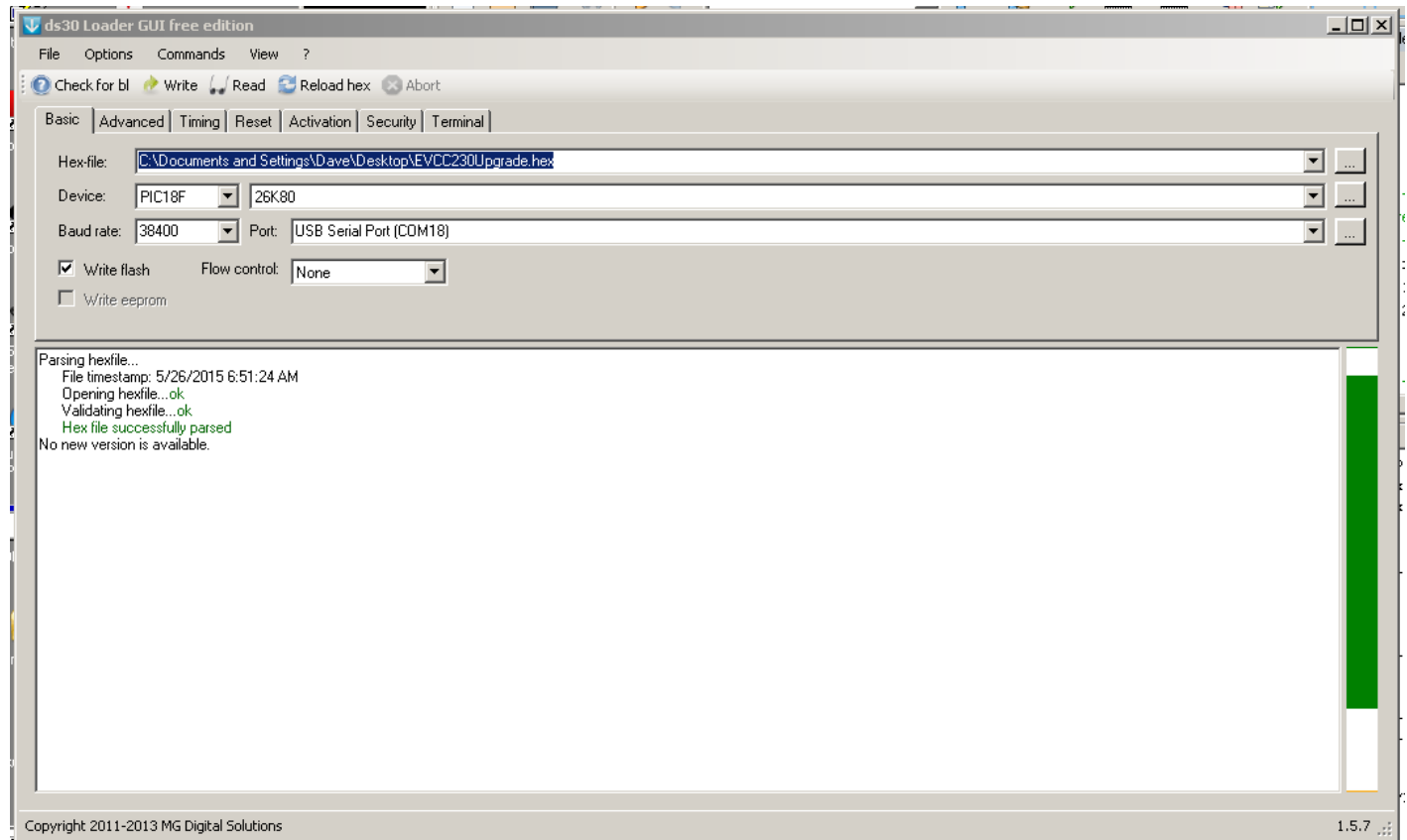
Device = **PIC18F26K80**

Baud Rate = **38400**

Use the pulldown on the Port option to find the COM port associated with the USB to serial cable to the EVCC. Select the correct COM port.

Tick the “Write flash” box.

Select the hex file to download. Thunderstruck will provide firmware upgrades by its website as needed. An upgrade file will be named by the convention “EVCC242Upgrade.hex”.



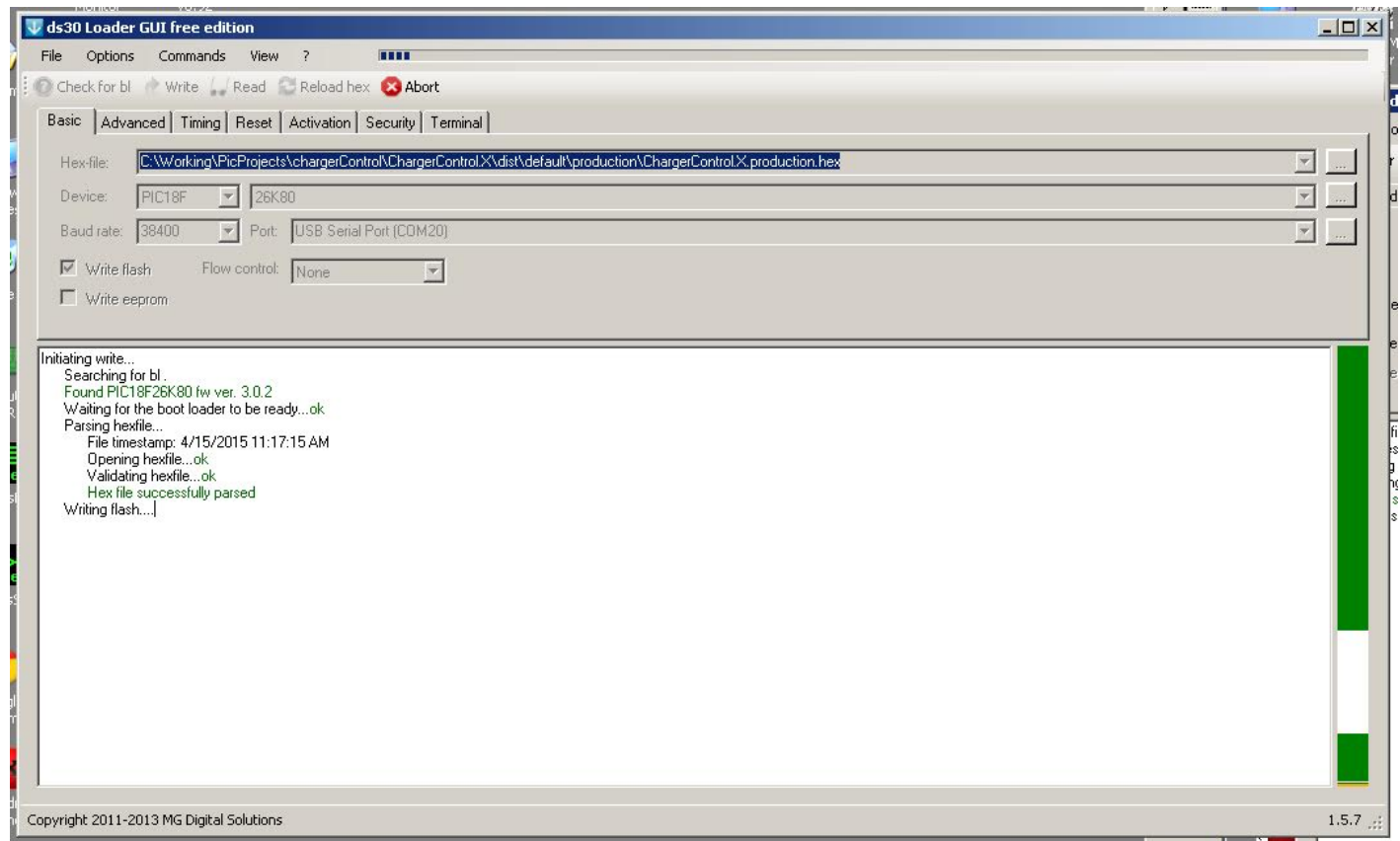
## Performing an Upgrade

In order to start the upgrade, must first bring up the EVCC CLI and type:

```
evcc> upgrade
```

The EVCC will the print some informational text and the EVCC will enter the serial bootloader. At this point the EVCC is waiting for an upgrade image. The EVCC LED will blink at a very slow blink (once every 2 seconds). It is then necessary to exit from the the terminal application (e.g., puTTY) and start the ds0bootloader.

Once the correct parameters are set (described above), click on the “Write” tab and the upgrad should start. The ds0bootloader will show a progress bar, and the EVCC LED will blink at a rapid rate to show that the loading has commenced.



Once the upgrade has completed, it is necessary to exit from the ds0bootloader application, cycle power to the EVCC, and start the terminal application.

One can use the **show version** command to verify that the proper version is running.



## Mac OSX Driver Installation

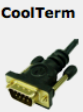
Before starting the procedure below, ensure the 12V power is hooked up to EVCC. Finally, insure that the USB to serial cable is plugged into the computer.

For MAC OS X, the virtual serial port device name is of the form “usbserial-<sn> where <sn> is the serial number of the USB to serial device. An example of what the name of the EVCC would look like is the following: usbserial-FTGDTR8M.

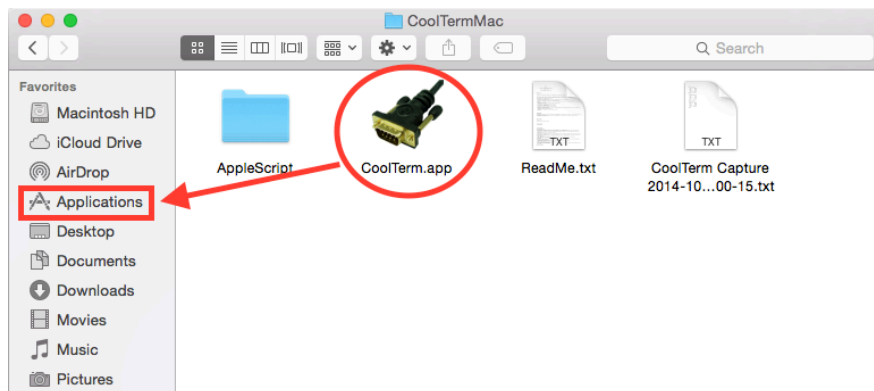
The MAC OSX distribution includes the applications “terminal” and “screen”, which may be used as a telnet client. However, for MAC OSX, we have used and recommend CoolTerm as it is simpler to install and use.

CoolTerm is a program that allows the user to easily access and program the EVCC via OS X.

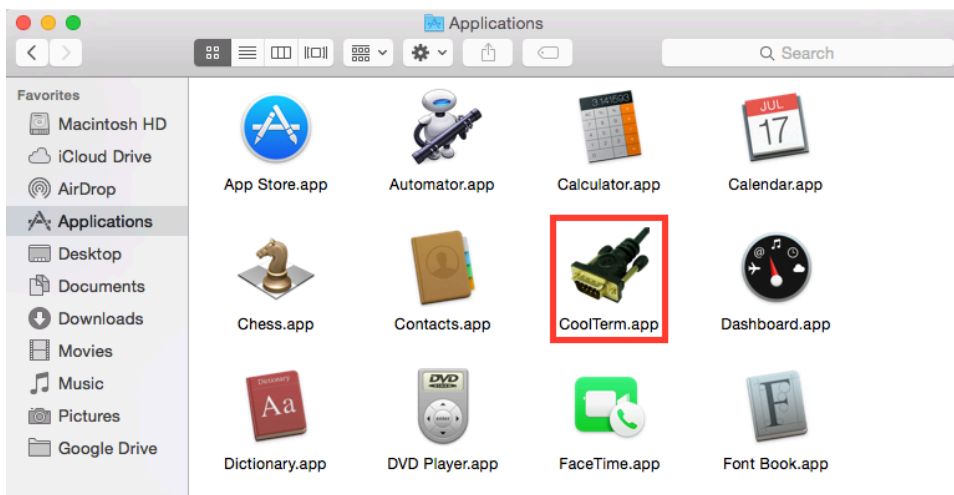
1. Go to <http://freeware.the-meiers.org>
2. Click download for mac

Application	Version	Description
 <p><b>CoolTerm</b></p> <p>Mac Win Linux Screenshot Info</p>	1.4.4	<p>CoolTerm is a simple serial port terminal application (no terminal emulation) that is geared towards hobbyists and professionals with a need to exchange data with hardware connected to serial ports such as servo controllers, robotic kits, GPS receivers, microcontrollers, etc. Written in <a href="#">REALBasic</a>.</p> <p>NOTE: Starting with v1.4.4, the official Mac build will only support Intel-based Macs. OS X 10.7 or newer is required. For a universal binary supporting OS X 10.6 or older, click <a href="#">here</a>.</p> <p>NOTE: The LINUX version is not officially supported. While almost everything is expected to work as expected, virtually no testing has been performed to confirm that all the features work properly. I have no LINUX system that I can use for testing and debugging. The LINUX build has been posted here as a courtesy to the users that asked for it. Please use this build at your own risk. Please use the <a href="#">forums</a> to share your experiences with other users.</p> <p>Books that mention CoolTerm:</p> <ul style="list-style-type: none"> <li>• <a href="#">Building Wireless Sensor Networks</a> by Robert Faludi</li> <li>• <a href="#">Making Things Talk, 2nd Edition</a> by Tom Igoe</li> <li>• <a href="#">Arduino Cookbook</a> by Michael Margolis</li> </ul>

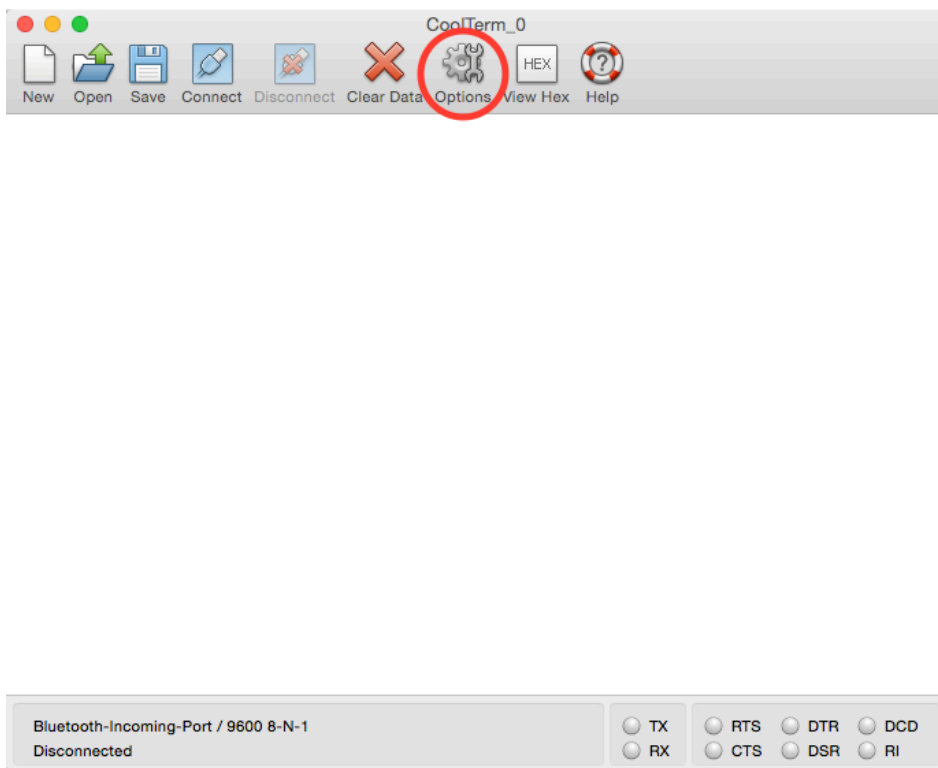
3. Extract the .zip file, open the CoolTermMac folder and drag the CoolTerm app into the applications folder.



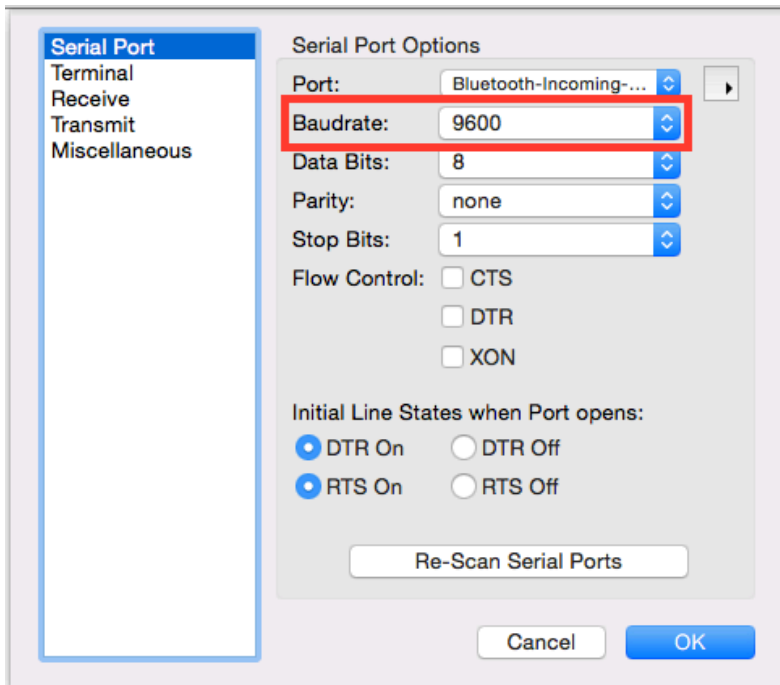
4. Open the applications folder and double click CoolTerm.app



5. Click “Options”

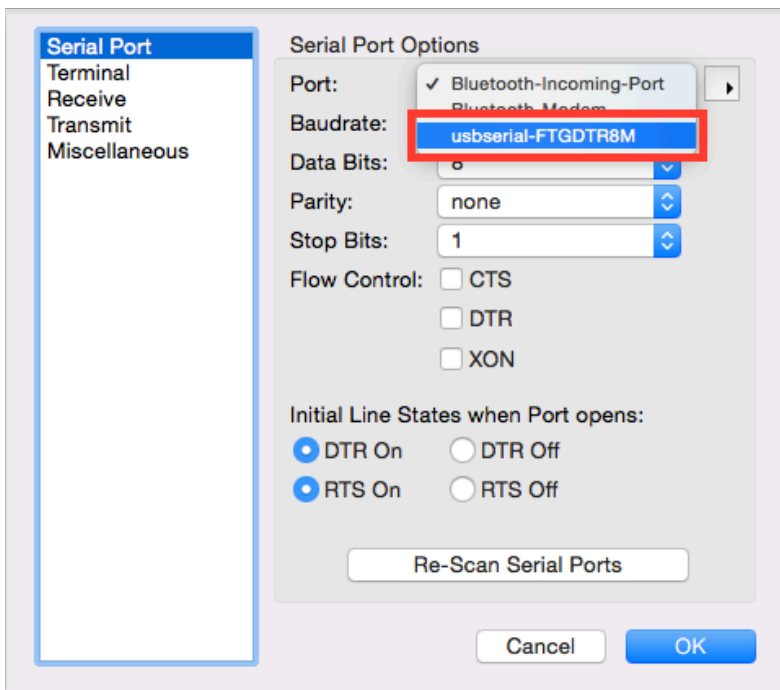


6. Ensure the “baudrate” is set to 9600 (which should already be set by default).

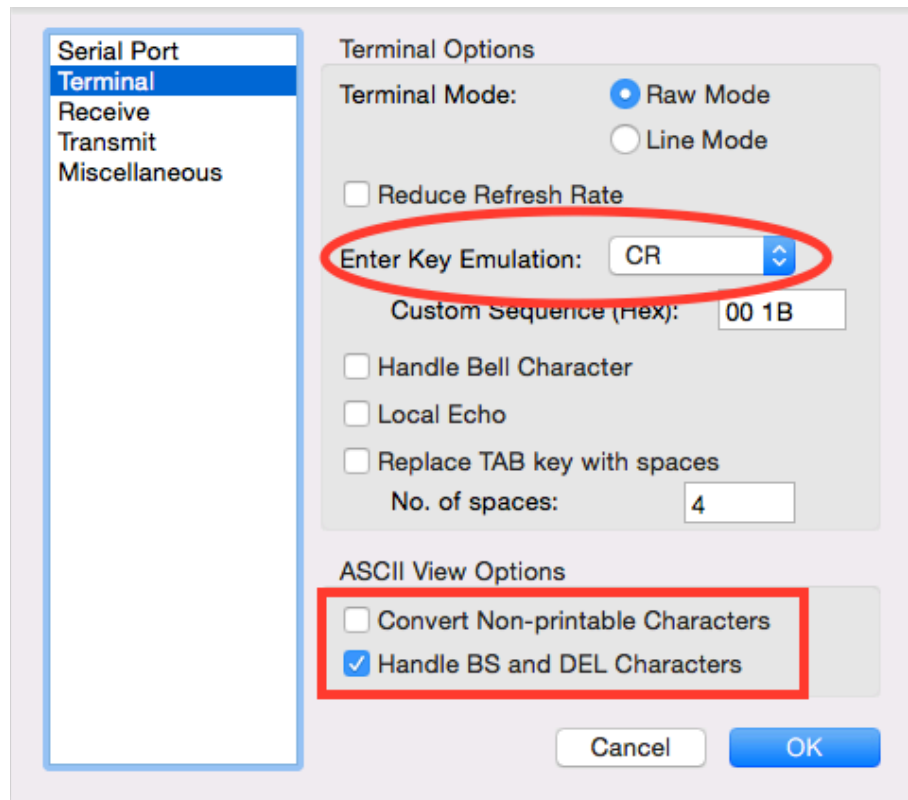


7. Click the drop down menu and select “usbserial-<sn>” where <sn> is the specific serial number of the EVCC as discussed earlier.

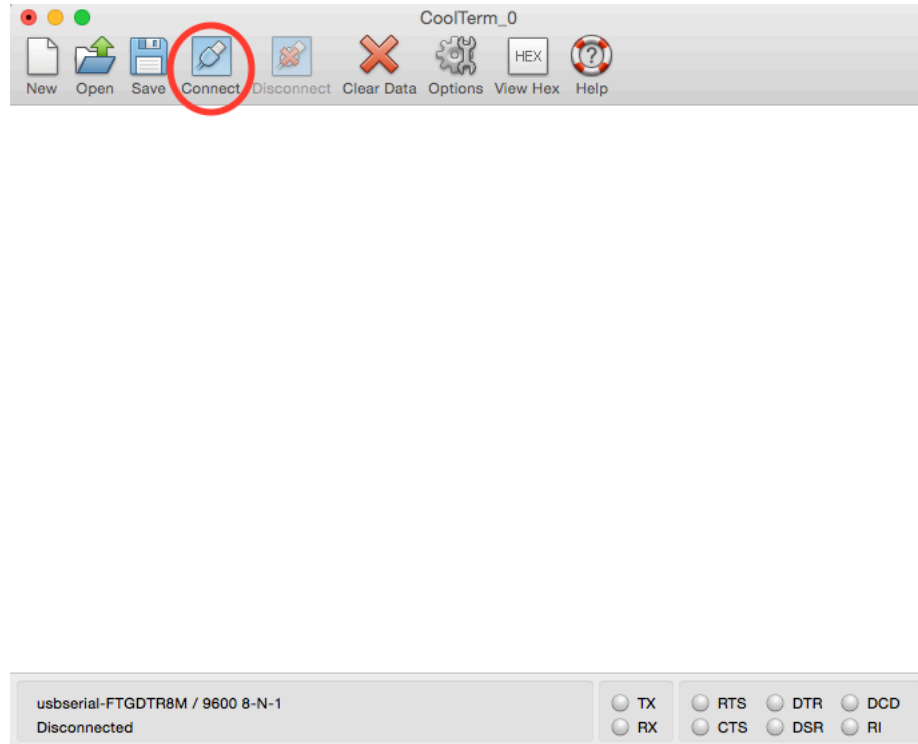
- **Note:** The usbserial-<sn> will not show up in the drop down menu if the USB is not plugged in prior to starting the program. If this occurs, exit CoolTerm, plug in the USB cable and restart CoolTerm.



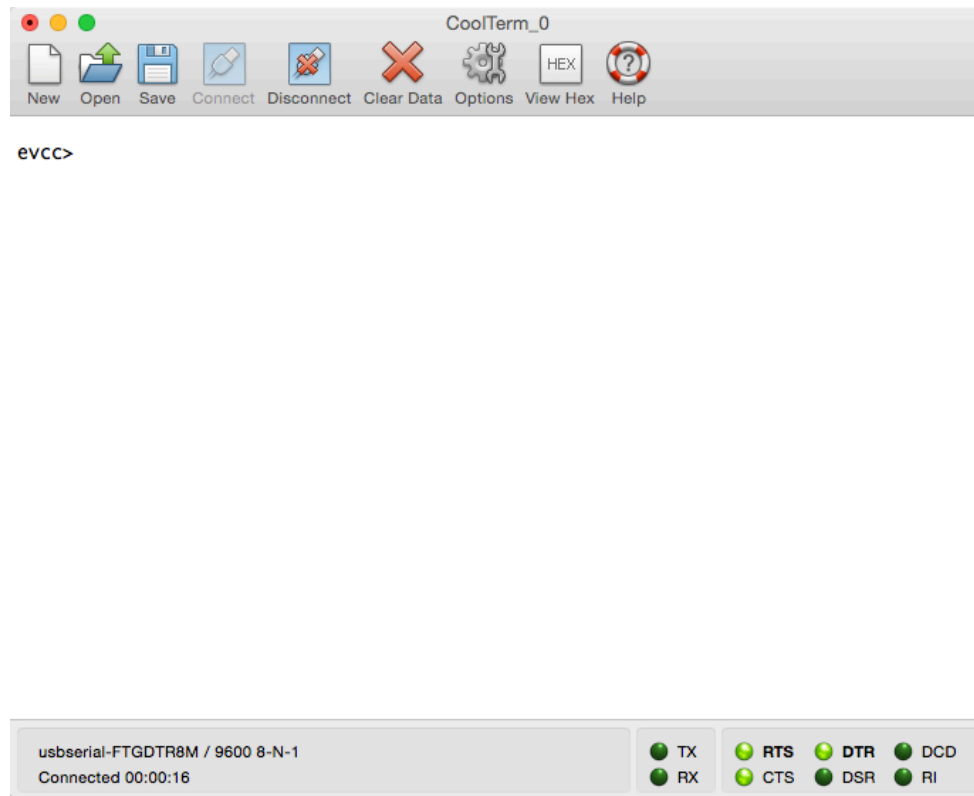
8. Still in “Options” go to the left hand column and click “terminal.” Then change the window to match the settings below.



9. Click “Connect”



10. Press the “return” key, the EVCC command prompt should come up.



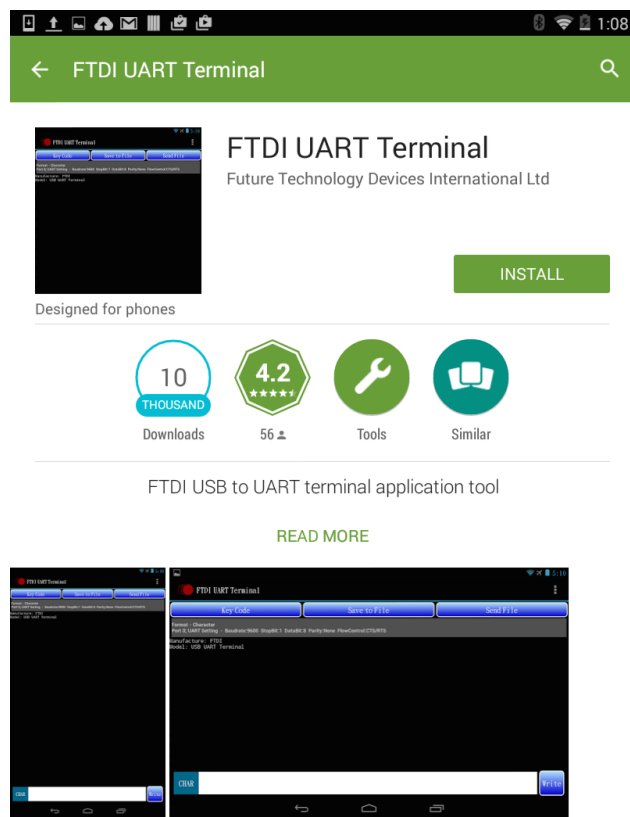
- **Note:** Although the operation of the serial port is very similar to the Windows examples, above, there is one important difference. Windows keyboards generate an ASCII “DEL” character when a “delete” is pressed. MAC keyboards generate an ASCII “BS” character. Current EVCC firmware only interprets the DEL key and the MAC “delete” key may not work as expected. However, the ASCII “DEL” character can usually be generated by MAC keyboards (look for another “delete” key with an “x” or try pressing FN-DEL).

## Android Driver Installation

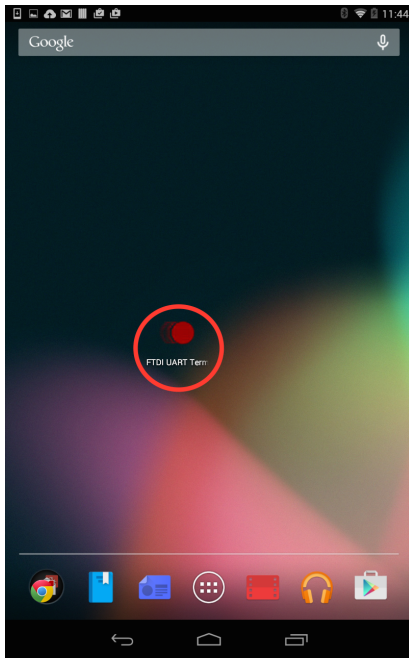
Before starting the procedure below, ensure the 12V power is hooked up to EVCC. Finally, insure that the USB to serial cable is plugged into the OTG cable which is then plugged into the Android device. You will need an “On The Go” (OTG) USB female to USB micro adapter found here: <http://www.amazon.com/IVSO%C2%AE-Nexus-Tablet-Micro-Cable/dp/B00932N46S>

In this guide, we will be using an Asus Nexus 7 Tablet. The same (or very similar) process should follow for smart phones and others.

1. Ensure your Android is running 3.2 or later.
2. Download and install the FTDI UART Terminal app from the app store.



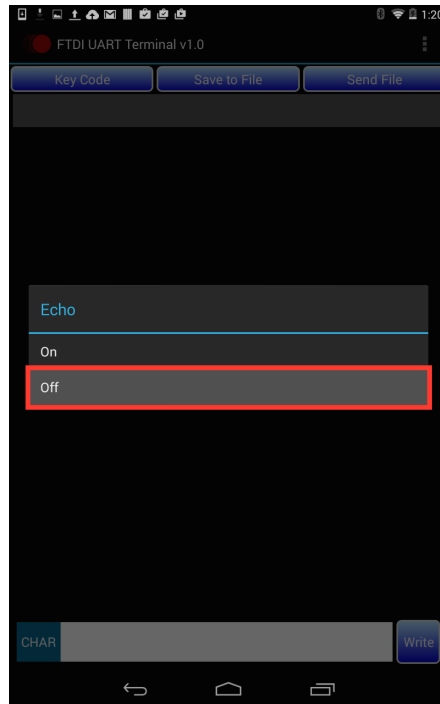
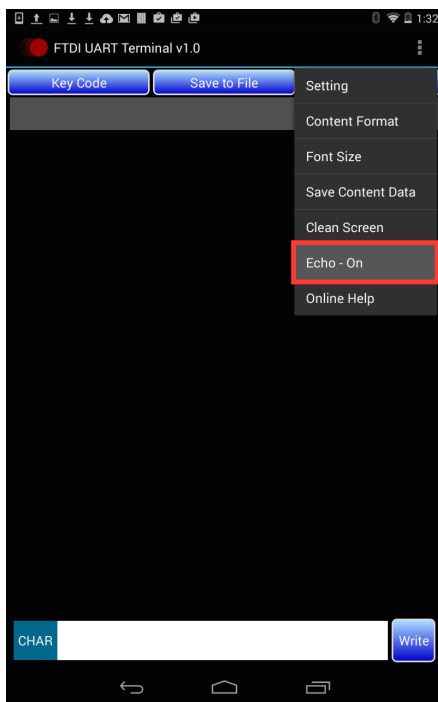
3. It should appear on the homescreen and look like this.



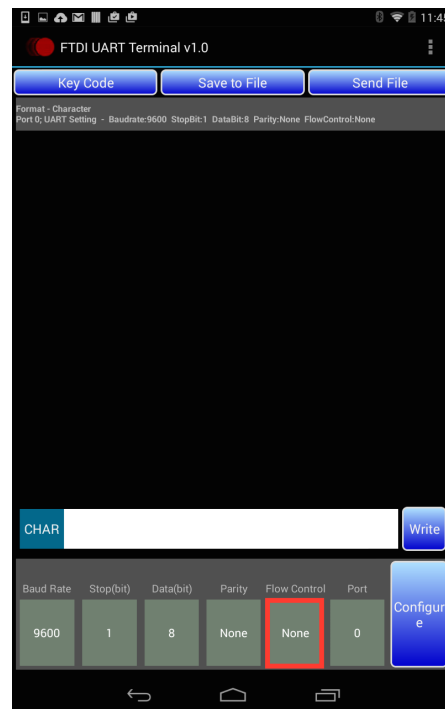
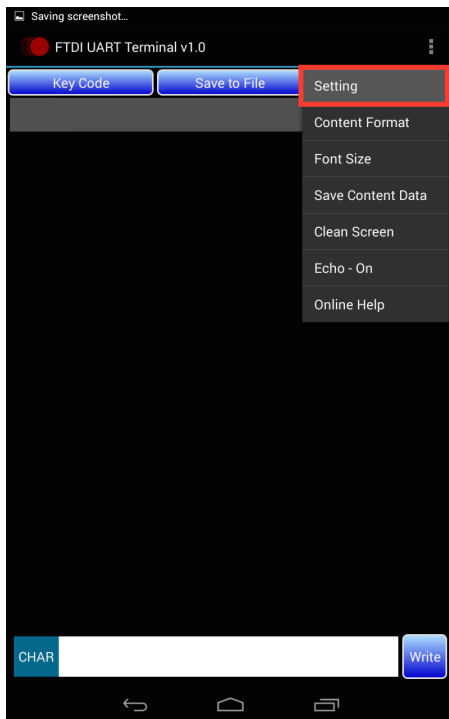
4. You can open the app, or plug in the EVCC and it should auto-detect and prompt you to open it with a program from the list. If this is what you choose to do, select FTDI UART Terminal from the list. (you can also check the box to always open with selected program). Once it is open, push the menu button (this differs from android to android).



5. Turn Echo Off



6. Go to the menu again and this time go to settings. Change “Flow Control” to “None” then press configure. **Note:** It will not allow the settings to be configured if the EVCC is not connected first.



7. The Android Device should now be set up to program the EVCC.

**Please Note:** because of the way the text data is sent to the device, it is necessary to place a “return” after each command before writing the command. This does what “enter” would do on the PC.



## Warranty and Support

The Thunderstruck return policy is available at <http://www.thunderstruck-ev.com/return-policy.html>.

Thunderstruck Motors and Dilithium Design reserve the right to make changes or improvements in design or manufacturing without assuming any obligation to change or improve products previously manufactured and / or sold.

For general support and warranty issues, contact  
[connect@thunderstruck-ev.com](mailto:connect@thunderstruck-ev.com)

For errors in this document, or comments about the product, contact  
[djmdilithium@gmail.com](mailto:djmdilithium@gmail.com)

## Document History

Rev 1.0.0	Apr 17, 2014	Initial Version
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